US Army Corps of Engineers
Alaska District



2013 REMEDIAL ACTION REPORT

Revision 1

Northeast Cape HTRW Remedial Actions
Northeast Cape, St. Lawrence Island, Alaska

Contract Nos. W911KB-13-C-0004 and
W911KB-12-C-0003

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ACRONYMS AND ABBREVIATIONS

′	minutes
°	degrees
µg/100 cm^2	micrograms per 100 square centimeters
AAC	Alaska Administrative Code
AC&WS	Aircraft Control and Warning Station
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
AK	Alaska Test Method
ANCSA	Alaska Native Claims Settlement Act
APP	Accident Prevention Plan
AST	aboveground storage tank
Bcy	bank cubic yards
Bgs	below ground surface
Bristol	Bristol Environmental Remediation Services, LLC
BTEX	benzene, toluene, ethylbenzene, and xylenes
BTOC	below top of casing
CCV	continuing calibration verification
CDQR	Chemical Data Quality Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLIN	Contract Line Item Number
CO	Contracting Officer
COC	contaminant of concern
CPR	cardiopulmonary resuscitation
CQC	contractor quality control
CQCP	Contractor Quality Control Plan
CQCSM	Contractor Quality Control Systems Manager
CS	Contaminated Sites Laboratory Approved Program
DI	deionized
DO	dissolved oxygen

ACRONYMS AND ABBREVIATIONS (continued)

DoD	U.S. Department of Defense
DRO	diesel range organics
DU	decision unit
ELAP	Environmental Laboratory Accreditation Program
EMT	emergency medical technician
EPA	U.S. Environmental Protection Agency
F	Fahrenheit
FUDS	formerly used defense site
GAC	Granular Activated Carbon
GRO	gasoline range organics
HSM	Health and Safety Manager
HTRW	hazardous, toxic, and radioactive waste
IDW	investigation-derived waste
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LDU	lower decision unit
MDU	middle decision unit
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MNA	monitored natural attenuation
MOC	Main Operations Complex
MS	matrix spike
MSD	matrix spike duplicate
MW	monitoring well
MWH	Montgomery Watson Harza Americas, Inc.
NALEMP	Native American Lands Environmental Mitigation Program
NE Cape	Northeast Cape
NOM	naturally occurring materials
NS	Northland Services
OSHA	Occupational Safety & Health Administration
PAH	polynuclear aromatic hydrocarbon

ACRONYMS AND ABBREVIATIONS (continued)

PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PLO	Public Land Order
PM	Project Manager
POL	petroleum, oil, and lubricants
PPE	personal protective equipment
PVC	polyvinyl chloride
QA	quality assurance
QAPP	Quality Assurance Project Plan
QAR	Quality Assurance Representative
QC	quality control
RA	removal action
Radome	Radar Dome
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
RPD	relative percent difference
RRO	residual range organics
SOP	Standard Operating Procedure
SOW	Scope of Work
SS	Site Superintendent
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SVOC	semivolatile organic compound
T&D	transportation and disposal
TAH	total aromatic hydrocarbons
TAqH	total aqueous hydrocarbons
TCLP	Toxicity Characteristic Leaching Procedure
TestAmerica	TestAmerica Laboratories, Inc.
TOC	total organic carbon
TSCA	Toxic Substances Control Act
UDU	upper decision unit

ACRONYMS AND ABBREVIATIONS (continued)

UFP	Uniform Federal Policy
USACE	US Army Corps of Engineers
USAF	U.S. Air Force
UST	underground storage tank
UVOST	Ultra-Violet Optical Screening Tool
VOC	volatile organic compound
WP	Work Plan

EXECUTIVE SUMMARY

This Remedial Action Report presents the results of a removal action performed at the Northeast Cape (NE Cape) Formerly Used Defense Site on Saint Lawrence Island, Alaska. Bristol Environmental Remediation Services, LLC (Bristol), and its team of subcontractors performed the work for the US Army Corps of Engineers, Alaska District, under two contract numbers:

- W911KB-13-C-0004
- W911KB-12-C-0003

Contract W911KB-13-C-0004 required Bristol to complete several tasks associated with the base Scope of Work for the 2013 field season (the volumes and amounts scoped for removal were estimates developed from previous work, and not what is confirmed to be known as existing/remaining volumes):

- Prepare plans and reports
- Mobilize to the NE Cape site in 2013
- Excavate and dispose 6,000 tons of petroleum, oil, and lubricants- (POL) contaminated soils at Main Operations Complex (MOC) sites 10, 11, 13, 15, 19, and 27 (these sites contained POL plumes A2, B1, B2, C, E1, E2, F, and I1 on the MOC excavation plan). Collect sidewall samples from the boundary between plume E and Site 28. Excavate Plumes C and I1 if they are found to contain what is determined to be mostly non-organic gravel pad material. Excavation into these plumes will halt if the material is found to be mostly organic peat material such as the material found in Site 28 so that intrusion into Site 28 wetlands can be avoided.
- Excavate and dispose of 135 tons of polychlorinated biphenyl- (PCB) contaminated soils from Site 13 (Heat and Power Plant) and Site 31 (White Alice Communications Station)
- Excavate and dispose 260 bank cubic yards of contaminated sediment at Site 28 Drainage Basin
- Investigate, excavate, and dispose 100 tons of arsenic-contaminated soil from Site 21 Wastewater Treatment Tank

- Excavate and dispose 0.25 tons of drums, 200 gallons of drum liquids, and 100 tons of contaminated soil at Site 10
- Continue monitoring natural attenuation of groundwater from seven existing monitoring wells in the MOC vicinity
- Sample soil for POL at the present-day refueling area (International Standards Organization [ISO] tanks) after tank removal
- Remove and dispose 25 tons of dangerous metal debris, 1 ton of drums, and 20 poles from tundra areas sitewide, where clearly identified
- Collect five *MULTI INCREMENT*® (MI)[1] soil samples at Site 28 staging areas and work pad.
- Include work activities and associated results in a 2013 Hazardous, Toxic, and Radioactive Waste (HTRW) Remedial Action Report
- Collect MI samples from MOC bulk bag storage areas, including Cargo Beach

Five modifications to contract W911KB-13-C-0004 added tasks to the SOW:

- Collected roadway soil samples at four locations across the site (Modifications P00002 and P00003)
- Performed soil sampling at a suspected pipeline break between Sites 3 and 7 (Modification P00002 and P00003)
- Analyzed surface water for additional contaminants benzene, toluene, ethylbenzene, and xylenes, and polynuclear aromatic hydrocarbons) at three downgradient MOC surface water locations (Modifications P00002 and P00003)
- Increased POL quantities by 3,500 tons (Modification P00004) and 1,101.24 tons (Modification P00005) at the MOC for a combined total, including the base SOW, of 10,601.24 tons
- Increased arsenic-contaminated soil removal amounts by 200 tons (Modification P00004) for a combined total, including the base SOW, of 300 tons
- Increased contaminated soil removal amounts at Site 10 by 250 tons (Modification P00004) for a combined total, including the base SOW, of 350 tons
- Added 10 tons of miscellaneous debris and drums (Modification P00004) to the base SOW for a combined total of 35 tons

[1] *MULTI INCREMENT*® is a registered trademark of EnviroStat, Inc.

- Added 10 pole stumps (Modification P00004) to the base SOW, for a combined total of 30 poles
- Exercised the option for abandonment of 10 monitoring wells and increased the total number of wells to 12 (Modification P00005)

Additionally, Bristol completed tasks in 2013 that remained from the W911KB-12-C-0003 contract:

- Excavated, transported, and disposed 3,177.09 tons of POL-contaminated soil from the MOC
- Excavated, transported, and disposed 115.28 tons of PCB-contaminated soil from sites 13 and 31
- Excavated, transported, and disposed of 40.6 tons of contaminated soil from Site 10
- Removed 1.62 tons of drums from Site 10
- Removed, transported, and disposed119.4 bank cubic yards (bcy) of sediment from Site 28
- Removed and disposed of 15.33 tons of miscellaneous debris
- Performed post-construction MI soil sampling at bulk bag staging areas, located at Site 6, the MOC, and Site 26
- Performed pre- and post-MI soil sampling at a bulk bag staging area north of the present-day refueling area

In the 2013 field season, Bristol completed the bulk of primary tasks and those added to contract W911KB-13-C-0004:

- Excavated, removed, and disposed 10,601.24 tons of POL-contaminated soil from the MOC
- Removed 145 bcy of sediment from Site 28
- Excavated, removed, and disposed 305.13 tons of arsenic-contaminated soil from Site 21
- Excavated, removed, and disposed 290.49 tons of contaminated soil from Site 10
- Removed and disposed 50 gallons of POL-liquids from the MOC and Site 10
- Removed and disposed 0.29 tons of drums from Site 10

- Collected groundwater samples from seven monitoring wells at the MOC for continued monitoring of natural attenuation
- Performed pre- and post-MI soil sample collection from one decision unit (DU) in the footprint of the fuel containment
- Removed and disposed 28.45 tons of miscellaneous debris, 1 ton of drums and 30 poles/pole stumps from across the site
- Collected a total of eight primary soil samples from four separate locations along the NE Cape road system
- Collected eight primary soil samples at a suspected pipeline break area located between Sites 7 and 3
- Abandoned twelve monitoring wells across the site

The 2013 POL- and PCB-contaminated soil removal efforts at the MOC and Site 31 were a continuation of work initiated in 2011. In 2013, Bristol completed excavation at Site 10 that began in 2012. Bristol's field season lasted from June 21 through September 29, 2013. During this time, Bristol excavated a total of 14,556.73 tons of contaminated soil and sediment from various sites into 1,561 bulk bags (9- and 5-cubic-yard geotextile containers) and shipped the containerized soil off-site for disposal. An additional 427 bulk bags (leftover from the 2012 field season) were also shipped off-island for disposal. By season's end, Bristol had manifested and shipped 1,988 bulk bags, which were transferred to disposal facilities located in Arlington, Oregon. Forty-two landing craft vessels were used for shipping freight off-site, including bulk bags and Conex containers.

Removal totals for contract W911KB-13-C-0004 differed from actual removal amounts in some instances:

- PCB-contaminated soil removal – Bristol was scoped to remove 135 tons of PCB-contaminated soils, but after achieving the contract limits for contract W911KB-12-C-0003, there were no PCB-contaminated soils remaining to remove.
- Site 21 arsenic-contaminated soil removal – Bristol was scoped to remove 300 tons of arsenic-contaminated soils from Site 21, but the final weights indicated that a total of 305.13 tons had been removed.

- Site 10 contaminated soil removal – Bristol was contracted to remove 350 tons of contaminated soil from Site 10, but site cleanup was achieved after removal of only 290.49 tons of soil.
- Site 10 liquid removal – Bristol was scoped to remove 200 gallons of liquid from Site 10, but only 50 gallons of liquid were recovered from NE Cape during the 2013 field season.
- Miscellaneous debris removal – Bristol was contracted to remove 35 tons of miscellaneous debris from various locations across the site. Actual removal and disposal amounts totaled 28.45 tons.

Additionally, some work elements were not completed during the 2013 field season and remain to be completed in 2014:

- Containerization, removal and disposal of geotextile dewatering tubes at the Site 28 work pad – Eleven dewatering tubes were left in containments at the Site 28 work pad to dewater over the winter. Containerization, sampling and disposal of the sediment within the tubes will be necessary to complete the project task. Associated tasks include treating any containment water, sampling the sediment for waste disposal, and collecting geotechnical samples from the sediment contained within the dewatering tubes. Once the geotextile dewatering tubes and containments are removed, MI soil samples will be collected from the former work pad footprint.
- Demobilization of equipment and supplies – Bristol left heavy equipment, vehicles and camp supplies at the NE Cape site that will require demobilization following the completion of all field tasks. This decision was made as the end of the field season approached with the input and consent of USACE. It is Bristol's intention to utilize this equipment in 2014 to complete the remaining tasks at Site 28.

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1.0 INTRODUCTION

The *Northeast Cape HTRW Remedial Actions Report* presents the results of a removal action (RA) performed at the Northeast Cape (NE Cape) Formerly Used Defense Site (FUDS) on Saint Lawrence Island, Alaska. Bristol Environmental Remediation Services, LLC (Bristol), and its team of subcontractors performed the work for the US Army Corps of Engineers (USACE), Alaska District, under two contract numbers:

- W911KB-13-C-0004
- W911KB-12-C-0003

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2.0 SITE DESCRIPTION

2.1 LOCATION

Saint Lawrence Island is located in the northern Bering Sea off the western coast of Alaska. NE Cape lies approximately 135 air miles southwest of Nome, Alaska (Figure 1). The project site, which originally encompassed 4,800 acres, falls between Kitnagak Bay to the northeast, Kangighsak Point to the northwest, and the Kinipaghulghat Mountains to the south (Figure 2). The site is located at 63 degrees (°) 20 minutes (′) north latitude and 168° 59′ west longitude, in Township 25 South, Range 54 West, Kateel River Meridian. The site is not connected to the surrounding communities by road and is only accessible via air, water, or all-terrain vehicle (USACE, 2009).

Figure 3 shows the location of the major work sites discussed in this report. The bulk of the facilities were located in what is known as the Main Operations Complex (MOC), an area located approximately 1 mile south of the airstrip. An overview of the MOC is shown on Figure 4. A number of work sites discussed throughout this document, including Site 10, Site 13, Pad 98, and the aboveground storage tanks (ASTs) were located in the MOC area of concern. A gravel road known as Perimeter Road encircles Sites 13, 15, 17, 18, 19, 20 and 27 at the MOC; whereas Sites 9, 10, 11, 14, 16, 21, 22 and 26 are outside of Perimeter Road.

2.2 CLIMATE

Saint Lawrence Island has a cool, moist, subarctic maritime climate, with some continental influences during winter when much of the Bering Sea is capped with ice pack. Winds and fog are common, and precipitation occurs approximately 300 days per year as light rain, mist, or snow. Annual snowfall is approximately 80 inches per year. Total annual precipitation is about 16 inches per year, and more than half falls as light rain between June and September. Summer temperatures average between 34 degrees

Fahrenheit (°F) and 48°F, with a record high of 65°F. Winter temperatures range from -2°F to 10°F, with an extreme low of -30°F (MWH, 2003a). Freeze-up normally occurs in October or November, and breakup normally occurs in June.

Winds are generally in a northerly to northeasterly direction from September to June and southwesterly in July and August. Winds exceed 11 miles per hour 70 percent of the time. The average wind speed is 18 miles per hour. Gusts in the NE Cape area have measured as high as 110 miles per hour (USACE, 2002).

2.2.1 Weather Conditions during the Project Field Season

Weather conditions during the 2013 June through September field season was typical of a summer subarctic maritime climate. Variable winds, light precipitation or fog, and temperatures ranging from 35-55°F were representative of the daily weather in lowland and lower mountain areas. Crews periodically encountered violent storms with sustained winds exceeding 30 miles per hour, as well as periods of clear, calm conditions.

Wind was often the most significant factor affecting work conditions during the 2013 field season and was, at times, responsible for knocking out the satellite communications system and halting work activities. High winds also complicated bulk bagging operations due to the difficulty of handling the bags under such conditions.

Bristol witnessed minor amounts of snow in late September, but no significant accumulation around the work sites. Snow was more common in the higher elevations of Kangukhsam Mountain, including the valley road to the old Radar Dome and Tram Station. Work progress was not affected by snowfall during the 2013 field season.

2.3 TOPOGRAPHY

The lower mountain area consists mainly of flat coastal plains that gradually turn into rolling tundra toward the base of the Kinipaghulghat Mountains. The mountains rise

abruptly to a maximum elevation of approximately 1,850 feet above mean sea level. Elevations across the work areas ranged from sea level to approximately 300 feet above mean sea level.

2.4 GEOLOGY

Saint Lawrence Island consists of isolated bedrock highlands of igneous, metamorphic, and older sedimentary rocks surrounded by unconsolidated surficial deposits overlying a relatively shallow erosional bedrock surface. In the immediate vicinity of the lower mountain area south of the MOC, shallow, unconsolidated surficial materials overlie quartz monzonitic rocks of the Kinipaghulghat Pluton. The pluton forms the mountainous work area south of the MOC, including Kangukhsam Mountain. The Suqitughneq River drainage in the Kinipaghulghat Pluton has created an erosional valley and alluvial fan of unconsolidated sediments. Granitic bedrock materials are exposed at the coast north of Kitnagak Bay, suggesting that quartz monzonitic bedrock underlies the unconsolidated materials at a relatively shallow depth on a wave-cut erosional platform (USACE, 2009).

The unconsolidated materials exhibit an alluvial soil profile in areas that have not been disturbed by man. In general, silts near the surface, which overlie more sand-dominated soils, characterize the soil stratigraphy at the site. The silt may contain varying quantities of clay, sand, and gravel and may vary from zero to 10 feet in thickness. The silt is dark brown to dark green and sometimes exhibits a mottled texture. In some areas, the silt exhibits an aqua green or blue color. Dark brown silts were observed in outcrops. The sand at depth contains varying degrees of silt, gravel, and cobbles and it varies from 2 feet to more than 20 feet in thickness. These deeper, coarse-grained materials are generally unsorted and are likely to be of glaciofluvial origin. The depth to bedrock at the lower elevation areas of the site is unknown (USACE, 2009).

Beach material is primarily cobble (1-inch stones), with some sand and intermittent large boulders and rocks (USACE, 2002).

2.5 SURFACE WATER AND GROUNDWATER

Because Saint Lawrence Island is relatively remote and undeveloped, regional-groundwater data is limited (MWH, 2003). Bedrock materials south of the site (and underlying the unconsolidated deposits) are not expected to store and transmit significant quantities of groundwater. Typically, these types of granitic rocks are impermeable and transmit groundwater only through localized fractures and weathered soil zones at the surface. However, historical reports concerning water supply wells suggest that this deep, fractured bedrock aquifer supplied sufficient water to sustain the installation during operation (MWH, 2003). Multiple production wells accompanied by storage tanks used to supply the installation during its operation and were drilled to depths of 50 to 70 feet into a fractured bedrock aquifer. It is noted in the MWH report (2003) that the use of multiple water supply wells may indicate that groundwater availability was inconsistent and variable throughout the aquifer during different times of the year and that there are insufficient data to determine the aquifer's extent across the site.

The primary potential aquifer at the NE Cape site is the unconsolidated alluvial material that underlies the area. Regions where blocks of the bedrock are breaking off to form the talus fields that flank the Kinipaghulghat Mountains are likely capable of transmitting large volumes of groundwater (MWH, 2003). The mountainous area to the south of the former installation provides an ideal recharge area for these unconsolidated materials, providing runoff from rain and snowmelt during the summer that permeates the broken bedrock, alluvial, and glacial deposits. Based on the topography and geology of the site, the regional groundwater flow direction is expected to be from the mountainous recharge

area south of the site, flowing north, eventually discharging to the Bering Sea (MWH, 2003).

The shallow, subsurface groundwater observed and encountered across the MOC (and across the former installation) likely consists of seasonally thawed water that is both spatially and temporally intermittent (MWH, 2003). Groundwater elevations observed in monitoring wells at the MOC in 2013 ranged from approximately 60 to 71 feet above mean sea level, exhibited depth to water measurements ranging from approximately 5 to 39 feet below ground surface (bgs), and exhibit a groundwater flow direction to the northwest (Figure 5). Water depths at the MOC are greatest to the south and become shallower progressing north to the Site 28 drainage basin. Section 6.9 contains additional information regarding well logs and hydrogeology of various sites at NE Cape.

Groundwater elevations fluctuate both from year to year and throughout the course of the field season. Water elevations for late July/early August at the F/G plume were 4 feet higher in 2012 than in 2013. In 2011, 2012 and 2013 groundwater elevations at the MOC increased by several feet from late July to early September. In August 2011, the groundwater elevation at the H plume excavation rose 3 feet in 3 days during a precipitation event. Groundwater elevations in excavations may also demonstrate large spatial variability: on July 23rd 2012 water levels taken from the Site 13 excavation and the F plume excavation 25 feet away varied by 3.2 feet.

Key factors influencing the flow of groundwater at the site are the permafrost and frozen soils, which render the unconsolidated materials effectively impermeable in some areas (MWH, 2003). The U.S. Geological Survey has classified Saint Lawrence Island as an area of moderately thick to thin permafrost (Ferrians, 1965). Although the depth of permafrost at Saint Lawrence Island is unknown, the base of permafrost on the mainland at Nome (135 air miles northeast) is estimated to be at a depth of 120 feet. The deeper, unconsolidated deposits at the site are probably permanently frozen, and the shallow soils

represent the active layer where soils thaw during portions of the year. Frozen soils have an effect in retarding groundwater flow most of the year.

In addition to the Bering Sea north of the NE Cape facility, surface water in the vicinity of the work area consists of small streams, small- to moderate-sized lakes, and marshy areas (MWH, 2003). Surface water generally flows northward from the more southerly located highland areas of the Kinipaghulghat Mountains. Small surface water bodies are common throughout the area. The primary stream drainage in the area, the Suqitughneq River, is fed by runoff from the Kinipaghulghat Mountain valley in the lower mountain area, south of the former installation. Several smaller tributaries, originating from two small, unnamed lakes (MWH, 2003), feed this stream drainage as it flows north to Kitnagak Point. Surface water flow in the area is highly dynamic; these changes occur over short and long periods of time (MWH, 2003). Bristol observed significant changes in surface water characteristics at multiple locations across the site, most notably at a location directly south (uphill) from Site 26 where surface water runs through a culvert underneath the road that connects the MOC and Site 31. This drainage originated in the Kinipaghulghat Mountain valley and exhibited variable flow in late spring/early summer. The drainage would flow for days at a time but would run dry later into the summer during drier periods.

2.6 AIR QUALITY

Air quality in the area is good. There are minimal sources of air emissions at the site because of its remote nature. The occasional boat motor, vehicle engine, or fire has a negligible effect. Air emissions at the site increase during remedial action work because more equipment and vehicles are operating at the site. Winds typical of the area aid in dispersing emissions (USACE, 2002).

2.7 VEGETATION

The NE Cape area has several major habitat types, including moist tundra dominated by heaths, grasses, sedges, mosses, and lichens, with shrubs that include bearberry, dwarf birch, narrow-leaf Labrador tea, and willow. These plants typically grow in 1 to 3 feet of undecayed organic mat over saturated and frozen soil. Alpine tundra plants (dwarf, prostrate plants that include heaths and tundra species adapted to dry, thin soil conditions) grow on the slopes and exposed ridges of nearby mountains. The NE Cape area has many low-lying areas with lakes, bogs, and poorly drained soils (USACE, 2002).

2.8 FISH AND WILDLIFE

Large mammals are generally not abundant on Saint Lawrence Island. Polar bears may be on the island any time during the year but are most often present when the ice pack is near shore. Some years, polar bears become stranded on the island throughout the summer when the ice pack moves out earlier than usual. A population of approximately 1,000 reindeer inhabits the island. Arctic foxes, cross foxes, red foxes (less common), wolves (rarely), and several small mammals (tundra shrews, arctic ground squirrels, Greenland collared lemmings, red-backed voles, and tundra voles) also inhabit the island (MWH, 2003). Animals usually seen in or around the work sites are small mammals such as ground squirrels and foxes.

Marine mammals are present in the vicinity of the NE Cape area as seasonal migrants in the offshore and near shore marine waters, at haul-out sites, and in association with the advancing and retreating ice pack. No haul-out sites are within the work area. During the summer, walrus, sea lions, and spotted seals may be present in offshore waters. During the ice season, ringed seals, bearded seals, walrus, and spotted seals can be found in near shore and offshore leads and open water. Bowhead, gray, minke, killer, right, humpback, blue, and beluga whales inhabit offshore waters (USKH, 1993 in MWH, 2003).

The only breeding seabird colony known to exist at the NE Cape facility consists of about 60 glaucous gulls and 60 herring gulls at Seevookhan Mountain, approximately 5 miles southeast of the NE Cape site. Several other species of birds have been sighted in the vicinity of the NE Cape site, including common ravens, snow buntings, snowy owls, whistling swans, Lapland longspurs, jaegers, sand hill cranes, and emperor geese.

Ten primary species of fish reside in the streams and tundra ponds of Saint Lawrence Island. These include blackfish, nine-spined stickleback, grayling, whitefish, and Dolly Varden trout. Five of the six species of Pacific salmon occur around the island and rear in many of the larger drainages (MWH, 2003).

2.9 COMMUNITY PROFILE AND LAND USE

The nearest community on Saint Lawrence Island to the project site is the Village of Savoonga, approximately 60 miles northwest of the site, with an estimated population of 718 people, according to the State of Alaska Department of Commerce, Community, and Economic Development website (accessed December 3, 2014), but Savoonga locals estimate that the population exceeds 800 people. There are no permanent residents at the NE Cape site, but there is a small subsistence hunting and fishing camp in the area that is infrequently inhabited in the summer by residents of Savoonga and Gambell. Snow machine travel during the winter months provides residents of Gambell and Savoonga relatively easy access to the site. The NE Cape site property is currently owned jointly by the two local native corporations, Sivuqaq, Inc., in Gambell and Kukulget, Inc., in Savoonga. The island is accessible by boat, regularly scheduled airlines (to Gambell and Savoonga), and chartered air flights out of Nome. There is no regularly scheduled commercial access to the project site.

2.9.1 Subsistence Activities

Savoonga is a traditional St. Lawrence Island Yupik village with a subsistence lifestyle. Whale, seal, walrus, and reindeer compose 80 percent of islanders' diets. The economy is largely based upon subsistence hunting of walrus, seal, fish, and whale, with some cash income. Berries, edible and medicinal plants are also harvested. Subsistence and commercial fishing for halibut takes place in the vicinity of NE Cape.

2.9.2 Community Support

The 2013 fieldwork at NE Cape enhanced the local community in several ways. Bristol employed six members of the Savoonga community throughout the majority of the field efforts. The construction camp's mess hall and medic facility were often visited by local community members. Visitors were able to access medical personnel and medicine maintained on the site. The emergency medical technicians (EMTs) and construction camp helped local individuals who needed medical attention during Bristol's field efforts in 2013. The camp also offered shelter and communications with Nome, Savoonga, Gambell or Anchorage for the local population. The satellite communication system enabled visitors, including those hunting or fishing for subsistence, to contact family members and friends back home to provide updates on their status and condition. The NE Cape camp was a safe haven for anyone who might get caught in poor conditions while away from home.

2.10 HISTORY

Saint Lawrence Island was established as a reindeer reserve by Executive Order on January 7, 1903. The U.S. Air Force (USAF) constructed an Aircraft Control and Warning Station (AC&WS) at NE Cape during 1950 and 1951 (USACE, 2009). The present project site was acquired by the USAF on January 16, 1952, under Public Land Order (PLO) 970, which removed 21,013 acres from the reserve. In 1952, the USAF AC&WS was formally

activated by assignment of the 712th AC&WS Squadron and the 698th Security Squadron. The original site was designed to support 212 personnel. Throughout its existence, the NE Cape facility has been a surveillance station, providing radar coverage for the Alaskan Air Command and, later, for the North American Air Defense Command, as part of an Alaska-wide system constructed to reduce potential vulnerability to bomber attacks across the polar regions.

The White Alice Station area remained in operation with minimal military staff until 1972. All lands were then withdrawn from the military under PLO 5187 for classification under Section 17(d)(1) of the Alaska Native Claims Settlement Act (ANCSA) of 1971, which entitled local community village corporations to select and receive specific tracts of federal land. Interim Conveyance No. 203 (June 1979) conveyed unsurveyed lands of Saint Lawrence Island to Sivuqaq, Inc., and Savoonga Native Corporation, known today as Kukulget, Inc. Surveyed land, easements, and land-use permits effective before conveyance were excluded from the transfer.

In 1982, transfer of the White Alice Station area, south of the MOC, to the U.S. Department of the Navy was initiated. However, this transaction was not formally completed and was superseded by ANCSA. The Navy conducted an RA under its Comprehensive Long-Term Environmental Action Navy program. The action included removal of specified hazardous items and containerized hazardous and toxic waste.

In 2000, the White Alice Station was reclassified as a FUDS-eligible property. In response, the USACE included the area in the ongoing cleanup program for NE Cape (USACE, 2002).

2.10.1 Previous Studies and Actions

Environmental investigations and cleanup activities at NE Cape began in the mid-1980s, with the goal of locating and identifying areas of contamination and gathering enough

information to develop a cleanup plan. The URS Corporation conducted preliminary assessments in 1985, and Ecology and Environment, Inc. did follow-up assessments in 1991, 1992, and 1993.

Remedial investigations (RIs) were initiated at NE Cape during the summer of 1994, when Montgomery Watson Harza Americas, Inc. (MWH), performed a Phase I RI. Soil, sediment, groundwater, and surface water samples were collected during the Phase I RI. Additional sampling was performed during subsequent investigations: MWH conducted Phase II RI in 1996, 1998, and 1999; MWH conducted Phase III RI in 2001 and 2002; and Shannon &Wilson, Inc., conducted Phase IV RI in 2004. A feasibility study was conducted by USACE in March 2007, which summarized historical sampling results and RAs and evaluated a range of alternatives for complying with the criteria prescribed by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The studies divided the concerns among 34 separate sites. The results of the RIs showed that contaminants were present at some but not all sites (USACE, 2009).

Several removal actions have taken place at the NE Cape FUDS:

- URS Corporation, 1990: Removal of transformers, drums, tanks, and other containerized hazardous wastes
- Northwest Enviro Service, Inc., 1994: Removal of 16 electrical transformers and their contents
- MWH, 1997: Removal of communication wires and cables from the tundra
- Nugget Construction Inc., 2000: Removal of building demolition and debris, drums, antenna poles, and a fuel pipeline
- Nugget Construction Inc., 2001: Removal of building demolition debris, polychlorinated biphenyl- (PCB-) contaminated soil, petroleum, oil, and lubricants-(POL-) contaminated soil, and miscellaneous debris
- Bristol Environmental & Engineering Services Corporation (Bristol Environmental and Engineering Services Corporation), 2003: Removal of building demolition debris, other miscellaneous debris, drums, tanks, communications poles, wires, cables, and fuel lines

- Bristol Environmental and Engineering Services Corporation, 2005: Demolition and removal of tramway towers, wires, and cables, metal poles, communications wire and cable
- Bristol Environmental Remediation Services, LLC, 2009: Removal of POL-containing drums, landfill cap construction at Site 7, trial study of in-situ chemical oxidation treatment of POL-contaminated soils at the MOC
- Bristol Environmental Remediation Services, LLC, 2010: Removal of POL-contaminated soils from Sites 1, 3, 6, and 32; PCB-contaminated soils from Sites 13, 16, 21, and 31; and arsenic-contaminated soils from Site 21; landfill cap construction at Site 9; and monitored natural attenuation (MNA) at Site 8
- Bristol Environmental and Engineering Services Corporation, 2011: Removal of POL-contaminated soil from the MOC and PCB-contaminated soil from Sites 13 and 31; MNA at Site 8 and in groundwater wells at the MOC; debris removal; and roofing tar removal
- Bristol Environmental remediation Services, 2012: Removal of POL-contaminated soil from the MOC; PCB-contaminated soil from Sites 13 and 31; arsenic-contaminated soil from Site 21; ethylene glycol- and tetrachloroethene- (PCE-) contaminated soil and over 1,000 gallons of liquid from Site 10; sediment from Site 28; debris and poles from across the site; continuation of MNA at Site 8 and in groundwater wells at the MOC; abandonment/decommissioning of six monitoring wells across the site; and collection of soil samples along the road leading to the Radome

In 2009, the USACE produced the *NE Cape Decision Documen*t, which presented the selected remedies for NE Cape in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act and the National Oil and Hazardous Substances Pollution Contingency Plan. Remedial actions were determined for each site of concern at NE Cape. Table 2-1 lists the selected remedies and their current status. A separate decision document was also developed specific to the Site 7 landfill.

Table 2-1 Decision Document Selected Remedies for Northeast Cape Sites

Decision Document Site Remedy	Status
No Further Action at sites 2, 4, 5, 12, 14, 17, 18, 20, 22, 23, 24, 25, 26, 33, and 34	Complete
Excavation and removal of petroleum-contaminated soils at Site 1 Airstrip	Completed in 2010
Excavation and removal of petroleum-contaminated soils at Site 3 Fuel Pumphouse	Completed in 2010
Excavation and removal of petroleum-contaminated soils at Site 6 Former Drum Field	Completed in 2010
Excavation and removal of petroleum-contaminated soils at Site 32 Lower Tramway	Completed in 2010
Excavation and removal of PCB-contaminated soils at sites 13, 16, 21, and 31	Completed in 2013
Excavation and removal of arsenic-contaminated soil at Site 21 Wastewater Treatment Tank	Conducted in 2011, 2012 and 2013; arsenic-contaminated soil remains
Excavation and removal of petroleum, metals, and PCB-contaminated sediment at Site 28 Drainage Basin, including removal of near-surface sediments from the narrow channel upgradient of the Suqitughneq River	Under review
Construction of sedimentation pond or other appropriate controls at Site 28 Drainage Basin	Planned
MNA of petroleum-contaminated sediment at Site 8 POL Spill Site	Under review
Capping of the Site 9 Housing and Operations Landfill	Completed in 2010
Chemical oxidation at the Main Operations Complex, with contingency remedy of MNA for groundwater, excavation and removal of petroleum-contaminated soils to a depth of 15 feet at sites 10, 11, 13, 15, 19, and 27, and land use controls	Chemical oxidation was initiated in 2009 and was unsuccessful; contingency in progress for groundwater; soil excavations conducted in 2011, 2012 and 2013; POL-contaminated soils remain
Land use controls to limit future drinking water uses for groundwater at the MOC (Sites 10–22, 26, 27), designate areas not suitable for drinking water (Sites 3, 4, 6, 7, 9), prevent construction of buildings on top of landfills, and manage potential future excavation and movement of soils above state cleanup levels	In progress

Table 2-1 Decision Document Selected Remedies for Northeast Cape Sites (continued)

Decision Document Site Remedy	Status
5-Year Reviews at sites with hazardous substances remaining above cleanup levels, as necessary until cleanup levels are met. Periodic reviews of POL-contaminated sites (e.g., Site 8) with residual contamination will be included in conjunction with evaluation of the MOC	To be determined
Periodic visual monitoring for 5 years of the capped area at the Site 9 Housing and Operations Landfill and Site 7 Cargo Beach Road Landfill for settlement and erosion	In progress
Additional visual monitoring, up to 30 years, may be conducted if deemed necessary based on the results of the site inspections	To be determined - The site(s) will be determined by the outcome of future site investigations, and are therefore undetermined
Removal of dangerous poles, wires, and other miscellaneous debris from tundra areas site-wide, where clearly identified	Pole removal conducted in 2009, 2010, 2011, 2012 and 2013. Ongoing wire and miscellaneous debris removal in 2009, 2010, 2011, 2012 and 2013 and planned for 2014 as necessary
Removal of partially submerged debris from streams in the vicinity of Site 9 Housing and Operations Landfill and Site 29 Suqitughneq River	Completed in 2010

Notes:

MNA = monitored natural attenuation
MOC = Main Operations Complex
PCB = polychlorinated biphenyl
POL = petroleum, oil, and lubricants

3.0 CONTRACT SPECIFICATIONS

3.1 SCOPE OF WORK

The 2013 SOW was established under contract W911KB-13-C-0004:

- Preparation of plans and reports
- Mobilization to the NE Cape site in 2013
- Excavation and disposal of 6,000 tons of POL-contaminated soils at MOC sites 10, 11, 13, 15, 19, and 27. These sites contained POL plumes A2, B1, B2, C, E1, E2, F, and I1 on the MOC excavation plan. Confirmation sidewall sample collection from the boundary between plume E and Site 28. Plumes C and I1 were to be excavated only if they contained mostly non-organic gravel pad material.
- Excavation and disposal of 135 tons of PCB-contaminated soils from Site 13 (Heat and Power Plant) and Site 31 (White Alice Communications Station)
- Excavation and disposal of 260 bank cubic yards (bcy) of contaminated sediment at Site 28 Drainage Basin
- Investigation, excavation, and disposal of 100 tons of arsenic-contaminated soil from Site 21 Wastewater Treatment Tank
- Excavation and disposal of 0.25 tons of drums, 200 gallons of drum liquids, and 100 tons of contaminated soil at Site 10
- Continued MNA of groundwater from seven existing monitoring wells in the vicinity of the MOC
- Soil sampling for POL at the present-day refueling area following its deconstruction
- Removal and disposal of 25 tons of dangerous metal debris, 1 ton of drums, and 20 poles from tundra areas sitewide, where clearly identified
- Collection of five MI soil samples at Site 28
- Inclusion of work activities and associated results in a *2013 HTRW Remedial Action Report*

In the 2013 field season, Bristol completed tasks that remained from contract W911KB-12-C-0003:

- Excavated, transported, and disposed 3,177.09 tons of POL-contaminated soil from the MOC

- Excavated, transported, and disposed 115.28 tons of PCB-contaminated soil from sites 13 and 31
- Excavated, transported, and disposed 40.6 tons of contaminated soil from Site 10
- Removed 1.62 tons of drums from Site 10
- Removed, transported, and disposed 119.4 bcy of sediment from Site 28
- Removed and disposed 15.33 tons of miscellaneous debris
- Performed post-construction MI soil sampling at bulk bag staging areas, located at Site 6, the MOC, and Site 26
- Performed pre- and post-MI soil sampling at a bulk bag staging area north of the fuel containment

(These tasks were accomplished concurrently with tasks from Contract

No. W911KB-13-C-0004 and are discussed in Section 6.0.)

Additionally, contract W911KB-13-C-0004 received modifications that increased the

SOW:

- Collected roadway soil samples at four locations across the site (Modifications P00002 and P00003)
- Performed soil sampling at a suspected pipeline break between Sites 3 and 7 (Modification P0002 and P00003)
- Analyzed surface water for additional contaminants benzene, toluene, ethylbenzene, and xylenes, and polynuclear aromatic hydrocarbons) at three downgradient MOC surface water locations (Modifications P00002 and P00003)
- Increased POL quantities separately by 3,500 tons (Modification P00004) and 1,101.24 tons (Modification P00005) at the MOC for a combined total, including the base SOW, of 10,601.24 tons
- Increased arsenic-contaminated soil removal amounts by 200 tons (Modification P00004) for a combined total, including the base SOW, of 300 tons
- Increased contaminated soil removal amounts at Site 10 by 250 tons (Modification P00004) for a combined total, including the base SOW, of 350 tons
- Added 10 tons of miscellaneous debris and drums (Modification P00004) to the base SOW for a combined total of 35 tons

- Added 10 pole stumps (Modification P00004) to the base SOW, for a combined total of 30 poles
- Exercised the option for abandonment of 10 monitoring wells and increased the total number of wells to 12 (Modification P00005)

Descriptions of field investigation methods are included in Section 5.0 and details of the task-oriented field activities are included in Section 6.0.

3.2 CONTRACT W911KB-13-C-0004

The USACE identified the work to be conducted as a series of Base and Optional Contract Line Item Numbers (CLINs). Optional CLINs identified unit-priced work performed in addition to that identified in the Base CLINs. The USACE awarded the Base and Optional CLINs to Bristol on November 30, 2012. The Base CLINs are summarized in Table 3-1, and Optional CLINs are summarized in Table 3-2.

Table 3-1 Base CLINs

Base CLINs	Description
0001	Project Management
0002	Planning Documents
0003	Chemical Data Quality
0004	Field Implementation
0005	2013 HTRW RA Report
0006	Options

Notes:
CLINs = Contract Line Item Numbers
HTRW = hazardous, toxic, and radioactive waste
RA = removal action

Table 3-2 Optional CLINs

Item/Option	Description	Quantity per Option	Number of Options Available	Options Exercised
0006AA/Optional Task 4.6.1	Additional POL Contaminated Soil removal	10 tons	460.124	460.124
0006AB/Optional Task 4.6.2	Additional PCB-Contaminated Soil	10 tons	50	0
0006AC/Optional Task 4.6.3	Additional Arsenic Contaminated Soil	10 tons	20	20
0006AD/Optional Task 4.6.4	Additional Contaminated Soil at Site 10	10 tons	25	25
0006AE/Optional Task 4.6.5	Additional Miscellaneous Debris/Drums	1 ton	10	10
0006AF/Optional Task 4.6.6	Additional Pole Stumps	1 Pole Stump	10	10
0006AG/Optional Task 4.6.7	Drum Liquids (Part of base work, not a CLIN option) 50 gallons of liquid disposed of in 2013 was found in the MOC and attributed to Site 10 because there was available funding in the Site 10 line item. -	50 gallons	2	0
0006AH/Optional Task 4.6.8	Additional Monitoring Well Abandonment	1 Well	12	12
0006AJ/Optional Task 4.6.9	MNA at Site 8 – option not exercised by USACE	Lump Sum	1	0
0006AK/Optional Task 4.6.10	Roadway Soil Sampling	Lump Sum	1	1
0006AL/Optional Task 4.6.11	Soil Sampling at Pipeline Break Between Sites 3 and 7	Lump Sum	1	1
0006AM/Optional Task 4.6.12	Additional Surface Water Analytes at the MOC	Lump Sum	1	1

Notes:
CLINs = Contract Line Item Numbers
MI = *MULTI INCREMENT®*
MNA = monitored natural attenuation
MOC = Main Operations Complex
PCB = polychlorinated biphenyl
POL = petroleum, oil, and lubricants

4.0 PROJECT PLANNING, KEY PERSONNEL, AND SUBCONTRACTORS

4.1 PROJECT PLANNING

Bristol received the contract award from USACE on November 30, 2012 and submitted a draft Work Plan (WP) to the USACE on March 15, 2013. The USACE provided work-plan comments on April 25, 2013, and the Alaska Department of Environmental Conservation (ADEC) provided comments on May 2, 2013. Bristol addressed the comments and submitted the revised *Northeast Cape HTRW Remedial Actions Work Plan* on June 21, 2013. The WP was approved by the ADEC on June 21, 2013. Section 4 describes the planning documents prepared for this project and field activities that deviated from the planning documents.

4.1.1 Planning Documents

Eight documents were prepared by Bristol. The Site Safety and Health Plan (SSHP) and Accident Prevention Plan (APP) were not reviewed by the ADEC. The remaining six documents were approved by the ADEC, and all were accepted by the USACE:

- Work Plan
- Quality Assurance Project Plan (QAPP)
- Contractor Quality Control Plan (CQCP)
- Storm Water Pollution Prevention Plan
- Waste Management Plan
- Final WP Uniform Federal Policy (UFP) QAPP Addendum

In cases where 2013 fieldwork spanned two contracts, Bristol described the work in the same final 2013 RA work plan.

4.1.2 Permits and Regulatory Notifications

Federal and state permits required for this project were included in the WP. Copies of the permits and letters are provided in Appendix A. Several permits and regulatory

notifications, including the Quarry Operating Agreement, apply to the 2013 activities on Saint Lawrence Island for the NE Cape HTRW RA project:

- Material Supply and Quarry Operating Agreement between Bristol and Kukulget, Inc. and Sivuqaq Inc., effective June 15, 2013.
- The Alaska Department of Natural Resources (ADNR), Division of Mining, Land & Water "Letter of Entry for state tidelands within Kitnagak Bay, Saint Lawrence Island," dated May 18, 2009, granted the USACE authorization to enter state tidelands for the express purpose of conducting barge landings for the continued assessment and cleanup of the NE Cape.
- State of Alaska Department of Environmental Conservation, Division of Water, Wastewater Discharge Authorization Program, 2009DB0004-0216.
- Alaska Department of Fish and Game (ADF&G) Fish Habitat FH09-III-0102 permit was issued on April 22, 2009, for equipment stream crossing, Northeast Cape White Alice Site Removal Action (Saint Lawrence Island), Township 25 South, Range 54 West, Quangeghsaq River.
- ADF&G Fish Habitat FH09-III-0103 permit was issued on April 22, 2009, and Amendment 1, issued on June 5, 2009, for placing of riprap in, performance of maintenance activities in, and water withdrawal (up to 3,000 gallons per day) from the Suqitughneq River, Northeast Cape White Alice Site Removal Action (Saint Lawrence Island), T25S, R54W.
- ADNR, Division of Mining, Land & Water, Temporary Water Use Authorization Permit TWUP A2012-63 dated June 12, 2012. Expires September 15, 2016.
- Department of the Army Right of Entry for Environmental Assessment and Response for Saint Lawrence Island, Alaska Property Identification Number DACA85-8-08-0134 between the USACE, Kukulget Incorporated, and Sivuqaq Incorporated, dated June 17, 2008.
- ADNR, Division of Mining, Land & Water, letter of intent for gravel extraction, dated July 11, 2013.

4.2 KEY OFFICE PERSONNEL

4.2.1 Project Manager (PM), Molly Welker

Molly Welker, the PM, was responsible for ensuring that project tasks were completed on schedule and within budget, recommended and justified project modifications,

implemented methods of tracking materials and resources, coordinated work with subcontractors, and complied with normal safety procedures and regulatory requirements. The PM submitted monthly status reports (MSRs) to the USACE to keep the project team informed about work progress. These MSRs are provided in Appendix B.

4.2.2 Health and Safety Manager (HSM), Clark Roberts, CIH

Clark Roberts, Certified Industrial Hygienist (CIH), reviewed Bristol's Safety and Health Program for this project. As the HSM, he monitored project compliance with Bristol's Corporate Safety and Health Program. Mr. Roberts worked with Bristol's Site Safety and Health Officers (SSHOs) assigned individual projects to develop and implement effective APPs and SSHPs. He is based in Bristol's San Antonio, Texas, office. For this project, Mr. Roberts was responsible for key health and safety tasks:

- Reviewed and edited the APP and SSHP
- Remained available for emergencies
- Provided consultation as needed to ensure that the APP and SSHP were fully implemented
- Coordinated any modification to the APP and SSHP with the Site Superintendent (SS), SSHO, and USACE Contracting Officer (CO)

4.2.3 Project Chemist, Marty Hannah

Marty Hannah was responsible for quality aspects related to the collection and chemical analysis of all samples on the project, as delegated by the PM. Mr. Hannah provided oversight relating to data development, the data review process, and all subcontracted laboratories. Mr. Hannah was responsible for setting up the field laboratory.

4.2.4 Regulatory Compliance Manager/Transportation and Disposal (T&D) Coordinator, Tyler Ellingboe

Tyler Ellingboe served as the Regulatory Compliance Manager and oversaw all activities related to collecting, manifesting, transporting, and disposing of hazardous materials and

wastes for Bristol. He worked closely with the Bristol environmental field crew to ensure wastes were properly identified.

Mr. Ellingboe also served as the T&D Coordinator and was responsible for ensuring proper manifesting, placarding, and tracking of waste streams.

4.2.5 Occupational Physician, Alexander T. Baskous

The Occupational Physician designated by Bristol for the NE Cape HTRW Remedial Actions project was Alexander T. Baskous. Dr. Baskous was familiar with the project hazards and the project scope. He determined medical surveillance protocols and reviewed examination/test results performed in compliance with Title 29 Code of Federal Regulations, Part 1910.120(f) (29 CFR 1910.120[f]) and 29 CFR 1926.65(f), Medical Surveillance. Dr. Baskous is board certified in Occupational Medicine, with an M.D. and Master of Public Health from Harvard University. He is the Director of the Northwest Segment of the American College of Occupational and Environmental Medicine, a Diplomate of the American Board of Family Practice, and is on the active staff of both Providence Alaska Medical Center and Alaska Regional Hospital in Anchorage, Alaska.

4.3 KEY FIELD PERSONNEL

4.3.1 Site Superintendent, Charles (Chuck) Croley

As SS, Chuck Croley was responsible for management of scheduling, coordination, and execution of Bristol's on-site activities in accordance with the contract specifications. He reported directly to the PM. For a period of time between August 2 and August 14, 2013, Maze Thompson acted as SS while Chuck Croley was away from the site on break. A copy of the USACE approval letter regarding Maze Thompson acting as SS is included with correspondence letters in Appendix C.

4.3.2 SSHO, Eric Barnhill

The SSHO, Eric Barnhill, was responsible for overall planning and compliance with safety and health requirements. He conducted daily safety meetings and addressed worker safety concerns. The SSHO was responsible for communicating safety issues and concerns, reporting safety incidents to the PM, and other safety-related duties:

- Remained on site on a full-time basis for the duration of field activities
- Assisted with on-site training and represented the HSM during the day-to-day on-site implementation and enforcement of the APP and the SSHP
- Performed a daily safety and health inspection and documenting results on the Daily Safety Inspection Log
- Ensured site compliance with specified safety and health requirements; federal, state, USACE Engineer Manual 385-1-1, and Occupational Safety & Health Administration (OSHA) regulations; and all aspects of the APP and SSHP, including but not limited to Activity Hazard Analyses, air monitoring, use of personal protective equipment (PPE), decontamination, site control, Standard Operating Procedures (SOPs) used to minimize hazards, safe use of engineering controls, the Emergency Response Plan, confined space entry procedures, the spill containment program, and preparation of records
- Stopped work if unacceptable health or safety conditions existed and took necessary action to reestablish and maintain safe working conditions
- Consulted with and coordinated any modifications to the APP and SSHP with the HSM, the SS, and the CO
- Served as a member of Bristol's quality control (QC) staff on matters relating to safety and health, conducted accident investigations, and prepared accident reports
- Reviewed results of daily QC inspections and documented safety and health findings in the Daily Safety Inspection Log
- Recommended and oversaw corrective actions for identified deficiencies, in coordination with site management and the HSM.

4.3.3 Contractor Quality Control System Manager (CQCSM), Russell James

Russell James was responsible for management of contractor quality control (CQC) and had the authority to act in all CQC matters for the project. He worked with the PM to

implement the CQCP to ensure that project quality objectives were met. Mr. James was Bristol's primary point of contact for environmental and regulatory matters in the field and was the liaison with the QAR.

4.3.4 Laboratory Analysts

Bristol subcontracted TestAmerica Laboratories, Inc. (TestAmerica), to provide two field laboratory analysts for the duration of fieldwork. The analysts performed soil extractions, operated the gas chromatographs, and supplied the field team with field laboratory sample results.

4.3.5 First-Aid/Cardiopulmonary Resuscitation (CPR)/Medical Personnel

All Bristol fulltime employees who performed fieldwork were required to maintain certification in first aid/CPR. Personnel received Universal Precautions and Personal Protective Equipment (PPE) training, as required by the OSHA bloodborne pathogen standard 29 CFR 1910.1030. At least two fulltime staff members were available at all times to render first aid, if required, at the NE Cape site. In addition, Bristol maintained an emergency medical technician (EMT III) on site during the majority of fieldwork. The EMT III and all necessary medical supplies were stationed in a trailer dedicated for use as the on-site medical facility.

4.3.6 Site Workers and Subcontractors

A variety of on-site workers contributed to or provided support for the project's various tasks, including heavy equipment operators, craft laborers, surveyors, environmental and medical personnel. Multiple subcontractors were used during the course of work and are listed in Table 4-1. Planning and safety documents were available to all site workers, including subcontractors and craft laborers. Site workers were supplied with the information, instructions, and emergency response actions contained in the APP and

SSHP, and they were responsible for complying with the rules, regulations, and procedures therein.

Table 4-1 Major Subcontractors

Subcontractor	Assignment
ECO-LAND, LLC	Surveying
Fairweather, LLC	Infirmary and emergency medical services
Global Services, Inc.	Camp and catering services
TestAmerica Laboratories, Inc.	Fixed-based analytical testing laboratory and on-site lab analysts

4.3.7 Site Visitors

Visitors arrived periodically throughout the duration of the project in 2013. The majority of visitors were residents of the villages of Savoonga and Gambell who stopped by the site while hunting and/or fishing. On July 31, 2013, a Security Aviation flight arrived with Colonel Christopher D. Lestochi (Alaska District Commander), Aldone Graham (Contracting Officer) and Ken Andraschko (FUDS Program Manager). The group spent approximately two hours visiting the project site and viewing work activities. USACE conducted another site visit on September 5, 2013 when Valerie Palmer (USACE PM) toured the site for approximately two hours.

ADEC Environmental Program Specialist III Curtis Dunkin visited the project site for site inspections twice during field efforts. Mr. Dunkin visited for a two day period August 12 through August 14, 2013 and again for a single day visit on August 23, 2013.

Other visitors included Alaska Community Action on Toxics members on July 26, 2013; Agency for Toxic Substances and Disease Registry representative and Savoonga and Gambell residents on August 12, 2013; Representatives from Native Village of Gamble, Kukulget Inc., and Sivuqaq Inc. on August 15, 2014; and Jacobs Engineering Group Inc. had representatives visit from September 11, 2014 to September 16, 2014.

Bristol maintained a visitor signature sheet (provided with field documents in Appendix D), and required all visitors arriving by air to log their arrival and departure times from the NE Cape site. Visitors who arrived by ATV or boat did not always sign in and out. All visitors were briefed on the safety protocols of the site as well as general camp guidelines.

5.0 LOGISTICS AND FIELD INVESTIGATION METHODS

5.1 MOBILIZATION/DEMOBILIZATION

Preparations for mobilization began in April 2013 with the staging of specialized equipment, materials, and shipping containers (Conex containers) in Alaska and the continental United States. Items purchased outside of Alaska were consolidated in Seattle, Washington, and transported by Northland Services (NS), to Anchorage, Alaska, in May 2013. Freight was loaded onto NS barges at the Port of Anchorage in early May 2013. The barges departed Anchorage in mid-May for Nome, Alaska.

Bering Air made reconnaissance flights to NE Cape prior to mobilization. The purpose of the flights was to assess whether the sea ice in Kitnagak Bay would allow the landing craft to land at Cargo Beach and to assess the condition of the airstrip. Based on Bering Air's observations, Bristol mobilized to NE Cape on June 21, 2013.

Six crew members from Global Services, Inc., and a satellite installation technician from Satellite Alaska arrived on June 24, 2013. Global Services was responsible for camp construction. The satellite communications system, including telephone and internet connections, was installed and established on-site by Satellite Alaska. Bristol maintained three phone lines during the course of fieldwork: one line was dedicated to Bristol's business operations; a second line was for the USACE; and a third (referred to as the "morale phone") was available to the field crew for personal use. Camp construction was completed by July 9, 2013, and the setup crew departed the site.

Additional personnel and subcontractors arrived between June 28 and July 9, 2013. Removal work began on July 12, 2103, with the excavation of contaminated soil at Site 10. PCB- and POL-contaminated soil removal activities followed shortly thereafter.

Landing craft hauled freight between Nome and Cargo Beach. The first landing craft arrived at Cargo Beach on June 28, 2013. The Cargo Beach landing area is marked on

Figure 3, along with all other NE Cape work sites utilized during the project. Photographs of the beach landing operations and other site activities are displayed in the photograph log presented in Appendix E.

Personnel demobilization began September 9, 2013 with the field lab crew. Over the following two weeks, twenty-six personnel departed the site. Only essential personnel remained for camp deconstruction and equipment winterization. Field activities were completed and all personnel were off site by September 29, 2013.

Forty-two landing craft arrived at NE Cape between June 28 and September 22, 2013, to transport soil, bulk bags, miscellaneous debris and supplies off-island.

Bristol left heavy equipment, camp components, and vehicles over winter in an effort to reduce mobilization/demobilization costs associated with 2014 barge transportation.

5.2 TEMPORARY CONSTRUCTION CAMP

The temporary construction camp was set up on the gravel pad adjacent to the airstrip and was designed to house approximately 40 people. Living quarters consisted of 13 individual Weatherport tents, each capable of housing four people. In addition to the four-person Weatherports, 3 two-person tents were used for temporary housing. Two trailers were on site, one used as the field laboratory; the other contained the medical facility. Crew used both trailers as sleeping quarters during the final phases of demobilization.

Camp facilities included shared sleeping quarters; a medical dispensary; a recreation room; a dining facility; showers, laundry, and toilet facilities; a food storage container; satellite telephone and television system; and offices for Bristol, subcontractors, and USACE personnel. An on-site EMT III was ready to provide emergency medical services at all times. The camp was fully operational between July 6 and September 24, 2012.

5.3 AIR SUPPORT

Security Aviation, of Anchorage, Alaska, and Bering Air, of Nome, Alaska, provided air support services during the 2013 summer season. A Cessna Conquest, owned and operated by Security Aviation, was used to transport USACE personnel to the site in order to comply with U.S. Department of Defense (DoD) Directive 4500.53 and the DoD Commercial Review Board. King Air, Beechcraft, or Navajo aircraft (owned and operated by Bering Air out of Nome, Alaska) provided passenger flights for non-USACE personnel. Approximately 60 round-trip flights were chartered during the 2013 construction season.

5.4 FIELD SURVEY

ECO-LAND, LLC was on-site throughout the duration of field activities in 2013. ECO-LAND's crew supported multiple survey-related activities, only some of which are listed:

- Delineated the boundaries of the POL plumes at the MOC
- Surveyed excavation extents, groundwater elevations, and decision unit (DU) boundaries
- Surveyed monitoring wells and sample locations
- Surveyed sediment removal and confirmation sample locations at Site 28
- Provided volume estimates of soil overburden stockpiles at the MOC
- Surveyed the topographic surfaces at the MOC, Site 21, Site 10 and Site 31 following soil removal and grading activities

Horizontal survey points reference the North American Datum of 1983, Alaska State Plane Zone 9, and are recorded in U.S. survey feet. Vertical control references the North American Vertical Datum of 1988.

5.5 EQUIPMENT

Major equipment consisted of tracked excavators, heavy loaders, pickup trucks, rock trucks, road maintenance equipment, and utility task vehicles. Bristol's heavy-equipment

mechanic serviced, maintained, and repaired equipment on site. Equipment inspection forms are included with field documentation in Appendix D.

5.6 SITE ACCESS

Approximately 5.5 miles of gravel roads connect the various work areas at the site and require a small amount of maintenance each year. Maintenance generally consists of grading and adding minor amounts of fill. The section of road that leads south past the borrow area becomes a bulldozer trail which continues up the valley and onto the top of the Kinipaghulghat mountains. There are four stream crossings (three culverts and one bridge) within the work areas at NE Cape. Bristol did not perform any maintenance on the bridge or culverts during operations in 2013.

Bristol maintains the airstrip during field operations, with frequent grading and compacting.

5.7 BACKFILL AND BORROW MATERIAL

Borrow material used at the project site was obtained at the borrow area, approximately 2,000 feet south-southeast of the former White Alice antenna array. A total of 10,868 cubic yards of material was removed during field operations in 2013. The material was used primarily for backfill and road repair.

Excavation depths in POL-contaminated areas were based on results from a 2010 ultra-violet optical screening tool (UVOST) investigation. The UVOST-delineated plumes are subsurface areas where concentrations of diesel range organics (DRO) or residual range organics (RRO) in soil exceeded the site-specific cleanup level of 9,200 milligrams per kilogram (mg/kg). Overburden material (soil overlying the UVOST-delineated plume that does not exceed site-specific cleanup levels) that was excavated at POL-contaminated sites was stockpiled at various locations in the western and northwestern sections of the MOC

(Figure 4) and used as backfill following the removal of soil that had contaminant concentrations exceeding cleanup levels. The stockpiled overburden was only used as backfill when field laboratory results indicated that DRO/RRO concentrations were below 7,360 mg/kg (80 percent of the site-specific cleanup level of 9,200 mg/kg). If field laboratory results indicated that DRO/RRO concentrations exceeded 7,360 mg/kg, then the soil was not used for backfill and was instead containerized at Pad 98 (Figure 4).

5.8 HEALTH AND SAFETY

Health and Safety plays a fundamental role in all of Bristol's jobs, without exception. Upon arrival, the crew began setting up the medical trailer and communications systems. The EMT III arrived on July 9, 2013. An EMT was on site throughout the duration of the project. Bristol conducted safety meetings on a daily basis, and all on-site personnel were encouraged to take a proactive role in addressing safety concerns and questions. Bristol's SS, SSHO, CQCSM, PM, and the USACE QAR frequently communicated regarding safety issues.

The SS and SSHO briefed field personnel, subcontractors, government personnel, and visitors directly upon arrival. Part of Bristol's safety routine involved the daily Toolbox Safety Meetings, held each morning before work began. These meetings were about project-related work on the NE Cape site. Safety topics were chosen based on the day's activities or general project safety. Topics included weather conditions, footing conditions, equipment safety, housekeeping, and PPE. Bristol's subcontractors were completely integrated into the health and safety program. Key subcontractor involvement with all parties included complying with one SSHP that applied to all workers. All workers, including subcontractors, attended the mandatory daily Toolbox Safety Meetings.

Minimum safety gear for all personnel included hard hat, reflective vest, steel-toe boots, safety glasses, and work gloves. Additional PPE was incorporated on a site-specific basis. For example, Tyvek coveralls, boot covers, and/or washable boots were required for personnel working at the PCB-contaminated sites (Sites 13 and 31); dry suits and/or chest waders and gloves were required for work in the shallow waters of Site 28; and flame-resistant clothing was required for welding or cutting operations that produced flame or spark.

The Bristol SSHO performed safety and health walk-through inspections each day at the various work sites. These inspections enabled the SSHO to stay abreast of current site activities and conditions, look for existing or potential site safety issues/concerns, ensure appropriate use of PPE, and reinforce safe work practices. The daily safety inspections also provided material for the daily Toolbox Safety Meetings. Bristol incorporated an incentive program into the health and safety program. Each week, the SSHO would present a member, or members, of the field team with an award for outstanding safety practice.

In all, Bristol developed 15 Activity Hazard Analyses for specific tasks and operations at NE Cape; several such analyses are presented in the APP (Bristol, 2013):

- Barge-loading operations
- Barge-unloading operations
- Contaminated sediment removal and disposal
- Debris removal and staging
- Drum removal
- Excavation less than 4 feet in depth
- Excavation greater than 4 feet and backfilling
- Fueling of vehicles and equipment
- POL and PCB soil removal disposal
- Pole removal

- Site restoration
- Surface soil sampling
- Subsurface soil sampling
- Wire removal
- Dredging and pumping

Bristol invested 19,448.25 employee hours from contract inception through December 2013 for this project on Contract No. W911KB-13-C-0004. Work performed from June through December 2013 under Contract No. W911KB-12-C-0003 consisted of 4,639.75 employee-hours. No lost-time accidents occurred during the 2013 field season.

5.9 SOIL CONTAINERIZATION AND BULK BAGGING OPERATIONS

The majority of the work performed during the 2013 HTRW Remedial Action involved excavating, packaging, sampling, and transporting contaminated soils. To accomplish these tasks, Bristol relied heavily on the use of excavators, heavy loaders, and bulk bags.

Contaminated soil from the various work sites was loaded into triple-layered geotextile bulk bags capable of holding approximately 9 cubic yards of material and rated for up to 24,000 pounds. Bristol also used 5-cubic-yard bulk bags that were rated for 15,000 pounds. The bulk bags comprise an outer woven material and two inner linings, one composed of impermeable plastic, and the other of felt fabric. Both the felt fabric and the woven outer material can be opened and closed via zippered openings. Prior to soil containerization, each bag was placed into a support structure (loading frame) that served to hold the bag open in an upright position while soil was transferred into the bag. A series of straps formed webbing around the bottom and sides of the bulk bags and served as the lift and support structure for bag hauling. These straps attached to a lift frame that was installed onto the forks of a heavy loader. The lift frame consisted of a steel support structure with a series of Crosby clip-hooks (eye/hoist-hooks) attached.

The bulk bags were installed into a loading frame and filled with contaminated soil. The bags were then zipped shut and pulled from the frames by a loader. The bags were marked with fluorescent paint-marker and given a distinct ID corresponding to their respective sites and waste characterization sample groups. The bags were then weighed and transported to an available staging area (additional information in Section 6.11). The bags were loaded onto shipping flats (i.e., metal pallets or skids) and staged at Site 26 until they could be loaded onto a truck trailer and hauled to Cargo Beach. Bag loading and hauling operations utilized a two- to four-person labor crew, one member of the science team, and four equipment operators.

Section 5.12.5 provides information regarding waste characterization sampling of the bulk bag contents.

5.10 WASTE HANDLING AND DISPOSAL

During the 2013 field season, Bristol excavated 14,556.73 tons of contaminated soil, which was loaded into triple-lined, U.S. Department of Transportation-approved bulk bags and staged for subsequent transport off-island. In addition to contaminated soil, Bristol loaded Conex containers with miscellaneous metal and wooden debris and wooden poles collected throughout the site. In total, 1,561 bulk bag containers were filled between July 12 and September 21, 2013. Table 5-1 lists the weights of all soil excavated and shipped during the 2013 field season.

Table 5-1 2013 Waste Disposal Amounts

Site	Quantity	Containers
MOC POL on Contract W911KB-12-C-0003	3,177.09 tons	319 bulk bags
MOC POL on Contract W911KB-13-C-0004	10,601.24 tons	1156 bulk bags
Site 31 PCB (non-TSCA)	9.58 tons	1 bulk bag
Site 13 PCB (non-TSCA)	105.69 tons	10 bulk bags
Site 21 Arsenic (non-RCRA)	305.13 tons	37 bulk bags
Site 10 on Contract W911KB-12-C-0003	40.6 tons	4 bulk bags
Site 10 on Contract W911KB-13-C-0004	290.49 tons	28 bulk bags
Site 28 Containerized Sediment**	26.91 tons	6 bulk bags
2013 Combined PCB, POL, Site 10, Site 28 and Arsenic Removal Totals*	14,556.73	1,561 bulk bags

Notes:
*Sediment currently remains on-site in 11 dewatering tubes and will be shipped off-island in 2014
**This sediment disposal amount is associated with the 2012 contract.
MOC = Main Operations Complex
PCB = polychlorinated biphenyl
POL = petroleum, oil, and lubricants
RCRA = Resource Conservation and Recovery Act
TSCA = Toxic Substances Control Act

Apart from the 1,561 bulk bags that Bristol loaded in 2013, there were 427 bulk bags leftover from 2012 operations that Bristol shipped out for disposal during the 2013 field season. Additionally, two bags were shipped off-island containing soil that was contaminated with oil from an equipment hydraulic line that ruptured in 2012. Bristol manifested and shipped a total of 1,988 bulk bags loaded with non-TSCA and non-RCRA regulated PCB-, POL-, ethylene glycol-, and arsenic-contaminated soil off-island on 42 separate landing craft voyages between June 28 and September 23, 2013.

In addition to contaminated soil, Bristol was responsible for removing a number of other waste items:

- One 55-gallon drum of used oil recovered from the MOC during POL-contaminated soil removal (2013)
- One 15-gallon drum of methylene chloride generated in the field lab (2013)

- One 5-gallon drum of hexane and acetone that was generated in the field lab (2013)
- Two 5-gallon containers of waste water generated from HACH field-screening kits (2013)
- One 5-gallon container of sulfuric acid generated in the field lab (2013)
- Two 85-gallon drums containing a total of six activated carbon hood-filters (2013)
- Two carbon vessels with approximately 3,000 pounds of activated carbon (2013)
- Two Conex shipping container filled with treated wood (2013)
- Three Conex shipping containers with miscellaneous metal and debris(2013)
- One shipping flat loaded with the carcass of an old bulldozer(2013)

Wastes were classified in accordance with 40 CFR 261; 40 CFR 761; and 40 CFR 61. Each hazardous waste type was evaluated to identify all applicable treatment standards in 40 CFR 268, Land Disposal Restrictions. Wastes shipped off-island were placarded in accordance with 49 CFR 172, Subpart F. Labels and placards were affixed to all sides of containers used for shipping the RCRA-regulated waste drums. Bristol provided the USACE physical copies of Waste Manifests, Bills of Lading, and Certificates of Disposal, and electronic copies are provided in the supplemental data folder. Waste profiles are provided in Appendix F.

Table 5-2 lists the wastes shipped off-island in 2013 and their associated treatment. This table also includes soils excavated in 2012 but shipped in 2013. Hazardous wastes, manifest numbers, and shipping dates are presented in Table 5-3.

Table 5-2 2013 Waste Disposal Summary

Waste Type	Final Treatment / Disposal	Disposal Facility	Approximate Disposal Quantity
Miscellaneous Debris, including wood, metal and rubber	Disposal in Subtitle D Landfill	Columbia Ridge Recycling & Landfill - Arlington, OR	51.30 tons
POL-Contaminated Soil, Non-RCRA	Disposal in Subtitle D Landfill	Columbia Ridge Recycling & Landfill - Arlington, OR	13,778.33 tons
PCB-Contaminated Soil, <50 ppm PCBs	Disposal in Subtitle D Landfill	Columbia Ridge Recycling & Landfill - Arlington, OR	115.27 tons
Arsenic-Contaminated Soil from Site 21	Disposal in Subtitle D Landfill	Columbia Ridge Recycling & Landfill - Arlington, OR	305.13 tons
Two 55-gallon drums of contaminated soil from Site 10	Disposal in Subtitle C Landfill	US Ecology Idaho, Inc. – Grand View, ID	1 ton
Ethylene glycol-, POL-, and arsenic-Contaminated soils from Site 10	Disposal in Subtitle D Landfill	Columbia Ridge Recycling & Landfill - Arlington, OR	330.09 tons
Containerized Sediment from Site 28	Disposal in Subtitle D Landfill	Columbia Ridge Recycling & Landfill - Arlington, OR	26.91 tons
Used Oil from the MOC	Recycling/Fuel Blending	Emerald Services, Airport Way	1 x 55-gallon drum
Activated Carbon from Carbon Vessels	Disposal in Subtitle D Landfill	Bulked at Emerald Alaska; Disposed at Columbia Ridge Recycling & Landfill - Arlington, OR	3 tons

Notes:

< = less than
> = greater than
OR = Oregon
PCB = polychlorinated biphenyl
POL = petroleum, oil, and lubricants
ppm = parts per million
RCRA = Resource Conservation and Recovery Act
TSCA = Toxic Substances Control Act

Table 5-3 Hazardous Waste Shipping

Manifest No.	Container Type	Contents	Date Shipped	Destination
0004786023FLE	15-gallon Drum	Methylene Chloride	9/27/2013	Clean Harbors, Aragonite
0004786021FLE	5-gallon Drum	Hexane/Acetone	9/27/2013	Emerald Services, Tacoma
004786022FLE	85-gallon Drum	Fume Hood-Filters	9/23/2013	US Ecology Idaho, Inc.
004786022FLE	85-gallon Drum	Fume Hood-Filters	9/23/2013	US Ecology Idaho, Inc.
004786022FLE	5-gallon Drum	Wastewater from HACH Kit	9/27/2013	US Ecology Idaho, Inc.
004786022FLE	5-gallon Drum	Wastewater from HACH Kit	9/27/2013	US Ecology Idaho, Inc.
004786022FLE	5-gallon Drum	Sulfuric Acid	9/27/2013	US Ecology Idaho, Inc.

5.11 DECONTAMINATION

Decontamination is significant as it relates to contaminated-site investigation and/or remediation. Decontamination procedures are instituted to protect the environment and personnel and to maintain the quality and integrity of environmental samples. Bristol incorporated decontamination procedures during all sampling events and implemented protocols for decontaminating heavy equipment operated during excavations.

For groundwater and surface water sampling, Bristol used new tubing for each monitoring well or surface water sample location. The tubing was discarded following each sample collection. A submersible pump, when used, was decontaminated between each well by disassembling the pump and cleaning it in an Alconox solution, followed by a rinse with filtered water and deionized (DI) water. The YSI® water quality meter and accessory flow-through cell were cleaned in a similar fashion with Alconox and a double rinse.

Crew donned new nitrile gloves for every sample collected on site. Reusable sampling equipment such as stainless steel spoons and trowels was washed in an Alconox solution, followed by a rinse of potable water and DI water.

Excavators were decontaminated using a dry-brush technique before site demobilization. Dry-brushing removes gross soil particles from all parts of the equipment that came into contact with contaminated soils. When an excavator was used for soil sampling, its bucket was given a thorough dry brushing between samples. Before site demobilization, excavator tracks were cleaned by shovels and brushes without the use of water.

5.12 ENVIRONMENTAL SAMPLING

Bristol collected numerous samples from different media during the project for a variety of reasons. Soil samples were collected from bulk bags for waste characterization purposes. Confirmation soil samples were collected from excavations at the MOC, Site 21, Site 10, Site 28 and Site 31 to determine if any contaminants remained in soil following removal efforts. Soil, groundwater, and surface water samples were collected from the MOC and Site 28 to further characterize the sites, monitor for natural attenuation, and monitor impacts from construction activities. Surface water samples were collected from Site 28 streams to monitor the impact of removal activities on surface-water contaminant concentrations. Surface water samples were also collected from impoundments to determine whether contained waters complied with discharge criteria. Soil samples were collected from four locations along the NE Cape road system and from the tundra directly adjacent to the road in an area where a former pipeline was suspected to have broken. All samples were collected in accordance with ADEC *Draft Field Sampling Guidance* (ADEC, 2010), and Bristol's WP (2013), and associated SOPs.

5.12.1 Field Laboratory Soil Sample Collection from POL Sites

Following POL excavations Bristol collected field laboratory samples every 10 feet along excavation sidewalls and one sample per 100 square feet of excavation floor, using stainless steel spoons or trowels. Samples were placed into Ziploc bags. When site conditions prevented safe entry into an excavation, samples were collected from the bucket of an excavator. Bags were marked with a unique sample ID and submitted to the on-site field laboratory for DRO/RRO analysis.

Excavation sidewall samples were collected from subsurface horizons most likely to be contaminated, such as the groundwater interface, tops of confining layers, bottoms of relatively porous layers, or depths at which a nearby UVOST probe indicated UVOST wavelength emission profiles consistent with fuel fractions as well as profiles with high relative emission percent. UVOST technology was employed in 2010 to delineate the extent of DRO-contaminated soil and is discussed in further detail in Section 6.2. Field laboratory extraction and analysis followed the SOP prepared for NE Cape, which is provided in Appendix G.

5.12.2 Field Laboratory Soil Sample Collection from PCB Sites

Field laboratory samples for PCB analysis were collected from excavations at Sites 13 and 31. These samples were collected in Ziploc bags with stainless steel spoons and promptly submitted to the field laboratory. Samples were collected with the aid of an excavator bucket when excavation conditions prevented safe entry. The excavator bucket was decontaminated between samples by dry brushing. Samples collected from the excavator bucket were collected from soil not directly in contact with the bucket's surfaces. As with confirmation samples, extensive field laboratory samples were collected at the same frequency and using the same methods as confirmation samples. Samples were collected using a 25-square-foot grid consisting of 5-foot by 5-foot square grid sections at Sites 13

and 31 during excavation activities. The grid lines were marked with paint every 5 feet; individual sampling sites within the grid were marked with pin flags. Samples were collected from each grid, marked with a unique sample ID, and submitted to the on-site field laboratory for analysis.

5.12.3 Confirmation Soil Sample Collection from POL Sites

Bristol followed confirmation sampling protocols commensurate with the ADEC *Draft Field Sampling Guidance* (2010). Samples were collected at a rate of one per 20 linear feet along sidewalls. Two floor samples were collected for the first 250 square feet of excavation floor, plus one for each additional 250 square feet. The POL sites were excavated to either 15 feet bgs or 2 feet below the water table, whichever was encountered first. Samples were collected from flooded excavation floors at a rate of one per 1,600 square feet of excavation floor area. Confirmation samples from flooded excavations or excavations not safe for entry were collected with the aid of an excavator bucket. Crew members donned a new pair of nitrile gloves prior to collecting each sample. The excavator bucket was decontaminated between each sample. Samples were collected into appropriately sized glass jars, labeled with a unique ID and necessary analytical notes, and shipped under Chain of Custody to TestAmerica.

5.12.4 Confirmation Soil Sample Collection from PCB Sites

Confirmation samples at PCB-contaminated sites (Sites 13 and 31) were collected as described in the ADEC-approved WP (Bristol, 2013), every 5 feet along the excavation floor and sidewalls (one sample per 25 square feet), using stainless steel spoons and trowels. The environmental sampling crew referred to the ADEC *Draft Field Sampling Guidance* (2010) and the U.S. Environmental Protection Agency's (EPA's) *Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup* (1986) for guidance. Sample collection from the excavator bucket was employed at Site 31, where the excavation was

deemed unsafe for entry. Samples were collected into pre-cleaned 4-ounce glass jars that were labeled and shipped under Chain of Custody to TestAmerica.

5.12.5 Waste Characterization Sample Collection

Waste characterization samples were collected from all wastes that were shipped off-island. Soil samples were collected from bulk bags that were loaded with POL-, PCB-, arsenic-, ethylene glycol-, and PCE-contaminated soils from the MOC, Site 21, Site 31, Site 13, Site 28, and Site 10.

Analytical results from the field laboratory were used to characterize POL- and PCB-contaminated soils. Each POL and PCB waste characterization sample consisted of a composite of seven discrete samples collected with a stainless steel scoop from seven bulk bags. The discrete sample, or aliquot of the composite, was collected from each side of an individual bulk bag and placed into a stainless steel bowl, where the soil was homogenized. The homogenized soil from seven bulk bags was then placed into a Ziploc bag, given an ID that corresponded to the group of bags from which the sample was collected, and submitted to the field laboratory.

The arsenic waste characterization samples consisted of a composite from seven bulk bags. The composited arsenic samples were collected using a stainless steel scoop, placed into pre-cleaned, 4-ounce glass jars, and shipped under Chain of Custody to TestAmerica for arsenic analysis.

Volatile and non-volatile waste characterization samples were collected at Site 10. Volatile waste characterization samples at Site 10 were collected into pre-tared, 4-ounce jars and preserved with methanol. Non-volatile samples were collected into un-preserved 8-ounce jars.

Bristol recovered an oil-filled drum at the MOC during excavation activities. The crew used a drum thief to collect representative waste characterization samples into 8-ounce jars. The jars were labeled and shipped under Chain of Custody to TestAmerica.

5.12.6 Water Sample Collection

Bristol collected surface water samples into clean, non-preserved, 1-liter amber jars. Collectors slowly dipped the jars into water sources at the MOC, Site 21 and Site 28, and then transferred water into appropriate sample containers for the specified analyses.

Groundwater samples were collected from monitoring wells within the MOC and are discussed in Section 6.1.

5.13 FIELD LABORATORY

Bristol used an on-site field laboratory for screening soils to aid in excavation activities. The laboratory was capable of analyzing soils for DRO/RRO using Alaska Test Method (AK)102/103 and for PCB soils and wipes using a modified EPA Method 8082. Bristol used the field laboratory whenever possible.

Field screening results from the on-site laboratory were used to direct the excavation of contaminated soil but were not used to determine whether site cleanup levels had been achieved. The field screening laboratory was not certified for any confirmation sample analyses. If mobile laboratory concentrations were greater than 80 percent of site cleanup levels of 9,200 mg/kg for DRO and RRO, or 1 mg/kg PCB, then the excavation was expanded and additional field laboratory samples were collected. Once the excavation was believed complete based on field screening results below 80 percent of cleanup levels, confirmation samples were collected and submitted to TestAmerica to confirm that the remaining soil was below site cleanup levels. PCB waste characterization samples were also submitted to the field laboratory for PCB analysis. The off-site disposal facilities accepted field laboratory results for waste disposal purposes.

Field lab sample locations were surveyed by ECO-LAND.

5.13.1 POL Analysis

The POL screening samples were analyzed for DRO and RRO using a gas chromatograph equipped with dual flame-ionization detectors and procedures outlined in Appendix D of the ADEC *Underground Storage Tank Procedures Manual* for AK102 and AK103 (ADEC, 2002). Bristol used field laboratory results to indicate if site locations required further excavation and to tentatively determine if a site reached cleanup goals. Confirmation samples were collected at locations where field laboratory results indicated concentrations below cleanup levels.

5.13.2 PCB Analysis

The PCB screening samples were analyzed as Aroclors using a gas chromatograph equipped with dual electron capture detectors and procedures outlined in EPA Method 8082. Samples were extracted using a rapid extraction method outlined in the *Standard Operating Procedure for Polychlorinated Biphenyls Field Testing for Soil and Sediment Samples* (EPA, 2002). The screening method used in the field was slightly modified from the EPA field testing method; a 1:1 hexane acetone solvent mixture was used instead of a 10:8:2 mixture of hexane, methanol, and water. Water was added after sonication to facilitate the separation of the hexane from the acetone. When water was added to the initial extract, the solvents physically separated, leaving the hexane as the top layer, which contained the PCBs. The method was also modified in the field because organic materials were present at the sites. The addition of diatomaceous earth and sodium sulfate to the samples produced emulsions in the sample extracts; to minimize potential for emulsions, samples were air dried in weigh dishes after the initial sample

weight was recorded. The modification of the EPA method was reviewed and approved by ADEC; the DEC variance approval letter can be found in appendix C. All other extraction and analysis steps followed the SOP prepared for NE Cape provided in Appendix G.

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6.0 TASK-ORIENTED FIELD ACTIVITIES

All fieldwork conformed to planning documents, except as noted in Section 6.13, "Deviations from the Planning Documents." The section 6.0 subsections detail the work Bristol performed at each site in order to accomplish objectives set forth in the SOW. Logistics associated with task-oriented field activities were described in section 5 of this report. Appendix H contains the analytical data tables referenced in this section. Pertinent field personnel notes and other field documentation are included in Appendix D.

6.1 MOC MNA GROUNDWATER SAMPLING, RESULTS, AND DISCUSSION

As part of the SOW, Bristol collected groundwater samples from monitoring wells within the MOC, analyzed the results, and compared the results with historical data to determine whether natural attenuation is occurring in groundwater at the site. The 6.1 subsections describe the history of the MOC site and present 2013 groundwater sampling results.

6.1.1 Description and History

The MOC at the NE Cape installation contained the majority of the site's infrastructure and was partitioned into various sites throughout its history. Sites 10, 11, 13, 15, 16, 19, and 27 are within or near the MOC. Site 11 historically contained three 400,000-gallon ASTs, one of which was punctured in the late 1960s, leading to a large release of diesel fuel. Other potential contaminant sources came from Site 13, the former Heat and Power Plant, which contained a variety of ASTs and underground storage tanks (USTs), diesel generators, and power transformers; Site 15, where a fuel pipeline break resulted in a diesel fuel spill; the Site 16 Paint and Dope Storage building, originally a flammable liquids storage facility with an AST; Site 19, which once contained an auto maintenance building; and Site 27, an equipment and vehicle refueling area consisting of a small shed and a concrete valve box attached to a buried fuel pipeline that was connected to the large ASTs at Site 11 (USACE, 2009). The MOC's infrastructure, including buildings, tanks, and

piping, had been demolished and transported off site during 2000 through 2005 removal actions (USACE, 2009). Primary contamination sources included the ASTs USTs, and all associated piping that contained fuel products; secondary sources included residual subsurface fuel-contaminated soil caused by historical spills. Electrical transformers, 55-gallon drums, and miscellaneous activities contributed to site contamination (USACE, 2009). Historically, contaminants of concern (COCs) observed in soil at the MOC above site-specific cleanup levels are DRO, PCBs, and naphthalene; DRO, benzene and arsenic have been observed in groundwater. Soil and groundwater have previously been tested for RRO, VOCs, SVOCs, metals and pesticides.

USACE initiated a program in 2010 to monitor natural attenuation in groundwater at the MOC. Ten wells were initially selected for the monitoring program, but a physical evaluation determined that only nine wells were suitable for the MNA sampling program. The initial 10 wells were selected based on historical results, physical proximity to the MOC, and ability to monitor groundwater that intersects with the MOC and other known contaminant areas. Bristol collected groundwater samples and MNA parameter data from the nine wells within the MOC beginning in 2010 and completed a third round of sampling and data collection in 2012. The monitoring wells (MWs) selected by the USACE for sampling and monitoring include MW88-1, MW88-4, MW88-5, MW88-10, MW10-1, 17MW1, 22MW2, 20MW1, and 26MW1. In 2012, two of the wells (MW88-4 and MW88-5) were abandoned due to their locations within POL-contaminated soil removal areas. The seven remaining wells were sampled in 2013 and their results are presented in section 6.1.3. The locations of the monitoring wells are shown on Figures 5 and 6. Figure 5 shows the potentiometric surface and groundwater elevations and Figure 6 shows the concentrations of contaminants above cleanup levels in groundwater. The groundwater low-flow purging forms that correspond with this sampling event are located in Appendix D.

In 2010, wells MW88-4, MW88-5, and MW88-10 contained contaminant concentrations exceeding cleanup levels. All three wells exceeded the groundwater cleanup level of 1.5 mg/L for DRO at 3.3 mg/L, 12 mg/L, and 1.6 mg/L, respectively. Well MW 88-5 also contained concentrations of benzene and RRO at 0.0093 mg/L and 1.6 mg/L, respectively, which exceeds the cleanup criteria of 0.005 mg/L and 1.1 mg/L. In 2011, monitoring wells MW88-4 and MW88-5 contained DRO concentrations of 2.3 mg/L and 7.5 mg/L, respectively. MW88-4 contained benzene and arsenic concentrations of 0.0094 mg/L and 0.011 mg/L, respectively. MW88-5 contained benzene and RRO concentrations of 0.020 mg/L and 2.0 mg/L, respectively. DRO in MW88-10, which exhibited concentrations in excess of cleanup level in 2010 at 1.6 mg/L, did not exceed cleanup levels in 2011. In 2012, monitoring wells MW88-4, MW88-5, and MW88-1 contained contaminant concentrations that exceeded cleanup levels; the wells contained concentrations of DRO at 2.0 mg/L, 4.6 mg/L, and 1.9 mg/L, respectively. MW88-5 contained a benzene concentration of 0.0064 mg/L and MW88-4 contained dissolved arsenic at 0.011 mg/L, the same concentration as the 2011 sampling event.

6.1.2 Field Activities

Seven groundwater monitoring wells were sampled with a Monsoon positive pressure submersible pump using a low-flow sampling protocol, in accordance with Section IV of the ADEC *Draft Field Sampling Guidance* (ADEC, 2010). An ice plug was present in MW88-10 above the groundwater table, approximately 6 feet below the top of the well casing. The ice plug was melted with a heated steel rod and removed prior to sampling. The heated rod was decontaminated with an alconox solution and a DI water rinse prior to use and did not enter the groundwater table. The heated metal rod was used to clear ice obstruction above the groundwater level in several other wells: 2011 MW88-10; 2012 26MW-1, MW 88-10; 2013 MW88-10. Ice was encountered above the groundwater table while lowering the pump in wells 88-4 (2010) and at 22MW-2 and 17MW-1 (2012), but a

metal rod was not used. Water quality parameters, including temperature, pH, dissolved oxygen (DO), conductivity, and oxygen-reduction potential, were collected using a YSI 556 meter with flow-through cell; turbidity was measured with a Hach portable turbidimeter; and water level was measured with a water level meter. During the low-flow purge procedure, water quality parameters were measured, recorded, and allowed to stabilize prior to sample collection. Groundwater samples were collected directly from ⅛-inch, Teflon-lined, high-density polyethylene tubing into the appropriate collection vessels. In wells with no historical evidence of contamination purge water and investigation-derived waste was collected into 5-gallon buckets and treated with granular activated carbon prior to being discharged onto the ground. Purge water was treated and discharged within 20 feet of the monitoring well's location. In MW88-1, known to have contaminant concentrations above cleanup levels, investigation-derived waste was contained within 5-gallon buckets and disposed with POL-contaminated soil bulk bags, following receipt of analytical sample results. Copies of the groundwater purging and sampling field forms are provided in Appendix D.

6.1.3 Results

Seven primary water samples and one field duplicate sample were collected from monitoring wells in the MOC, July 19 through July 21, 2013. Groundwater samples were submitted for analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX); PCB; gasoline range organics (GRO); DRO; RRO; metals (total and dissolved); polynuclear aromatic hydrocarbons (PAHs); and methane. Samples were shipped under chain-of-custody to TestAmerica in Tacoma, Washington, for analysis. Hach kits were used in the field laboratory to collect the natural attenuation parameters for manganese, ferrous iron, sulfate, nitrate, and alkalinity. The natural attenuation parameters from 2010 through 2013 are presented in Appendix H, Table H1. Figure 5 shows the potentiometric groundwater surface and the locations of the monitoring wells sampled at the MOC.

Groundwater levels were measured on July 19, 2013, and indicate groundwater flow was predominantly north/northwest.

Figure 6 shows the MOC groundwater monitoring wells sampled in 2013, and sample results for all wells where historical concentrations of contaminants exceeded cleanup levels. Full laboratory analytical results for MOC groundwater monitoring wells are presented in Appendix H, Table H2. None of the wells sampled in 2013 contained contaminant concentrations that exceeded cleanup levels. MW88-4 and MW88-5, which historically contained contaminant concentrations in excess of cleanup levels, were located within the footprint of excavation and removal activities associated with the E plume and were decommissioned, including removal and demolition after sampling was completed in 2012 (Bristol 2012). Future work will include the repair of wells MW10-1, MW88-1, MW88-10, 17MW1, 20MW1, 22MW2, and 26MW1 and the installation of a groundwater monitoring well network at the MOC after all excavation and removal activities have been completed.

PCBs and BTEX were not detected in any wells. GRO was detected in concentrations not exceeding cleanup levels in 17MW-01 and MW88-10. PAHs were detected in concentrations not exceeding cleanup level in wells MW88-10 and MW88-1. Some dissolved and total metals were detected in all wells; total and dissolved Arsenic, Silver and Vanadium were not detected in any wells.

Table 6-1 presents sample results for wells that exceeded cleanup criteria from the 2004, 2010, 2011, 2012, or 2013 sampling events. A comparison of the 2013 groundwater sample results with past results showed that MW88-10 exhibited a higher concentration of DRO (0.97 mg/L) during the 2013 sampling event than in the previous two years. However, contaminant concentrations at MW88-10 did not exceed cleanup levels in 2013, and had not exceeded cleanup levels since 2010. Graph 1 in Appendix H shows the DRO concentrations in wells MW88-1 and MW88-10 from 2004 to 2013. MW88-1 exceeded

cleanup criteria for DRO for the first time in 2012 and fell below the cleanup concentration to 0.22 mg/L in 2013.

Table 6-1 Current and Historical Groundwater Sample Results for Select Monitoring Wells

	Matrix	Water	Water	Water	Water	Water	Water
	Method	8260B	AK101	AK102	AK103	6020	6020
	Analyte	Benzene	GRO (C6–C10)	DRO (nC10–<nC25)	RRO (nC25–nC36)	Arsenic-Dissolved	Lead-Total
	Cleanup Level	0.005	1.3	1.5	1.1	0.01	0.015
	Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Well ID	Year						
88-4*	2004	**0.0337**	1.25	**3.89**	**1.46**	--	0.00502
	2010	0.0024	0.24	**3.3**	0.43	0.0085	0.002
	2011	**0.0094**	0.4	**2.3**	0.55	**0.011**	0.0013 J
	2012	0.0048	0.31	**2.0**	0.24	**0.011**	0.0019 J
88-10	2004	ND (0.0004)	0.0357	1.38	ND (0.549)	--	**0.0376**
	2010	ND (0.00015)	ND (0.044)	**1.6**	0.036 J	ND (0.0004)	0.0015 J
	2011	ND (0.00045)	ND (0.044)	0.54	0.15	ND (0.0038)	0.00083 J

Table 6-1 Current and Historical Groundwater Sample Results for Select Monitoring Wells (continued)

	Matrix	Water	Water	Water	Water	Water	Water
	Method	8260B	AK101	AK102	AK103	6020	6020
	Analyte	Benzene	GRO (C6–C10)	DRO (nC10–<nC25)	RRO (nC25–nC36)	Arsenic-Dissolved	Lead-Total
	Cleanup Level	0.005	1.3	1.5	1.1	0.01	0.015
	Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Well ID	Year						
88-10 cont.	2012	ND (0.00045)	ND (0.044)	0.50	0.064 J	ND (0.004)	0.00076 J
	2013	ND (0.00045)	ND (0.05) B	0.97	0.043 J	ND (0.004)	ND (0.015) B
88-5*	2004	**29.7**	**1.5 J**	**11.3**	**2.28**	--	0.012
	2010	**0.0093**	0.19	**12**	**1.6**	0.0028	0.0029 J
	2011	**0.020**	0.24	**7.5**	**2.0**	0.0052	0.0019 J
	2012	**0.0064**	0.16	**4.6**	0.58	0.0055	0.0021
88-1	2004	ND (0.0004)	0.0141 J	ND (0.345)	0.168 J	--	0.001 B
	2010	ND (0.00015)	ND (0.05)	0.75	0.037 J	ND (0.0004)	ND (0.0029)
	2011	ND (0.00045)	ND (0.044)	0.74	0.26	ND (0.0038)	0.0016 J
	2012	ND (0.00045)	ND (0.044)	**1.9**	0.15	ND (0.004)	0.00041 J
	2013	ND (0.00045)	ND (0.044)	0.22	0.05 J	ND (0.004)	ND (0.0025)

Notes:

*well was abandoned in 2012

-- = not sampled

< = less than

AK = Alaska Test Method

B = analyte detected in method blank at less than 10 times the sample concentration

BOLD = sample result exceeds cleanup level

DRO = diesel range organics

GRO = gasoline range organics

J = result is an estimate

mg/L = milligrams per liter

ND = non-detect; limit of detection in parentheses

RRO = residual range organics

MNA parameters are presented in Appendix H, Table H1. In 2013, MW88-10 contained the highest concentrations of ferrous iron, dissolved manganese, alkalinity, and methane in the sampled wells. Ferrous iron, manganese, methane, and alkalinity are metabolic by-

products of anaerobic microbial respiration. The low dissolved oxygen concentration in MW88-10 suggests that dissolved oxygen is being consumed by microbial respiration with POL (mainly diesel fuel) as the electron donor. In the absence of dissolved oxygen, nitrate, manganese (IV), ferric iron (FeIII) and sulfate act as electron acceptors in the order listed in microbial respiration. Byproducts of microbial degradation are carbon dioxide (measured as alkalinity), nitrite, dissolved manganese (MnII), ferrous iron (FeII), sulfide and methane. Table H1 shows the MNA parameters collected from the MOC wells. Wells MW88-4 and 88-5, which were removed in 2012, show the lowest historical dissolved oxygen concentrations as well as the lowest oxidation reduction (redox) potential. The redox values for MW88-4 and MW88-5 are actually negative values, which indicates highly reductive groundwater and this is again reflected in the high methane concentrations. Methane is produced when carbon dioxide is the electron acceptor and this only occurs in a reducing environment, in the absence of other sufficient electron acceptors. The wells with the lowest contaminant concentrations had high DO compared to other monitoring wells at the MOC, suggesting that in wells containing higher concentrations of DRO, microbes have depleted oxygen to aerobically degrade DRO. These factors are an indication that natural attenuation is likely occurring, and the 2013 MNA results are consistent with MNA results from 2010, 2011 and 2012. Graph 2 shows contaminant trends for DRO, RRO, benzene, and water elevations in well MW88-1. Concentrations of RRO and benzene roughly mimic water elevation in a direct correlation (i.e., low water levels correspond to lower concentrations of benzene and RRO and higher water levels correspond to higher benzene and RRO concentrations).

The increase in DRO at well MW88-10 is not fully understood, but removal activities at the MOC may contribute to the disturbance in subsurface groundwater flows. During 2012 soil removal, Wells MW 88-4 and MW 88-5, which historically had concentrations of benzene, DRO, and RRO which exceeded their respective cleanup levels, were

decommissioned and thus not sampled during the 2013 event. More information and sampling results are needed after removal activities are completed to determine whether MNA is a viable method for reaching cleanup goals.

6.2 POL-CONTAMINATED SOIL REMOVAL AT THE MOC

6.2.1 Description and History

The primary COCs in soil at the MOC are DRO, naphthalene and PCBs. Bristol collected data in 2010 using UVOST technology as a means to plan and guide POL excavation activities at the MOC. As a result of this investigation, Bristol delineated ten plumes (identified as plumes A through J), spanning sites 11, 13, 15, 17, and 27, where DRO existed at concentrations exceeding the site-specific cleanup level of 9,200 mg/kg. During the 2011 field season, Bristol excavated 8,090.99 tons of POL-contaminated soil from plumes J1A, A1, and from visibly stained soil located in the footprint of the former ASTs at Site 11. During the 2012 field season, Bristol excavated 8,594.91 tons of POL-contaminated soil from plumes A1, E2, E3, E4, G1, G2, and H. In 2013 Bristol excavated POL-contaminated soil from plumes E4, E3, E2, G, F, B1, B2, I1, and A2. Figure 4 shows the POL plumes, as delineated by the UVOST, as well as the locations and extents of excavations from POL-contaminated soil removal efforts. Of the 13,778.33 tons of POL-contaminated soil removed in 2013, 3,177.09 tons were removed under Contract W911KB-12-C-0003 and 10,601.24 tons were removed under Contract W911KB-13-C-0004. The total quantity of POL-contaminated soil removed from the MOC to date is 30,464.23 tons.

6.2.2 Field Activities and Results

Soil excavated from POL plumes was loaded into rock trucks and transported to a concrete foundation located at Pad 98 (Figure 4) where the soil was stockpiled and loaded into bulk bags; soil from Site 10 was routinely loaded directly into bulk bags. Where soil and

weather conditions permitted, Bristol attempted to mechanically separate large-diameter rocks from smaller-diameter soil particles. An on-site mechanical rock-screening plant separated rocks with diameters exceeding 2 inches in an effort to maximize removal of DRO-contaminated soil while minimizing the weight of transported material. Screen plant use was limited due to the high moisture content of the silty-clay matrix surrounding the larger rocks. It was not possible for the screen plant to efficiently and effectively separate the fine material from the larger material. Once a bag was filled, a waste characterization sample was collected. Bristol estimates that less than 500 tons of soil was screened.

Soil sample results from the field laboratory's DRO/RRO analysis determined whether or not concentrations exceeded the applicable cleanup level and if further excavation and removal was necessary. If DRO/RRO results from the field lab indicated contamination concentrations above 80% of the site-specific cleanup level, then additional soil was excavated from the sample location and additional samples were collected and submitted to the field lab. Once field laboratory results showed DRO/RRO concentrations below 80% of site-specific cleanup levels, Bristol collected and submitted confirmation samples to TestAmerica. Refer to section 5.12.3 for additional information regarding confirmation soil sample collection. Field laboratory screening and confirmation sample frequency followed ADEC *Draft Field Sampling Guidance* (2010). In 2013, Bristol collected a total of 138 primary confirmation samples and 15 duplicate samples from POL excavations at the MOC, all of which were sent to a fixed base off-site lab for analysis. Section 6.2.2 subsections describe field activities and sample results from tasks associated with POL-contaminated soil removal at the MOC.

6.2.2.1 POL-Contaminated Soil Removal from Plume E

The E plume (divided into sub-plumes E1 through E4) was one of the larger plumes delineated by the UVOST in 2010, with an estimated area of 17,500 square feet (Figure 4).

Excavation activities were initiated in 2012 within plume E4, E3, and portions of E2 and E1. E plume excavation activities were not completed in 2012 due to additional quantities of contaminated soil remaining after Bristol removed scoped tonnages and the relatively short duration of the field season; excavations continued in 2013. Excavation and removal activities in 2013 occurred within the E4, E3, and E2 excavation units. The initial excavation began at E4 on July 14, 2013. Figure 7 shows the extents of the E plume excavation, confirmation sample locations exceeding clean-up criteria from 2012, and all confirmation sample locations from 2013.

Groundwater levels dictated the depths to which soil could be excavated from the various E sub-plumes. In 2012, excavation depths in E4 and E3 ranged from approximately 3 feet bgs to 10 feet bgs, corresponding to 2 feet below groundwater at the time of excavation. During the 2013 field season, water elevations were approximately 2 to 3 feet lower across the MOC, allowing for deeper excavation.

At the end of the 2012 field season, five floor confirmation sample locations contained DRO concentrations exceeding the site-specific cleanup level of 9,200 mg/kg. Three of these five samples (12NCMOCSS090, 12NCMOCSS140 and 12NCMOCSS146) were located in the E4 plume and excavated in 2013 due to increased accessibility from low water levels at E4. Approximately 8 feet of overburden was removed from the excavation footprint and stockpiled on liners. Contaminated soil that had been submerged in 2012 was excavated to the E4 UVOST-delineated depth of 13 feet outlined in Table 4-2 of the Work Plan (Bristol, 2013). The floor of the E4 excavation was submerged in a minimum of 2 feet of water at the time of excavation.

Excavation extents of the E4 plume expanded into the D2 plume due to the prevalence of POL-contamination as indicated by field lab results. The excavation proceeded westward until it reached the boundary of the western drainage. The USACE QAR and Bristol

discussed and determined the excavation's northern extent (the boundary between Site 28 and the MOC). The reason for the determination of this point as the northern extent and excavation stopping point was to avoid releasing water with petroleum sheen from the POL excavation into the Site 28 wetlands.

Confirmation sample results for the E plume are presented in Appendix H, Table H3. Nine confirmation samples were collected along the northern sidewall, five of which (13NCMOCSS017, 13NCMOCSS035, 13NCMOCSS036, 13NCMOCSS037, and 13NCMOCSS069) contained DRO in concentrations exceeding the site-specific cleanup level. No further excavation occurred at these sample locations due to their proximity to Site 28 and the determination to stop excavation to retain contaminated water inside the excavation.

In addition to the northern sidewall samples collected in the E plume, thirty-three confirmation samples were collected from the floor and non-northern sidewalls of the E plume excavation. Four sidewall confirmation samples, 13NCMOCSS008, 13NCMOCSS011, 13NCMOCSS073, and 13NCMOCSS077, contained DRO in concentrations of 270,000 mg/kg, 68,000 mg/kg 17,000 mg/kg and 29,000 mg/kg, respectively. Two of these locations (13NCMOCSS008 and 13NCMOCSS011) were excavated further and the confirmation sample results that followed did not contain DRO or RRO in concentrations that exceeded the site-specific cleanup levels of 9,200 mg/kg. Soil in the location of confirmation sample 13NCMOCSS073 was not excavated due to its proximity to the western drainage area. Bristol was instructed by the QAR not to proceed with excavation of this area to minimize damage to the drainage. Floor sample 13NCMOCSS020 contained DRO at a concentration of 11,000 mg/kg; but since the floor of the excavation was submerged in at least 2 feet of water, no additional excavation occurred at this location. Bristol recommends the removal of sidewall sample

13NCMOCSS077 in 2014. Bristol also recommends removing contaminated soil in the E1 and E2 excavation units.

There were not enough floor samples collected in 2012 to confirm the southeastern corner of the E excavation. This area, approximately 1,250 square feet, required the collection of additional confirmation samples to comply with the ADEC *Draft Field Sampling Guidance* (2010). Bristol advanced test pits to 12 feet (the same depth as the 2012 excavation floor) and collected samples with the aid of the excavator bucket. More than 2 feet of water filled the test pit locations within 4 hours of excavation. Six additional floor confirmation samples (13NCMOCSS001 through 13NCMOCSS006) were collected from the test pit floors. Sample results did not exceed site-specific cleanup levels.

The southern extent of the excavation was lined and backfilled at the end of the 2013 field season. Backfill was placed in 1-foot lifts and track-walked with a bulldozer for compaction. Seed and fertilizer was spread across the disturbed areas. POL-contaminated soil remains within the E-Plume. Bristol recommends continued removal in 2014, beginning with sample location 13NCMOCSS077 (duplicate 13NCMOCSS085) then continuing into the E1 and E2 plumes.

All soil from the E plume that was presumed to be below the site specific cleanup level for DRO/RRO was stockpiled on a lined clean overburden area. All clean overburden was sampled following ADEC guidelines for stockpiles and analyzed at the onsite field lab. Stockpiled soil containing DRO/RRO results below 80% of the 9,200 mg/kg cleanup level was used as backfill; soil in excess of this threshold was containerized and shipped off site for disposal.

6.2.2.2 POL-Contaminated Soil Removal from Plume F and G

Following the 2012 soil removal efforts, three sidewall confirmation samples at the G excavation (12NCMOCSS069, 12NCMOCSS070 and 12NCMOCSS160) contained DRO in

concentrations exceeding cleanup levels (other 2012 samples exceeding site-specific cleanup levels depicted in Figure 8 are not recommended for removal due to their location below 2 feet of water at the time of excavation). At the start of 2013 removal activities, Bristol used the survey crew to find the sample locations and remove approximately 8 feet of the overburden to access the contaminated layer of soil. Overburden was stockpiled on a liner located in the northwestern section of the MOC (Figure 4). DRO-contaminated soil was excavated from approximately 8 feet bgs to 15 feet bgs and transported to Pad 98 for containerization.

Two excavations were opened in 2013 in order to remove these three contaminated soil locations. Excavation A extended west from historical samples 12NCMOCSS069 and 12NCMOCSS070. As DRO-contaminated soil was excavated, the southern sidewall extended into the footprint of the F plume. After Excavation A entered into the F plume, Bristol excavated the F plume, according to Bristol's UVOST-guided dig plan (Table 4-2 of the 2013 WP), until the field lab results indicated that DRO concentrations above the site-specific cleanup levels had all been removed. Sidewall samples collected for field laboratory analysis were located directly above the groundwater interface and the floor of Excavation A was excavated to 2 feet below groundwater. Figure 8 shows the 2012 and 2013 excavation extents at the G and F plumes, select 2012 sample results, and all 2013 confirmation soil sample locations.

Excavation B extended east from historical sample location 12NCMOCSS160 and the demarcation liner that marked the eastern extent of the 2012 G1 plume excavation. Excavation continued until sample results indicated that DRO contamination had been removed to concentrations below the site-specific cleanup level. The floor was excavated to 2 feet below groundwater.

Initially, soil samples were collected from only the sidewalls and were submitted to the field laboratory for DRO/RRO analysis. When field laboratory results showed DRO/RRO at concentrations less than 80% of the site-specific cleanup level, confirmation soil samples were collected from the newly exposed floors and sidewalls of Excavation A and Excavation B. The confirmation samples were collected with the aid of an excavator bucket and were shipped to TestAmerica for DRO/RRO analysis. Confirmation samples were not collected along sidewalls located within 2012 backfilled excavation extents. Confirmation soil sample results for Excavation A are presented in Appendix H, Table H4; Excavation B are presented on Table H5.

Confirmation soil samples were collected from Excavation A after field lab results indicated that DRO and RRO had been removed to concentrations less than 80% of the site-specific cleanup level. Confirmation soil samples were collected from nine locations on the sidewalls of Excavation A and three floor locations. Sample results from eight of the locations were below the site-specific cleanup levels. Sidewall confirmation sample 13NCMOCSS022 and duplicate sample 13NCMOCSS033 contained DRO concentrations of 13,000 mg/kg and 12,000 mg/kg, respectively. Following receipt of this sample result, Bristol's field crew excavated this sample location and collected a sidewall sample for the field lab. The DRO/RRO sample results from the field lab were below 80% of the site-specific cleanup level. Excavation activities were stopped at this eastern extent of Excavation A because removal activities were within the footprint of the 2012 G plume excavation at a depth of approximately 14 feet bgs. The excavation depths were deeper than the 2012 G plume excavation extent of 12 feet bgs which was excavated to 2 feet below groundwater. Bristol and the QAR determined that no additional soil would be removed within the footprint of historical excavations that had previously been excavated to 2 feet below groundwater.

Confirmation samples were collected from three locations along the sidewall of Excavation B (13NCMOCSS030, 12NCMOCSS031, and 12NCMOCSS032), and one from the submerged excavation floor (13NCMOCSS041). All confirmation samples associated with Excavation B were below the site-specific cleanup level of 9,200 mg/kg. Confirmation soil sample results are presented on Table H5.

Field duplicates were collected per ADEC Field Sampling Guidance at a rate of 1 duplicate sample per 10 primary samples. The MOC excavations (Plumes A, B, E, F and G) were considered a single site.

All soil from the G plume and F plume that was presumed to be below the site specific cleanup level for DRO/RRO was stockpiled on a lined clean overburden area. All clean overburden was sampled following ADEC guidelines for stockpiles and submitted to the field lab for analysis. Stockpiled soil containing DRO/RRO results below 80% of the 9,200 mg/kg cleanup level was used as backfill; soil in excess of this threshold was containerized and shipped off site for disposal.

The excavations were backfilled in lifts of approximately 1 foot. The deeper portions of the excavations were backfilled using an excavator that compacted (tamped) the 1-foot lifts with its bucket. A bulldozer was used for backfill and compaction once the conditions could safely accommodate such actions. Contaminated soil at plumes G and F were excavated to depths of 15 feet bgs or 2 feet below groundwater. Cleanup is considered complete according to the selected remedy for the site.

6.2.2.3 POL-Contaminated Soil Removal from Plume B

Excavation of the B Plume (shown on Figure 9) was initiated on July 26, 2013. The B plume is located within the footprint of the Site 13 PCB excavation. Bristol's UVOST-guided dig plan indicated that the contaminated zone lay within B1, between 11 and 15 feet bgs, and within B2, between 7 and 15 feet bgs. Bristol considered soil

shallower than 11 feet at B1 and 7 feet at B2 clean overburden, which was stockpiled on a liner with similarly clean overburden from other POL excavations. Soil located deeper than the overburden interval was loaded into a rock truck and hauled to Pad 98 for containerization. Soil was excavated to a final depth of 15 feet bgs, where the excavation was approximately 80% submerged with water. The lateral extent of the excavation was guided by field-lab DRO/RRO results. Sidewall samples collected for field laboratory analysis were collected from soil directly above the groundwater interface. The final extents of the B plume excavation are shown in Figure 9.

After field laboratory results indicated DRO/RRO concentrations less than site-specific cleanup levels, Bristol proceeded with the collection of confirmation samples. Confirmation soil sample results from the B plume excavation are presented in Appendix H, Table H6. Eighteen primary confirmation samples and two duplicate samples were collected from the sidewalls of the excavation, and nine primary samples were collected from the floor. One sidewall confirmation sample (13NCMOCSS094) contained DRO in concentrations exceeding cleanup level. Following receipt of this sample result, the location of 13NCMOCSS094 was additionally excavated, and field-screened; confirmation samples 13NCMOCSS115, 13NCMOCSS116, and 13NCMOCSS117 were collected; results indicated that DRO/RRO concentrations did not exceed site-specific cleanup levels.

All soil from the B plume that was presumed to be below the site specific cleanup level for DRO/RRO was stockpiled on a lined clean overburden area. All clean overburden was sampled following ADEC guidelines for stockpiles and submitted to the field lab for analysis. Stockpiled soil containing DRO/RRO results below 80% of the 9,200 mg/kg cleanup level was used as backfill; soil in excess of this threshold was containerized and shipped off site for disposal. The excavation was completely backfilled in 1-foot lifts, each

track-walked with a bulldozer for compaction. The USACE considers soil removal at plume B complete.

6.2.2.4 POL-Contaminated Soil Removal from Plume I1

Excavation activities at Plume I1 (shown on Figure 10) were initiated on July 27, 2013. To mitigate impact to the Site 28 wetland, the USACE and Bristol determined that the northern boundary of Plume I1 would be the limit of excavation. The limit of excavation was chosen because the excavation was at a point where additional excavation to the north would allow for the release of water with petroleum sheen to the Site 28 wetlands.

Bristol's UVOST-guided dig plan indicated that the contaminated zone was located within the I1 plume, between 10 and 15 feet bgs. Due to the I1 Plume being positioned on a slope face, approximately five feet of overburden was removed on the downhill side, and approximately ten feet of shallow overburden was removed on the uphill side to reach the UVOST-delineated contaminated zone. The clean overburden was stockpiled on a liner with similarly clean overburden from other POL excavations. Soil located deeper than the overburden interval (within the contaminated zone) was loaded into a rock truck and hauled to Pad 98 for containerization. The excavation area sloped northward. Soil was excavated to a final depth of 15 feet bgs, as measured from the south sidewall, and 9 feet bgs, as measured from the north sidewall; groundwater infiltrated the excavation to 2 feet bgs, as measured from the north sidewall. Fixed-laboratory DRO/RRO analysis of the sidewall confirmation samples determined the final lateral extent of the excavation. Sidewall samples were collected from soil directly above the groundwater interface. The final extents of the I1 plume excavation are shown in Figure 10.

After field laboratory results indicated DRO and RRO concentrations did not exceed 80% of site-specific cleanup levels, Bristol proceeded with the collection of confirmation samples. Confirmation soil sample results from the I1 plume excavation are presented in

Appendix H, Table H7. One duplicate and fourteen primary samples were collected from the sidewalls of the excavation, and two primary samples were collected from the floor. Confirmation samples 13NCMOCSS060, 13NCMOCSS067 and 13NCMOCSS089 contained DRO in concentrations exceeding the site-specific cleanup level at 10,000 mg/kg, 9,900 mg/kg and 13,000 mg/kg, respectively. Sample 13NCMOCSS060 is a sidewall sample located at the boundary of Site 28, so no further excavation occurred at this sample location. Sample location 13NCMOCSS067 was a floor sample submerged in greater than two feet of water, thus no additional excavation was conducted at this location. Sample 13NCMOCSS089 is a sidewall sample located on the south side of the excavation that was not excavated and will require removal in 2014. The extent of the excavation was surveyed prior to backfill. The limits of the excavation will be relocated by the onsite surveying team prior to excavation in 2014.

All soil from the I1 plume that was presumed to be below the site specific cleanup level for DRO/RRO was stockpiled on a lined clean overburden area. All clean overburden was sampled following ADEC guidelines for stockpiles and submitted to the field lab for analysis. Stockpiled soil containing DRO/RRO results below 80% of the 9,200 mg/kg cleanup level was used as backfill; soil in excess of this threshold was containerized and shipped off site for disposal. The excavation was completely backfilled in 1-foot lifts, each track-walked with a bulldozer for compaction.

6.2.2.5 POL-Contaminated Soil Removal from Plume A2

The A2 plume is located within the footprint of the Site 13 PCB excavation. Excavation of the A2 Plume (shown on Figure 11) was initiated on August 6, 2013. Bristol's UVOST-guided dig plan indicated that the contaminated zone was located within the A2 plume boundaries, between 8 and 15 feet bgs. Bristol considered soil shallower than 8 feet to be clean overburden and stockpiled it on a liner with similarly clean overburden from

other POL excavations. Soil located deeper than 8 feet bgs was excavated to 15 feet bgs, loaded into a rock truck, and hauled to Pad 98 for containerization. The final lateral extent of the excavation was guided by field laboratory results for DRO/RRO analysis. Sidewall samples were collected from soil directly above the groundwater interface (13-15-feet bgs), and an additional sample was collected approximately 2 feet higher (10-12 feet bgs). The additional field laboratory sample in the vertical horizon was collected to determine if more overburden material could be removed. In cases where the relatively shallow field laboratory sample result was below 80% of site-specific cleanup levels, additional clean overburden was removed and stockpiled on a liner.

As the excavation progressed in 2013, the A2 plume connected with the former 2011 and 2012 A1 excavations and excavation ceased because all soil having contaminant concentrations that exceeded the respective cleanup level(s) had been previously removed down to 15 feet bgs. No field laboratory or confirmation samples were taken from areas where liner and backfill from the historical A1 excavations was visible, because this area had been previously excavated, confirmation sampled and backfilled with clean fill from the onsite borrow source. The final extents of the A2 plume excavation are shown in Figure 11.

After field laboratory results indicated DRO/RRO concentrations less than 80% of site-specific cleanup levels, Bristol proceeded with the collection of confirmation samples. To minimize the variability inherent in attempting to co-locate sidewall samples taken from an excavator bucket, confirmation samples were instead derived directly from field laboratory screening sample volumes, and confirmation sample collection times were recorded to reflect the time the field screening sample was collected. Confirmation soil sample results from the A2 plume excavation are presented in Table H8, located in Appendix H. Twenty-seven primary confirmation samples and six duplicate samples were collected from the sidewalls of the excavation, and thirteen samples were collected from

the excavation floor. During confirmation sampling of the excavation floor, approximately 90% of the floor was submerged with water. All sidewall and floor samples were below clean up levels for DRO and RRO.

One groundwater monitoring well, Unknown Well 01, was located within the footprint of the A2 excavation and was removed as described in Section 6.9.

All soil from the A2 plume that was presumed to be below the site specific cleanup level for DRO/RRO was stockpiled on a lined clean overburden area. All clean overburden was sampled following ADEC guidelines for stockpiles and submitted to the field lab for analysis. Stockpiled soil containing DRO/RRO results below 80% of the 9,200 mg/kg cleanup level was used as backfill; soil in excess of this threshold was containerized and shipped off site for disposal.

The excavation was completely backfilled in 1-foot lifts, each track-walked with a bulldozer for compaction. Contaminated soil removal is considered complete at plume A2.

6.2.2.6 MOC Surface Water Monitoring

Before, during, and following MOC-soil removal activities, Bristol collected surface water samples from three locations in Site 28 (MOCSW01, MOCSW02, and MOCSW03) adjacent to the MOC (Figure 4), in order to assess if removal activities impacted surface water. Samples were collected on July 13, July 23, and September 15, 2013; results are presented in Appendix H, Table H9. At the time of the July 13, 2013 sampling, MOC soil removal activities had not yet commenced for the season. By July 23, 2013, excavation of the E plume was underway within 70 feet of sample location MOCSW01. By the third sampling, POL excavation activities had ceased. Samples were collected as described in Section 5.12.6 from surface waters in close proximity to the MOC excavations and were analyzed by TestAmerica for DRO/RRO, BTEX, and PAHs. Analytical results were used to calculate total aromatic hydrocarbon (TAH) and total aqueous hydrocarbon (TAqH)

results. TAH and TAqH surface water cleanup levels are specified in the decision document (USACE, 2009) as 0.01 mg/L and 0.015 mg/L, respectively. Numerical surface water cleanup levels for GRO, DRO, and RRO were not defined in the *Decision Document* (USACE, 2009), which denotes the cleanup levels as "no sheen". Water quality parameters and turbidity were also measured and recorded; however, no presence of sheen was noted.

TAH and TAqH concentrations did not exceed criteria in any sample. Concentrations of DRO and RRO were highest at location MOCSW01, an area with a distinct hydrocarbon odor from the water during the three sample events. The pre-excavation DRO concentration at MOCSW01 was 6.1 mg/L, dropping to 3.2 mg/L post-excavation; the pre-excavation RRO concentration was 2.6 mg/L, dropping to 1.3 mg/L post-excavation. The highest concentrations of DRO and RRO measured at the MOCSW02 location were both 1.1 mg/L and were collected during removal operations (mid-excavation). The lowest measured concentrations of DRO at 0.78 mg/L and RRO at 0.15 mg/L from MOCSW02 were collected post-removal. The highest concentration of DRO measured at MOCSW03 was 2.1 mg/L and was collected post-removal. Mid-excavation and post-excavation analyses contained DRO concentrations at 1.1 mg/L and 2.1 mg/L, respectively. The highest RRO concentration was 0.49 mg/L, collected pre-removal, and the lowest measured RRO concentration of 0.39 mg/L was collected post-removal.

6.2.2.7 Final Grade and Topographical Survey

After excavations were backfilled, the MOC was re-graded to prevent ponding of water and erosion at the site. Figure 12 presents the topographic survey completed by ECO-LAND. ECO-LAND, LLC performed the final topographic survey of the MOC. The Site MOC Reconstruction As-Built Survey drawing is provided in Appendix I.

6.3 PCB-CONTAMINATED SOIL REMOVAL AT SITES 13 AND 31

6.3.1 Site 13 Description and History

Site 13, which encompasses former Building 110, once contained the heat and power facilities for the installation (Figure 13). Sources of contamination from this site consist of transformers, diesel generators, ASTs, USTs, and piping (MWH, 2003). The site has been investigated and sampled multiple times since 1994 and contained DRO and PCBs in subsurface soils with concentrations that exceeded cleanup levels (USACE, 2009). Several phases of PCB-contaminated soil removal have occurred at this site, including excavation efforts performed by Bristol in 2010, 2011, 2012 and 2013. Upon completion of the 2012 field season, Bristol had excavated 2181.15 tons of PCB-contaminated soil from Site 13 into 211 bulk bags. One confirmation sample location (12NC13SS231) containing PCB concentrations in excess of the cleanup level remained after 2012 PCB-removal activities. The 2013 removal efforts focused on this location and the ground beneath a former stockpile area that was situated to the south of the original excavation.

In 2011, Bristol constructed a stockpile area south of the Site 13 excavations. This area (shown on Figure 13) was created to hold overburden from the Site 13 excavation that held a liner in place over winter between the 2010 and 2011 season. Bristol was directed to sample the footprint of the proposed stockpile area before stockpiling backfill material on the liner. Samples were collected from the area and submitted to the field lab. Some of the sample results indicated PCBs at concentrations that exceeded cleanup levels. PCB-contaminated sample locations were excavated and the area was used as a stockpile area (with liner) until 2013, when Bristol deconstructed the stockpile, liner and collected post-deconstruction samples. Post-deconstruction samples showed several areas that contained soil with PCB contamination above cleanup levels.

6.3.2 Site 13 Field Activities

Initial 2013 soil-removal activities were determined by fixed-laboratory analytical sample results from the 2012 removal efforts at Site 13. The site of the one confirmation sample from the 2012 effort, 12NC13SS231 (1.6 mg/kg), was located by the survey crew and excavated. Four field samples were collected from the resulting excavation and results indicated that PCB concentrations in soil were below cleanup levels. The 2013 excavation was backfilled with clean material after post-excavation sample results confirmed that no soil remained in concentrations that exceeded PCB cleanup levels.

A total of 206 soil samples were collected from the stockpile area and submitted to the field lab for PCB analysis. Results indicated that PCBs existed in the soil at concentrations exceeding the cleanup level. Additional excavation commenced in this stockpile area to remove all remaining PCB contamination.

Excavation activities for both removal areas consisted of an iterative process of soil removal and containerization, followed by the collection of soil samples that were submitted to the field laboratory for PCB analysis. The area associated with the sample 12NC13SS231 was excavated to approximately 1.5 to 2.0 feet bgs, and discrete floor and sidewall samples were collected on 5-foot by 5-foot (25 square feet) spacing and submitted to the field laboratory for analysis. Additional soil was removed from sample locations where PCB concentrations exceeded 0.8 mg/kg.

The stockpile area and liner in Site 13 was deconstructed and the area underneath was sampled at a rate of one discrete sample per 25 square feet. The initial round of field samples yielded several discrete samples above 0.8 mg/kg. Excavation and sampling occurred until all field lab results were below 0.8 mg/kg.

Soil was loaded directly into bulk bags at Site 13 and staged at one of the staging areas. A total of 105.69 tons of PCB-contaminated soil, consisting of 10 bulk bags, was excavated from the site.

6.3.3 Site 13 Results

Throughout the course of Site 13 removal activities in 2013, a total of 75 primary confirmation samples and 8 field duplicate samples were collected and submitted to TestAmerica after field laboratory results reported PCBs at less than 0.8 mg/kg. Results are presented in Appendix H, Table H10. None of the confirmation samples at Site 13 contained PCB concentrations that exceeded the cleanup level of 1 mg/kg, and there are no remaining areas of PCB contamination above cleanup levels. Confirmation sample locations are depicted on Figure 13.

The excavations at Site 13 were backfilled with clean material that was compacted and graded by a bulldozer. All disturbed areas were seeded and fertilized prior to Bristol's departure from the site. A topographical survey of the area was performed by ECO-LAND, LLC and the final grade is depicted on Figure 12. The Site 13 as-built survey drawing that shows the final topographic survey performed by ECO-LAND, LLC is provided in Appendix I. All disturbed areas were seeded and fertilized prior to Bristol's departure from the site. Contaminated soil removal is considered complete at Site 13.

6.3.4 Site 31 Description and History

Site 31 is the former White Alice Complex, located uphill and to the southeast of the MOC (Figure 14). The site formerly contained four large antennas, an electronics building (Building 1001), an auto maintenance shop, storage shed, and seven ASTs (MWH, 2003). The antennas, buildings, and ASTs were removed from the site during previous actions; only the concrete antenna/building foundations remain. PCBs were historically detected in soil and on concrete at Site 31. PCB-contaminated soil removal efforts took place in

2005, 2010, 2011 and 2012 for the purpose of removing all soil with PCB concentrations greater than 1 mg/kg.

One confirmation sample location (12NC31SS199) containing PCB concentrations in excess of the cleanup level of 1 mg/kg remained after 2012 PCB removal activities. The 2013 removal efforts focused on this location.

6.3.5 Site 31 Field Activities

Surveyed confirmation samples from the 2012 removal efforts at Site 31 were used to guide the initial soil removal activities in 2013. The one confirmation sample location from the 2012 effort, sample 12NC31SS199 (1.3 mg/kg), was located by the survey crew, and excavation commenced in that area.

Refer to Figure 14 for the excavation extents and sample locations at Site 31. Soil was excavated approximately 1.5 to 2.0 feet bgs at the location of 2012 confirmation sample 12NC31SS199. Soils were loaded directly into bulk bags at Site 31 and staged at one of the bulk bag staging areas. Similar to PCB excavation activities at Site 13, soil removal was followed by sample collection and field laboratory analysis for PCB concentrations. Following the first round of excavation at Site 31, the field lab sample results indicated PCBs had been removed to concentrations less than 0.8 mg/kg. One confirmation sample and a QC duplicate sample were collected following receipt of the field laboratory results and submitted to TestAmerica for PCB analysis.

A total of 9.85 tons of PCB-contaminated soil, contained in one bulk bag, was excavated and removed from Site 31. To avoid the pooling of rain water, Bristol backfilled the excavation and contoured it to blend in with surrounding topography. A topographical survey of the area was performed by ECO-LAND, LLC. The final grade is depicted on Figure 15. The Site 31 as-built survey drawing that shows the final topographic survey performed by ECO-LAND, LLC is provided in Appendix I.

6.3.6 Site 31 Results

Confirmation sample locations are shown on Figure 14 and the results are presented in Appendix H, Table H11. One primary sample and one QC duplicate sample were collected and submitted to TestAmerica for PCB analysis. Neither sample contained PCB in concentrations exceeding the cleanup level of 1 mg/kg. All disturbed areas were seeded and fertilized prior to Bristol's departure from the site. Contaminated soil removal is considered complete at Site 31.

6.4 SITE 21 ARSENIC EXCAVATIONS

6.4.1 Site 21 Description and History

Site 21, located west of the MOC Perimeter Road (Figure 4 and Figure 16), contained the wastewater treatment system for the Housing and Operations Complex. The infrastructure consisted of a concrete settling tank with attached piping, enclosed in a wooden utilidor that discharged to the tundra approximately 450 feet to the west (USACE, 2009). The infrastructure was removed in 2003 and soil confirmation samples were collected after the removal of the piping and utilidor from locations along the piping run and at the inlet and outfall lines.

PCBs and arsenic have previously been identified as COCs at this site (USACE, 2009). The primary contaminant of potential concern in shallow groundwater is arsenic. Arsenic was detected above cleanup levels during the 1994 investigation at one location. Surface water samples collected downgradient of the monitoring wells did not contain arsenic above action levels. The arsenic detected in the shallow groundwater was likely due to sediments in the water column, and arsenic was thus eliminated as a contaminant of concern.

Bristol removed 10.4 tons of PCB-contaminated soil in 2010; resulting in the primary remaining COC at the site being arsenic contamination in soils located near the outfall of the former discharge pipe. The source of the arsenic contamination is unknown.

Arsenic-contaminated soil removal actions were performed by Bristol in 2010, 2011, and 2012 resulting in the combined removal of approximately 135 tons of soil. In 2012, Bristol excavated 102.7 tons of arsenic-contaminated soil from Site 21 and collected confirmation samples from floor and sidewall locations within the excavation. Four confirmation sidewall sample locations contained arsenic concentrations as high as 320 mg/kg, exceeding the site-specific cleanup level of 11 mg/kg. For 2013, Bristol was scoped to delineate arsenic soil contamination by collecting soil samples from a total of twenty soil borings. Following the delineation of the arsenic contamination, Bristol was contracted to remove 100 tons of arsenic contaminated soil. The presence of additional arsenic contamination allowed for a contract modification that allowed for an additional 200 tons of arsenic contaminated soil.

6.4.2 Site 21 Field Activities

Bristol initialized field activities at Site 21 on July 10, 2013. Prior to conducting excavation activities at Site 21, Bristol was tasked to collect surface water samples in order to establish baseline aqueous arsenic concentrations for the site. Three additional rounds of sampling were conducted during the course of field work, once during removal, one following the completion of soil removal and a final round of samples was collected after backfill activities were complete. Two water sample locations were selected by field personnel in coordination with the on-site QAR. One location (21SW01) was chosen up-gradient of the excavation; another (21SW02) was selected down-gradient from the excavation (Figure 16). The initial round of surface-water sample collection was initiated on July 10,

2013. Subsequent surface water sampling events occurred on August 22, September 7, and September 15, 2013.

Following the collection of the pre-excavation surface water samples, Bristol installed seventeen of the scoped 21 soil borings to delineate the vertical and horizontal extent of contamination. The locations of the soil borings were chosen following discussions with the on-site QAR. Three soil samples were collected per boring, at depths of approximately 0.5 feet bgs, 2.0 feet bgs, and 3.0 feet bgs. Fifty-one primary soil samples were collected from the seventeen borings. Sample results indicated that seventeen soil samples from eleven of the borings contained arsenic in concentrations exceeding site-specific cleanup levels. Three additional soil boring locations were planned following discussions with the USACE and the ADEC. The final three soil borings were advanced and nine associated primary soil samples and one duplicate QC sample were collected on July 25, 2013. Two sample locations from these final three borings contained arsenic in concentrations exceeding cleanup levels.

Bristol used the soil boring sample results to produce a map of 17 of the 21 scoped soil borings at Site 21 that required removal. The map (included in Appendix D) showed the location of each soil boring and the resulting arsenic concentrations at each sample depth. Soil removal areas were marked on the map along with the horizontal and vertical extents of each removal area. The map also included estimates of the total volume and the estimated weight of soil in the proposed removal areas; following USACE and the ADEC acceptance of the map, Bristol commenced excavation activities in the proposed removal areas. A total of 51 primary soil samples and 6 duplicate soil samples were collected during the initial mapping event.

On August 22 and 23, 2013, 262.05 tons of arsenic-contaminated soils were removed. Twenty primary confirmation samples and two duplicate samples were collected from the

floor and sidewalls of the resulting excavation. The majority of the samples collected were collected below two feet of water. Twelve samples (13NC21SS023, 13NC21SS024, 13NC21SS026, 13NC21SS027 [duplicate sample 13NC21SS028], 13NC21SS029, 13NC21SS030, 13NC21SS032, 13NC21SS035 [duplicate sample 13NC21SS036], 13NC21SS040, and 13NC21SS041) from ten locations within the Site 21 excavation contained arsenic in concentrations that exceeded the site-specific cleanup level. Following receipt of these sample results, Bristol proceeded with a second round of excavation in an attempt to remove as much arsenic-contaminated soil as possible within the contract limit of 300 tons. The second expansion of the excavation took place on September 3, 2013, with the removal of 43.08 tons of arsenic-contaminated soil. Figure 16 shows the excavation extents, soil boring locations, and sample locations at Site 21. At the direction of the USACE, only specific sample locations were selected for excavation and removal due to contract limitations. Soil sample locations corresponding to samples 13NC21SS024, 13NC21SS027 (duplicate sample 13NC21SS028), 13NC21SS029, 13NC21SS030, 13NC21SS032, 13NC21SS035, 13NC21SS036, 13NC21SS040, and 13NC21SS041, were removed during the second round of excavation at Site 21. Soil at sample locations 13NC21SS023 and 13NC21SS026, for which analytical results indicated that arsenic concentrations remained in soil that exceeded the site-specific cleanup level were not excavated in 2013; soil remained in place due to excavation ceasing at the direction of USACE. After the second round of excavation, an additional nine confirmation samples and one duplicate sample were collected and submitted to TestAmerica for arsenic analysis. Results are discussed further in Section 6.4.3.

The majority of the western half of the excavation was submerged in water following excavation activities at the site. An excavator was utilized to assist with sample collection from submerged areas of the excavation.

Contaminated soil was containerized in bulk bags directly from the excavation at Site 21. Water from the excavated soil was allowed to drain from the excavator bucket over the excavation prior to placing the soil in the bulk bag. Mitigation measures including straw waddles and silt fencing were in place to prevent sediment flow offsite. Thirty-seven bulk bags were filled with contaminated soil, for a total excavated weight of 305.13 tons. The bulk bags were sampled for waste characterization purposes.

Prior to backfilling and grading, all Site 21 sample locations were surveyed, but not lined. Site 21 was backfilled with clean borrow source material, compacted, and graded with a bulldozer and excavator following removal efforts in 2013. Work is not complete at the site; further work is planned for 2014. The final grade and topographic detail are shown on Figure 17. The Site 21 as-built survey drawing that shows the final topographic survey performed by ECO-LAND, LLC is provided in Appendix I.

6.4.3 Site 21 Results

Nine surface water samples were collected at Site 21 and submitted to TestAmerica for total and dissolved arsenic analysis. Arsenic was not detected in any of the surface water samples. Surface water sample results are presented on Table H12 (Appendix H).

Sixty primary and seven duplicate soil samples were collected during the 2014 soil boring and mapping activities at Site 21. Soil boring sample results are presented in Appendix H, Table H13. Twenty-one soil samples, including two duplicate samples, contained arsenic in concentrations that exceeded the site-specific cleanup level of 11 mg/kg. Arsenic concentrations in all samples ranged from 1.1 mg/kg to 210 mg/kg. One sample collected from 0.5 feet bgs at soil boring location 21SB17 (13NC21SS17-0.5) contained an arsenic concentration 14 mg/kg. This location was not included as a removal area due to active water flow. This sample location was discussed with the ADEC which approved of not removing this soil due to several factors: the arsenic concentration was only slightly above

the cleanup level; removal would have caused further destruction to the wetland; and removal would have facilitated contaminant migration.

Twenty-eight primary and three duplicate samples were collected from the Site 21 excavation following removal of arsenic-contaminated soil and these confirmation sample results are presented in Appendix H, Table H14. Fourteen primary and two duplicate samples contained arsenic in concentrations that exceeded 11 mg/kg. Arsenic concentrations in all samples ranged from 2.0 mg/kg to 340 mg/kg. Arsenic remains at six locations in concentrations that exceed the site-specific cleanup level of 11 mg/kg; these six locations are represented by samples 13NC21SS023, 13NC21SS026, 13NC21SS043, 13NC21SS045, 13NC21SS046, and 13NC21SS047. Five samples, 13NC21SS023, 13NC21SS026, 13NC21SS043, 13NC21SS045 and 13NC21SS046 are recommended for a future removal action. Sample 13NC21SS026 was collected below groundwater and is not recommended for removal.

6.4.3.1 Waste Characterization

Nine samples were submitted to TestAmerica for waste characterization purposes. Three of these samples were analyzed for arsenic using a Toxicity Characteristic Leaching Procedure (TCLP) extraction method. Arsenic was not detected in any of the samples extracted using the TCLP method. Arsenic concentrations in the other six samples ranged from 8.8 mg/kg to 87 mg/kg. Waste characterization sample results for Site 21 are shown in Appendix H, Table H15.

6.5 SITE 10 DRUM REMOVAL AREA

6.5.1 Description and History

Site 10 (Figure 18) consists of a wide gravel area along the access road, directly east of the former ASTs at Site 11. An area of surface soil contamination was documented in 1994 along the western edge of the gravel pad at the Site 10 Buried Drums site. The maximum

concentration of DRO was 26,500 mg/kg. Additional surface soil samples were collected in 1996, and the maximum DRO result was 17,000 mg/kg. Soil borings were completed in 2004 and demonstrated that subsurface soils are not significantly impacted; the maximum DRO result was 619 mg/kg. Approximately 10 drums, one of which contained POL liquids, were exposed during excavation activities on the J1A plume during 2011 removal actions, and the drums and their respective contents were removed and disposed of. The ADEC determined further characterization of the site was necessary.

During the 2012 field season, Bristol investigated the site to find and remove buried drums. Drums were encountered that contained new and used oil, oil/water mixtures, tar, diesel fuel, ethylene glycol (antifreeze), and alcohols. A total of 27 new drums were filled with liquids recovered from Site 10 and shipped off site for disposal. In addition to liquid wastes, 59.4 tons of soil contaminated with ethylene glycol and tetrachloroethene (PCE) was removed. Following the drum removal, 37 soil samples correlating to 29 locations within the excavation and four locations from stockpiled soils were collected and submitted to TestAmerica to be analyzed for GRO, DRO/RRO, PCBs, VOCs, PAHs, ethylene glycol, RCRA 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), nickel, vanadium, and zinc. Sample results indicated concentrations of arsenic, ethylene glycol, PCE, and DRO remained in concentrations that exceeded cleanup levels.

6.5.2 Field Activities

In 2013 Bristol opened four excavations at Site 10 (Figure 18) to remove soil where concentrations of arsenic, ethylene glycol, PCE, and DRO exceeded cleanup levels in 2012. Field and confirmation sampling occurred between each round of soil excavation.

Excavation A is located at the southern portion of the 2012 excavation, downhill from the gravel pad, and was excavated to remove soil associated with three 2012 confirmation

samples that exceeded the DRO site-specific cleanup level of 9,200 mg/kg. Samples 12NC10SS001, 12NC10SS002, and 12NC10SS011 contained DRO concentrations of 10,000 mg/kg, 11,000 mg/kg, and 11,000 mg/kg DRO, respectively. Soil from these locations was excavated and stockpiled at Pad 98 for containerization. Samples were collected from the excavated areas and submitted to the field lab for DRO/RRO analysis. When field lab results determined that contaminant concentrations in soil were less than 80% of the cleanup level, confirmation samples 13NC10SS011, 13NC10SS012 (duplicate 13NC10SS016), 13NC10SS014, and 13NC10SS015 were collected and submitted to TestAmerica to be analyzed for GRO, DRO/RRO, PCBs, VOCs, PAHs, glycols, RCRA 8 metals, nickel, vanadium, and zinc.

Excavation B, located within the 2012 excavation footprint occurred at the location of sample 12NC10SS009, which contained an arsenic concentration of 14 mg/kg. Excavated soil was loaded directly into bulk bags for off-site disposal. Confirmation sample 13NC10SS013 was collected and submitted to TestAmerica to be analyzed for GRO, DRO/RRO, PCBs, VOCs, PAHs, glycols, RCRA 8 metals, plus nickel, vanadium, and zinc.

The excavation that resulted from 2012 drum removal activities (the 2012 excavation that encompasses Excavation C on Figure 18) was only partially sampled for confirmation purposes prior to demobilization from the site. The excavation was left open and no liner was placed prior to demobilization. The 2012 drum removal activities disturbed soil in areas of the excavation's northern extent that were not sampled in 2012 that required confirmation sampling for potential contaminants in 2013. Bristol planned to complete confirmation sampling in this area during the 2013 removal activities. Confirmation samples 13NC10SS003 thru 13NC10SS007 were collected and submitted to TestAmerica to be analyzed for GRO, DRO/RRO, PCBs, VOCs, PAHs, glycols, RCRA 8 metals, nickel, vanadium, and zinc.

Excavation C was opened in 2013 at the locations of 2012 confirmation soil samples 12NC10SS028 and 12NC10SS030 (duplicate sample 12NC10SS032). These samples contained ethylene glycol in concentrations of 350 mg/kg, 15,000 mg/kg, and 16,000 mg/kg, respectively, exceeding the cleanup level of 190 mg/kg. Sample 12NC10SS030, also contained a PCE concentration of 0.025 mg/kg, exceeding the cleanup level of 0.024 mg/kg. Soil excavated from these locations was loaded into bulk bags for off-site disposal. Confirmation samples 13NC10SS001 and 13NC10SS002 (duplicate sample 13NC10SS008) were collected and submitted to TestAmerica to be analyzed for GRO, DRO/RRO, PCBs, VOCs, PAHs, glycols, RCRA 8 metals, nickel, vanadium, and zinc. Both sample locations exceeded the site specific cleanup level of 190 mg/kg for ethylene glycol. Additional soil was removed and subsequent confirmation soil samples 13NC10SS023 thru 13NC10SS034, and confirmation soil sample 13NC10SS045, were collected and submitted to TestAmerica to be analyzed for ethylene glycol. As the excavation progressed to deeper elevations, confirmation sample results continued to contain ethylene glycol in concentrations that exceeded the cleanup levels. The lateral extent of contamination was excavated until confirmation sample results indicated that soil contaminant concentrations were below the cleanup level. Excavations continued at depth until bedrock was encountered. The excavation was terminated at bedrock per discussions with the ADEC and the USACE. Excavation sidewalls did not exceed cleanup criteria for ethylene glycol. Final excavation confirmation samples for DRO/RRO were below site-specific cleanup levels of 9,200 mg/kg.

Excavation D was opened in a location where a metal detector indicated the presence of metallic anomalies beneath the ground surface. Empty drums and metal debris were removed from the excavation and placed on a liner located adjacent to the dig site. The empty drums (weighing 0.29 tons) and metal debris were loaded into a Conex for shipping and disposal. Confirmation samples 13NC10SS017, 13NC10SS018, 13NC10SS021

(duplicate sample 13NC10SS022) were collected and submitted to TestAmerica to be analyzed for GRO, DRO/RRO, PCBs, VOCs, PAHs, glycols, RCRA 8 metals, nickel, vanadium, and zinc. Sample 13NC10SS018 contained RRO in concentrations exceeding the site-specific cleanup level of 9,200 mg/kg. Soil from this location was excavated and additional metal debris was discovered and removed which expanded the excavation footprint. Soil samples were collected and submitted to the field lab for DRO/RRO analysis after the debris was removed. When field lab results indicated DRO/RRO in concentrations below the cleanup level of 9,200 mg/kg, confirmation samples 13NC10SS035 thru 13NC10SS044 were collected and submitted to TestAmerica for DRO/RRO analysis. DRO/RRO concentrations in these confirmation soil samples were all below the site-specific cleanup level of 9,200 mg/kg.

6.5.3 Results

Confirmation samples 13NC10SS011, 13NC10SS012 (duplicate 13NC10SS016), 13NC10SS014, and 13NC10SS015 were associated with the removal of DRO contamination from Excavation A. Confirmation soil sample results from this DRO excavation are provided in Appendix H, Table H16.

Confirmation sample 13NC10SS013 (Appendix H, Table H17) was associated with the removal of arsenic contamination in Excavation B. Concentrations of all contaminants were below cleanup levels.

Confirmation samples 13NC10SS003 through 13NC10SS007 (Table H18) were collected from the 2012 drum removal area located directly northeast of Excavation C. These samples did not contain any contaminant concentrations that exceeded cleanup levels.

Confirmation samples 13NC10SS001 and 13NC10SS002 (duplicate sample 13NC10SS008) (Appendix H, Table H18) were collected from Excavation C. All samples exceeded the cleanup criteria of 190 mg/kg for ethylene glycol, having concentrations of 890 mg/kg,

280 mg/kg and 320 mg/kg, respectively. Soil from these confirmation sample locations was excavated and subsequent confirmation samples 13NC10SS023 and 13NC10SS024 (duplicate 13NC10SS025) were collected and submitted to TestAmerica for glycol analysis. All three samples exceeded the ethylene glycol cleanup level with concentrations of 2,200 mg/kg, 1,000 mg/kg, and 950 mg/kg, respectively. Following additional excavation, confirmation samples 13NC10SS026 thru 13NC10SS030 were collected and submitted to TestAmerica for glycol analysis. Samples 13NC10SS027 and 13NC10SS030 exceeded the cleanup level for ethylene glycol, containing concentrations of 2,700 mg/kg and 1,600 mg/kg, respectively. The sample locations were excavated and confirmation samples 13NC10SS031 thru 13NC10SS034 were collected and submitted to TestAmerica for glycol analysis. Floor confirmation sample 13NC10SS032 (duplicate sample 13NC10SS034) exceeded the ethylene glycol cleanup level with concentrations of 1,700 mg/kg and 1,600 mg/kg, respectively. This floor sample location was excavated and confirmation sample 13NC10SS045 was collected and submitted to TestAmerica. Confirmation soil sample 13NC10SS045 exceeded the cleanup criteria for ethylene glycol with a concentration of 890 mg/kg. Bristol excavated to 4 feet below fractured bedrock to a total depth of 12 feet bgs. The excavation was terminated at bedrock per discussions with the ADEC and the USACE. Confirmation sidewall soil samples 13NC10SS26, 13NC10SS28, 13NC10SS29 and 13NC10SS031 did not exceed the cleanup criteria for ethylene glycol. Confirmation soil sample results from Excavation C are presented in Appendix H, Table H18.

Confirmation samples 13NC10SS017, 13NC10SS018, and 13NC10SS021 (duplicate sample 13NC10SS022) were collected from Excavation D (Appendix H, Table H19) and submitted to TestAmerica to be analyzed for GRO, DRO/RRO, PCBs, VOCs, PAHs, glycols, RCRA 8 metals, nickel, vanadium, and zinc. Sample 13NC10SS018 contained RRO at 15,000 mg/kg, exceeding the site-specific cleanup level of 9,200 mg/kg. Additional soil was

removed and samples were submitted to the field lab for DRO/RRO analysis. When field lab results indicated DRO/RRO at concentrations below the cleanup level, Bristol collected and submitted confirmation soil samples 13NC10SS035 thru 13NC10SS044 to TestAmerica for DRO/RRO analysis. DRO/RRO concentrations for these final confirmation soil samples did not exceed site-specific cleanup levels.

Waste Characterization results for Site 10 soil and liquid drum wastes are presented on Tables Appendix H, Tables H20 and H21. Samples were shipped under Chain of Custody to TestAmerica for analysis of GRO, DRO, RRO, VOCs, TCLP VOCs, PAHs, TCLP PAHs, PCBs, TCLP PCBs, glycols, and metals. Chemicals of concern (COCs) at this site consisted of arsenic, ethylene glycol, DRO, RRO, and PCE. All waste characterization results were below regulatory criteria.

At the MOC, Bristol recovered a buried drum that appeared to contain used oil. A sample was collected from the drum (13NC10DS03) and analyzed for PAHs, PCBs, VOCs, TCLP RCRA metals plus nickel, vanadium, and zinc, and ignitability. This drum was moved to Site 10 and included with the Site 10 wastes.

6.6 REMOVAL OF MISCELLANEOUS DEBRIS, DRUMS, AND POLES

6.6.1 Description and History

Miscellaneous debris, consisting of metal roofing, wire, rusted drums, and Marston matting, has been identified in multiple areas associated with the installation. Bristol has removed miscellaneous debris from across the site since 2009. In 2012, approximately 15.3 tons of miscellaneous debris, 158 wooden poles and pole pieces weighing 28.45 tons, and 1.3 tons of rusted drums were collected and removed from the island.

6.6.2 Field Activities

Under contract W911KB-12-C-0003, Bristol was scoped to remove 15.33 tons of miscellaneous metal debris scattered throughout the NE Cape site, and, under contract W911KB-13-C-004, 25 tons of miscellaneous metal, 1 ton of drums, and 30 pole stumps. Poles were gathered as one of Bristol's first field tasks upon arrival at the site, while debris was gathered concurrently with all other field operations. Pole locations are shown on Figure 3. A small crew located the poles and removed them with an excavator. When possible, the poles were pulled out of the ground using the excavator bucket and attached thumb. When the pole could not be pulled out with the excavator, the ground surrounding the pole was excavated in order to gain access to the buried portion of the pole. Much of the debris—wire, antenna components, and rusted drums—was recovered from various locations within Site 28 and the surrounding tundra. Additional debris was recovered from POL and PCB excavations at the MOC and consisted of metal piping, corrugated steel culvert components, and miscellaneous metal. Historic marston matting that was stored near the borrow area in a flat work area was removed from the borrow source area and consolidated into Conex containers for disposal.

The remaining 15.33 tons of miscellaneous debris on the 2012 contract were removed. The 2013 scope allowed for an initial 25 tons of miscellaneous debris; the initial 25 tons were collected and an additional 10-ton option was exercised of which 3.45 tons were collected for a total of 28.45 tons of wire and miscellaneous debris. Bristol collected a total of 56 poles. The 2013 scope allowed for 20 initial poles, with an option for an additional 10 poles. The remaining 26 poles were weighed and placed with wire and miscellaneous debris tonnage. Bristol was scoped for 1 ton of drums, and removed 1 ton of drums which was included with the debris shipped to Columbia Ridge Landfill for disposal. Removed debris was shipped to the Columbia Ridge Landfill for disposal.

6.7 SAMPLING AT SUSPECTED PIPELINE BREAK LOCATION

6.7.1 Description and History

A pipeline used to deliver fuel to the installation storage tanks at the MOC once ran between the Cargo Beach and MOC. During a Restoration Advisory Board meeting held on December 5, 2012, St. Lawrence Island resident Bryan Rookok, Jr. stated that during historic pipeline removal work, he observed a break in this pipeline between Site 3 (Pump House), near Cargo Beach, and the Site 7 landfill. It was unclear when the break may have occurred. Mr. Rookok did not recall observing any indications of petroleum contamination at the location of the break, indicating that the break may have occurred after petroleum was drained from the pipeline. Specifically, the location of the reported pipeline break was immediately adjacent to the northwest side of the road, in a relative low-lying area where the pipeline crossed beneath the roadway via a culvert. Bristol identified this location near Cargo Beach Road between Site 3 and Site 7 (Figure 20) and was tasked to collect soil samples in order to address any concerns of contamination remaining in place.

6.7.2 Field Activities

Bristol was scoped to advance four borings with a hand auger at the Suspected Pipeline Break Location. On August 10, 2013, Bristol staff located the area of the Pipeline Break (Figure 20) and chose sample locations in consultation with USACE.

Bristol advanced each of four soil borings to 2 feet bgs within a 15-foot by 15-foot area, starting at the culvert on the northwest side of the road. Due to the prevalence of large rocks in the area of the suspected pipeline break, a shovel was used to advance all soil borings. Two samples were collected for each boring at depths of approximately 1 foot and 2 feet bgs.

6.7.3 Results

Confirmation sample results are presented in Appendix H, Table H22. Nine samples, including one duplicate sample, were collected and submitted to TestAmerica for BTEX, GRO, and DRO/RRO analysis. None of the samples contained contaminant concentrations exceeding evaluation criteria.

6.8 ROADWAY SAMPLING

6.8.1 Description and History

The current road network maintained and utilized by Bristol for site operations is the historic roadbed constructed for the NE Cape installation. The road network is currently used during removal activities to transport equipment, fuel, and bulk bags containing contaminated soil. The roads are maintained as necessary by Bristol during the summer field season to accommodate the traffic required to appropriately perform field work. During a Restoration Advisory Board meeting held December 5, 2012, an attendee stated that he was aware of "drain oil" being spread on the roads in the past for dust suppression during operation of the Northeast Cape Facility. During field activity dust suppression is done by spraying water on the road and keeping driving speeds low. To address this concern, the USACE scoped Bristol to perform sampling of the roadway at four separate locations and submit the samples to a fixed-base laboratory for analysis.

6.8.2 Field Activities

Bristol excavated four test pits at four different roadway segments on August 18, 2014. The test pits were dug down to older road bed to evaluate if soil containing PCBs was applied to the road surface for dust control during military operations at NEC (Figure 21):

- Between Site 7 and Site 6
- Between the Airstrip and Site 8

- Between Site 8 and the MOC
- Between the MOC and Site 31

Test pits were advanced to a depth of 2 feet below the road surface using an excavator. Soil samples 13NCRWSS01 thru 13NCRWSS09 were collected at depths of 1 foot and 2 feet bgs in each of the four test pits and submitted to TestAmerica for analysis of GRO, BTEX, DRO, RRO, PAHs, PCBs, RCRA 8 metals, and zinc. Test pits were backfilled and re-graded following sampling activities.

6.8.3 Results

Full laboratory analytical results are presented in Appendix H, Table H23. PAH and BTEX compounds were not detected in any of the samples. DRO/RRO, RCRA metals and zinc were detected in all samples at concentrations below cleanup levels. GRO was detected at concentrations below the cleanup level in samples 13NCRWSS01 and 13NCRWSS04, but the results may be due to trip blank contamination. PCB 1260 was detected at concentrations below the cleanup level in sample 13NCRWSS04. Contaminant concentrations did not exceed evaluation criteria for any of the soil samples.

Bristol was not scoped to collect surface water samples near the roadway samples and soil sample results did not lead to any concern of surface water contamination.

6.9 MONITORING WELL ABANDONMENT

6.9.1 Description and History

Bristol was tasked to abandon compromised groundwater monitoring wells and well-points in order to remove the physical hazards associated with the wells and eliminate the contaminant migration pathway they may create. Twelve wells were identified by USACE for decommissioning (Figure 22). Historical boring logs and well descriptions from previous work by other contractors are contained in Appendix J.

Where casing was present and created a pathway to groundwater, wells were decommissioned in accordance with applicable ADEC guidance (ADEC, 2009). The well casings were filled with bentonite pellets to the depths specified in Table 6-3, and the casings and monuments were completely removed from the ground when feasible. All well materials were containerized and hauled off-island for disposal.

6.9.2 Field Activities

On July 13, 2013 monitoring well MW10-4 was abandoned. The 3-foot diameter concrete monument and protective casing were frost-jacked out of the ground by the 2-inch diameter PVC well casing. The remaining PVC extended to a depth of approximately 4 feet bgs and the well was hand removed.

On August 18, 2013, wells MW6-1, MW7-4, and Unknown Well 03 were abandoned. Monitoring wells MW6-1 and MW 7-4 were constructed from 2-inch diameter PVC pipe that extended 12.7 and 13.2 feet below top of casing (BTOC), respectively. MW6-1 was completed as a stickup monument with a 2-foot-diameter concrete and steel protective casing. The well was removed using an excavator bucket. MW7-4 was completed as a stickup monument with a 6-inch diameter steel protective outer casing set in cement. The PVC had frost jacked several feet above the metal casing and was hand removable. Unknown Well 03, located at Site 6, was completed as a 1.5-inch steel well-point extending approximately 11 feet bgs with a 3-foot stickup and no outer casing. Unknown Well 03 was removed using an excavator bucket. The boreholes resulting from the removal of these monitoring wells were filled to the ground surface with bentonite pellets.

On September 6, 2013, a piece of damaged, slotted 2-inch diameter PVC referred to as Unknown Well 01 (located along the sidewall of the A2 plume) was removed during Plume A2 excavation activities. The well was located below grade, and the casing had

been severed by an excavator at 7 feet bgs during Plume A2 excavations. Soil in the casing prevented removal of the end cap. The slotted casing terminated 1 foot below the excavation floor and was removed by hand and backfilled with bentonite pellets.

On September 7, 2013, monitoring wells MW16-2, MW16-3 and Unknown Well 02 were abandoned. Monitoring wells MW16-2 and MW16-3 were constructed from 2-inch-diameter PVC pipe and extended 16.65 feet and 16.61 feet BTOC, respectively. The wells were completed as stickups, and the protective outer casings were constructed from 6-inch-diameter steel casing set in cement. The well monuments were removed, and the well caps were knocked out using a steel rod. The well casings were filled with bentonite pellets to 5 feet bgs before Bristol attempted to pull the wells. The well casings were then removed using an excavator and sling. Joints in the PVC casing of MW 16-2 and MW 16-3 had uncoupled and only the top 6 feet of casings were removed. The wells were filled to 6 inches bgs with bentonite pellets, and covered with soil to the ground surface.

Unknown Well 02 was located approximately 100 feet south of Pad 98 (Figure 22) and constructed from a 1.5-inch diameter steel rod extending 11.80 feet bgs with 3 feet of stickup. No boring or well construction logs are provided for this location and the original well identification is unknown. The well-point did not have a monument or outer protective casing. The cap of the well had rusted shut and Bristol could not remove it to collect water level measurements or to backfill it with bentonite pellets. The 14.80-foot steel rod was removed using an excavator with sling and the resulting hole was backfilled to the surface with bentonite pellets.

In an attempt to positively identify the 3 unknown wells (Unknown Well 01, 02 and 03) the USACE conducted a review of historical documentation including GIS. These 3 wells

were unable to be positively identified and are therefore still referred to as Unknown Wells.

On September 11, 2013, monitoring wells MW16-1, MW21-1, and MW9-2 were abandoned. The wells were constructed from 2-inch diameter PVC pipe and extended 16.70 feet, 8.75 feet, and 12.25 feet BTOC, respectively. Monuments for wells MW16-1 and MW9-2 were constructed from 6-inch diameter steel casing set in cement. The monuments were removed and the well caps were knocked out using a steel rod. The well casings were filled with bentonite pellets to the ground surface before the wells were removed. The casing for MW16-1 was removed with an excavator and sling, while frost-jacking allowed MW9-2 to be hand removed. The monument for well MW21-2 was encased in concrete that frost-jacked above ground and broke. The PVC screen was visible at the surface, so the casing was removed by hand and the resulting hole was backfilled with bentonite pellets.

Monitoring well MW21-3 was constructed from 2-inch diameter PVC pipe that extended 9.2 feet BTOC during its original installation. The well was completed as a stickup with a 3-foot diameter concrete and steel protective casing. The well casing was damaged and frost-jacked, its screen bottom extending approximately 3 feet bgs, and was removed by hand.

All direct pathways to the water table resulting from the presence of these twelve wells have been closed and rendered less permeable than the surrounding soils.

Table 6-3 Well Abandonment Results

Well ID	Depth (ft. bgs)	Stick-up (ft.)	Diameter (inches)	Construction	Depth to bentonite (ft. bgs)	Notes
Unknown Well 01	17.0	0	2	PVC	15	Original Well ID unknown, located below grade in A Plume Excavation footprint
Unknown Well 02	11.80	3	1.5	Steel	0 (filled to surface)	Original Well ID unknown
MW 6-1	9.5	3.2	2	PVC	---	None
MW7-4	10	3.2	2	PVC	---	Casing loose and frost jacked
MW9-2	9.5	2.75	2	PVC	0 (filled to surface)	Casing loose and frost jacked
MW10-4	6.5	1.5	2	PVC	---	Casing loose and frost jacked
MW16-1	14.5	2.75	2	PVC	0 (filled to surface)	
MW16-2	14.0	2.75	2	PVC	0 (filled to surface)	8′ casing in place
MW16-3	14.5	2.75	2	PVC	0 (filled to surface)	8′ casing in place
MW21-1	7	1.75	2	PVC	0 (filled to surface)	Severe frost jacking, damged monument and screen at surface
MW21-3	7	2.2	2	PVC	0 (filled to surface)	Severe frost jacking to 1′ bgs
Unknown Well 03	11	4	1.5	Steel	---	None

Notes:
bgs = below ground surface
ft. = feet

6.10 SITE 28 SEDIMENT REMOVAL

In 2013, Bristol was tasked with the removal and disposal of 260 bcy of contaminated sediment in the Site 28 Drainage Basin, under contract W911KB-13-C-0004. Sediment-

removal operations were initiated in 2012 under contract W911KB-12-C-0003, in which Bristol was scoped to remove 140 bcy of contaminated sediment during the Phase I Sediment Removal. Bristol removed 20.6 bcy of sediment in 2012, leaving 119.4 bcy of sediment to be removed in 2013, under Contract No. W911KB-12-C-0003.

6.10.1 Description and History

The Site 28 Drainage Basin lies north of the MOC and flows north into the Suqitughneq River (Figure 3). This site has been impacted by fuel releases from the bulk fuel storage tanks and other releases. Surface water runoff and subsurface water seeps from the MOC gravel pad into this tundra and wetland area.

Three drainages originate from the MOC gravel pad and contribute flow to Site 28 (Figure 23):

- The eastern drainage flows from the area adjacent to sites 10 and 11, a vegetated area north of the former fuel tanks.
- The middle drainage originated from a culvert removed during 2010 that previously directed flow from Site 27 (located on the west side of the E plume).
- The western drainage originated from a manhole and small concrete supporting structure just north of the perimeter access road, which emptied into an artificially created swale. In 2010, the concrete manhole structure, as well as a portion of culvert associated with the structure, was cleaned and removed. The manhole likely served as the drain for Building 110, the Power and Heat Building. The western drainage is downgradient and north of Site 13.

Soil staining has been observed near the head of the eastern drainage, at the former tank locations, and along the banks of the middle and western drainages. Sediment in the western drainage has been described as stained and will produce sheen when disturbed.

6.10.1.1 Pre-2011 Sampling

Sampling activities occurred at the drainage basin between 1994 and 2001. Based on analytical results from the sampling, the primary COCs in sediments are chromium, lead, zinc, PCBs, PAHs, DRO, and RRO.

Surface water samples were collected in the drainage basin in 1994, 1996, and 2001. According to the *Decision Document* (USACE, 2009), concentrations of DRO, total recoverable petroleum hydrocarbons, PCBs, and lead were elevated in 1994. Surface water samples collected in 2001 were analyzed for DRO, RRO, and PCBs. The samples were not analyzed for lead. DRO was detected at concentrations ranging from 0.39 to 2.3 mg/L. PCBs and RRO were not detected.

The shallow groundwater was investigated in 1994 and 2001. Two monitoring wells were installed in the eastern drainage in 1994, and sample analytical results identified DRO and lead as potential COCs. DRO and lead analytical results for groundwater samples collected in 2001 had concentrations below cleanup levels. No COCs were retained for the shallow groundwater (USACE, 2009).

The most heavily contaminated areas of the drainage basin were found immediately below the former locations of two culverts, in the western and middle drainages.

6.10.1.2 2011 Characterization

To delineate the extent and magnitude of contamination at Site 28, Bristol conducted sediment and soil sampling along 11 transects, placed between the upper end of Site 28 (near the MOC) and its confluence with the Suqitughneq River in 2011. Bristol placed transect lines along areas of historical contamination and analyzed them to gain a general understanding of the potential contaminants throughout the drainage. This sampling was not intended to result in a full characterization of the drainage system as it was known that further sampling investigation efforts would be necessary. Results from the 2011

sampling event revealed contaminants that exceeded the ADEC-approved site-specific cleanup levels as documented in the 2009 Decision Document. The highest concentrations of contaminants were located proximal to the edge of the MOC. The *Site 28 Technical Memorandum* (Bristol Engineering Services Corporation, 2012) presents detailed information from the 2011 Site 28 investigation.

6.10.1.3 2012 Sediment Mapping and Sampling

Bristol performed a sediment mapping and sampling effort within the Site 28 Drainage Basin in July 2012 to fill data gaps and further delineate the extent and magnitude of contaminated sediment at the site. Sediment was defined as all loose material (mineral and/or organic) except for that which is actively growing vegetation or is part of a vegetative mat. The sediment mapping was conducted in two phases: during the first phase, streams and ponds in the drainage basin were visually and manually inspected to define the horizontal boundaries of the sediment areas; during the second phase, probing was conducted to determine the thickness of sediment and the composition of the underlying material in each sediment area. Approximately 400 cubic yards of sediment was mapped within the Site 28 drainage basin in 2012.

After the mapping effort, 51 primary sediment samples were collected from the mapped sediment areas to delineate the extent and magnitude of contamination at the site. Analytical results from the sampling effort indicated that fuel, PCBs, and metal contamination was present within the drainage basin, and the highest contaminant concentrations were generally found adjacent to the MOC pad.

6.10.1.4 2012 Phase I Sediment Removal

Bristol performed a Phase I sediment removal in 2012. Two sediment removal procedures were employed during the 2012 field season: removal by excavator, and removal via suction dredge and geotextile dewatering-tube combination. A total of 20.6 bcy of

contaminated sediment was removed at two locations (Areas 1 and 2, shown on Figure 23) near the MOC pad using the excavator. Sediment removal was completed in these two areas, and confirmation samples were collected. Sediment removal in Area 4 was accomplished using a suction dredge. Due to time and weather constraints, sediment removal could not be completed at Area 4 in 2012. Dredged sediment that was retained in the geotextile tubes and treated water from Area 4 remained within the lined containments over the winter of 2012/2013.

Confirmation soil samples were collected from removal areas 1 and 2. In Area 1, naphthalene and 2-Methylnaphthalene exceeded cleanup levels in both confirmation samples. Naphthalene, 2-methylnaphthalene, acenaphthene, fluorene, and phenanthrene exceeded cleanup criteria in both confirmation samples from Area 2. All of the sediment confirmation sample results exceeded the total calculated low molecular weight polynuclear aromatic hydrocarbons (Total LPAH) cleanup level of 7.8 mg/kg. However, the calculated values for total high molecular weight polynuclear aromatic hydrocarbons (Total HPAH) in each of the samples were below the cleanup level of 9.6 mg/kg.

Surface water samples were collected before, during, and after the 2012 Phase I sediment-removal operations to evaluate whether or not the removal operations were adversely affecting water quality further downgradient in the drainage basin. Samples were analyzed for BTEX, DRO, RRO, PAHs, PCBs, RCRA 8 Metals, nickel, vanadium, and zinc. The cleanup criterion for surface water is 10 micrograms per liter TAH, which is the sum of BTEX compounds, and 15 micrograms per liter TAqH, which is the sum of BTEX and PAH compounds (USACE, 2009). All surface water analytical results were below the TAH and TAqH criterion. All PCB results were non-detect and all GRO, DRO, and RRO results were non-detect or very low with no significant variation occurring between sampling events.

Bristol collected MI samples prior to construction of the work pad/impoundment area. Four primary samples and two replicate samples were analyzed for PAHs, DRO/RRO, PCBs, RCRA 8 metals, vanadium, nickel, vanadium, zinc, and TOC. All results were below cleanup levels.

Additional details from the 2012 sediment removal activities are presented in the *Site 28 Phase I Sediment Removal Report* (Bristol, 2013c).

6.10.2 Field Activities

6.10.2.1 Initial Activities

In 2013, Bristol continued sediment removal operations that were initiated in 2012. Before sediment removal operations began in 2013, the overwintered geotextile tube was removed from its containment and placed into a bulk bag for disposal. Two primary samples (13NC28TWA01 and 13NC28TWA02) plus one duplicate sample (13NC28TWA03) were collected at the beginning of the 2013 from the overwintered treated water containments for disposal/discharge purposes; the contained water received no further treatment prior to collection of these two samples. The samples were analyzed for BTEX, DRO/RRO, PAHs, PCBs, RCRA 8 metals, nickel, vanadium, and zinc. No sheen was observed on the contained water. Analytical results (presented in Appendix H, Table H24) were below the discharge criteria presented in the State of Alaska Wastewater General Permit 2009DB0004-0216 and 18 AAC 70. The samples were within discharge permit discharge criteria for TAH and TAQH, with minor detects on a few analytes. The water was discharged to the tundra north of the Site 28 work pad (Figure 23).

6.10.2.2 Site Preparation

In preparation for sediment removal activities, Bristol re-graded the 2012 work pad and staged the sediment-removal equipment at the site. New water containments were set up and the water treatment system was installed. The sediment trap that was installed

immediately north of Sediment Removal Area 4 during 2012 operations had been left in place over the winter. Prior to the first dredging activities in 2013, the filter media in the sediment trap was removed, placed in a bulk bag for disposal, and replaced.

Construction elements for the sediment removal operations included tundra mats (DuraDeck), a suction/vacuum dredge, pumps and hoses, a polymer injection system, geotextile sediment collection tubes with non-woven built-in liners, water containments/collection sumps, and a water filtration/treatment system.

The suction dredge was attached to pumps and hoses that directed the sediment through the polymer injection area and into the geotextile sediment collection tubes at the Site 28 work pad. Dredge hoses used for pumping material from the sediment removal areas to the work pad/water treatment area consisted of 100-foot sections of 3-inch reinforced polyethylene hose connected by aluminum cam lock hose fittings. Two intermediate sumps, Sumps 1 and 2, (Figure 23) moved the material slurry from the removal areas to the polymer injection area and the water processing area.

Approximately 80 feet prior to sediment capture in the geotextile tubes, SPINPRO™ 410 polymer was injected into the main line to facilitate sediment coagulation and settlement. The polymer injection system consisted of a SPINPRO HydroMizer polymer feed system with injection pump, and included a clean water supply consisting of three 300-gallon polyethylene water tanks linked together by a manifold. The HydroMizer specifications are included in Appendix K.

Bristol placed geotextile sediment collection tubes within an impermeable, lined containment capable of holding approximately 20,000 gallons of water. The sediment collection tubes contained two geotextile layers, one woven and one non-woven, which retained the sediments while allowing water to drain through the pore spaces of the

fabrics. Additional information on the dewatering tubes is provided in Appendix K. The wastewater was stored within the lined containment area.

The water filtration system was adjacent to the water containments and consisted of a series of two sock filters and a hydrocarbon-absorbent cellulose fiber. The water was treated through a 25-micron sock filter, a 5-micron sock filter, and finally through a container with the hydrocarbon-absorbent cellulose fibers before it accumulated in secondary water containment. Appendix K provides the general specifications of the sock filter housings. Three additional water containments were added to the water processing area as the number of geotextile dewatering tubes and volume of treated water increased.

After the first batch of water was processed through the water treatment system, Bristol added a granular activated carbon (GAC) system as the last treatment step and eliminated the hydrocarbon scrubber. The GAC units were added to the treatment system because analytical results for the first batch of treated water samples were above TAqH criteria. The general specifications for the GAC units are provided in Appendix K. Initial treatments through the GAC system generated clear water, and analytical results from the treated water were below discharge criteria. Based on those results, Bristol treated the next volume of containment water, collected a treated water sample, and discharged the GAC-treated water onto the ground without awaiting additional analytical results. ADEC and USACE agreed that pre-treated water containment samples no longer needed to be collected.

Water treated through the GAC units gradually became turbid. Bristol employed a back-flushing procedure to remove the fine sediment particles that had collected in the GAC units. The back-flushing consisted of forcing clean water in reverse flow through the system to agitate the carbon and clean out sediment that had accumulated on top of the carbon. Both GAC units were back-flushed into primary containments with

approximately 25,000 gallons of fresh water. After back-flushing, the GAC output became relatively clear again. The water from the back-flushing was re-treated and sampled, and the TAH and TAqH analytical results were below discharge criteria.

Figure 23 shows the locations of sediment control areas, intermediate sumps, polymer injection area, water treatment area and work pad, and treated water discharge area.

6.10.2.3 Sediment Removal

The sediment removal in 2013 encompassed all areas where sediment was identified during mapping operations in 2012 (Figure 23), except Areas 1 and 2, where sediment removal was completed in 2012. Prior to removal activities in each area, ECO-LAND surveyors marked the boundaries with lath to guide the sediment removal. Removal activities began near the MOC (Sediment Removal Areas 5, 6, 7, and 8) and progressed towards the Site 28 drainage confluence with the Suqitughneq River (Areas 3, 4, 9, 10, and 11). Removal activities were conducted in a manner that minimized stream head cutting and followed Environmental Best Practice Guidelines 3 of the *Waterways and Wetlands Works Manual* (Gallagher, 2003). The depth of sediment removal did not exceed 2 feet in any removal area. During active sediment removal, Bristol personnel observed conditions downstream of the sediment trap to monitor the potential migration of sediment off site. Monitoring activities included the collection of surface water samples during removal (described further in Section 6.10.2.4) and observing turbidity downstream of the sediment trap prior to during and after dredge activity.

Sediment removal began in Removal Area 6. Initially, the dredge was used to remove sediment in this area; however, vegetative material routinely clogged the in-line pumps. After discussion with the onsite USACE QAR, it was decided to remove the sediment/vegetative material by hand instead of using the dredge. Bristol personnel donned dry suits, entered the shallow ponds, and rolled/scooped up the

sediment/decaying plant material in large pieces. Conditions were similar in Removal Areas 5, so sediment was hand-removed in those areas as well. Removal area 7 was a mixture of vegetative mat and highly organic sediment. The vegetation mat material was placed at the edge of the pond onto a plastic liner as it was removed. The material from area 7 was then loaded into plastic bags which were transferred by hand into bulk bag containers. After removal was complete in Areas 5 and 6, an excavator was used to pick the rolled mats out of the shallow edges of the ponds and place the material in bulk bags for disposal.

The difference between the pre-removal sediment surveyed volume of 400 bcy and post-removal surveyed volume of 264.4 bcy was 135.6 bcy. Some areas deemed to be sediments prior to the removal effort were actively growing vegetation during the removal effort, so they were not considered sediment and were left in place.

During the manual sediment removal in Area 7, Bristol observed loose material (much like typical sediment) along with the clumps and strands of decaying plant material. To address this additional pond sediment, Bristol supplemented the manual sediment removal in Area 7 with dredging.

Removal Area 8 was a small pond that contained water during the 2012 sediment mapping and sampling. However, the pond was dry in 2013. Material from this area was removed by excavator. Excavated sediment was placed directly in a bulk bag for disposal.

Sediment removal in the lower removal areas (Areas 3, 4, 9, 10, and 11) was performed using the suction dredge. Removal Area 4 was re-dredged to capture sediment that migrated from upstream areas after the 2012 dredging. Removal Areas 9, 10, and 11 were downstream of the sediment trap installed in 2012. Temporary sediment controls were placed downstream prior to dredging these three areas. Sediment controls consisted of a

log of jute matting, with smaller pieces of jute matting placed to fill in the gaps. Figure 23 shows the temporary sediment control locations.

Bristol removed a total of 264.4 bcy of sediment from Site 28 in 2012 and 2013. During the 2012 field season, 20.6 bcy of sediment was removed. During the 2013 field season, 119.4 bcy of sediment was removed under the 2012 contract (W911KB-12-C-0003) and 145 bcy was removed under the 2013 contract (W941KB-13-C-0004). During the 2012 sediment mapping effort, ECO-LAND performed a pre-removal survey of the sediment areas. In 2013, the survey team accompanied the dredge team to generate a post-removal survey of the sediment removal areas. The pre- and post-surveys were compared and the difference was calculated in AutoCAD; the total volume was determined using this information.

6.10.2.4 Surface Water Sampling

Bristol collected surface water samples at three locations (28-SW-01, 28-SW-02 and 28-SW-03) before, during, and after the sediment removal process. The three sample locations were in the active stream channel downstream of the sediment removal operations and are shown on Figure 23. The surface water samples were collected with a clean, unpreserved jar and transferred into appropriate containers. TestAmerica analyzed nine primary samples and one duplicate surface water sample for BTEX, DRO/RRO, PAHs, PCBs, RCRA 8 metals, nickel, vanadium, and zinc. Surface water samples were also analyzed for field turbidity using a Hach 2100B field turbidimeter.

Surface water samples were collected immediately downgradient of sediment mitigation measures, at locations 28-SW-01, 28-SW-01B, and 28-SW-03 (shown on Figure 23), to monitor whether contaminant migration was occurring during active sediment-removal operations. Surface water samples were collected at a rate of one sample per two hours (or portion thereof); samples were collected in the first 60 to 90 minutes of dredging or if visual evidence suggested a change in water quality. A total of 21 primary and 3 duplicate

surface water samples were collected downstream of the sediment mitigation measures during active sediment removal. Surface water samples were submitted to TestAmerica for analysis of BTEX, DRO/RRO, PAHs, PCBs, and RCRA 8 metals plus nickel, vanadium, and zinc. Field turbidity measurements were collected using a Hach 2100B field turbidimeter.

6.10.2.5 Wastewater Sampling

Wastewater samples (pre-treated) and treated water samples were collected from the containment areas and analyzed at TestAmerica for BTEX, DRO/RRO, PAHs, PCBs, RCRA 8 metals, nickel, vanadium, and zinc. The ADEC allowed for a sampling frequency of one sample per containment prior to discharge regardless of the volume of the containment. Turbidity was also measured. Two primary samples were collected from the pre-treated water containments, and 21 primary and 3 duplicate treated water samples were collected in 2013. As described in Section 6.10.2.2, pre-treated water containment samples were not collected after the GAC units were added to the treatment system.

6.10.2.6 Soil Sampling

Bristol collected sediment confirmation samples from all sediment removal areas after removal was completed. The sediment confirmation samples were collected by using either a hand auger or a gloved hand and submitted to TestAmerica for analysis of BTEX, DRO/RRO, PAHs, PCBs, RCRA 8 metals, nickel, vanadium, and zinc, and for silica gel cleanup and TOC, as described in ADEC Technical Memorandum 06-001. Confirmation samples were collected at a rate of one sample for every 30 feet of active stream channel and one sample for every 400 square feet of sediment in pond areas where sediment was removed. A minimum of one sample was collected from each ponded removal area that contained sediment. A total of 41 primary and 5 duplicate sediment confirmation samples were collected. Figure 23 shows the locations of the sediment confirmation samples.

MI soil samples were collected from underneath the intermediate sumps following their deconstruction/removal at the end of the field season. One MI soil sample was collected from the lower sump (Sump 1) and MI soil samples were collected in triplicate from the footprint of Sump 2. The samples were analyzed for PCBs, DRO/RRO, BTEX, metals, and PAHs. Figure 23 shows the location of the MI samples collected from the sump areas.

At the end of the season, one primary grab soil sample, plus a duplicate sample, was collected in the water dispersal area north of the Site 28 work pad. The sample was analyzed for PCBs, DRO/RRO, BTEX, metals, and PAHs. Figure 23 shows the location of the sample collected from the treated water discharge area.

The geotextile tubes were left in place in containment on the pad at Site 28. No additional treatment is necessary for the sediment inside the tubes. The tubes were overwintered to allow for additional water drainage. Samples for waste characterization and geotechnical evaluation were collected in 2014 and are discussed in the Site 28 Technical Memorandum located in Appendix L.

6.10.3 Results

Analytical results for the samples collected in Site 28 were compared to several types of cleanup levels and evaluation criteria:

- Surface water samples were evaluated against criteria specified in the *NE Cape Decision Documen*t (USACE, 2009) and from the *State of Alaska Water Quality Standards*, 18 AAC 70 as defined in Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances (ADEC 2008).
- Containment water samples were evaluated using the discharge criteria determined in the State of Alaska Wastewater General Permit No. 2009DB0004 under discharge authorization No. 2009DB0004-0216.
- Sediment samples were compared to cleanup levels specified in the *NE Cape Decision Document* (USACE, 2009). If an analyte did not have a cleanup level specified in the decision document, it was compared to levels specified in NOAA SQuiRT Tables, Probable Effect Level (PEL), Freshwater Sediment, 2009.

The 2013 Site 28 analytical results are presented in Appendix H, Tables H24 through H29. The laboratory Level IV data reports are provided electronically along with the electronic data deliverables. Figure 23 shows sample locations that exceed cleanup levels for any analyte. Analytical results are discussed in more detail in subsequent sections.

6.10.3.1 Surface Water Samples Before, During, and After Sediment Removal Activities

Nine primary samples and one duplicate surface water sample were collected at three locations (28-SW-01, 28-SW-02 and 28-SW-03) before, during, and after Site 28 sediment removal activities. None of the surface water samples exceeded the surface water evaluation criteria, and no sheen was observed. All three sample locations contained the highest concentrations of DRO during the post-removal sampling event. Post-removal sample 13NC28PSW02, at sample location 28-SW-02, had the highest concentration of DRO, at 0.62 mg/L. Analytical results are presented in Appendix H, Table H25.

6.10.3.2 Surface Water Samples Downstream of Sediment Controls

A total of 21 primary and 3 duplicate surface water samples were collected downstream of the sediment mitigation measures during active sediment removal. None of the samples collected exceeded surface water evaluation criteria, and no sheen was observed. Of the samples collected at location 28-SW-01 (13NC28STW01 through 13NC28STW020 and 13NC28DSW01) the maximum DRO concentration was 1.5 mg/L in sample 13NC28STW19. Sample 13NC28STW21, collected at location 28-SW-01B, had the highest DRO concentration of all the surface water samples collected downstream of the sediment mitigation measures with a concentration of 5.6 mg/L. Sample 13NC28STW023, collected at location 28-SW-03, was the farthest downstream sample and contained an estimated DRO concentration of 0.042 mg/L. Full analytical results for the surface water samples collected downgradient of the sediment control measures are presented in Appendix H, Table H26.

6.10.3.3 Pre-Treated and Treated Water Samples

Two water samples were collected of the pre-treated water within the primary containment, 13NC28WA01 and 13NC28WA02. Both samples exceeded the TAH discharge limit of 10 µg/L and the TAqH discharge limit of 15 µg/L, with sample 13NC28WA01 having a TAH result of 32.3 µg/L and a TAqH result of 64.3 µg/L and sample 13NC27WA02 having a TAH result of 33.7 µg/L and a TAqH result of 38.8 µg/L. The pre-treated water was processed through the on-site water treatment system after sample collection and receipt of sample results of the pre-treated water and met discharge criteria after water treatment. Full analytical results for pre-treated water samples from primary containments are presented in Appendix H, Table H27.

Twenty-one primary and three duplicate treated water samples were collected from the secondary containments (samples 13NC28TWA01 through 13NC28TWA24). Analytical results for treated water containment samples are shown in Appendix H, Table H24, and were compared to discharge criteria determined in the State of Alaska Wastewater General Permit No. 2009DB0004 under discharge authorization No. 2009DB0004-0216.

Analytical results for the first batch of treated water in 2013 (13NC28TWA04 and duplicate sample 13NC28TWA05) were below the TAH criteria of 10 µg/L; however, the TAqH results exceeded the criteria of 15 µg/L, as specified in the discharge permit. Sample 13NC28TWA06 was collected from the second batch of treated water, before Bristol received analytical results for samples 13NC28TWA04 and 13NC28TWA05. The TAH and TAqH results for sample 13NC28TWA06 were below discharge criteria. As described in Section 6.10.2.2, Bristol added GAC units to the treatment system after receiving analytical results showing the first batch of treated water exceeded TAqH criteria. Water from the first and second batches were subsequently re-treated and re-sampled.

Treated water sample 13NC28TWA07 was the first water sample collected after the addition of the GAC units to the water treatment system. TAH and TAqH concentrations in sample 13NC28TWA07 were 2.7 µg/L and 3.0 µg/L, respectively, which is below the discharge criteria of 10 µg/L TAH and 15 µg/L TAqH. Treated water samples 13NC28TWA08 through 13NC28TWA24 had analytical results below the TAH and TAqH discharge criteria.

6.10.3.4 Sediment Confirmation Samples

Forty-one primary and five duplicate sediment confirmation samples were collected after sediment removal activities in 2013; although the material collected for post-removal confirmation sampling within Site 28 is not what is traditionally and/or technically considered to be soil or sediment, the material being confirmation sampled is being called sediment as a point of reference.

Contaminants that exceeded cleanup levels include acenaphthene fluorene, fluoranthene, napthalene, phenanthrene, 2-methylnaphthalene, total low molecular weight PAHs (LPAHs), DRO and RRO. Site 28 sediment confirmation samples are shown on Figure 23 and results are presented in Appendix H, Table H28.

Twenty-two confirmation samples exceeded cleanup levels for acenaphthene. Concentrations of acenaphthene exceeding the cleanup level ranged from 0.52 mg/kg to 5.2 mg/kg, with the highest concentration found in sample 13NC28SS013.

Twenty-one confirmation samples exceeded cleanup levels for naphthalene. Concentrations of naphthalene in excess of cleanup levels ranged from 2 mg/kg to 40 mg/kg (estimated concentration), with the highest concentration found in sample 13NC28SS023.

Twenty confirmation samples exceeded cleanup levels for fluorene. Concentrations of fluorene in excess of the cleanup level ranged from 0.87 mg/kg to 11 mg/kg, with the highest concentration found in sample 13NC28SS013.

Sixteen confirmation samples exceeded cleanup levels for LPAHs. Concentrations of LPAHs in excess of the cleanup level ranged from 8.1 mg/kg to 48.7 mg/kg, with the highest concentration found in sample 13NC28SS036.

Thirty-one confirmation samples exceeded cleanup levels for 2-methylnaphthalene. Concentrations of 2-methylnaphthalene in excess of the cleanup level ranged from 1.9 mg/kg to 86 mg/kg, with the highest concentration found in sample 13NC28SS023.

Two confirmation samples exceeded cleanup levels for phenanthrene. Samples 13NC28SS002 and 13NC28SS036 contained concentrations of phenanthrene at 5 mg/kg and 6.3 mg/kg, respectively.

Thirty-one samples contained DRO in concentrations that exceeded the site-specific cleanup level of 3,500 mg/kg, with the highest concentration found in sample 13NC28SS013. Concentrations of DRO in all samples ranged from 42 mg/kg to 85,000 mg/kg. DRO was analyzed by silica gel extraction, which reduced DRO concentrations to levels below the site-specific cleanup level in samples 13NC28SS008 and 13NC28SS024. The DRO concentration in sample 13NC28SS008 reduced from 4,200 mg/kg to an estimated concentration of 3,300 mg/kg following silica gel extraction. In sample 13NC28SS024, silica gel extraction reduced the DRO concentration from 3,600 mg/kg to 2,900 mg/kg. Changes ranged from a 67% percent decrease of DRO in sample 13NC28SS001 to no decrease as observed in samples 13NC28SS029, 13NC28SS032, 13NC28SS033 and 13NC28SS034. Concentrations of DRO were reduced by an average of 20% for all samples.

Twenty-eight samples exceeded the site-specific cleanup level 3,500 mg/kg for RRO, with the highest concentration found in sample 13NC28SS023. Concentrations of RRO in the confirmation samples ranged from 500 mg/kg to 26,000 mg/kg. Following silica gel extraction, RRO concentrations in seven confirmation samples that exceeded the cleanup level were reduced to levels below the cleanup level. Changes ranged from a 72% decrease in RRO concentrations in sample 13NC28SS028 to 22% in sample 13NC28SS036. Concentrations of RRO were reduced by an average of fifty-three percent in all samples following silica gel extraction.

The evaluation criteria applied to analytes not named as COCs in the 2009 decision document is from the NOAA SQuiRT Tables. Acenaphthylene, anthracene and pyrene exceeded NOAA SQuiRT table criteria.

Acenaphthylene exceeded the evaluation criteria from the NOAA SQuiRT Tables in 27 samples. Acenaphthylene concentrations exceeding the evaluation criteria ranged from 0.17 mg/kg to 2.9 mg/kg, with the highest concentration in sample 13NC28SS036.

Anthracene exceeded the evaluation criteria in six confirmation samples. Concentrations ranged from 0.25 mg/kg to 4.4 mg/kg, with the highest concentration in sample 13NC28SS006.

Pyrene exceeded the evaluation criteria in four confirmation samples. Concentrations of pyrene above the evaluation criteria ranged from 0.89 mg/kg to 1.5 mg/kg, with the highest concentration in sample 13NC28SS028.

6.10.3.5 Soil Samples After Infrastructure Removal

Bristol collected MI samples from deconstructed intermediate sump locations at the end of the field season. One MI soil sample (13NC28MI01) was collected from the lower sump (Sump 1) and MI soil samples were collected in triplicate (13NC28MI02 thru

13NC28MI04) from the footprint of the upper sump (Sump 2). One of the three field replicate MI samples (13NC28MI03) exceeded the soil cleanup level of 11 mg/kg for arsenic, with a concentration of 12 mg/kg. Chromium was detected above the migration to groundwater evaluation criteria (specified in 18AAC75.341) of 25 mg/kg in samples collected from both sump areas. Chromium concentrations ranged from 29 mg/kg to 38 mg/kg. Chromium concentrations do not exceed the ambient level for the site of 48 mg/kg (USACE, 2009) and have been described in the *NE Cape Decision Document* (USACE, 2009) as existing in the trivalent state, thus not posing a risk to potential future residents. The results are presented in Appendix H, Table H29.

One primary grab soil sample (13NC28WDA01) and its duplicate (13NC28WDA02) were collected in the water dispersal area north of the Site 28 work pad at the end of the field season. None of the contaminant concentrations in either sample exceeded cleanup levels. Analytical results are presented in Appendix H, Table H29.

6.10.4 Overwintering and Cleanup

All pumps, hoses, and polymer injection equipment were removed from Site 28 at the end of the 2013 season.

Bristol removed residual sediment in Sumps 1 and 2 by pumping the sediment to the sediment dewatering tubes in the work pad area and excavating the un-pumpable sediment. After residual sediment was removed from the sumps, an excavator was used to remove the geotextile fabric that lined each sump, and re-grade the areas. The liner and excavator-removed sediment was placed in a bulk bag for disposal.

Eleven geotextile tubes were left at the Site 28 Pad through the winter of 2013/2014. The tubes will remain over the 2013-2014 winter so that additional water can seep out. In an effort to minimize the amount of water shipped off island, a complete freeze/thaw cycle was desired in order to force additional water out of the sediment trapped in the

geotextile dewatering tubes. Bristol will return to the site in the spring of 2014 and collect geophysical and waste samples from the geotextile tubes. Drum-sized GACs will be used to treat water that has seeped from the tubes. GAC treated water will be contained and sampled and will not be discharged until it meets discharge criteria, TAH concentrations, TAqH concentrations, and no sheen is visible. Once the tubes and containments are removed, Bristol will collect an MI soil sample from the work pad area.

Bristol and USACE met on September 19, 2013 to discuss the overwintering of Site 28 geotextile dewatering tubes. The project team decided that Bristol will prepare a Site 28 addendum to the final *2013 NE Cape HTRW Remedial Action Report* (this document). The addendum is located in Appendix L and discusses the tasks associated with the overwintering of the dewatering tubes at Site 28.

6.11 MI SAMPLING OF BAG STAGING AREAS

6.11.1 Description and History

Bristol frequently used a number of locations across the former installation as staging areas for loaded bulk bags. Following discussions with the ADEC, it was decided that the staging areas should be sampled to ensure that bulk-bagged contaminants are not cross-contaminating staging areas (Figures 24 and 25). In 2012 Bristol sampled 12 DUs across four bulk bag staging areas, including six DUs at Cargo Beach, four at Site 6, one at the MOC, and one at Site 26. The DUs described were sampled to provide a baseline for contaminant concentrations. Of the initial 12 DUs, the four units at Site 6 and the units at the MOC and Site 26 were re-sampled in 2013 after bulk bags were transferred from the staging areas and shipped off-island. Two additional units, one directly adjacent to the north side of the fuel containment area and one underneath the fuel containment, were created and sampled in 2013.

6.11.2 Field Activities

The four corners of each Rectangular DU were re-located and the DUs were re-constructed in the field using fiberglass measuring tapes and assistance from the on-site surveyors. Each DU was subdivided into equally sized cells from which sample increments were collected. A dice roll or random number generator determined the location within each cell where the MI sample was collected. For non-volatile samples, Bristol collected MI samples within each DU as described in *MULTI INCREMENT Sampling Standard Operating Procedures BERS-14* (Appendix G).

Volatile sample collection entailed a different procedure. Individual aliquots of 2 grams of soil were collected and weighed from each cell and placed into a measured amount of methanol in order to achieve a 1:1 ratio of soil to methanol. After all aliquots were collected and placed into methanol, a volume of no more than 30 mL of the methanol was transferred, by syringe, from the jar with the soil and methanol to a 40 mL VOA vial. The drawn off methanol was then shipped to TestAmerica for GRO and BTEX analysis.

A conditional approval with sampling technique description for MI volatile sampling can be found in Appendix C. The locations of the DUs are shown on Figures 24 and 25.

Cargo Beach was MI sampled in 2012 and is scoped to be sampled after all bags for the project have been moved off island. This post-activity MI soil sampling will occur in 2014.

6.11.3 Site 6 MI Sampling Results

Four DUs were sampled at Site 6 (Figure 24). The four DUs covered an area of approximately 28,700 square feet. The two smaller units covered an area of approximately 6,480 square feet each, with dimensions 108 feet long by 60 feet wide. The larger DUs covered an area of approximately 7,920 square feet, with dimensions 132 feet long by 60 feet wide. The smaller DUs were divided into 45 cells. The larger DUs were divided into 55 cells that measured 12 feet wide by 12 feet long, from which MI samples were

collected. The samples were packaged, labeled, and shipped to TestAmerica for DRO/RRO and PCB analysis. Sample results for Site 6 DUs are presented in Table H30. One sample was analyzed per DU, for a total of four samples (13NCBGSS07, 13NCBGSS08, 13NCBGSS09, and 13NCBGSS10), none of which exceeded cleanup levels for DRO, RRO or PCBs.

6.11.4 MOC Bag Staging Areas MI Sampling Results

The bulk bag staging area located directly adjacent to the north side of the fuel containment (Figure 25) has been utilized as a bag staging area since 2011, but has not yet been MI sampled, as it remained an active staging area throughout the years. This staging area was sampled twice in 2013. Sample 13NCBGSS01 was collected on July 18, 2013, when bulk bags were cleared from the staging area, and sample 13NCBGSS03 was collected from the same DU after staging operations were completed for the season on September 9, 2013. The DU was divided into 36 cells, each measuring 20 feet wide by 20 feet long, and covered an area of approximately 14,400 square feet, with each side measuring 120 feet in length. Samples were analyzed at TestAmerica for DRO/RRO and PCBs. The results for sample 13NCBGSS01 and 13NCBGSS03 are presented in Appendix H, Table H30. Cleanup levels were not exceeded in either of the samples.

The DU containing sample 13NCBGSS02 was divided into 49 cells, each measuring 8 feet wide by 8 feet long. The DU covers an area of approximately 3,025 square feet, with each side measuring 55 feet in length. The results for MI soil sample 13NCBGSS02 are presented in Appendix H, Table H30. TestAmerica analyzed sample 13NCBGSS02 for DRO/RRO and PCBs. Cleanup levels were not exceeded in this sample.

The DU containing sample 13NCBGSS04 was collected from Site 26, the former construction camp. This DU was divided into 36 cells, measuring10 feet wide by 10 feet long, and covered an area of approximately 3,600 square feet, with each side measuring

60 feet in length. This DU was sampled in triplicate and is represented by MI soil samples 13NCBGSS04, 13NCBGSS05, and 13NCBGSS06. The samples were analyzed by TestAmerica for DRO/RRO and PCBs, and the results are presented in Appendix H, Table H30. Cleanup levels were not exceeded in any of the samples.

6.11.5 Fuel Containment Area MI Sampling Results

The DU for the fuel containment area was divided into 30 cells, each measuring 10 feet by 10 feet, and covered an area of approximately 3,000 square feet. Two sides of the DU measured 50 feet in length, and the other two sides measured 60 feet in length. This DU was sampled in triplicate and is represented by MI soil samples 13NCISOMI01, 13NCISOMI02 and 13NCISOMI03. TestAmerica analyzed samples for DRO/RRO, GRO, and BTEX and the results are presented in Appendix H, Table H31. Cleanup levels were not exceeded in any of the sample replicates.

6.12 ITEMS REMAINING FOR COMPLETION

6.12.1 Site 28

The geotextile sediment collection tubes remain onsite and will require containerization, transportation, and disposal in 2014. Waste characterization samples will need to be collected from the captured sediment for proper waste profiling. Waste characterization samples will be submitted to TestAmerica for analysis of BTEX, DRO/RRO, PAHs, PCBs, RCRA 8 metals, nickel, vanadium, and zinc. The analyses will also include silica gel cleanup and TOC analysis. Bristol is also tasked with the collection of geotechnical samples from the dewatered sediment to determine moisture content and density.

Two dewatered sediment samples representative of average soil type and water content will be collected and submitted to a geotechnical laboratory to determine moisture content and density. A 2-inch brass sleeve will be pushed into the sediment collection tube to collect the samples required for the geotechnical analyses for the following ASTM

International (ASTM) methods: ASTM D2216-10, ASTM D7263-09 and ASTM D422-63 (2007). One sample will be subjected to sieve-test analysis.

After the sediment is containerized and the dewatering containments are removed, one post-construction MI sample will be collected from the Site 28 work pad and analyzed for 11 metals, PCBs, BTEX, PAHs, DRO/RRO, and DRO/RRO with silica gel extraction.

6.13 DEVIATIONS FROM THE PLANNING DOCUMENTS

Differing site conditions and unforeseen circumstances necessitated some work to deviate from the planning documents:

- Sediment was hand removed in Sediment Removal Areas 5, 6, and 7. The plans called for removal via suction dredge, but the nature of the sediment was not favorable for dredging and was more easily removed by hand. Areas 5 and 6 were picked up by an excavator after hand removal. Area 7, the area with a high organic content, was placed in small bags and carried by utility task vehicle to a bulk bag in a nearby bag frame.
- Sediment Removal Area 8, which had historically been submerged with water, was dry during the 2013 field season. Due to the area's proximity to the Site 28 work pad, an excavator was used for sediment removal. The sediment was loaded directly into a bulk bag.
- The treatment system was originally planned to consist of sock filters for particulates and absorbent cellulose fibers for hydrocarbons. Sample results collected from the treated water indicated that the discharge criteria, specifically TAH and TAqH criteria would not be met. As a result, Bristol incorporated GAC vessels into the treatment system. The efficacy of the treatment system was such that ADEC approved no longer collecting pre-treatment samples and also approved a limited number of discharges prior to receiving lab results.
- Water samples were initially being collected from untreated water in the primary containments and again from the treated water in secondary containments. When Bristol incorporated the GAC units into the treatment system, the ADEC approved discontinuing the collection of untreated water samples in an August 29, 2013 conference call. Only treated water samples were collected thereafter. Treated water samples were collected on a per containment volume regardless of how full the containment was. Each full or partially full batch of water was sampled prior to discharge.

- Some of Bristol's equipment was overwintered at the NE Cape site.

7.0 CHEMICAL DATA COLLECTION, ANALYSIS, AND REVIEW

7.1 PRIMARY LABORATORIES

TestAmerica-Tacoma was Bristol's primary analytical laboratory for the project and analyzed the majority of the project samples. Terri Torres, the Client Service Manager, acted as the program Laboratory QA Officer for the project. Due to capacity issues at TestAmerica-Tacoma, some analyses were subcontracted to TestAmerica-Denver, which is also DoD ELAP- and ADEC CS-certified for sample analyses.

Ethylene glycol samples were submitted to TestAmerica-Denver for analysis. Ethylene glycol was not listed as a COC prior to the discovery of waste barrels at Site 10.

7.2 CHEMICAL DATA QUALITY REVIEW

The project laboratory data was reviewed by Bristol chemists and the findings are presented in the Chemical Data Quality Review (CDQR) report (Appendix M). Analytical results tables, presented in Appendix H, are flagged in accordance with the CDQR and QAPP.

The sample summary sheet and ADEC laboratory checklists are included as Attachments 1 and 2 of the CDQR. The ADEC Certificates of Approval for Contaminated Sites Analysis and DoD-ELAP certifications are contained in Appendix N.

Data qualifiers (flags) were incorporated into the sample results tables:

- J – Positive result is less than the LOQ and is considered an estimate.
- ND (LOD) – Analyte result is less than the detection limit (DL). The non-detect result (ND) has the limit of detection (LOD) in parentheses.
- ND (LOQ) B – Analyte result is less than the limit of quantitation (LOQ). The analyte was also detected in a blank at a comparable concentration (resulting in the B flag). The affected sample result changed to ND from initial reported positive value that was near the reported value in the blank.

- R – Analyte result is rejected and result is not usable. Note that "R" replaces the chemical result (no result shall be reported with an "R" flag).
- B – Analyte result is considered an estimated value with potential high bias due to contamination present in the method blank, instrument blank, or trip blank. Results less than 10 times the reported blank concentration will be B flagged to indicate bias.
- MH, ML, MN – Analyte result is considered an estimated value biased high (H), low (L), or uncertain (N) due to matrix (M) effects.
- QH, QL, QN – Analyte result is considered an estimated value biased high, low, or uncertain due to a laboratory quality control failure (Q) such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits. Field duplicates that do not meet relative percent difference (RPD) limits but meet other acceptance criteria are also flagged QN.

When both a Q and M qualifier apply to a single result, the reviewer used the qualifier that most impacted the data.

The CDQR evaluates the analytical data generated from the NE Cape 2013 project, conducted July through September 2013. Analytical data was assessed to determine whether the program objectives and data quality goals were met. The assessment reviewed sample receipt conditions, extraction and analytical procedures, sampling procedures, and correspondence to method criteria and project data quality objectives.

Samples arrived at TestAmerica labs within acceptable temperatures and appropriate Chain of Custody correspondence for every submitted sample set; other discrepancies were noted. A limited number of sample coolers arrived slightly below or above 4 ± 2°C; however, no samples broke due to freezing in coolers where the temperature fell below criteria. In many cases the cooler temperatures were above criteria for either the temperature blank or the cooler itself, but usually within temperature criteria for one of the two measurements. One glycol sample cooler was temporarily lost by Fed Ex and delivered two days later at a temperature of 20.8°C. The USACE was notified immediately and a variance was granted (Appendix M, Attachment 3) for the analysis to proceed as

glycol is relatively non-volatile. There were instances where the information on the container labels did not match the CoC. For these instances, the laboratory used information from the CoC and provided documentation of the discrepancies in the laboratory report case narratives. Amber bottles arrived broken for two samples; however, the laboratory was able to proceed with analysis using the remaining bottles.

Samples that were extracted or analyzed after holding times had expired were H qualified (estimated values biased low). Most hold times were met with noted exceptions:

- DRO, RRO, and BTEX analyses for all MI samples collected from the fuel containment area, and DRO and RRO analyses for all MI samples (except 13NCBGSS01) collected from the bag staging areas
- The DRO and RRO analyses for downstream water samples collected during Site 28 removal operations, and BTEX analysis for downstream water samples collected from Site 28, post-removal
- DRO and RRO analyses for downstream water monitoring samples 13NC28STW03 through 13NC28STW07 and 13NC28DSSW01; PAHs for water sample 13NC28STW15
- RRO analysis for Site 28 MI sample 13NC28MI01, collected from the lower sump at the discharge area

Extraction and analytical procedures were acceptable based on method blanks, laboratory control sample/laboratory control sample duplicates (LCS/LCSDs), matrix spike/matrix spike duplicates (MS/MSDs), and surrogates, with noted exceptions.

- Detected results were qualified as estimated with a high bias (QH) due to high surrogate recoveries:
  - PCB-1254 and PCB-1260 (shared peaks) in sample 13NC10SS018
  - 1-methylnaphthalene and 2-methylnaphthalene in samples 13NC28STW17 and 13NC28STW19
  - RRO in sample 13NCMOCSP001

- Detected results were qualified as estimated with a high bias (QH) due to high LCS and/or LCSD recoveries:
  - Acenapthylene in samples 13NC28STW22, 13NC28STW22, 13NC28MI002
  - Acenaphthylene and anthracene for samples 13NC28SS025 through 13NC28SS046
- Results were qualified as estimated with a low bias (QL or ML) due to low surrogate recoveries:
  - GRO in samples 13NCPBSS08, -09 and -09 MS/MSD (parent sample flagged), and 13NCRWSS08
  - PCB-1260 in sample 13NC10DS03 MS/MSD (parent sample flagged)
  - All PCB results for 13NC28MI01
  - PAH results for 13NCMOCSW08
- Results were qualified as estimated with a low bias (QL) due to low LCS recoveries:
  - PCB-1260 in sample 13NC113SS059
  - Anthracene in samples 13NC10WS001 through 13NC10WS004
- Results were qualified as estimated with an unknown bias (QN) due to LCS/LCSD RPD, or laboratory duplicate RPD outside of criteria:
  - RPD between the two differing columns exceeded 40% for propylene glycol in in sample 13NC10SS23.
  - RPDs for the LCS/LCSD exceeded 30 % RPD control limits for naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene and acenaphthylene. Positive results for samples 13NC28PRWA01 through 13NC28PRWA04 were flagged
- Results were B qualified to indicate that sample concentrations that were less than 10 times the reported blank concentration were B flagged:
  - Acetone in sample 13NC10SS018
  - Methylene chloride results for 19 soil samples
  - Toluene results for three water samples
  - Styrene results for two soil samples
  - GRO in samples 13NC10WS001 through 13NC10WS004, 13NCMOCGW06 and 13NCMOCGW07, 13NC10SS011 through 13NC10SS16, 13NC10WS05,

13NC10SS017, 13NC10SS018, 13NC10SS021, 13NC10SS022, 13NCPBSS07, 13NCRWSS01 and 13NCRWSS04

- Naphthalene in sample 13NC10WS05
- Fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, and benzo[a]pyrene in samples 13NC28SS001 through 13NC28SS013
- Benzo[k]fluoranthene and dibenz[a,h]anthracene in samples 13NC28SS014 through 13NC28SS024
- Anthracene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, ebnzo(a)pyrene, benzo(g,h,i)perylene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene, and pyrene in samples 13NC28TWA13 through 13NC28STWA16 and samples 13NC28STW16 through 13NC28STW20
- Benzo[k]fluoranthene and dibenz[a,h]anthracene in sample 13NC28TWA020. Pyrene in samples 13NCMOCSW08 through 13NCMOCSW10
- DRO and RRO in samples 13NCMOCSS001 through 13NCMOCSS013 and
- 13NC10SS08 through 13NC10SS010
- DRO in sample 13NC28PRWA03, 13NC28PRWA04, 13NCRWSS01, 13NCRWSS03, 13NCRWSS04, 13NCRWSS05, 13NCRWSS07, 13NCRWSS08, 13NCRWSS10 and 13NC10SS040
- RRO in sample 13NCMOCSWA005, 13NCPBSS02 and 13NCPBSS04.
- Lead in samples 13NCMOCGW01, 13NCMOCGW04, 13NCMOCGW06 and 13NCMOCGW07
- Mercury in samples 13NC28TWA01 through 13NCTWA03; 13NC10WS01 through 13NC10WS03 and 13NC10WS05; 13NC28PRWA01 through 13NC28PRWA04; 13NC28TWA020 through 13NC28TWA24; and 13NC28PSW01 through 13NC28PSW03
- Ethylbenzene in samples 13NC28SS15, 13NC28SS22, and 13NC28SS24; xylenes in sample 13NC28SS22

Samples were qualified due to either high (MH) or low (ML) MS/MSD recoveries to indicate potential bias due to a matrix effect. Qualification was limited to the spiked samples since associated LCS/LCSD results were in control. An MN qualifier was used to

indicate a matrix effect with an unknown bias when both a high and low MS/MSD recovery were observed or for a high MS/MSD RPD, unassociated with bias.

MH qualified samples include:

- Mercury in sample 13NC28SS001

ML qualified samples include:

- DRO and RRO in sample 13NCMOCWA002

QH qualified samples include:

- benzo[b]fluoranthene in sample 13NC10SS017
- 1- and 2-methylnaphthalene in samples 13NC28STW17 and 13NC28STW19
- acenaphthylene in sample 13NC28STW22
- DRO and RRO in samples 13NCMOC066 and 13NC28SS041
- DRO in samples 13NCMOCSS10 and 13NCMOCSS144
- RRO (silica gel treated) in sample 13NC28SS019
- barium, cadmium, chromium, nickel and vanadium in sample 13NC10SS017
- barium, chromium and vanadium in sample 13NC28SS001
- Barium, chromium and zinc in sample 13NCRWSS08
- chromium and zinc in sample 13NC28SS019
- chromium, vanadium and zinc in sample 13NC28SS029
- chromium and vanadium in sample 13NC28SS041
- vanadium in sample 13NC28MI01
- mercury in sample 13NC28SS001

QL qualified samples include:

- chlorobenzene in sample 13NC10DS01
- PCB-1260 in sample 13NC13SS059
- all PCBs in samples 13NC28WA01, 13NC10DS03 and 13NC28MI01
- 1- and 2-methylnaphthalene in sample 13NC28SS019
- all PAHs in sample 13NCMOCSW08, acenaphthene in sample 13NC28SS029

- DRO in samples 13NCPBSS09, 13NC28WA02 and 13NC28MI01
- RRO in samples 13NCMOCSS144 and 13NC28STW21
- DRO (untreated and silica gel treated) in sample 13NC28SS019
- DRO and RRO (both silica gel treated) in sample 13NC28SS041
- mercury in samples 13NC28TWA07and Hach001

QN qualified samples include:

- PCB-1260 in sample 13NC10SS017
- 1- and 2-methylnaphthalene, acenaphthylene, benzo[a]pyrene, indeno[1,2,3-cd]pyrene, dibenz[a,h]anthracene, and benzo[g,h,i]perylene in sample 13NC28MI01
- RRO in sample 13NCPBSS09

Field duplicate results met QAPP criteria with the exception of samples listed in Table 7-1, which are flagged QN. Imprecision was observed in sample results, RPDs, and field duplicate samples for analytes listed in Table 7-1.

Table 7-1 Field Duplicates Not Meeting Precision Criteria

Parent Sample ID/Laboratory Sample ID	Field Duplicate Sample ID/ Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field Duplicate Result	RPD (%)
13NCMOCWA001	13NCMOCWA004	Fluorene	mg/L	0.000041	0.000027	**41.2**
13NC10SS021	13NC10SS022	1-methylnaphthalene	mg/kg	0.024	0.012	**67**
		2-methylnaphthalene		0.044	0.0075	**52**
		Benzo[a]pyrene		0.057	0.021	**92**
		naphthalene		0.023	0.0057	**120**
13NC28TWA02	13NC28TWA03	Naphthalene	µg/L	0.02	0.042	**71**
13NC28TWA04	13NC28TWA05	Anthracene	µg/L	0.082	0.045	**59**
13NCMOCGW06 (Lab WO# 580-39444-6)	13NCMOCGW07 (Lab WO# 580-39444-7)	Zinc-total	mg/L	0.045	0.16	**112**
		1-methylnaphthalene	µg/L	0.42	0.6	**35.3**
		Acenaphthene	µg/L	0.63	0.22	**96.5**
		Fluorene	µg/L	1.3	0.45	**97.1**

Table 7-1 Field Duplicates Not Meeting Precision Criteria (continued)

Parent Sample ID/Laboratory Sample ID	Field Duplicate Sample ID/Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field Duplicate Result	RPD (%)
13NC28SS002	13NC28SS003	Acenaphthene	mg/kg	1.6	0.92	**54**
		Acenaphthylene		1.6	0.61	**90**
		Fluoranthene		0.2	0.12	**50**
		Fluorene		3.4	2.0	**52**
		phenanthrene		5	2.9	**53**
13NCRWSS05	13NCRWSS06	DRO	mg/kg	20	45	**77**
		RRO		210	530	**86**
13NC21SS035	13NC21SS036	Arsenic	mg/kg	24	12	**67**
13NC28STW13	13NC28STW14	1-methylnaphthalene	mg/L	.03	.049	**48**
13NC28SS014	13NC28SS015	1-methylnaphthalene	mg/kg	50	21	**82**
		2-methylnaphthalene		53	24	**75**
		Acenaphthylene		2.2	0.36	**144**
		Anthracene		0.36	0.2	**57**
		Chrysene		0.084	0.04	**71**
		Fluorene		7.9	4.1	**63**
		Naphthalene		13	5.5	**81**
		Phenanthrene		3.7	2.2	**51**
		M,p-Xylene		0.38	0.17	**76**
13NC28SS039	13NC28SS040	1-Methylnaphthalene	mg/kg	0.044	0.078	**56**
		2-Methylnaphthalene		0.051	0.093	**58**
		Fluorene		0.016	0.029	**58**
13NC28SS042	13NC28SS043	Arsenic	mg/kg	20	11	**58**
13NC28WDA01	13NC28WDA02	Arsenic	mg/kg	2.0	1.1	**58**
		Barium		87	44	**66**
		Chromium		8.3	4.1	**68**
		Nickel		4.8	1.9	**87**
		Zinc		48	18	**91**
		Mercury		0.13	0.048	**92**
		Fluoranthene		0.037	0.0077	**131**
		Pyrene		0.029	0.0069	**132**

Notes:
µg/L = micrograms per liter
DRO = diesel range organics
ID = identification
mg/Kg = milligrams per kilogram
mg/L = milligrams per liter
RPD = relative percent difference
RRO = residual range organics

The data review indicated that analytical data and sample results are usable for project purposes and objectives. The 2013 NE Cape project Sites 10, 13, 21, 28, and 31; the MOC; the fuel-containment, bulk-bag, bag-staging, roadway, and pipeline-break areas; and the drum samples data are complete, correct, consistent, compliant with method procedures and QC requirements, and usable as qualified.

7.3 Analytical Methods for Soil and Sediment

Appendix O, Table O1 presents compounds (analytes), analytical methods, laboratory limits, and the corresponding cleanup levels for soil and sediment.

7.4 Analytical Methods for Groundwater and Surface Water

Appendix O, Table O2 presents the compounds (analytes), analytical methods, laboratory limits, and the corresponding cleanup levels for groundwater.

7.5 Analytical Methods for Wastes

Bristol collected characterization samples for all wastes shipped off-island. Waste characterization samples from bulk bags containing POL and PCB soils were analyzed in the field laboratory, with the few exceptions listed in Table 7-2. TestAmerica performed other analyses. Waste characterization matrices and analytical methods are listed in Table 7-2.

Table 7-2 Analytical Methods for Wastes

Sample Type	Analyte(s)	Analytical Method(s)
POL Soil	DRO/RRO	AK102/103
PCB Soil	PCBs	8082
Arsenic Soil	TCLP extraction and analysis performed for arsenic	1311/6020
Site 10 Bulk Waste Characterization	Glycols, PCBs, VOCs, PAHs, GRO, DRO and RRO. TCLP extraction and analyses for RCRA 8 metals and PCBs.	8015C, 8082, 8260, 8270-SIM, AK101, AK102, AK103 1311/6020, 8082
Drum Contents Characterization	Flashpoint; RCRA 8 metals plus nickel, vanadium and zinc; PCBs, VOCs, PAHs. TCLP extraction and analyses were also performed for RCRA 8 metals plus nickel, vanadium and zinc; VOCs, and PAHs	1010A, 6010B/7471A, 8082, 8260B, 8270-SIM 1311/6010B/7470A, 1131/8260, 1311/8270-SIM
GAC Waste	TCLP extraction and analysis performed for BTEX	1311/8260

Notes:

AK = Alaska Test Method
DRO = diesel range organics
EPA = U.S. Environmental Protection Agency
PCBs = polychlorinated biphenyls
POL = petroleum, oil, and lubricants
RRO = residual range organics
SVOCs = semivolatile organic compounds
VOC = volatile organic compounds

7.6 WASTE DISPOSAL AND CLEANUP CRITERIA

Waste disposal criteria were based on several regulations:

- Title 18 of the Alaska Administrative Code, Chapters 60 – Solid Waste Management; 62 – Hazardous Waste; 75 – Oil and Other Hazardous Substances Pollution Control; and 78 – Underground Storage Tanks (18 AAC 60, 62, 75, and 78)
- 29 CFR 1910 and 1926 – Health and Safety for General Industry and Construction
- 33 CFR 138 – Financial Responsibility for Water Pollution
- 40 CFR 60, 61, 260–270, 279, 300–303, and 761 – EPA –RCRA; CERCLA; and TSCA
- 46 CFR 150, 151, and 153 – U.S. Coast Guard, Department of Homeland Security

- 49 CFR 171–178 – Hazardous Materials Transportation

Cleanup levels are presented in Appendix O, Tables O1 and O2. The referenced criteria for soil, sediment, surface water and groundwater are derived from several sources and regulations:

- *Northeast Cape Decision Document* (USACE, 2009).
- Cleanup levels for soil not listed in the SOW or the 2009 decision document were obtained from 18 AAC 75.341, Table B1, Method 2 – Soil Cleanup Levels for Migration to Groundwater.
- Cleanup levels for groundwater were obtained from 18 AAC 75.345, Table C, Groundwater Cleanup Levels.
- Regulatory levels for surface water were obtained from the 2009 decision document and the *Alaska Water Quality Criteria Manual* for Toxic and Other Deleterious Organic and Inorganic Substances, Drinking Water Criteria, 18AAC70

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FIGURES

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-1-RP.DWG - Layout: 8.5 X 11
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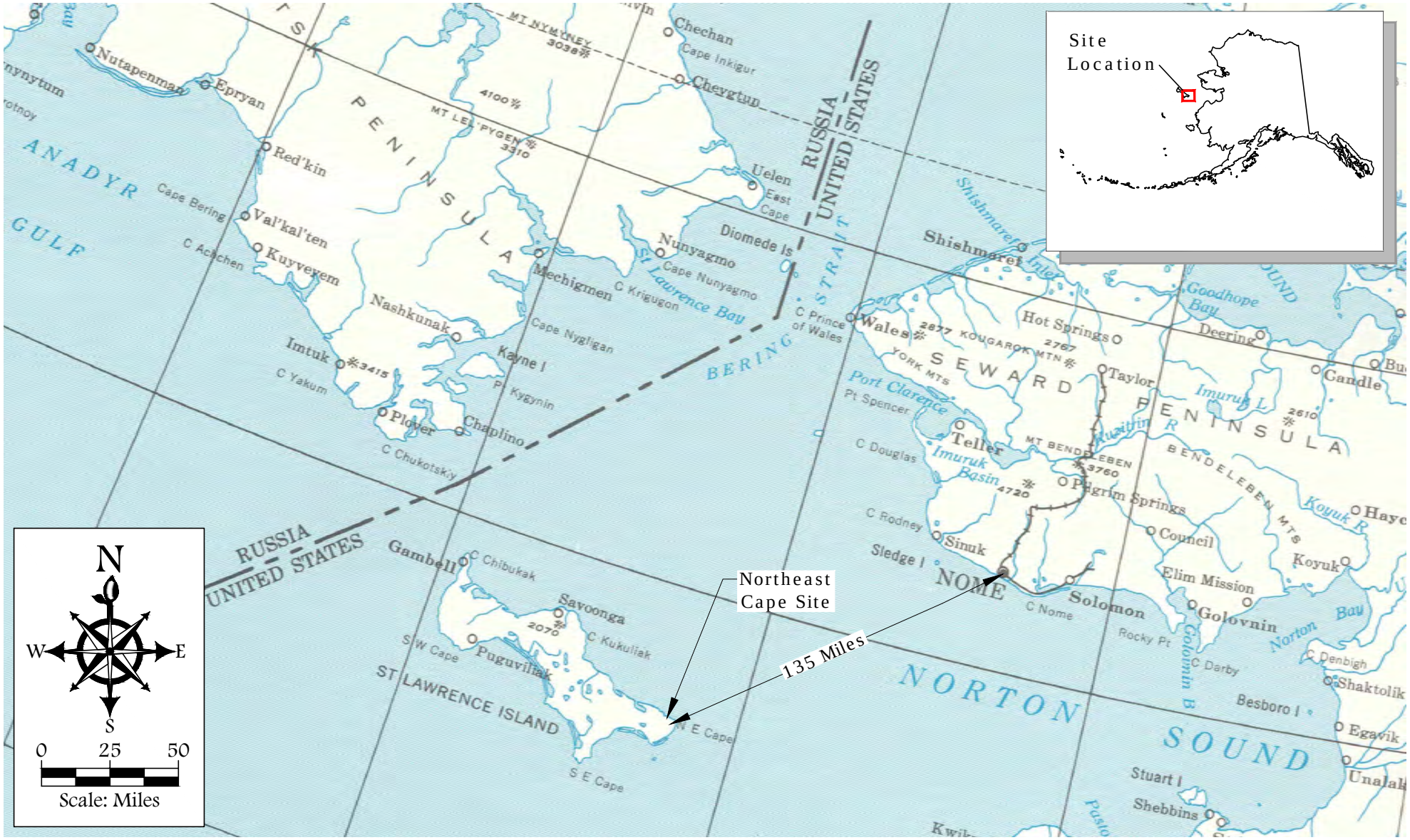


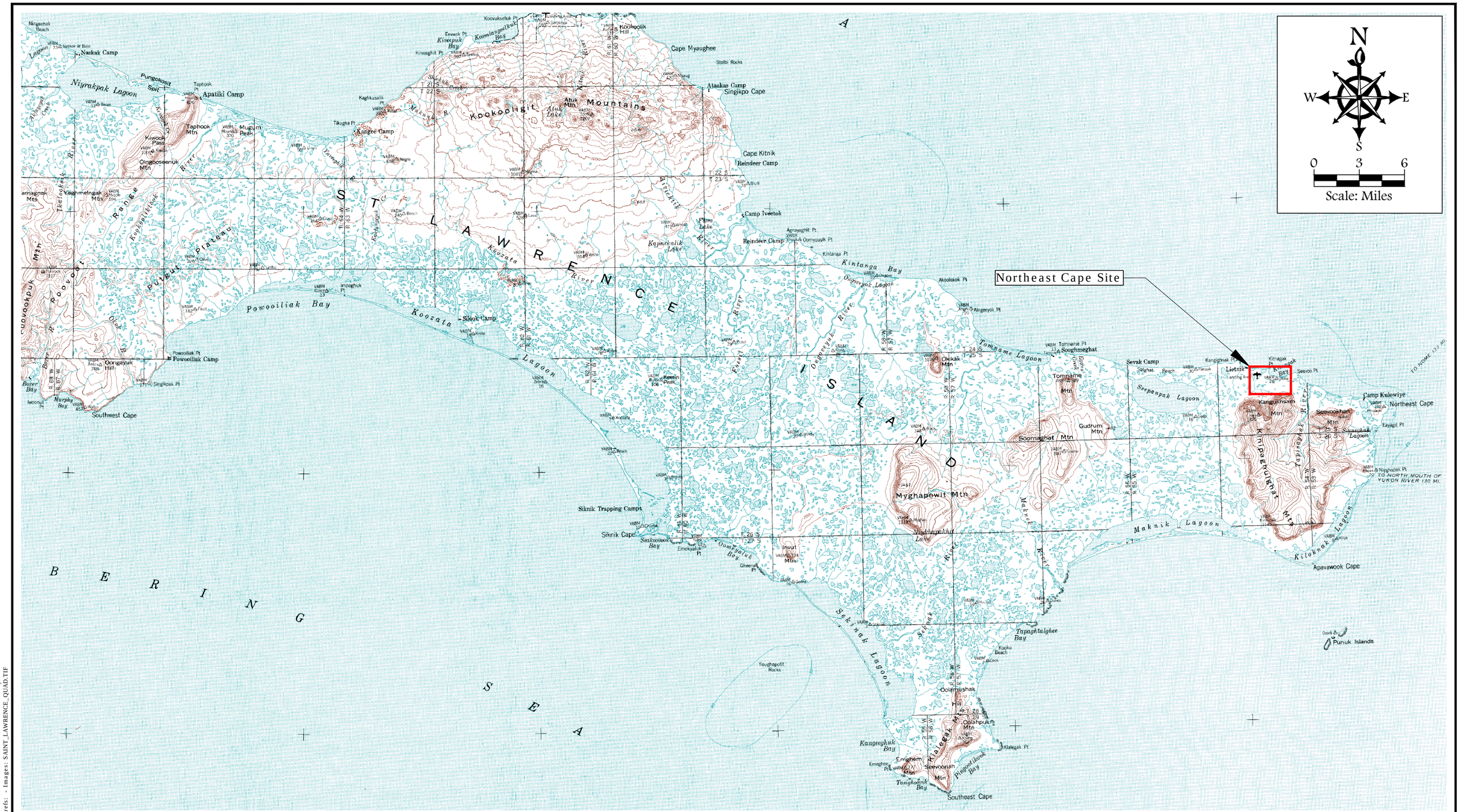
Note:
HTRW hazardous, toxic, and radioactive waste

Source:
USGS National Atlas Sheet Number 42-43

FIGURE 1
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
VICINITY MAP

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM:	N/A
PROJECTION:	N/A
Project No.	34130068
DATE	11/22/2013
DWN.	NAP
SCALE	1" = 50 mi
APPRVD.	RJ



Note:
HTRW hazardous, toxic, and radioactive waste

FIGURE 2
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
LOCATION MAP

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 27
PROJECTION: UTM 2N M
Project No. 34130068

DATE 12/31/2013
DWN. NAP
SCALE 1" = 6 mi
APPRVD. RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-2-RP.DWG - Layout: 11 X 17
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Bering Sea

Barge Landing Area

Cargo Beach Staging Area

Site 3 Fuel Pump House

Suspected Pipeline Break Location

Bulk Bag Staging Area at Site 6

Site 7-Cargo Beach Landfill

Field Lab

Medical Facility

Temporary Construction Camp

Over Winter Equipment Staging Area

Pole Locations

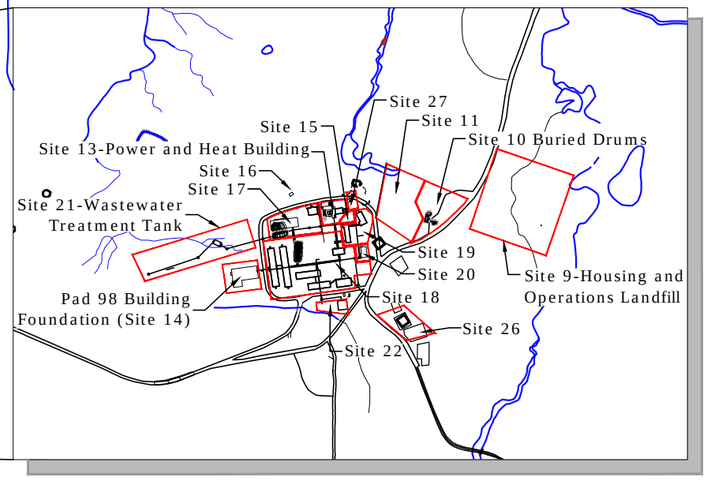
Road Sample Location

Road Sample Locations

Sugitughneq River

Site 28-Drainage Basin

Water Withdrawal Area



Bulk Bag Staging Areas

Fuel Storage/Containment Area

Road Sample Location

Site 31-White Alice Site

MOC

Mechanic Shop/Container Storage Area

Over Winter Equipment Staging Area

Roofing Tar Area (Removed in 2011)

Borrow Source

Site 34 Upper Camp and Radar Dome Area

N

W E

S

0 750 1500

Scale: Feet

Notes:

HTRW	hazardous, toxic, and radioactive waste
MOC	main operations complex
POL	petroleum, oil, and lubricants

Drawing Adapted From Montgomery Watson
File Titled NECAPE.DWG, Date 05 June 2001. Based on Resurvey Performed by ECO-LAND, LLC, July 2009.

Legend

Surface Water

Project Work Site

FIGURE 3
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
PROJECT WORK SITES

Bristol

ENVIRONMENTAL REMEDIATION SERVICES, LLC

Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120068

DATE 11/22/2013
DWN. NAP
SCALE 1" = 1,500'
APPRVD. RJ

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N
W E
S
0 75 150
Scale: Feet

Site 28
Site 16
Bldg 110-Power and Heat Building
Abandoned Building Pad/
POL Overburden Stockpile Location
Perimeter Access Road
Site 21
Concrete Pad 98
(Site 14)
Stockpile Area
Site 13
Site 19
Concrete Pad
MI DU
Bldg 108-Auto Storage
Bag Weigh Area
Dewatering/
Stockpile Area
Site 11
Site 10
HWAP
Access Road
Bulk Bag Staging Area
Bulk Bag Staging Area and MI DU
Fuel Containment & MI DU
Mechanic
Shop Area
Perimeter Access Road
Road Sample Location
Site 26
MI DU
Bulk Bag Staging Area
MOCSW01
MOCSW02
MOCSW03
A1
A2
B1
B2
C
D1
D2
D3
D4
E1
E2
E3
E4
F
G1
G2
H
I1
I2
I3
I4
I5
I6
I7
I8
I9
J1A
J1B
J2
J3
J4
J5

Image Acquisition Date: 26 Aug. 2008

Legend

- Surface Water
- 2011 Excavation
- 2012 Excavation
- 2013 Excavation
- UVOST Delineated Plume (2010)
- Former AST Location
- Concrete Pad (Removed 2011)
- Bulk Bag Staging Areas
- Site 13
- A1 — Plume Identification
- Secondary Topographic Contours
- 73 — Primary Topographic Contours and Ground Elevation
- Surface Water Sample
- MI Grid
- Road Sample Location

Notes:

AST	Aboveground Storage Tank
HTRW	Hazardous, Toxic, and Radioactive Waste
HWAP	Hazardous Waste Accumulation Point
MI DU	*Multi Increment*® Sample Decision Unit
POL	Petroleum, Oil, and Lubricants
UVOST®	Ultra-Violet Optical Screening Tool®

Topography units are in feet; elevations are based on the North American Vertical Datum of 1988.

FIGURE 4
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
MOC OVERVIEW MAP

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34130068

DATE 11/21/2013
DWN. NAP
SCALE 1" = 150'
APPRVD. RJ

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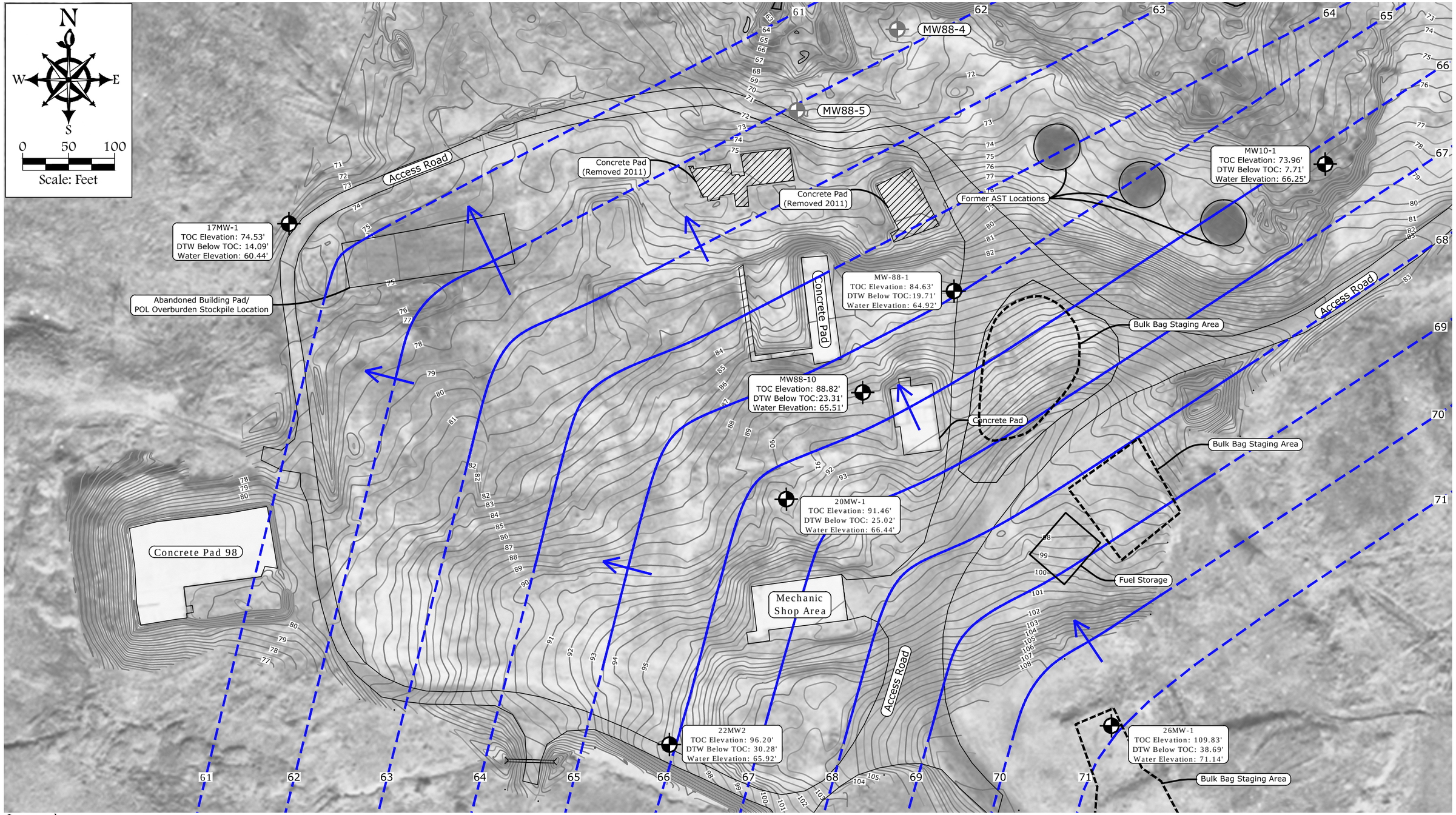

Legend

- Monitoring Well Location
- Monitoring Well Location Abandoned in 2012
- Secondary Topographic Contours
- Primary Topographic Contours and Ground Elevation
- Groundwater Flow Direction
- Groundwater Contour (Dashed where inferred)

Notes:

'	foot/feet
AST	aboveground storage tank
DTW	depth to water
HTRW	hazardous, toxic, and radioactive waste
POL	petroleum, oil, and lubricants
TOC	top of casing

Groundwater elevation data was collected on 7/19/2013.
Topo units are in feet, elevations are based on the North American Vertical Datum of 1988.

FIGURE 5
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
MOC POTENTIOMETRIC SURFACE MAP

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34130068

DATE 11/06/2013
DWN. NAP
SCALE 1"=100'
APPRVD. RJ

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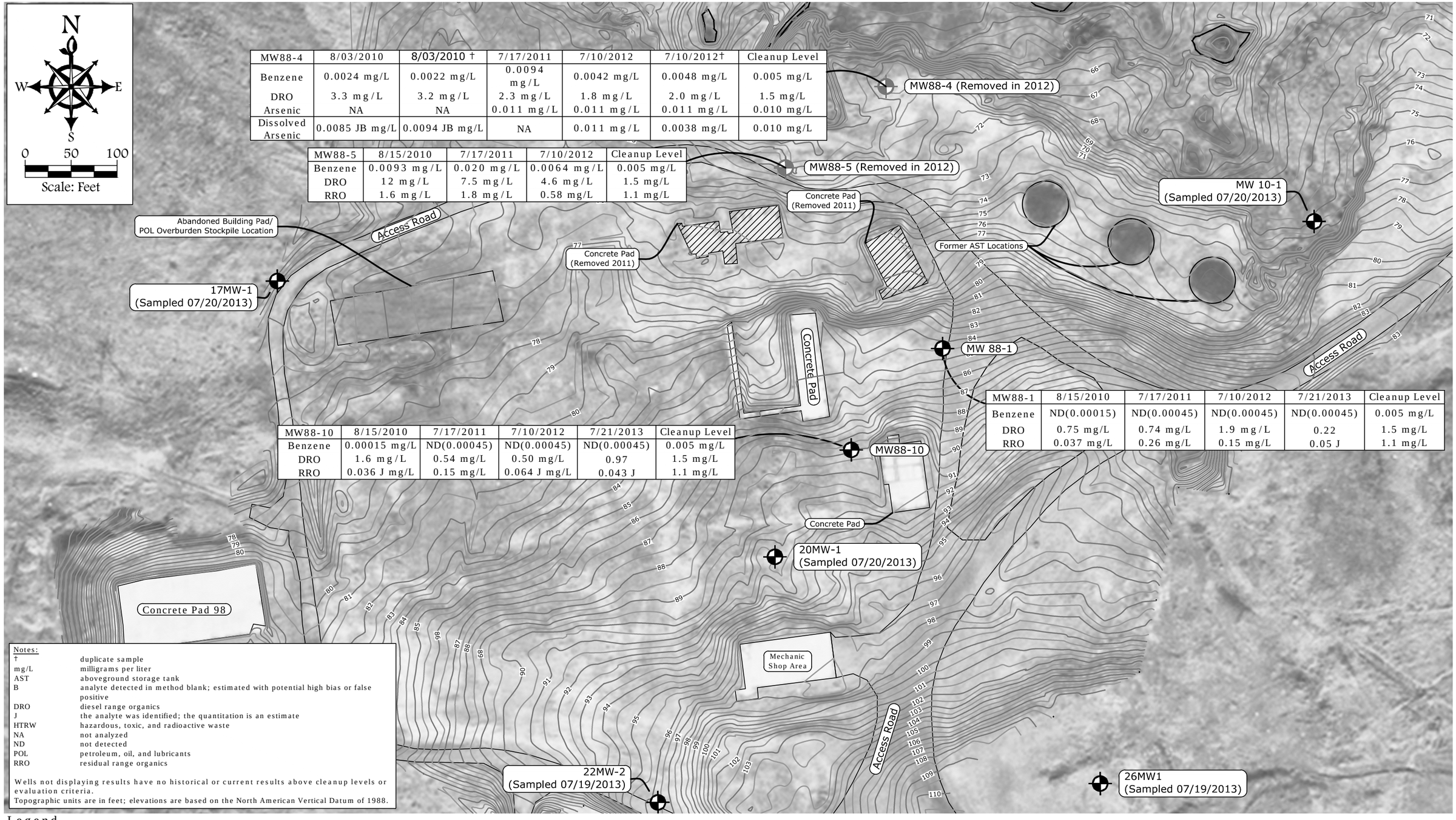

MW88-4	8/03/2010	8/03/2010 †	7/17/2011	7/10/2012	7/10/2012†	Cleanup Level
Benzene	0.0024 mg/L	0.0022 mg/L	0.0094 mg/L	0.0042 mg/L	0.0048 mg/L	0.005 mg/L
DRO	3.3 mg/L	3.2 mg/L	2.3 mg/L	1.8 mg/L	2.0 mg/L	1.5 mg/L
Arsenic	NA	NA	0.011 mg/L	0.011 mg/L	0.011 mg/L	0.010 mg/L
Dissolved Arsenic	0.0085 JB mg/L	0.0094 JB mg/L	NA	0.011 mg/L	0.0038 mg/L	0.010 mg/L

MW88-5	8/15/2010	7/17/2011	7/10/2012	Cleanup Level
Benzene	0.0093 mg/L	0.020 mg/L	0.0064 mg/L	0.005 mg/L
DRO	12 mg/L	7.5 mg/L	4.6 mg/L	1.5 mg/L
RRO	1.6 mg/L	1.8 mg/L	0.58 mg/L	1.1 mg/L

MW88-10	8/15/2010	7/17/2011	7/10/2012	7/21/2013	Cleanup Level
Benzene	0.00015 mg/L	ND(0.00045)	ND(0.00045)	ND(0.00045)	0.005 mg/L
DRO	1.6 mg/L	0.54 mg/L	0.50 mg/L	0.97	1.5 mg/L
RRO	0.036 J mg/L	0.15 mg/L	0.064 J mg/L	0.043 J	1.1 mg/L

MW88-1	8/15/2010	7/17/2011	7/10/2012	7/21/2013	Cleanup Level
Benzene	ND(0.00015)	ND(0.00045)	ND(0.00045)	ND(0.00045)	0.005 mg/L
DRO	0.75 mg/L	0.74 mg/L	1.9 mg/L	0.22	1.5 mg/L
RRO	0.037 mg/L	0.26 mg/L	0.15 mg/L	0.05 J	1.1 mg/L

Notes:

†	duplicate sample
mg/L	milligrams per liter
AST	aboveground storage tank
B	analyte detected in method blank; estimated with potential high bias or false positive
DRO	diesel range organics
J	the analyte was identified; the quantitation is an estimate
HTRW	hazardous, toxic, and radioactive waste
NA	not analyzed
ND	not detected
POL	petroleum, oil, and lubricants
RRO	residual range organics

Wells not displaying results have no historical or current results above cleanup levels or evaluation criteria.
Topographic units are in feet; elevations are based on the North American Vertical Datum of 1988.

Legend

- Current Monitoring Well Location
- Monitoring Well Location Abandoned in 2012
- Secondary Topographic Contours
- Primary Topographic Contours and Ground Elevation

FIGURE 6
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
MOC MONITORING WELL LOCATIONS AND SELECT SAMPLE RESULTS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34130068

DATE 11/06/2013
DWN. NAP
SCALE 1"=100'
APPRVD. RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-6-RPV1.DWG - Layout: 11X17
User: NPEACOCK Apr 28, 2014 - 9:43am Xrefs: TOPO-XREF.DWG - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF

N
W E
S
0 15 30
Scale: Feet

Western Drainage

13NCMOCSS068

13NCMOCSS069
DRO = 61,000 mg/kg

13NCMOCSS070

MOCSW01

13NCMOCSS073
DRO = 17,000 mg/kg
RRO = 45,000 mg/kg
This sample location was not excavated due to it's proximity to the Site 28 Western Drainage.

13NCMOCSS072

13NCMOCSS074

13NCMOCSS075

13NCMOCSS076

13NCMOCSS010/013

E-Excavation
Water Extent = 100% Submerged
Water Elevation = 62.70'
Depth = 11'
Planimetric Area = 10,796 sq ft

E-Excavation
Water Extent = 100% Submerged
Water Elevation = 60.90'
Depth = 15'
Planimetric Area = 1,036 sq ft

13NCMOCSS077/085
DRO = 29,000 J mg/kg
Recommended For Removal In 2014

13NCMOCSS008*

13NCMOCSS007

13NCMOCSS009

13NCMOCSS020
DRO = 11,000 mg/kg
2' Below Water

13NCMOCSS110

13NCMOCSS071

13NCMOCSS021

12NCMOCSS090*

13NCMOCSS011*

13NCMOCSS012

13NCMOCSS017
DRO = 40,000 mg/kg

13NCMOCSS016

13NCMOCSS015

13NCMOCSS014

13NCMOCSS018/019

12NCMOCSS146*

13NCMOCSS042

13NCMOCSS43

12NCMOCSS140*

13NCMOCSS035
DRO = 76,000 mg/kg
RRO = 14,000 mg/kg

13NCMOCSS036
DRO = 17,000 mg/kg
RRO = 10,000 mg/kg

13NCMOCSS037
DRO = 10,000 mg/kg

13NCMOCSS100

13NCMOCSS078

13NCMOCSS079

13NCMOCSS080

This Area (1,250 sq ft) was not submerged with water in 2012 and required additional soil sampling in 2013 to satisfy the accepted sampling frequency of two samples for the first 250 sq ft, plus one for each additional 250 sq ft.

Test Pit (2013)

13NCMOCSS001

13NCMOCSS002

13NCMOCSS003

13NCMOCSS004

13NCMOCSS005

13NCMOCSS006

Test Pit (2013)

Test Pit (2013)

Former AST Location

Additional samples will be collected from this sidewall in 2014.

Excavation will continue in 2014 into the remainder of E1 and E2 plumes.

Concrete Pad (Removed 2011)

Concrete Pad (Removed 2011)

D1 D2 D3 D4 E1 E2 E3 E4 I1 I2 I4 I5 A2 C G2

Notes:

*	removed in 2013
'	foot/feet
mg/kg	milligrams per kilogram
AST	aboveground storage tank
DRO	diesel range organics
ft	foot/feet
HTRW	hazardous, toxic, and radioactive waste
J	result is an estimate
RRO	residual range organics
sq	square

The Floor of the E4 excavation was excavated to 2 feet below groundwater.
Only the highest concentration is displayed for duplicate sample results.
Topo units are in feet, elevations are based on the North American Vertical Datum of 1988.

Image Acquisition Date: 26 Aug. 2008

Legend

- Surface Water
- UVOST Delineated Plume (2010)
- Excavation Extents (2013)
- Excavation Extents (2012)
- Excavation Extents (2011)
- Surface Water Sample Location
- Secondary Topographic Contours
- Primary Topographic Contours and Ground Elevation
- 2013 Floor Sample Location Where DRO Concentrations Exceeded Site-Specific Cleanup Level of 9,200 mg/kg
- 2013 Floor Sample Location Where DRO Concentrations Did Not Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- 2013 Sidewall Sample Location Where DRO Concentrations Exceeded Site-Specific Cleanup Level of 9,200 mg/kg
- 2013 Sidewall Sample Location Where DRO Concentrations Did Not Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- 2013 Sidewall Sample Location Where DRO Concentrations Exceeded Site-Specific Cleanup Level of 9,200 mg/kg (Removed In 2013)
- 2012 Sample Location Where DRO Concentrations Exceeded Site-Specific Cleanup Level of 9,200 mg/kg (2' Below Groundwater)
- 2012 Sample Location Where DRO Concentrations Exceeded Site-Specific Cleanup Level of 9,200 mg/kg (Removed In 2013)
- 2012 Sample Location Where DRO Concentrations Did Not Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- E1 Plume Identification

FIGURE 7
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
E EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120068

DATE 12/06/13
DWN. NAP
SCALE 1" = 20'
APPRVD. RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-7-RP-V1.DWG - Layout: 11X17
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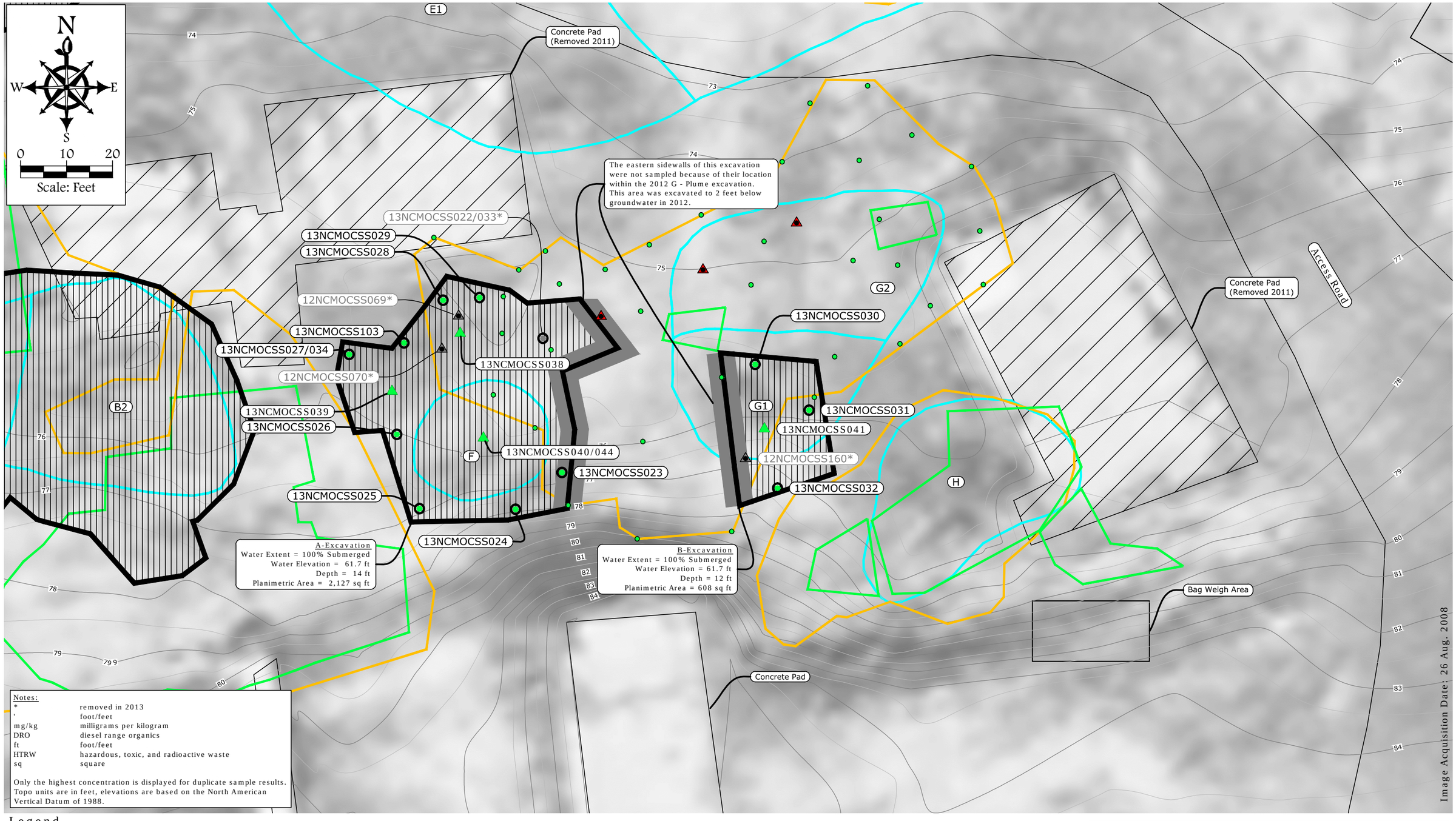

Notes:

*	removed in 2013
'	foot/feet
mg/kg	milligrams per kilogram
DRO	diesel range organics
ft	foot/feet
HTRW	hazardous, toxic, and radioactive waste
sq	square

Only the highest concentration is displayed for duplicate sample results.
Topo units are in feet, elevations are based on the North American Vertical Datum of 1988.

Legend

- UVOST Delineated Plume (2010)
- Excavation Extents (2013)
- Excavation Extents (2012)
- Excavation Extents (2011)
- Secondary Topographic Contours
- Primary Topographic Contours and Ground Elevation
- E1 Plume Identification

- 2013 Floor Sample Location Where DRO Concentrations Did Not Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- 2013 Sidewall Sample Location Where DRO Concentrations Did Not Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- 2013 Sidewall Sample Location Where DRO Concentrations Exceeded Site-Specific Cleanup Level of 9,200 mg/kg (Removed In 2013)
- 2012 Sample Location Where DRO Concentrations Exceeded Site-Specific Cleanup Level of 9,200 mg/kg (2' Below Groundwater)
- 2012 Sidewall Sample Location Where DRO Concentrations Exceeded Site-Specific Cleanup Level of 9,200 mg/kg (Removed In 2013)
- 2012 Sample Location Where DRO Concentrations Did Not Exceed Site-Specific Cleanup Level of 9,200 mg/kg

FIGURE 8
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
G AND F EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120068

DATE 12/06/2013
DWN. NAP
SCALE 1" = 20'
APPRVD. RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-8-RPV1.DWG - Layout: 11X17
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N
W E
S
0 10 20
Scale: Feet

B-Excavation
Water Extent = 20% Dry 80% Submerged
Water Elevation = 61.5 ft
Depth = 17 ft
Planimetric Area = 5,695 sq ft

Concrete Pad (Removed 2011)

Concrete Pad

13NCMOCSS049
13NCMOCSS048
13NCMOCSS050
13NCMOCSS056
13NCMOCSS047/059
13NCMOCSS051
13NCMOCSS054
13NCMOCSS057
13NCMOCSS093
13NCMOCSS052
13NCMOCSS055
13NCMOCSS053
13NCMOCSS046
13NCMOCSS116
13NCMOCSS098
13NCMOCSS058
13NCMOCSS099
13NCMOCSS090/102
13NCMOCSS094*
13NCMOCSS092
13NCMOCSS045
13NCMOCSS117
13NCMOCSS097
13NCMOCSS096
13NCMOCSS091
13NCMOCSS115
13NCMOCSS095

A1 A2 B1 B2 E1 E2 F G1 G2

Notes:

*	removed in 2013
'	foot/feet
mg/kg	milligrams per kilogram
DRO	diesel range organics
ft	foot/feet
HTRW	hazardous, toxic, and radioactive waste
PCB	polychlorinated biphenyls
sq	square

Topo units are in feet, elevations are based on the North American Vertical Datum of 1988.

Image Acquisition Date: 26 Aug. 2008

Legend

- UVOST Delineated Plume (2010)
- Excavation Extents (2013)
- Excavation Extents (2012)
- Excavation Extents (2011)
- Site 13 PCB Excavation
- 2013 Floor Sample Location Where DRO Concentrations Did Not Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- 2013 Sidewall Sample Location Where DRO Concentrations Did Not Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- 2013 Sidewall Sample Location Where DRO Concentrations Exceeded Site-Specific Cleanup Level of 9,200 mg/kg (Removed In 2013)
- E1 Plume Identification
- Secondary Topographic Contours
- 73 Primary Topographic Contours and Ground Elevation

FIGURE 9
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
B EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120068

DATE 12/06/2013
DWN. NAP
SCALE 1" = 20'
APPRVD. RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-9-RPV1.DWG - Layout: 11X17
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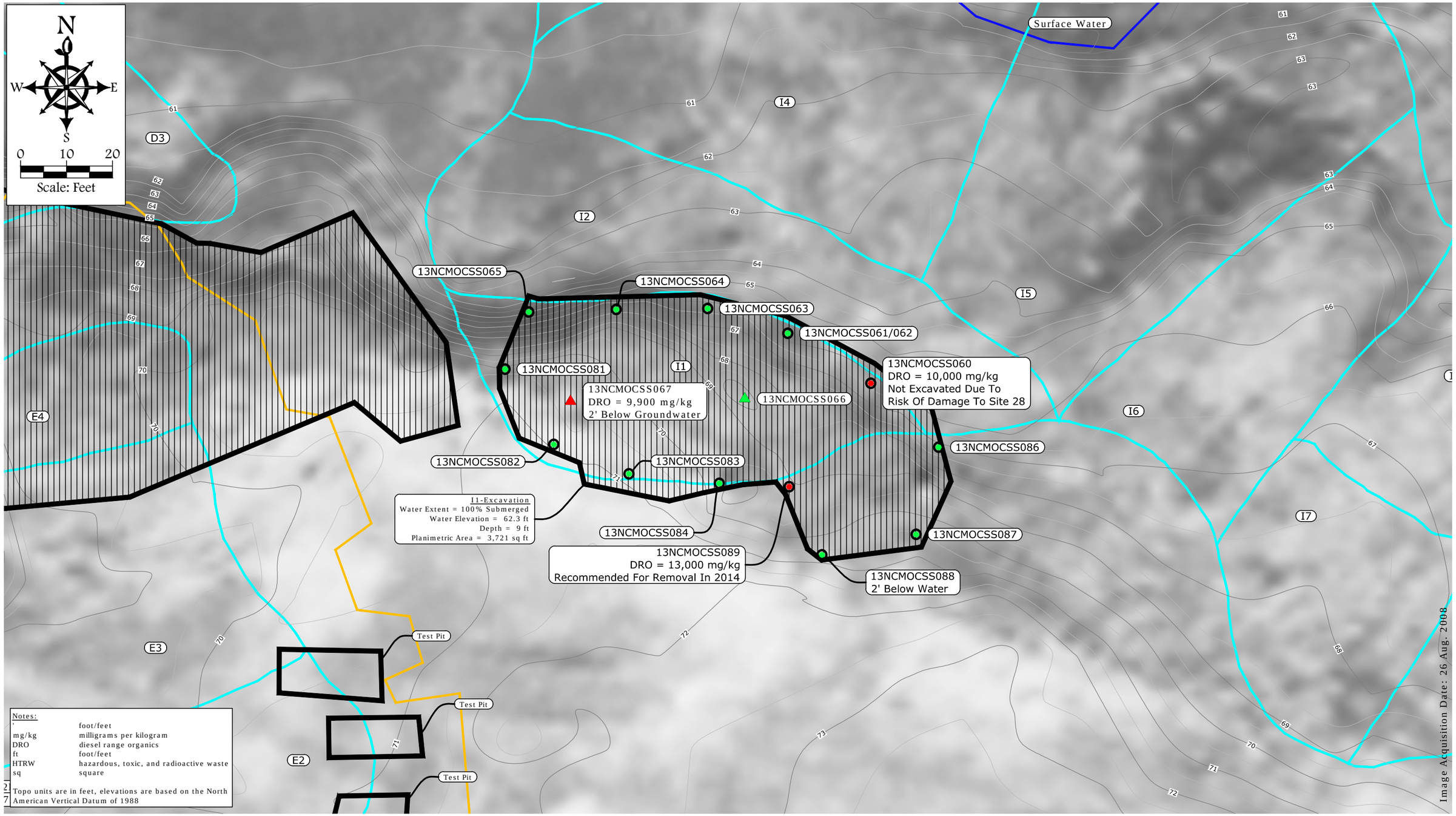

Notes:

'	foot/feet
mg/kg	milligrams per kilogram
DRO	diesel range organics
ft	foot/feet
HTRW	hazardous, toxic, and radioactive waste
sq	square

Topo units are in feet, elevations are based on the North American Vertical Datum of 1988

Legend

- Surface Water
- UVOST Delineated Plume (2010)
- Excavation Extents (2013)
- Excavation Extents (2012)
- Excavation Extents (2011)
- 2013 Floor Sample Location Where DRO Concentrations Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- 2013 Floor Sample Location Where DRO Concentrations Did Not Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- 2013 Sidewall Sample Location Where DRO Concentrations Exceeded Site-Specific Cleanup Level of 9,200 mg/kg
- 2013 Sidewall Sample Location Where DRO Concentrations Did Not Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- E1 Plume Identification
- Secondary Topographic Contours
- 73 Primary Topographic Contours and Ground Elevation

FIGURE 10
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
I1 EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34130068

DATE 11/13/2013
DWN. NAP
SCALE 1" = 20'
APPRVD. RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-10-RPV1.DWG - Layout: 11X17
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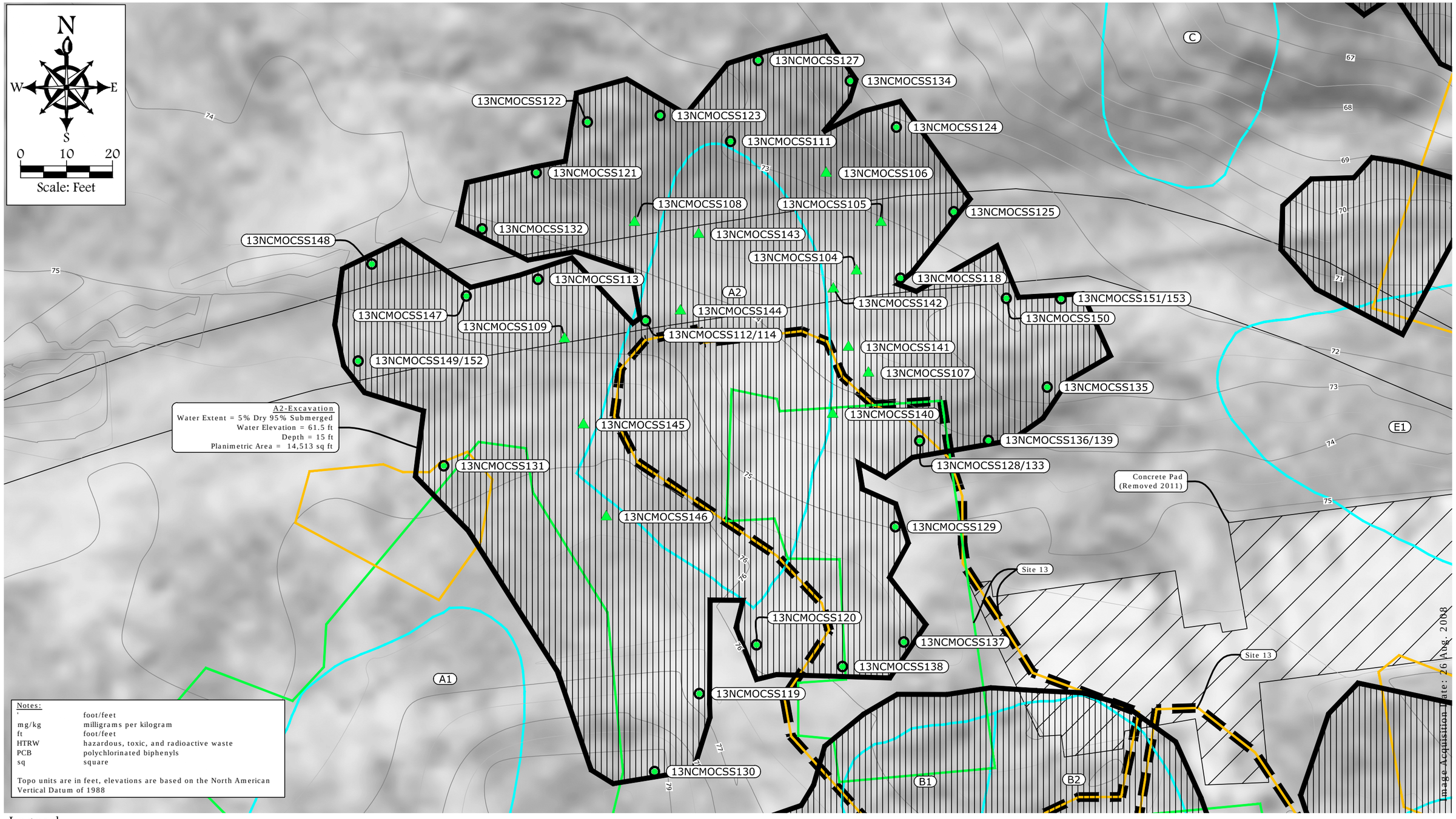

Notes:

'	foot/feet
mg/kg	milligrams per kilogram
ft	foot/feet
HTRW	hazardous, toxic, and radioactive waste
PCB	polychlorinated biphenyls
sq	square

Topo units are in feet, elevations are based on the North American Vertical Datum of 1988

Legend

- UVOST Delineated Plume (2010)
- Excavation Extents (2013)
- Excavation Extents (2012)
- Excavation Extents (2011)
- Site 13 PCB Excavation
- 2013 Floor Sample Location Where DRO Concentrations Did Not Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- 2013 Sidewall Sample Location Where DRO Concentrations Did Not Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- E1 Plume Identification
- Secondary Topographic Contours
- 73 Primary Topographic Contours and Ground Elevation

FIGURE 11
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
A2 EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34130068

DATE 11/13/2013
DWN. NAP
SCALE 1" = 20'
APPRVD. RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-11-RPV1.DWG - Layout: 11X17
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N
W E
S
0 50 100
Scale: Feet

Concrete Pad (Removed 2011)

Concrete Pad (Removed 2011)

Former AST Locations

Access Road

Abandoned Building Pad

Concrete Pad

Concrete Pad

Access Road

Access Road

Concrete Pad 98

Mechanic Shop Area

Notes:

AST	aboveground storage tank
HTRW	hazardous, toxic, and radioactive waste

Topo units are in feet, elevations are based on the North American Vertical Datum of 1988.

Image Acquisition Date: 26 Aug. 2008

Legend

- Surface Water
- Area of Disturbance (2011-2013)
- Secondary Topographic Contours
- 73 Primary Topographic Contours and Ground Elevation

FIGURE 12
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
MOC FINAL GRADE AND TOPOGRAPHIC SURVEY

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120057

DATE 11/13/2013
DWN. NAP
SCALE 1" = 100'
APPRVD. RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-12-RP.DWG - Layout: 11X17
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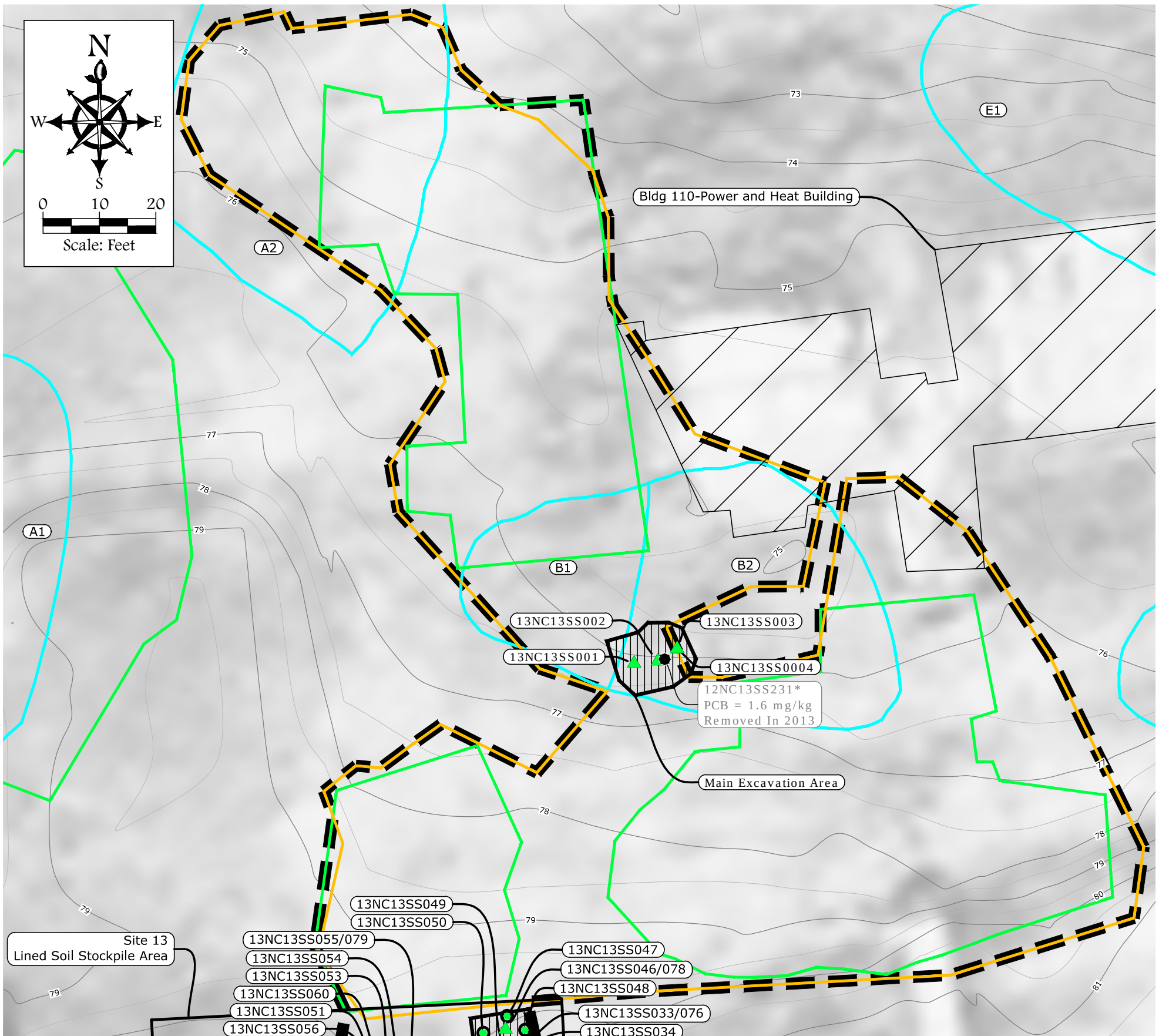


Notes:

*	removed in 2013
mg/kg	milligrams per kilogram
DRO	diesel range organics
HTRW	hazardous, toxic, and radioactive waste
PCB	polychlorinated biphenyls

All PCB contamination greater than 1mg/kg has been removed.
Topo units are in feet, elevations are based on the North American Vertical Datum of 1988.
All 2013 PCB confirmation samples are below the cleanup level of 1 mg/kg.

Legend

- 2013 Floor Confirmation Sample Location Where PCB Concentrations Did Not Exceed Cleanup Level of 1 mg/kg
- 2013 Sidewall Confirmation Sample Location Where PCB Concentrations Did Not Exceed Cleanup Level of 1 mg/kg
- 2012 Sample Location Where PCB Concentrations Exceeded Cleanup Level of 1 mg/kg (Removed In 2013)
- E1 Plume Identification
- Secondary Topographic Contours
- 73 Primary Topographic Contours and Ground Elevation
- UVOST Delineated Plume (2010)
- Excavation Extents (2013)
- Excavation Extents (2012)
- Excavation Extents (2011)
- Site 13 PCB Excavation

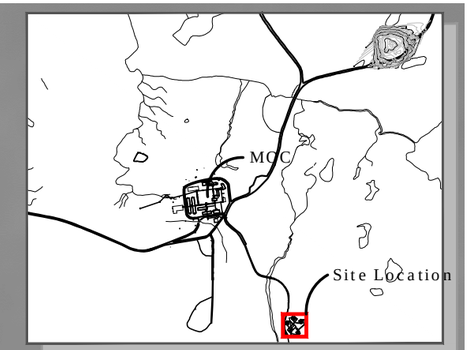
FIGURE 13
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 13 EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34130068

DATE 12/03/13
DWN. NAP
SCALE 1" = 20'
APPRVD. RJ

N
W E
S
0 10 20
Scale: Feet



Building 1001 Foundation

12NC31SS199*
PCB = 1.2 mg/kg
Removed In 2013

13NC31SS001/002

2013 Excavation Area

Concrete Pads

Antenna 1

Antenna 1 Foundation

Approximate
Former AST Location

Approximate
Former AST Locations

Road to MOC

Former Fuel Pipeline

Approximate Location Former Fuel Pipeline

Approximate
Former AST Location

Approximate
Former AST Location

2012 Excavation

Notes:

*	removed in 2013
mg/kg	milligrams per kilogram
AST	aboveground storage tank
HTRW	hazardous, toxic, and radioactive waste
MOC	main operations complex
PCB	polychlorinated biphenyls

All PCB contamination greater than 1 mg/kg has been removed.
All 2013 confirmation sample were below the cleanup level of 1 mg/kg for PCBs.

Image Acquisition Date: 26 Aug 2008

Legend

2012 Sample Location Where PCB Concentrations Exceeded Cleanup level Of 1 mg/kg (Removed In 2013)

2013 Floor Confirmation Sample Location Where PCB Concentrations Did Not Exceed Cleanup Level Of 1 mg/kg

Excavation Extents (2013)

Excavation Extents (2012)

Excavation Extents (2011)

FIGURE 14
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 31 EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34130068

DATE 12/03/13
DWN. NAP
SCALE 1" = 20'
APPRVD. RJ

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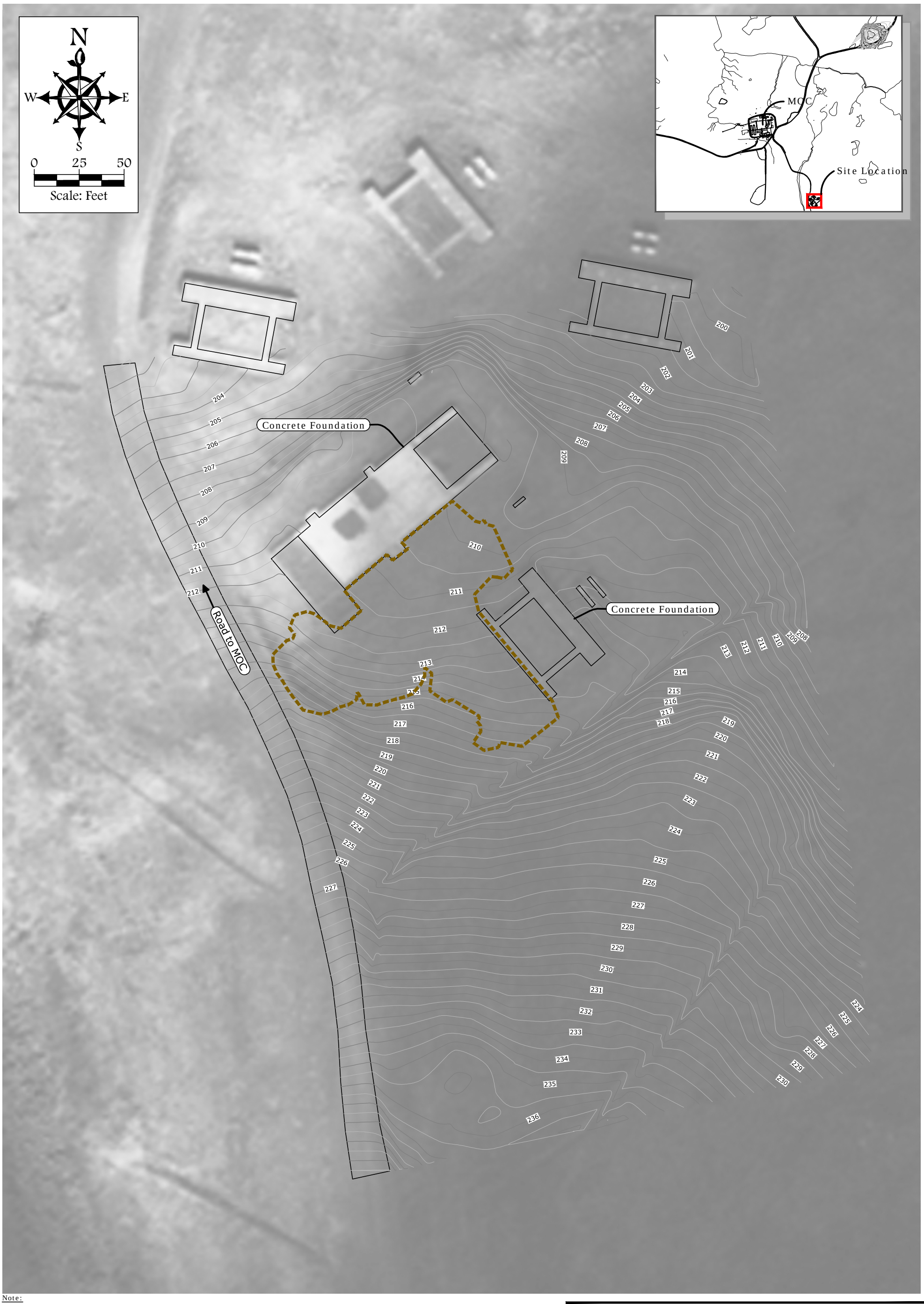


Note:
MOC main operations complex
HTRW hazardous, toxic, and radioactive waste

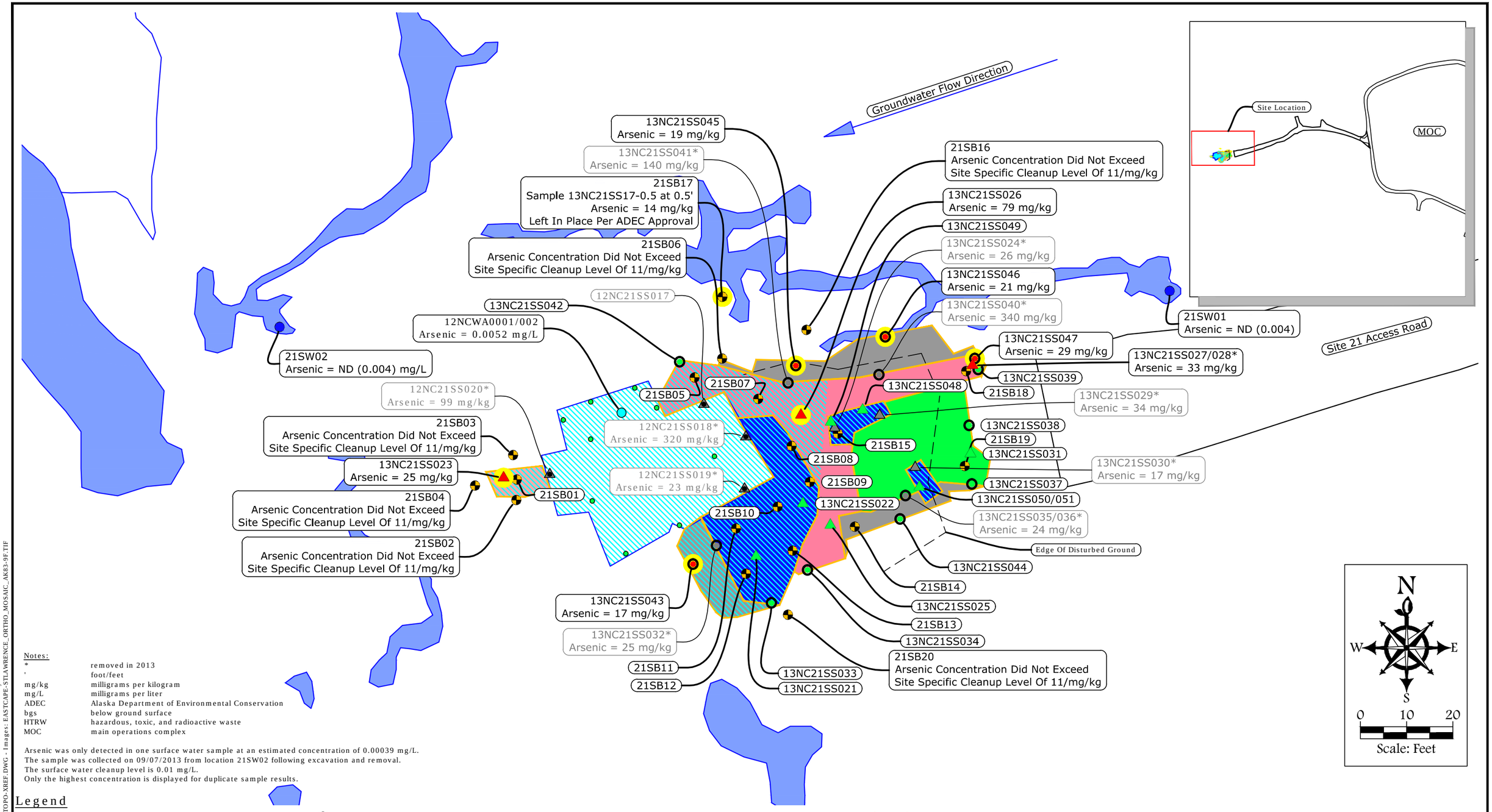
Legend

Secondary Topographic Contours
Primary Topographic Contours and Ground Elevation
Area Of Disturbance (2010-2013)

FIGURE 15
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 31 FINAL GRADE AND TOPOGRAPHIC SURVEY

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM:	NAD 83
PROJECTION:	STATE PLANE AK 9
PROJECT NO.	34130068
DATE	12/03/13
DWN.	NAP
SCALE	1" = 50'
APPRVD.	RJ



Notes:

*	removed in 2013
'	foot/feet
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
ADEC	Alaska Department of Environmental Conservation
bgs	below ground surface
HTRW	hazardous, toxic, and radioactive waste
MOC	main operations complex

Arsenic was only detected in one surface water sample at an estimated concentration of 0.00039 mg/L.
The sample was collected on 09/07/2013 from location 21SW02 following excavation and removal.
The surface water cleanup level is 0.01 mg/L.
Only the highest concentration is displayed for duplicate sample results.

Legend

- 2013 Floor Sample Location Where Arsenic Concentrations Exceeded 11 mg/kg (Points With Yellow Highlights Currently Remain On Site)
- 2013 Floor Sample Location Where Arsenic Concentrations Exceeded 11 mg/kg (Removed in 2013)
- 2013 Floor Sample Location Where Arsenic Concentrations Did Not Exceed 11 mg/kg
- 2013 Sidewall Sample Location Where Arsenic Concentrations Exceeded 11 mg/kg (Points With Yellow Highlights Currently Remain On Site)
- 2013 Sidewall Sample Location Where Arsenic Concentrations Did Not Exceed 11 mg/kg
- 2013 Sidewall Sample Location Where Arsenic Concentrations Exceeded 11 mg/kg (Removed in 2013)
- 2012 Sample Location Where Arsenic Concentrations Exceeded (Removed In 2013)
- 2013 Soil Boring Location
- 2013 Surface Water Sample Location
- 2012 Surface Water Sample Location
- 2012 Sample Location Where Arsenic Concentrations Did Not Exceed Site-Specific Cleanup Level of 11 mg/kg
- Sample Location Where Arsenic Remains in Concentrations Exceeding 11mg/kg
- Removal To 1.0' bgs (2013)
- Removal To 2.5' bgs (2013)
- Removal To 3.5' bgs (2013)
- Removal Limit (2012)
- Second Expansion (2013)
- Flooded Portion Of Removal Area
- Surface Water

FIGURE 16
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 21 EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34130068

DATE 12/05/13
DWN. NAP
SCALE 1" = 20'
APPRVD. RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-16-RPV1.DWG - Layout: 11X17
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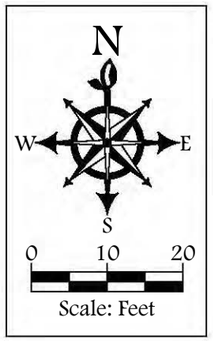

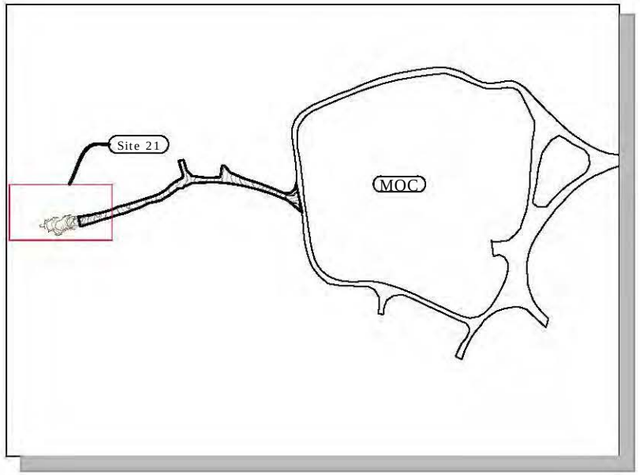

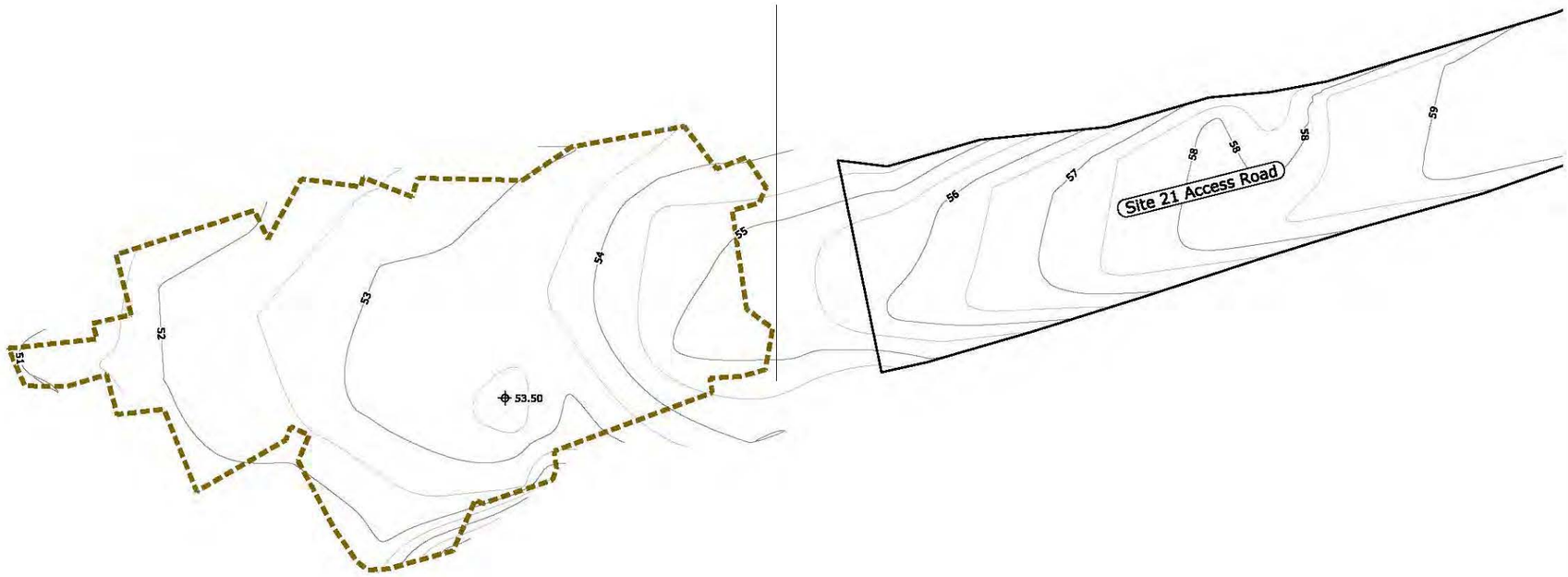

Notes:

HTRW	hazardous, toxic, and radioactive waste
MOC	main operations complex

Topo units are in feet, elevations are based on the North American Vertical Datum of 1988.

Legend

- Area Of Disturbance (2011-2013)
- Secondary Topographic Contours
- 73 Primary Topographic Contours and Ground Elevation
- Spot Elevation

FIGURE 17
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 21 FINAL GRADE AND TOPOGRAPHIC SURVEY

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34130068

DATE 12/05/13
DWN. NAP
SCALE 1" = 10'
APPRVD. RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-17-RPV1.DWG - Layout: 11X17
User: NPEACOCK May 08, 2014 - 9:54am Xrefs: - Images:

N
W E
S
0 10 20
Scale: Feet

J1B
J2
J1A
70
71
72
73
74
75
76
77
78
79
80
81
82
83

MW 10-1

Excavation D
Water Extent = 0% Submerged
Depth = 7 ft
Planimetric Area = 855 sq ft

13NC10SS039
13NC10SS043
13NC10SS037
13NC10SS019
13NC10SS042
13NC10SS036
13NC10SS018*
RRO = 14,000 mg/kg
13NC10SS041
13NC10SS017
13NC10SS035
13NC10SS038/044
13NC10SS040
13NC10SS021/022
13NC10SS020

Excavation B
Water Extent = 0% Submerged
Depth = 5 ft
Planimetric Area = 77 sq ft

Former AST Location

13NC10SS013
12NC10SS013
12NC10SS009*
Arsenic = 14 mg/kg
12NC10SS002*
DRO = 11,000 mg/kg
13NC10SS012/016
13NC10SS011
12NC10SS011*
DRO = 11,000 mg/kg
12NC10SS001*
DRO = 10,000 mg/kg
13NC10SS015
13NC10SS014

13NC10SS031
13NC10SS027*
Ethylene Glycol = 2,700 mg/kg
13NC10SS003
13NC10SS006
13NC10SS004
13NC10SS007
13NC10SS005
12NC10SS030/032*
Ethylene Glycol 16,000 mg/kg
Tetrachloroethene 0.025 mg/kg

Excavation C
Water Extent = 100% Submerged
Water Elevation = 67.6 ft
Depth = 12 ft
Planimetric Area = 727 sq ft
(Excavated to Bedrock)

Excavation A
Water Extent = 0% Submerged
Depth = 8 ft
Planimetric Area = 281 sq ft

13NC10SS26
12NC10SS012
12NC10SS020
13NC10SS024/025*
Ethylene Glycol = 1,000 mg/kg
13NC10SS28
12NC10SS028*
Ethylene Glycol 350 mg/kg
13NC10SS002/008*
Ethylene Glycol = 320 mg/kg
13NC10SS023*
Ethylene Glycol = 2,200 mg/kg
13NC10SS032/034*
Ethylene Glycol = 1,600 mg/kg
13NC10SS001*
Ethylene Glycol = 890 mg/kg
13NC10SS045*
Ethylene Glycol = 890 mg/kg
13NC10SS30*
Ethylene Glycol = 1,600 mg/kg
13NC10SS29

Image Acquisition Date: 26 Aug. 2008

Notes:

*	removed in 2013
'	foot/feet
mg/kg	milligrams per kilogram
AST	aboveground storage tank
DRO	diesel range organics
ft	feet
HTRW	hazardous, toxic, and radioactive waste
RRO	residual range organics
sq	square

Only the highest concentration is displayed for duplicate sample results.
Topo units are in feet, elevations are based on the North American Vertical Datum of 1988.

Legend

- UVOST Delineated Plume (2010)
- Excavation Extents (2013)
- Excavation Extents (2012)
- Excavation Extents (2011)
- J1A — Plume Identification
- Secondary Topographic Contours
- 73 — Primary Topographic Contours and Ground Elevation

- 2013 Floor Sample Location Where Contaminant Concentrations Exceeded Cleanup Level (Removed In 2013)
- 2013 Floor Sample Location Where Contaminant Concentrations Did Not Exceed Cleanup Level
- 2013 Sidewall Sample Location Where Contaminant Concentrations Did Not Exceed Cleanup Level
- 2013 Sidewall Sample Location Where Contaminant Concentrations Exceeded Cleanup Level (Removed In 2013)
- 2012 Sample Location Where Contaminant Concentrations Exceeded Cleanup Level (Removed In 2013)
- 2012 Sample Location Where Contaminant Concentrations Did Not Exceed Cleanup Level

FIGURE 18
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 10 EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34130068

DATE 11/18/13
DWN. NAP
SCALE 1" = 20'
APPRVD. RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-18-RPV1.DWG - Layout: 11X17
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N

W E

S

0 10 20

Scale: Feet

Former AST Location

Access Road

Image Acquisition Date: 26 Aug. 2008

Notes:

AST	aboveground storage tank
HTRW	hazardous, toxic, and radioactive waste

Topo units are in feet, elevations are based on the North American Vertical Datum of 1988.

Legend

- Area Of Disturbance (2011-2013)
- Secondary Topographic Contours
- 73 Primary Topographic Contours and Ground Elevation

FIGURE 19
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 10 FINAL GRADE AND TOPOGRAPHIC SURVEY

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120068

DATE 12/05/2013
DWN. NAP
SCALE 1" = 20'
APPRVD. RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-19-RP.DWG - Layout: 11X17
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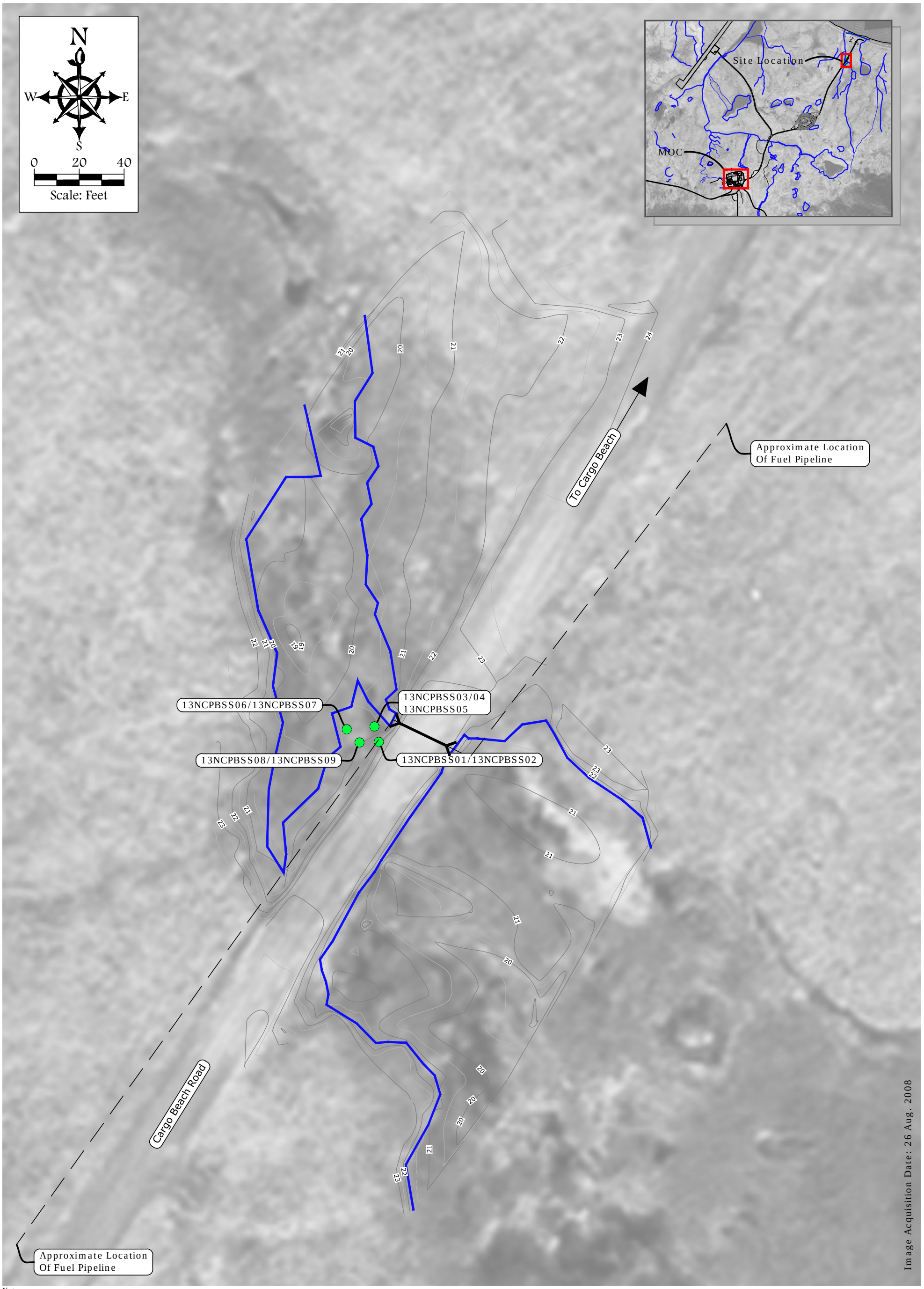


Notes:

HTRW	hazardous, toxic, and radioactive waste
MOC	main operations complex

Topo units are in feet, elevations are based on the North American Vertical Datum of 1988.
All contaminant concentrations were below cleanup levels.

Legend

- 2013 Floor Sample Location Where Contaminant Concentrations Did Not Exceed Cleanup Level
- Secondary Topographic Contours
- Primary Topographic Contours and Ground Elevation
- Surface Water
- Culvert

FIGURE 20
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SUSPECTED PIPELINE BREAK LOCATION OVERVIEW MAP
AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM:	NAD 83
PROJECTION:	STATE PLANE AK 9
PROJECT NO.	34130068
DATE	12/05/13
DWN.	NAP
SCALE	1" = 20'
APPRVD.	RJ

Temporary Construction Camp

Cargo Beach Staging Area

Site 3 Fuel Pump House

Road Sample Location

Site 7-Cargo Beach Landfill

Road Sample Locations

Site 28-Drainage Basin

Site 21-Wastewater Treatment Tank

MOC

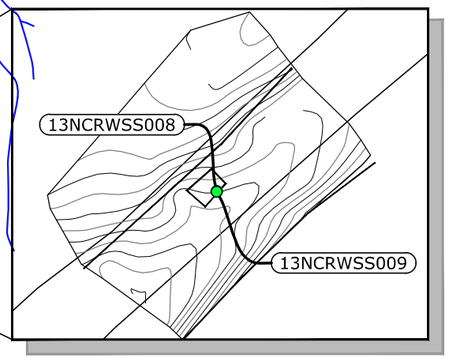
Water Withdrawal Area

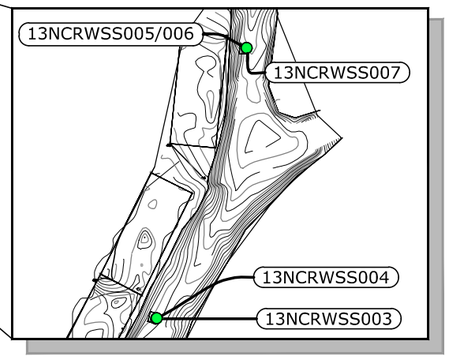
Site 9-Housing and Operations Landfill

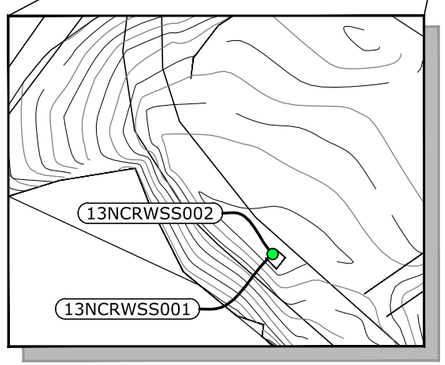
Site 10 Buried Drums

Road Sample Location

Site 31-White Alice Site







N

W E

S

0 750 1500

Scale: Feet

Notes:

HTRW	hazardous, toxic, and radioactive waste
MOC	main operations complex
POL	petroleum, oil, and lubricants

Drawing Adapted From Montgomery Watson
File Titled NECAPE.DWG, Date 05 June 2001. Based on Resurvey Performed by ECO-LAND, LLC, July 2009. None of the roadway samples contained contaminant concentrations that exceeded cleanup levels.

Legend

Surface Water

Sample Location Where Contaminant Concentration Did Not Exceed Cleanup Levels

FIGURE 21
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
ROAD SAMPLING LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120057

DATE 12/05/13
DWN. NAP
SCALE 1" = 1500'
APPRVD. RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-21-RP.DWG - Layout: 11X17
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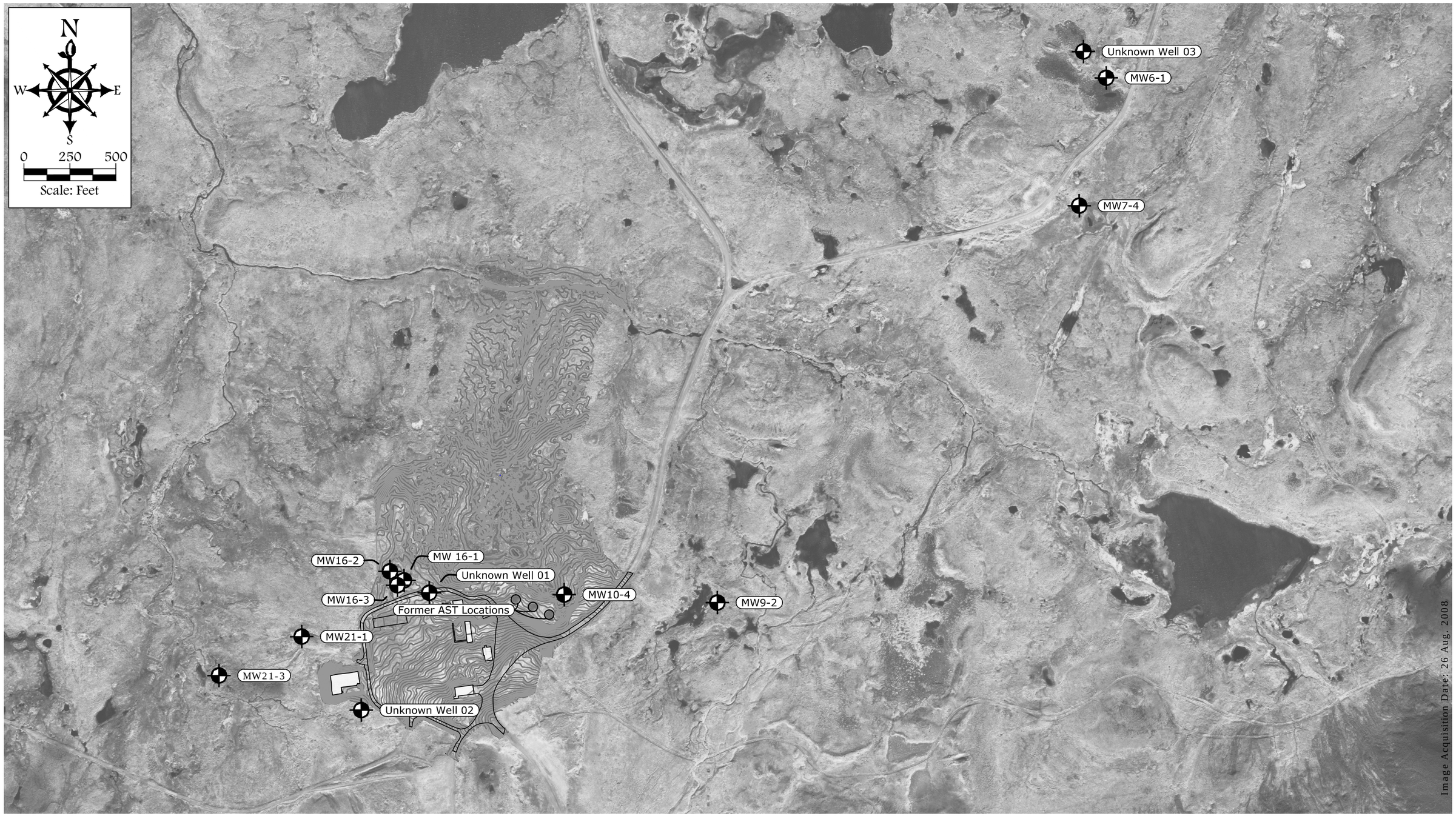

Notes:

AST	aboveground storage tank
HTRW	hazardous, toxic, and radioactive waste

Legend

Monitoring Well Location Abandoned in 2013

FIGURE 22
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
ABANDONED MONITORING WELLS LOCATION MAP

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34130068

DATE 06/03/2014
DWN. NAP
SCALE 1" = 500'
APPRVD. GJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-22-RPV1.DWG - Layout: FIGURE-22
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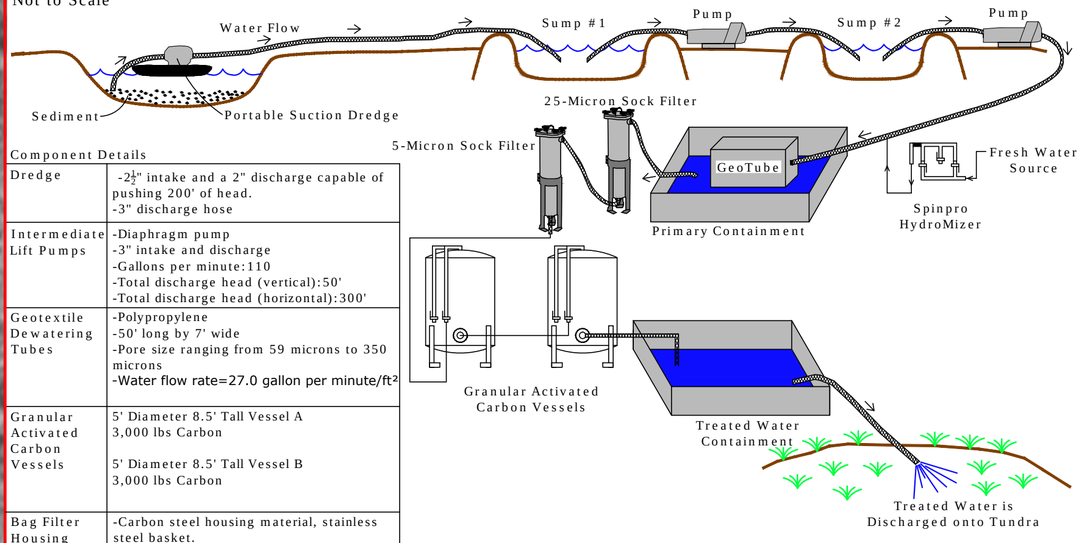
Xrefs: TOPO-XREF.DWG - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF

N
W E
S
0 30 60
Scale: Feet

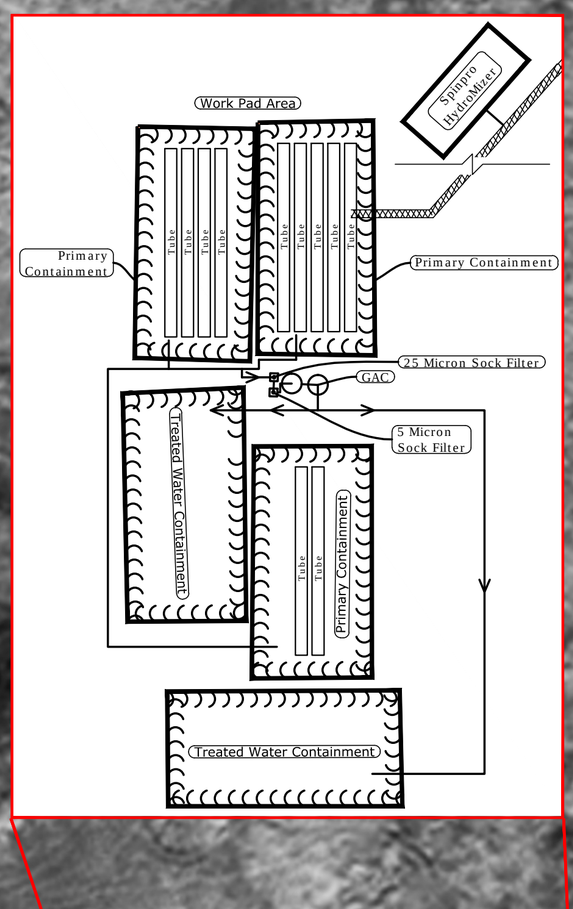
Treatment Train Detail

Not to Scale



Component Details

Dredge	-2½" intake and a 2" discharge capable of pushing 200' of head. -3" discharge hose
Intermediate Lift Pumps	-Diaphragm pump -3" intake and discharge -Gallons per minute:110 -Total discharge head (vertical):50' -Total discharge head (horizontal):300'
Geotextile Dewatering Tubes	-Polypropylene -50' long by 7' wide -Pore size ranging from 59 microns to 350 microns -Water flow rate=27.0 gallon per minute/ft²
Granular Activated Carbon Vessels	5' Diameter 8.5' Tall Vessel A 3,000 lbs Carbon 5' Diameter 8.5' Tall Vessel B 3,000 lbs Carbon
Bag Filter Housing	-Carbon steel housing material, stainless steel basket. -Overall height 37.41" -Max. Flow GPM=200. -2" connection FNPT -8 5/8" Dia. (in.) -Max. pressure (PSI) 150



SUQITUGHNEQ RIVER

Sediment Removal Area 11

28-SW-03
13NC28SS046
Area 11-2
2,4 BCY
Temporary Sediment Controls
13NC28SS045
Area 11-1
2,2 BCY
10-4
11,5 BCY
Area Was Actively Growing Vegetation
Area 10-5
7,5 BCY

13NC28SS044	
Analyte	mg/kg
RRO (nC25-nC36)	**6800**
RRO (nC25-nC36)-SG	**3600**

Sediment Removal Area 10

13NC28SS042/043
Area 10-3
5,1 BCY
13NC28SS041
Area 10-2
0,4 BCY
28-SW-02
13NC28SS039/040
Area 10-1
3,9 BCY
Temporary Sediment Controls
Area Was Actively Growing Vegetation

13NC28SS038	
Analyte	mg/kg
2-Methylnaphthalene	**20**
Acenaphthene	**1**
Acenaphthylene	*0.85*
Fluorene	**2.5**
Naphthalene	**7.2**
Total Low Molecular Weight PAHs[a]	**13.19**
DRO	**31000**
RRO (nC25-nC36)	**11000**
DRO (nC10-<nC25)-SG	**27000**
RRO (nC25-nC36)-SG	**6800**

13NC28SS037	
Analyte	mg/kg
2-Methylnaphthalene	**5.1**
Acenaphthene	**0.78**
Acenaphthylene	*0.4*
Fluorene	**1.2**
DRO (nC10-<nC25)	**16000**
RRO (nC25-nC36)	**6400**
DRO (nC10-<nC25)-SG	**14000**
RRO (nC25-nC36)-SG	**4600**

Sediment Removal Area 9

28-SW-01B

13NC28SS036	
Analyte	mg/kg
2-Methylnaphthalene	**81**
Acenaphthene	**3.9**
Acenaphthylene	*2.9*
Anthracene	*0.56 QH*
Fluorene	**11**
Naphthalene	**24**
Phenanthrene	**6.3**
Pyrene	*1.3*
Total Low Molecular Weight PAHs[a]	**48.66**
DRO (nC10-<nC25)	**64000**
RRO (nC25-nC36)	**22000**
DRO (nC10-<nC25)-SG	**64000**
RRO (nC25-nC36)-SG	**17000**

13NC28SS034	
Analyte	mg/kg
2-Methylnaphthalene	**29**
Acenaphthene	**0.97**
Acenaphthylene	*0.92*
Fluorene	**2.4**
Naphthalene	**12**
Pyrene	*1*
Total Low Molecular Weight PAHs[a]	**18.72**
DRO (nC10-<nC25)	**26000**
RRO (nC25-nC36)	**9800**
DRO (nC10-<nC25)-SG	**27000**
RRO (nC25-nC36)-SG	**7500**

AREA 9
23,4 BCY
13NC28SS035

13NC28SS032	
Analyte	mg/kg
2-Methylnaphthalene	**17**
Acenaphthene	**0.64**
Acenaphthylene	*0.26*
Naphthalene	**5.5**
Total Low Molecular Weight PAHs[a]	**8.104**
DRO (nC10-<nC25)	**4800**
DRO (nC10-<nC25)-SG	**5300**

28-SW-01

Sediment Trap

These areas were actively growing vegetation during removal operations.

2012 and 2013 Sediment Removal Area 4

13NC28SS033	
Analyte	mg/kg
2-Methylnaphthalene	**43**
Acenaphthene	**0.81**
Acenaphthylene	*0.68*
Anthracene	*0.25 QH*
Fluorene	**2**
Naphthalene	**24**
Total Low Molecular Weight PAHs[a]	**31.64**
DRO	**26000**
RRO (nC25-nC36)	**7400**
DRO (nC10-<nC25)-SG	**27000**
RRO (nC25-nC36)-SG	**4900**

13NC28SS028	
Analyte	mg/kg
2-Methylnaphthalene	**3.4**
Acenaphthene	**0.8**
Anthracene	*0.34 QH*
Fluoranthene	**2.3**
Fluorene	**0.97**
DRO	**4200**
DRO (nC10-<nC25)-SG	**3700**

13NC28SS030/031	
Analyte	mg/kg
2-Methylnaphthalene	**18**
Acenaphthene	**0.66**
Acenaphthylene	*0.3*
Naphthalene	**4.2**
DRO (nC10-<nC25)	**8500**
RRO (nC25-nC36)	**4500**
DRO (nC10-<nC25)-SG	**8000**

13NC28SS029	
Analyte	mg/kg
2-Methylnaphthalene	**27**
Acenaphthene	**1.8 J QL**
Acenaphthylene	*0.74*
Anthracene	*0.25 QH*
Fluorene	**2.6**
Naphthalene	**9.7**
Total Low Molecular Weight PAHs[a]	**18.59**
DRO (nC10-<nC25)	**21000**
RRO (nC25-nC36)	**6900**
DRO (nC10-<nC25)-SG	**23000**
RRO (nC25-nC36)-SG	**4500**

13NC28SS026	
Analyte	mg/kg
DRO (nC10-<nC25)	**8900**
DRO (nC10-<nC25)-SG	**8700**

AREA 4
98,4 BCY
13NC28SS027

13NC28SS025	
Analyte	mg/kg
RRO (nC25-nC36)	**6000**

13NC28SS024	
Analyte	mg/kg
2-Methylnaphthalene	**29**
Acenaphthylene	*0.25*
Fluorene	**0.87**
Naphthalene	**6.4**
Total Low Molecular Weight PAHs[a]	**8.311**
DRO (nC10-<nC25)	**3600**

13NC28SS021	
Analyte	mg/kg
2-Methylnaphthalene	**2**
Acenaphthene	**0.62**
Acenaphthylene	*0.5*
DRO (nC10-<nC25)	**41000**
RRO (nC25-nC36)	**20000**
DRO (nC10-<nC25)-SG	**33000**
RRO (nC25-nC36)-SG	**13000**

Sump #1

Sediment Removal Area 3

13NC28SS022	
Analyte	mg/kg
2-Methylnaphthalene	**1.9**

13NC28SS020	
Analyte	mg/kg
2-Methylnaphthalene	**3.9**
Naphthalene	**2.3**
DRO (nC10-<nC25)	**53000**
RRO (nC25-nC36)	**8500**
DRO (nC10-<nC25)-SG	**40000**

13NC28SS014/015	
Analyte	mg/kg
2-Methylnaphthalene	**53 QN**
Acenaphthene	**2.3**
Acenaphthylene	*2.2 QN*
Anthracene	*0.36 QN*
Fluorene	**7.9 QN**
Naphthalene	**13 QN**
Total Low Molecular Weight PAHs[a]	**29.46**
DRO (nC10-<nC25)	**67000**
RRO (nC25-nC36)	**14000**
DRO (nC10-<nC25)-SG	**54000**
RRO (nC25-nC36)-SG	**7800**

13NC28SS013	
Analyte	mg/kg
2-Methylnaphthalene	**33**
Acenaphthene	**5.2**
Acenaphthylene	*2.4*
Fluorene	**11**
Naphthalene	**12**
Total Low Molecular Weight PAHs[a]	**34.6**
DRO (nC10-<nC25)	**85000**
RRO (nC25-nC36)	**19000**
DRO (nC10-<nC25)-SG	**75000**
RRO (nC25-nC36)-SG	**14000**

13NC28SS016	
Analyte	mg/kg
2-Methylnaphthalene	**11**
Acenaphthylene	*0.21*
Fluorene	**0.92**
Naphthalene	**2**
DRO (nC10-<nC25)	**12000**
RRO (nC25-nC36)	**6800**
DRO (nC10-<nC25)-SG	**9100**
RRO (nC25-nC36)-SG	**3600**

13NC28SS019	
Analyte	mg/kg
2-Methylnaphthalene	**9.6 QL**
Acenaphthylene	*0.17*
DRO (nC10-<nC25)	**8800 QL**
RRO (nC25-nC36)	**11000**
DRO (nC10-<nC25)-SG	**7200 QL**
RRO (nC25-nC36)-SG	**5100 QH**

Sump Hose Line

13NC28SS017	
Analyte	mg/kg
2-Methylnaphthalene	**20**
Acenaphthene	**0.57**
Acenaphthylene	*0.57*
Fluorene	**1**
DRO (nC10-<nC25)	**21000**
RRO (nC25-nC36)	**10000**
DRO (nC10-<nC25)-SG	**15000**
RRO (nC25-nC36)-SG	**4800**

13NC28SS018	
Analyte	mg/kg
2-Methylnaphthalene	**2**
Acenaphthylene	*0.23*
DRO (nC10-<nC25)	**8200**
RRO (nC25-nC36)	**4000**
DRO (nC10-<nC25)-SG	**6600**

13NC28SS011	
Analyte	mg/kg
2-Methylnaphthalene	**4.3**
Acenaphthene	**0.52**
Acenaphthylene	*0.41*
Fluorene	**1.2**
Naphthalene	**4.2**
DRO (nC10-<nC25)	**46000**
RRO (nC25-nC36)	**9700**
RRO (nC25-nC36)-SG	**4600**

13NC28WDA02/01
12NC28MI001
Treated Water Discharge Area

13NC28SS012	
Analyte	mg/kg
2-Methylnaphthalene	**3.4**
Acenaphthylene	*0.22*
Fluorene	**0.89**
DRO (nC10-<nC25)	**13000**
RRO (nC25-nC36)	**15000**
DRO (nC10-<nC25)-SG	**9500**
RRO (nC25-nC36)-SG	**5300**

Sump #2

13NC28SS009	
Analyte	mg/kg
2-Methylnaphthalene	**4.1**
Acenaphthene	**1.6**
Acenaphthylene	*1.1*
Fluorene	**3.5**
Naphthalene	**7.7**
Total Low Molecular Weight PAHs[a]	**16.4**
DRO (nC10-<nC25)	**66000**
RRO (nC25-nC36)	**8500**
DRO (nC10-<nC25)-SG	**61000 QN**
RRO (nC25-nC36)-SG	**4100 QN**

Polymer Injection Area

AREA 3
64,6 BCY

13NC28SS010	
Analyte	mg/kg
2-Methylnaphthalene	**2.4**
DRO (nC10-<nC25)	**11000**
DRO (nC10-<nC25)-SG	**9200**

Water Containment Number 3

13NC28SS008	
Analyte	mg/kg
2-Methylnaphthalene	**1.9**
Acenaphthylene	*0.18*
DRO (nC10-<nC25)	**4200 J**
RRO (nC25-nC36)	**7300**

Hose Line

13NC28SS002/003	
Analyte	mg/kg
2-Methylnaphthalene	**66 J**
Acenaphthene	**1.6 MN**
Acenaphthylene	*1.6 MN*
Fluorene	**3.4 MN**
Naphthalene	**33**
Phenanthrene	**5 MN**
Total Low Molecular Weight PAHs[a]	**43.6**
DRO (nC10-<nC25)	**24000**
RRO (nC25-nC36)	**12000**
DRO (nC10-<nC25)-SG	**18000**
RRO (nC25-nC36)-SG	**5900**

Work Pad

Water Treatment System

MI DU
12NC28MI002
12NC28MI003
12NC28MI004

AREA 5 NORTH
3,1 BCY
13NC28SS004
Sediment Removal Area 5
13NC28SS005
AREA 5 SOUTH
6,5 BCY

AREA 7
12,3 BCY
Sediment Removal Area 7

13NC28SS006	
Analyte	mg/kg
2-Methylnaphthalene	**81**
Acenaphthene	**3.6**
Acenaphthylene	*2.1*
Anthracene	*4.4*
Fluorene	**9**
Naphthalene	**25**
Pyrene	*0.89 B*
Total Low Molecular Weight PAHs[a]	**47.8**
DRO (nC10-<nC25)	**29000**
RRO (nC25-nC36)	**10000**
DRO (nC10-<nC25)-SG	**15000**

Sediment Removal Area 6

AREA 6
21,3 BCY

AREA 8
1,8 BCY
Sediment Removal Area 8
13NC28SS001

Actively Growing Vegetation

2012 Sediment Removal Area 2

2012 Sediment Removal Area 1

12NC28SS054
12NC28SS055
12NC28SS052
12NC28SS053/056

13NC28SS007	
Analyte	mg/kg
2-Methylnaphthalene	**30**
Acenaphthene	**0.57**
Acenaphthylene	*0.27*
Fluorene	**1.4**
Naphthalene	**10**
Total Low Molecular Weight PAHs[a]	**13.413**
DRO (nC10-<nC25)	**11000**
RRO (nC25-nC36)	**9600**
DRO (nC10-<nC25)-SG	**8000**
RRO (nC25-nC36)-SG	**3700**

Eastern Drainage
Western Drainage
Former Culvert
Remaining Capped Culvert
Former Culvert
Middle Drainage

Former AST
Site 11
Former AST
Bldg 110
Main Operations Complex (MOC)

Notes:
BOLD results indicate sample concentrations above sediment cleanup levels (Table 1, Northeast Cape Decision Document, January 2009)
Italicized results indicate sample concentrations above sediment evaluation criteria (NOAA SQuiRT tables, Probable Effect Level, Freshwater Sediment 2009)

mg/kg	milligrams per kilogram
AST	aboveground storage tank
B	analyte detected in the blank, result with potential high bias
BCY	bank cubic yards
DRO	diesel range organics
GRO	gasoline range oragnics
HTRW	hazardous, toxic and radioactive waste
J	result is an estimate
MH	matrix interference suspected with potential high bias
MI DU	*MULTI INCREMENT*® Decision Unit
MN	matrix interference suspected, result with no directional bias
PCB	polychlorinated biphenyl
RRO	residual range organics
SG	silica gel
QH	laboratory quality issue, result with potential high bias
QL	quality issue with potential low bias
QN	analyte result is considered an estimated value with uncertain bias due to a laboratory quality control failure such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits, and/or the field duplicates not meet relative percent difference (RPD) limits but meet other acceptance criteria

Only the highest concentration is displayed for duplicate sample results.

Legend

- 2013 Removal Areas
- 2013 Proposed Removal Areas
- 2012 Removed Sediment Boundary
- Vegetative Mat Boundary
- Ponded Water
- MI DU
- Secondary Contours
- Primary Contours

12NC28SS051 Sample Identification

Open Areas Between Proposed And Removed Boundaries Depicted Were Actively Growing Vegetation During Removal Operations.

2012 Sediment Confirmation Sample Location

2013 Water Sample Location

2013 Sediment Confirmation Sample Location That Does Not Exceed Cleanup Levels Or Evaluation Criteria

2013 Soil Confirmation Sample Location That Did Not Exceed Cleanup Levels

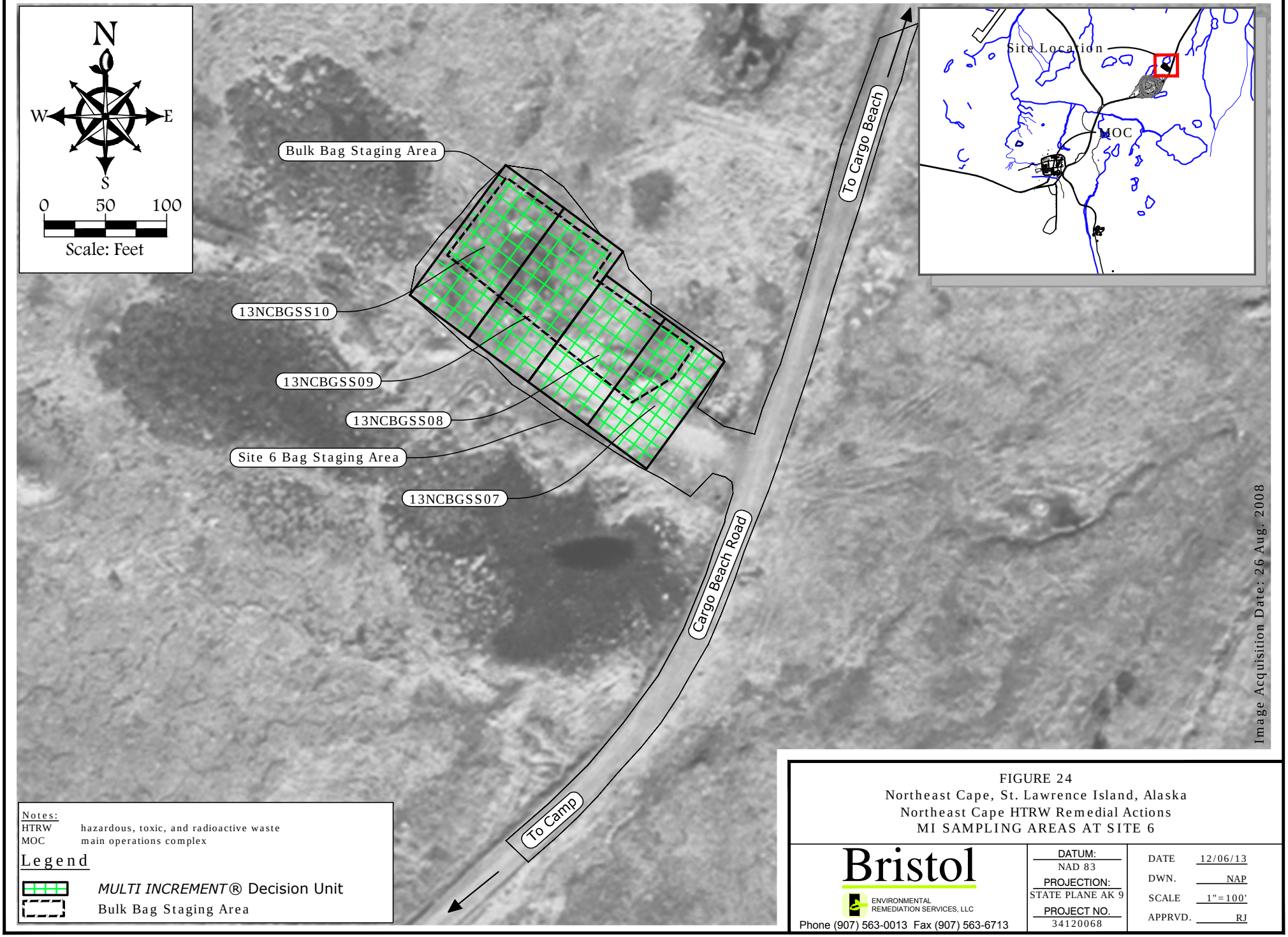
2013 Sediment Confirmation Sample Locations With One Or More Analytes That Exceed Cleanup Levels

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713
Project No. 34130068

FIGURE 23
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NE CAPE HTRW REMEDIAL ACTIONS
SITE 28 SEDIMENT REMOVAL AREAS, SAMPLE LOCATIONS AND SELECTED RESULTS

SCALE: 1" = 60'	DESIGNED:	CHECKED: RJ	DRAWN: NAP	DATE: 12/11/13

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-24-RPV1.DWG - Layout: 8.5X11
User: NPEACOCK May 01, 2014 - 2:22pm Xrefs: XREF-FIGURE-8.DWG - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF



Notes:
HTRW hazardous, toxic, and radioactive waste
MOC main operations complex

Legend

MULTI INCREMENT® Decision Unit

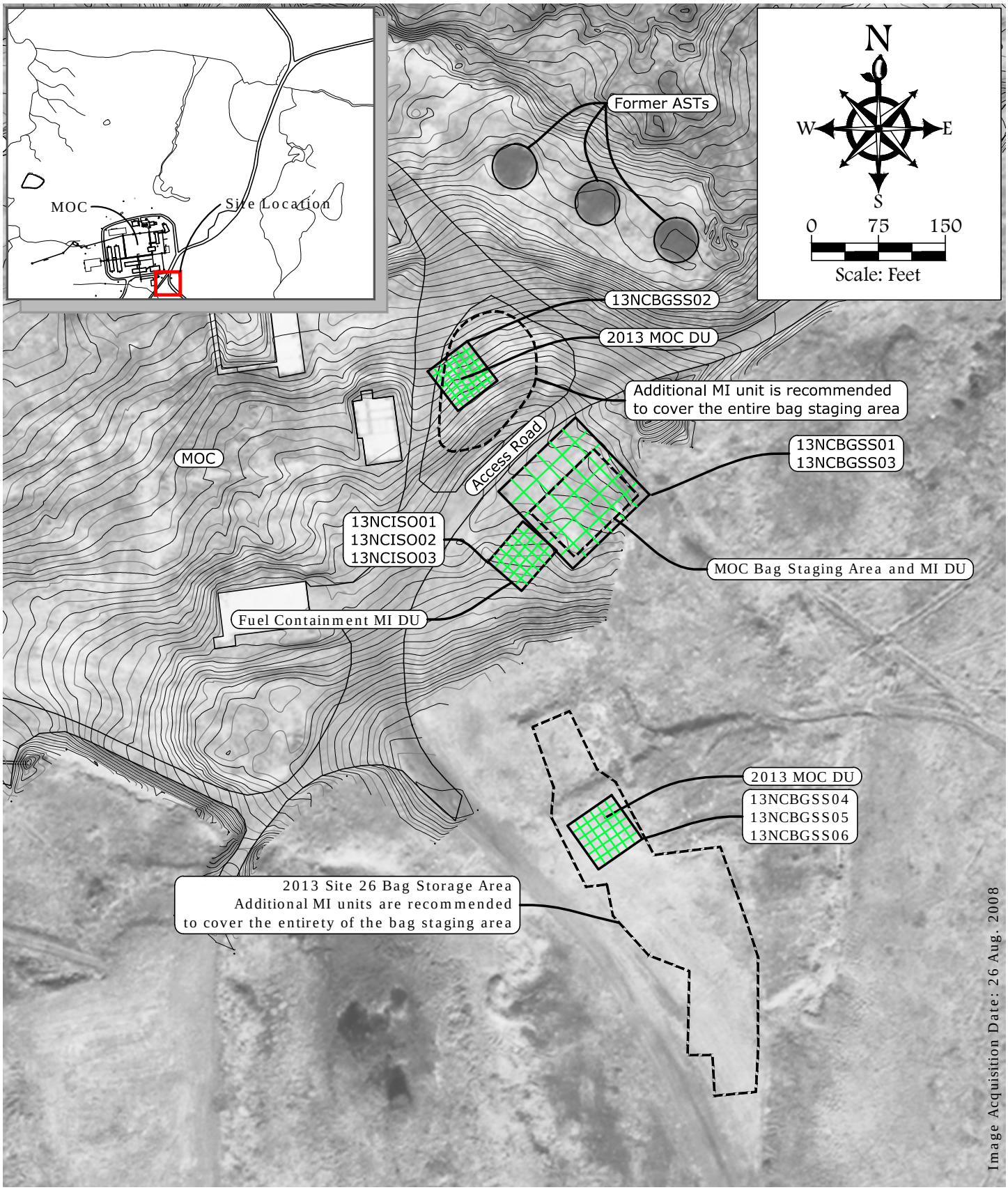
Bulk Bag Staging Area

FIGURE 24
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
MI SAMPLING AREAS AT SITE 6

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120068

DATE 12/06/13
DWN. NAP
SCALE 1"=100'
APPRVD. RJ



Legend

MULTI INCREMENT® Decision Unit

Bulk Bag Staging Areas

Notes:

AST	aboveground storage tank
DU	decision unit
MI	*MULTI INCREMENT*®
MOC	main operations complex
HTRW	hazardous, toxic, and radioactive waste

FIGURE 25
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
MI SAMPLING AREAS AT THE MOC

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM:	NAD 83
PROJECTION:	STATE PLANE AK 9
Project No.	34120068
DATE	12/06/13
DWN.	NAP
SCALE	1" = 150'
APPRVD.	RJ

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-25-RPY1.DWG - Layout: 8.5X11
User: NPEACOCK May 01, 2014 - 2:20pm Xrefs: TOPO-XREF.DWG - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF

APPENDIX A

Permits

MATERIAL SUPPLY AND
QUARRY OPERATING AGREEMENT

Kukulget Inc., whose address is P.O. Box 160 Savoonga, Alaska 99769, and Sivuqaq Inc., whose address is P.O. Box 101 Gambell, Alaska 99742, Alaska Native Corporations created pursuant to the Alaska Native Claims Settlement Act, herein referred to as "Owners," and Bristol Environmental Remediation Services LLC, whose address is 111 W. 16th Avenue, Third Floor, Anchorage, Alaska 99501, herein referred to as "Contractor" agree to the extraction of material and the operation of the quarry and such other rights as are designated in this contract, subject to the following provisions:

1. DESCRIPTION - LOCATION, MATERIAL, AND PRICE:

1.1. Quarry Description. The material source area covered by this agreement is the borrow site south of the Main Operations Complex at Northeast Cape, St. Lawrence Island, Alaska shown on the attached figure.

1.2. Royalty. The royalty price for all types of material removed from the Quarry during the Term of this Agreement is:

Material Type	Unit Price
All Material	$10.00 (per cubic yard)

Quantities to be determined by truck count.

2. EXCLUSIVE RIGHTS AND DUTIES:

Owner hereby grants to Contractor and Contractor accepts from Owner, the exclusive right to manage and operate the Quarry for the Term of this Agreement (defined in ¶3). Management and operation of the Quarry shall include, without limitation, the following:

A. The exclusive right to manage the extraction and removal of Materials from the Quarry;

B. The exclusive right, to secure access to the Quarry to avoid an attractive nuisance and deter unauthorized extraction of Materials therefrom, up to and including, fencing the perimeter and/or access to the Quarry;

C. The duty to perform all reclamation identified in the Letter of Intent (section 5).

3. TERM:

The term of this Agreement ("term") shall commence on June 15, 2013 and expire on December 31, 2013.

4. PAYMENTS AND DEPOSITS:

Within 30 days after the cessation of work for winter, or completion or termination, Contractor in any year in which the Contractor extracts or transports material from the Quarry, Contractor shall pay payments as described in Paragraph 1.2.

5. LETTER OF INTENT/ANNUAL RECLAMATION STATEMENT:

By June 15, 2013 and prior to commencing any operations in any Quarry subject to this Agreement, the Contractor shall file a "Letter of Intent" (Letter) with the State of Alaska Department of Natural Resources, Division of Land (Division of Land) as required by State law. The contractor shall also file an "Annual Reclamation Statement" (Statement) with the Division of Land as required by State law. The Statement shall be filed before December 31 of any calendar year during which Quarry operations were carried out under this Agreement. The Contractor shall provide copies of the Letter and the Statement(s) to the Owners.

6. RECLAMATION PLAN:

Contractor shall comply with the requirements of the Letter (section 5) regarding reclamation. The Contractor shall document reclamation activities per the Statement (section 5).

7. CONFLICT WITH CONTRACT.

In the event that any provision of this Material Supply Contract and Quarry Operating Agreement shall conflict with Contractor's Contract W911KB-13-C-0004 with the Corp of Engineers for the Northeast Cape HTRW Remedial Actions, St. Lawrence Island, Alaska, contract W911KB-13-C-0004 shall control and this Agreement shall be considered amended to bring it into conformity with W911KB-13-C-0004.

8. INSPECTION OF QUARRY:

Prior to commencing any operations at the Quarry, authorized representatives of Contractor and Owners may inspect the Quarry to determine whether and to what extent prior mining operations have resulted in visual environmental contamination that requires remediation. Contractor shall have no obligation to perform remediation of contamination discovered at this inspection; provided, however, that from the date of such inspection Contractor shall be liable for all hazardous materials deposited at the Quarry as a result of Contractor's operations during the term hereof, or any extension . Failure by the parties to do so shall not affect the enforceability of this Agreement, provided Contractor prepares and transmits its environmental findings to Owners, at its address set forth in ¶17, below in writing, before beginning Operations.

9. BOOKS AND RECORDS OF ACCOUNT:

Contractor shall maintain accurate and complete records, log books and books of account documenting: (a) the volume of gravel extracted from the Quarry seasonally and submitted to Owners; (b) the amounts due and payable by Contractor and; the amounts actually paid by Contractor to Owners pursuant to this Agreement.

Materials from the Quarry shall be measured by truckloads. Each truck load will contain between 18.75 and 25 cubic yards depending on the truck type (e.g., 30 or 40 ton rock truck). Truck count and truck type shall be performed and recorded by the operator loading haul units at the quarry site. The operator will provide the truck count to the Contractor's Site Superintendent or his designee on a daily basis. The Site Superintendent will provide a summary of the truck count to Owner within five business days of receiving a request from the Owner.

10. OPERATING REQUIREMENTS:

10.1. Standards of Operations. Contractor shall excavate and remove Material from the Quarry in compliance with all laws, regulations, ordinances, orders and its contract with the Corps W911KB-13-C-0004. Contractor shall conduct and maintain its Operations in a commercially reasonable, workman like and clean manner, and shall take all necessary precautions to prevent or suppress fires and to prevent erosion, contamination or destruction of the land and adjacent wetlands and waters. The Contractor agrees to carry out its quarry operations only in areas previously disturbed by others at the Quarry site.

10.2. Supervision. Contractor shall maintain adequate supervision at all times when Operations are in progress to ensure compliance with the provisions of this contract and all applicable federal, state, and local laws and regulations.

10.3. Agents. The provisions of this Contract apply with equal force upon any agent, employee, or contractor designated by Contractor to perform any of the Operations under this contract. Contractor is liable for the noncompliance caused by any such agent, employee, or contractor.

10.4. Grave Sites or Archaeological Sites. No grave or archaeological site shall be in any way disturbed, removed, or damaged. Upon encountering any grave or archaeological site, Contractor shall immediately cease work in the area of the site and shall immediately notify Owners.

11. COMPLIANCE WITH APPLICABLE LAWS:

Contractor shall comply with all local, State and federal laws, statutes, ordinances, rules, regulations, decrees, injunctions, orders and codes applicable to the operation or management of the Quarry, including without limitation, mining reclamation, mining safety and health (i.e., "MSHA") and occupational safety and health (i.e., "OSHA"). These laws and regulations are, by this reference, made a part of this Contract.

12. REQUIRED PERMITS:

Contractor shall obtain and maintain, at its expense and throughout the Term, all licenses, permits, approvals, consents and certificates from local, state and federal authorities which may be necessary or appropriate for its management and operation of the Quarry.

13. ASSIGNMENT:

This contract may be assigned or transferred pursuant to 30 days advance notice to Owners.

14. PERMITS:

Any permits necessary for Operations under this Contract must be obtained by Contractor before commencing those Operations.

15. WARRANTIES:

This sale is made without any warranties, express or implied, as to quantity, quality, merchantability, profitability, or fitness for a particular use of the Material to be extracted from the Quarry under contract. Contractor specifically waives any claims that may arise resulting from the use of the Material.

16. NOTICES:

All notices and other documents required or authorized under this Contract must be in writing and are deemed delivered upon receipt provided that the same are sent certified mail, postage paid, to the party to which the same is mailed the following address or such other address as such party may by written notice provide:

To the Owner: Kukulget Inc.
P. O. Box 160
Savoonga, AK 99769

Sivuqaq Inc.
P.O. Box 101
Gambell, AK 99742

with a copy to Jerald Reichlin, Attorney at Law.

To the Contractor:
Bristol Environmental Remediation Services, LLC
Attn: Greg Jarrell
111 W. 16th. Avenue, Third Floor
Anchorage, Alaska 99501

17. INTEGRATION AND MODIFICATION:

This Contract, including all laws and documents that by reference are incorporated in it or made a part of it, contains the entire agreement between the parties. This Contract may not be modified or amended except by a document signed by both parties to this contract. Any amendment or modification which is not in writing, signed by both parties, is null and void and of no legal effect.

18. SEVERABILITY OF CLAUSES OF CONTRACT:

If any provision of this Contract is adjudged to be invalid, that judgment does not affect the validity of any other provision of this Contract, nor does it constitute any cause or action in favor of either party as against the other.

19. CONSTRUCTION:

Words in the singular number include the plural, and words in the plural number include the singular.

20. HEADINGS:

The headings of the numbered paragraphs in this Contract shall not be considered in construing any provisions of this Contract.

21. "EXTRACTED," "EXTRACTION":

In this Contract, use of the terms "Extracted" and "Extraction" encompasses the severance or removal, as well as extraction, by Contractor of any Material covered by this Contract.

22. WAIVERS:

No agent, representative, or employee of Owners has authority to waive any provision of this Contract unless expressly authorized to do so in writing by the Presidents of Kukulget Inc. and Sivuqaq Inc.

23. GOVERNING LAW:

This Contract shall be governed by and construed in accordance with Alaska law. Venue and jurisdiction shall lie exclusively in the Superior Court for the State of Alaska, Third Judicial District, at Anchorage, Alaska.

24. EFFECTIVE DATE:

This Contract shall be effective the 15th day of June 2013.

25. **BY SIGNING THIS CONTRACT**, Owner, and Contractor, agrees to be bound by its provisions as set out above.

CONTRACTOR:

By: _____
Its: Project Manager
5/3/13

OWNER:

Kukulget Inc.

By: _____
Its: President

Sivuqaq Inc.

By: _____
Its: President

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC

111 W. 16th Avenue, Third Floor
Anchorage, Alaska 99501-5109
907-563-0013 Phone
907-563-6713 Fax

October 29, 2013

Kukulget Inc.
P.O. Box 160
Savoonga, AK 99769

Dear Sir:

This letter is to inform you about the 2013 truck load count for material that was used at Northeast Cape this summer for the Remedial Action Project for the US Army Corps of Engineers – Alaska District. The borrow pit material was used by Bristol for backfilling excavation areas at the Main Operations Complex and for road maintenance.

The total 2013 truck load count is 418 loads. Each truck load carried 26 cubic yards of material and therefore 10,868 cubic yards of borrow pit material was mined from the quarry near Site 32. Our quarry agreement states we will pay $10.00 per cubic yard for a total payment of $108,680. This amount will be split evenly between your village corporation and Sivuqaq Inc. in Gambell.

You may use this information to now invoice Bristol for your share of the royalty payment of $54,340 for the borrow pit material.

If you have any questions, please contact me at 907-743-9341.

I have also mailed this information to the Sivuqaq Inc. in Gambell. A copy of this letter has been sent to Jerry Reichlin in Anchorage, AK.

Sincerely,
Bristol Environmental Remediation Services

Molly Welker
Project Manager

cc: Jerry Reichlin

Bristol
ENVIRONMENTAL REMEDIATION
SERVICES, LLC

111 W. 16th Avenue, Third Floor
Anchorage, Alaska 99501-5109
907-563-0013 Phone
907-563-6713 Fax

October 29, 2013

Sivuqaq Inc.
P.O. Box 101
Gambell, AK 99742

Dear Sir:

This letter is to inform you about the 2013 truck load count for material that was used at Northeast Cape this summer for the Remedial Action Project for the US Army Corps of Engineers – Alaska District. The borrow pit material was used by Bristol for backfilling excavation areas at the Main Operations Complex and for road maintenance.

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You may use this information to now invoice Bristol for your share of the royalty payment of $54,340 for the borrow pit material.

If you have any questions, please contact me at 907-743-9341.

I have also mailed this information to the Kukulget Inc. in Savoonga. A copy of this letter has been sent to Jerry Reichlin in Anchorage, AK.

Sincerely,
Bristol Environmental Remediation Services

Molly Welker
Project Manager

cc: Jerry Reichlin

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
Division of Mining, Land and Water

Northern Regional Land Section

SARAH PALIN, GOVERNOR

NORTHERN REGION
3700 AIRPORT WAY
FAIRBANKS, ALASKA 99709-4699
PHONE: (907) 451-3014
FAX: (907) 451-2751
dianna.leinberger@alaska.gov

May 18, 2009

Christopher Floyd
US Army Corps of Engineers, Alaska District
Environmental Resources Section
EN-CW-ER
PO BOX 6898
Elmendorf AFB, AK 99506-06898

RE: **Letter of Entry for state tidelands within Kitnagak Bay, Saint Lawrence Island**

For the purpose of accessing the Northeast Cape for a Formerly Used Defense Site Cleanup and a Native American Lands Environmental Mitigation Program Project

Dear Mr. Floyd,

The Department of Natural Resources, Division of Mining, Land and Water hereby grants the US Army Corps of Engineers (USACE) a "Letter of Entry" authorization to enter upon state tidelands for the express purpose of conducting barge landings for the continued assessment and cleanup of the Northeast Cape. The barge landings will occur at Kitnagak Bay located within Kateel River Meridian, Township 25 South, Range 54 West, sections 10, 11, 12, 14, 15.

The Northern Region Land Office is hereby providing this letter allowing for entry for the purpose of conducting the above described project. The Letter of Entry is subject to the following terms and conditions:

- The Letter of Entry does not convey any interest in state land and as such is revocable immediately, with or without cause. The USACE, its contractors and sub-contractors are authorized use of the barge landing within state tidelands, but are not authorized to preclude or restrict public access on and through the tideland area.

- All operations must be conducted in a manner that will assure minimum conflict with other users of the area. This Letter of Entry is subject to the principles of the public trust doctrine specifically the right of the public to use navigable waterways and the land beneath them for navigation, commerce, fishing, hunting, protection of areas for ecological study, and other purposes, must be protected.

- The Regional Manager or his designee reserves the right to grant other interests to the subject areas consistent with the public trust doctrine. The State of Alaska makes no representations or warranties whatsoever, either expressed or implied, as to the existence, number, or nature of such valid existing rights.

- All activities at the site shall be conducted in a manner that will minimize the disturbance to the natural character of the beach.

- All waste generated by the USACE, its contractors and sub-contractors under this Letter of Entry will be removed or otherwise disposed of as required by state and federal law.

- Abandonment of equipment is prohibited on state lands.

- Refueling of equipment and the storage of petroleum products on state owned tidelands is prohibited.

- The USACE, its contractors and sub-contractors shall immediately notify the Alaska Department of Environmental Conservation (ADEC) by telephone, and immediately afterwards send ADEC a written notice by facsimile, hand delivery, or first class mail, informing ADEC of any unauthorized discharges of oil to water, any discharge of hazardous substances other than oil and any discharge or cumulative discharge of oil greater than 55 gallons solely to land and outside an impermeable containment area. If a discharge, including a cumulative discharge, of oil is greater than 10 gallons but less than 55 gallons, or a discharge of oil greater than 55 gallons is made to an impermeable secondary containment area, the USACE, its contractors and sub-contractors shall report the discharge within 48 hours, and immediately afterwards send ADEC a written notice by facsimile, hand delivery, or first class mail. Any discharge of oil, including a cumulative discharge, solely to land greater than one gallon up to 10 gallons must be reported in writing on a monthly basis. The posting of information requirements of 18 AAC75.305 shall be met. Scope and Duration of Initial Response Actions (18 AAC 75.310) and reporting requirements of 18 AAC 75, Article 3 also apply.

  The USACE, its contractors and subcontractors shall supply ADEC with all follow-up incident reports. Notification of a discharge must be made to the nearest ADEC Area Response Team during working hours: Anchorage (907) 269-7500, fax (907) 269-7648; Fairbanks (907) 451-2121, fax (907) 451-2362; Juneau (907) 465-5340, fax (907) 465-2237. The ADEC oil spill report number outside normal business hours is (800) 478-9300.

- The USACE may not assign or transfer, in part or whole, the Letter of Entry to another party.

- The USACE must obtain written approval from the Regional Manager or his designee prior to making any changes or improvements to the project site or their operations as authorized by this Letter of Entry.

- This Letter of Entry does not relieve the USACE from securing other necessary state, federal and local permits. This Letter of Entry does not provide authorization for travel on private property.

- The USACE, its contractors and sub-contractors shall observe all federal, state and local laws and regulations applicable to the authorized areas, including regulations for the protection of fish and wildlife, and shall keep all premises in a neat, orderly, and sanitary condition.

- The Alaska Historic Preservation Act requires that if cultural or paleontological resources are discovered on state lands as a result of this activity, work that would disturb such resources must be stopped and the State Historic Preservation Office be contacted immediately at (907) 269-8720.

- This Letter of Entry is issued for a specific use. Use of the barge landing for purposes other than those specified constitutes a breach of this authorization and may result in revocation. This Letter of Entry is revocable with any applicable laws, statutes and regulations (state and federal).

Any questions regarding any aspect of this Letter of Entry shall be directed to Dianna Leinberger, Department of Natural Resources, Division of Mining, Land and Water, Northern Region Land Office, 3700 Airport Way, Fairbanks, Alaska 99709, (907) 451-3014, dianna.leinberger@alaska.gov.

Sincerely,

Dianna Leinberger

Dianna Leinberger
Natural Resource Specialist

From:	Luetters, Susan
To:	Jarrell, Greg
Cc:	James, Russell
Subject:	FW: NE Cape 2013
Date:	Tuesday, March 12, 2013 9:59:22 AM

The same goes for this one!

Susan Luetters
Senior Environmental Scientist
Bristol Engineering Services Corporation
Phone : (907) 563-0013

From: Sackinger, Robert B (DNR) [mailto:robert.sackinger@alaska.gov]
Sent: Tuesday, March 12, 2013 9:24 AM
To: Luetters, Susan
Subject: RE: NE Cape 2013

Susan,

The previous letter of entry authored by Dianna Leinberger remains valid for 2013. However, please let me know next year if additional activity is expected to occur in the 2014 season.

Best Regards,

R. Bruce Sackinger
Natural Resource Specialist III
State of Alaska, Department of Natural Resources
Division of Mining, Land & Water, Northern Regional Office
(907) 451-2720
bruce.sackinger@alaska.gov

.

From: Luetters, Susan [mailto:sluetters@bristol-companies.com]
Sent: Monday, March 11, 2013 5:26 PM
To: Sackinger, Robert B (DNR)
Cc: Jarrell, Greg; James, Russell; Floyd, Christopher B POA
Subject: NE Cape 2013

Hi Robert,

Bristol Environmental Remediation Services (BERS) will be heading out to North East Cape again this year in mid -June. I have included the email string from the past couple of years, and as attachments the original Permit letter and the current year's project description. Conditions surrounding the request remain unchanged from the past four years. Are we still good to go?

If you require any additional information please call/email me.

Susan Luetters
Senior Environmental Scientist
Bristol Engineering Services Corporation
Phone : (907) 563-0013

From: Luetters, Susan
Sent: Wednesday, April 11, 2012 3:20 PM
To: 'Leinberger, Dianna L (DNR)'
Cc: Welker, Molly; Floyd, Christopher B POA
Subject: RE: NE Cape 2012

Hi Dianna,

It is that time of year again. Bristol Environmental Remediation Services (BERS) will be heading out to North East Cape again. I have included the email string from the past couple of years, and as attachments the original Permit letter and the current year's project description. Conditions surrounding the request remain unchanged from the past three years. Are we still good to go?

If you require any additional information please call/email me.

Susan Luetters
Senior Environmental Scientist
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
Direct : (907) 743-9316
FAX : (907) 563-6713
sluetters@bristol-companies.com
http://www.bristol-companies.com/

From: Leinberger, Dianna L (DNR) [mailto:dianna.leinberger@alaska.gov]
Sent: Thursday, April 21, 2011 1:31 PM
To: Luetters, Susan
Subject: RE: NE Cape

Susan,

The letter is still valid. I'll note in the file that clean up is still ongoing.

-Dianna

Dianna Leinberger
Department of Natural Resources
Division of Mining, Land & Water
Northern Region Lands Section - Permits & Easements
907-451-3014

From: Luetters, Susan [mailto:sluetters@bristol-companies.com]
Sent: Thursday, April 21, 2011 12:41 PM
To: Leinberger, Dianna L (DNR)
Subject: FW: NE Cape

Trying this one more time.

Susan Luetters
Senior Environmental Scientist
Phone : (907) 563-0013

From: Luetters, Susan
Sent: Thursday, April 21, 2011 12:33 PM
To: 'dainna.leinberger@alaska.gov'
Cc: Welker, Molly; Floyd, Christopher B POA
Subject: FW: NE Cape

Hi Dianna,

It is that time of year again . . . As per below we are ramping up for the 2011 season out at NE Cape conditions surrounding the request are the same as 2009 and 2010. Are we good to go?

Susan Luetters
Senior Environmental Scientist
Phone : (907) 563-0013

From: Luetters, Susan
Sent: Tuesday, February 23, 2010 1:19 PM
To: 'dianna.leinberger@alaska.gov'
Subject: FW: NE Cape

From: Luetters, Susan
Sent: Tuesday, February 23, 2010 10:11 AM
To:
Cc: Welker, Molly; Floyd, Christopher B POA
Subject: NE Cape

Hi Dianna,

As per the attached, Bristol Environmental Remediation Services will be going back to Northeast Cape at the request of the USACE to continue the environmental remediation of the Formerly Used Defense Site. Included in this transmission is your 2009 “Letter of Entry for State tidelands within Kitnagak Bay, Saint Lawrence Island” For the purpose of accessing NE Cape for a Formerly Used Defense Site Cleanup and a Native American Lands Environmental Mitigation Program Project.

The conditions that surrounded the issuance of this Letter of Entry will not be changing for the 2010 season; therefore, do we need to re-request this authorization for the 2010 season or will the 2009 letter extend to cover this season since there is no expiration date on the authorization?

Thank you for your attention to this matter and we look forward to your response.

Sincerely,

Susan Luetters
Senior Environmental Scientist
Bristol Environmental & Engineering Services Corporation
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
Direct : (907) 743-9316

FAX : (907) 563-6713
sluetters@bristol-companies.com
http://www.bristol-companies.com/

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THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation
DIVISION OF WATER
Wastewater Discharge Authorization Program

555 Cordova Street
Anchorage, Alaska 99501-2617
Main: 907.269.6285
fax: 907.334.2415
www.dec.alaska.gov/water/wwdp

August 31, 2012

DEC File No.: 475.48.001

Greg Jarrell
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501

Re: **Authorization 2009DB0004-0216: Bristol Environmental Remediation Services, LLC-Northeast Cape HTRW Remedial Actions**

Dear Permittee:

The Alaska Department of Environmental Conservation (DEC) has completed its review of your 2009DB0004 Contained Water Notice of Intent (NOI) for the Northeast Cape HTRW Remedial Actions and is issuing authorization number 2009DB0004-0216 for this project. The discharge from this project is authorized in accordance with the terms of the general permit and any site specific requirements in this authorization. An electronic copy of the Contained Water general permit will be attached to the PDF portfolio which includes this authorization letter which is posted to the DEC water permit search.

The authorization effective date is August 31, 2012.

The authorization to discharge expires at midnight on August 30, 2013.

The authorized discharge location is to a gravel pad upland of a vegetated area as described in the NOI.

The following site specific conditions apply:

1) Before water discharge, the permittee must collect contained water samples for TAH and TAqH. If the analytical results exceed the effluent limits established by the permit, the water must be treated to meet the requirements of the permit and retested prior to discharge.

2) At startup, a visual check for petroleum sheen is required. If an oil sheen is observed corrective action must be taken to remove the hydrocarbon contamination prior to discharge.

3) Visual checks for sheen in the effluent must be recorded daily, and daily estimates of flow must be taken to accurately estimate the total wastewater discharged monthly and for the total project.

4) Monitoring for the following parameters are waived by this authorization: pH, turbidity, settleable solids, and total chlorine.

A copy of the General Permit 2009DB0004 and this authorization must be kept at the project site. This authorization does not relieve the permittee from other local, state, or federal government permitting requirements.

The Discharge Monitoring Report can be found and completed on the following website, http://www.dec.alaska.gov/water/Compliance/permittee.html. Once the DMR is completed it shall be submitted to the following address:

Department of Environmental Conservation
Division of Water
Compliance and Enforcement Program
555 Cordova Street
Anchorage, Alaska 99501
Telephone Nationwide (877) 569-4114
In Anchorage Area/International (907) 269-4114
Fax (907) 269-4114
Email: dec-wqreporting@alaska.gov

If you have any questions concerning this authorization, please contact Jake Greuey at (907) 269-8117 or Jake.Greuey@alaska.gov.

Sincerely,

James Rypkema
Section Manager, Storm Water and Wetlands

From:	Welker, Molly
To:	Welker, Molly
Subject:	FW: Continuation of Northeast Cape HTRW Phase I remediation discharges
Date:	Monday, July 08, 2013 9:32:35 AM

From: Greuey, John J (DEC) [mailto:john.greuey@alaska.gov]
Sent: Wednesday, July 03, 2013 4:31 PM
To: Luetters, Susan
Cc: Dunkin, Curtis S (DEC); Rypkema, James (DEC)
Subject: Continuation of Northeast Cape HTRW Phase I remediation discharges

Susan,
Upon discussion with Curtis Duncan, the primary point of contact with contaminated sites who approved the remedial work plan he agreed the remediation related discharges to the surface can all be covered under the approved work plan. There is no need to file a new NOI for the contained water authorization used in the past as this discharge will now simply be authorized under the Contaminated Sites approved remedial work plan which covers the entire remediation project. If you have any further questions, please contact Curtis Duncan at 269-3053.
Thanks,

Jake Greuey
Environmental Program Specialist IV
Alaska DEC - Division of Water
555 Cordova Street
Anchorage, AK 99501
907-269-4597

Alaska Department of Environmental Conservation
Wastewater Discharge Authorization Programs

STATE OF ALASKA WASTEWATER GENERAL PERMIT

2009DB0004

Contained Water GP

This permit is issued under provisions of Alaska Statutes 46.03, the Alaska Administrative Code as amended, and other applicable State laws and regulations. This permit may be terminated, modified, or renewed under provisions of Alaska Statute and the Alaska Administrative Code. This permit supersedes State wastewater general permit 2003DB0089.

This wastewater discharge general permit is available for use by persons responsible for the discharge of contained water that meets the eligibility criteria in this permit. Contained water means water isolated from the environment in a manmade container or a lined impoundment structure.

The owners and operators of facilities covered under this general permit are authorized to discharge to the lands and waters of the State of Alaska in accordance with discharge point(s) effluent limitations, monitoring requirements, and other conditions set forth herein.

This general permit shall become effective **March 19, 2009**

This general permit and the authorization to discharge shall expire at midnight, **March 18, 2014**.

SIGNATURE ON FILE	3/19/2009
Signature	Date
Sharmon M Stambaugh	Wastewater Discharge Program Manager
Printed Name	Title

Wastewater Discharges Eligible For Coverage Under this Permit. This general permit applies to:

- contained water including, but not limited to: hydrostatic test water or chlorinated water from tanks, pipelines, swimming pools, and other containers that hold wastewater that meets state water quality standards in 18 AAC 70 and the effluent limitations in Section 1.2.2 of this permit;

Wastewater Discharges Not Covered by this Permit. This general permit does not apply to:

- Contaminated groundwater where halogenated hydrocarbons are the primary contaminant of concern;
- A discharge to waters listed by the state as impaired, where the impairment is wholly or partially caused by a pollutant contained within the proposed discharge;
- A discharge from a sewage lagoon or other treatment works subject to a different State wastewater discharge permit;
- A discharge permitted under storm water general permits;
- A discharge to groundwater under a response action, a cleanup, or a corrective action approved under 18 AAC 70.005; or
- A wastewater discharge originating from water accumulations within secondary containment areas as regulated under 18 AAC 75.075 (d), AND is intended to be discharged to a surface water.

Notice of Intent (NOI) Requirements

- An NOI under Section 1.1.1 and prior written authorization from the Department are required for one-time discharge (i.e., no more than one discharge per year) of a volume of water greater than or equal to 10,000 gallons through discharge to the land surface or to a surface water body; or
- An NOI is not required for a one-time discharge of a volume of water less than 10,000 gallons, however, all terms and conditions of this permit, including the effluent limitations in Section1.2.2, still apply.

General Provisions

A wastewater discharge authorized under this general permit is subject to the terms and conditions specified in Sections 1 and 2 of this permit. All discharges made under the authority of this permit, regardless of size, are subject to the terms and conditions contained herein. Approval to operate under this permit shall be valid for not longer than 12 months. This permit does not relieve the permittee of the responsibility of obtaining other required permits if any.

The Department will require a person to obtain an individual permit when the wastewater discharge does not meet the eligibility criteria of this general permit, contributes to pollution, has the potential to cause or causes an adverse impact on public health or water quality, or a change occurs in the availability of technology or practices for the control or abatement of pollutants contained in the discharge.

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1 OPERATIONAL REQUIREMENTS

1.1 NOTICE OF INTENT

1.1.1 An applicant wishing to conduct a discharge activity under this permit and whose total discharge volume is equal to or greater than 10,000 gallons, must submit a Notice of Intent to the Alaska Department of Environmental Conservation. The Notice of Intent form can be found at http://www.dec.state.ak.us/water/wwdp/index.htm or by sending a request to DEC.Water.WQPermit@alaska.gov. The Notice of Intent must be submitted to ADEC at least thirty (30) days prior to the start of the discharge activity at:

Alaska Department of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Programs
555 Cordova Street
Anchorage, Alaska 99501
Phone (907)-269-6285
Fax (907)-269-3487
Email DEC.Water.WQPermit@alaska.gov
http://www.dec.state.ak.us/water/wwdp/index.htm

1.1.2 A Notice of Intent is **not** required for discharges of less than a total of 10,000 gallons. However the water quality standards in 18 AAC 70 and the terms and conditions in this permit still apply to all activities conducted under this permit even if submittal of a Notice of Intent is not required.

1.1.3 The Notice of Intent must be accompanied by the appropriate fee as found in 18 AAC 72.956 or any such regulations as amended. The permit fees can be found the Department's website at: www.state.ak.us\dec\water\wwdp\online permitting\fees.htm

1.1.4 An applicant must have written authorization from the Department before conducting a discharge activity under this permit which results in a total discharge of 10,000 gallons or more of contained water. The Department will, in its discretion, deny use of this permit, or attach or waive conditions appropriate for a specific discharge activity in the authorization.

1.1.5 The written authorization is effective for the period beginning on the effective date of the authorization and lasting through its expiration date. If this permit is modified or renewed during the term of the authorization, the new permit requirements apply.

1.2 TERMS AND CONDITIONS

1.2.1 The permittee is authorized to discharge wastewater as specified in this subsection.

1.2.2 Wastewater discharged shall not exceed the following limitations:

Effluent Characteristic	**Maximum Value**
Turbidity	5 NTU above background[1]
Settleable Solids	0.2 mL/L (milliliters per liter)
Total Chlorine	11 µg/L fresh water or 7.5 µg/L saltwater (micrograms per liter)
pH	Between 6.5 and 8.5 pH units or within 0.2 units (marine water), or 0.5 units (fresh water) of the receiving water pH at all times.
Total Aqueous Hydrocarbons (TAqH)	15 µg/L (micrograms per liter)
Total Aromatic Hydrocarbons (TAH)	10 µg/L (micrograms per liter)

1.2.3 The discharge shall not cause thermal or physical erosion.

1.2.4 The discharge shall not cause re-suspension of sediments upon discharge to receiving waters.

1.2.5 The discharge shall be free of (a) any additives such as antifreeze solutions, methanol, solvents, and corrosion inhibitors; (b) solid wastes and garbage; (c) toxic substances; (d) grease or oils which exceed the effluent limitations in Section 1.2.2 or produce sheen; (e) foam in other than trace amounts; or (f) other contaminants.

1.2.6 The discharge shall not cause a violation of the Alaska Water Quality Standards (18 AAC 70).

1.2.7 The discharge shall not cause adverse effects to aquatic or plant life, their reproduction or habitats.

1.2.8 The Department will, in its discretion, attach terms and conditions to the written authorization required by Section1.1.4, as appropriate.

---

1 Applies to discharges to the waters of the state only. Not in effect for disposals which freeze upon discharge. Shall not have more than 10% increase in turbidity when the natural condition is more than 50 NTU, not to exceed a maximum increase of 15 NTU. Shall not exceed 5 NTU over natural conditions for all lake waters.

1.2.9 This permit does not constitute a grant of water rights.

1.2.10 An applicant must contact the Department of Fish & Game, Office of Habitat Management and Permitting, http://www.habitat.adfg.alaska.gov/ , two weeks prior to any discharge, if the discharged water will enter fish-bearing waters.

1.2.11 If a toxic pollutant (including oil, grease, or solvents) concentration standard is established in accordance with 18 AAC 70 for a pollutant present in this discharge, and such standard is more stringent than the limitation in this permit, this permit is considered to be modified in accordance with the toxic pollutant concentration standard.

1.3 MONITORING

1.3.1 Test procedures used for sample analysis shall conform to methods cited in 18 AAC 70.020(c), or as such regulations may be amended. The permittee may substitute alternative methods of monitoring or analysis upon receipt of prior written approval from the Department.

1.3.2 The permittee shall use current calibrated equipment when taking field measurements, and shall use bottles and sampling procedures provided by the laboratory when taking samples for laboratory analysis.

1.3.3 Samples and measurements taken shall be representative of the volume and nature of the monitored activity.

1.3.4 For discharges equal to or greater than 10,000 gallons, the permittee shall monitor the contained water, background natural condition, or the wastewater stream of the discharge in the following manner and frequency. Monitoring results from all before discharge samples must be received and reviewed by the permittee before discharging in order to insure compliance with the conditions in Section 1.2.2.

For discharges less than 10,000 gallons, the permittee is required to conduct the Field monitoring to insure compliance with the conditions in Section 1.2.2, but is not required to conduct the TAqH or TAH Lab monitoring unless there is sheen.
In accordance with this section, the following requirements apply:

Effluent Characteristic	Sample Location	Minimum Frequency	Sample Type	Sample method
Total Flow	Effluent	Daily	Estimate or Measured	Field
Turbidity (NTU)	Effluent & Background	Before discharge and 1 per week	Grab	Field
Settleable Solids	Effluent	Before discharge and 1 per week	Grab	Field (see note 11 to 18 AAC 70.020(b))
Total Chlorine	Containment	Before discharge	Grab	Field
pH	Containment	Before discharge	Grab	Field
Total Aqueous Hydrocarbons (TAqH)	Containment	Before discharge	Grab	Lab method 602 or 624 (see note 7 to 18 AAC 70.020(b))
Total Aromatic Hydrocarbons (TAH)	Containment	Before discharge	Grab	Lab method 610 or 625 (see note 7 to 18 AAC 70.020(b))

1.3.5 If the permittee monitors any contained water, discharge, or surface water characteristic identified in this permit more frequently than required, the results of such monitoring shall be reported to the Department in the monitoring report required under Section 1.4 of this permit.

1.3.6 Additional monitoring parameters and increased monitoring frequency may be required on a case-by-case basis.

1.3.6 Specific requirements for monitoring may be waived by the Department in the authorization to discharge under this permit if the information submitted in the Notice of Intent demonstrates no reasonable potential to exceed the effluent limitations in Section 1.2.2 of this permit.

1.4 REPORTING

For a discharge equal to or greater than 10,000 gallons, monitoring results shall be recorded on a Discharge Monitoring Report (DMR) and submitted no later than the 14th day of the month following the month that each sampling occurs. Reporting shall begin when the discharge starts. Reporting shall be done on the electronic form included with the written authorization or on the form located at the website address provided below. The reports shall be emailed AND signed copies of the monitoring results and all other reports required herein shall be submitted to the Department office at the following address:

Alaska Department of Environmental Conservation
Division of Water
Compliance Section
555 Cordova Street
Anchorage, Alaska 99501
Toll free 1-877-569-4114 (outside Anchorage service area)
In Anchorage service area 907-269-4114
Fax (907) 269-4604
Email: dec-wqreporting@alaska.gov
http://www.dec.state.ak.us/water/Compliance/index.htm

A false statement knowingly made by the permittee, the operator, or other employee, including a contractor, on any such report may result in the imposition of criminal penalties as provided for under AS 46.03.790.

1.5 RECORDS RETENTION

All records and information resulting from the monitoring activities required by this permit, including all records of analyses performed, calibration and maintenance of instrumentation, and recordings from continuous monitoring instrumentation shall be retained in Alaska for three years for observation by the Department. Upon request from the Department, the permittee shall submit certified copies of such records.

1.6 CHANGE IN DISCHARGE

A discharge authorized herein shall comply with the terms and conditions of this permit. The discharge of any pollutant or toxic material more frequently than specified, or at a concentration or limit not authorized, shall constitute noncompliance with the permit. Any anticipated construction changes, flow increases, or process modifications which will result in new, different, or increased discharge of pollutants and will cause a violation of this permit's limitations are not allowed under this permit and must be reported by submission of an individual waste discharge permit application or a revision of the Notice of Intent. Physical changes to the treatment process may be subject to plan review.

1.7 ACCIDENTAL DISCHARGES

The permittee shall provide protection from accidental discharges not in compliance with the terms and conditions of this permit. Facilities to prevent such discharges shall be maintained in good working condition at all times.

1.8 NONCOMPLIANCE NOTIFICATION

1.8.1 If, for any reason, the permittee does not comply with or will be unable to comply with any term or condition specified in this permit, the permittee shall report the noncompliance to the Department within 72 hours of becoming aware of such noncompliance. This report shall be by telephone, fax, email, or in the absence of these avenues, by mail to the address information provided in Section 1.4.

1.8.2 A written follow-up report shall be sent to the Department within seven (7) days of the noncompliance event. The written report shall contain, but is not limited to:

1.8.2.1 Times and dates on which the event occurred, and if not corrected, the anticipated time the noncompliance is expected to continue;

1.8.2.2 A detailed description of the event, including quantity and type of materials causing the noncompliance;

1.8.2.3 Details of any actual or potential impact on the receiving environment or public health;

1.8.2.4 Details of actions taken or to be taken to correct the cause(s) of the event and to remedy any damage that result from the event.

1.8.2.5 A permittee may use the ADEC non-compliance notification form to provide the required information of this section. Go to the website address provided in Section 1.4 or send a request to the email address provided in Section 1.4.

1.9 RESTRICTION OF PERMIT USE

The department will require a person with a general permit authorization to obtain an individual permit if the department determines that the discharge does not meet the requirements of this permit, the discharge contributes to pollution, there is a change in technology, or the environment or public health are not protected.

1.10 TRANSFER OF OWNERSHIP

In the event of any change in control or ownership of the permitted facility, the permittee shall notify the succeeding owner or controller of the existence of this permit and the authorization by letter or by using the Change in Ownership Form. A copy of the letter or form shall be forwarded to the Department at the address listed in Section1.1. The original permittee remains responsible for permit compliance unless and until the succeeding owner or controller agrees in writing to assume such responsibility and the Department approves assignment of the permit. The Department will not unreasonably withhold such approval.

2 GENERAL REQUIREMENTS

2.1 ACCESS AND INSPECTION

The permittee shall allow the department access to the permitted facilities at reasonable times to conduct scheduled or unscheduled inspections or tests to determine compliance with this permit, the terms of the authorization to operate under this permit, State laws, and regulations.

2.2 INFORMATION ACCESS

Except where protected from disclosure by applicable state or federal law, all records and reports submitted in accordance with the terms and conditions of this permit shall be available for public inspection at the appropriate State of Alaska Department of Environmental Conservation office.

2.3 CIVIL AND CRIMINAL LIABILITY

Nothing in this permit shall relieve the permittee from any potential civil or criminal liability for noncompliance with this permit, their authorization to operate, or applicable laws and regulations.

2.4 AVAILABILITY

The permittee shall post or maintain a copy of this permit and their authorization available to the public at the discharge facility.

2.5 ADVERSE IMPACT

The permittee shall take all necessary means to minimize any adverse impacts to the receiving waters or lands resulting from noncompliance with any limitation or condition specified in this permit, including additional monitoring needed to determine the nature and impact of the non-complying activity. The permittee shall clean up and restore all areas adversely impacted by the non-complying activity.

2.6 CULTURAL OR PALEONTOLOGICAL RESOURCES

If cultural or paleontological resources are discovered as a result of this discharge activity, work which would disturb such resources is to be stopped, and the State Historic Preservation Office, Division of Parks and Outdoor Recreation, Department of Natural Resources (907) 762-2622, is to be notified immediately.

2.7 OTHER LEGAL OBLIGATIONS

This permit does not relieve the permittee from the duty to obtain any other necessary permits or approvals from the Department or other local, state, or federal agencies, and to comply with the requirements contained in any such permits. All activity conducted and all plan approvals implemented by the permittee pursuant to

the terms of this permit shall comply with all applicable local, state, and federal laws and regulations.

2.8 POLLUTION PREVENTION

In order to prevent and minimize present and future pollution, when making management decisions that affect waste generation, the permittee shall consider the following order of priority options as outlined in AS 46.06.021:

- Wastewater source reduction;
- Wastewater recycling;
- Wastewater treatment; and
- Wastewater discharge to the environment.

Department of Environmental Conservation

Water Online Application System

Admin Pages:
Home
Activate / Deactivate Permits
O2D Administrator

This page shows the current status of the permit you selected to view. On this page you can view and update or change the status. To change the status, just select another option from the dropdown list, and click the 'Set ... Status' button next to the list. This will update the permit to the state you have selected in that dropdown list.

Created By:	DEREK TANNAHILL on 8/28/2012 2:12:35 PM	**Last Modified:**	8/29/2012 10:20:29 AM

Status	Details	Options	Change Status
Signed	Administratively signed on 8/29/2012 10:20:29 AM	Signed	Set Signed Status
Paid	Paid on 8/28/2012 2:35:43 PM	Paid	Set Payment Status
Fee Amount	$350.00		Void

Application Data (Completed)

Tracking #:	2009DB0004-0216	**Facility:**	Northeast Cape HTRW Remedial Actions	**Permit Type:**	Contained Water Permit

Project Information	***Details***
Project Name	Northeast Cape HTRW Remedial Actions
On-site Address Line 1	Main Operations Complex, Site 28
On-site Address Line 2	
Nearest City	Savoonga
State	AK
Nearest Zip Code	99769
Country	USA
On-site Phone	8773700628
On-site Fax	
On-site Email	
Description of project	
NAICS Code	I do not know

Contacts	***Details***	
On-Site Contact	Name:	Chuck Croley
	Title	Site Superintendent
	Organization:	Bristol Environmental Remediation Services, LLC
	Address:	111 W. 16th Avenue, Third Floor
	City:	Anchorage
	State:	AK
	Zip:	99501
	Country:	USA
	Phone:	9075630013
	Cell:	
	Fax:	
	Email:	

	Website:	
Applicant, Billing Contact	Name:	Greg Jarrell
	Title	Project Manager
	Organization:	Bristol Environmental Remediation Services, LLC
	Address:	111 W. 16th Avenue, Third Floor
	City:	Anchorage
	State:	AK
	Zip:	99501
	Country:	USA
	Phone:	9075630013
	Cell:	
	Fax:	
	Email:	
	Website:	
Responsible Party	Name:	Carey Cossaboom
	Title	Project Manager
	Organization:	US Army Engineer District, Alaska
	Address:	P.O. Box 6898
	City:	JBER
	State:	AK
	Zip:	99506
	Country:	USA
	Phone:	9077538689
	Cell:	
	Fax:	
	Email:	
	Website:	

Discharge Information	***Details***
Is this a discharge of hydrostatic test water?	No
Does the water contain chlorine or other toxic substances?	No
End of pipe latitude (1) Converter	
End of pipe longitude (1)	
Additional end of pipe latitudes and longitudes	
Mapping Technique	GPS Unit
Description of Wastewater Treatment Plan	
The water processing site will consist of a Geotube placed atop an impermeable liner. The Geotube will contain the sediment while allowing water to pass through the pore spaces. The wastewater will be captured by the liner and directed toward a primary water impoundment. Water samples will be collected from the primary water impoundment and analyzed at a laboratory for all COCs. Water from the primary impoundment will be treated through a granular activated carbon filtering system and discharged into a secondary impoundment. Wastewater samples will be collected from the secondary impoundment and analyzed at a laboratory for all COCs. Water will remain in the secondary impoundment until sample results confirm that all contaminant concentrations are below discharge criteria presented in the State of Alaska Wastewater General Permit 2009DB0004. If results indicate concentrations below discharge criteria, then the treated water will be discharged to the ground.	
Maximum anticipated discharge flow rate (gallons per day - GPD)	
Average anticipated discharge flow rate (gallons per day - GPD)	
Total anticipated discharge (gallons)	
Discharge velocity at end of pipe (feet per second - FPS)	
Anticipated start date	09/03/2012
Anticipated completion date	10/05/2012

Receiving Area Information	***Details***
Receiving Area Name	Water Processing Area
Receiving Area Type	Unvegetated Area

Description of receiving area Gravel pad upland of drainage area.	
Supply for aquaculture	No
Supply for industrial use	No
Primary contact recreation	I do not know
Secondary contact recreation	I do not know
Catalogued anadromous spawning area	I do not know
Harvesting for consumption of raw mollusks or other raw aquatic life	No

Attachments	***Title (Type), Description***
FIG10-SITE28-JULY12.pdf	**PROPOSED PHASE 1 SEDIMENT REMOVAL AREAS (Project Description Material)**

Creator	Date	Comment		
jjgreuey	08/29/2012 10:19	Received e-mailed signature page on 8/28/12 from Greg Jarrell. Admin signed	Edit	Delete

Add Comment

Home

STATE OF ALASKA

SARAH PALIN, GOVERNOR

1300 COLLEGE RD.
FAIRBANKS, AK 99701
PHONE: (907) 459-7289
FAX: (907) 459-7303

DEPARTMENT OF FISH AND GAME

DIVISION OF HABITAT

FISH HABITAT PERMIT
FH09-III-0102

ISSUED: April 22, 2009
EXPIRES: December 31, 2014

Ms. Molly Welker
Bristol Environmental and Engineering Services Corporation
111 W. 16th Ave., Third Floor
Anchorage, AK 99501-5109

Dear Ms. Welker:

RE: Equipment Stream Crossing, Northeast Cape White Alice Site Removal Action (St. Lawrence Island), T25S, R54W, Quangeghsaq River; SID AK 0203-17AA

Pursuant to AS 16.05.841, the Alaska Department of Fish and Game (ADF&G), Division of Habitat, has reviewed your proposal to make multiple crossings at multiple sites (four) across the Quangeghsaq River with amphibious all-terrain vehicles. Timbers or poles may need to be placed in and adjacent to the stream to create better crossing sites that prevent ATVs from getting stuck and reduce damage to vegetation. Access is needed to cut down and remove hundreds of poles from abandoned utility lines. ADF&G originally received a description of the proposed project on March 19, 2002 and a more detailed description via email on April 3, 2002. That activity was permitted under Fish Habitat Permit FG02-III-0073 which expired December 31, 2005. Additional access may be needed to conduct maintenance activities.

The Quangeghsaq River supports anadromous Dolly Varden (and possibly whitefish) and resident fish (e.g., Alaska blackfish) in the area of your proposed activity. Based upon our review of your plans, your proposed project may obstruct the efficient passage and movement of fish.

In accordance with AS 16.05.841, project approval is hereby given subject to the following stipulations:

(1) Equipment crossings shall be made from bank to bank in a direction substantially perpendicular to the direction of stream flow.

Equipment crossings shall be made only at locations with gradually sloping banks. There shall be no crossings at locations with sheer or cut banks.

Banks shall not be altered or disturbed in any way to facilitate crossings. If stream banks are inadvertently disturbed, they shall be immediately stabilized to prevent erosion.

(2) If timber/poles are placed in and adjacent to the stream to create a crossing site, they must be placed in such a way that free passage of fish is assured. In addition, all material shall be completely removed from the streambed and banks at the end of each work season. If needed, the streambed shall be recontoured to assure that "trenches" are not left that will trap fish at low-water levels.

(3) Vehicle crossings shall be limited to only what is necessary to accomplish work.

(4) No damming or diversions are permitted.

The permittee is responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved plan. For any activity that significantly deviates from the approved plan, the permittee shall notify the ADF&G and obtain written approval in the form of a permit amendment before beginning the activity. Any action taken by the permittee, or an agent of the permittee, that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any stipulation contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is the responsibility of the ADF&G. Therefore, it is recommended that the ADF&G be consulted immediately when a deviation from the approved plan is being considered.

This letter constitutes a permit issued under the authority of AS 16.05.841. This permit must be retained on site during construction. Please be advised that this approval does not relieve you of the responsibility of securing other permits, state, federal or local.

This permit provides reasonable notice from the commissioner that failure to meet its terms and conditions constitutes violation of AS 16.05.861; no separate notice under AS 16.05.861 is required before citation for violation of AS 16.05.841 can occur.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. The department reserves the right to require mitigation measures to correct disruption to fish and game created by the project and which were a direct result of the failure to comply with this permit or any applicable law.

The recipient of this permit (permittee) shall indemnify, save harmless, and defend the department, its agents and its employees from any and all claims, actions or liabilities for

injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or the permittee's performance under this permit. However, this provision has no effect, if, and only if, the sole proximate cause of the injury is the department's negligence.

Sincerely,

Denby S. Lloyd, Commissioner

BY: Robert F. "Mac" McLean, Regional Supervisor
Habitat Division

cc: Chris Milles, ADNR, Fairbanks
Ann Rappoport, USFWS, Anchorage
Jeanne Hanson, NMFS, Anchorage

RFM:mac

STATE OF ALASKA

SARAH PALIN, GOVERNOR

1300 COLLEGE RD.
FAIRBANKS, AK 99701
PHONE: (907) 459-7289
FAX: (907) 459-7303

DEPARTMENT OF FISH AND GAME

DIVISION OF HABITAT

FISH HABITAT PERMIT
FH09-III-0103

ISSUED: April 22, 2009
EXPIRES: December 31, 2014

Ms. Molly Welker
Bristol Environmental and Engineering Services Corporation
111 W. 16th Ave., Third Floor
Anchorage, AK 99501-5109

Dear Ms. Welker:

RE: Bridge Repair, Northeast Cape White Alice Site Removal Action (St. Lawrence Island); T25S, R54W, Suqitughneq River; SID AK0203-17AA

Pursuant to AS 16.05.841, the Alaska Department of Fish and Game (ADF&G), Division of Habitat, has reviewed your proposal to place riprap or conduct maintenance activities in the Suqitughneq River (on St. Lawrence Island) to protect the bridge abutments. ADF&G received your request via email on April 17, 2009. Your original request was received on March 19, 2002 with a more detailed description received via email on April 3, 2002. The original activity was permitted under Fish Habitat Permit FG02-III-0072 which expired December 31, 2005.

Your original proposed project entailed placing approximately 15 cubic yards of riprap at the base of the abutments of the bridge crossing the Suqitughneq River each work season (two work seasons are anticipated). An excavator, operating from the deck of the bridge, will place the riprap. The current proposed work will included any necessary repairs but will not exceed the original footprint and scope of work.

The Suqitughneq River supports anadromous Dolly Varden (and possibly whitefish) and resident fish (e.g., Alaska blackfish) in the area of your proposed activity. Based upon our review of your plans, your proposed project should not obstruct the efficient passage and movement of fish.

In accordance with AS 16.05.841, project approval is hereby given subject to the following stipulations:

(1) Banks shall not be altered or disturbed in any way. If stream banks are inadvertently disturbed, they shall be immediately stabilized to prevent erosion.

(2) "End-dumping" riprap is prohibited. Riprap shall be strategically placed to prevent excess rock in the streambed.

The permittee is responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved plan. For any activity that significantly deviates from the approved plan, the permittee shall notify the ADF&G and obtain written approval in the form of a permit amendment before beginning the activity. Any action taken by the permittee, or an agent of the permittee, that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any stipulation contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is the responsibility of the ADF&G. Therefore, it is recommended that the ADF&G be consulted immediately when a deviation from the approved plan is being considered.

This letter constitutes a permit issued under the authority of AS 16.05.841. This permit must be retained on site during construction. Please be advised that this approval does not relieve you of the responsibility of securing other permits, state, federal or local.

This permit provides reasonable notice from the commissioner that failure to meet its terms and conditions constitutes violation of AS 16.05.861; no separate notice under AS 16.05.861 is required before citation for violation of AS 16.05.841 can occur.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. The department reserves the right to require mitigation measures to correct disruption to fish and game created by the project and which were a direct result of the failure to comply with this permit or any applicable law.

The recipient of this permit (permittee) shall indemnify, save harmless, and defend the department, its agents and its employees from any and all claims, actions or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or the permittee's performance under this permit. However, this provision has no effect, if, and only if, the sole proximate cause of the injury is the department's negligence.

Sincerely,

Denby S. Lloyd, Commissioner

BY: Robert F. "Mac" McLean, Regional Supervisor
Habitat Division
Alaska Department of Fish and Game

cc: Chris Milles, ADNR, Fairbanks
Ann Rappoport, USFWS, Anchorage
Jeanne Hanson, NMFS, Anchorage

RFM:mac

Luetters, Susan

From: Sackinger, Robert B (DNR) <robert.sackinger@alaska.gov>
Sent: Wednesday, April 11, 2012 3:51 PM
To: Luetters, Susan
Cc: Floyd, Christopher B POA; Welker, Molly
Subject: RE: NE Cape 2012

Susan,

Dianna is now working for BLM. I have assumed her previous duties.
The letter is still valid. I will note (again) that clean up is still ongoing. You are "good to go."

Thanks,

R. Bruce Sackinger
Natural Resource Specialist III
State of Alaska, Department of Natural Resources
Division of Mining, Land & Water, Northern Regional Office
(907) 451-2720
bruce.sackinger@alaska.gov

From: Luetters, Susan [mailto:sluetters@bristol-companies.com]
Sent: Wednesday, April 11, 2012 3:29 PM
To: Sackinger, Robert B (DNR)
Cc: Floyd, Christopher B POA; Welker, Molly
Subject: FW: NE Cape 2012

Please disregard the previous email as one of the attachments was incomplete.

Susan Luetters
Senior Environmental Scientist
Bristol Engineering Services Corporation
Phone : (907) 563-0013

From: Luetters, Susan
Sent: Wednesday, April 11, 2012 3:20 PM
To: 'Leinberger, Dianna L (DNR)'
Cc: Welker, Molly; Floyd, Christopher B POA
Subject: RE: NE Cape 2012

Hi Dianna,

It is that time of year again. Bristol Environmental Remediation Services (BERS) will be heading out to North East Cape again. I have included the email string from the past couple of years, and as attachments the original Permit letter and the current year's project description. Conditions surrounding the request remain unchanged from the past three years. Are we still good to go?

f you require any additional information please call/email me.

From: Kimberly_Klein@fws.gov
To: Luetters, Susan
Cc: Floyd, Christopher B POA; Welker, Molly
Subject: RE: 2010 and 2011 Project Information - NE Cape, St. Lawrence Island
Date: Monday, April 23, 2012 5:01:03 PM

Susan, Christopher, and Molly,
Thank you for sending the project description and figures for the proposed 2012 cleanup
activities at the St. Lawrence Island Northeast Cape Site for potential impacts to threatened and endangered species. We reviewed and evaluated the project for new information
following the activities of 2010. Based on this information, we have determined that the project has not substantially changed from that evaluated in 2009-2011, and as such, it will not be
necessary to reinitiate consultation with the US Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act for this year's (2012) activities. The determination and concurrence statement issued May 13, 2009 will remain in effect and applicable to the cleanup activities of 2012.

This letter relates only to federally listed or proposed species, and/or designated or proposed critical habitat, under our jurisdiction. This letter does not address species under the jurisdiction of the National Marine
Fisheries Service, or other legislation or responsibilities under the Fish and Wildlife Coordination Act, Clean Water Act, National Environmental Policy Act, Marine Mammal Protection Act, Migratory Bird Treaty Act, or Bald and Golden Eagle Protection Act. Please send us and available monitoring and reporting documents or updated permits when these are available, and let us know if you have any questions or
concerns. Thank you.

Kimberly Klein
Endangered Species Biologist
USFWS/AFWFO
605 W. 4th Ave. Room G-61
Anchorage, AK 99501
(907) 271-2066

"Luetters, Susan" <sluetters@bristol-companies.com>

"Luetters, Susan" <sluetters@bristol-companies.com>

04/13/2012 05:17 PM

To<Kimberly_Klein@fws.gov>
cc"Welker, Molly" <mwelker@bristol-companies.com>, "Floyd, Christopher B POA" <Christopher.B.Floyd@usace.army.mil>
SubjectRE: 2010 and 2011 Project Information - NE Cape, St. Lawrence Island

Luetters, Susan

From: Dana Seagars <dana.seagars@noaa.gov>
Sent: Wednesday, April 11, 2012 4:34 PM
To: Luetters, Susan
Cc: Welker, Molly; Jon Kurland
Subject: Re: St. Lawrence Island: NE Cape Cleanup 2012

Hi Susan:
There have been no changes on the Steller sea lion front since last year, so yes, the letter is still valid.
Please adjust your contact for Assistant Administrator of Protected Resources from Kaja Brix to Jon Kurland effective immediately. Jon's email is Jon.Kurland@noaa.gov and his phone number in Juneau is 907-586-7638.
Thank you, Dana Seagars

On Wed, Apr 11, 2012 at 3:10 PM, Luetters, Susan <sluetters@bristol-companies.com> wrote:

Hi Dana,

Bristol Environmental Remediation Services (BERS) will be heading out to North East Cape again this year in June, and we are checking in with NOAA-NMFS to reaffirm our compliance with existing reg.'s as it pertains to our work getting to, and while on, the island.

The email string associated with this transmission is the correspondence between your office and ours beginning in 2010.

We would appreciate it if you would please verify that the original letter, as it stands, is still valid. For your information I have attached the current Project Description and the original 2009 correspondence between our office and yours regarding marine species of concern to NOAA-NMFS.

Thank you for your time and attention to this matter, and if you have any questions please call or email me.

Susan Luetters
Senior Environmental Scientist
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
Direct : (907) 743-9316
FAX : (907) 563-6713
sluetters@bristol-companies.com
http://www.bristol-companies.com/

STATE OF ALASKA

SEAN PARNELL, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF MINING, LAND & WATER
Water Resources Section

550 WEST 7TH AVENUE, SUITE 1020
ANCHORAGE, ALASKA 99501-3562
PHONE: (907) 269-8600
FAX: (907) 269-8904

June 12, 2012

Bristol Environmental Remediation Services
Attn: Molly Welker
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501

Subject: Temporary Water Use Authorization, TWUP A2012-63

Dear Ms. Welker:

The Water Resources Section completed the review of the Application for Temporary Use of Water from Bristol Environmental Remediation Services. Enclosed is the Temporary Water Use Authorization TWUP A2012-63, **with an expiration date of September 15, 2016,** for uses associated with the ongoing environmental remedial cleanup activities at the former Northeast Cape site on St. Lawrence Island.

Please note all of the conditions on the permit, especially conditions one (1), five (5) and thirteen (13) through twenty-four (24).

If changes to this project are proposed during its operation, please contact this office immediately to determine if further review is necessary. If you have any questions or concerns, I may be contacted at (907) 269-8588. Thank you for your cooperation with the Water Resources Section.

Sincerely,

Merry Johnson
Natural Resource Specialist III

Enclosures: Temporary Water Use Authorization – TWUP A2012-63
Administrative Service Fee Fact Sheet

Cc. Susan Luetters, Bristol Environmental & Engineering Services Corporation
(Via email: sluetters@bristol-companies.com)

ALASKA DEPARTMENT OF NATURAL RESOURCES
Division of Mining, Land, and Water
Water Resources Section
550 West 7th Avenue, Suite 1020, Anchorage, AK 99501-3562

TEMPORARY WATER USE AUTHORIZATION
TWUP A2012-63

Pursuant to AS 46.15, as amended and the rules and regulations promulgated thereunder, permission is hereby granted to Bristol Environmental Remediation Services, 111 W. 16th Avenue, Third Floor, Anchorage, Alaska 99501, and its contractors, **to withdraw up to 3,000 gallons of** water per day **(subject to a maximum of 180,000 gallons of water)** from June 15 through September 15 of each authorized year from the below-described source of water. The water will be used for camp water supply and dust suppression associated with the ongoing environmental remedial cleanup activities at the former Northeast Cape site, on Saint Lawrence Island, Alaska.

SOURCE OF WATER:

Suqitughneg River within NW¼ Section 15, Township 25 South, Range 54 West, Kateel River Meridian.

STRUCTURES TO BE CONSTRUCTED AND USED:

Screened water intake structure, four-inch pump with 35-gpm output, hose and/or pipe and other water removal and distribution equipment.

Changes in the natural state of water are to be made as stated herein and for the purposes indicated.

During the effective period of this authorization, the permittee shall comply with the following conditions:

CONDITIONS:

1. This authorization does not authorize the permittee to enter upon any lands until proper rights-of-way, easements, or permission documents from the appropriate landowner have been obtained.
2. Follow acceptable engineering standards in exercising the privilege granted herein.
3. Comply with all applicable laws, and any rules and/or regulations issued thereunder.
4. Except for claims or losses arising from negligence of the State, defend and indemnify the State against and hold it harmless from any and all claims, demands, suits, loss, liability and expense for injury to or death of persons and damages to or loss of property arising out of or connected with the exercise of the privileges covered by this authorization.
5. Notify the Water Resources Section upon change of address.

6. The permittee shall obtain and comply with other permits/approvals (state, federal, or local) that may be required prior to beginning water withdrawal pursuant to this authorization.

7. The permittee shall allow an authorized representative of the Water Resources Section to inspect, at reasonable times, any facilities, equipment, practices, or operators regulated or required under this authorization.

8. Failure to respond to a request for additional information during the term of the authorization may result in the termination of this authorization.

9. The permittee is responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project, and shall ensure that workers are familiar with the requirements of this authorization. For any activity that significantly deviates from the approved project during its siting, construction, or operation, the permittee is required to contact the Water Resources Section and obtain approval before beginning the activity.

10. The Water Resources Section may modify this authorization to include different limitations, expand monitoring requirements, evaluate impacts, or require restoration at the site.

11. Any false statements or representations, in any application, record, report, plan, or other document filed or required to be maintained under this authorization, may result in the termination of this authorization.

12. Pursuant to 11 AAC 93.220 (f), this authorization may be suspended by the Department of Natural Resources to protect the water rights of other persons or the public interest.

13. Any water intake structure in fish bearing waters, including a screened enclosure, well-point, sump, or infiltration gallery, must be designed, operated, and maintained to prevent fish entrapment, entrainment, or injury, unless specifically exempted by the Alaska Department of Fish and Game, Habitat Division.

14. **Water intake structure must be enclosed and centered within a screened box or cylinder with a maximum screen-mesh size of 1/4 inches. To reduce fish impingement at the screen/water interface, water velocity may not exceed 0.5 feet per second when the pump is operating.**

15. **Adequate flow and water levels must remain to support indigenous aquatic life and provide for the efficient passage and movement of fish. Issuance of this authorization does not give the permittee the right to block or dam a water course.**

16. Permittee shall inspect the intake screen for damage (torn screen, crushed screen, screen separated from intake ends, etc.) after each use and prior to each deployment. Any damage observed must be repaired prior to use of the structure. The structure must always conform to the original design specifications while in use.

17. Water discharge (including runoff) shall not be discharged at a rate or location resulting in sedimentation, erosion, or other disruptions to the bed or banks of water bodies, causing water quality degradation.

18. The suction hose at the water extraction site must be clean and free from contamination at all times to prevent introduction of contamination to the water body, and should be in water of sufficient depth so that sediments are not disturbed during the water extraction process.

19. Water bodies shall not be altered to facilitate water withdrawal or disturbed in any way. If banks, shores, or beds are inadvertently disturbed, excavated, compacted, or filled by activities attributable to this project, they shall be immediately stabilized to prevent erosion and resultant sedimentation of water body which could occur both during and after operations. Any disturbed areas shall be recontoured and revegetated.

20. Pumping operations shall be conducted in such a way as to prevent any petroleum products or other hazardous substances from contaminating surface or ground water. Pumps will not be fueled or serviced within 100 feet of a pond, lake, stream, or river unless the pumps are situated within a catch basin designed to contain any spills. Vehicles will not be fueled or serviced within 100 feet of a pond, lake, stream or river. Equipment shall not be stored or serviced within 100 feet of any of the subject water bodies. In case of accidental spills, absorbent pads shall be readily available at the water collection point. All spills must be reported to the Alaska Department of Environmental Conservation and the Alaska Department of Natural Resources.

21. In-water activity will be limited to placement and removal of the intake structure only. No other in-water activities will occur.

22. There shall be no wheeled, tracked, excavating, or other machinery or equipment (with the exception of the non-motorized screened intake box) operated below the ordinary high water line.

23. The placement of water trucks and/or pumping equipment shall not unnecessarily hinder public access.

24. Per 11 AAC 05.010. (a)(8)(M), an annual administrative service fee shall be assessed on this appropriation of water.

This Temporary Water Use Authorization is issued pursuant to 11 AAC 93.220. No water right or priority is established by a temporary water use authorization issued pursuant to 11 AAC 93.220. Water so used is subject to appropriation by others (11 AAC 93.210(b)).

Pursuant to 11 AAC 93.210 (b), authorized temporary water use is subject to amendment, modification, or revocation by the Department of Natural Resources if the Department of Natural Resources determines that amendment, modification, or revocation is necessary to supply water to lawful appropriators of record or to protect the public interest.

This authorization shall expire on September 15, 2016.

Date issued: June 12, 2012

Approved: K. Plutt

Title: Natural Resource Manager

REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
ENVIRONMENTAL ENGINEERING SECTION (EN-EE)
P.O. BOX 6898
JBER, ALASKA 99506-0898

01 May 2013

Environmental Engineering Section C-0004

SUBJECT: Northeast Cape Right of Entry Documents, Contract W911KB-13-C-0004, NE Cape HTRW Remedial Action (FY13), Northeast Cape, St. Lawrence Island, Alaska

Bristol Environmental Remediation Services
111 W. 16th Avenue, Suite 301
Anchorage, AK 99501

Gentlemen:

The purpose of this letter is to deliver Northeast Cape Right of Entry (ROE) documents recently signed by members of Kukulget, Inc. and Sivuqaq, Inc. All personnel (contractor, subcontractors, government, and other visitors) working on the project should be made aware of and adhere to the conditions in the ROE documents. Please include the ROE documents in the 2013 Work Plan.

If you have any questions, please contact the undersigned at 753-5789.

Sincerely,

Ronald S. Broyles
Contracting Officer's Representative

DEPARTMENT OF THE ARMY
RIGHT-OF-ENTRY FOR
ENVIRONMENTAL ASSESSMENT AND RESPONSE

The undersigned, hereinafter called the "**Owner**", in consideration of the mutual benefits of the work described below, hereby grants to the **UNITED STATES OF AMERICA**, hereinafter called the "Government", a right-of-entry upon the following terms and conditions:

1. The Owner hereby grants to the Government an irrevocable right to enter in, on, over and across the land described herein, for a period not to exceed five (5) years, **beginning June 1, 2013**, and terminating upon the earlier completion of remediation or the filling of a notice of termination in the local land records by the representative of the United States in charge of the Saint Lawrence Island remediation project, for use by the United States, its representatives, agents, contractors, and assigns, as a work area for environmental investigation and response**;** including the right to store, move, and remove equipment and supplies; erect and remove temporary structures on the land; investigate and collect samples; excavate and remove ordnance and explosive waste, pollutants, hazardous substances, contaminated soils, containerized waste, and replace with uncontaminated soil; excavate and remove all storage tanks (above, at and below ground level), contents and appurtenant piping; demolish and dispose of former military structures and debris; construct, operate, maintain, alter, repair and remove groundwater monitoring wells, groundwater purification and injection systems, appurtenances thereto and other devices for the monitoring and treatment of contamination in soil, air and water; and perform any other such work which may be necessary and incident to the Government's use for the environmental investigation and response on said lands; subject to existing easements for public roads and highways, public utilities, railroads and pipelines; reserving, however, to the landowner(s), their heirs, executors, administrators, successors and assigns, all such right, title, interest and privilege as may be used and enjoyed without interfering with or abridging the rights and right-of-entry hereby acquired.

2. The Owner also grants the right to enter and exit over and across any other lands of the Owner as necessary to use the described lands for the purposes listed above.

3. All tools, equipment, and other property taken upon or placed upon the land by the Government shall remain the property of the Government and may be removed by the Government at any time within a reasonable period after the expiration of this permit or right-of-entry.

4. Upon expiration or termination of this right-of-entry, the Government shall assure restoration of the ground contour and replace any pavement or other cover which was removed or damaged for this work, establish a groundcover of grass on areas not otherwise covered and reconnect any operating utility lines which were required to be disconnected or otherwise disrupted.

5. If any action of the Government's employees or agents in the exercise of this right-of-entry results in damage to the real property, the Government will, in its sole discretion, either repair such damage or make an appropriate settlement with the Owner. In no event shall such repair or settlement exceed the fair market value of the fee title to the real property at the time immediately preceding such damage. The Government's liability under this clause is subject to the availability of appropriations for such payment, and nothing contained in this agreement may be considered as implying that Congress will at a later date appropriate funds sufficient to meet any deficiencies. The provisions of this clause are without prejudice to any rights the Owner may have to make a claim under applicable laws for any damages other than those provided for herein.

6. The land affected by this right-of-entry is located in the State of Alaska, and is described as follows:

All surface and subsurface rights on Saint Lawrence Island, Alaska, within;
Township 25 South, Range 54 West, Kateel River Meridian

WITNESS MY HAND AND SEAL this 24 day of April, 2013.

Kukulget, Inc.

Authorized Signature

Morris Toolie, Jr. - President

P.O. Box 160
Savoonga, Alaska 99769

(907) 984-6184

Sivuqaq, Inc.

Authorized Signature

Rodney Ungwiluk, Jr. – President

P.O. Box 101
Gambell, AK 99742

907) 985-5826

UNITED STATES OF AMERICA

Thomas M. Kretzschmar
Chief, Real Estate Division
US Army Engineer District, AK
P.O. Box 6898
JBER, Alaska 99506-0898
FAX 907-753-1836

SAINT LAWRENCE ISLAND, ALASKA **NO. DACA85-8-12-00046**

5. If any action of the Government's employees or agents in the exercise of this right-of-entry results in damage to the real property, the Government will, in its sole discretion, either repair such damage or make an appropriate settlement with the Owner. In no event shall such repair or settlement exceed the fair market value of the fee title to the real property at the time immediately preceding such damage. The Government's liability under this clause is subject to the availability of appropriations for such payment, and nothing contained in this agreement may be considered as implying that Congress will at a later date appropriate funds sufficient to meet any deficiencies. The provisions of this clause are without prejudice to any rights the Owner may have to make a claim under applicable laws for any damages other than those provided for herein.

6. The land affected by this right-of-entry is located in the State of Alaska, and is described as follows:

All surface and subsurface rights on Saint Lawrence Island, Alaska, within;
Township 25 South, Range 54 West, Kateel River Meridian

WITNESS MY HAND AND SEAL this 20th day of April, 2013.

Kukulget, Inc.

Authorized Signature

Morris Toolie, Jr. - President

P.O. Box 160
Savoonga, Alaska 99769

(907) 984-6184

Sivuqaq, Inc.

Authorized Signature

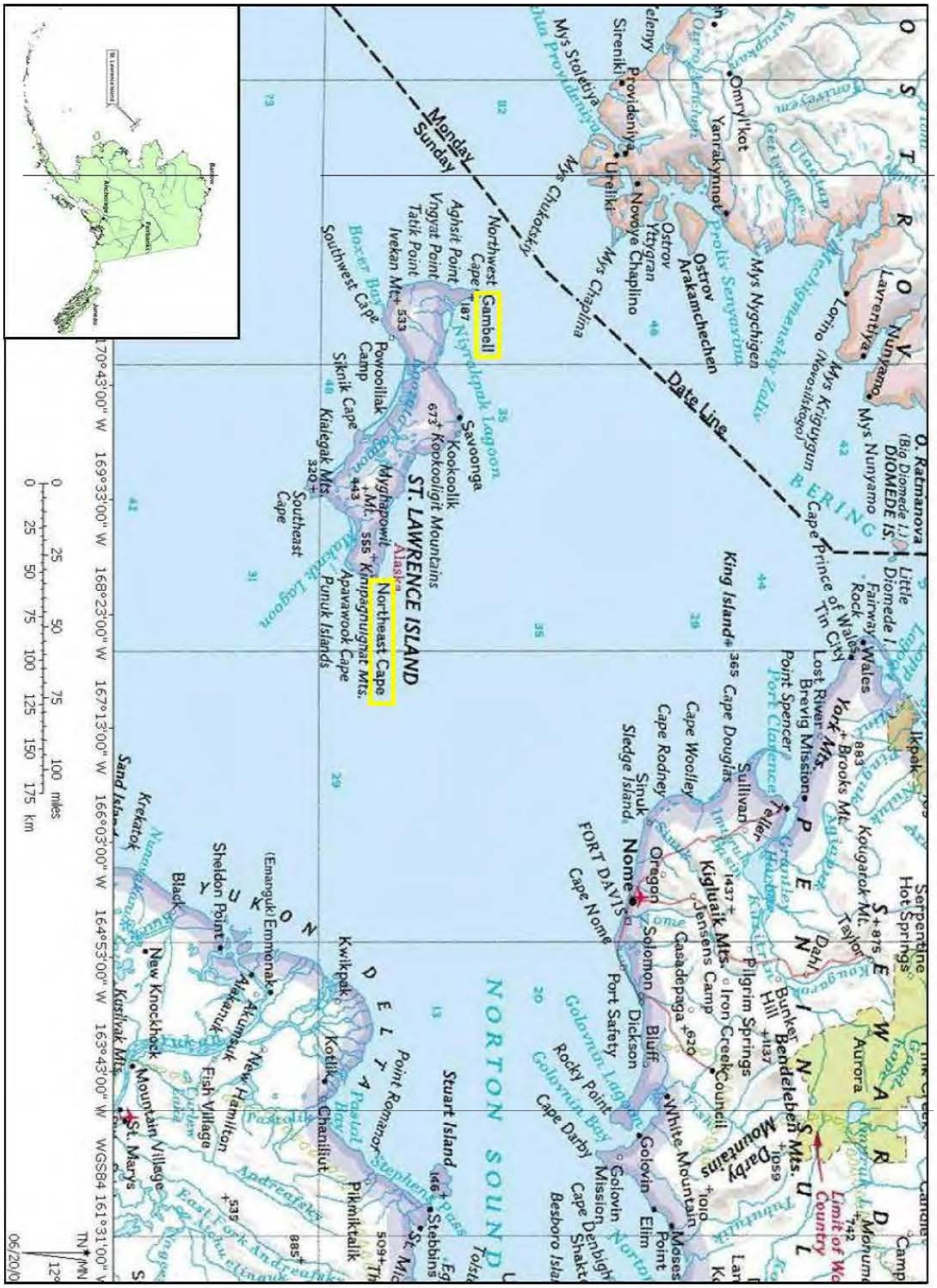
Archie Ungwiluk, President

P.O. Box 101
Gambell, AK 99742

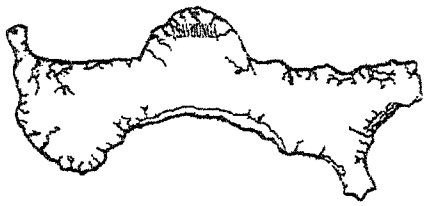
907) 985-5826

UNITED STATES OF AMERICA

Thomas M. Kretzschmar
Chief, Real Estate Division
US Army Engineer District, AK
P.O. Box 6898
JBER, Alaska 99506-0898
FAX 907-753-1836


O. Ratmanova (Big Diomede I.)
DIOMEDE IS.
Little Diomede I.
Fairway Rock
Wales
Lorino (Novosiitkogo)
Mys Nunyamo
Nunyamo
Lavrentiya
Mys Krigiygun
Mys Nygchigen
Ostrov Arakamchechen
Ostrov Yttygran
Novoye Chaplino
Mys Chaplina
Mys Chukotskiy
Ureliki
Provideniya
Sireniki
Omryl'kot
Yanrakynnot
Mys Stolbtiya
Monday
Sunday
Date Line
BERING
Cape Prince of Wales
Tin City
King Island
Lost River
Brevig Mission
Point Spencer
Port Clarence
York Mts
Brooks Mt
Kougarok Mt.
Taylor
Serpentine Hot Springs
Dahl
Bunker Hill
Bendeleben Mts.
Darby Mountains
Aurora
Limit of Wo
Country
Cape Douglas
Cape Woolley
Cape Rodney
Sinuk
Sledge Island
Sullivan
Teller
Kigluaik Mts.
Jensens Camp
Casadepaga
Iron Creek
Council
Pilgrim Springs
Oregon
Nome
FORT DAVIS
Cape Nome
Solomon
Dickson
Bluff
Port Safety
Rocky Point
Golovnin Lagoon
Golovnin Bay
Cape Darby
Golovin
Golovin Mission
Cape Denbigh
Shakt
Besboro Islan
White Mountain
Moses Point
Elim
NORTON SOUND
Stuart Island
Stebbins
St. Mic
Pikmiktalik
Point Romanzof
Stephens Pass
Chaniliut
Kotlik
Kwikpak
Alakanuk
New Hamilton
Fish Village
Mountain Village
St. Mary's
Kusilvak Mts.
New Knockhock
Akumsuk
Sheldon Point
(Emanguk) Emmonak
Black
YUKON
Kwekatok
Sand Island
Andreafsky
East Fork Andreafsky
Pastolik
Pastolik Bay
Pastolik Lagoon
Nunanguk Lagoon
Kangirlvar Lagoon
Kangirlvar Bay
Northwest Cape
Gambell
Aghsit Point
Vngyat Point
Tatik Point
Ivekan Mt
Southwest Cape
Boxer Bay
Savoonga
Kookoolik
Kookooligit Mountains
Myghapowit Mt.
Kinipagnuighat Mts.
Northeast Cape
Alaska
ST. LAWRENCE ISLAND
Powoolilak Camp
Siknik Cape
Kialegak Mts.
Southeast Cape
Apavawook Cape
Punuk Islands
Punuk Lagoon
Nevuokak Lagoon
Nevuokak Bay
Nevuokak

Kukulget Inc.
P.O. Box 160
Savoonga, AK.
99769



Phone/Fax (907)-984-6184

April 23, 2013

Mr. Thomas M. Kretzschmar
Chief, Real Estate Division
US Army Engineer District, AK
P. O. B0x 6898
JBER, Alaska 99506-0898

Dear Mr. Kretzschmar:

The Board of Director's held a meeting April 5, 2013 and these items shall be considered for the upcoming project at Northeast Cape starting June 1, 2013:

1. Fishing only at the mouth of Tapisak River

2. There shall not be any beachcombing by project employees

3. There shall not be any 4 wheeler riding or any type of land mode transportation on Lands other than stated in the Project's use.

Thank you and please consider these issues as we did not revise the Right of Entry Contract with these additions.

Sincerely yours,

Morris Toolie, Jr.
President

THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Natural Resources
Division of Mining, Land & Water
Northern Regional Land Office
3700 Airport Way
Fairbanks, Alaska 99709-4699
Main: 907-451-2770
Fax: 907-451-2751

July 11, 2013

RECEIVED
JUL 15 2013
BRISTOL

Bristol Environmental Remediation Services, LLC
ATTN: Susan Luetters
111 W. 16th Ave. Third Floor
Anchorage, Alaska 99501

Re: LAS 29198 – Letter of Intent for Non-state Land

Dear Ms. Luetters,

The Department of Natural Resources (DNR), Division of Mining, Land and Water (DMLW), Northern Regional Office (NRO), received your Letter of Intent (LOI) for gravel extraction. According to the application the subject site is located on private land on the Northeast Cape of Saint Lawrence Island within Township 25 South, Range 54 West, Kateel River Meridian.

Thank you for submitting an LOI for gravel extraction activities taking place during 2013. After reviewing the LOI we have determined that the LOI is complete as submitted. The proposed reclamation measures are appropriate provided that the operation is conducted in a manner that will prevent unnecessary and undue degradation of land and water resources, and the operation shall be reclaimed using current reclamation methods so that the site is left in a stable and safe condition. No financial assurance is required for activities under an LOI.

Although the proposed gravel extraction is exempt under the provision for small operations, an annual reclamation statement needs to be filed with this office at the end of the year. This statement should disclose the total acreage and volume of material mined in the current year, the total acreage reclaimed, and the specific reclamation methods used to comply with AS 27.19.020 (Reclamation Standards). Please submit this statement to the DNR, DMLW, NRO no later than January 31, 2014. If a statement is not submitted, subsequent operations, regardless of size, will no longer be exempt from a mining reclamation plan and bonding.

This acceptance letter does not alleviate the necessity to obtain authorizations required by other agencies and entities for this activity. If you have any questions, please feel free to contact me. I can be reached at (907) 451-2728 or at dianna.leinberger@alaska.gov. We look forward to working with you. We hope you have a successful field season.

Sincerely,

Dianna Leinberger

Dianna Leinberger
Natural Resource Manager

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

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Anchorage, AK 99501
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www.bristol-companies.com

31 October 2013

Mary Gleason
Department of Natural Resources
Division of Mining, Land & Water
Northern Regional Land Office
3700 Airport Way
Fairbanks, AK 99709-4699

Re: Annual Reclamation Statement – LAS 29198

Dear Ms. Gleason:

This is the annual reclamation statement for the LAS 29198 – Letter of Intent for Non-state Land for the Northeast Cape, St. Lawrence Island, Alaska project (NE Cape) [USACE contract W911KB-13-C-0004].

Bristol Environmental Remediation Services (Bristol) quarried 10,686 cubic yards of borrow pit material from the quarry at the NE Cape project site during the summer of 2013. The area disturbed by the removal of the material is approximately 50,000 square feet on a slope that is less than 30 degrees. The quarry consists of coarse gravel, sand and cobbles and has no vegetation. At the end of the mining operation in September 2013 a Cat 322B excavator and a Cat 160H grader were used to grade the borrow pit area and to re-contour and fill any trenches, pits or holes that were created from the mining operation. There is no site drainage issue since all the runoff percolates through the coarse material in this area.

Bristol does not want to close the project out due to the fact that we probably will return to NE Cape in 2014 to do some follow-up site remediation which will include using more borrow pit material from the quarry.

If you have any questions, please contact me at 907-743-9341.

Sincerely
Bristol Environmental Remediation Services, LLC

Molly Welker
Project Manager

APPENDIX B

Monthly Status Reports

Bristol
ENVIRONMENTAL
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2011-2012 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 Task Order 0007
W911KB-12-C-0003
W911KB-13-C-0004
Monthly Status Report
January 2013

Submitted on 2/11/2013

Summary of Work Performed

Summary of Work Tasks

During the month of January, Bristol performed the following:

- Prepared and submitted of the Draft HTRW report.
- Submitted the Schedule of Values for the new 2013 Contract.
- Prepared and submitted a copy of the Draft Schedule.
- Coordinated and held the 2013 NE Cape Project Kickoff Meeting on January 9, 2013.
- Prepared and submitted the Draft Site 28 Sediment Removal Report.
- Completed and submitted the Final Site 28 Technical Memorandum.
- Continued writing the 2013 planning documents (WP, SSHP, QAPP, etc.)
- Coordinating 2013 mobilization and demobilization with marine transportation provider(s).
- Submitted additional sediment samples for bench-scale testing to determine the appropriate flocculent and filtration media for Site 28 sediments.

Subcontractors

- During the month of December Bristol received and paid invoices to subcontractors for the rental of equipment, remote camp rental, 3rd party data quality review, and contaminated soil transportation and disposal.

USACE and ADEC Correspondence

- On 1/3 Bristol corresponded with V. Palmer regarding the agenda and schedule for the Kickoff Meeting held on 1/9.
- On 1/3 Bristol received a copy of the draft RAB meeting minutes from V. Palmer.
- On 1/10 Bristol sent a Letter of Authorization to M. Suprenant with the list and signatures of Bristol representatives with signature authority for the contract.
- On 1/15 Bristol sent V. Palmer and R. Broyles a copy of the draft minutes from the Kickoff Meeting.
- On 1/15 Bristol received the response to comments from USACE for the Site 28 Technical Memorandum.
- On 1/25 G. Jarrell and R. Broyles discussed the draft schedule as related to the final demobilization date and contract end.

Work Underway

- Production of planning documents for 2013 season.
- Coordination and planning for 2013 mobilization.

Work Planned for the Upcoming Month

- Continue preparation of planning documents.
- Renewal of appropriate permits.
- Coordination with subcontractors for planning purposes.
- Procurement of supplies and materials for 2013 season.
- Bristol will continue preparation of the required report submittals.
- Prepare and finalize subcontracts for the 2013 season.
- Prepare and deliver the Quarry Operating Agreement to the representatives of Kukulget, inc. and Sivuqaq, Inc. for approval and signature.
- Preparation and submission of the final project schedule.

Status of Laboratory Reports

- All laboratory data and CDQR's have been completed and delivered.

Pay Estimates

- Bristol submitted Invoice 34120057-06 for payment on January 29, 2013.

Accident/Exposure Hours

- The January 2013 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms were submitted on February 5, 2013 to R. Broyles.

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2011-2012 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 TO 0007, W911KB-12-C-0003, W911KB-13-C-0004
Monthly Status Report
February 2013

Submitted on 3/22/2013

Summary of Work Performed

Summary of Work Tasks

During the month of February, Bristol performed the following:

- Continued writing the 2013 planning documents (WP, SSHP, QAPP, etc.)
- Coordinating 2013 mobilization and demobilization with marine transportation provider(s).

Subcontractors

- During the month of December Bristol received and paid invoices to subcontractors for the rental of equipment, remote camp rental, and satellite communications equipment.

USACE and ADEC Correspondence

- On 2/1 Bristol and R. Broyles corresponded via email about the manifest for the rejected waste drum.
- On 2/4 Bristol corresponded with V. Palmer regarding the EPA inquiry into the rejected waste drum (subsequently transferred to another facility).
- On 2/7 G. Jarrell and R. James (Bristol) met with R. Broyles and J. Craner to discuss contract volumes and amounts remaining under Contract(s) W911KB-06-D-0007 and W911KB-12-C-0003.
- On 2/14, 2/15, 2/19, and 2/20 Bristol and J. Craner corresponded via email regarding finalization of contract volumes discussed during the 2/7 meeting.

Work Underway

- Production of planning documents for 2013 season.
- Coordination and planning for 2013 mobilization.

Work Planned for the Upcoming Month

- Continue preparation of planning documents.
- Renewal of appropriate permits.
- Coordination with subcontractors for planning purposes.
- Procurement of supplies and materials for 2013 season.
- Bristol will continue preparation of the required report submittals.
- Prepare and finalize subcontracts for the 2013 season.

- Prepare and deliver the Quarry Operating Agreement to the representatives of Kukulget, inc. and Sivuqaq, Inc. for approval and signature.
- Preparation and submission of the final project schedule.

Status of Laboratory Reports

- No outstanding laboratory reports/issues at this time.

Pay Estimates

- Bristol submitted Invoice 34120057-06 for payment on January 29, 2013.

Accident/Exposure Hours

- The February 2013 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms were submitted on February 5, 2013 to R. Broyles.

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2011-2012 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 TO 0007, W911KB-12-C-0003, W911KB-13-C-0004
Monthly Status Report
March 2013

Submitted on 4/11/2013

Summary of Work Performed

Summary of Work Tasks

During the month of February, Bristol performed the following:

- Completed production of 2013 planning documents (WP, SSHP, QAPP, etc.)
- Submitted draft 2013 planning documents.
- Submitted comment responses for the Site 28 Soil Removal Report.
- Coordinating 2013 mobilization and demobilization with marine transportation provider(s).
- Applied for and received several of the required permits.
- Prepared and delivered the Quarry Operating Agreement to the representatives of Kukulget, Inc. and Sivuqaq, Inc. for approval and signature. (note: to date no responses received)

Subcontractors

- During the month of March Bristol received and paid invoices to subcontractors for the rental of equipment, remote camp rental, and satellite communications equipment.

USACE and ADEC Correspondence

-
- On 3/12 M. Hannah (Bristol) and M. Utley corresponded regarding water quality criteria tables for the Draft RA Report
- On 3/18 an d3/19 Bristol received USACE comments on the 2012 Remedial Action Report from J. Craner.
- On 3/19, 3/20, and 3/21 G. Jarrell and V. Palmer corresponded via email regarding ADEC report comments.
- On 3/29 R. James and J. Craner corresponded via email regarding SWPP updates and manifesting related to the arsenic soil from Site 21.

Work Underway

- Coordination and planning for 2013 mobilization.
- Addressing comment responses for the draft Remedial Action Report.
- Procurement of supplies, materials, etc. for the 2013 season.

Work Planned for the Upcoming Month

- Address comments on the Site 28 Sediment Removal Report, Draft RA Report, and the 2013 Work Plan when received.
- Update the SWPP (NOI will not occur until closer to mobilization).
- Coordination with subcontractors for planning purposes.
- Procurement of supplies and materials for 2013 season.
- Bristol will continue preparation of the required report submittals.
- Prepare and finalize subcontracts for the 2013 season.

Status of Laboratory Reports

- No outstanding laboratory reports/issues at this time.

Pay Estimates

- Bristol submitted Invoice 32110002-12 for payment on March 1, 2013.

Accident/Exposure Hours

- The March 2013 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms were submitted on April 8, 2013 to R. Broyles.

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2011-2013 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 TO 0007, W911KB-12-C-0003, and W911KB-13-C-0004
Monthly Status Report
April 2013

Submitted on 5/10/2013

Summary of Work Performed

Summary of Work Tasks

During the month of April, Bristol performed the following:

- Received comments from the USACE on the 2013 NE Cape planning documents (WP, SSHP, QAPP, etc.)
- Finalized addressing the comment responses for the Site 28 Soil Removal Report.
- Coordinating 2013 mobilization and demobilization with marine transportation provider(s).
- Resent the Quarry Operating Agreement to the representatives of Kukulget, Inc. and Sivuqaq, Inc. for approval and signature. (Note: signatures received on 5/3/2013)

Subcontractors

- During the month of April Bristol received and paid invoices to subcontractors for the rental of equipment, remote camp rental, and satellite communications equipment.

USACE and ADEC Correspondence

- 4/1/13 – J. Craner emailed Bristol to ask which MWs in the MOC contained ice plugs which were melted using a heated rod. We answered his question(s) this same day.
- 4/3/13 – J. Craner emailed Bristol with SWPPP questions/concerns. We responded the same day and provided him with a write-up on our winter shutdown procedures and updated NOIs.
- 4/4/13 – Bristol had a meeting with the USACE regarding MNA results at Site 8 and the MOC.
- 4/4/13 – S. Benjamin called M. Hannah regarding flocculent with regards to ADEC/C. Dunkin's comments.
- 4/4/13 – V. Palmer emailed Bristol ADEC's comments on RA Report.
- 4/8/13 – Emails and meeting invites were sent to USACE for Friday 4/12/2013 comment resolution meeting.
- 4/8/13 – R. James emailed J. Craner regarding a write-up for the PCB correlation study that USACE performed in 2012. J. Craner responded on 4/9/13 stating that the USACE will provide Bristol with a brief write-up detailing the procedures and results.
- 4/11/13 – J. Craner emailed to ask if NOTs were issued for old SWPPPs. BESC Engineer D. Tannahill helped and we responded to J. Craner on 4/11/13 stating the SWPPPs were closed with EPA and ADEC.

- 4/11/13 – Received RTCs for Site 28 Sediment Removal. RA Report RTCs were provided with the exception of Sean Benjamin's comments.
- 4/12/13 – Comment resolution meeting with Bristol, USACE and ADEC (C. Dunkin). Issues discussed include the following:
  - Samples at Site 8 will be classified as sediment not soil.
  - Additional surface water samples will be collected at MOC for TAH and TAqH calculations (Contract Mod 00002).
  - ADEC requested more surface water samples be collected at Site 28 during excavation/dredging activities of sediment.
  - Additional MNA information from MOC groundwater samples and Site 8 samples will be included in the 2012 Final RA Report.
  - TCLP analyses for arsenic on bulk waste from Site 21 with confirmation samples that exceed 100 mg/kg will be requested from TestAmerica for hazardous waste disposal purpose.
  - Bristol will include 2011 arsenic concentrations in the tables for Site 21 in the 2012 Final RA Report.
- 4/16/13 – J. Craner sent BERS the last remaining comments from S. Benjamin/T. Lee.
- 4/17/13 – J. Craner emailed SWPPP NOI mod and requested that it be added to the onsite SWPPP.
- 4/25/13 – M. Welker returned as Project Manager
- 4/30/13 – R. James emailed J. Craner a draft copy of Figure 5 from the Site 28 Sediment Removal report so that the USACE could review the treatment train diagram and comment prior to the report's finalization. Received comments from the USACE on 4/30 regarding the figure.
- 4/30/13 – M. Hannah contacted J. Craner regarding comment No. 11 for the Site 28 Sediment Removal Report. Comment is resolved on 5/1/13; accepted via email from J. Craner.

Work Underway

- Coordination and planning for 2013 mobilization and field effort.
- Addressing comment responses for the Draft 2012 Remedial Action Report and 2013 Work Plan.
- Procurement of supplies, materials, etc. for the 2013 field season.
- Subcontractor Agreements
- Field Personnel Employment Packets

Work Planned for the Upcoming Month

- Production and submittal of the Site 28 Sediment Removal Report, Final 2012 RA Report, and the 2013 Work Plan when all comments have been approved.
- Update the SWPPP (NOI will occur when Bristol is closer to mobilization).
- Coordination with subcontractors for planning purposes.
- Procurement of supplies and materials for 2013 season.
- Prepare and finalize subcontracts for the 2013 season.

Status of Laboratory Reports

- Bristol Chemist, M. Hannah, submitted draft SEDD 5.2 files produced by TestAmerica to S. Benjamin and M. Utley for review. Utley generated a validation report which will be included in the final SEDD deliverables in the 2012 Final RA Report.
- M. Hannah made a request to S. Benjamin for approval of the use of microwave extraction (EPA method 3546) for DRO/RRO soil samples. If ADEC approves of the method S. Benjamin stated he will also approve the method.

Pay Estimates

- N/A

Accident/Exposure Hours

- The April 2013 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms were submitted on May 6, 2013 to R. Broyles.

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2011-2013 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 TO 0007, W911KB-12-C-0003, and W911KB-13-C-0004
Monthly Status Report
May 2013

Submitted on 6/7/2013

Summary of Work Performed

Summary of Work Tasks

During the month of May Bristol performed the following:

- Received comments from the USACE and ADEC on the 2013 NE Cape planning documents (WP, SSHP, QAPP, etc.)
- Submitted the Site 28 Phase 1 Sediment Removal Report
- Finalized subcontractor agreements with Global, Fairweather, ECO-land, and TestAmerica

Subcontractors

- During the month of May Bristol received and paid invoices to subcontractors for the rental of equipment, remote camp rental, and satellite communications equipment

USACE and ADEC Correspondence

- 5/1/13 – Received C-0004 letter from R. Broyles for NE Cape Right of Entry
- 5/2/13 – Bristol received ADEC comments on the 2013 Work Plan in an email from V. Palmer
- 5/6-5/9/10 – M. Hannah and A. Shewman corresponded about Site 21 sampling frequency at 400 square feet
- 5/8/13 – M. Welker sent R. Broyles an email requesting insurance requirements for the 2013 contract
- 5/9/13 – M. Hannah corresponded with S. Benjamin about 4 VOCs where the LOD is greater than the site's cleanup level. Serial letter H-0005 sent to USACE about conditional acceptance of SG-treated results, variance for reporting of 4 VOC analytes, and alternate sampling frequency at Site 21
- 5/10/13 – Bristol submitted the price proposal packet for Contract Mod 0002
- 5/10/13 – Bristol submitted the Site 28 Phase 1 Sediment Removal Report
- 5/10/13 – M. Hannah corresponded with S. Benjamin on the microwave extraction method for DRO/RRO
- 5/13/13 – R. Broyles asked if Bristol was going to be submitting any pay estimates in May 2013; M. Welker responded with estimates on 5/14/13
- 5/13–5/15/13– Phone and email correspondence with. V. Palmer about the flocculent for Site 28
- 5/15/13 – Bristol submitted the RTC forms with the Contractor Responses for the 2013 NE Cape Work Plan

- 5/16/13 – J. Craner requested the analytical worksheets related to Contract Mod 0002. This information was provided to the USACE on 5/16/13
- 5/16/13 – Bristol requested that the COR correct the address on the 2013 NE Cape Contract award
- 5/20/13 – Serial Letter H-0006 sent with submittal of Bristol certificate of insurance for 2013 Contract
- 5/20/13 – Bristol sent the POA Form 15 to R. Broyles for the 2012 (Invoice 08) and 2013 (Invoice 01) contracts
- 5/23-5/24/13 – V. Palmer and M. Welker corresponded about scheduling a Comment Resolution Meeting for the 2013 Work Plan and the RTC forms for the Work Plan
- 5/28/13- Bristol received the 2013 Work Plan RTC forms for V. Palmer, A. Shewman, J. Craner, and S. Benjamin
- 5/29/13 – Bristol received the ADEC RTC form from V. Palmer and held a Comment Resolution Teleconference with the USACE and ADEC to discuss the 2013 Work Plan
- 5/30/13 – Work Plan Comment Resolution Teleconference Meeting Minutes submitted to USACE
- 5/30/13 – Bristol received an email from ADEC about variance requests
- 5/31/13- Bristol chemist corresponded with S. Benjamin and V. Palmer about hard copy lab reports and SEDD deliverables for the 2012 Final HTRW Report
- 5/31/13 – Work Plan Comment Resolution Teleconference Meeting Minutes submitted to ADEC

Work Underway

- Coordination and planning for 2013 mobilization and field effort
- Technical editing and production of 2013 Work Plan
- Procurement of supplies, materials, etc. for the 2013 field season
- Field Personnel Temporary Employment Packets and scheduling physicals and drug tests
- Calibration and testing of field laboratory equipment

Work Planned for the Upcoming Month

- Submittal of the 2013 Work Plan
- Coordination with subcontractors for planning purposes and scheduling marine transportation and disposal logistics for bulk bags
- Procurement of supplies and materials for 2013 season
- Field mobilization is scheduled for June 21, 2013 for the camp setup crew

Status of Laboratory Reports

- Bristol Chemist, M. Hannah, continuing to submit draft SEDD 5.2 files produced by TestAmerica to S. Benjamin and M. Utley for review. Utley generates a validation report which will be included in the final SEDD deliverables scheduled for June 14, 2013

- Waiting for the approval from ADEC for the use of the microwave extraction (EPA method 3546) for DRO/RRO soil samples and the conditional acceptance of silica-gel treated results for Site 8 and Site 28

Pay Estimates

- Submitted POA Form 15 for the 2012 and 2013 contracts to R. Broyles on 5/20/13

Accident/Exposure Hours

- The May 2013 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms for the 2012 and 2013 contracts were submitted on June 4, 2013 to R. Broyles

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2011-2013 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 TO 0007, W911KB-12-C-0003, and W911KB-13-C-0004
Monthly Status Report
June 2013

Submitted on 7/10/2013

Summary of Work Performed

Summary of Work Tasks

During the month of June Bristol performed the following:

- Submitted the 2013 NE Cape HTRW Remedial Actions Final Work Plan and the 2012 NE Cape HTRW Remedial Action Report-Final.
- Mobilized Bristol and Camp Setup Crew to NE Cape.

Subcontractors

- During the month of June, Bristol received and paid invoices to subcontractors and vendors for the rental of heavy equipment, remote camp rental, field laboratory and environmental field supplies, and satellite communications equipment.
- Bristol had correspondence and communicated with all subcontractors on the 2013 field effort, the contractual requirements, certificates of insurance, and start-up date.
- Held a teleconference with Northland Services and Waste Management on 6/10/13 about the transport and disposal of the bulk bags.

USACE and ADEC Correspondence

- On 6/3/13 submitted 34130068-01 POA Form 15 for the 2013 contract and 34120057-08 POA Form 15 for the 2012 contract to R. Broyles.
- R. James sent an email to J. Craner on 6/3/13 about the PCB correlation information that will be included in the 2012 Final Report when the USACE completes it.
- Submitted May 2013 Exposure Hour Reports for the 2012 and 2013 contracts on 6/4/13 to R. Broyles.
- On 6/4/13 C. Dunkin of ADEC sent an email about the Resolution Meeting Minutes and confirmed ADEC's approval of 2 of the 4 variance requests (proposed confirmation sampling frequency at Site 21 and the reporting variance of the 4 VOC analytes).
  - Bristol is still waiting to hear from ADEC about the final approval on the microwave extraction method and proposed use of silica-gel results for Sites 8 and 28.
  - ADEC also approved the use of the flocculent and requested TAH/TAqH analysis of the flocculent.
- On 6/4/13-6/10/13 correspondence with R. Broyles about the Monthly Exposure Hour Forms and the POA Form 15.

- Bristol delivered the 2012 NE Cape HTRW Remedial Action Report-Final to USACE on 6/5/13.
- Bristol submitted the complete INV08 Payment Package for the 2012 Contract on 6/7/13. Payment received on 7/3/13.
- Bristol submitted the May Monthly Status Report on 6/7/13.
- Bristol submitted the complete INV01 Payment Package to R. Broyles for the 2013 Contract on 6/10/13. Payment received on 7/3/13.
- Email correspondence with USACE about the FRMD Document Number for the 2013 HTRW Remedial Actions Work Plan on 6/17/13.
- On 6/10/13 M. Hannah corresponded with S. Benjamin about not needing Level IV reporting for the flocculent test results on the TAH and TAqH that ADEC requested.
- Bristol received an email from V. Palmer on 6/13/13 wondering if Bristol was planning to sell any of our heavy equipment at the end of the field season to Kukulget. Bristol doesn't have any plans to sell any equipment at this time.
- V. Palmer sent an email about the ACAT visit to NE Cape on 6/14/13.
- Bristol delivered a Laserjet printer for the QAR on 6/17/13.
- Bristol sent the USACE an email on 6/18/13 about the mobilization schedule, camp setup dates, field start date of 7/8/13 for the QAR, and the reservation of the Security Aviation flight.
- On 6/18/13 Bristol sent a request for an address correction on the 2013 Contract to R. Broyles.
- On 6/19/13 Bristol sent an email to V. Palmer and S. Benjamin about the TestAmerica kickoff meeting, the EPA Method 3520C and 3510C, and the MI-sampling for volatiles.
- On 6/21/13 Bristol delivered binders containing the 2012 NE Cape HTRW Remedial Action Report – TestAmerica Laboratory Data Reports.
- On 6/24/13 Bristol delivered 9 hardcopies and electronic copies of the 2013 HTRW Remedial Actions Work Plan to the USACE.
- Held a teleconference with the USACE on 6/28/13 about the 2012-2013 MI-sampling at the MOC and Site 28. Bristol submitted a MI-sampling table and a meeting agenda to the USACE prior to the teleconference.
  - USACE plans to discuss these issues with ADEC.
- On 6/28/13 had email correspondence with R. Broyles about the sequential numbering of the serial letters and address correction on 2013 Contract Award.

Work Underway

- Coordination and implementation of the 2013 field effort.

Work Planned for the Upcoming Month

- Implementation of the 2013 field effort.
- Coordination and scheduling of marine transportation and disposal logistics for bulk bags.

Status of Laboratory Reports

- Bristol Chemist, M. Hannah, is continuing to submit draft SEDD 5.2 files produced by TestAmerica to M. Utley for review. Utley generates a validation report which will be included in the final SEDD deliverables which should be completed by end of month.
- Waiting for the approval from ADEC for the use of the microwave extraction (EPA method 3546) for DRO/RRO soil samples and the conditional acceptance of silica-gel treated results for Site 8 and Site 28.

Pay Estimates

- Received payment on INV01 for 2013 contract and INV08 for 2012 contract on 7/3/13.

Accident/Exposure Hours

- The June 2013 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms for the 2012 and 2013 contracts were submitted on 7/3/13 to R. Broyles.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

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Anchorage, AK 99501
phone (907) 563-0013
fax (907) 563-6713
www.bristol-companies.com

2011-2013 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 TO 0007, W911KB-12-C-0003, and W911KB-13-C-0004
Monthly Status Report
July 2013

Submitted on 8/12/2013

Summary of Work Performed

Summary of Work Tasks

During the month of July Bristol performed the following:

- Completed the mobilization phase and conducted the field tasks at NE Cape.

Subcontractors

- During the month of July, Bristol received and paid invoices to subcontractors and vendors for the rental of heavy equipment, remote camp rental, field laboratory and environmental field supplies, and satellite communications equipment.
- Bristol had correspondence with all subcontractors on the 2013 field effort, personnel rotations, the bulk bag transportation and disposal, and demobilization schedule.

USACE and ADEC Correspondence

- Bristol sent the signature page for the Contract Mod 00002 for W911KB-13-C-0004 and discussed the numbering of Contract Mod 00002 and 00003 with R. Broyles on 7/1/13.
- On 7/2/13 email correspondence with L. Geist and R. Broyles about the ROE not in the Work Plan. It was inserted into the revised Appendix F that was submitted to the USACE on 7/11/13.
- Between 7/2/13 and 7/24/13 had email correspondence with the USACE and ACAT about ACAT's fish sampling event at NE Cape in July.
- Between 7/3/13 and 7/8/13 had correspondence related to the discharge permit for Site 28. J. Greuey at ADEC stated we don't need a discharge permit and can follow the Work Plan. This correspondence was included in the revised Appendix F.
- Submitted the revised Appendix F for the Final 2013 NE Cape HTRW Remedial Actions Work Plan (Serial Letter H-0011).
- On 7/15/13 and 7/16/13 had email correspondence with J. Craner about the Security Aviation flight scheduled for 7/18/13. And on 7/25/13 through 7/30/13 Bristol discussed the Security Aviation flight on 7/31/13 with USACE.
- Emails on 7/16/13 were sent to USACE and ADEC to discuss the flocculent results and a question from ADEC about the bench pilot test.
- On 7/25/13 Bristol submitted the Supplemental Data EDDs to USACE for the 2012 HTRW Final Report (H-0028).

- Serial Letter H-0012 was sent to R. Broyles requesting the temporary transfer of the site superintendent while C. Croley went on break. USACE approval was received on 7/30/13.
- On 7/30/13 received an email from A. Graham (C-0007) about Bristol's demobilization schedule and also received approval for Contract Mod 00003 from M. Suprenant on 7/30/13 for the 2013 contract.
- R. Broyles emailed Bristol about E. Barnhill as the SSHO.

Work Underway

- Coordination and implementation of the 2013 field effort. Planning for the demobilization phase.

Work Planned for the Upcoming Month

- The 2013 field effort continues with the POL-contaminated soil excavations, Site 21 arsenic soil removal, Site 10 soil removal, and dredging activities at Site 28.
- Coordination and scheduling of marine transportation and disposal logistics for bulk bags.
- Bristol is waiting for the USACE to decide on exercising options for the 2013 contract related to additional POL-contaminated soil at the MOC, additional arsenic soil at Site 21, contaminated soil from Site 10, and options to deal with the 55 poles that were removed from the project area in 2013.

Status of Laboratory Reports

- Bristol Chemist, M. Hannah, has requested several variance requests for the analytical results from TestAmerica with M. Utley and S. Benjamin between 7/16/13 and 7/31/13.

Pay Estimates

- Received payment for INV08 for 2012 Contract on 7/3/13 in the amount of $666,664. Received payment for INV02 for 2013 Contract on 7/11/13 in the amount of $94,101.92.
- Submitted POA Form 15 for INV02 and INV09. The complete payment packets for INV02 for 2013 contract was submitted on 7/26/13 and for INV09 for 2012 contract on 7/29/13. Payment has not been received.

Accident/Exposure Hours

- The July 2013 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms for the 2012 and 2013 contracts were submitted on 8/2/13 to R. Broyles.

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Monthly Status Report
August 2013

Submitted on 9/11/2013

Summary of Work Tasks

During the month of August Bristol performed the following:

- Conducted the field tasks at NE Cape and accepted additional quantities from two contract modifications (P00003 and P00004)

Subcontractors

- During the month of August, Bristol received and paid invoices to subcontractors and vendors for the rental of heavy equipment, remote camp rental, field laboratory and environmental field supplies, and satellite communications equipment.
- Bristol had correspondence with all subcontractors on the 2013 field effort, personnel rotations, the bulk bag transportation and disposal, and demobilization schedule.

USACE and ADEC Correspondence

- On 8/4/13 USACE emailed Bristol about a Security Aviation flight on 8/7/13.
- Email correspondence on 8/4/13 about C. Dunkin/ADEC visit to NE Cape on 8/12/13-8/14/13.
- Serial letter H-0014 was sent to A. Graham and R. Broyles on 8/6/13 about C-0007 Response to Demobilization Schedule.
- V. Palmer sent an email on 8/6/13 about the ATSDR visit to NE Cape.
- Bristol corresponded with USACE about the Site 21 figure and received approval to dig on 8/8/13.
- Bristol requested the use of a photo taken at NE Cape on 8/8/13.
- Email correspondence on 8/12/13-8/16/13 about the next Security Aviation flight on 8/23/13.
- Bristol sent an email to V. Palmer about MI-samples on 8/14/13.
- Bristol received P00004 Contract Modification for additional quantities on 8/16/13. Signature page was sent to R. Taylor on 8/19/13.
- Bristol received more comments about the Site 21 figure on 8/16/13.
- R. Broyles requested rough estimates for invoicing for work performed in August and September 2013 on 8/25/13. Estimates were sent to R. Broyles on 8/27/13.
- On 8/28/13 and 8/29/13 corresponded about the Work Plan modification for the Site 28 treated water protocol (H-0015) and sample results. A teleconference to discuss Site 28 treated water protocol was held on 8/29/13 with the USACE, Bristol, and ADEC.

- Bristol received P-00005 Contract Modification on 8/29/13. Bristol signed the contract modification with conditions attached (H-0016 and H-0017) on 8/30/13. This contract modification is still pending.

Work Underway

- Completion of Site 28 dredging and sampling, working on waste profiles for hazardous waste manifests, final backfilling, grading, and seeding at the MOC, and implementing the demobilization phase.

Work Planned for the Upcoming Month

- The 2013 field effort will be completed with 10,601.24 tons of POL-contaminated soil excavated from the MOC, 305 tons of Site 21 arsenic soil removed, the completion of the Site 10 soil removal, removal of miscellaneous debris, metal, and poles, and dredging activities at Site 28. The MOC sites will be backfilled, graded and seeded.
- Continued coordination and scheduling of marine transportation and disposal logistics for bulk bags and the demobilization phase.

Status of Laboratory Reports

- All laboratory reports should be received from the analytical laboratory in Tacoma in September 2013.

Pay Estimates

- Received payment for INV09 for 2012 Contract on 8/20/13 in the amount of $2,369,039. Received payment for INV03 for 2013 Contract on 8/20/13 in the amount of $364,846.61.
- Submitted POA Form 15 for INV03 (Contract W911KB-13-C-0004) and INV10 (Contract W911KB-12-C-0003) on 8/29/13 and 8/30/13 respectively.

Accident/Exposure Hours

- The August 2013 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms for the 2012 and 2013 contracts were submitted on 9/6/13 to R. Broyles.

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Contracts: W911KB-06-D-0007 TO 0007, W911KB-12-C-0003, and W911KB-13-C-0004
Monthly Status Report
September 2013

Submitted on 10/10/2013

Summary of Work Tasks

During the month of September Bristol performed the following:

- Completed the field tasks, shut down the camp and completed partial demobilization at NE Cape.

Subcontractors

- During the month of September, Bristol received and paid invoices to subcontractors and vendors for the rental of heavy equipment, remote camp rental, field laboratory and environmental field supplies, and satellite communications equipment.
- Bristol had correspondence with all subcontractors on the 2013 field effort, personnel rotations, the bulk bag transportation and disposal, and demobilization schedule.

USACE and ADEC Correspondence

- On 9/1/13 Bristol received the signed POA 15 forms for two invoices (Invoice 03 for Contract W911KB-13-C-0004 and Invoice 10 for Contract W911KB-12-C-0003).
- From 9/1/13 to 9/11/13 Bristol worked on the field plans and purchase order with Jacobs for the 5-year review of the NE Cape project. Jacobs conducted the sampling and field inspection at NE Cape from 9/11/13 to 9/16/13.
- A. Graham emailed Bristol on 9/3/13 about Contract Mod P00005 and Serial Letters H-0016 and H-0017 discussing Assumptions for Acceptance of Contract Mod P00005.
- Email correspondence with J. Craner on 9/3/13 and 9/4/13 and Security Aviation about the flight to NE Cape scheduled for 9/5/13.
- On 9/4/13 there was correspondence about the addendum to the Site 28 wastewater plan based on the conference call that was held with USACE, ADEC and Bristol on 8/29/13.
- On 9/6/13 Bristol submitted the complete payment packet for Invoice 10 for Contract W911KB-12-C-0003.
- B. Burke contacted A. Graham on 9/6/13 about the final POL tonnage needed for the Contract Mod P00005.
- From 9/6/13 through 9/15/13 there was email correspondence about the Security Aviation flight scheduled on 9/18/13 to NE Cape that was eventually changed to 9/23/13.
- On 9/9/13 there was correspondence about the submittal of the complete pay estimate packet for Invoice 03 for Contract W911KB-13-C-0004.

- Serial Letter H-0018 was sent to the USACE on 9/10/13.
- R. Broyles emailed on 9/10/13 about Bristol being a co-generator of the field laboratory hazardous waste.
- On 9/10/13 Bristol received an email from R. Taylor on the final modification for NE Cape. Welker sent information about the 12 monitoring wells and tonnage at Site 21. R. Broyles clarified that this contract modification will address just the additional POL tonnage at the MOC and the other quantities will be handled in another contract modification at a later date for the credits/additions based on final quantities.
- Welker corresponded on 9/11/13 with V. Palmer about the MI samples at the fuel storage area.
- Between 9/12/13 and 9/13/13 there was correspondence with V. Palmer and ADEC about the GAC sample being tested for TCLP-BTEX for RCRA characterization. ADEC acknowledged receipt of this information on 9/13/13.
- Between 9/13/13 and 9/18/13 there was correspondence with R. Taylor on the revisions/corrections to Contract Mod P00005. Bristol received the signed contract mod on 9/18/13.
- On 9/16/13 Bristol was requested to provide a detailed deviation report for the overwintering of the Site 28 dewatering tubes.
- Serial Letter H-0019 was submitted on 9/18/13 requesting signature on the hazardous waste manifests. Signed manifests were returned to Bristol on 9/19/13.
- Serial Letter H-0020 was submitted on 9/18/13 discussing the overwintering of the Site 28 dewatering tubes.
- On 9/19/23 Bristol met at the USACE office to discuss the overwintering of the Site 28 dewatering tubes.
- Bristol sent an email to V. Palmer on 9/23/13 about the Site 28 addendum, revised project schedule and the request for a period of performance extension that was discussed at the meeting on 9/19/13.
- On 9/24/13 Welker corresponded with V. Palmer about the fact that all bags have been removed from NE Cape.

Work Underway

- Continuing to coordinate and track the marine transportation and disposal of the bulk bags.
- Drafting the final HTRW Remedial Action Report.

Work Planned for the Upcoming Month

- Drafting the final HTRW Remedial Action Report.

Status of Laboratory Reports

- All final laboratory reports should be received from the analytical laboratory by the end of October 2013.

Pay Estimates

- Received payment for INV10 for 2012 Contract on 9/26/13 in the amount of $2,275,848.07. Received payment for INV03 for 2013 Contract on 10/4/13 in the amount of $7,547,934.60.

Accident/Exposure Hours

- The September 2013 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms for the 2011, 2012 and 2013 contracts were submitted on 10/4/13 to R. Broyles.

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Contracts: W911KB-06-D-0007 TO 0007, W911KB-12-C-0003, and W911KB-13-C-0004
Monthly Status Report
October 2013

Submitted on 11/7/2013

Summary of Work Tasks

During the month of October Bristol performed the following:

- Completed demobilization tasks in Anchorage and began drafting the 2013 HTRW Remedial Action Report.

Subcontractors

- During the month of October, Bristol received and paid invoices to subcontractors and vendors for the rental of heavy equipment, remote camp rental, and satellite communications equipment.
- Bristol corresponded with the transportation and disposal subcontractors on the schedule for the bulk bag transportation and disposal from the Port of Seattle.
- Gravel royalty letters were sent to Sivuqaq Inc. and Kukulget Inc. on 10/29/13.

USACE and ADEC Correspondence

- Bristol corresponded with V. Palmer on 10/2/13 about the Work Plan deviations and a period of performance extension to November 1, 2014 due to the overwintering of the dewatering tubes at Site 28 which was discussed at a meeting on 9/19/13 with USACE. Bristol also clarified the February 2014 date shown on the revised project schedule for the submittal of the draft Remedial Action Report.
- On 10/3/13 Bristol sent Serial Letter H-0021 to USACE about the revised project schedule and request for an extension of the period of performance for the 2013 Contract.
- Bristol and USACE corresponded on 10/7/13 about the POA Form 15 for Invoice 04 for the 2013 Contract. R. Broyles questioned the request for the 100% of the transportation and disposal costs and asked if the bulk bags had reached their destination. Bristol replied that all bulk bags had been removed from the island and approximately 1,300 bulk bags had arrived at the Port of Seattle.
- On 10/7/13 Bristol received C-0008 from J. Craner about the revised project schedule and extension of the period of performance for the 2013 Contract.
- Between 10/8/13 and 10/17/13 Bristol and USACE corresponded (H-0022, C-0009 and C-0010) and met to discuss invoicing for 100% of the Site 28 task on Invoice 04 for the 2013 Contract. Meeting at USACE was held on 10/15/13 at 0900 with A. Graham and R. Broyles to discuss a fair and reasonable adjustment on Invoice 04. USACE agreed to pay 100% of the Site 28 Sediment Removal SubCLIN on Invoice 04.

- Bristol submitted the September Monthly Status Report on 10/10/13.
- R. Broyles sent Bristol information on how to get a base pass on 10/10/13.
- On 10/25/13 Bristol sent R. Broyles POA Form 15 for Invoice 11 for 2012 Contract. R. Broyles requested that Bristol reduce the Site 28 Sediment task to 90% because of the geotubes currently being overwintered at NE Cape. Bristol reduced the invoice as requested but would like to inform USACE that nine bulk bags with approximately 54 tons of sediment from Site 28 were transported off-island in September 2013 and will be disposed by December 2013 including the geotube that was overwintered in 2012.

Work Underway

- Continuing to coordinate and track the marine transportation and disposal of the bulk bags.
- Drafting the final HTRW Remedial Action Report.

Work Planned for the Upcoming Month

- Drafting the final HTRW Remedial Action Report.

Status of Laboratory Reports

- All but one of the final laboratory reports have been received from the analytical laboratory. The laboratory report for the Site 10 drum waste is still pending.
- Bristol is working on the CDQR, ADEC check lists and sample summary tables.

Pay Estimates

- Bristol received payment for Invoice 03 for 2013 Contract on 10/4/13 in the amount of $7,547,934.60.
- Submitted POA Form 15 for Invoice 04 for the 2013 Contract to R. Broyles on 10/7/13. Received approval on 10/8/13.
- Submitted payment packet (H-0022) for Invoice 04 for 2013 Contract on 10/8/13 for $3,865,424. (Received payment on 11/5/13).
- Submitted POA Form 15 for Invoice 11 for 2012 Contract to R. Broyles on 10/25/13. Received approval on 10/29/13 with an adjustment for the Site 28 sediment CLIN to 90% instead of 100%.
- Submitted payment packet (H-0013) for Invoice 11 for 2012 Contract on 10/29/13 for $481,177.96.

Accident/Exposure Hours

- The October 2013 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms for the 2011, 2012 and 2013 NE Cape Contracts were submitted on 11/4/13 to R. Broyles.

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Monthly Status Report
November 2013

Submitted on 12/12/2013

Summary of Work Tasks

During the month of November Bristol performed the following:

- Continued drafting the 2013 HTRW Remedial Action Report.
- Scanned and filed transportation and disposal documents that were received from the waste disposal facility.

Subcontractors

- During the month of November, Bristol received and paid invoices to subcontractors and vendors for heavy equipment rental, remote camp rental, satellite communications, laboratory services, surveying, marine transportation, and waste disposal.
- Bristol corresponded with the transportation and disposal subcontractors on the schedule for the bulk bag transportation and disposal from the Port of Seattle. All bulk bags and non-hazardous bulk waste has been properly disposed by Waste Management.
- Gravel royalty payment paid to Kukulget Inc. on 11/22/2013. Bristol received an invoice from Sivuqaq Inc. on 12/9/2013 for their portion of the gravel royalty.

USACE and ADEC Correspondence

- Bristol corresponded with V. Palmer on 11/4/13 about the December RAB meeting in Savoonga. Bristol informed the USACE that we were not funded to attend a RAB meeting under the 2013 contract.
- On 11/4/13 R. Broyles emailed Bristol about providing him an estimate of what Bristol would be invoicing the USACE in November. Bristol estimated that we'd be invoicing the USACE for $640,000**.**
- Bristol corresponded with the USACE on 11/7/13 about the EPA Region 10 exception report related to the hazardous material from NE Cape. USACE approved the report and Bristol sent it to EPA.
- Bristol corresponded with J. Craner on 11/7/13 about the excavation extents at the MOC. Bristol provided the USACE with an AutoCAD drawing on 11/7/2013 that contained the 2012 and 2013 excavation extents at the MOC. Bristol provided the USACE with the 2011 excavation extents on 11/8/2013.
- Bristol submitted the October 2013 Monthly Status Report on 11/7/13.

- Bristol filed an exception report with the U.S. EPA, Region 10, to notify the agency that signed disposal paperwork will not be received within 45 days of shipment of hazardous materials from St. Lawrence Island.
- Bristol submitted serialized letter H-0023 to the USACE on 11/26/2013 regarding project management transfer effective 11/30/2013.

Work Underway

- Drafting the final HTRW Remedial Action Report.
- Continuing to scan and file transportation and waste disposal documentation.
- Chemical Data Quality Review (CDQR)

Work Planned for the Upcoming Month

- Finalize the draft of the 2013 HTRW Remedial Action Report.

Status of Laboratory Reports

- All of the final laboratory reports have been received from the analytical laboratory. The final report was received from TestAmerica on 11/18/2013.
- Bristol is working on the CDQR, ADEC check lists and sample summary tables.

Pay Estimates

- Bristol received payment for Invoice 11 for the 2012 Contract on 11/22/13 in the amount of $483,021.21. Bristol corresponded with the USACE about the over payment of $1,843.25. This discrepancy was related to Item 0004 and 0006AC, which will be rectified on the next invoice submitted to the USACE for Contract W911KB-12-C-0003.

Accident/Exposure Hours

- The November 2013 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms for the 2011, 2012 and 2013 NE Cape Contracts were submitted on 12/5/13 to R. Broyles.

APPENDIX C

Correspondence and
Response to Comments

Pheasant, Leslie

From: Welker, Molly
Sent: Monday, August 12, 2013 2:36 PM
To: James, Russell
Subject: FW: GAC unit estimate from Emerald Alaska
Attachments: 12847 Bristol - St. Lawrence Island - GAC Units.pdf

Russell – please share this information with Johnny and he can contact Blake Hillis (blakeh@emeraldnw.com) for additional information or call Emerald's office at 646-5050. Let me know if you or Johnny have any concerns about the GACs ASAP – so I can't get this price quote signed and we can get the GACs ordered. I'll probably put them on the landing craft that are due back to NE Cape on Thursday or Friday morning.

Molly Welker
Senior Project Manager
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Shaun Tucker [mailto:shaunt@emeraldnw.com]
Sent: Monday, August 12, 2013 2:29 PM
To: Welker, Molly
Subject: GAC unit estimate from Emerald Alaska

Hello Molly,

I hope that this e-mail finds you well.

Attached is the R.O.M. – rough order of magnitude / rough time and materials estimate for providing two 3,000 pound GAC units for the Bristol project at St. Lawrence Island.

Please review and don't hesitate to contact me with any questions or if you require any additional information.

Emerald Alaska, Inc. is providing a good faith estimate for the charges and fees which may be incurred within the scope of work, but the actual charges and fees may vary from or exceed the estimate.

If you find our estimate for the scope of work described acceptable, please sign and date the last page of the terms and conditions form, and return it to my attention. If required by your company, please provide a purchase order number, or other invoicing reference number for this work. As soon as we receive a signed "Notice to Proceed" we will contact you with a date and time to schedule the equipment.

Thank you for the opportunity and we are very much looking forward to hearing from you again soon.

Shaun G. Tucker: Business Development Manager
Emerald Alaska, Inc.
800 East Ship Creek Avenue | Anchorage, AK 99501

Office: 907.646-5050 - Cell Number: 907.398.5345

shaunt@emeraldnw.com | www.emeraldnw.com

Please don't print this e-mail unless necessary.

Shaun G. Tucker
Business Development Manager
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WORK ESTIMATE: for Bristol Environmental Remediation Services, LLC.
Project Name: GAC Unit for USACE Project at NE Cape on St. Lawrence Island
Estimate Number: 12847

CUSTOMER:	Bristol Environmental Remediation Svcs.	Estimate Date:	08/12/2013
WORK DESCRIPTION	GAC Unit		
BILLING ADDRESS:	111 West 16th Avenue, Third Floor		
	Anchorage, Alaska 99501-5109		
CUSTOMER CONTACT:	Molly Welker: Senior Project Manager		
PHONE NUMBER:	(907) 563-0013		
FAX NUMBER:	(907) 563-6713		
E-MAIL ADDRESS:	mwelker@bristol-companies.com		

This estimate is valid for a period of 30 days and only for the scope of work described herein.

Scope of Work: GAC Units – to St. Lawrence and disposal.

Emerald Alaska, Inc. is pleased to offer the following R.O.M. – rough order of magnitude / rough estimate for supplying GAC Units for treatment / water polishing at the USACE project at the NE Cape on St. Lawrence Island. Below are the figures showing the treatment train detail that is currently installed at NE Cape: Bristol Environmental Remediation Services are responsible for transportation to and from Anchorage to the job site location, safe operation of the equipment and damages to the equipment.

The range of hydrocarbon contaminants in the water that need to be filtered are shown below. Our cleanup levels are DRO= 1.5 mg/L and TAH = 10 ug/L and TAqH = 15 ug/L.

Treated Water	**Range**		**Units**
	Low	High	
DRO Range	0.0486	4.4	mg/L
BTEX	ND-0.9	19.56	ug/L
PAHs	2.98	9.25	ug/L
mg/L-milligrams per liter (ppm)			
ug/L-micrograms per liter (ppb)			

GAC Unit Specifications: for 3,000 Media Vessels

General Specifications:	Flow ranges from 0 – 300 GPM
Main Equipment:	2 – 3,000 lb media vessels 54" diameter x 8.5' high
Equipment Features:	Stainless Steel slotted screen for water collection & backwash distribution Standard Absorption System Piping including: Air Eliminators to remove air from headspace Schedule 40 carbon steel process piping Cast Iron butterfly valves for process piping 3" Butterfly valves for GAC discharge
Internal Lining:	Macropoxy 646 epoxy where GAC contacts steel for portable water & most liquid applications
External Coating:	High solids epoxy paint
Pressure rating:	75 psig & 14 psig vacuum
Water Hose Connection:	Male camlocks 2" inlet fitting
Air Hose Connection:	¾" Chicago hose connection
Process Pipe Connection:	3" Camlock
Maintenance Access:	2- 14" x 18" manway on top and side
Weight:	2300 lbs. empty / 8300 lbs. Operating weight
Options:	Manifold for between vessels
Power Requirements:	None



Assumptions:

- Emerald Alaska, Inc. will bill "**actual**" Time and Materials for the completion of this scope of work.
- All Environmental Permits required by Federal, State, or Local Authorities will be the sole responsibility of Bristol Environmental Remediation Services, LLC.
- All analytical work – prior to startup will need to be provided to determine the "dwell" or the time period that the contaminated water is in contact with the activated carbon, will be the sole responsibility of Bristol Environmental Remediation Services, LLC.
- All analytical work – prior to discharge will need to be provided to determine if the water meets the discharge permit standard, will be the sole responsibility of Bristol Environmental Remediation Services, LLC.
- If delays are encountered outside the control of Emerald Alaska, Inc., Bristol Environmental Remediation Services, LLC. will be billed "Stand by time" at the current statewide rates.
- All generated waste will be packaged for transportation and disposal in accordance with 49 CFR and 40 CFR guidelines.
- Waste disposal is pending Generator characterization. For the purpose of this estimate, EAI assumes that waste generated from this project is non-hazardous.
- **NOTE:** If the spent Carbon is deemed Hazardous – through analysis. Emerald Alaska, Inc. has the ability to properly manage the transportation and disposal, using facilities that are "Approved for Use", by all of the major oil and gas companies. For the above mentioned, we are assuming that the Spent Carbon will be Non-Hazardous and able to be processed at Emerald Alaska's Viking Facility, which is also "Approved for Use".
- Bristol Environmental Remediation Services will be responsible in the event that the "Equipment" is lost, damaged or destroyed during the rental period. Bristol Environmental Remediation Services agrees to replace or repair the equipment if damaged or destroyed during the transportation, and operation period that the equipment / GAC Units are rented.

- The rental period is "portal to portal", and billing starts from the time of delivery and when the 2 – GAC units / vessels are cleaned.

Equipment and Consumable Supplies:

- Granulated Activated Carbon Contactor : $500.00 per week, per unit
- Granulated Carbon – Activated: $1,702.50 per 1,000 pounds
- Labor for filling/removing carbon from contactors: $4,500.00 lump sum / per event
- Delivery, Set up, and Pick up of equipment: $8,500.00 lump sum / per event
- Cleaning fee for Carbon Contactors and equipment: $4,500.00 lump sum / per event
- Miscellaneous hand tools, fitting and gaskets: $500.00 per event
- EAI Facility Water Processing Tech. $90.00 per hour

The following is based on: 2 - GAC Units 30 days (20 days processing water), the skid mounted Filter unit, 6,000 pounds of Carbon, filling/removing the Carbon, delivery, and pick-up and cleaning of equipment.

If requested by Bristol Environmental Remediation Services, Emerald Alaska, Inc. can make recommendation for resonating time of the water in the carbon contactor units. **(3,000 pounds of Carbon: gallons per minute 100, Contact time: 6.51)** estimated only.

Disposal:

- Facility Profile Fee: $50.00 per profile
- In-house Documentation Fee: $15.00 per manifest
- Transportation and Disposal Project Management: $1,000.00 per event
- Super Sack / DOT shipping containers: $29.75 per Super Sack
- Disposal of Spent Carbon (Non-Hazardous): $374.50 per Super Sack

PROJECT NAME: GAC Unit for Bristol Environmental project at St. Lawrence Island

EQUIPMENT LIST:	NO.	UNIT	RATE:	TOTAL:
GAC UNIT - (2 Units)	8	week/unit	$500.00	$4,000.00
Carbon - Activated: est. 6000 pounds	6	1000 pound	$1,702.50	$10,215.00
Labor for filling/removing carbon from Contactors	2	event	$1,500.00	$3,000.00
Delivery, and Pick up of equipment	1	event	$4,000.00	$4,000.00
Cleaning fee for carbon contactors and equipment	2	event	$2,000.00	$4,000.00
			TOTAL:	**$25,215.00**

TRANSPORTATION & DISPOSAL:	NO.	UNIT	RATE:	TOTAL:
Facility Profile Fee:	1	each	$50.00	$50.00
In-house Documentation Fee:	1	each	$25.00	$25.00
Transportation and Disposal Project Management	1	event	$500.00	$500.00
Cubic Yard Galaxy/Maverick/ DOT shipping containers	6	each	$102.50	$615.00
Transportation and Disposal of Spent Carbon	6	each	$468.15	$2,808.90
			TOTAL:	**$3,998.90**

Project Summary

Equipment Total	*$25,215.00*
Disposal	*$3,998.90*
Project Total	***$29,213.90***

Emerald Alaska, Inc. is providing a good faith estimate for the charges and fees which may be incurred within the scope of work, but the actual charges and fees may vary from or exceed the estimate.

The information provided in this document is sensitive and confidential information intended for the use of Bristol Environmental Remediation Services and may not be disclosed to any third persons without the sender's written consent.

If you find our estimate for the scope of work described above acceptable, please sign and date this form, and return it to my attention. If required by your company, please provide a purchase order number, or other invoicing reference number for this work. As soon as we receive a signed "Notice to Proceed" we will contact you with a date and time to schedule the above mentioned scope of work.

Thank you for your consideration of this proposal. Emerald Alaska is looking forward to providing Bristol Environmental Remediation Services, with cleaning, transportation and disposal services. If you should have any questions regarding this proposal, please don't hesitate to contact me at (907) 646-5050 or cell (907) 398-5345.

Sincerely,



Shaun G. Tucker
Business Development Manager
Emerald Alaska, Inc.
Office: (907) 646-5050
Cell: (907) 398-5345
E-mail: shaunt@emeraldnw.com

Terms and Conditions:

1. **This signed estimate must be received as an official Notice to Proceed for any project or change order.**
2. **Energy surcharges, applicable to the date of service, will apply to all items affected by fuel costs. Energy surcharge vary month to month. AUGUST 2013: 18.8%**
3. Disposal pricing is based on disposal method. The price above may vary from the final price, which is based on final TSDF profile approval and waste receipt.
4. Customer will package all material in DOT-approved shipping containers, in accord with Department of Transportation regulations. Any containers not meeting such regulatory standards will be repackaged at Customer's expense.
5. If delays are encountered outside the control of Emerald Alaska, Inc., additional charges may apply.
6. Containers must be readily accessible by the generator or the generator's representative.
7. Customer agrees to pay all applicable tax or permit fees.
8. Expedited services (less than 24-hour notice) are considered emergency response and will incur a 10% invoice surcharge. Expedited services may not be available for all work projects.
9. Customer agrees to pay in full and on time all charges and fees within the scope of work, and within any authorized change order. Payment terms are net 30 unless other arrangements have been made prior to the start of work. Billing will occur at the time Emerald Alaska, Inc. accepts the waste material for transportation and/or disposal. Final manifests, certificates of disposal and other supporting documentation will be mailed to the project manager when available.
10. Customer acknowledges this quote is a good faith estimate of the charges and fees which may be incurred within the scope of work, but the actual charges and fees may vary from or exceed the estimate. Customer agrees to pay the actual charges and fees.
11. Emerald Alaska, Inc. reserves the right to require security and take other steps to ensure Customer timely and fully pays all charges and fees. Emerald Alaska, Inc. may suspend services if Customer fails to make full and timely payment.
12. Emerald Alaska, Inc. has no obligation to perform any services or incur any costs unless and until this Estimate and Work Order is authorized and signed by Customer, and returned to Emerald Alaska, Inc. Emerald Alaska, Inc. has no obligation to perform any services or incur any costs beyond those described within the scope of work in this Estimate and Work Order, unless and until a written change order is executed and signed by both Customer and by Emerald Alaska, Inc.

On behalf of Customer, I agree to all terms and conditions of this Estimate and Work Order, and authorize Emerald Alaska, Inc. to proceed accordingly. If required by your AP department, please provide the purchase order number for this work.

Customer Signature	Printed Name	Date
Company Name	Title	Purchaser Order No.

THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

555 Cordova Street
Anchorage, Alaska 99501
Phone: 907.269.7503
Fax: 907.269.7649
dec.alaska.gov

File No: 475.38.013

May 21, 2014

US Army Corps of Engineers USACE, AK District
Attention: Ms. Valerie Palmer
CEPOA-PM-ESP
P.O. Box 6898
JBER, AK 99506-0898

Re: ADEC Review and Approval of the Final June, 2013 Northeast Cape (NEC) Removal Action (RA) Work Plan

Dear Ms. Palmer;

Thank you for providing the Alaska Department of Environmental Conservation's Contaminated Sites Program (ADEC) with a copy of the Final 2013 NEC RA Work Plan which is dated June, 2013 and was received by ADEC on July 3, 2013. ADEC had previously completed its review of the final work plan and associated variance requests in and submitted its tentative and conditional approvals both orally and electronically via email to the Army Corps of Engineers on June 5, 2013. This letter is a follow up to provide the Army Corps of Engineers with a formal final approval of the final 2013 RA work plan for the Corps' records. ADEC also recently submitted three letters to the Corps for the purpose of documenting ADEC's conditional approvals of the Corps' 2013 in-season variance and modification requests to the ADEC-approved final 2013 RA work plan.

Please contact me at curtis.dunkin@alaska.gov or at (907)269-3053 if you have any questions regarding this letter.

Sincerely,

Curtis Dunkin
Environmental Program Specialist

James, Russell

From: Welker, Molly
Sent: Thursday, August 15, 2013 4:21 PM
To: James, Russell
Subject: FW: NEC; Corps' request to not excavate soil sample location 21SB17 at Site 21 (UNCLASSIFIED)
Attachments: EXCAVATION-EXTENTS.pdf

Russell -- when you have a chance can you review this and then we can pass it on to Aaron for his review and then eventually to Curtis...thanks

Molly Welker
Senior Project Manager
Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013

-----Original Message-----
From: Peacock, Noyuk
Sent: Thursday, August 15, 2013 4:00 PM
To: James, Russell
Cc: Welker, Molly
Subject: RE: NEC; Corps' request to not excavate soil sample location 21SB17 at Site 21 (UNCLASSIFIED)

Please see attached...

Thanks,

Noyuk Peacock
AutoCAD/GIS Technician
Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013

-----Original Message-----
From: James, Russell
Sent: Thursday, August 15, 2013 11:44 AM
To: Peacock, Noyuk
Cc: Welker, Molly
Subject: FW: NEC; Corps' request to not excavate soil sample location 21SB17 at Site 21 (UNCLASSIFIED)

I've attached the Site 21 map. It has been marked up by Aaron (USACE QAR) to address Curtis Dunkin's comments below. He's outlined a new removal area. Please revise the boundary as noted, recalculate the volumes and add the sample results (including the results for the additional borings).
If you have any questions, please call (907) 273-0045 or email.
Thanks,

Russell James
Environmental Scientist
Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013 -----Original Message-----
From: Shewman, Aaron F POA [mailto:Aaron.F.Shewman@usace.army.mil]
Sent: Thursday, August 15, 2013 11:12 AM
To: James, Russell

Cc: Geist, Lisa K POA; Craner, Jeremy POA
Subject: FW: NEC; Corps' request to not excavate soil sample location 21SB17 at Site 21 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Russell,

Please see DEC's guidance on Site 21 and mechanical screening of POL-soil below.

I am marking up a Site 21 figure for you to use as a basis for the modifications Curtis has requested below.

Aaron Shewman, P.E.
Environmental Engineer
USACE Alaska District (EN-EE)
Joint Base Elmendorf-Richardson, Alaska
(907) 753-5558 (voice)
(907) 753-2829 (fax)

-----Original Message-----
From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Thursday, August 15, 2013 10:51 AM
To: Palmer, Valerie Y POA; Geist, Lisa K POA; Shewman, Aaron F POA; Craner, Jeremy POA
Cc: Halverson, John E (DEC)
Subject: [EXTERNAL] NEC; Corps' request to not excavate soil sample location 21SB17 at Site 21

Valerie, all, I have discussed the Corps' request to not excavate soil sample location 21SB17 at Site 21 with John Halverson. A summary of ADEC's determinations are below; per the outlined conditions of which, ADEC approves the Corps' request. Please also see below re: the oversized material that is being encountered in the POL soil excavations.

Site 21

A request was made orally to ADEC on August 13, 2013 from Lisa Geist of the Corps that the Corps not be required to excavate soil sample location 21SB17 at Site 21 due to the following:

1) 21SB17 is located in a very wet portion of Site 21 more than 10 ft. away from 21SB06 (2013 analytical results of 2.6 mg/kg) and nearly 20 ft. away from the next location, 21SB05, analytical results for which barely exceed the alternative cleanup level (established background) concentration of 12 mg/kg; and

2) excavation of the wetland area at the 21SB17 location could result in significant adverse impacts to the wetland and surface water features in the immediate area.

ADEC approves the Corps' request to not excavate soil sample location 21SB17 at Site 21 per the following conditions:

1) Floor and sidewall confirmation samples are collected at locations of the resulting northern excavation boundary between the 21SB17 and 21SB05 locations; the analytical results of which are all below the ACL (background) of 11 mg/kg; and

2) All analytical results of all floor confirmation samples taken at the vertical limit of excavation (2 feet bgs) for the entire site are below the ACL of 11 mg/kg and no other contamination exceeding this cleanup level is left in place other than the proposed 21SB17 location.

3) ADEC requests the Corps provide a revised figure which depicts the current known boundaries of the excavation, the known analytical sample locations and results, and the revised proposed excavation boundaries and anticipated removal volumes for approval prior to proceeding at site 21.

Screening of > 2" material at POL excavations

Per the ADEC-approved 2103 NEC RA Work Plan, screening of material larger than 2" was planned at all excavations where it could be effective with removing larger rock material which could either visually or via analysis be determined to not exceed the criteria for larger materials (per the attached ADEC Guidance document) and/or the respective site-specific cleanup level(s). Per ADEC's observations made while conducting site inspections on August 12-14, 2-13, significant volumes of rock materials which were significantly larger than 2" were being loaded into supersacks for disposal; rock materials which neither appeared to be stained nor had significant amounts of fines attached. The on-site available rock screening capabilities should be utilized whenever possible to maximize the efficacy of the removal actions and to ensure that required cleanup per the 2009 Decision Documents are achieved.

Please contact me if you have any questions. Thanks and regards

Curtis Dunkin

Environmental Program Specialist

ADEC Contaminated Sites Program

555 Cordova Street

Anchorage, AK 99501

Phone: 907-269-3053

Classification: UNCLASSIFIED
Caveats: NONE

James, Russell

From: Welker, Molly
Sent: Monday, August 26, 2013 1:02 PM
To: Croley, Charles; Clark, Julie; Jarrell, Greg; Hannah, Marty
Cc: Faust, Matt; James, Russell
Subject: FW: Tentative NEC Site 28 water treatment/discharge proposal (UNCLASSIFIED)

Looks like we still have to sample but don't have to wait for the results prior to discharge. And we will have to sample the discharge area at the end of the discharge process.

Molly Welker
Senior Project Manager
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Broyles, Ronald S POA [mailto:Ronald.S.Broyles@usace.army.mil]
Sent: Monday, August 26, 2013 12:50 PM
To: Faust, Matt; James, Russell; Welker, Molly
Subject: FW: Tentative NEC Site 28 water treatment/discharge proposal (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Here is what Curtis had to say about discharging water directly from the GACs.

From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Monday, August 26, 2013 12:45 PM
To: Palmer, Valerie Y POA; Geist, Lisa K POA; Shewman, Aaron F POA; Craner, Jeremy POA; Broyles, Ronald S POA
Subject: [EXTERNAL] Tentative NEC Site 28 water treatment/discharge proposal

Hi Lisa, just left you a voice msg. and thought I'd follow up w/ an email as well.
Per reading the summarized language in the DCQR (which recommends discharging directly to the surface post GAC-treatment w/ no sampling), ADEC would request at a minimum, that the treated water initially be discharged to one of the holding ponds, then that volume of water to be discharged be sampled for analysis prior to discharge. After conferring internally this morning, it sounds reasonable to ADEC to discharge prior to receiving the results, however the water should still be sampled for confirmation. ADEC also would request that at least one surface soil sample w/ duplicate be sampled from the discharge area for confirmation. This sampling approach would allow the field team to discharge prior to receiving results while confirming cleanup levels are achieved without creating potential data gaps of contaminant fate. Please let me know if you have any questions or would like to discuss further. Thanks and regards

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

Classification: UNCLASSIFIED
Caveats: NONE

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
ENVIRONMENTAL ENGINEERING SECTION (EN-EE)
P.O. BOX 6898
JBER, ALASKA 99506-0898

REPLY TO
ATTENTION OF:

29 July 2013

Environmental Remediation Section C-0006

SUBJECT: Alternate Site Superintendent Acceptance, Contract W911KB-13-C-0004, NE Cape HTRW Remedial Action (FY13), Northeast Cape, St. Lawrence Island, Alaska

Bristol Environmental Remediation Services, LLC.
111 W. 16th Avenue, Suite 301
Anchorage, AK 99501

Gentlemen:

The purpose of this letter is to respond to your Serial Letter number H-0012, Temporary Transfer of the Site Superintendent, dated 25 July 2013.

Your request to transfer site superintendent duties to Maze Thompson while Chuck Croley is on his break is acceptable. This is a similar arrangement that happened last season. Although it isn't mentioned in your letter, Chuck Croley is also the site safety and health officer for the project. We are assuming that Eric Barnhill will assume these duties while Mr. Croley is away. This is also an acceptable substitution.

If you have any questions, please contact the undersigned at 753-5789.

Sincerely,

Ronald S. Broyles

Ronald S. Broyles
Contracting Officer's Representative

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
ENVIRONMENTAL ENGINEERING SECTION (EN-EE)
P.O. BOX 6898
JBER, ALASKA 99506-0898

REPLY TO ATTENTION OF:

07 October 2013

Environmental Engineering Section C-0008

SUBJECT: Response to Submittal of Revised Project Schedule and Period of Performance Extension, Contract W911KB-13-C-0004, NE Cape HTRW Remedial Action (FY13), Northeast Cape, St. Lawrence Island, Alaska

Bristol Environmental Remediation Services
111 W. 16th Avenue, Suite 301
Anchorage, AK 99501

Gentlemen:

The purpose of this letter is to respond to your Serial Letter number H-0021, dated 03 October 2013, which included a revised project schedule (including explanation) complete with request to extend the period of performance for contract number W911KB-13-C-0004. After review, we accept the revised project schedule and will therefore initiate a modification to the contact to extend the period of performance to 01 November 2014.

If you have any questions, please contact the undersigned at 753-5789.

Sincerely,

Ronald S. Broyles

Ronald S. Broyles
Contracting Officer's Representative

James, Russell

From: Greuey, John J (DEC) <john.greuey@alaska.gov>
Sent: Wednesday, July 03, 2013 4:31 PM
To: Luetters, Susan
Cc: Dunkin, Curtis S (DEC); Rypkema, James (DEC)
Subject: Continuation of Northeast Cape HTRW Phase I remediation discharges

Susan,
Upon discussion with Curtis Duncan, the primary point of contact with contaminated sites who approved the remedial work plan he agreed the remediation related discharges to the surface can all be covered under the approved work plan. There is no need to file a new NOI for the contained water authorization used in the past as this discharge will now simply be authorized under the Contaminated Sites approved remedial work plan which covers the entire remediation project. If you have any further questions, please contact Curtis Duncan at 269-3053.
Thanks,

Jake Greuey
Environmental Program Specialist IV
Alaska DEC - Division of Water
555 Cordova Street
Anchorage, AK 99501
907-269-4597

James, Russell

From: Welker, Molly
Sent: Tuesday, July 16, 2013 3:11 PM
To: Hannah, Marty; James, Russell; Croley, Charles
Subject: ADEC approval of flocculent
Attachments: Continuation of Northeast Cape HTRW Phase I remediation discharges

FYI -- we have gotten approval for the use of the flocculent from ADEC

Molly Welker
Senior Project Manager
Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013

-----Original Message-----
From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Tuesday, July 16, 2013 1:32 PM
To: Palmer, Valerie Y POA
Subject: RE: Flocculent Results (UNCLASSIFIED)

Valerie, Thank you again for providing ADEC with the analysis results of the flocculent proposed for use at NEC Site 28 (as well as Bristol's additional summary in your email below). ADEC has completed its review of the information provided and determined that the impacts of the flocculant to waters discharged from the Geotube should be minimal due to the likelihood that TAH and TAqH compounds should be precipitated out with the captured sediment in the Geotube. Per the ADEC tentatively approved 2013 work plan, the impoundment water will be treated and sampled prior to discharging to ensure that all COC concentrations are below the ADEC 18 AAC 75 Table C Groundwater cleanup criteria prior to discharging the water to the ground surface. Please see also the attached email from ADEC-Div. of Water re: how ADEC will continue to manage water discharges under the approved remedial work plans when associated w/ contaminated sites. I will include this summary and approval in a formal letter that will be sent this week along with the other variance and general work plan approvals. Please contact me if you have any questions.
regards

Classification: UNCLASSIFIED
Caveats: NONE

James, Russell

From: Hannah, Marty
Sent: Monday, July 15, 2013 10:36 AM
To: Craner, Jeremy POA; James, Russell
Cc: Welker, Molly; Barnhill, Eric
Subject: RE: Northeast Cape MI Sampling Question (UNCLASSIFIED)

Let me know if you have any questions on this. We should have everything we need on site in the mobile lab. My cell phone is fixed too, 907-250-1663.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013 -----Original Message-----
From: Craner, Jeremy POA [mailto:Jeremy.D.Craner@usace.army.mil]
Sent: Friday, July 12, 2013 5:42 PM
To: James, Russell
Cc: Welker, Molly; Hannah, Marty; Barnhill, Eric
Subject: FW: Northeast Cape MI Sampling Question (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Russell,

Please see response from ADEC below. They request that the final transfer of the VOA vial be done with a syringe instead of the suggested pipette and bulb.

Thanks for ensuring that this gets done correctly.

Jeremy

-----Original Message-----
From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Friday, July 12, 2013 3:44 PM
To: Craner, Jeremy POA
Cc: Palmer, Valerie Y POA; Benjamin, Sean P POA; Broyles, Ronald S POA; Geist, Lisa K POA
Subject: RE: Northeast Cape MI Sampling Question (UNCLASSIFIED)

Jeremy and Valerie,

ADEC has completed its review of the Corps' variance request outlined in the email below for collecting the BTEX soil samples via ADEC MI guidance and the approved 2012/2013 MI sampling at NEC. This variance request and pending ADEC approval applies exclusively to the BTEX sampling of the site 28 impoundment areas pre-construction. Per your verification that the size of the decision units and the number of cells has not changed (per what ADEC tentatively approved in the 2013 work plan), ADEC approves the requested variance with one exception, that the final extraction of the methanol from the sample jar and transfer to the VOA vial be done with a syringe and not the suggested pipette and bulb. Please let me know if you have any questions. regards

From: Craner, Jeremy POA [mailto:Jeremy.D.Craner@usace.army.mil]
Sent: Friday, July 12, 2013 2:24 PM
To: Dunkin, Curtis S (DEC)
Cc: Palmer, Valerie Y POA; Benjamin, Sean P POA; Broyles, Ronald S POA; Geist, Lisa K POA
Subject: Northeast Cape MI Sampling Question (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Hi Curtis:

Below are pertinent sections of an email originally sent to the USACE. Bristol wants to MI sample the Site 28 impoundment areas but is unsure how to handle the BTEX analysis portion. We want to do this ASAP. Is it OK if they use the suggest method listed below for BTEX sample collection? Basically we will end up with 1 sample per DU instead of many separate discreet samples. It seems reasonable to be but we need your approval. Please let me know as soon as possible so we can get the impoundments built.

Bristol had a conference call kick-off meeting on June 12, 2013 with TestAmerica to discuss the 2013 NE Cape project and analytical requirements of the contract. Rush turnaround times and data quality objectives were discussed. Bristol received additional information and requests from TestAmerica regarding the following updated methods that were not included in the 2013 NE Cape HTRW Work Plan.

I also wanted to inform you that Bristol has included a SOP for collection of multi-increment (MI) samples in the 2013 NE Cape QAPP, which includes the collection of volatile samples. Bristol plans to collect and ship the volatile portion of the MI samples for BTEX analysis as follows: an Encore sampler will be used to collect a pre-determined volume of sample that is equal to 2 grams of soil from each cell within a decision unit and place the sample in a tared 32-ounce methanol preserved jar, assuring that no splashing or loss of methanol occurs and methanol and soil are at a 1:1 ratio. If soil conditions are not amenable to Encore sampling, a field scale will be used to weigh out 2 grams of soil collected with a tared stainless steel spoon before placing it in the methanol preserved jar. The jar will be weighed after each decision unit is sampled to determine the soil weight minus the weight of the jar and methanol. Immediately after collecting the volatile sample from each cell, another co-located sample will be collected and placed in an unpreserved jar for percent moisture determination. The laboratory will be instructed to homogenize the sample before percent moisture determination to best reflect the decision unit conditions. Once a decision unit has been completed for all analyses, methanol will be transferred from the sample jar with a pipette and bulb to a VOA vial with no more than 30 mL of methanol in order to be shipped as dangerous goods in excepted quantity.

Thanks,

Jeremy

Jeremy Craner

Hydrogeologist

USACE Alaska District (EN-EE)

Joint Base Elmendorf-Richardson, Alaska

907.753.2628 (voice)

907.753.2829 (fax)

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Alaska Department of Environmental Conservation (ADEC)
Contaminated Sites Program
Document Reviewed: Draft January 2013 Northeast Cape Removal Action Work Plan
Commenter: Curtis Dunkin-ADEC **Date Submitted:** May 01, 2013**; ADEC-reviewed 5-28-13**

#	Page #	Section	ADEC Comment	Response
1.	1	1.0	Add surface water sampling at sites 8, 28, and MOC to the SOW bullets.	Surface water sampling will be added for Site 28 and the MOC. Site 8 is an unfunded option in our SOW and will be added with (unfunded option) after the sampling statement. **ADEC-Accepted May 28, 2013**
2.		2.0	Revise miscellaneous statements throughout this section as previously requested in ADEC comments submitted on past work plans and reports.	Previous ADEC comments will be reviewed and revised accordingly **ADEC-Accepted May 28, 2013**
3.	6	2.5	Second paragraph on this page, briefly describe the varying/seasonal perched groundwater that has previously been observed at the MOC POL excavations. Also briefly describe the temporary elevated groundwater table in some excavations which occurs during significant precipitation events.	Conditions encountered in 2011 and 2012 at G and H plume has been added to the paragraph. **ADEC-Accepted May 28, 2013**
4.	13	Table 2-1	The former fuel line associated with site 3 was brought up by resident RAB members at the winter 2012 RAB mtg. and was planned to be reinvestigated in 2013. Table 2-1 should be revised accordingly and the action item should be included in the SOW lists, SAP, and QAPP worksheets throughout the document.	The sampling of the Pipeline break near Site 3 is part of a contract modification that is still unfunded. Table 2-1 lists selected remedies from the 2009 Decision Document, which did not include investigating the suspected pipeline leak between Sites 3 and 7. Bristol feels it is more appropriate to list the pipeline sampling in Section 3.1 (Scope of Work for 2013), in the QAPP, and noting it as an unfunded option. **ADEC-Accepted May 28, 2013**

#	Page #	Section	ADEC Comment	Response
5.	15-16	3.2	The remaining MI areas associated with site 26 (and any others) where sampling was not conducted in 2012 need to be added.	The remaining MI sampling will be included and it will be stated that it is part of the 2012 SOW. **ADEC-Accepted May 28, 2013**
6.	16	Table 3-1	Need to include surface water sampling at sites 8, 28, and MOC. Include surface water sampling in other related sections throughout the document (i.e. 4.0, QAPP, etc.).	Surface water sampling at Site 28 and MOC will be added to Table 3-1. Site 8 sampling will be added to Table 3-2 (Optional Field Tasks) as Option/Item 4.6.9/006/AJ. It will also be added to other appropriate sections. **ADEC-Accepted May 28, 2013**
7.	19	3.4.1	Briefly describe the suspected reasons for the groundwater elevation changes discussed in the second paragraph on this page.	A sentence will be added to the last part of the paragraph stating: While the exact causes for such changes in groundwater elevations are not fully understood, factors such as precipitation (rain), snowmelt and changes in sub-surface conditions such as depth to permafrost are the likely reasons for the variability. **ADEC-Accepted May 28, 2013**
8.	20	3.4.1	Revise the sentence in the last paragraph on this page which begins with 'The wells with the lowest contaminant…'. Goes on to state that there is comparatively high DO, suggesting that microbes are depleting oxygen. Depleting oxygen would result in anaerobic conditions.	The sentence will be modified to state: The wells with the lowest contaminant concentrations had comparatively high DO, suggesting an environment where the microbes can deplete oxygen and aerobically degrade DRO. But as the groundwater flows down gradient through the MOC the environment becomes anaerobic in the wetlands as measured in wells MW88-4 and MW88-5. **ADEC-Accepted May 28, 2013**

#	Page #	Section	ADEC Comment	Response
9.	23	3.4.3	Second paragraph on this page, does 2,703.58 tons represent the total volume of soil from 2011 and 2012 or only 2012?	Statement will be clarified so that it's clear that this is total for 2012 only. **ADEC-Accepted May 28, 2013**
10.	25-26	3.4.6	Discussion in this section and in other sections throughout document should be reconciled re: what is considered surface water criteria and what is considered Table C criteria. Tasks to be completed in 2013 which are remaining from the 2012 contract should be clearly and specifically outlined and discussed in the narrative.	Per USACE comments this and other sections will state that surface water criteria from the 2009 decision document and 18AAC70 (Toxic and Deleterious Materials, drinking water criteria) will be used as evaluation criteria for surface water samples. No surface water results will be compared to Table C of 18AAC75. **ADEC-Accepted May 28, 2013** Tasks from 2012 under contract W911KB-12-C-0003 that were not completed are described in Section 3.2, including work at Site 28. **ADEC-Accepted May 28, 2013**
11.	37	4.1.19	Third paragraph of this section, state that 2012 confirmation results indicate that PCB concentrations in soils is not expected to exceed 50 mg/kg in 2013.	A statement will be added that based on 2012 results PCB soil results are not expected to exceed 50 mg/Kg total PCBs. **ADEC-Accepted May 28, 2013**
12.	39	4.1.22	What is meant by 'treated appropriately' in the first complete sentence on this page?	The sentence will be clarified to state that soil particles will be added to bulk bags and water will be treated through a GAC filter. **ADEC-Accepted May 28, 2013**
13.	45	4.2	Last sentence on this page, state per ADEC approval submitted via email in 2012. Include a copy of the email in the appropriate appendix.	A sentence will be added stating: The modified collection rate of 1,600 sq. ft per sample of flooded floor was approved by ADEC in an email dated August 23rd 2012, which can be found in Appendix I.

#	Page #	Section	ADEC Comment	Response
				ADEC-Accepted May 28, 2013
14.	46	4.2	Last paragraph of this section needs to state the other surface water criteria which will be evaluated in 2013; incl. analyzing for BTEX and PAHs to calculate TAH/TAqH, etc. as discussed and agreed upon at the April 12, 2013 comment resolution meeting for the draft 2012 RA Report. The last paragraph of this section also needs to discuss how potential releases of contaminants will be mitigated.	The paragraph will be modified to include BTEX/PAHs will be evaluated as part of the surface water criteria for TAH/TAqH though it is currently an unfunded in a pending contract modification. Mitigation options will be added to the last paragraph and will include options covered in the SWPPP including silt fencing and absorbent boom. **ADEC-Accepted May 28, 2013**
15.	50	4.4	Revise the second sentence of the second paragraph on this page to state: '…2 ft. below water; the water table has historically been…'.	The sentence will be modified to state that previous observations and measurements during removal have shown the water table is basically to the top of the excavation. The area is low lying and served as a drainage for the water treatment effluent. **ADEC-Accepted May 28, 2013**
16.	51	4.4	Last paragraph of this section should briefly discuss the source/method for acquiring the fine-grained material. Also discuss briefly why road construction to site 21 may be required. ADEC's understanding is that heavy machinery has accessed the site in the past consecutive years to conduct removal actions.	A sentence will be added that finer grained material will be obtained from the local borrow source by running it through the screen plant. **ADEC-Accepted May 28, 2013** The statement in section 4.4 is correct that the road may be necessary for rock trucks. Heavy machinery (excavators) have accessed the site in previous years but the site has not been backfilled using rock trucks. The rock trucks require a solid

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				surface so they don't get stuck. **ADEC-Accepted May 28, 2013**
17.	52	4.5	What about the arsenic exceedances which remained at site 10 per the 2012 RA report?	Arsenic is stated in the last sentence of the 1st paragraph of Section 4.5: Confirmation soil samples collected in 2012 indicate that locations remain within the site where **arsenic**, ethylene glycol, PCE, and DRO are present in concentrations exceeding cleanup levels (Figure 9). **ADEC- Accepted May 28, 2013** Metals are included as being part of the confirmation analysis suite. **ADEC-Accepted May 28, 2013**
18.	54	4.7	Why up to 10 wells for potential monitoring well abandonment? Per the 2012 RA work plan, only 7 wells remain at the MOC and/or are within the anticipated excavation boundaries at the MOC.	The 7 wells that remain at the MOC are part of the MNA monitoring. A sentence will be added to Section 4.7 to state that option 4.6.8 for abandonment of up to 10 wells is to remove the physical hazard of damaged wells site-wide (e.g., not just at the MOC) or as part of the removal action when wells are within the excavation areas. **ADEC-Accepted May 28, 2013**
19.	54	4.8	Revise the third sentence of this section to state: '…will remove up to 260 bcy of sediment…' since it is not known whether this volume of sediment can be completely removed in 2013.	The sentence will be revised as requested to include "up to" as part of the statement. **ADEC-Accepted May 28, 2013**
20.	55	4.8	Second paragraph on this page, more information needs to be provided to ADEC re: the B-40 anionic polymer. ADEC requires the necessary information to demonstrate that the B-40 will not result in adverse effects, analysis antagonisms, etc. on the sediment and/or water that is collected in the impound(s).	The polymer that will be used for the Site 28 removal is now called SpinPro 410. This polymer was developed specifically sediment from Site 28 and has proved effective in removing sediment from Site 28

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			Last paragraph on this page, provide more information about the throughput capacity of the sock filters and the scrubber.	suspended in water. Additional information on this product has been provided to the USACE. **ADEC-Accepted May 28, 2013; ADEC should be provided with the benchmark test results which should also be included in the work plan. Associated sections of the work plan should be updated/revised to include all of the** The polymer has not been tested for COCs, but any water that goes through the impoundment water cleaning/scrubbing process -including the use of flocculating polymer- will be tested and not discharged if discharge permit criteria are not met. **ADEC-Accepted May 28, 2013** Additional information on the sock filters and scrubber will be provided. **ADEC-Accepted May 28, 2013**
21.	56	4.8	Last sentence of the first full paragraph on this page, add 18AAC75 Table C Criteria to the discharge criteria.	Per previous discussions, Table C is for groundwater only. Last sentence will be modified to state: If sample results indicate concentrations are below discharge criteria stated in the discharge permit and 18AAC70 (summarized in Table 15-3 of the QAPP) the treated water will be discharged to the ground. **ADEC-Accepted May 28, 2013**
22.	57	4.8	Last paragraph on this page, ADEC requests that the in-situ removal surface water sampling at site 28 be conducted at a two hour interval	The sentence will be modified to state: Bristol will collect surface water samples at a

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			while removal activities are occurring. The samples should be collected similar to ADEC's 10% duplicate requirement; i.e. if the removal operations occur for 2 hours and 38 minutes for one day, then two samples should be collected. ADEC approves a maximum of three samples required per day.	rate of one sample per two hours (or portion thereof) during sediment removal for a maximum collection of three samples per day. **ADEC-Accepted May 28, 2013; Correction to ADEC's original comment, should be three instead of two samples per day if operations last i.e. 2.5 hours.**
23.	59	4.10	Add BTEX to the COC analytes and state that TAH/TAqH will be calculated.	BTEX will be added as a CoC and analyte. A sentence will be added to the end of the paragraph to state: The BTEX and PAH results will be used to calculate the TAH/TAqH concentrations for evaluation of the Site 8 surface water with surface water criteria specified in the 2009 Decision Document and 18AAC70 surface water evaluation criteria. **ADEC-Accepted May 28, 2013**
24.	60	4.10	Change all references to soil at site 8 to sediment in this section, the QAPP, and throughout the rest of the document where applicable. Last paragraph on this page, see comment #59 above. Revise all applicable sections throughout the document re: surface water sampling and analysis to include all of the known COCs for that site; particularly BTEX and PAHs for the purpose of calculating TAH/TAqH. Revise the last sentence on this page to state that silica gel cleanup will only be used for evaluating potential biogenic interferences. State that ADEC has not approved the use of the SGC method to be used to make decisions re: cleanup levels and contaminant concentrations.	Soil will be changed to sediment for Site 8 in all applicable sections. **ADEC-Accepted May 28, 2013** Surface water samples within the DUs are being collected for MNA, including methane, per the SOW. Surface water samples, described on page 59 and referenced in comment #23 will include BTEX and PAHs (currently an unfunded task as part of a pending contract modification) along with DRO/RRO per the

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				SOW. **ADEC-Accepted May 28, 2013** Last sentence of page 60 states that SGC and TOC results will be used to evaluate biogenic interference; A sentence will be added that ADEC has not approved the use of the SGC results to demonstrate that cleanup goals have been achieved. **ADEC-Accepted May 28, 2013**
25.	61	4.10	Revise the second to last sentence in this section to state: '…if microbial activity is occurring anaerobically;'	Sentence will be revised as suggested. **ADEC-Accepted May 28, 2013**
26.	62	4.11	Add MI sampling of the Cargo Beach after offsite shipping of bulk bags is completed in this and other applicable sections of the work plan.	Reference to Cargo Beach and MI sampling following off-site shipping of all bulk bags will be added. **ADEC-Accepted May 28, 2013**
27.		4.0	Section 4 needs to include a new table that includes the matrices, names of compounds, and the associated laboratory analysis method.	Reference to Tables 11-1, 11-2 and Tables 15-1, 15-2 and 15-3 in the QAPP will be added to section 4.0. The WP describes the work and the QAPP describes the matrices, compounds and analytical methods. **ADEC-Accepted May 28, 2013**
28.	71	6.2	Add machinery fluids as a source of potential spills.	Machinery fluids will be added to Section 6.2 **ADEC-Accepted May 28, 2013**
29.	73	7.0	Omit the word 'and' in the third to last bullet.	"And" will be removed from third to last bullet. **ADEC-Accepted May 28, 2013**
30.		Figure 3	Include the 'roofing tar' site on this and other applicable figures.	Roofing tar site will be included on Fig 3 and other applicable figures **ADEC-Accepted May 28, 2013**

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31.		Figure 5	Replace 'Hot' in the legend with '2012 Sidewall Sample Exceeded ADEC Cleanup Level for PCBs'	Hot will be replaced with "exceeded PCB cleanup level". **ADEC-Accepted May 28, 2013**
32.		Figure 8	Clarify the dates of samples in the legend. Were all of the red and black dot sample locations from 2012? Does the green dot 'proposed auger location' refer to 'Proposed 2013 soil sample location'?	"Historical" will be replaced with 2012 in the legend. **ADEC-Accepted May 28, 2013** Yes, all read and black sample dots were from 2012. And 2012 will be added to the red and black dots in the legend. **ADEC-Accepted May 28, 2013** Green dots in the legend will be modified to state: Proposed 2013 auger location.
33.		Figure 9	State the date of the referenced soil samples in the legend.	2012 will be added in the legend as: 2012 Sample ID for the white box that references Sample ID. **ADEC-Accepted May 28, 2013**
34.		Figure 11	Depict in color the wells for which 2012 analysis results indicated exceedances.	Wells with exceedances will be a different color along with the 2 wells that were abandoned in 2012 per ADEC and USACE comments. **ADEC-Accepted May 28, 2013**
35.	ii	Waste Mngmt. Plan	Is the acronym CON-HTW correct or should this be HTRW? Revise elsewhere in document as necessary.	The document will be revised for consistency with respect to CON-HTRW and HTRW. **ADEC-Accepted May 28, 2013**
36.			**UFP-QAPP**	
37.		General	Many of ADEC's comments and revision requests on in the narrative and QAPP sections (above and below) need to be applied to numerous other similar sections and QAPP worksheets throughout the document. Several global document searches will be required to amend these;	All 2013 documents will be reviewed for consistency and incorporate comments in a similar manner throughout the document. Reference to surface water evaluation

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			ADEC ceased making similar comments/revision requests (surface water samples, COCs and analytes, etc.) starting with QAPP worksheet # 17.	criteria will be reviewed and incorporated in all relevant sections. **ADEC-Accepted May 28, 2013**
38.		Worksheet #5	State the Analytical Laboratory and the Data Verification Chemist. This information should be incorporated elsewhere throughout the document as necessary.	TestAmerica will be added as the analytical laboratory and data verification chemist, Keather McLoone will be added. **ADEC-Accepted May 28, 2013**
39.		Worksheet #9	Why is this worksheet blank?	The January 2013 NEC kick-off meeting minutes will be included in WS#9. **ADEC-Accepted May 28, 2013**
40.	47	Worksheet #10	Whenever referencing the years for which surface water samples were collected at site 28, 2012 should also be included. This should also be revised elsewhere where applicable throughout the document.	Reference to 2012 SW sampling will be included in WS#10 and other applicable areas. **ADEC-Accepted May 28, 2013**
41.	50	Worksheet #10	Replace the word 'Potential' with 'Known chemical COCs…' Include PCE and Glycol as known COCs. Include concrete as a potentially affected matrix.	Potential will be replaced with known for PCE and glycol. Concrete will be added as a potentially affected matrix. **ADEC-Accepted May 28, 2013**
42.		Worksheets 11-1 – 11-3	Revise the column titled Sampling Method/Tool to be 'Sampling Tool'. Include the analysis method associated with each COC/analyte in all associated tables.	Revision will be made as requested and will be changed to "Sampling Tool". Methods and CoCs along with DL, LOD and LOQ for each matrix are included in WS#15 as prescribed in UFP-QAPP manual Final Version 1, March 2005. **ADEC-Accepted May 28, 2013**
43.	57	Worksheet #11	Matrices: Is there concrete known within the vicinity of the remaining soil exceedances that were left in place in 2012 at sites 31 and 13?	There is no concrete in the vicinity of the remaining PCB soil exceedances at Sites 13 or 31. All previous concrete in contact with PCB contaminated soil was cleaned and wipe tested to confirm the concrete was not

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				contaminated above cleanup levels. **ADEC-Accepted May 28, 2013; Please include the responses in the work plan.**
44.	58	Worksheet #11	Include a brief statement and reference of ADEC's 2012 approval re: the frequency of confirmation sampling in POL excavations that extend to two ft. below the water table.	Reference to the August 23rd, 2012 approval of confirmation sampling of flooded floors at a rate of 1 sample per 1,600 sq. feet of flooded floor will be included in the 'When, Where How Section' of WS#11 for the MOC POL soil removal. **ADEC-Accepted May 28, 2013**
45.	60	Worksheet #11	First paragraph on this page should state that excavations will continue at site 10 if results from the initial round of confirmation samples indicate that contaminant concentrations exceed cleanup levels.	Will include the statement: If confirmation samples indicate that soil cleanup levels have not been achieved, soil excavation will continue until cleanup levels have been achieved or contracted tonnage (including exercised options) has been reached. **ADEC-Accepted May 28, 2013**
46.	61	Worksheet #11	Revise mg/Kg to mg/kg on this page. Last full paragraph on this page re: the three additional borings, it needs to be better clarified when these will be conducted, what criteria will determine their locations, and how they will be utilized to facilitate removal actions.	Kg will be changed to kg. **ADEC-Accepted May 28, 2013** Second to last sentence of referenced paragraph will be modified to state: This map will be presented to USACE and DEC for comment and discussion prior to commencement of excavation. Three (3) additional borings will be placed and 9 additional samples collected after discussions between ADEC, USACE PDT and Bristol once potential data gaps are identified. The 3 boring locations may be used to determine if any

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				arsenic above cleanup levels remains outside of the initial sample area based on the initial boring results. **ADEC-Accepted May 28, 2013**
47.	62	Worksheet #11	Second paragraph on this page, re: fine material state the source and/or how it will be acquired.	The sentence will be modified to state: The upper 0.5 foot of backfill will consist of a majority of finer material obtained from the local borrow source and run through the screen plant, which is more likely to support vegetation growth than coarse material **ADEC-Accepted May 28, 2013**
48.	65	Worksheet #11	First paragraph on this page, state that although groundwater has not been encountered at site 31, that water from saturated soil conditions have infiltrated the excavations during significant precipitation events. State this also in references to groundwater for site 13.	Sentence will be modified as suggested for Site 31. Site 13, described on previous page has statement: Water that may have been rainwater or groundwater persisted in the southwest segment of the Site 13 excavation in 2012. **ADEC-Accepted May 28, 2013**
49.	67	Worksheet #11-1	Table 11-1: BTEX and PAHs should be included as analytes for all analytical samples where POL is a COC (i.e. the MOC soil samples). The full suite of COC analytes needs to be included in the analysis of all soil samples associated with site 10.	DRO/RRO were the only analyses specified in the 2013 SOW and previous years for POL impacted soil at the MOC. Excavations A1, A2, B1, B2, E2, E3, E4, G1, G2, H and J1A used only DRO/RRO results to demonstrate that cleanup goals had been achieved prior to backfill. Site 10 includes all analytes including GRO, VOCs, PCBs, DRO, RRO, PAHs, metals (plus nickel, vanadium and zinc) and glycol. **ADEC- Not Accepted May 28, 2013; site 10 is basically a multi-contaminant**

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				cocktail. All ongoing characterization (including nature and extent of contamination during any expansions of excavations where characterization has not yet occurred) and final confirmation samples associated with site 10 should include the full suite of ADEC Method Two Tables B1 and B2 COCs.
50.	68	Worksheet #11-1	Table 11-1: Re: COCs listed in the analytical suite, the table states arsenic separate from metals. However, the narrative of the work plan and the QAPP make different references; sometimes stating that samples will be analyzed for metals, and sometimes stating that samples will be analyzed for metals and arsenic. This should be reconciled for clarity.	The analysis for arsenic only is strictly related to Site 21. The WP and QAPP will be reviewed and reference to Site 21 will state only arsenic will be sampled for and analyzed. Sections that are not Site 21 specific will be clarified to state samples will be collected for RCRA 8 metals and zinc per the SOW. **ADEC-Accepted May 28, 2013**
51.	69	Worksheet #11-1	Table 11-1: MI sampling locations required for 2013 are not limited only to the water impoundment locations associated with the site 28 removal actions and should be revised to include i.e. other 2012 and 2012 staging areas, Cargo Beach, etc. Also, the sampling rationale column should state that the # of samples for the site 28 impoundment areas may be greater or fewer than stated depending on how many impoundment and transfer locations are required.	MI samples at Cargo Beach and staging areas will be added to text in WS#11 and Table 11-1. **ADEC-Accepted May 28, 2013** Sampling rationale column will include that an MI sample will be collected at each sump location prior to construction of the sump and after removal of impoundments and transfer locations. **ADEC-Accepted May 28, 2013**
52.	71	Worksheet #11-2	Table 11-2: Total depth bgs is N/A for surface water samples and should be revised in this table and others throughout the document for clarity.	N/A will be changed to 0.0 feet bgs for primary surface water samples.

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			MOC and all other surface water samples should be analyzed for the full suite of surface water criteria and for Table C criteria for the known COCs. Note also previous comments above and as discussed in recent resolution and planning meetings regarding ADEC's request for increased surface water sampling down gradient of the MOC during removal activities instead of only once during removal activities over the course of the season.	**ADEC-Accepted May 28, 2013** Trip blank depth will remain NA as it is truly not applicable to a depth. **ADEC-Accepted May 28, 2013** A contract modification (currently pending and unfunded) for the MOC SOW includes BTEX and PAHs for TAH/TAqH evaluation of surface water for the pre-, during, and post- excavation samples along with the initial DRO/RRO specified in the original SOW. Additional frequencies were not included in the pending contract modification. **ADEC-Accepted May 28, 2013** Table C criteria will be applied for MOC groundwater if not specified in the Decision Document. **ADEC-Accepted May 28, 2013**
53.	72-73	Worksheet #11-2	Table 11-2: Site 28 surface and impoundment water samples should include analysis for all metals COCs; zinc, arsenic, etc.	Site 28 surface and impoundment water sampling include the analysis of RCRA 8 metals and zinc (all total) per SOW. **ADEC-Accepted May 28, 2013**
54.	75	Worksheet #11-2	Table 11-3: Waste SAP should include PCB- and POL- and metals-contaminated soils from other AOCs.	Table 11-3 is for waste (bulk and liquid) samples sent to a confirmation lab. Site 21 will be added along with additional Site 28 sediment samples. PCB and POL waste samples are analyzed in the field lab and are not included on Table 11-3. The TSDF accepts POL and PCB waste supported by characterization results of the field lab.

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55.	77	Worksheet #11	First paragraph on this page, state the alternative confirmation sampling rate per ADEC's 2012 approval. Reference and include ADEC 2012 approval email as an attachment. Second paragraph on this page, ADEC only approved the alternative confirmation sampling frequency for below the water table for POL soils at the MOC. If the excavation floor is flooded in any other excavations outside of the MOC and/or where POL is not the only COC then ADEC should be informed prior to continuing work to determine the path forward. The 2' below water table rule only generally applies to POL soil contamination. This section and others which present similar information should be revised. To ADEC's knowledge, per the information presented in previous work plans and reports, flooding has not yet occurred in any of the PCB excavations at NEC; only temporary soil water intrusion resulting from precipitation. This should be discussed in related sections for clarity. Third paragraph on this page, revise the second and third sentences to state: '…depths from the POL-excavated areas…up to 15 feet deep. [begin a new sentence] The sidewall depth from the PCB-excavated areas is not limited to 15 feet; excavation of PCB contaminated soil will continue until confirmation samples determine that no soil remains at concentrations exceeding ADEC cleanup levels.' Revise the last sentence of the third paragraph. What is meant by 'attempt to field screen' and 'the most POL-contaminated'?	Reference to the August 23rd, 2012 approval of confirmation sampling of flooded floors at a rate of 1 sample per 1,600 sq. feet of flooded floor will be included in the 'When, Where How Section' of WS#11 for the MOC POL soil removal. The email letter will be included as a QAPP attachment and referenced in WS#11. **ADEC-Accepted May 28, 2013** Third paragraph revised to state: For both the POL and PCB sidewall sample collection, the sample will be collected approximately midway up the wall from each grid at the perimeter of the excavated area. The sidewall depth from the PCB excavated areas will vary from 1.0 foot to possibly up to 15 feet deep. PCB excavations may be potentially deeper if PCB contamination is still above cleanup levels at a depth of 15 feet. The field team will field screen the most POL-contaminated areas based on visual observations, such as staining and odors, lithology, and past field-screening results. **ADEC-Accepted May 28, 2013**
56.	78	Worksheet #11	What is the rationale for the confirmation sampling at a frequency of one	It was in the 2013 SOW.

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			per 400 sq ft. at site 21 for under the water table? MOC Surface Water Sampling (bottom of page): revise to include BTEX and PAHs to calculate TAH/TAqH. Also per previous comments, more surface water samples need to be collected during excavation activities, not just once.	**Not ADEC-Accepted as of May 28, 2013. This subject requires further deliberation and comment resolution.** BTEX and PAHs will be added as analytes on page 78 with (unfunded option in pending contract modification) in parentheses. **ADEC-Accepted May 28, 2013** 3 Sample events were included in the SOW for 2012 and 2013. **ADEC- May 28, 2013: Are the referenced 3 sample events to occur during removal activities? If so, to include a total of 5 sampling events (1 before, 3 during, and 1 after) then this is ADEC-Accepted May 28, 2013**
57.	79	Worksheet #11	MOC Groundwater Sampling (second paragraph on this page): State that the groundwater samples will be analyzed for COCs DRO, BTEX, PAHs and VOCs. Site 28 Drainage (last paragraph on this page): Are the stated samples intended to be confirmation samples? Revise paragraph to discuss the 2011/12 sampling and mapping results and planned removal activities; then discuss which areas will be confirmation sampled. Will sampling in 2013 also be conducted at 2012 sediment removal locations? Also clarify whether or not confirmation samples will be collected from locations where sediment is left in place (i.e. sediment remains after removal of the maximum of 2 feet). Briefly state the rationale for 400 square feet of ponded area and every 30 feet of channel.	Paragraph will be modified to state that groundwater will be analyzed for GRO/BTEX, DRO/RRO, PAHs, PCBs, total and dissolved metals (RCRA 8 +zinc), and MNA parameters, including methane. **ADEC-Accepted May 28, 2013** 2011 and 2012 sampling and mapping results are thoroughly discussed in WS#10 starting on page 46. **ADEC-Accepted May 28, 2013** A sentence will be added stating that confirmation samples will be collected after 2 feet of sediment removal (no deeper to avoid head-cutting).

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				ADEC-Accepted May 28, 2013 The rationale of 400 sq feet of pond and every 30 feet of channel was included in the SOW. The sampling rate rationale was also applied to the Site 21 sampling.
58.	80	Worksheet #11	Site 28 Sediment Removal: Second paragraph of this section, what is the justification for reducing the number of surface water samples from 3 to 2? Briefly explain the timing of collecting surface water samples so that the sample will be representative of through flow of water from disturbed areas.	The sampling frequency was defined in the SOW in Section 4.4.12. **Not ADEC-Accepted as of May 28, 2013. This subject requires further deliberation and comment resolution.** Bristol proposes collecting the first sample between 60 and 90 minutes after dredging activities begin or when visual evidence such as turbidity indicates a change in the water quality. **ADEC-Accepted May 28, 2013; either is acceptable to ADEC-whichever occurs first. Please state this in the applicable sections of the work plan.**
59.	81	Worksheet #11	Last sentence of first paragraph on this page, what is the plan if results indicate concentrations above ADEC Table C cleanup and discharge criteria? Revise first sentence of the second paragraph on this page to state: "…content and density. [begin a new sentence] A sieve-test…' Second paragraph on this page, ADEC is assuming (since it is not discussed) that new contaminated sediment and water from 2013 removals will be pumped into the Geotube which will still contain the contaminated water and sediment from 2012 removals. Is this standard for Geotube use and/or could problems be encountered which may result	The following statement will be added to end of the paragraph: *If results indicate that discharge criteria defined in the permit are not met, the water will be re-treated and resampled until results indicate the permit criteria are met. If it is determined that the water treatment system is inadequate, the treatment system will be modified until demonstrates it is capable of treating water to meet discharge permit requirements.*

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			from having overwintered the Geotube with water and sediment. Briefly explain and clarify this in this section.	**ADEC-Accepted May 28, 2013** Results will not be compared to Table C of 18AAC75 as it only addresses groundwater. First sentence of second paragraph will be parsed into 2 sentences per request. Second paragraph, For 2013 new Geotubes will be used. **ADEC-Accepted May 28, 2013; please clarify this in the applicable sections of the work plan.**
60.		Worksheets 12-1 – 12-18	VOCs in soil and water need to be added to the respective worksheets.	Worksheet 12-5 will have the Analytical modified from BTEX to BTEX/VOCs. The analytical method will remain as SW8260B. **Not ADEC-Accepted as of May 28, 2013. The full suite of VOCs in soils are being analyzed at specific sites and/or have been requested by ADEC. Associated narrative sections and QAPP worksheets should be revised as requested.**
61.		Worksheet 13	2012 data should also be included.	The three 2012 reports, HTRW RA, Site 28 mapping and Site 28 Phase I removal will be added to worksheet #13. **ADEC-Accepted May 28, 2013**
62.	107	Worksheet 14	Subsurface Soil: The information presented in this subsection is disconnected and needs to be revised. Why the one bullet for all of the other sites and then a stand-alone paragraph for site 21? See comment #54 and others above re: the alternative confirmation sampling frequency of one per 1600 sq. ft. - which ADEC approved in 2012 to only apply to POL excavations at the MOC which extend below the water table. ADEC's approval was based upon the rationale that groundwater at the	Worksheet #14 will be edited and revised for better readability along with references to where fuller descriptions of sampling tasks are documented in the QAPP, such as WS#11, 17 and. 18. **ADEC-Accepted May 28, 2013**

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			MOC may be subject to further ISCO remediation in the future and that it would at the very least be monitored to assess natural attenuation. ADEC has not yet approved the proposed confirmation sampling below the water table at other sites (i.e. site 21) at a frequency of 400 square feet. References to statements re: alternative confirmation sampling frequency being in accordance with ADEC Guidance need to be revised, as ADEC does not have specific guidance for sampling soil below the water table. These revisions/clarifications need to be applied throughout the document. The sentence beginning with 'Excavating, and disposing…' does not make sense and should be revised.	Reference to the ADEC guidance for alternative sampling frequency will be removed from WS #14 and other locations throughout the WP and QAPP. **ADEC-Accepted May 28, 2013** The "Excavating and Disposing" sentence will be revised for clarity along with the entire paragraph starting at the Sub-surface soil bullet. The entire text of WS#14 will be revised per other statements in comment #62. **ADEC-Accepted May 28, 2013**
63.	108	Worksheet 14	Surface Water: Add site 8 samples. Bulk Bags: Metals, arsenic, and PCE-contaminated soil also require characterization for waste purposes and should be included. Also change the title to 'Waste Characterization of Bulk Bags'.	Site 8 Surface Water and Soil Samples will be added to the QAPP along with a statement that the sampling is contingent on funding of this option. **ADEC-Accepted May 28, 2013** Bulk Bag sampling and characterization will be added to WS #14 and also included in Table 11-3 (Waste Sampling). **ADEC-Accepted May 28, 2013**
64.	108	Worksheet 14	QC Tasks: Second sentence of this section, what is meant by 'relevant to the cost of the confirmation sampling'?	The analytical costs of the QC is referring to the cost estimate to USACE for the proposed work. The sentence will be revised and the "relevant to the cost" portion removed. **ADEC-Accepted May 28, 2013**
65.	109	Worksheet 15	All LODs for 2013 must be below the 18AAC75 and 18AAC70 cleanup criteria for all COCs as discussed in the April 12, 2013 comment	Four VOC analytes, chloromethane, Ethylene dibromide, 1,2 dichloroethane, and

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			resolution meeting.	1,2,3-tichloropropane, have LODs greater than cleanup levels. Only Site 10 in-situ soil, Site 10 drum contents, and Site 10 bulk waste will be tested for full VOCs as part of the 2013 remedial actions. None of the four analytes were detected in liquid drum contents, in-situ soil, or in bulk waste. Therefore it can be reasonably expected that if the four analytes were not detected in the drum liquids then they are likely not in the soil due to an incomplete pathway. Below are explanations of each analyte and further reasoning why they would not be expected in the soil. **ADEC- Accepted May 28, 2013 (Tentatively and Conditionally) This subject requires further deliberation and comment resolution.** Chloromethane has a boiling point of -11 degrees F and was previously used as a refrigerant before Freon. It would evaporate if not under pressure. Ethylene dibromide was used as a fuel additive to gasoline and virtually no GRO has been detected during any sampling events at Site 10, except as reported with a B flag for method blank contamination. 1,2 dichloroethane is a chemical intermediate for the production of poly vinyl chloride (PVC) and an intermediary

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				for 1,1,1 trichloroethane, which in the past was mainly associated with dry cleaning. 1,2,3-trichloropropane is used mainly as an industrial solvent and paint/varnish remover. It was not detected in any drum liquids or in-situ soil at Site 10 in 2012. **ADEC- Accepted May 28, 2013 (Tentatively and Conditionally) This subject requires further deliberation and comment resolution.**
66.	120	Worksheet 15-2	Table 15-2: a table note should be included to explain the green and yellow highlighted cells.	A table note will be added to define the green highlight as analyte LOD is greater than cleanup level. Yellow highlights have been removed. **ADEC-Accepted May 28, 2013**
67.		Worksheet 16	Both the electronic and hard copies of this timetable are mostly not legible and should be revised or broken up into multiple tables to make the information legible and useful.	WS #16 timetable will be formatted for legibility and broken up into multiple tables if the formatting alone does not make the table readable. **ADEC-Accepted May 28, 2013**
68.	126	Worksheet 17	Site 28: ADEC has not approved the use of a flocculating agent. The draft 2012 NEC RA Report stated that a bench scale test was conducted by Bristol. The results of this bench scale test, specific information about the flocculants proposed, as well as a proposal to use the flocculating agent must be submitted to ADEC for review and approval.	Additional information regarding the SpinPro 410 product that Bristol has purchased for use at Site 28 has been sent to USACE for their review. Bristol recommended this information be sent to ADEC for review. **ADEC- Accepted May 28, 2013 (Tentatively and Conditionally)** SpinPro was sent a sample of the sediment material from Site 28 and they ran bench

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				scale tests and recommended we use their SpinPro 410 product at 1:200 ratio. **ADEC-Accepted May 28, 2013 (Tentatively and Conditionally) This subject requires further deliberation and comment resolution.**
69.	128	Worksheet 17	First sentence on this page, why is (Bristol 2011b) referenced when the provision of the documentation is inferred to be in the 2013 work plan? Second full paragraph on this page, briefly state/summarize the concentration ranges of other COCs at other sites (i.e. metals, glycol, PCE, etc.).	The reference will be edited to (Bristol 2013a). **ADEC-Accepted May 28, 2013** Text will be added to identify other sites at NEC and their concentration ranges based on recent analytical results. **ADEC- Accepted May 28, 2013**
70.	131	Worksheet 18	Last sentence of this section should include site 10. Section should also reference the worksheets and/or narrative sections which discuss	Site 10 will be added to WS#18. **ADEC- Accepted May 28, 2013**
71.	175	Worksheet 28	Note, that the frequency of field duplicates is stated as one per 10 field samples. The word 'field' should be changed to 'primary' and a note should be added that 'i.e., 11 primary samples require 2 duplicates'.	"Field" samples will be changed to "primary" samples. **ADEC- Accepted May 28, 2013** Frequency/Number column will have text edited to state: One per 10 primary samples (or portion thereof) of similar matrix per analytical group. **ADEC- Accepted May 28, 2013**
72.	181	Worksheet 30	State whether or not TA-Savannah is an ADEC-approved laboratory.	Text will be added to state: TestAmerica-Savannah is a DoD ELAP and ADEC CS-accredited laboratory. Page 182 also states that TA-Savannah is ADEC CS accredited in the middle of the paragraph. Reference will also be added that their accreditations can be found in Attachment 3 of the QAPP.

#	Page #	Section	ADEC Comment	Response
				ADEC- Accepted May 28, 2013
73.	184	Worksheets 31, 35, and 36	State the actual individuals who are responsible for each action not just the position and entity.	Marty Hannah and Sean Benjamin (USACE) will be added to WS#31 for responsible person(s) for reviewing cooler receipt forms and Marty Hannah or Keather McLoone will be added as person completing ADEC checklists. Data verification chemist will be identified as Keather McLoone in the final QAPP submittal. **ADEC- Accepted May 28, 2013**
74.		Missing Appendices	There are numerous appendices and attachments, which are located after the QAPP which are not accounted for the in the documents' table of contents.	Document will be reviewed so that all attachments and appendices are included in the table of contents **ADEC- Accepted May 28, 2013**
75.			**End of ADEC Comments**	

NE Cape Meeting Minutes from May 23, 2014 meeting.

Attendees: Valerie Palmer (USACE PM), Ron Broyles (USACE COR), Aaron Shewman (USACE project Engineer), Jeremy Craner (USACE QAR), Russell James (Bristol PM), Greg Jarrell (Bristol co-PM), Eric Barnhill (Bristol SSHO-CESCL), Marty Hannah (Bristol Project Chemist).

Meeting Started at 10 am AST at USACE-Alaska District Headquarters at JBER. Bristol had prepared an agenda for topics of discussion regarding the 2013 RA report comments from ADEC as well as 2014 planning documents that ADEC has not responded with comments as of the date of the meeting.

Topic: ADEC comment on the decision to overwinter the camp and Bristol equipment on site. Consensus response: The decision to over-winter equipment was made between USACE PDT and Bristol.

Topic: ADEC comment on Table 2-1 of RA report to change Site 28 status to "Ongoing" Per Valerie and Group agreed to change status to "under review". Valerie said the sediment pond still needs to be evaluated.

Topic: Also on Table 2-1 of report, Site 8 MNA will have SW monitoring in, per Valerie and Jeremy; only the 2 SW locations that have been previously sampled will be sampled in 2014 for TAH/TAqH and DRO and will be covered in the MOD but no soil samples will be collected. . The 2009 DD stated 3 years of MNA in soil would be performed per Valerie and SW data gap will be filled. If Site 8 is still considered soil then had 2 years of results less than CULs.

Topic: MI sampling at Site 26, overburden (clean) stockpiles, bag staging areas (BSAs) and Cargo Beach. Bristol is scheduled to collect 9 primary MI samples for 2104. Russell stated: Bag Staging Areas had 4 DUs totaling 36,000 sq. ft. for 2104. MI sampling did not cover full areas of BSAs in 2013 so Bristol will sample areas not covered in 2013 at Site 26. Group agreed cargo beach only needs to be sampled post-bag areas at the end of 2014 season. Transport corridor at intersection of cargo beach road and actual beach still under discussion; should only areas with actual bags be sampled or entire beach area similar to 2012.

Also under discussion: if bags are on shipping flats do the staging areas need to be sampled? Discussion followed regarding bags being in DOT approved shipping containers and on flats. Consensus was that sampling would be overkill if bags are on flats. If bags are on flats no sampling is required in that staging area.

Jeremy stated stockpile areas were pre and post sampled by MI. Any new BSA locations will need pre- and post-stockpile sampling.

Russell asked if stockpile or BSAs were post-sampled in 2013 would they need pre-sampling in 2014? Russell stated if we can keep everything staged at Site 26 in the same locations that were already sampled then only 4 DUs post-bag will be needed. Beach has only been sampled once in 2012 at beginning of field season.

Aaron comment: only post-bag sampling needed at Cargo Beach. Aaron asked if any "hits" at Cargo Beach?

Russell: We've had low level detections but nothing over CULs.

Eric comment; Site 26 has an area that was pre-sampled in 2013 but no bags were staged there.

Jeremy asked if the SOW had any options to add MI sampling? Answer: No, mod will have to me added to include five more MI samples per Valerie.

Group consensus; will need 14 MI samples for 2014, currently only scoped for 9 so will add 5 primary samples on MOD for 2014. Beach only requires post-bag sampling. Table 11-1 will be updated in 2014 WP to include 14 primaries.

Topic: ADEC approval letter for 2013 WP. Curtis said the ADEC final WP approval letter should be included in report and letter would be forthcoming. Letter will be sent to Valerie and forwarded to Bristol for inclusion in the final 2013 report.

Topic: ADEC requested additional information be included regarding non-project specific site visitors be included in 2013 report regarding site visits from ATSDR, NEC TAPP advisor, Gambell and Savoonga visitors.

Per Valerie: Lisa added comments to responses that will be included in final response regarding site visitors. Bristol has sign in sheet identified who the visitors were and the dates but not what was discussed during the visits.

Topic: ADEC comment # 39 (second paragraph of comment) recommending additional figure to Figure 7 that depicts the southern extent of the E plume that was lined and has confirmation results exceeding CULs and will require future removal. Also, section 6.2.2.1 needs to be more specific regarding which areas of E plume still contain areas above CUL and why they weren't removed.

Discussion followed and it was agreed that no new figure is needed and that a revised figure could cover the ADEC request for clarity on the figure. In addition, the text will be clarified stating the extent of excavation.

Topic: ADEC comment 45 recommends omitting the sentence that says contaminated soil removal is complete at Plume B.

Consensus: Leave sentence in. Plume B is complete, floors sidewalls and all results demonstrate Plume B is complete.

Topic: ADEC comment 50 recommends omitting the sentence that says contaminated soil removal is complete at Plume A2.

Consensus: Leave sentence in. Plume A2 is complete, floors sidewalls and all results demonstrate Plume A2 is complete. Valerie, perhaps change sentence to USACE believes excavation is complete.

Topic: ADEC had multiple comments regarding the sampling of overburden before being used as backfill.

Response: Sampling procedures were outlined in the work plan and the RA Report. The overburden sampling was covered in a section and applied to all excavations and stockpiles.

Topic: The ADEC has requested multiple new subheadings for various elements of sampling and has requested that information be repeated throughout multiple sections.

Consensus: Stockpile sampling is described once and is sufficient for the report as all results were non-detect or well below cleanup levels. It was agreed the repeating of the stockpile sampling in multiple sections would make the report highly redundant and not add value to the report. The tables support the sampling, perhaps they should be better referenced in the report.

Topic: Duplicate Frequencies in multiple comments from ADEC.

Consensus response: Bristol collected duplicate samples at a rate of 10% or greater for all types of samples. Bristol has collected duplicates in this manner for all previous POL removal efforts at the MOC. The frequency is consistent with the field sampling guidance and other application ADEC regulations.

Topic: discharge at Site 28 meeting Table C criteria vs. Discharge Permit requirements.\

Valerie stated she had an answer. TAH/TAqH is still the valid discharge criteria as stated in the 2013 work plan. Surface water criteria is only applicable when water is discharged directly into a surface water body and not onto the ground.

Topic: Third paragraph of ADEC comment #38 regarding the determination of the Site 28 boundary where it abuts the E4 plume.

Response: The E4 excavation boundary was determined in the field through consultation between Bristol and USACE PDT. The boundary was selected to prevent draining the water in the excavation from draining into the wetland of Site 28, which would impact surface water quality. Valerie stated the boundary was included in previous work plans. The boundary follows elevation contour lines. Per Aaron and Jeremy, the boundary will be surveyed to establish the boundary. The dashed line on Figure 10 is reference and the removal area actually extended beyond that shown on figure 10.

Topic: Hand removal of sediment at Site 28.

Response: Bristol hand removed sediment/vegetation below an active vegetative layer and the material was initially put on side of drainage in the water in area still considered for removal at Site 28. The material was not placed on any areas outside of the removal area. The material was placed on a piece of liner at removal area 7. The locations were confirmation sampled after removal. Soil/sediment was embedded in the root layer which made suction removal was not effective. No pre or post-removal samples were collected where hand removed material was placed for a matter of hours.

Topic: ADEC requested MI sample IDs be modified to more clearly reflect the units where the MI samples were collected.

Response: The MI sample IDs were consistent with the nomenclature convention stated in the 2013 WP and already match up with tables, figures and laboratory reports as well as electronic data deliverables. It would require going back and modifying all report documents, including laboratory reports. It was a consensus that the MI sample names will remain as stated. MI samples are collected to support the field effort and were not post-removal confirmation samples.

Topic: ADEC comment # 91 as stated; ADEC recommends providing an explanation at the beginning of this section (6.10.3.4) to clarify that although the material collected for post-removal confirmation sampling within site 28 is not what is traditionally and/or technically considered to be soil or sediment; that the material being confirmation sampled is being called soil as a point of reference.

Response: Based on USACE comments the media is sediment (2013 draft RA report references soil), Bristol agreed to change the CULs to sediment values based on USACE comments.

Topic: ADEC comment #93: ADEC requests more discussion regarding the trivalent chromium and 'ambient chromium concentration'. Is there scientific data which confirms that 48 mg/kg is a 'background' concentration for NEC and confirms that this chromium is stable in the trivalent state?

Response: Per USACE The Decision Document states the chromium on-site is chromium III. Lisa Geist has expanded on the response to comment #93.

Topic: ADEC comments 106, 107 and 110 regarding figure 4 boundaries for previous years and monitoring wells that were removed before 2012. ADEC requested a new Figure between the scales of Figure 4 and Figure 6.

Response for comment #106: Figure 4 shows excavation boundaries and is color coded by year. Hash marks may be removed pending discussions with USACE.

Response for comment #107: Bristol shows the wells removed from the MOC GW sampling program in 2012 (MW 88-4 and 88-5) on Figure 6 with grey MW symbols. Please refer to Figure 22 (Abandoned MW location map). MWs removed in 2012 could be added to this figure at the USACE's request. Per Valerie, the report covers what was done in the field in 2013 and is not a compendium of all actions in 2012. Per Russell, 2 wells were removed near Site 9 in 2012and another jacked up well (not identified) that was removed in the area between Site 8 and Site 9. USACE does not believe this would add value to the 2013 report but will be included in the 5 year review.

Response for comment #110: The A1 plume was confirmed below cleanup levels in previous RA reports. These samples will not be added to the 2013 RA Report or figures as it would clutter the report and figures. USACE stated this is something to be included in the 5 year review or long term monitoring plan and will not be included in the 2013 RA report.

Topic: ADEC request for footnotes on every page of every table.

Response: Bristol and USACE consensus: Table notes will remain at end of table to keep the number of table pages at minimum. Table notes will remain consistent with ADEC formatting similar to Tables B1 and B2 of 18AAC75.

Topic: Comment #137 regarding glycol. ADEC stated in comment: ADEC does not concur with the statement that glycol was not initially identified as a compound of concern since it was analyzed for and detected in previous investigations as well as included in both the 2012 and 2013 work plans.

Response: Glycol was not listed in the 2012 WP/QAPP or 2009 Decision Document and was only identified after drum contents were transferred during excavation at Site 10 in 2012. It was listed in the 2013 WP. The statement will be revised that ethylene glycol was identified as a potential target analyte in 2102 but was not identified as a COPC in the 2009 Decision Document. USACE does not have technical guidance in the DD regarding the remedy for glycol. USACE will elaborate on the glycol response and addressing its presence as it was not identified as a COPC.

2014 WP and field effort discussion

Topic: 2014 Schedule. Security Aviation flights, scheduling and initial sampling at Site 21 were discussed. USACE COR Jeremy Craner will accompany the Site 21 sampling/mapping crew on June 9th with 40 boring locations and 30 have been tentatively identified by Craner. The remaining 10 will be decided after ADEC, USACE and Bristol discussions on the best locations for sampling and characterizing the site. Jeremy's initial thoughts were to set transects spaced 100 feet apart and sample locations 50 feet apart along the transects.

Topic: PCB result exceeding CUL (2.2 mg/kg) at Site 6 from 2009 sampling that was collected before any removal actions were initiated. The field duplicate collected at the same time was less than PCB CUL, there were also lab QC issues.. The sample location was based on a surface stain visually identified in 2009. The location with PCBs exceeding CULS at the Hazardous Waste Accumulation Point (HWAP) was again sampled in August 2009 after field activities were completed and the result was less than PCB CUL at 0.2 mg/kg. The sample location was GPS'd in 2009.

Consensus was reached that the sample location exceeding the PCB CUL will be excavated as a test pit and sampled for PCBs at 2 depths at the same location, one above the clean fill and one below the clean fill that was placed in 2010. The sample area was removed in 2010 during the POL removal effort.

Topic: Russell stated that the 2013 Draft Final RA report with approvals is likely to go past the May 31st deadline and requested an extension. Valerie commented that Curtis has not seen the USACE comments and proposed revisions to the draft RA report and that many comments by USACE and ADEC were similar and the draft/final should address most of the ADEC comments including figures. It should speed up the comment resolution period but an extension is likely.

Topic: 2014 Start/dig date. Russell stated Bristol setup crew is going out on July7th with Global arriving July 9th for camp setup. Jeremy stated he is scheduled to arrive July 17th and may miss the first day of excavation, if any, depending how fast the camp setup goes. Drilling will start approximately July 24-

25th. The drill rig will be flown into Nome and either barged or flown in a Casa to NE Cape. Jeremy asked if the drill rig could go through bony material. Bristol stated that Geotek is bringing in augers and a downhole hammer that is capable of penetrating the ground and will use HSA to install wells. Estimated drilling is roughly 1 week.

It was discussed that any new wells will not be installed in areas that are scheduled to be removed in 2014. Jeremy and Russell both stated that the wells would not be in areas to be excavated but will definitely be adjacent to past excavations.

Valerie asked when the lab will start being set up. Bristols response is the lab personnel will arrive approximately 1 week after the camp setup crew arrives and the schedule is based on having bed availability (tents set up).

Valerie asked about the lab certs and approvals and the rough schedule. Marty stated the lab will still be required to perform a PT sample prior to ADEC approval for the mobile lab and that the DoD/ELAP accreditation is already approved after the April 1 audit. Valerie was supportive of the accredited lab setup and the quick TAT on results will not hold up removal activities.

Valerie stated that even without ADEC approval of the final work plan the work is a continuation of activities described in the 2013 WP.

Geotube over-wintering and sampling will be completed in the first week of field mobilization and falls under the 2013 contract/WP so it can be sampled and transferred into shipping containers without a final WP approval for 2014.

The meeting was adjourned at approximately 11:45 am.

Alaska Department of Environmental Conservation (ADEC)
Contaminated Sites Program
Document Reviewed: Draft January 2014 Northeast Cape (NEC) 2013 Removal Action (RA) Report Revision-0
Commenter: Curtis Dunkin-ADEC **Date Submitted:** May 02, 2014**; ADEC Review Determinations Submitted July 2, 2014**

#	Page #	Section	ADEC Comment	Response
1.	ES-1	Exec. Summary	Please clarify/emphasize in the sentence preceding the bullets of 'scoped' tasks that the volumes and amounts are actually scoped based upon estimates developed from previous work and not what is confirmed to be known as existing/remaining volumes of contamination at NEC. Last sentence in the fifth bullet on this page, please clarify the rationale to only excavate if the plumes contain 'mostly non-organic gravel pad material'; ADEC does not recall this being a condition per the approved 2013 work plan. What are the criteria and evaluation methods that were used to determine this?	The development of the volumes as estimates based upon past work will be clarified. **ADEC-Accepted June 26, 2014** The language in the bullet is taken from the work plan. The evaluation of the material contained in the excavation was made by a geologist. **ADEC-Accepted June 26, 2014; please include the RTC as well as a clarification that the volumes were estimates of remaining contaminated soil to be removed** These criteria were used to minimize intrusion into Site 28 wetlands. **ADEC-Accepted June 26, 2014; however, it should be further discussed why non-organic vs. organic material removal would or wouldn't impact the wetlands.**
2.	ES-2	Exec. Summary	First bullet on this page, please clarify that the Multi-incremental (MI) sampling at site 28 is only associated with staging areas, and not the contaminated drainage area(s). MI sampling tasks for the other staging areas should also be listed. Was MI sampling of the Cargo Beach post 2013 field season also not required/scoped? If not in 2013, then it should be conducted again at the end of the 2014 field season.	Language will be added to clarify that MI samples were related to the Site 28 staging areas and sumps only. **ADEC-Accepted June 26, 2014** MI sampling in the other areas will be clarified. **ADEC-Accepted June 26, 2014** Additional MI sampling is planned for

#	Page #	Section	ADEC Comment	Response
			Please state all associated COCs when referencing removal or other activities throughout the document; i.e. bullet on this page that starts with 'Increased contaminated soil removal amounts at Site 10…'. Last paragraph at the bottom of this page, assuming these 2012-contracted tasks were completed in 2013, please state in the sentence preceding the bullets '…Bristol completed tasks in 2013 that…'.	2014 at the bulk bag staging areas (including Cargo Beach). **ADEC-Accepted June 26, 2014** All COCs (from the decision document) will be included where applicable. **ADEC-Accepted June 26, 2014** Bristol is scoped for additional MI sampling at bag staging areas in 2014. Bristol will collect one additional MI sample from the Site 28 work pad (geotube containment area) in 2014 once the dewatering tubes and containments are removed. **ADEC-Accepted June 26, 2014** The sentence will be adjusted. **ADEC-Accepted June 26, 2014**
3.	ES-3	Exec. Summary	First bullet on this page, please correct spacing typo. The statement '…tasks originating from and added to…' in the first non-bullet sentence on this page does not make sense and should be revised and/or expanded for clarity.	The text will be revised for clarity. **ADEC-Accepted June 26, 2014**
4.	ES-5	Exec. Summary	ADEC's understanding, per the approved 2013 work plan was that all equipment and materials (except the water and sediment containment cells at site 28) would be mobilized off-site at the end of the 2013 field season. The report should clearly document why and when these decisions were made.	Bristol made the decision to overwinter. No additional text will be added regarding overwintering of equipment and supplies. **ADEC June 26, 2014; ADEC requests that all variations to the approved work plan be discussed as required in the draft report. Discussion should include any impacts to 2013 or future work at NEC.** Bristol added a bullet to the deviations section about overwintering equipment.

#	Page #	Section	ADEC Comment	Response
5.	3	2.1	Please revise the second to last sentence of this section to state '…were located within the MOC area of concern.'. Please also revise the last statement in this section since Perimeter Road does not serve as an 'unofficial boundary' rather it encircles all of the known areas of concern associated with the MOC sites.	The MOC perimeter road does not encircle Sites 10, 11, 16, 21 or 27 **ADEC June 26, 2014; comment resolution required to clarify. The report states that the perimeter road is considered an unofficial boundary of the MOC. Please better clarify 'unofficial boundary'.**
6.	6	2.5	First sentence of this section, please replace the word scarce with limited.	Will replace **ADEC-Accepted June 26, 2014**
7.	7	2.5	Second full paragraph on this page, this section should briefly discuss the large range of variability in groundwater depths, seasonal characteristics and changes which have been observed over the last 5 consecutive field seasons of remedial activities; i.e. seasonal and weather-caused changes in groundwater depths and flows, previously suspected perched groundwater, the differences in groundwater elevations in very close proximity associated with i.e. the excavations and removals at site 13 and the adjacent POL plumes where groundwater was encountered at shallower depths in consecutive field seasons on either side of the site 13 excavation, although groundwater was never encountered with a consistently deeper site 13 excavation.	Text will be added to this section: "Groundwater elevations fluctuate both from year to year and throughout the course of the field season. Water elevations for late July/ early August at the F/G plume were 4 feet higher in 2012 than 2013. In 2011, 2012 and 2013 groundwater elevations at the MOC increased by several feet from late July to early September. In August 2011, the groundwater elevation at the H plume excavation rose 3 feet in 3 days during a precipitation event. Groundwater elevations in excavations may also demonstrate large spatial variability: on July 23rd 2012 water levels taken from the Site 13 excavation and the F plume excavation 25 feet away varied by 3.2 feet." **ADEC-Accepted June 26, 2014**
8.	10	2.9	ADEC has commented previously on numerous NEC documents re: the reference(s) to Gambell residents utilizing the NEC site. To ADEC's	Contractor personnel met Gambell residents at NEC throughout the season.

#	Page #	Section	ADEC Comment	Response
			knowledge Gambell residents generally do not travel to and/or spend time at NEC; travel to and/or use of NEC has been limited to Savoonga residents (with the exception of opportunistic day trip site visits by Gambell delegates during the RA field season).	**ADEC-Accepted June 26, 2014**
9.	13	2.10.1	Please revise the statement preceding the bullets on this page since many of these removal actions were really not ongoing and/or associated.	Statement will be revised to state that several removal actions have taken place at NEC **ADEC-Accepted June 26, 2014**
10.	14	2.10.1	First sentence of the last paragraph on this page, please include language to clarify that there were two separate decision documents produced for NEC. Please also revise the font typo in this same sentence.	The two decision documents will be referenced. The typo will be corrected **ADEC-Accepted June 26, 2014**
11.	15	Table 2-1	The status of the site 28 excavation and removal should be changed to ongoing. ADEC acknowledges that the sediment has been removed from the drainage, however it still remains in geotubes on-site therefore the work is not really complete; this should be revised to avoid any misunderstanding. Please revise the status of MNA at site 8 by adding the statement 'MNA evaluation ongoing' due to the fact that MNA has not been formerly determined and ADEC had previously identified data gaps that were not addressed in 2013 and remain outstanding.	The status will be changed to "Under Review". **ADEC-Accepted June 26, 2014** DD calls for 3 years of monitoring only, which was completed. Under review as part of the 5 year review. Status will be changed to "Under review". **ADEC-Accepted June 26, 2014**
12.	16	Table 2-1	Re: the remedy 'Additional VM', please state specifically which sites this applies to. Re: the removal of poles, debris, etc., is this future work planned for this action and if so, the status to should be revised to state 'ongoing removals in [years] and planned for 2014' or 'removals in [years] and completed in 2013'.	The site(s) will be determined by the outcome of future site investigations, and are therefore undetermined. **ADEC-Accepted June 26, 2014; please state the RTC in table** The table will be revised for clarity. **ADEC-Accepted June 26, 2014**
13.	18	3.0	Bottom half of this page re: the C-004 modifications, please include the tasks which were stated in the Exec. Summary which are not included here.	The Modifications will be checked against the executive summary and adjusted accordingly. **ADEC-Accepted June 26, 2014**

#	Page #	Section	ADEC Comment	Response
			Third bullet on the bottom portion of this page, were the increases of POL quantities approved separately or all at once; if separately please revise to 'Two increases of POL…'. The bullet discussing site 10 which is associated with the section discussed in the two comments above should include the drums and POL liquids which were removed and disposed of off-site.	The bullet will be revised to show that two separate mods were enacted **ADEC-Accepted June 26, 2014**
14.	20	Table 3-2	Were the drum liquids which were removed in 2013 optional CLINs? Prior to the 2013 field season ADEC requested that further sampling and evaluation be conducted at site 8 during the 2013 RA field season. ADEC was informed that work at site 8 was not scoped for 2013 and subsequently no work was done. However, according to Table 3-2 it was scoped as optional. Why was this option not utilized in 2013?	The drum liquids were part of the base scope of work (not a CLIN option). **ADEC-Accepted June 26, 2014; please state the RTC in the table** The 50 gallons of liquid disposed of in 2013 was found in the MOC and attributed to Site 10 because there was available funding in the Site 10 line item. **ADEC-Accepted June 26, 2014; please state the RTC in the table** The option to do the work was not exercised by USACE for reasons unknown to Bristol. Additional water samples will be collected in 2014. **ADEC-Accepted June 26, 2014; please state the RTC in the report narrative**
15.	21	4.1.1	Please note that only 6 of the 8 listed documents were reviewed and approved by ADEC; although the SSHP and APP are generally part of a comprehensive work plan ADEC does not review or approve these documents. Please revise the preceding paragraph to clarify. Please revise language in the last sentence on this page for clarity. Instead of stating 'a single set of planning documents' please state 'in the same final 2013 RA work plan'.	The paragraph will be reworded to state that the SSHP and APP were included with the planning documents, but approval was not required by ADEC. **ADEC-Accepted June 26, 2014; please also include the revision request in the second paragraph of ADEC's comment on the left**

#	Page #	Section	ADEC Comment	Response
16.	22	4.1.2	Please include ADEC's formal approval letters of the final 2013 RA work plan as well as ADEC's approvals of all variance requests in this section.	The letters will be included along with comment resolution meeting minutes and emails in the RTC appendix. **ADEC-Accepted June 26, 2014**
17.	27	4.3.7	ADEC conducted two separate site inspections (a one-day and another two full days) in August, 2013. This should be included and briefly summarized in this section. Representatives from ATSDR, the NEC TAPP advisor, and delegates from Savoonga and Gambell conducted a one-day site visit at NEC which should be included and briefly summarized in this section.	The 2 ADEC site visits 8/12 thru 8/14 and 8/23 will be added. **ADEC-Accepted June 26, 2014** Other visits to be added include ACAT on 7/26; ATSDR, Savoonga, Gambell on 8/12; NVG, Kukulget, Sivuqaq on 8/15; and Jacobs from 9/11 to 9/16. **ADEC-Accepted June 26, 2014** Refer to 8/12/2013 DQCR for a more detailed summary from QAR. **ADEC-Accepted June 26, 2014**
18.	30	5.1	Last sentence of this section does not appear to be consistent with what ADEC was informed of regarding what would be the 2013 demobilization strategy; specifically that no machinery or materials would be left onsite other than the geotubes and their associated containment cells at the site 28 staging area.	Bristol discussed the overwintering of equipment with USACE. **ADEC June 26, 2014; please see and apply ADEC's response to RTC #4 above.**
19.	32	5.7	Second to last sentence on this page, please clarify that soil having contaminant concentrations exceeding cleanup levels was removed instead of stating 'contaminated soil removal' for clarity.	Sentence will be restated. **ADEC-Accepted June 26, 2014**
20.	37	Table 5-1	Recommend revising Table 5-1 for clarity. ADEC's understanding is that the listed 26.91 tons of site 28 sediment was characterized and shipped offsite for disposal and that the site 28 sediment which was left onsite has yet to be characterized for disposal. This should be clarified in the narrative section of 5.10 and i.e. include extra notes which could distinguish whether the listed quantity was generated in 2012 vs. 2013,	The section(s) pertaining to Site 28 sediment disposal –including table 5-1 and associated notes- will be expanded upon for clarification. **ADEC-Accepted June 26, 2014**

#	Page #	Section	ADEC Comment	Response
			etc. Please revise the asterisk in the notes to clarify the year the sediment was excavated and the site of site of its origin – assuming it was site 28.	Asterisk will be restated for clarity. **ADEC-Accepted June 26, 2014**
21.	38	5.10	Please state the site and year of origin for all volumes of waste and/or contaminated materials if not presumed to be 2013 (as also requested in comment #20 above); i.e. the two Conex containers with treated wood.	Clarification of site and year of origin of waste and/or contaminated material will be added. The wood was generated in 2013. Only POL soil and hydraulic oil sand was leftover from 2012. **ADEC-Accepted June 26, 2014**
22.	40	5.11	Please revise first sentence of this section to state '…investigation and/or remediation.'.	Sentence will be revised. **ADEC-Accepted June 26, 2014**
23.	42	5.12.1	First sentence of second paragraph of this section, please define what is meant by 'relatively high' for clarity. Please also briefly describe the objective(s) of the judgmental samples as well as when, why, etc. these samples were collected for field laboratory analysis.	"Relatively high" is used to describe both UVOST wavelength emission profiles consistent with fuel fractions as well as profiles with high relative emission percent. The term "judgmental" is used to describe sampler discretion regarding where the ADEC mandated excavation sidewall samples are collected. The word "judgmental" will be changed to "excavation sidewall" to eliminate confusion. **ADEC-Accepted June 26, 2014**
24.	43	5.12.3	Fourth sentence of the first paragraph of this section, please revise to state that the excavations proceeded to either 15 feet bgs or 2 feet below the water table; whichever was encountered first.	Sentence will be restated. **ADEC-Accepted June 26, 2014**
25.	43	5.12.4	Please revise the first sentence of this section to state 'ADEC-approved WP…'.	Sentence will be restated with "ADEC approved work plan. **ADEC-Accepted June 26, 2014**

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26.	45	5.13	Omit the word 'to' in the last sentence of the first paragraph.	Sentence will be changed as requested. **ADEC-Accepted June 26, 2014**
27.	46	5.13.2	Please state in each applicable section wherever discussed in the report that the respective variances were reviewed and approved by ADEC; please reference ADEC's formal letter (forthcoming) approving the variances and include as an attachment in the report.	Noted, location of approval letter will be clarified. It was in Appendix C, Correspondence. **ADEC-Accepted June 26, 2014**
28.	47	6.0	Last sentence of this section, please replace the word 'holds' with 'contains'.	Change will be made as requested. **ADEC-Accepted June 26, 2014**
29.	47	6.1.1	Second sentence on this page, please revise to state '…and 27 are within or near the MOC.'. Last full sentence of this section on this page, please replace the word 'held' with 'contained'. Please make this revision for all other similar uses throughout the document.	Second sentence will be restated. **ADEC-Accepted June 26, 2014** Held will be replaced with contained. **ADEC-Accepted June 26, 2014**
30.	48	6.1.1	Please revise the last sentence of the first paragraph on this page to clarify which COCs have historically been observed at concentrations which have exceeded the respective cleanup levels as well as those COCs which have not.	Sentence will be revised to state that CoCs observed in soil at the MOC above site-specific cleanup levels are DRO, PCBs, and naphthalene; DRO, benzene and arsenic in groundwater. Soil and groundwater have previously been tested for RRO, VOCs, SVOCs, metals and pesticides. **ADEC-Accepted June 26, 2014**
31.	49	6.1.2	Regarding the ice plug in MW88-10, this section should also include references to how the analytical results from this sample were evaluated and/or qualified similar to how the ice plug was addressed in the 2012 RA report (per ADEC's comment # 17 dated April 01, 2013 and subsequent RTC and comment resolution meeting). It should also state whether or not this was the same well and state all wells and years in which ice plugs were encountered in monitoring wells.	Analytical results for MW88-10 were not qualified. Potential impacts were addressed in ADEC comment #17 from April 2013. Results were not qualified. Bristol did the same thing in 2012. Bristol said in comment sheets for the 2012 RA Report that additional text was added to section 6.1.2. The thawing rod was only

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				used to thaw ice plugs relatively high in the casing, was decontaminated between wells and it did not enter the groundwater. **ADEC-Accepted June 26, 2014; please state the RTC and associated 2012 information in the narrative for clarity** Wells in which a heated metal rod was used to clear ice obstruction above the groundwater level: 2011 MW88-10; 2012 26MW-1, MW 88-10; 2013 MW88-10. Ice was encountered above the groundwater table while lowering the pump in wells 88-4 (2010) and at 22MW-2 and 17MW-1 (2012), but a metal rod was not necessary to remove the ice obstructions at these locations. **ADEC-Accepted June 26, 2014; please state the RTC and associated 2012 information in the narrative for clarity**
32.	51	6.1.3	Please revise the first complete sentence on this page to clarify whether or not the wells were actually decommissioned, demolished, and/or a combination of both and why; and/or reference section 6.9.2 of this report for 2013 wells. Please state that MW88-4 and MW88-5 were specifically demolished via removal due to the fact that they were located within the footprint of the excavation and removal activities associated with the E plume as documented in the 2012 RA Report. Please reference the associated sections in the 2012 report and also	Section 6.9.2 will be referenced in this section and the text, " MW88-4 and MW88-5… were located within the footprint of excavation and removal activities associated with the E plume and were decommissioned…" will be added with a citation of the 2012 RA Report. **ADEC-Accepted June 26, 2014** Text will be amended: "Future work will include the installation of a groundwater monitoring well network at the MOC after

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			include a statement clarifying that the USACE will be installing an entirely new network of groundwater monitoring wells in the near future for the purpose of ongoing monitoring of the contaminated groundwater plume's natural attenuation after all excavation and removal activities at the MOC have been completed. This section should also include a brief summary of all groundwater monitoring wells which are still intact/in place at NEC (i.e. ADEC presumes that i.e. MW88-10 is still intact), and whether or not they are serviceable and/or planned to be used in the future as a monitoring point.	all excavation and removal activities have been completed." **ADEC-Accepted June 26, 2014** Bristol is scoped to repair the following wells in 2014: MW10-1, MW88-1, MW88-10, 17MW1, 20MW1, 22MW2, and 26MW1. **ADEC-Accepted June 26, 2014; please state the RTC in the narrative such that it clarifies which wells are serviceable and which are planned for repair**
33.	52	Table 6-1	Recommend stating '88-10 cont.' in the column titled Well ID on this page for clarity.	"88-10 cont." will be added to table if it breaks in the same location after revision. **ADEC-Accepted June 26, 2014**
34.	53	6.1.3	Please revise the first sentence on this page to clarify what is meant by 'comparatively high DO'; comparative to what? The discussion in the first paragraph on this page should be revised and discussed further in regards to correlations that are presented. The comparison of wells with 'comparatively high DO' to those exhibiting depleted oxygen was similarly discussed and commented on by ADEC in the 2012 RA report. It should be further discussed whether or not the wells with high or higher DO concentrations actually had previous contaminant detections and if then whether the DO concentrations were different than 2012 and/or 2013 concentrations when COC concentrations may have been higher. Otherwise, ADEC does not perceive a significant correlation to exist between the high and low DO wells; rather the parameters of the low DO wells are indicative of anaerobic degradation. It should also be clarified that aerobic degradation would occur via both	Text will be changed to "…high DO compared to other monitoring wells at the MOC." The sentence has been revised along with the entire paragraphs regarding MNA at the MOC based on USACE comments. In regarding the comparisons, the DO is compared to upgradient wells that do not have CoCs above GW cleanup levels. **ADEC-Accepted June 26, 2014** Wells with comparatively high DO have not had previous contaminant detections. The DO data is used to compare baseline DO from "background" wells with wells where anaerobic degradation is occurring. **ADEC-Accepted June 26, 2014; please state the RTC in the narrative for clarity**

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			facultative and obligate aerobic microbes in the presence of oxygen and that anaerobic degradation would only occur via obligate anaerobic and facultative microbes. It should also be stated that if depleted oxygen is used as the indicator for whether attenuation/degradation is occurring then it is only anaerobically. Please revise the second sentence of the second paragraph on this page to state '…which historically had concentrations of [COCs] which exceeded their respective cleanup levels,'. Please also revise the 'clean up' typo. Please either revise or omit the last sentence of this section. Ongoing and future groundwater sampling and MNA is a requirement of the 2009 Decision Document as well as 18 AAC75 to calculate the extent and rate of MNA and to determine whether or not contamination is migrating. It is also somewhat misleading to state 'replace MWs 88-4 and 88-5' since ADEC will require a network of new monitoring wells and not just two. This section should also include a brief summary of the other individual COCs which were included in analyses that were either detected but below cleanup levels and/or non-detect.	Text will be modified to emphasize that in the presence of depleted oxygen anaerobic degradation is likely occurring. **ADEC-Accepted June 26, 2014** Text will be modified as requested. **ADEC-Accepted June 26, 2014** Text will be modified accordingly. **ADEC-Accepted June 26, 2014** The following text will be added to address other COCs: "PCBs and BTEX were not detected in any wells. GRO was detected in concentrations not exceeding cleanup levels in 17MW-01 and MW88-10. PAHs were detected in concentrations not exceeding cleanup level in wells MW88-10 and MW88-1. Both dissolved and total metals were detected in all wells; total and dissolved Arsenic, Silver and Vanadium were not detected in any wells." **ADEC-Accepted June 26, 2014**
35.	54	6.2.2	To ADEC's knowledge, not all excavated soil from the POL plumes were loaded into rock trucks and transported; instead numerous instances of direct bagging occurred at several of the sites throughout the field season. This should be discussed for clarity. Regarding the rock screening plant, this section should briefly summarize the estimated (or calculated if available) volumes of soil that were processed through the plant and also discuss the results in more detail. Please revise the first sentence of the last paragraph on this page to state	Language will be added to clarify that soil from Sites 13, 31 and 10 were routinely placed directly into bulk bags. **ADEC-Accepted June 26, 2014** Bristol will estimate the amount of soil that was processed through the screen plant. **ADEC-Accepted June 26, 2014** First sentence of last paragraph will be

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			'determined that contaminant concentrations exceeded the applicable cleanup level and that further excavation and removal was necessary.'.	revised. **ADEC-Accepted June 26, 2014**
36.	55	6.2.2	Second to last sentence of this section, please amend to state that the confirmation and duplicate samples were sent to a fixed offsite laboratory for analysis.	Sentence will be revised as requested. **ADEC-Accepted June 26, 2014**
37.	55	6.2.2.1	Please elaborate on what is meant by 'excessive quantities of contaminated soil' in the first paragraph of this section. Was there more contaminated soil with contaminant concentrations exceeding the respective cleanup level than previously estimated or was it foreseen prior to commencing the 2012 RA that the E plume could not be completely removed in the 2012 season?	Excessive quantities will be removed and restated that contaminated soil remained after contracted amounts were excavated. It was foreseen that the estimated soil volume could not be completely removed in the 2012 season. **ADEC-Accepted June 26, 2014**
38.	56	6.2.2.1	Were all stockpiles of 'presumed clean overburden' sampled prior to utilizing it as backfill? This is not discussed in any of the associated sections of the report where presumed clean overburden was removed and stockpiled. Second paragraph of this page, was the boundary determination discussed with and/or approved by ADEC? Please provide more information for the justification of making this determination. Last sentence of the third paragraph on this page, please elaborate on the reasons for discontinuing excavation associated with the 5 referenced sample locations. What were the excavation lift depths within the E4 plume? Was soil with contaminant concentrations exceeding the cleanup level(s) that was above the two feet below the water table criteria left in place? ADEC's understanding was that excavation activities were not advanced in those areas due to the soil being inundated with water. These referenced sample locations are an average of 20-30 feet away from the depicted 'to be considered' site 28 boundary and well into the D plume	Yes, the stockpiles were sampled prior to being used as backfill. Section 5.7 discusses the sampling of overburden material. **ADEC-Accepted June 26, 2014; please state this in each associated section for clarity and/or reference Section 5.7** Second paragraph will be clarified that the boundary determination was made in coordination with USACE QAR. **ADEC-Accepted June 26, 2014** Excavation boundary left in place under direction of USACE to prevent damage to Site 28 and to prevent draining of excavation water into adjacent wetland. **ADEC-June 26, 2014; per similar RTCs above, further discussion/resolution necessary to clarify**

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			and should be excavated to two feet below the water table. Why is soil sample location 13NCMOCSS077 depicted in Figure 7 with /085? Was this a duplicate? If so then it should be discussed in the narrative.	Sample 13NCMOCSS077 and 085 will be called out as duplicates in the narrative. **ADEC-Accepted June 26, 2014**
39.	57	6.2.2.1	The narrative needs to discuss in more detail the process of collecting a new round of confirmation samples after the original confirmation samples confirmed that a contaminant concentration exceeded its respective cleanup level. Confirmation sample requirements essentially 'reset' when further excavation is required. Were all areas associated with the E plume removals excavated to either 15' bgs and/or 2 feet below the water table – whichever was encountered first? A new figure should be added that depicts the southern extent of the E plume that was lined as well as the confirmation sampling locations for which the results exceeded any respective cleanup level(s) and will require further removal action(s) in the future. This information is not discernible from the current Figure 7 due to the fact that numerous rounds of removal and confirmation sampling activities are depicted. Please be more specific in the narrative discussion regarding what areas associated with the E plume(s) still contain contaminated soil above respective cleanup levels which will require future removal.	Text will be modified to discuss sampling procedure where further excavation is required. All E plume areas were excavated to 15' bgs or 2 feet below water. **ADEC-Accepted June 26, 2014** The sentence "POL-contaminated soil remains within the E-Plume. Bristol recommends continued removal in 2014, beginning with sample location 13NCMOCSS077 (duplicate 13NCMOCSS085) then moving into the E1 and E2 plumes." Will be added to the narrative. **ADEC-Accepted June 26, 2014** Bristol believes this information can be displayed on the current figure. Narrative section will be clarified. **ADEC-Accepted June 26, 2014**
40.	57	6.2.2.2	The discussion of both the F and G plumes in this section is difficult to discern which discussion is related to which plume and/or both. Some paragraphs/portions discuss both plumes, then some discuss them separately. ADEC recommends separating each plume into its own section and discuss each one separately.	The section has been rewritten based on USACE comments and text has been modified to clarify. The narrative now discusses the two separate excavations as Excavation A and Excavation B. **ADEC-Accepted June 26, 2014**
41.	58	6.2.2.2	Were all stockpiles of 'presumed clean overburden' sampled prior to utilizing it as backfill? This is not discussed in any of the associated	Section 5.7 discusses sampling of overburden at POL sites.

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			sections of the report where presumed clean overburden was removed and stockpiled. What is the status of contaminated soil associated with 2012 confirmation sample locations 12NCMOCSS033, 37, and 39 which are depicted on Figure 8 of the 2013 draft report as located outside of the 2013 excavation extent but within the 2012 extent? Were these floor or sidewall samples? Please indicate this in the legend of Figure 8. Do the 2012 sample locations depicted on Figure 8 where contaminant concentrations exceeded respective cleanup levels indicate contamination that was left in place after the 2012 season or was further removal and subsequent resampling for confirmation conducted in 2012? This should be clarified in this section and others where applicable. A lot of the information depicted in figure 8 does not correlate clearly with the discussion in this narrative section; and vice versa. For example, the first paragraph on this page states that the 2013 excavation extended west – eventually into the footprint of the F plume however, this paragraph is discussing the excavation activities at the F plume. This needs to be reconciled for clarity; please also see comment # 40 above re: separating the F and G plumes into stand-alone sections. Another example is in the second paragraph on this page which initially appears to be a continuation of the F plume excavation activities but then states in the third sentence that samples were collected from the G1 excavation. Please also reference the specific sub plume ID whenever referencing them i.e. G1, G2, etc. In association with the immediate comment above, Figure 8 depicts	**ADEC-Accepted June 26, 2014** Sample locations 12NCMOCSS033, 37 and 39 were floor samples from the 2012 G plume excavation and were below 2 feet of water. Figures in the 2013 RA Report do not show samples from previous field seasons which were removed during previous field seasons and subsequently resampled. The statement "2012 samples exceeding site specific clean up levels depicted in Figure 8 are not recommended for removal due to their location below 2 feet of water at the time of excavation." will be added to the narrative. **ADEC-Accepted June 26, 2014** Section has been rewritten for clarity. The figure has been revised to show the separate excavations labeled Excavation A and Excavation B. The narrative discusses each excavation separately and the samples from each excavation are discussed in association with the appropriate excavation. **ADEC-Accepted June 26, 2014**

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			numerous 2012 sample locations for which the analytical results indicated contamination at concentrations which exceeded cleanup levels, however, there are no indications on Figure 8 nor associated discussion in the narrative regarding whether or not the identified contaminated soil has been removed or requires a future removal action (i.e. sample locations 12NCMOCSS033, 37, and 39 as commented on above). Narrative should state whether or not the 2012 samples, which are depicted on Figure 8 as having contaminant concentrations exceeding cleanup levels were floor or sidewall samples. ADEC presumes, for example that sample 12NCMOCSS160 was a floor sample; and if that it was collected two feet below the groundwater level. Fourth sentence of the second paragraph does not make sense due to it referencing 'the receipt of laboratory samples' which then states samples over multiple years associated with multiple excavation events. The legend in Figure 8 (and all other figures where applicable) needs to indicate whether the 2012 samples were floor or sidewall. Again, the latter part of this page is mixing references to G and F plume activities (sampling, excavating, etc.) making it extremely difficult to discern the site-specific details. This entire section needs to be reorganized and reconciled for clarity as commented above. This and all other narrative sections should identify and discuss the associated duplicate sample(s). A duplicate sample should have been collected and submitted with every confirmation sampling event at a frequency of 1 duplicate per every 10 primary samples per matrix per sampling event.	Second paragraph has already been revised based on USACE comments. **ADEC-Accepted June 26, 2014; please note all RTCs which state 'revised based upon USACE comments' should be discussed briefly during comment resolution to clarify that the revisions equally address ADEC's comments** Plume discussions will be separated for clarity. **ADEC-Accepted June 26, 2014** Field duplicates were collected per ADEC Field Sampling Guidance at a rate of 1 duplicate sample per 10 primary samples as stated in the work plan. Bristol could not find any references in ADEC guidance or regulations specifying one duplicate per sampling event. **ADEC Accepted June 26, 2014; comment resolution necessary to clarify**

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42.	59	6.2.2.2	The first complete paragraph on this page begins with discussing the initiation of the F plume excavation, although this paragraph is following previous discussions of the F and G plume excavations. Please see comments in #s 40 and 41 above for clarity. Was the 'presumed clean overburden that was stockpiled from this and other numerous AOCs sampled in 2013 prior to replacing as back fill? As previously commented, this should be discussed in each associated section where 'presumed clean overburden' was handled.	The F and G plume section has been rewritten for clarity. Section 5.7 references procedures used to sample overburden material prior to use as backfill. **ADEC-Accepted June 26, 2014**
43.	60	6.2.2.2	Partial paragraph at the top of this page, after the excavation reached 2-ft. below the groundwater level, were new floor and/or side wall confirmation samples collected at the ratio which ADEC approved in 2011? Please omit the last sentence of this section.	Yes, samples were collected at the sampling rates approved in the planning documents. **ADEC-Accepted June 26, 2014; please provide the detailed discussion in the narrative** Section has been rewritten for clarity. **ADEC-Accepted June 26, 2014**
44.	60	6.2.2.3	As previously commented above, was the 'considered to be clean overburden' based upon the 2010 UVOST results and/or was this soil sampled in 2013 prior to replacing as back fill?	Soil was sampled as discussed in section 5.7 **ADEC-Accepted June 26, 2014; please also see and apply RTC review of the first paragraph of ADEC's comment #38**
45.	61	6.2.2.3	Regarding the sidewall sample 13NCMOCSS094, it is unclear how it is discussed in the narrative vs. how it is depicted on figure 9 how this location is considered to be a sidewall sample when it is well inside the boundary of the B1 plume excavation (10-15 ft. from the nearest edge). This should be discussed/reconciled in the narrative for clarity. Please apply this comment to other sections and figures with similar sample locations as commented above. Please omit the last sentence of this section.	This sidewall sample will appear well inside the excavation boundary due to the fact that it was excavated and removed. These situations will be clarified in the text. **ADEC-Accepted June 26, 2014** USACE believes the last sentence in section 6.2.2.3 should not be removed. **ADEC June 26, 2014; upon ADEC discussing this with the USACE, the USACE**

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				agreed for the statement to either be revised or omitted.
46.	61	6.2.2.4	Was the referenced northern boundary of the I1 plume which is being considered the limit of excavation actually proposed to and/or approved by ADEC? What limit of excavation was this considered to be; presuming it to mean limit of excavating associated with all of the I-associated plumes? Why was the 5-10 feet of presumed clean overburden removed when the contaminated zone thought to be located between 10 and 15 feet bgs as stated? Recommend possibly revising this discussion for clarity. As previously commented above, was the 'considered to be clean overburden' based upon the 2010 UVOST results and/or was the overburden soil sampled in 2013 prior to replacing as back fill? The last sentences on this page and the further discussion on page 62 re: determination of the lateral extent of contamination should be revised/reconciled for clarity. The field-lab samples did not determine the final lateral extent as stated on page 61; rather the confirmation samples results made this determination.	The limit of excavation was determined following discussions with the USACE on-site QAR regarding potential impacts resulting from drainage of excavation water into the adjacent wetland. **ADEC June 26, 2014; this requires further resolution discussion for clarity** The narrative will be revised for clarity. **ADEC-Accepted June 26, 2014** See section 5.7 regarding the sampling of overburden soil. **ADEC-Accepted June 26, 2014** Sentence will be restated with "confirmation samples" making the determination. **ADEC-Accepted June 26, 2014**
47.	62	6.2.2.4	The stated fourteen primary samples would have required 2 duplicates and not one as stated. This should be explained and reconciled throughout the document re: duplicate samples as also commented above. Sidewall sample 13NCMOCSS060 is not depicted on figure 10 as being on the boundary with site 28 rather it is inside of what is depicted as the 2010 proposed excavation boundary. This site should have been excavated further. Furthermore, ADEC's recollection of the approval for the 'to be considered extent of excavation' was the general area(s) located	Duplicate samples were collected at the frequency appropriate for the MOC POL excavations (in accordance with the planning documents, which specified 10% of the entire MOC excavation). Discrete POL plumes within the MOC were not treated as different sites. Samples collected from POL excavations at the MOC have a greater than 10% duplicate sample

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			immediately on either side of the site 28 boundary as depicted on Figure 10 which were both 1) not saturated above the 2-ft. bgs; and 2) a risk to causing greater damage to the terrain/ecosystem of site 28 if disturbances/removals occurred. Second to last sentence of this section, was the south side of the excavation lined prior to being backfilled? As commented above, was all material which was used as back fill (whether it originated as overburden from removal excavation or from the borrow area), sampled and determined to not have contaminant concentrations exceeding respective cleanup levels prior to being utilized as back fill?	frequency rate. **ADEC June 26, 2014; requires further resolution discussion** Sample 060 is located within the UVOST delineated plume. The legend entry is incorrect and has been revised for clarity. **ADEC-Accepted June 26, 2014** The Site 28 boundary was discussed in previous planning documents and reports. It was also discussed in the field with the USACE QAR. This boundary will be surveyed in 2014. **ADEC-Accepted June 26, 2014; however further resolution discussion is required for clarity** The south side of the excavation was not lined. Overburden was sampled prior to being used as backfill. **ADEC-Accepted June 26, 2014; please include the RTC in the narrative for clarity. Please also discuss whether or not exceedances remained and if, how the boundary will be determined since it was not lined**
48.	62	6.2.2.5	As similarly commented above, the narrative sections associated with various plumes do not discuss whether or not field-lab samples were collected and analyzed for the presumed clean overburden soils and/or the presumed contaminated soils – to confirm 2010 UVOST investigation results to determine whether contaminant concentrations exceeded respective cleanup levels. Based upon the information provided in this report it appears to ADEC that potentially contaminated soil could have been mixed with uncontaminated soil and/or that there may have been no	The soil was sampled using ADEC stockpile sampling guidance, as stated in the 2013 work plan section 4.1.15, final paragraph. Also, section 5.7 of the final report states that no stockpile was used as backfill until field lab results were below the threshold. **ADEC-Accepted June 26, 2014; please see**

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			determinations (at a minimum by the field lab) that the presumed contaminated soil did not have contaminant concentrations which exceeded the cleanup level(s). This is not what was presented to ADEC nor what was approved by ADEC in the final 2013 RA Work Plan.	**similar requests for clarification in RTCs above**
49.	63	6.2.2.5	Re: most of the discussion in the first paragraph on this page, please see comment # 48 above. Does this paragraph need to be moved to the beginning of this section and elaborated further to clarify the sampling program implemented to determine which overburden was clean and when the contaminated profile of soil exceeding respective cleanup level(s) was exposed? This should be applied to the other sections for clarity. First sentence of the second paragraph on this page please state the year when referencing actions i.e. 'As the 2013 excavation progressed…'. Please apply this throughout the document. Also in this sentence, please revise typo '…and was thus removal was…' and also revise the last part of this sentence to state 'as all soil having contaminant concentrations which exceeded the respective cleanup level(s) had been previously removed…'. Second paragraph on this page, it is not acceptable to ADEC that no confirmation samples were collected from an area where contaminated soil which exceeded respective cleanup levels was removed. This results in a data gap(s); regardless of the fact that previous removal actions had occurred within the same footprint and previous associated confirmation samples indicated contaminant concentrations in soil below respective cleanup levels.	The determination of whether a stockpile was above or below cleanup levels is covered in section 5.7; Backfill and Borrow. **ADEC-Accepted June 26, 2014** Noted. All covered in Section 5.7 **ADEC-Accepted June 26, 2014** Year of removal actions will be added. **ADEC-Accepted June 26, 2014** Typo will be corrected. **ADEC-Accepted June 26, 2014** The areas in question were sampled and confirmed below cleanup levels in prior years (2011, 2012). The backfill placed beyond the liner was from a clean source. Bristol has not opened up and sampled other excavations that were confirmed clean as this was not in the Scope of Work. **ADEC June 26, 2014; the comment and RTC require further comment resolution discussion** All stockpiles were sampled using ADEC guidelines prior to use as backfill. **ADEC-Accepted June 26, 2014; however this needs to be discussed in detail in each associated/applicable section and not just**

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			ADEC has significant concerns regarding the accuracy and field relevancy of the 2010 UVOST SI results given the fact that the proposed excavation areas for the A1 and A2 plumes (as well as the E4, B1, and the F plumes) ended up being significantly different from what was actually encountered in the field. This is also the reason ADEC has significant concerns regarding whether or not 'presumed clean overburden' was sampled prior to and/or post stockpiling and/or backfilling. Second paragraph on this page, please better define the stated 'liner and backfill was visible' as criteria for not collecting confirmation samples; especially in instances where 2013 excavations were advanced into and/or past previous excavation footprint boundaries; as depicted in numerous figures. Last paragraph on this page, why were 6 duplicate samples collected for 27 primary samples?	**stated 'as required' once that is buried in the narrative of the document** The liner and backfill will be better defined. **ADEC-Accepted June 26, 2014** The MOC POL plumes were treated as one project area; the total number of duplicate samples was based on the total number of MOC samples **ADEC June 26, 2014; as previously commented above, further resolution discussion is necessary for clarity**
50.	64	6.2.2.5	It would be helpful for future reference and management of the MOC groundwater contamination to generate a new figure which depicts the MOC-associated monitoring wells and color code them based upon the year in which they were demolished/removed; along with excavation boundaries which are color coded for the respective year. Please omit the last sentence of this section.	Bristol was not scoped to document wells not in the MOC GW sampling plan. **ADEC June 26, 2014; ADEC requests the revision be considered since this information is important with facilitating the path forward for establishing a new monitoring well network at the MOC** Excavations are color coded by year. **ADEC-Accepted June 26, 2014** Confirmation results are all below cleanup levels. Last sentence is accurate and will not be deleted. **ADEC June 26, 2014; upon ADEC discussing this with the USACE, the USACE agreed for the statement to either**

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				be revised or omitted.
51.	64	6.2.2.6	Please state the date of the third sampling event; state the date of all other referenced events in this and other sections throughout the document. Please state that the concentrations of TAH and TAqH are related surface water quality criteria.	Samples were collected on July 13, July 23, and September 15, 2013; **ADEC-Accepted June 26, 2014; please include the RTC in the narrative** TAH/TAqH will be noted as surface water criteria. **ADEC-Accepted June 26, 2014**
52.	66	6.3.1	Last sentence of this section, please briefly summarize the results of the post-deconstruction samples of the stockpiling area. Please also change post-construction to post–deconstruction for clarity.	Sentence will be rewritten for clarity. Post-construction will be removed from sentence. **ADEC-Accepted June 26, 2014**
53.	66	6.3.2	Was the area of the one sample location which exceeded the cleanup level covered in 2013 prior to demobilizing?	Sentence will be added to end of first paragraph stating that the 2013 excavation was backfilled with clean material after post-excavation sample results confirmed that no soil remained in concentrations that exceeded PCB cleanup levels. **ADEC-Accepted June 26, 2014**
54.	67	6.3.2	For both sites 13 and 31 (incl. all assoc. areas where PCB removals occurred), shouldn't the field screening sampling have occurred at a higher frequency i.e. in 5-ft. grids prior to confirmation sampling as was done for all previous removal actions?	"discrete floor and sidewall samples were collected on 5-foot by 5-foot (25 square feet) spacing and submitted to the field laboratory for analysis." **ADEC-Accepted June 26, 2014**
55.	67	6.3.3	Please reference the year associated with all sampling results; in this instance to clarify that the discussion pertains solely to 2013 results and activities.	2013 will be added to first sentence of 6.3.3 **ADEC-Accepted June 26, 2014**
56.	68	6.3.4	Please revise the last sentence of the first paragraph by replacing 'in an attempt to bring' with 'for the purpose of removing all soil with PCB concentrations greater than 1 mg/kg'.	The suggested revision will be made. **ADEC-Accepted June 26, 2014** There were no remaining sample locations remaining with sample results above the

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			Similarly to site 13 and comment #54 above was the area of the one sample location which exceeded the cleanup level covered/lined in 2013 prior to demobilizing?	cleanup level of 1 mg/kg. No need to place a liner. **ADEC-Accepted June 26, 2014; ADEC's comment intended to reference lining in 2012**
57.	69	6.4.1	Are the trivalent chromium concentrations observed in site 21 soils been observed to be in the same state at other NEC sites and could changes in site conditions at site 21 result in changes in toxicity? Please create a separate paragraph for the 1994 arsenic sampling and the USACE's conclusion for clarity.	The chrome iii is the lowest energy Cr, and energy (of one form or another) would need to be added to make it into Cr+6. The water, in general (site MOC), are acidic, which makes Cr+6 unstable. **ADEC-Accepted June 26, 2014; please state this in the narrative of the report** Text of report incorrectly states that chromium was previously identified as a COC (this will be changed). **ADEC-Accepted June 26, 2014** Chromium was identified as a potential COC during the RI but did not exceed ambient levels established for NE Cape. The DD also makes a generic statement that "Chromium in soil exists predominantly in the trivalent state, and the levels do not pose a potential risk to residents." **ADEC-Accepted June 26, 2014; please state the info above in the narrative of the report for clarity** Regarding the arsenic in groundwater statement. The text will be reworded to reflect actual wording/context from the DD. "The primary contaminant of potential

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				concern in shallow groundwater is arsenic. Arsenic was detected above cleanup levels during the 1994 investigation at one location. Surface water samples collected downgradient of the monitoring wells did not contain arsenic above action levels. The arsenic detected in the shallow groundwater was likely due to sediments in the water column, and arsenic was thus eliminated as a contaminant of concern." **ADEC-Accepted June 26, 2014**
58.	70	6.4.1	Please state the volume of PCB-contaminated soil removed in 2010 and that subsequent confirmation samples indicated that PCBs did not remain at concentrations greater than 1 mg/kg. Please revise statements in this and other sections throughout the document; instead of 'PCB contamination' please revise and specify 'PCB-contaminated soil'.	10.4 tons of PCB-contaminated soil removal will be added to the report as well as a statement that PCBs did not remain in concentrations exceeding 1 mg/kg. The phrase "PCB Contamination" will be replaced with "PCB contaminated soil" **ADEC-Accepted June 26, 2014**
59.	70	6.4.2	Please revise/amend the last sentence in this section to clarify that Bristol was initially contracted to remove 100 tons and that a mid-season contract modification allowed for another 200 tons of arsenic-contaminated soil to be removed due to more contaminated soil being encountered than anticipated.	This wasn't necessarily more than anticipated, just more than the USACE initially contracted. The purpose of the initial borings was an attempt to delineate the extent of arsenic-contaminated soil, which was unknown prior to the boring sampling event. Contracted amounts don't equal anticipated/expected amounts. **ADEC-Accepted June 26, 2014; please include the RTC and discuss this further in the narrative of the report for clarity**

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60.	71	6.4.2	First full paragraph on this page, please revise the first sentence to state '…17 of the scoped 20 soil borings…'. Please state how many duplicate samples should have been collected and submitted with the 51 primary soil samples associated with the 17 soil borings. Second full paragraph on this page, should the reference to Appendix D be revised to Figure 16 or Appendix D and Figure 16? Last sentence of the second full paragraph on this page, please state the date of ADEC's conditional approval of the referenced map. Please also reference ADEC's approval via email and include this email as an attachment in the report.	The language will be changed as suggested. **ADEC-Accepted June 26, 2014** It will be stated that along with the 51 samples, 6 duplicates were collected. **ADEC-Accepted June 26, 2014** The map in Appendix D is not Figure 16. It is the map that was made during the field effort after collecting the samples from the soil borings. **ADEC-Accepted June 26, 2014; please correct the references in the report for consistency** The date of approval will be added to the paragraph along with reference to the included email. **ADEC-Accepted June 26, 2014**
61.	72	6.4.2	First sentence on this page please clarify the reference to 12 samples from 10 locations since these were confirmation samples and not borings. Re: 'at the direction of the USACE to excavate specific locations', please apply and discuss the last paragraph in comment # 60 above re: ADEC's conditional approval. Please revise the third to last sentence of the first paragraph to state 'Soil sample locations… for which analytical results indicated that arsenic concentrations remained in soil that exceeded the site-specific cleanup level were not excavated in 2013.'. Please also briefly discuss and clarify why these locations were not excavated in 2013. Second to last sentence of the first paragraph, please state the number of duplicate samples collected; please also apply this to all other sections as previously commented above re: duplicate samples.	Sentence will be revised to state the 12 samples were from the excavation and the duplicates will be called out/clarified. Clarified to state that both duplicate samples were above cleanup level. **ADEC-Accepted June 26, 2014** The suggested change will be made and it will be noted that excavation ceased at the direction of USACE due to additional excavation being out of scope. **ADEC-Accepted June 26, 2014** It will be stated that a primary and one duplicate was collected in the third round **ADEC-Accepted June 26, 2014**

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			Last paragraph on this page, please briefly summarize how contaminated sediment and or water was mitigated from migrating offsite/outside of the boundaries of the excavations in re: to allowing the water to drain out of the bucket. Please briefly summarize the depth of the excavated locations in respect to the groundwater table. Were all locations excavated down to two-ft. bgs if exceedances were observed to that depth, and did any of the confirmation sample locations collected at 2-ft. bgs exceed the site-specific cleanup level; aka was contamination left in place at 2-ft. bgs or deeper after 2013 removal actions were completed?	Mitigation measures included silt fencing and straw waddles. **ADEC-Accepted June 26, 2014; please state and discuss this in the narrative for clarity** The summary will be revised to state that most samples were collected below 2' of GW but not all. Samples 13NC21SS023 and -026, collected after excavation, still remain above cleanup levels. Contracted tonnages were reached for 2013. **ADEC-Accepted June 26, 2014**
62.	73	6.4.2	First paragraph on this page, and in regards to several of the comments in # 61 above, were the sample locations which exceeded the cleanup level lined and surveyed prior to backfilling for the purpose of 1) facilitating future removal actions; and 2) mitigating cross contamination of clean backfill material? This needs to be discussed in more detail including ADEC's conditional approval/addendum approval for site 21 activities discussed in comments above.	The paragraph will be revised to state that sample locations were surveyed but not lined prior to backfill. **ADEC-Accepted June 26, 2014 re: surveying; however how will non-lined areas that were backfilled be addressed for additional contamination in 2014?**
63.	73	6.4.3	First paragraph of this section and in others whenever discussing surface water samples for metals, please state and clarify whether total and dissolved contaminants were analyzed and include their respective results. First sentence of second paragraph, please add the word 'soil' to the samples discussed. Please apply this to all other applicable statements throughout the document by stating the matrix whenever discussing samples. Please also state the number of duplicate samples which were collected in association with this sample group and apply this similarly throughout the document where applicable. Second paragraph of this section and elsewhere throughout the document	Total and dissolved results will be clarified. **ADEC-Accepted June 26, 2014** Soil will be added. **ADEC-Accepted June 26, 2014** Number of duplicate samples will be added. **ADEC-Accepted June 26, 2014** Years will be added for clarity. **ADEC-Accepted June 26, 2014**

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			where applicable whenever discussing total number of samples collected and the range of results please state the year or years that this information pertains to for clarity. In regards to the last sentence of the second paragraph of this section, and elsewhere throughout the document wherever applicable, whenever mentioning/discussing deviations, variances, or otherwise actions that were inconsistent with the ADEC-approved work plan, please include ADEC review, conditions, and approval as also discussed in comment # 60 above. Re: the soil sample location that is stated as having not been excavated due to water flow, ADEC's rationale for approving this action was based upon the Corps' proposal that removal would have been more destructive and potentially caused contaminant migration and due to the fact that the concentration of arsenic at this location was 14 mg/kg – 3 mg/kg above the site-specific cleanup level. This should be discussed at the end of the second paragraph for clarity. First sentence of the third paragraph of this section, why were only 2 duplicate samples collected for 29 primary samples? Please also state whether these samples were based upon all combined or specific removal phases during 2013. Second sentence of the last paragraph on this page, re: the statement 14 primary and 2 duplicate samples, please clarify whether this represents 14, 15, or 16 sample locations where exceedances were observed. Please also apply this to similar statements throughout the document. ADEC recommends generating a new figure to support figure 16 which depicts the sample locations which exceeded the cleanup level which were left in place in 2013; please also include the boundaries of excavation stages in this figure.	Statement regarding ADEC approval and deviations will be added. **ADEC-Accepted June 26, 2014** Discussion will be added for clarity. **ADEC-Accepted June 26, 2014** Sentence will be revised to state 28 primary and 3 duplicate samples. Duplicate counts are from all removal phases. **ADEC-Accepted June 26, 2014** By default a field duplicate is collected at the same location. Bristol will review the section and revise as necessary for clarity. **ADEC-Accepted June 26, 2014** A different symbol will be added to figure 16 to show locations that exceeded cleanup level and were left in place in 2013. This section has been revised based on USACE comments. Figure 16 has been revised significantly for clarity. The sample locations where arsenic-contaminated soil remains are more obvious. **ADEC-Accepted June 26, 2014**

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64.	74	6.4.3	Please add a new subheading titled 'Waste Characterization' atop the first paragraph on this page; please also apply this to the other sections where applicable.	Waste Characterization subtitle will be added. **ADEC-Accepted June 26, 2014**
65.	74	6.5.1	Please revise the last sentence of the first paragraph of this section. Although there may have been other anecdotal evidence or reasons why the Corps returned to conduct further work at site 10 in 2011 and 2012, the site characterization/investigation and subsequent removal actions were conducted by the Corps at the request of ADEC due to ADEC's determination that the previous site work did not result in the site being adequately characterized. Last paragraph on this page, please briefly state the waste liquids and respective volumes which have been removed from site 10 to date.	Text will state that ADEC determined further characterization of the site was necessary. **ADEC-Accepted June 26, 2014** Waste liquids and volumes will be summarized. **ADEC-Accepted June 26, 2014**
66.	75	6.5.2	Second paragraph of this section, please revise the sentence beginning with 'When field lab results indicated…' to state '…indicated that contaminant concentration(s) in soil were less than 80% of the cleanup level…'.	Text will be added stating when field lab results were less than 80% of CUL. **ADEC-Accepted June 26, 2014**
67.	76	6.5.2	The last paragraph on page 75 and first two paragraphs on page 76 are very convoluted regarding the discussion of 2012 vs. 2013 activities. ADEC recommends relocating the 2012 activities to the site history section 6.5.1. First paragraph on this page, please better explain why the stated disturbance resulted in further confirmation sampling being required. Please also discuss the activities associated with the 2012 site closure activities prior to demobilization; i.e. was a liner placed and/or was the site backfilled in 2012? Please clarify whether or not further soil was excavated in between the stated intervals of confirmation samples 10SS001/2 and the stated subsequent samples. Also, the discussion of confirmation samples in general throughout this paragraph is convoluted and should be	Bristol will review the section and revise as necessary for clarity. This section has been revised based on USACE comments. The excavations will be discussed individually and samples will be discussed per excavation. Because some 2012 sample locations were excavated in 2013, mention of these 2012 sampling activities is necessary for the 2013 narrative. **ADEC-Accepted June 26, 2014** No backfill activities occurred at the site in 2012 and no liner was placed. **ADEC-Accepted June 26, 2014; please state the RTC in the narrative for clarity**

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			reorganized for clarity. Please revise the last complete sentence on this page by making two separate sentences to state: 'The lateral extent of contamination was excavated until confirmation sample analysis results indicated that soil contaminant concentrations were below the cleanup level.'; omit the word but and begin a new sentence specific to the vertical depth information. Please reference the confirmation sample IDs in the last sentence of this paragraph on page 77.	Further confirmation sampling was required due to the presence of drums containing residual fluid. **ADEC-Accepted June 26, 2014; please state the RTC in the narrative for clarity** Text will be modified to indicate what soil removal occurred between each round of confirmation sampling. **ADEC-Accepted June 26, 2014** Text will be changed accordingly. **ADEC-Accepted June 26, 2014**
68.	77	6.5.2	First full paragraph on this page, it seems convoluted to state excavation activities being completed per confirmation samples, then to begin another discussion about a fourth excavation. Recommend briefly summarizing the total number of excavations in the beginning of this section and number reference each separate excavation in the respective discussions.	The term "excavation" for these sections will call out specific excavations. The beginning of the section 6.5.2 states that "Bristol opened four excavations at Site 10". Bristol will review the section and clarify. **ADEC-Accepted June 26, 2014**
69.	77	6.5.3	Correct spacing between 'H16.Confirmation'.	Spacing will be corrected. **ADEC-Accepted June 26, 2014**
70.	78	6.5.3	Please revise second sentence on this page to '…analytes with concentrations…'. Second paragraph on this page needs to be revised significantly for clarity. Please see comments in #s 67 and 68 above regarding making more specific references to better associate and reference sampling activities with removal actions; i.e. give the subsequent rounds of excavation and confirmation sampling a specific and consistent reference.	Sentence will be revised. **ADEC-Accepted June 26, 2014** The paragraph will be reviewed and revised for clarity. This section will be revised and discussed per excavation. **ADEC-Accepted June 26, 2014**
71.	79	6.5.3	Last paragraph of this section and elsewhere in other sections where applicable, please briefly summarize the results of the waste characterization samples.	A brief summary will be added. **ADEC-Accepted June 26, 2014**

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72.	80	6.6.2	Why would Marston matting be found in the borrow source area? Is the referenced borrow source area the historical or current one on the mountainside? Please revise typos in the first sentence of the last paragraph on this page by inserting a hyphen in '10-ton' and replacing 'tons was collected' with 'were' collected.	The area where the marston matting was found was near, but not in, the current borrow area. There is a relatively flat staging/work area just below the borrow source where the matting was found. Bristol does not know why the matting was there. **ADEC-Accepted June 26, 2014; please include the RTC in the report narrative** The suggested changes will be made. **ADEC-Accepted June 26, 2014**
73.	81	6.6.2	Why was debris shipped to CRL for disposal?	Economical choice. **ADEC-Accepted June 26, 2014**
74.	82	6.7.3	Why were PAHs not sampled for in order to calculate TAH and TAqH since this site is adjacent to/part of a wetland/surface water feature(s)?	TAH/TAqH is applicable to surface water. Soil was sampled at 4 locations as part of a site investigation based on anecdotal information brought up at the 2013 RAB meeting. Analytical results do not indicate presence of POL. Bristol was not scoped to collect surface water samples at this location. **ADEC June 26, 2014; comment resolution required**
75.	82	6.8.2	Please state the date(s) on which the roadside test pitting and sampling were conducted. ADEC's understanding is that this was conducted later in the field season for the purpose of also evaluating any potential impacts from the 2013 activities. Figure 21 only depicts three callouts of the stated four roadway segments and should be amended. Please also label each roadway segment callout in the figure for clarity; i.e. site 6, 8, MOC, and 31.	Sample dates will be added to the text. **ADEC-Accepted June 26, 2014** The road samples were not conducted to evaluate potential impacts from 2013. The test pits were dug down to older road bed to evaluate if soil containing PCBs was applied to the road surface for dust control during military operations at NEC. **ADEC-**

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				Accepted June 26, 2014; please state the RTC in the report narrative Figure 21 has 2 sample locations in one callout (along with a dup) at the intersection of Cargo Beach Rd and Airport Rd. The figure has been edited and now has four callouts. **ADEC-Accepted June 26, 2014**
76.	86	6.9.2	Please revise the sentence preceding Table 6-3 to state: '…from the [presence] of these…closed [and] rendered…'.	Sentence will be revised. **ADEC-Accepted June 26, 2014**
77.	89	6.10.1.2	Re: the statement in the latter part of the paragraph that the sampling did not result in a full characterization, please amend the sentence or add some additional language to clarify that this was not the intent with those efforts and that further sampling investigation efforts were known to be necessary. Please revise the sentence immediately following to state: '…that exceeded the ADEC-approved site-specific cleanup levels as documented in the 2009 Decision Document'.	Both statements will be revised. **ADEC-Accepted June 26, 2014**
78.	90	6.10.1.4	Last sentence of the first paragraph of this section, please revise to state: 'Dredged sediment that was retained in the geotextile tubes and treated water…'.	Sentence will be revised. **ADEC-Accepted June 26, 2014**
79.	91	6.10.2.1	Please provide more information regarding the sediment and waste characterization activities associated with the overwintered geotextile tube prior to disposal. Was further draining water treatment required? Was the intent not to collect samples for waste characterization and geotechnical evaluation?	More information regarding the overwintered geotextile tubes will be added, including that no additional treatment was necessary. **ADEC-Accepted June 26, 2014**
80.	92	6.10.2.1	First paragraph on this page, please include language and further discuss the results of the overwintered containment water. Were these results from 2012 or 2013 samples? Please also include discuss the	Language will be added that water generated in 2012 was over-wintered and resampled at the beginning of the 2013

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			concentrations of detected contaminants in respect to the Table C cleanup levels; and include more details re: the discharge criteria.	field effort. **ADEC-Accepted June 26, 2014** Language will be added discussing the contaminants that were detected. Table C cleanup levels are not applicable. **ADEC-Accepted June 26, 2014**
81.	94	6.10.2.2	The last sentence on page 93 and the first complete sentence on page 94 discuss and reference the same thing; please omit/combine into one sentence for clarity. Last paragraph of this section needs to include a detailed discussion of all COCs - not just TAH and TAqH results. Please also see comment # 80 above. ADEC requested the water be treated to Table C criteria as well as all other applicable permit requirements. Please apply this to all discussions associated with determining that the water treatment achieved discharge criteria.	Text will be modified accordingly. **ADEC-Accepted June 26, 2014** Table C criteria were not a requirement of the discharge permit. **ADEC June 26, 2014 comment resolution required; this was a conditional requirement of contaminated sites not the discharge permit** The permit states that it has to meet 18 AAC 70, but only asks to test for Turbidity, Settleable solids, Cl-, pH, TAH and TAqH. Authorization 2009DB0004-216 removes pH, turbidity, settleable solids, and total chlorine **ADEC June 26, 2014 comment resolution required; this was a conditional requirement of contaminated sites not the discharge permit** COCs outlined in the decision document will be discussed as appropriate. **ADEC-Accepted June 26, 2014**
82.	95	6.10.2.3	First paragraph on this page, please discuss the frequency in which visual observations were made downstream of the sediment trap. Second paragraph on this page, please briefly describe how the contaminated material from Areas 5, 6, and 7 were staged and how the	Observation frequency will be added. **ADEC-Accepted June 26, 2014** A description of the placement of removed sediment in each area, and of removal by hand/excavator will be added. The

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			material was removed with the excavator bucket; i.e. was the underlying tundra also removed if the material was not placed on a liner? Were confirmation samples collected both from the sediment removal and the staging area(s)? Are there photos of the excavator driving to and/or conducting removal at the subject three sites? Are there photos of the furthest downstream sediment trap? Last paragraph on this page, how much of Area 4 was re-dredged?	material that was removed by hand consisted primarily of vegetative material. It was placed (not stockpiled) immediately adjacent to the ponds at areas 5, 6 and 7. The material at removal area 7 was placed on a liner. **ADEC-Accepted June 26, 2014** Bristol will provided photos of the hand-removed material at removal areas 5, 6 and 7. These will be provided electronically with the final report in the supplemental folder. **ADEC-Accepted June 26, 2014** The entirety of Area 4 was re-dredged. **ADEC-Accepted June 26, 2014**
83.	96	6.10.2.3	Last paragraph of this section, please briefly discuss the difference between calculating the volume of sediment prior to removal vs. that volume of sediment which actually ends up being condensed in the geotextile tube.	A discussion of the methods used to calculate will be added. **ADEC-Accepted June 26, 2014**
84.	96	6.10.2.4	Please create a subtitle for each paragraph of this section and apply titles relevant to that information similar to the Results section 6.10.3; i.e. Baseline Surface Water Sampling; In-situ SW Sampling, Waste Characterization, Soil Confirmation, etc.	Subsections will be added as needed for clarity. **ADEC-Accepted June 26, 2014**
85.	97	6.10.2.4	Please revise the second sentence of the last paragraph on this page to state: '…to Test America for analysis of…'. Please revise the second to last sentence of this paragraph to state: '…pond where sediment was removed.'.	Changes will be made as suggested. **ADEC-Accepted June 26, 2014**
86.	98	6.10.3	Please revise the first bullet on this page to specify which 18 AAC 70 SOA Water Quality Standards criteria were specifically evaluated for each COC. Please revise the second bullet point on this page to clarify that ADEC-	Bullet will be revised. **ADEC-Accepted June 26, 2014** Second bullet will not be revised. **ADEC-Accepted June 26, 2014**

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			contaminated sites also required all COC concentrations in containment water to also be below the 18AAC75 Table C criteria prior to discharging to the ground surface.	The work plan stated only TAH/TAqH and sheen were required to be met prior to discharge. **ADEC June 26, 2014 comment resolution required; this was a conditional requirement of contaminated sites not the discharge permit**
87.	99	6.10.3.1	The one duplicate sample collected in association with the three sampling events is not adequate and represents a data gap; although in this instance ADEC recognizes that this data gap is no longer reconcilable. As previously commented above, ADEC's duplicate sampling criteria are based upon sampling events and not just the total number of samples for a specific matrix that are collected over a range of time; i.e. the entire field season or remedial event, etc. ADEC requests that all of the associated duplicate and other quality assurance failures be itemized and discussed in all associated and applicable sections of this report. Results for all COCs analyzed should be briefly summarized with respect to the applicable 18AAC70 criteria.	Duplicate sample frequency one duplicate per 10 primary samples (or portion thereof) of similar matrix per analytical group as stated on WS#28 of the ADEC approved QAPP was met. The frequency as stated in WS#28 of the ADEC approved QAPP is consistent with section VIII.D.1, including Table 3, of the 2009 ADEC Field Sampling Guidance. **ADEC June 26, 2014; comment resolution required** Results are summarized in their respective tables. **ADEC-Accepted June 26, 2014; however the request is to also discuss the COCs in the narrative**
88.	99	6.10.3.2	Please see and apply comments in # 87 above to this section. Although 18AAC70 and 18AAC75 do not have criteria for DRO in surface water, 18AAC75 does require the offsite contaminant migration pathway to be mitigated. In this instance, the analysis results of several samples indicated that DRO had migrated offsite as a result of removal activities. This needs to be discussed in detail for each COC. It is also necessary to briefly summarize the comparison of contaminant concentrations observed during removal activities vs. the pre-removal	Duplicate sample frequency of one duplicate per 10 primary samples (or portion thereof) of similar matrix per analytical group as stated on WS#28 of the ADEC approved QAPP was met. The frequency as stated in WS#28 of the QAPP is consistent with section VIII.D.1, including Table 3, of the 2009 ADEC Field Sampling Guidance. **ADEC June 26, 2014;**

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			COC concentrations.	**comment resolution required**
89.	99	6.10.3.3	Please state the range of exceedances observed for TAH and TAqH. Please also summarize all COC analysis results and the Table C discharge criteria as required by ADEC-contaminated sites. Please see comment # 86 above.	Ranges of exceedances will be included. Second bullet will not be revised. The work plan stated only TAH/TAqH and sheen were required to be met prior to discharge. **ADEC June 26, 2014; comment resolution required**
90.	100	6.10.3.3	Please see comment #s 89 and 86 above and apply similarly to the discussion in the first full paragraph on this page and elsewhere through this section and the entire document where applicable. Were the stated three duplicate samples collected over the course of the field season or were they submitted with the respective number of primary samples based upon a specific sampling event as discussed in numerous comments above? Please also summarize the analysis results for all other COCs per ADEC's request to meet 18AAC75 Table C criteria prior to discharging treated water to the ground surface for all applicable discussion throughout this section and the entire document. Wasn't water overwintered from 2012 which was sampled and discharged in 2013? If so this should be summarized and discussed in this section. Please revise typo in first sentence of the last paragraph on this page; change 'additional' to 'addition'.	The work plan stated only TAH/TAqH and sheen were required to be met prior to discharge. **ADEC June 26, 2014; comment resolution required** Duplicate samples were collected over the field season at a rate of 1 field duplicate for every 10 primary samples. **ADEC June 26, 2014; comment resolution required** Table C criteria are not applicable. **ADEC June 26, 2014; comment resolution required** Discussion of the over-wintered water will be added. The over-wintered water met permit discharge criteria. **ADEC-Accepted June 26, 2014** The collection and discussion of over-wintered water is discussed in Section 6.10.2.1, first paragraph. **ADEC-Accepted June 26, 2014** "Additional" will be changed to "addition". **ADEC-Accepted June 26, 2014**

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91.	101	6.10.3.4	ADEC recommends providing an explanation at the beginning of this section to clarify that although the material collected for post-removal confirmation sampling within site 28 is not what is traditionally and/or technically considered to be soil or sediment; that the material being confirmation sampled is being called soil as a point of reference. Please revise the last sentence on this page to state: 'DRO was also analyzed by…'.	Based on USACE comments that the media is sediment (draft says soil). CULs have been changed to sediment values based on USACE comments. The report will provide an explanation as requested by ADEC to state "although the material collected for post-removal confirmation sampling within site 28 is not what is traditionally and/or technically considered to be soil or sediment, the material being confirmation sampled is being called sediment as a point of reference." **ADEC-Accepted June 26, 2014** Sentence will be revised to state: DRO was analyzed by method AK102 and analyzed with and without silica gel treatment. The silica gel treated sample concentrations reduced two samples to below site-specific cleanup levels. **ADEC-Accepted June 26, 2014**
92.	102	6.10.3.4	Please state the range of changes in concentrations for DRO post SGC similar to the last paragraph of this section for RRO.	The following text will be added: "Changes ranged from a 67% percent decrease of DRO in sample 13NC28SS001 to no decrease as observed in 13NC28SS032. Concentrations of DRO were reduced by an average of 20% for all samples." **ADEC-Accepted June 26, 2014**
93.	102	6.10.3.5	ADEC requests more discussion regarding the trivalent chromium and 'ambient chromium concentration'. Is there scientific data which	Unless a tannery or plating facility was located on site, then the decision should

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			confirms that 48 mg/kg is a 'background' concentration for NEC and confirms that this chromium is stable in the trivalent state?	stand that the Cr onsite is Cr iii. Please refer to the document: Technical Memorandum, Background Determination for Risk Assessment, Derivation of Ambient Concentrations for Abiotic Media associated with the Northeast Cape Site, St. Lawrence Island, Alaska, May 2003. (F10AK096903_03.11_0003_a). This document will be referenced in the report. **ADEC-Accepted June 26, 2014** The text will be revised to clarify that Chromium does NOT have a cleanup level of 25 mg/kg specified in the DD. The ambient level in soil at NE Cape is 48 mg/kg. The text will clarify that the 25 mg/kg chromium evaluation criteria is from 18AAC75.341. The inference that chromium was described in the DD as existing in trivalent state is not really relevant to this discussion of samples collected from underneath a deconstructed sump location. It is a general scientific principal that chromium in soil exists in Cr+3 valence state. **ADEC-Accepted June 26, 2014**
94.	103	6.10.4	Please amend the third paragraph of this section to state that GAC-treated water will be contained and sampled for laboratory analysis; and that treated water will be discharged to the ground surface once analysis results confirm that concentrations of COCs are below 18AAC75 Table C	The sentence will be revised to state that GAC treated water will be contained and sampled and will not be discharged until it meets discharge criteria, TAH/TAqH and

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			and discharge permit criteria.	no sheen. **ADEC June 26, 2014; comment resolution required**
95.		6.11	The results discussion for each AOC in this section require further discussion and clarification re: how the MI sample results were evaluated based upon the number of increment samples which composed each lab sample in respect to the cleanup level. It needs to be briefly explained for clarity that the site wide concentration of the DU is determined by multiplying the result of the composite sample concentration by the number of increment samples which made up the composite sample. There appears to be potential discrepancies in the 2013 work plan and the results discussed in this report associated with the areas which were intended for sampling. The 2013 work plan (i.e. Table 11-2 of QAPP worksheet #11-2), states that the Cargo Beach was going to be sampled early in 2013 but is not discussed in the report. The work plan also does not specify that the MOC would be MI-sampled, although the proposed sample IDs in table 11-2 are MOC. Please also see comment # 96 below.	Please refer to the ADEC draft MI guidance (March 2009). The number of increments is irrelevant as long as it's between 30 and 50, the result reflects the mean concentration of the decision unit. **ADEC June 26, 2014; comment resolution required** The section may not have been totally clear, Cargo Beach had been sampled at the beginning of the project (not under 2013 contract) and will need to be resampled after ALL removal actions and bulk bags are off-site in 2014. Cargo Beach was unfunded for 2013 MI sampling. The MOC MI samples were located at temporary bag storage areas. **ADEC-Accepted June 26, 2014; please include the RTC in the report narrative**
96.	104	6.11.1	Please revise the discussion in this section for clarity; it is not clear why the 2012 DU sampling is discussed –is this actually associated with 2013? How the 2012 sampling relates to the 'resampling' of site 6 MOC and site 26 is unclear; was it resampled in 2012? 2013? State the two additional units and associated AOC that were created and sampled in 2013. Please see comments in # 95 above.	Section 6.11.1, titled "Description and History" is the appropriate area for discussing 2012 sampling. The DUs described were sampled to provide a baseline for contaminant concentrations; to show that RA activities and bag staging did not adversely affect the areas or the ISO tank storage area. **ADEC-Accepted June 26, 2014; please note ADEC's comment was**

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			Recommend giving MI sampling areas a specific ID and to notate these on respective figures (24, 25, etc.); i.e. S6-1, S6-2, MOC-1, etc. for clarity.	**more related to it not being clear if the discussion referred to the 2012 or 2013 sampling** Sample IDs are consistent with name conventions included in the 2013 QAPP and are already included in the EDDs. **ADEC-Accepted June 26, 2014; however there are not IDs associated with the DUs on figures and related narrative report discussions**
97.	107	6.12.1	Please state the COCs to be analyzed in the last sentence of this section. Please also apply comment #94 above to this section.	Will add: BTEX, DRO/RRO, DRO/RRO-SG, PAHs, PCBs, and 11 metals. **ADEC-Accepted June 26, 2014**
98.	107	6.13.1	The narrative section(s) associated with sediment removal from these areas previously stated that the sediment was placed on the edge of the removal area and then was picked up with the loader and placed into bags. This needs to be reconciled throughout the document for clarity.	Text will be revised to state: Areas 5 and 6 were picked up, after hand removal, by excavator. Area 7, the area with a high organic content, was placed in small bags and carried by UTV to a bulk bag in a nearby bag frame. **ADEC-Accepted June 26, 2014**
99.	108	6.13.1	Please revise the last sentence of the second bullet on this page since ADEC did not approve this. ADEC approved no longer collecting pre-treatment samples and also approved a limited number of discharges prior to receiving the results. It should be noted that the GAC systems required maintenance mid-season; after which a batch of containment water was re-treated prior to discharge. ADEC approved the discharge of treated water prior to receiving laboratory analysis results only if no turbidity or sheen were observed in the containment. Please also include a brief explanation in the narrative section for site 28 that ADEC approved a sampling frequency of one sample per	Bullet point will be revised. The mid-season maintenance and sampling after maintenance are described in the last paragraph of Section 6.10.2.2 **ADEC-Accepted June 26, 2014** A brief explanation will be added. **ADEC-Accepted June 26, 2014**

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			containment volume – regardless of how full the containment was; that the sample simply had to be representative of the batch of treated water that was going to be discharged. Please include other 'deviations' and/or amendments, additions, etc. which were made to the work plan and field effort for all sites i.e. 21, MOC, etc. Please also include the email correspondence and approvals between ADEC and the project team members and reference them in this and other applicable sections.	Emails/approvals will be gathered and consolidated in the final report. They will be referenced where applicable. **ADEC-Accepted June 26, 2014**
100.	110	7.2	Please revise or omit the first sentence of the last paragraph on this page. There are numerous notable discrepancies identified which are discussed following this statement. Furthermore, what was the variance granted by the USACE discussed in the last sentence on this page? This represents a chain of custody discrepancy. Did the sample exceed holding times and was it adequately qualified because of the quality control issues?	Sentence will be revised. **ADEC-Accepted June 26, 2014** The variance was for the cooler being above temperature. Holding times were not exceeded. No qualification for temperature above ADEC specified temperatures. **ADEC-Accepted June 26, 2014**
101.	111	7.2	Please revise the first sentence of the second paragraph on this page. The results didn't exceed holding times rather the analysis occurred outside of holding times; which also results in biased low and not biased high.	Sentence will be revised to state: samples that were extracted or analyzed outside of holding time and those results were H qualified (estimated biased low). **ADEC-Accepted June 26, 2014**
102.	112	7.2	ADEC has significant concerns re: the extensive blank contaminations which are itemized in the last bullet on this page.	Bullet will be reworded based on USACE comment to state: Results were B qualified to indicate that sample concentrations that were less than 10 times the reported blank concentration were B flagged. **ADEC-Accepted June 26, 2014** As for the blank contamination, some results were due to lab contamination (acetone, methylene chloride). None of the

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				affected sample results (B flagged) were anywhere near regulatory or cleanup levels so the results are still usable for project purposes (to demonstrate that removal actions were effective or that removal efforts did not adversely impact respective media). **ADEC-Accepted June 26, 2014**
103.	115	Table 7-1	The extensive RPD criteria not being met is unacceptable.	41 out of 1300 duplicate results (3%) did not meet RPD criteria. Please provide reference to guidelines for acceptable criteria. **ADEC June 26, 2014; comment resolution required**
104.	117	7.2	Please revise the first sentence on this page to state: 'The data review located in Appendix M of this report determined the impacts to and resulting usability of the analytical data for the project's purposes and objectives.'; assuming the reference to the data review refers to that located in Appendix M of this report.	The Appendix M reference is stated in the first sentence of Section 7.2. **ADEC-Accepted June 26, 2014**
105.	119	7.6	Should the information following the first bullet on this page be included under a new header and section titled Cleanup Levels and Action Criteria? Please include surface water in the sentence preceding the four bullets. Please revise the third bullet (fourth bullet on this page) to include ADEC's request to utilize 18AAC75 Table C criteria for the treated containment water prior to surface discharge.	Surface water will be added to the sentence even though there is no actual cleanup level for surface water, only evaluation criteria. **ADEC-Accepted June 26, 2014 re: the addition of surface water however comment resolution is required per ADEC's conditional approval of applying Table C criteria to the contained water prior to discharging** Table C is not applicable, only permit discharge criteria which are TAH/TAqH and no sheen. **ADEC June 26, 2014;**

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				comment resolution required
106.		New Figure	ADEC suggests generating a new figure that has a view scale between that of figures 4 and 6 and depicts the MOC excavation boundaries for each year (in the manner already depicted on current figures but w/o the hash marks) and also include depictions of the monitoring wells that are color coded for the year they were removed. Also per the first part of comment #108 below, please include depictions of all confirmation soil sample locations which were collected below the water table for the respective year of excavation; the analytical results of which indicated that COC(s) remained above the respective cleanup level.	Figure 4 shows excavation boundaries and is color coded by year. Hash marks will remain as is following discussions with USACE. **ADEC June 26, 2014; comment resolution required** Bristol shows the wells removed from the MOC GW sampling program in 2012 (MW 88-4 and 88-5) on Figure 6 with grey MW symbols. **ADEC June 26, 2014; comment resolution required**
107.		Figure 5	Please depict any other monitoring wells which were removed prior to 2012 and also include call outs for those wells which were removed/decommissioned in 2013.	Please refer to Figure 22 (Abandoned MW location map). **ADEC-Accepted June 26, 2014**
108.		Figure 7	Please clarify why there are 2012 sample locations depicted (which according to the legend had COC concentrations that exceeded the respective cleanup level) in locations that are within the 2012 excavation boundary however were not addressed further in 2013 nor discussed in the report; i.e. 12NCMOCCSS128, 1212NCMOCSS117, etc. Please apply this and clarify for all other figures which depict similar sample locations. Are these 2012 and 2013 floor sample locations which are depicted as exceedances at 2-ft. below the water table? Please indicate in the legend of this and all other applicable figures whether the 2012 sample locations were sidewall or floor. Were there confirmation sidewall samples in 2012 for the southernmost excavation boundary for E1 and E2?	The figure will be revised and a new symbol for sample results exceeding CUL but under 2' of water, which is why they were not excavated further. **ADEC-Accepted June 26, 2014** Yes, 2' below water table. **ADEC-Accepted June 26, 2014** New symbols for SW and floor will be added to figure. **ADEC-Accepted June 26, 2014** No, Excavations E1 and E2 will be expanded south in 2014. **ADEC-Accepted June 26, 2014; please include the RTC in the report narrative**

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			If the project team concluded to not excavate past the site 28 boundary on the northernmost boundary of the MOC due to destructiveness to wetlands and water infiltration, then why were northeast and northwest boundaries of the E4 excavation not continued to the site 28 boundary to a depth of no less than 2-ft. below the water table?	The water in the excavation would have flowed into Site 28. A wall was left in place to keep the water within the excavation. **ADEC-Accepted June 26, 2014; please include the RTC in the report narrative**
109.		Figure 10	Please provide a call out to identify the 2010 proposed plume excavation boundary in the upper left of the figure adjacent to the compass. Please add a call out for the one surface water feature which is depicted in the upper right of the figure (difficult to discern). It would also be helpful in this and other figures which depict plumes adjacent to the 'site 28 boundary' to also depict the approximate boundary of where shallow ground water has been observed (i.e. < 1-foot bgs).	Revisions will be made to the figure as requested. **ADEC-Accepted June 26, 2014** The callout will be added to the surface water. **ADEC-Accepted June 26, 2014** Areas of shallow groundwater will be added where applicable. **ADEC-Accepted June 26, 2014**
110.		Figure 11	Please depict the locations of previous 2011 and 2012 samples that were determined to be below cleanup level as stated in section 6.2.2.5 of the narrative.	The A1 plume was confirmed below cleanup levels in previous RA reports. These samples will not be added to the 2013 RA Report figures. **ADEC-Accepted June 26, 2014**
111.		Figure 12	Please depict the I1 and Site 28 boundaries as well as the MOC monitoring wells which were removed and color code them as year depicted.	The purpose of this Figure is to show the areas of disturbance and that the topography of the MOC excavation areas is amenable to proper drainage. **ADEC-Accepted June 26, 2014**
112.		Figure 13	Please clarify which of the depicted samples are confirmation samples.	They're all confirmation samples. "Confirmation" will be added to the legend so it is obvious. "removed in 2013" symbol will be added to the legend text for the 2012 confirmation sample that was

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				above CUL (in 2012) and removed in 2013. **ADEC-Accepted June 26, 2014**
113.		Figure 16	Please add a call out for sample location 21SB17 and state 'exceedance 14/mg/kg left in place' and reference the narrative section and/or ADEC approval. Although ADEC has approved downgradient surface water samples for various reasons, has the downgradient drainage of site 21 been adequately characterized; similarly to site 28 for COCs? ADEC is unable to locate the 3rd 2013 surface water sample location as stated in the narrative and required per the 2013 work plan.	A new label will be added for above CUL but left in place. **ADEC-Accepted June 26, 2014** Second paragraph, last 2 sentences in Section 6.4.3 will be revised to include "ADEC approval". Section 6.4.3 will reference the figure, which supports the text. **ADEC-Accepted June 26, 2014** Characterization of the Site 21 drainage, other than arsenic in SW, was not requested. **ADEC June 26, 2014; ADEC's comment was intended to address the characterization of arsenic contamination throughout the greater drainage and not in regards to other COCs** Only 2 SW locations were specified in the WP. Nine total SW samples were collected; 2 primaries + field dup pre excavation, 2 primaries mid-excavation, 2 primaries post-excavation and 2 primaries post-backfill. **ADEC-Accepted June 26, 2014; needs resolution/reconciliation for clarity**
114.		Figure 18	Please depict the MOC monitoring wells which may be within the view of this figure and color code the year removed. Please also depict any exceedances in groundwater which may have been historically observed.	Monitoring wells within the extent of this figure will be added. Sampling at MW10-1 was conducted from 2010 to 2013 – no detections were reported thus no

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			As requested above in comments associated with the site 10 narrative, please assign an ID to each of the site 10 excavations in 2013. Also, was the depicted 2011 extent of excavation in this figure not that of the J1A plume and not site 10? If so, please indicate this in the legend for clarity.	exceedances will be depicted. **ADEC-Accepted June 26, 2014** The Site 10 excavations will be assigned a unique ID and discussed per excavation. **ADEC-Accepted June 26, 2014**
115.		Figure 20	ADEC's understanding is that there is a culvert underneath the road connecting the two surface water features which are depicted on each side of the road. If there is one please depict it. Also please depict the known and/or estimated location of the former pipeline.	Culverts and estimated pipeline location will be added. **ADEC-Accepted June 26, 2014**
116.		Figure 21	Please see previous comment above regarding only three AOCs depicted but four were sampled.	The figure has been edited so that four callout boxes are visible on the figure, each representing a sample location. **ADEC-Accepted June 26, 2014**
117.		Figure 22	Please apply comments above re: abandoned monitoring wells to figure 22 and/or new associated figures. Is the depicted 'unknown MW03' associated with the 1994 Soil Boring No: 6-2 as indicated in Appendix J? Similarly for 'unknown wells 01 and 02 at the MOC?	The monitoring wells marked as unknown could not be reconciled with historical data. Unknown MW03 is not 6-2. **ADEC-Accepted June 26, 2014; please include the RTC in the report narrative**
118.		Appendix B	July 2013 Monthly Status Report: Note the 4th bullet under USACE and ADEC Correspondence re: the water discharge criteria as requested by ADEC Contaminated Sites to follow the DOW and Table C criteria.	The 4th bullet states: "Between 7/3/13 and 7/8/13 had correspondence related to the discharge permit for Site 28. J. Greuey at ADEC stated we don't need a discharge permit and can follow the Work Plan. This correspondence was included in the revised Appendix F." **ADEC-Accepted June 26, 2014; needs resolution/reconciliation for clarity**
119.		Appendix H	Table H9: states no sheen however narrative states that sheen was observed in all three phases of excavation.	This table refers to the locations where the MOC surface water samples were

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				collected. Section 6.10.1 reports that the western drainage has historically been reported to produce sheen when disturbed, however, the samplers did not observe sheen at any of the MOC surface water sample locations during surface water sampling. **ADEC-Accepted June 26, 2014**
120.		Appendix H	Table H10: per the PCB-1260 and the All Other PCBs designations, were two samples run or is the result from one sample used for both designations? This should be discussed in the narrative for clarity; please also address similarly for Site 31 in Table H11.	One sample. "All other PCBs" were non-detect and combined to minimize white space and reduce the number of pages. **ADEC-Accepted June 26, 2014; please clarify this in the narrative and/or notes**
121.		Appendix H	Table H13: for this and all other tables throughout the Appendices and document please add all of the necessary notes to explain all of the footnotes used; i.e. MN on page 2 of Table H13. Please also include all applicable notes to each page of a table, not just at the end of the table. Table H14: Please notate and include a note to depict which sample locations with analytical results exceeding the cleanup level will require future removal and which are approved to be left in place. Please also include a row for sample depth.	Table H13-Changed flag to QN based on USACE comment. QN added to footnotes. **ADEC-Accepted June 26, 2014** Footnotes will remain at end of table. **ADEC-Accepted June 26, 2014; please note that the second portion of ADEC's comment on the left was not addressed in the RTC (re: row for sample depth)**
122.		Appendix H	Table H22: the narrative discussion of the pipeline break sampling should discuss the elevated DRO and RRO concentrations in respect to what has been observed before with SGC results and whether or not these concentrations may be indicative of a previous spill; even though current concentrations are below the site-specific cleanup levels.	Samples were not submitted for SGC analysis. Bristol will not draw conclusions on whether or not a spill occurred. Bristol collected samples per the Scope of Work and reported them as being less than site-specific cleanup levels. **ADEC-Accepted June 26, 2014**

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123.		Appendix H	Table H24: please revise this table to include 18AAC75 Table C criteria along with the DOW Discharge Permit and indicate in the Notes that the Table C criteria were required and approved by ADEC contaminated sites to apply to all treated water originating from site 28 that would be discharged to the surface. This is consistent with numerous ADEC requests and approvals in past years re: this subject as well as numerous comments above.	Bristol followed the discharge permit requirements, which is TAH/TAqH and sheen as stated in the work plan/QAPP, Table C criteria does not apply. **ADEC June 26, 2014; comment resolution is required**
124.		Appendix H	Table H25: please clarify in the Notes section of this table and in all of the associated narrative sections for surface water sampling that the drinking water criteria has been applied during the removal actions; and once completed, the Corps will investigate and evaluate for the chronic aquatic organisms exposure criteria.	Notes section will be clarified for the evaluation criteria footnote: *Based on drinking water criteria from Alaska Water Quality Criteria Manual for Toxic and Deleterious Organic and Inorganic Substances, 18 AAC 70. Future investigation and evaluation will be based on recommendations from the Five Year Review. **ADEC-Accepted June 26, 2014**
125.		Appendix H	Table H27: please apply comment # 123 above to this table.	Table H27 presents the concentrations of water contained in the geotube containment area before treatment. The results were used strictly to evaluate the efficacy of the treatment system. No water was discharged from the geotube containment area. The results indicated that GAC was needed as part of the water treatment system. The results do not need to meet Table C criteria, which is not applicable in this case. **ADEC-Accepted June 26, 2014 regarding the first portion of the RTC - however ADEC disagrees with the last**

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				sentence of the RTC and comment resolution is necessary
126.		Appendix H	Table H28: please switch the rows such that the SGC results are directly below their respective associated DRO and RRO rows to aid in comparing results.	This change will be made as requested. **ADEC-Accepted June 26, 2014**
127.		Appendix H	Table H29: was TOC and SGC analysis conducted on these samples? If so please include this information since this would be valuable for comparing to other sample results associated with site 28.	The 2013 SOW did not include sampling and analysis for TOC and silica gel for any of the MI or water discharge area samples. **ADEC-Accepted June 26, 2014**
128.		Appendix H	Miscellaneous Tables: what was the cause for numerous holding time exceedances for several sites and why were holding times exceeded for some POL contaminants but not others in the same sample(s)? For all of the MI sampling of Bulk Bag Staging Areas, it should be clearly explained in the respective narrative sections why only specific and different COCs were analyzed; i.e. why arsenic was not included – ADEC assumes because arsenic-contaminated soil was not stored at that location.	The majority of samples exceeding holding times were because samples were initially extracted within holding times but re-extracted outside of holding times due to QC failures, mainly low LCS/LCSD recoveries. The MI samples collected at Site 28 exceeded holding times due to the samples being received "wet", which required longer drying times. **ADEC-Accepted June 26, 2014; please include the RTC in the report narrative** All bulk bags from Site 21 (arsenic) were placed directly onto shipping flats at Site 26. **ADEC-Accepted June 26, 2014; please include the RTC in the report narrative** The other MI sample areas were CoC-specific depending on location and the bulk bag contents. If staging areas had both PCB and POL bulk bags they were sampled for that. The ISO tank area was

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				sampled for GRO/BTEX, DRO and RRO as only fuel was stored there. **ADEC-Accepted June 26, 2014; please include the RTC in the report narrative**
129.		Appendix I	Survey Drawings: the provided survey drawings with the associated photos are very useful. Is there a reason why they are limited to the specific sites provided instead of including a survey topo for all sites where work was conducted?	The MOC-wide survey topo is included. These were drawings that the surveyor did on their own. This was not part of the scope of work. **ADEC-Accepted June 26, 2014**
130.		Appendix L	Site 28 Addendum: please state on a holder page that this work is planned in 2014 and will be submitted as a separate document titled '2013 NEC RA Report Appendix L – 2014 Addendum'.	This will be incorporated as suggested. **ADEC-Accepted June 26, 2014**
131.			**Chemical Data Quality Report**	
132.	8	1.0	Please revise or omit the first sentence of the second paragraph on this page. It is misleading to say that 'all data parameters fell within control limits unless otherwise stated' when there are more than 30 pages of discrepancies which follow.	Sentence will be revised. **ADEC-Accepted June 26, 2014** Only parameters that were out of control were described in the CDQR. **ADEC-Accepted June 26, 2014; however please revise the subject statements for clarity**
133.	11	1.0	Please note the discrepancies with duplicate sampling frequency as indicated in numerous comments above as well as stated in the data verification section on this page; i.e. 34 samples and 6 duplicates instead of 4 duplicates, 25 and 22 samples and two duplicates for each set instead of 3 duplicates for each set, seventy two samples and 7 duplicates instead of 8, etc. Last paragraph on this page should reference ADEC's approval of the 4 variance requests via email. These approval emails should be include in both the correspondence and the variance appendices.	The duplicate frequencies have been updated after further review of field notes. **ADEC-Accepted June 26, 2014** All field duplicate sampling met the minimum 10% frequency as stated in the ADEC field sampling guidance. The site 21 primary and duplicate sample frequency was incorrectly stated as well. It will read: Site 21: Eight water samples and 1 water-field duplicate, sixty primary soil samples

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				and seven field duplicates from soil borings, seventeen soil confirmation samples and two field duplicates, and nine soil waste samples. **ADEC-Accepted June 26, 2014** The ADEC approval of the four variance requests is included in Appendix C (Correspondence). The variance requests included in Attachment 3 of Appendix M (CDQR) only includes variance requests to the USACE project chemist relating to lab issues for out of control lab QC criteria. **ADEC-Accepted June 26, 2014; please note that ADEC submitted formal approval letters for the subject variance requests to the Corps in May, 2014. Please include these in the associated appendices.**
134.	15	2.1	First paragraph on this page, please state the targeted acceptable temperature range of 4 (+/-2) degrees Celsius per ADEC Guidance.	Temperature acceptance range will be restated as 4 (+/-2) degrees Celsius, 0-6 degrees is per DOD QSM and EPA. **ADEC-Accepted June 26, 2014**
135.	16	2.1	Work Order 580-39382-1: ADEC does not disagree with the information presented in this this summary, however ADEC requests that all data qualification be consistently applied to all samples for all conditions and variances in which ADEC Guidance criteria were not achieved. Please revise associated narrative discussions and language throughout the document. Please apply same requests in paragraph above to 580-395441 and all other samples for which ADEC Guidance criteria were not met.	The associated narrative will be reviewed and revised as necessary. **ADEC-Accepted June 26, 2014** **ADEC June 26, 2014; second portion of this comment on the left was not addressed in RTCs**

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136.	22	2.3	(580-39360-1): same as similar comments above. ADEC does not disagree with the USACE granting a variance associated with a DOD quality issue, however, all discrepancies which do not achieve ADEC's criteria must be qualified accordingly and addressed in the associated narrative discussion. Essentially the entire CDQR requires a comprehensive reevaluation to identify and reconcile these discrepancies.	The USACE variance was granted for 580-39360 and Bristol believes all results were properly qualified. Can you clarify? **ADEC-Accepted June 26, 2014; ADEC's comment was intended to verify that such variances did not result in a discrepancy with ADEC's criteria and was asking this to be evaluated and stated that is has been evaluated and whether or not discrepancies were observed** 1,2 dichloropropane was not detected in any samples and the instrument demonstrated it could detect it. Acetone was reported in the MB and not detected in any samples. You only qualify non-detect samples if there are indications that the instrument is not capable of detecting the analyte (QL). ADEC has no guidance regarding treatment of ND results with QC recoveries exceeding limits. EPA National Functional Guidelines for Organic Data Review (June 2008) state no qualification is necessary. Results were not qualified. **ADEC-Accepted June 26, 2014; per other response to RTC in first paragraph above, please include this discussion in the report narrative**
137.	26	2.6	ADEC does not concur with the statement that glycol was not initially identified as a compound of concern since it was analyzed for and	Glycol was not listed in the 2012 WP/QAPP and was only identified after

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			detected in previous investigations as well as included in both the 2012 and 2013 work plans.	drum contents were transferred during excavation in 2012. It was listed in the 2013 WP. **ADEC-Accepted June 26, 2014; yes but this still does not address ADEC's concern with the statement; please revise per the RTC for clarity**
138.	40	2.11	580-39755-1: ADEC does not concur with no flags being assigned to this batch of data; particularly for the failed RPD criteria of the LCS/LCSD SGC batch. ADEC would typically reject this data batch for this reason. Although it is not necessarily a critical issue since ADEC is not considering the SCG results to determine whether cleanup goals have been achieved, it is significant in regards to how the data is being evaluated and discussed; especially in regards to the data qualification discrepancies as addressed in numerous ADEC comments above.	The MS/MSD likely failed to meet criteria due to the parent sample concentrations being 4 times greater than the spike (4x rule, no flagging). The SG treated LCS/LCSD had RPDs of 22% for DRO, 21% for RRO, limit 20%. This is not cause to reject data and the recoveries were within criteria, which is why no data flags were assigned. **ADEC-Accepted June 26, 2014 however noting reconciliation of other discrepancies as commented to RTCs above and that this data is not critical for site closure evaluation**
139.	45	2.11	580-40427-1: please state the referenced qualitative information provided in the case narratives specific to each quality review re: the nature of the interference.	The last sentence of Section 2.11 was not specific to SDG 580-40427 and will be removed. **ADEC-Accepted June 26, 2014**
140.	46	2.13	580.39443-1: the last sentence on this page which carries over to page 47 does not make sense and should be revised. ADEC's request per comments above are that all sample data for which quality control criteria were exceeded should be qualified; 'based on review only' has nothing to do with whether or not the data should be qualified or not.	Sentence will be revised. **ADEC-Accepted June 26, 2014** As for not qualifying non-detects, ADEC has no guidance regarding treatment of ND results with QC recoveries exceeding limits. EPA National Functional Guidelines for Organic Data Review (June 2008) state

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				no qualification is necessary. Results were not qualified. **ADEC-Accepted June 26, 2014**
141.	47	2.13	280-46355-1: Please revise this discussion for clarity. It does not make sense to state 'could not accurately calculate zinc recoveries' but then to state 'recoveries met accuracy and RPD limits'.	Sentence will be reworded to state parent sample had zinc concentrations greater than 4 times the spike concentration and still met accuracy and RPD limits. **ADEC-Accepted June 26, 2014**
142.	48	2.13	580-40328-1: removing the J flags from sample 13NC28SS029 will require further discussion; also in association with other similar comments above associated with determining whether or not to qualify specific data.	The third to last sentence in this section "the lab-applied J flags were removed" will be restated for clarity. **ADEC-Accepted June 26, 2014; comment resolution required** As for why the J flags were removed will require further discussion. The lab performs the MS/MSD calculation based on concentrations, not on % recovery. As stated in the CDQR, when RPD is based on % recoveries the MS/MSDs meet recovery limits for arsenic, cadmium, lead and nickel. **ADEC-Accepted June 26, 2014; comment resolution required**
143.	51	2.16.1	Please revise/clarify the sentence in the first paragraph on this page that states '…Data which is J flagged…analytical results were not flagged'; as also commented numerous time above. Field Duplicate Frequencies: This section needs to be revised per numerous comments above re: insufficient duplicate samples collected per method/matrix/event. Information provided in the narrative section is not consistent with that provided in the data review.	D – Move the last sentence of this paragraph up three sentences. What they are referencing should be re-written to include the text of the WP that says that if both RPDs are J flagged, then the RPD will be calculated but not flagged if out of spec because of the variability of the low numbers. **ADEC-Accepted June 26, 2014**

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144.		Table 2-15.1	Please include a column which states the RPD% QC criteria for the respective matrix/analyte. Please also bolden the RPD% for sample 13NC28TWA05.	The RPD criteria for soil and water are noted in the text preceding Table 2-15.1. The RPD for sample 13NCTWA05 will be bolded. **ADEC-Accepted June 26, 2014**
145.	61	4.0	Per numerous comments above which will likely require further comment resolution discussion, ADEC notes that it may be necessary to revise several statements in the summary as well as add specific statements/discussions to clarify data QC issues which may have impacted the quality and/or usability of some of the 2013 data. Please omit the word 'very' from the first bulleted statement.	Previous ADEC QC issue comments will be addressed. None of the QC issues impact the usability of the data. **ADEC-Accepted June 26, 2014** "very" will be removed. **ADEC-Accepted June 26, 2014**
146.		DQCRs	Please include electronic copies of all of the 2013 Daily Quality Control Reports in a new Appendix.	DQCRs are included electronically in RA Report/MED/QC docs and include all of the 2013 DQCRs. **ADEC-Accepted June 26, 2014**
147.			**End of ADEC Comments**	

THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

555 Cordova Street
Anchorage, Alaska 99501
Phone: 907.269.7503
Fax: 907.269.7649
dec.alaska.gov

File No: 475.38.013

May 21, 2014

US Army Corps of Engineers USACE, AK District
Attention: Ms. Valerie Palmer
CEPOA-PM-ESP
P.O. Box 6898
JBER, AK 99506-0898

Re: ADEC Review and Conditional Approval of Request to not Remove One Soil Sample Location of Arsenic-Contaminated Soil at Site 21 Associated with the ADEC-Approved 2013 Northeast Cape (NEC) Removal Action (RA) Work Plan

Dear Ms. Palmer;

Thank you for providing the Alaska Department of Environmental Conservation's Contaminated Sites Program (ADEC) with documentation and specific information associated with the Army Corps of Engineers' (Corps) request associated with the 2013 removal actions at Site 21.

Representatives from the Corps discussed this request in person with ADEC contaminated sites staff during a site inspection on August 13, 2013. During this site inspection the field team assessed the 2013 soil sample location identified as 21SB17 for which analytical results indicated an arsenic concentration in soil of 14 mg/kg. The ADEC-approved background cleanup level for arsenic at NEC per the approved 2009 Decision Document is 11 mg/kg. Soil sample location 21SB17 was collected from an upland/wetland transition area within Site 21 where surface water increasingly becomes predominant. Analytical results from other soil samples which were collected very close to/adjacent to 21SB17 indicated that soil arsenic concentrations were all below the cleanup level of 11 mg/kg. The field team tentatively concurred, that moving machinery through the wetland to the location of 21SB17 and/or conducting excavation activities would likely cause extensive damage to the wetland and could potentially result in migration of upgradient arsenic into the drainage system.

This letter is a follow up to provide the Corps with formal and final approval from ADEC for the Corps to not excavate the Site 21 '21SB17' location in 2013. Attached with this letter are copies of ADEC's August 15, 2013 email summarizing its conditional approval to the

MAY 21 2014

Corps as well as other associated email correspondence for reference. Please include a copy of this letter along with the associated attachments in the final 2013 NEC RA Report.

Please contact me at curtis.dunkin@alaska.gov or at (907)269-3053 if you have any questions regarding this letter.

Sincerely,

Curtis Dunkin
Environmental Program Specialist

Enclosures: four pages of email correspondence dating August-September 2013

Dunkin, Curtis S (DEC)

From: Dunkin, Curtis S (DEC)
Sent: Thursday, August 15, 2013 10:51 AM
To: Palmer, Valerie Y POA; Geist, Lisa K POA; Shewman, Aaron F POA; Craner, Jeremy POA
Cc: Halverson, John E (DEC)
Subject: NEC; Corps' request to not excavate soil sample location 21SB17 at Site 21

Valerie, all, I have discussed the Corps' request to not excavate soil sample location 21SB17 at Site 21 with John Halverson. A summary of ADEC's determinations are below; per the outlined conditions of which, ADEC approves the Corps' request. Please also see below re: the oversized material that is being encountered in the POL soil excavations.

Site 21

A request was made orally to ADEC on August 13, 2013 from Lisa Geist of the Corps that the Corps not be required to excavate soil sample location 21SB17 at Site 21 due to the following:
1) 21SB17 is located in a very wet portion of Site 21 more than 10 ft. away from 21SB06 (2013 analytical results of 2.6 mg/kg) and nearly 20 ft. away from the next location, 21SB05, analytical results for which barely exceed the alternative cleanup level (established background) concentration of 12 mg/kg; and
2) excavation of the wetland area at the 21SB17 location could result in significant adverse impacts to the wetland and surface water features in the immediate area.

ADEC approves the Corps' request to not excavate soil sample location 21SB17 at Site 21 per the following conditions:

1) Floor and sidewall confirmation samples are collected at locations of the resulting northern excavation boundary between the 21SB17 and 21SB05 locations; the analytical results of which are all below the ACL (background) of 11 mg/kg; and
2) All analytical results of all floor confirmation samples taken at the vertical limit of excavation (2 feet bgs) for the entire site are below the ACL of 11 mg/kg and no other contamination exceeding this cleanup level is left in place other than the proposed 21SB17 location.
3) ADEC requests the Corps provide a revised figure which depicts the current known boundaries of the excavation, the known analytical sample locations and results, and the revised proposed excavation boundaries and anticipated removal volumes for approval prior to proceeding at site 21.

Screening of > 2" material at POL excavations

Per the ADEC-approved 2103 NEC RA Work Plan, screening of material larger than 2" was planned at all excavations where it could be effective with removing larger rock material which could either visually or via analysis be determined to not exceed the criteria for larger materials (per the attached ADEC Guidance document) and/or the respective site-specific cleanup level(s). Per ADEC's observations made while conducting site inspections on August 12-14, 2-13, significant volumes of rock materials which were significantly larger than 2" were being loaded into supersacks for disposal; rock materials which neither appeared to be stained nor had significant amounts of fines attached. The on-site available rock screening capabilities should be utilized whenever possible to maximize the efficacy of the removal actions and to ensure that required cleanup per the 2009 Decision Documents are achieved.

Please contact me if you have any questions. Thanks and regards

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

Dunkin, Curtis S (DEC)

From: Dunkin, Curtis S (DEC)
Sent: Wednesday, September 04, 2013 11:20 AM
To: Palmer, Valerie Y POA
Subject: RE: NEC site 21 (UNCLASSIFIED)

Valerie, thank you for the clarifications. That all sounds reasonable.

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

From: Palmer, Valerie Y POA [mailto:Valerie.Y.Palmer@usace.army.mil]
Sent: Wednesday, September 04, 2013 11:07 AM
To: Dunkin, Curtis S (DEC)
Subject: RE: NEC site 21 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Curtis,

We'll excavate as far as the remaining contract capacity gets us this year. Due to recent rains, all of the locations with exceedances are flooded. Bristol has been asked to excavate "hot spots" to two feet below current water levels. We'll evaluate the plan for next year after we know the final results from this year's work. The site will not be backfilled this year.

Thanks,
Valerie

From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Wednesday, September 04, 2013 10:19 AM
To: Palmer, Valerie Y POA
Subject: [EXTERNAL] NEC site 21

Hi Valerie, sorry to bombard you with emails. I was reading the Sept. 1 DQCR for site 21 (pasted below) which I understand to mean that sample locations where analysis results indicate exceedances that are submerged in water are not going to be excavated. Please note ADEC's condition re: the approved variance to not excavate the one exceedance location (in the event any contamination is left in place then that location would either require removal and/or capping along w/ the rest of the contamination left in place). Is further removal planned of the exceedance locations that are submerged in water; either this or future years? Thanks

Confirmation samples for arsenic analysis from the excavation floor and sidewalls have been received. Results indicate that ten (10) locations remain in the excavation where arsenic concentrations exceed cleanup levels (6 from the floor and 4 from sidewalls).
Ron Broyles has instructed Bristol to further excavate the sample locations that are not submerged in water where sample results indicate soil remains above cleanup levels. Bristol will excavate as

many locations as possible until contract amounts are reached (approximately 38 tons remain on the contract).

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

Classification: UNCLASSIFIED
Caveats: NONE

Dunkin, Curtis S (DEC)

From: Dunkin, Curtis S (DEC)
Sent: Friday, September 13, 2013 10:32 AM
To: Palmer, Valerie Y POA
Subject: RE: NE Cape DQCRs (UNCLASSIFIED)

Valerie, thank you for the clarifications and summaries all of which sound good to me/are acceptable. Having all of those bags shipped off this year would definitely be a positive. cheers

---

From: Palmer, Valerie Y POA [Valerie.Y.Palmer@usace.army.mil]
Sent: Friday, September 13, 2013 9:59 AM
To: Dunkin, Curtis S (DEC)
Subject: RE: NE Cape DQCRs (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Not all Site 21 exceedance locations are below the water table. No liner will be used prior to backfill; the sample locations can be reacquired with the survey data. With the site being excavated to different levels combined with the water issue it was decided that lining the site would not provide any added value.

All of the soil sacks are staged at the beach now and another barge is scheduled to arrive around the 20th. It's anticipated that all bags will be removed this year. I'll be quite happy to not have soil staged there this winter.

And Jacobs did mobilize on Wednesday. I hear they had sunshine yesterday but it's raining today. They don't have to submit daily progress reports, but they're good about communicating. I anticipate being able to send you a field update later today or Monday. I believe they're planning to leave the site Monday, too.

Happy Friday!
-Valerie

-----Original Message-----
From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Friday, September 13, 2013 9:42 AM
To: Palmer, Valerie Y POA
Subject: [EXTERNAL] FW: NE Cape DQCRs (UNCLASSIFIED)

oops, sensitive laptop accidentally sent emai.

thank you for the clarifications and updates. Are all of the remaining exceedance locations at site 21 below the water table and will those locations be lined prior to backfill?

Molly's summary of the GAC sampling for disposal is good.

It is indeed good to see another productive season coming to a close. What is the outlook for getting all of the sacks off island this year? Thanks again, have a good day

---

From: Dunkin, Curtis S (DEC)
Sent: Friday, September 13, 2013 9:34 AM
To: Palmer, Valerie Y POA
Subject: RE: NE Cape DQCRs (UNCLASSIFIED)

Hi Valerie, th

From: Palmer, Valerie Y POA [Valerie.Y.Palmer@usace.army.mil]
Sent: Thursday, September 12, 2013 3:04 PM
To: Dunkin, Curtis S (DEC)
Subject: RE: NE Cape DQCRs (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Curtis,

I see Bristol already responded to your question regarding the GAC sample. As for the others:

Site 21: We've decided to backfill the excavation for the winter to reduce any exposure risk. Sample locations have been surveyed and can be re-acquired when needed. We're considering our options for next year and will bring you in on those discussions after the field work is done for the year.

POL excavations: There are no partially excavated or backfilled plumes. C and E2 were not touched this year and are all that remain for next year. No fill should have been placed on top of these two areas.

It's exciting to see things winding down for the year. It feels like it went by so quickly to me, but I bet the field crew feels differently. Let me know if you have any other questions.

Thanks,

Valerie

From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Thursday, September 12, 2013 11:51 AM
To: Palmer, Valerie Y POA
Subject: [EXTERNAL] FW: NE Cape DQCRs

Hi Valerie, I just wanted to follow up/inquire on some of the site issues per lhe summaries in the attached Sept. 10 DQCR.

Site 21: I was not aware of a recent discussion/proposal for the path forward for site 21 (i.e. whether to back fill or not). Was all of the arsenic contaminated soil above the water table removed this year or does some remain? My recollection is that earlier confirmation samples indicated contamination still in place below the water table.

GAC sampling: wouldn't other contaminants also need to be TCLP sampled other than BTEX - especially metals to determine disposal requirements?

POL excavations: were any of the plumes partially excavated and/or backfilled and was any fill placed atop any of the plume areas that were not excavated/opened this year to due funding/volume limitations?

Thanks Valerie

From: James, Russell [rjames@bristol-companies.com]
Sent: Thursday, September 12, 2013 10:11 AM
To: 'Aaron Shewman'; Craner, Jeremy POA (Jeremy.D.Craner@usace.army.mil); Dunkin, Curtis S (DEC); Jarrell, Greg; 'Lisa Geist'; Palmer, Valerie Y POA <Valerie.Y.Palmer@usace.army.mil> (Valerie.Y.Palmer@usace.army.mil); 'Ron Broyles'; Welker, Molly
Subject: NE Cape DQCRs

Attached for September 10, 2013.

Thank you,

Russell James
Environmental Scientist
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
FAX : (907) 563-6713
rjames@bristol-companies.com
http://www.bristol-companies.com/

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Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

James, Russell

From: Palmer, Valerie Y POA <Valerie.Y.Palmer@usace.army.mil>
Sent: Wednesday, September 04, 2013 10:47 AM
To: Welker, Molly
Cc: Broyles, Ronald S POA; Croley, Charles; James, Russell
Subject: RE: NE Cape Site 28 wastewater treatment addendum (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Thank you very much Molly. As I mentioned on the phone I'll forward this to ADEC. I hope the weather dries up a bit for the folks in the field too!

-Valerie

From: Welker, Molly [mailto:mwelker@bristol-companies.com]
Sent: Wednesday, September 04, 2013 10:36 AM
To: Palmer, Valerie Y POA
Cc: Broyles, Ronald S POA; Croley, Charles; James, Russell
Subject: [EXTERNAL] NE Cape Site 28 wastewater treatment addendum

Dear Valerie:

A conference call on August 29, 2013 between USACE, ADEC, and BERS decided that the Site 28 treated water from the GAC will be pumped into containment (roughly 20K gallons), the water will be sampled, and then the water will be released (prior to receipt of sample results). The area where the treated water is discharged to the tundra will be sampled (primary and duplicate). All parties agreed to this methodology. Also, pretreated water sample will no longer be required.

Over the past weekend the treated water became relatively turbid compared to earlier discharge. The decision has been made by Bristol to hold on to the treated water until additional results are received from the analytical laboratory. Two treated water containments were sampled and were shipped off island to TestAmerica with preliminary lab results due on 9/6/13. Bristol will keep the USACE informed on the results.

To address the increased turbidity of the treated water Bristol has back-flushed the GAC with over 10,000 gallons of clean water and built another containment to deal with this additional water.

If you have any other questions related to this issue please contact me.

Thanks,

Molly

Molly Welker
Senior Project Manager
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Palmer, Valerie Y POA [mailto:Valerie.Y.Palmer@usace.army.mil]
Sent: Wednesday, September 04, 2013 10:08 AM
To: Welker, Molly
Cc: Broyles, Ronald S POA
Subject: FW: NEC site 28 wastewater treatment addendum (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Molly,

Was Bristol going to send an addendum for the Site 28 wastewater treatment plan? I think an e-mail or short letter would be sufficient.

Thank you,
Valerie

From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Wednesday, September 04, 2013 9:59 AM
To: Palmer, Valerie Y POA
Subject: [EXTERNAL] NEC site 28 wastewater treatment addendum

Hi Valerie, I just wanted to follow up on the work plan addendum for the wastewater treatment which Bristol indicated they would present for approval per our PDT teleconf. last week. Technically ADEC provided tentative oral approval during the teleconf. (per PDT concurrence on the revised plan) however we should finalize that asap. Thanks and regards

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

Classification: UNCLASSIFIED
Caveats: NONE

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Classification: UNCLASSIFIED
Caveats: NONE

THE STATE
of ALASKA
GOVERNOR SEAN PARNELL

Department of
Environmental Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

555 Cordova Street
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Phone: 907.269.7503
Fax: 907.269.7649
dec.alaska.gov

File No: 475.38.013

May 21, 2014

US Army Corps of Engineers USACE, AK District
Attention: Ms. Valerie Palmer
CEPOA-PM-ESP
P.O. Box 6898
JBER, AK 99506-0898

Re: ADEC Review and Approvals of Requests to 1) Use Spinpro 410 Flocculent on Site 28 Dredged Water and Sediment and 2) A Modification to the Site 28 Water Treatment and Discharge Procedures Associated with the ADEC-Approved 2013 Northeast Cape (NEC) Removal Action (RA) Work Plan

Dear Ms. Palmer;

Thank you for providing the Alaska Department of Environmental Conservation's Contaminated Sites Program (ADEC) with documentation and specific information associated with the Army Corps of Engineers' (Corps) requests to: 1) use Spinpro 410 Flocculent to facilitate sediment removal from dredged materials originating from Site 28, and 2) proposed modification to the Site 28 water handling, treatment, and discharge procedures; both in association with the implementation of the 2013 NEC RA Work Plan.

ADEC requested the Corps to provide BTEX and PAH analysis results on the proposed flocculent; upon receipt of which on July 16, 2013 via email from the Corps, ADEC determined that use of the flocculent would not cause unacceptable impacts to the analysis results of treated water originating from Site 28 removal actions. ADEC subsequently approved the use of the flocculent both orally and via email to the Corps on July 16, 2013; a copy of the email is attached with this letter for reference.

The above referenced July 16, 2013 email also outlined ADEC's requirements for handling, treating, and discharging dewater volumes resulting from 2013 Site 28 removal actions which were included in the ADEC-approved 2013 RA work plan.

On August 28, 2013 the Corps forwarded ADEC an email which contained a copy of Bristol's request for a work plan modification related to Site 28 treated water. Copies of the email correspondence and Bristol's modification request letter are attached with this letter for

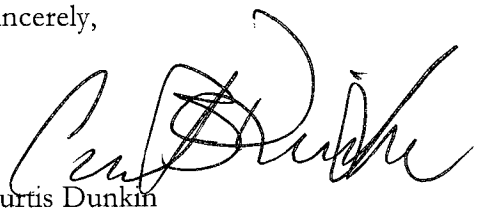
MAY 21 2014

reference. The project team conducted a teleconference on August 29, 2013 to discuss the proposed modification request which ADEC subsequently approved both orally and via email.

This letter is a follow up to provide the Corps with formal and final approvals from ADEC for the Corps to: 1) use Spinpro 410 Flocculent to facilitate sediment removal from dredged materials originating from Site 28, and 2) to implement the proposed modifications to the Site 28 water handling, treatment, and discharge procedures; both in association with the implementation of the 2013 NEC RA Work Plan. Please include a copy of this letter along with the associated attachments in the final 2013 NEC RA Report.

Please contact me at curtis.dunkin@alaska.gov or at (907)269-3053 if you have any questions regarding this letter.

Sincerely,



Curtis Dunkin
Environmental Program Specialist

Enclosures: nine pages of email correspondence dating July-September 2013, Bristol's August 28, 2013 letter to the Corps

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

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H-0015

August 28, 2013

U.S. Army Engineer District, Alaska
Environmental Remediation Section, CEPOA, EN-EE-ER
ATTN: Ron Broyles
P.O. Box 6898
Joint Base Elmendorf-Richardson, AK 99506-0898

RE: Request for Approval of a Work Plan Modification Related to Site 28 Treated Water
Contract W911KB-13-C-0004
2013 Northeast Cape HTRW Remedial Actions
Northeast Cape, St. Lawrence Island, Alaska

Dear Mr. Broyles:

The purpose of this letter is to request approval of a modification to our Work Plan related to the discharging of the treated water at Site 28. Bristol has recently installed two industrial-sized granular activated carbon (GAC) filters to remove contaminants from water generated from the dredging of the sediments in Site 28. The GAC filters have proven to be very effective in treating the water and meeting the discharge requirements of an ADEC permit and the Work Plan.

Highlights of the analytical results include:

- A TAH/TAqH value of 2.97 ug/L; which is well below the maximum of 15 ug/L specified by the discharge permit;
- Non-detect for PCBs, BTEX, and RRO;
- Non-detect for all PAHs with the exception of acenaphthene (at 0.014 ug/L); and
- Very low levels of DRO (0.18 mg/L).

Bristol requests that given the effectiveness of the GAC filters and the other installed treatment system (flocculent injection system, geotube filtering, and 25- and 5-micron sock filters), very low turbidity results, and the urgency to complete this task prior to freezing temperatures that we are allowed to discharge the water to the tundra without waiting for confirmation sample results of the treated water.

Bristol proposes that the treated water samples be collected once per 20,000 gallons discharged to the ground. Bristol has measured the discharge rate of the combined particulate filtration and GAC unit to be approximately 60 gallons per minute. At 60 gallons per minute, 20,000 gallons

are discharged every 5.56 hours. Bristol will collect treated water samples when 5.5 hours (5 hours 30 minutes) of water treatment are reached, and every 5.5 hours thereafter. Samples will be collected directly from the discharge hose during active water treatment.

Given the effectiveness of the water treatment system Bristol believes that it is no longer necessary to collect the pre-treated wastewater samples. And instead, per ADEC recommendation, Bristol will collect one grab confirmation surface soil sample with a duplicate from the discharge area at the end of this task.

If you have any questions, please contact me at 743-9341.

Sincerely,
Bristol Environmental Remediation Services, LLC

Molly Welker
Project Manager

Dunkin, Curtis S (DEC)

From: Dunkin, Curtis S (DEC)
Sent: Tuesday, July 16, 2013 1:32 PM
To: Palmer, Valerie Y POA
Subject: RE: Flocculent Results (UNCLASSIFIED)
Attachments: Continuation of Northeast Cape HTRW Phase I remediation discharges

Valerie, Thank you again for providing ADEC with the analysis results of the flocculent proposed for use at NEC Site 28 (as well as Bristol's additional summary in your email below). ADEC has completed its review of the information provided and determined that the impacts of the flocculant to waters discharged from the Geotube should be minimal due to the likelihood that TAH and TAqH compounds should be precipitated out with the captured sediment in the Geotube. Per the ADEC tentatively approved 2013 work plan, the impoundment water will be treated and sampled prior to discharging to ensure that all COC concentrations are below the ADEC 18 AAC 75 Table C Groundwater cleanup criteria prior to discharging the water to the ground surface. Please see also the attached email from ADEC-Div. of Water re: how ADEC will continue to manage water discharges under the approved remedial work plans when associated w/ contaminated sites. I will include this summary and approval in a formal letter that will be sent this week along with the other variance and general work plan approvals. Please contact me if you have any questions.
regards

-----Original Message-----
From: Palmer, Valerie Y POA [mailto:Valerie.Y.Palmer@usace.army.mil]
Sent: Tuesday, July 16, 2013 12:28 PM
To: Dunkin, Curtis S (DEC)
Subject: RE: Flocculent Results (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Curtis,

Here's the response I received from Bristol regarding your question:

The bench pilot test was performed by Spinpro (flocculent vendor) and to our knowledge no effluent was collected nor analyzed. Spinpro 410 was selected based on the vendor recommendation matching the sediment properties with the flocculent.

Bristol received the flocculent from the vendor in June and had it analyzed for BTEX and PAHs by TestAmerica. The analytical results sent to you today are from the lab testing the flocculent that is essentially the "input" as the flocculent was diluted to a similar concentration that is expected in the piping line before entering the geotube. Per the vendor and after consultation with wastewater engineers, it is highly probable that 99% of the flocculent will be bound with the sediment in the geotubes.

Please let me know if you have any additional questions!

Thank you,
Valerie

-----Original Message-----
From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Tuesday, July 16, 2013 11:14 AM
To: Palmer, Valerie Y POA

Subject: RE: Flocculent Results (UNCLASSIFIED)

Valerie, thanks for forwarding the results. I think this sounds reasonable, however before I fwd this to our QAR, did Bristol conduct any analysis of the effluent collected during their bench pilot test; i.e. analysis of the input and output when using the flocculent? Thanks

From: Palmer, Valerie Y POA [mailto:Valerie.Y.Palmer@usace.army.mil]
Sent: Tuesday, July 16, 2013 11:10 AM
To: Dunkin, Curtis S (DEC)
Subject: FW: Flocculent Results (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Curtis,

Please see the e-mail below regarding flocculent at Northeast Cape. Please let me know if you have any questions.

Thank you,

Valerie

From: Welker, Molly [mailto:mwelker@bristol-companies.com]
Sent: Tuesday, July 16, 2013 10:09 AM
To: Craner, Jeremy POA; Palmer, Valerie Y POA; Benjamin, Sean P POA
Cc: Hannah, Marty; James, Russell; Jarrell, Greg
Subject: Flocculent Results

Please find attached the flocculent results. The flocculent was diluted 1:1,000 prior to extraction, which is the approximate concentration that Bristol will inject the flocculent into the dredge removal line prior to the sludge being pumped into the geotube.

The BTEX results are elevated due to an additional 1:10 dilution that was done at the bench.

Bristol recognizes that the TAH and TAqH results for the flocculent are above the permitted water discharge concentration. The Spinpro company and waste water engineers have stated that 99% of the flocculent should be

bound up with the sediment and will be contained in the geotube. Bristol's additional filtration system (sock filters and water scrubber) should allow the treated discharge water to meet the discharge criteria.

Molly Welker
Senior Project Manager
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501-5109
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FAX : (907) 563-6713
mwelker@bristol-companies.com
http://www.bristol-companies.com/

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Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Dunkin, Curtis S (DEC)

From: Greuey, John J (DEC)
Sent: Wednesday, July 03, 2013 4:31 PM
To: 'sluetters@bristol-companies.com'
Cc: Dunkin, Curtis S (DEC); Rypkema, James (DEC)
Subject: Continuation of Northeast Cape HTRW Phase I remediation discharges

Susan,
Upon discussion with Curtis Duncan, the primary point of contact with contaminated sites who approved the remedial work plan he agreed the remediation related discharges to the surface can all be covered under the approved work plan. There is no need to file a new NOI for the contained water authorization used in the past as this discharge will now simply be authorized under the Contaminated Sites approved remedial work plan which covers the entire remediation project. If you have any further questions, please contact Curtis Duncan at 269-3053.
Thanks,

Jake Greuey
Environmental Program Specialist IV
Alaska DEC - Division of Water
555 Cordova Street
Anchorage, AK 99501
907-269-4597

Dunkin, Curtis S (DEC)

From: Dunkin, Curtis S (DEC)
Sent: Monday, August 26, 2013 12:45 PM
To: Palmer, Valerie Y POA; Geist, Lisa K POA; Shewman, Aaron F POA; Craner, Jeremy POA; Broyles, Ronald S POA
Subject: Tentative NEC Site 28 water treatment/discharge proposal

Hi Lisa, just left you a voice msg. and thought I'd follow up w/ an email as well.
Per reading the summarized language in the DCQR (which recommends discharging directly to the surface post GAC-treatment w/ no sampling), ADEC would request at a minimum, that the treated water initially be discharged to one of the holding ponds, then that volume of water to be discharged be sampled for analysis prior to discharge. After conferring internally this morning, it sounds reasonable to ADEC to discharge prior to receiving the results, however the water should still be sampled for confirmation. ADEC also would request that at least one surface soil sample w/ duplicate be sampled from the discharge area for confirmation. This sampling approach would allow the field team to discharge prior to receiving results while confirming cleanup levels are achieved without creating potential data gaps of contaminant fate. Please let me know if you have any questions or would like to discuss further. Thanks and regards

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

Dunkin, Curtis S (DEC)

From: Dunkin, Curtis S (DEC)
Sent: Tuesday, August 27, 2013 5:01 PM
To: Palmer, Valerie Y POA; Geist, Lisa K POA; Shewman, Aaron F POA; Craner, Jeremy POA; Broyles, Ronald S POA
Subject: RE: Tentative NEC Site 28 water treatment/discharge proposal

Hi Valerie, per our discussions re: the proposed treated water discharge at site 28, please have Bristol also provide a the previous 2013 analytical results for the GAC-treated water along with the proposal/addendum. Thanks and regards

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

From: Dunkin, Curtis S (DEC)
Sent: Monday, August 26, 2013 12:45 PM
To: Palmer, Valerie Y POA; Geist, Lisa K POA; 'Shewman, Aaron F POA'; Craner, Jeremy POA; Broyles, Ronald S POA
Subject: Tentative NEC Site 28 water treatment/discharge proposal

Hi Lisa, just left you a voice msg. and thought I'd follow up w/ an email as well.
Per reading the summarized language in the DCQR (which recommends discharging directly to the surface post GAC-treatment w/ no sampling), ADEC would request at a minimum, that the treated water initially be discharged to one of the holding ponds, then that volume of water to be discharged be sampled for analysis prior to discharge. After conferring internally this morning, it sounds reasonable to ADEC to discharge prior to receiving the results, however the water should still be sampled for confirmation. ADEC also would request that at least one surface soil sample w/ duplicate be sampled from the discharge area for confirmation. This sampling approach would allow the field team to discharge prior to receiving results while confirming cleanup levels are achieved without creating potential data gaps of contaminant fate. Please let me know if you have any questions or would like to discuss further. Thanks and regards

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

Dunkin, Curtis S (DEC)

From: Palmer, Valerie Y POA <Valerie.Y.Palmer@usace.army.mil>
Sent: Thursday, August 29, 2013 8:35 AM
To: Dunkin, Curtis S (DEC)
Cc: Broyles, Ronald S POA
Subject: RE: H-0015 Work Plan Modification for Site 28 Treated Water Sampling Protocol (UNCLASSIFIED)

Follow Up Flag: Follow up
Flag Status: Completed

Classification: UNCLASSIFIED
Caveats: NONE

Hi Curtis.

Per Molly the flow rate is a total of 60 gpm. She'd still like to be able to discharge straight to the tundra and has asked what the additional sampling requirements would be in order to do that. Are you available for a phone call with her this morning? It'd be good to get a final plan in place.

Thanks,
Valerie
753-2578

From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Wednesday, August 28, 2013 3:20 PM
To: Palmer, Valerie Y POA
Cc: Broyles, Ronald S POA
Subject: [EXTERNAL] RE: H-0015 Work Plan Modification for Site 28 Treated Water Sampling Protocol (UNCLASSIFIED)

Valerie, is the GAC flow rate of 60 gpm for one GAC unit or for both? My understanding during the site visit was that Bristol was running the GACs at a rate of 100 gpm each or 200 gpm total and that they were rated for up to 300 something gpm. At this point, ADEC's position remains that the treated water should be impounded up to a proposed volume (i.e. 20,000) and then sampled and discharged per what we have previously discussed. ADEC would actually require more frequent sampling if the samples were collected directly from the GAC and the discharge was conducted continuously w/o containment.

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

From: Palmer, Valerie Y POA [mailto:Valerie.Y.Palmer@usace.army.mil]
Sent: Wednesday, August 28, 2013 2:24 PM
To: Dunkin, Curtis S (DEC)
Cc: Broyles, Ronald S POA
Subject: FW: H-0015 Work Plan Modification for Site 28 Treated Water Sampling Protocol (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Curtis,

Please see the attached Site 28 work plan modification request from Bristol. Is ADEC okay with this approach? Please let me know if you have any questions.

Many thanks,
Valerie
753-2578

From: Broyles, Ronald S POA
Sent: Wednesday, August 28, 2013 2:19 PM
To: Palmer, Valerie Y POA
Subject: FW: H-0015 Work Plan Modification for Site 28 Treated Water Sampling Protocol (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Valerie,

Can you send this to Curtis to get his approval?

Thanks,
Ron

From: Welker, Molly [mailto:mwelker@bristol-companies.com]
Sent: Wednesday, August 28, 2013 2:15 PM
To: Broyles, Ronald S POA
Cc: Croley, Charles; Jarrell, Greg; James, Russell; Hannah, Marty
Subject: [EXTERNAL] H-0015 Work Plan Modification for Site 28 Treated Water Sampling Protocol

Ron:

Please see the attached letter discussing a Work Plan Modification related to the sampling procedure of the treated water at Site 28.

Thank you,

Molly

Molly Welker
Senior Project Manager
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
FAX : (907) 563-6713
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http://www.bristol-companies.com/

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Dunkin, Curtis S (DEC)

From: Dunkin, Curtis S (DEC)
Sent: Wednesday, September 04, 2013 3:26 PM
To: Palmer, Valerie Y POA
Subject: RE: NEC site 28 wastewater treatment addendum (UNCLASSIFIED)

Follow Up Flag: Follow up
Flag Status: Flagged

Valerie, thank you also for the site 28 wastewater update. Please keep me apprised of the treated water analysis results as soon as they are available to review and approve prior to Bristol conducting any further discharge of treated water. ADEC's oral approval of the treatment and discharge plan agreed to by the PDT on the Aug. 29 teleconf. was conditional based on no changes to observed water quality. If the issue persists then ADEC requests that no treated water be discharged until analysis results are confirmed to be below 18AAC70 surface water (TAH/TAqH, sheen, and/or odor) and 18AAC75 Table C groundwater criteria. Thanks again

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

From: Palmer, Valerie Y POA [mailto:Valerie.Y.Palmer@usace.army.mil]
Sent: Wednesday, September 04, 2013 11:00 AM
To: Dunkin, Curtis S (DEC)
Subject: RE: NEC site 28 wastewater treatment addendum (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Curtis,

I asked Bristol to follow up on this and was sent the following information:

A conference call on August 29, 2013 between USACE, ADEC, and BERS decided that the Site 28 treated water from the GAC will be pumped into containment (roughly 20K gallons), the water will be sampled, and then the water will be released (prior to receipt of sample results). The area where the treated water is discharged to the tundra will be sampled (primary and duplicate). All parties agreed to this methodology. Also, pretreated water sample will no longer be required.

Over the past weekend the treated water became relatively turbid compared to earlier discharge. The decision has been made
by Bristol to hold on to the treated water until additional results are received from the analytical laboratory. Two
treated water containments were sampled and were shipped off island to TestAmerica with preliminary lab results due on 9/6/13. Bristol will keep the USACE informed on the results.

To address the increased turbidity of the treated water Bristol has back-flushed the GAC with over 10,000 gallons of clean water and built another containment to deal with this additional water.

Please let me know if you need something else.

Thanks,
Valerie

From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Wednesday, September 04, 2013 9:59 AM
To: Palmer, Valerie Y POA
Subject: [EXTERNAL] NEC site 28 wastewater treatment addendum

Hi Valerie, I just wanted to follow up on the work plan addendum for the wastewater treatment which Bristol indicated they would present for approval per our PDT teleconf. last week. Technically ADEC provided tentative oral approval during the teleconf. (per PDT concurrence on the revised plan) however we should finalize that asap. Thanks and regards

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

Classification: UNCLASSIFIED
Caveats: NONE

Dunkin, Curtis S (DEC)

From: Dunkin, Curtis S (DEC)
Sent: Tuesday, September 10, 2013 12:55 PM
To: Palmer, Valerie Y POA
Subject: RE: NEC site 28 wastewater treatement results (UNCLASSIFIED)

Valerie, thanks for forwarding the results. The proposed plan to contine discharging as previously approved sounds good. Hard to believe it is Sept. 10

From: Palmer, Valerie Y POA [Valerie.Y.Palmer@usace.army.mil]
Sent: Tuesday, September 10, 2013 9:57 AM
To: Dunkin, Curtis S (DEC)
Cc: Broyles, Ronald S POA
Subject: RE: NEC site 28 wastewater treatement results (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Curtis,

Sorry for the delay – I was out yesterday. Please see the attached sample results. I'm told that Bristol plans to continue to contain treated water, collect samples, then immediately discharge in the essence of time. Site 28 is anticipated to wrap up in approximately 1.5 weeks. Bristol is starting to break down camp already.

Thanks,
Valerie

From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Monday, September 09, 2013 10:48 AM
To: Palmer, Valerie Y POA
Subject: [EXTERNAL] NEC site 28 wastewater treatement results

Hi Valerie. Could you please provide me w/ the most recent analysis results of the treated wastewater that was discharged to the ground surface? Also, please confirm that Bristol will continue to impound the wastewater post treatment and not discharge to the surface until wastewater results are received. If the next round of results are also all well below cleanup criteria then in the event that time becomes limited, ADEC would allow discharge prior to receiving results; however still requiring containment until sampled. Fyi I will be out of the office in training tom.-Fri., returning next Monday but will be checking/responding to emails. Thanks Valerie, have a good day

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

Classification: UNCLASSIFIED
Caveats: NONE

Dunkin, Curtis S (DEC)

From: Dunkin, Curtis S (DEC)
Sent: Thursday, September 19, 2013 2:33 PM
To: Palmer, Valerie Y POA
Subject: RE: NE Cape DQCRs (UNCLASSIFIED)

Valerie, thank you for the clarifications which all make sense and I concur. Regards

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

From: Palmer, Valerie Y POA [mailto:Valerie.Y.Palmer@usace.army.mil]
Sent: Thursday, September 19, 2013 1:51 PM
To: Dunkin, Curtis S (DEC)
Subject: RE: NE Cape DQCRs (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Curtis,

I had to look up the sample location too. There was never containment built on top of this sample location, and the question was if the post-containment sampling was still necessary (no). The water containment adjacent to this sample site only contained clean water used to mix with the flocculant (water was drawn from the containment into the water treatment process). No post-containment sampling should be required since no pre- or post-treatment water was placed in the containment.

The discrete sample from the discharge area will still be collected and any areas that did have contaminated media containment/staging will have post- sampling done according to the work plan.

Please let me know if that answered your question or just causes more confusion.

Thanks,
Valerie
753-2578

From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Thursday, September 19, 2013 1:14 PM
To: Palmer, Valerie Y POA
Subject: [EXTERNAL] FW: NE Cape DQCRs

Valerie, after reviewing Figure 10 of the work plan I've clarified the 12NC28MI001 location, however I'm still unclear about the issues raised in the question posed to PDT. Per my previous email, all staging and containment areas should be MI sampled regardless, including containments that had presumed or confirmed clean/treated water; and including the discrete soil sample from the discharge area. Thanks in advance for clarifying. regards

Curtis Dunkin

Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

From: Dunkin, Curtis S (DEC)
Sent: Thursday, September 19, 2013 1:09 PM
To: Palmer, Valerie Y POA
Subject: FW: NE Cape DQCRs

Hi Valerie. Could you please clarify this for me? My understanding per the approved work plan is that all staging/containment areas will be MI sampled. I'm not sure if this is supposed to be related to our PDT discussion/teleconf. back in August. Is area 12NC28MI001 the treated water discharge area? Thanks

Question posed to PDT: Do we need to collect a post-use MI sample from the area at 12NC28MI001? Or, should we post-use MI sample the fresh water containment area? The QAR thinks that collecting just a post-use discrete sample from the treated water outlet will be sufficient because area 12NC28MI001 was never used and the nearby containment only held fresh water. The PDT agreed; only a post-use discrete sample will be collected from the treated water outlet.

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
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Phone: 907-269-3053

From: James, Russell [mailto:rjames@bristol-companies.com]
Sent: Wednesday, September 18, 2013 5:36 PM
To: 'Aaron Shewman'; Craner, Jeremy POA (Jeremy.D.Craner@usace.army.mil); Dunkin, Curtis S (DEC); Jarrell, Greg; 'Lisa Geist'; Palmer, Valerie Y POA <Valerie.Y.Palmer@usace.army.mil> (Valerie.Y.Palmer@usace.army.mil); 'Ron Broyles'; Welker, Molly
Subject: NE Cape DQCRs

DQCR attached for September 17, 2013.
Thank you,

Russell James
Environmental Scientist
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
FAX : (907) 563-6713
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THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

555 Cordova Street
Anchorage, Alaska 99501
Phone: 907.269.7503
Fax: 907.269.7649
dec.alaska.gov

File No: 475.38.013

May 21, 2014

US Army Corps of Engineers USACE, AK District
Attention: Ms. Valerie Palmer
CEPOA-PM-ESP
P.O. Box 6898
JBER, AK 99506-0898

Re: ADEC Review and Approval of Variance Requests Associated with the 2013 Northeast Cape (NEC) Removal Action (RA) Work Plan

Dear Ms. Palmer;

Thank you for providing the Alaska Department of Environmental Conservation's Contaminated Sites Program (ADEC) with documentation and specific information associated with numerous variances being requested by the Army Corps of Engineers (Corps) in association with the implementation of the 2013 NEC RA Work Plan.

On May 10, 2013 ADEC received an email from the Corps requesting ADEC's consideration of three variances to be implemented as part of the 2013 RA efforts. The three variance requests included the following:

1. Conditional acceptance of silica gel treated results for sites 8 and 28
2. Reporting variance for four VOC analytes at site 10
3. Approval of alternative sampling frequency at site 21

A copy of the associated email correspondence thread between the Corps and ADEC along with Bristol's May 9, 2013 letter to Corps is attached with this letter for reference. On May 13, 2013, ADEC received a second email from the Corps which requested ADEC's consideration of the following fourth variance:

4. Approval for the project field laboratory (supported/operated by TestAmerica) to use the microwave extraction EPA method 3546 for DRO/RRO soil during the 2013 RA

MAY 21 2014

ADEC had previously completed its review of the four variance requests and submitted its determinations and approvals of all four requests both orally and electronically via two emails to the Corps on June 4th and 5th, 2013. Copies of this email thread are also attached with this letter for reference.

This letter is a follow up to provide the Corps with a formal and final approval from ADEC for the Corps to apply and implement the four variance requests discussed above in association with the 2013 RA efforts at NEC. Please include a copy of this letter along with the associated attachments in the final 2013 NEC RA Report.

Please contact me at curtis.dunkin@alaska.gov or at (907)269-3053 if you have any questions regarding this letter.

Sincerely,

Curtis Dunkin
Environmental Program Specialist

Enclosures: four pages of email correspondence dating May-June 2013, Bristol's May 9, 2013 letter to the Corps

Dunkin, Curtis S (DEC)

From: Dunkin, Curtis S (DEC)
Sent: Wednesday, June 05, 2013 4:35 PM
To: Palmer, Valerie Y POA; Craner, Jeremy POA
Subject: FW: 2013 NE Cape Work Plan Comment Resolution Meeting Minutes/ADEC Approval of Variance Requests

Valerie, and Jeremy, this is a follow up to yesterday's email for the other two variance requests. ADEC approves the use of the microwave extraction method as outlined in Valerie's 5-13-13 email. ADEC conditionally approves the use of the silica gel treat method results to be used to guide field decisions and cleanup level confirmations at sites 28 and 8; with the condition that all field observations and laboratory analytical results be provided to ADEC and the project team for review and approval prior to utilizing the results to implement further action. I will follow up with a separate formal approval letter to the Corps for the four variance requests and the use of the polymer flocculant as soon as the Corps confirms that TAH/TAqH analysis will be conducted on the flocculant and provided to ADEC for final review and approval prior to using it in the field. Please contact me if you have any questions. Thanks and regards

---

From: Dunkin, Curtis S (DEC)
Sent: Tuesday, June 04, 2013 11:27 AM
To: 'Welker, Molly'
Cc: Palmer, Valerie Y POA; 'Craner, Jeremy POA'
Subject: RE: 2013 NE Cape Work Plan Comment Resolution Meeting Minutes/ADEC Approval of Variance Requests

Molly, thank you for forwarding the minutes of our meeting; I don't have any edits or revision requests. This email confirms ADEC's approval of two of the 4 variance requests; the proposed confirmation sampling frequency at site 21 and the reporting variance for the 4 VOC analytes at site 10 are approved. I intend on finalizing the conditional approval of the microwave extraction method and the proposed use of the silica gel results for sites 8 and 28 later today. ADEC also conditionally approves the use of the proposed polymer flocculant (Spinpro 410) and requests that TAH/TAqH analysis be conducted on the polymer flocculent to determine whether or not it might contribute bias to the results and/or cause an exceedance of water quality standards. Please let me know if you have any questions. Thanks and regards

---

From: Welker, Molly [mailto:mwelker@bristol-companies.com]
Sent: Friday, May 31, 2013 9:56 AM
To: Dunkin, Curtis S (DEC)
Cc: Palmer, Valerie Y POA
Subject: 2013 NE Cape Work Plan Comment Resolution Meeting Minutes

Hi Curtis:

Please find attached the meeting minutes from our teleconference on Wed. May 29th discussing the 2013 NE Cape Work Plan. If you have any revisions to the meeting minutes please let me know.

Thanks,

Molly

Molly Welker
Senior Project Manager
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
FAX : (907) 563-6713

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Bristol
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H-0005

May 9, 2013

U.S. Army Engineer District, Alaska
Environmental Remediation Section, CEPOA, EN-EE-ER
ATTN: Valerie Palmer
P.O. Box 6898
Joint Base Elmendorf-Richardson, AK 99506-0898

RE: Conditional Acceptance of Silica Gel Treated Results at NE Cape for Sites 8 and 28, a Variance Request for Reporting of 4 VOC Analytes, and an Alternate Sampling Frequency for Site 21.

Northeast Cape Project

Dear Ms. Palmer:

Per your recent conversations with the Bristol chemist I recommend that the USACE send the following information to ADEC for approval of the conditional acceptance of silica gel treated results for Site 8 and Site 28, approval of reporting variances for 4 VOC analytes, and approval of the proposed alternate sampling frequency at Site 21 at NE Cape. Each topic and the justifications for approval are further discussed below.

Conditional Acceptance of Silica Gel Treated Results
Bristol Environmental Remediation Services requests ADEC approval of a conditional acceptance of silica gel treated results for samples collected at NE Cape at Site 8 and Site 28. The Site 28 sampling event in August 2011, and reported in the Site 28 Technical Memorandum (February 2012), included 12 primary and 2 field duplicate samples. The sample procedures followed the ADEC Technical Memorandum 06-001 for the collection of comparison (background) samples along with TOC analyses for DRO/RRO samples that received silica gel treatment. Based on the results of the comparison samples, it is evident that natural organic materials (biogenics) would likely bias DRO and RRO results high. The average untreated DRO result was 1,071 mg/kg and the average untreated RRO result was 12,725 mg/kg. Silica gel treatment of the same comparison samples decreased the DRO to an average 684 mg/kg and silica gel treated RRO average results were 3,283 mg/kg, with an average 36% DRO reduction and almost a 74% RRO reduction. Per Technical Memorandum 06-001, the background sample results will not be used to establish an average background biogenic concentration but will be used to demonstrate that biogenics are present at significant concentrations that can potentially bias DRO and RRO results high. Due to the potential biogenic contribution, we request that silica gel treated DRO and RRO results be conditionally accepted for Site 8 and Site 28 pending chromatographic review.

Reporting Variance for 4 VOC Analytes at Site 10
We also wish to request a variance for reporting 4 VOC analytes whose empirical Limits of Detection (LODs) are greater than the cleanup levels specified in 18AAC75.341 Table B1. These analytes are, chloromethane, ethylene dibromide, 1,2 dichloroethane, and 1,2,3-tichloropropane. Only Site 10 in-situ soil, Site 10 drum contents, and

Site 10 bulk waste will be tested for full VOCs as part of the 2013 NE Cape remedial actions. None of the 4 analytes were detected in liquid drum contents, in-situ soil, or in bulk waste collected at NE Cape in 2012. Therefore, it can be reasonably assumed that if the 4 analytes were not detected in the drum liquids that they are likely not in the soil due to an incomplete pathway or identified source. Below are further explanations of each analyte and justifiable reasoning why they would not be expected in the soil.

Chloromethane has a boiling point of -11 degrees F and was previously used as a refrigerant before Freon. It would evaporate if not under pressure. It was not detected in any drum samples, bulk waste, or in-situ soil at Site 10 in 2012.
Ethylene dibromide was used as a fuel additive to gasoline and virtually no GRO has been detected during any sampling events at Site 10, except as reported with a B flag for method blank contamination. GRO was not detected in any drum samples at Site 10 in 2012.
1,2 dichloroethane is a chemical intermediate for the production of polyvinyl chloride (PVC) and an intermediary breakdown product of 1,1,1 trichloroethane, which in the past was mainly associated with dry cleaning. It was not detected in any drum samples, bulk waste, or in-situ soil at Site 10 in 2012.
1,2,3-trichloropropane is used mainly as an industrial solvent and paint/varnish remover. It was not detected in any drum liquids, bulk waste, or in-situ soil at Site 10 in 2012.

Approval of Proposed Alternate Sampling Frequency at Site 21
Bristol requests that the alternate sampling frequency of 1 primary sample per 400 square feet of flooded floor be accepted and approved by the ADEC for Site 21. The alternate sampling frequency proposed by the USACE in the 2013 NE Cape Scope of Work is reasonable and useful to depict the concentration of arsenic remaining on the excavation floor once 2 feet of surface water covers the excavation floor, which is an excavation stopping point with regards to the depth. The current estimated excavation size at Site 21 is approximately 1,100 square feet and may expand to over 2,000 square feet pending the results of the sample borings that will be collected at the beginning of the 2013 NE Cape field effort. Sample results and a map depicting 2013 arsenic concentrations will be prepared by Bristol and submitted to ADEC and USACE as a technical memorandum for Site 21. A refined estimate of the2013 Site 21 excavation size will be included with the Site 21 technical memorandum. The 2013 NE Cape Scope of Work includes three additional borings whose locations will be identified after submittal of the technical memorandum and consultation with ADEC and USACE to address any potential data gaps or to further delineate the extent of arsenic contamination at Site 21.

Thank you for your consideration. If you have any questions, please call me or the Bristol Chemist, Marty Hannah at (907) 563-0013.

Sincerely,
Bristol Environmental Remediation Services, LLC

Molly Welker Digitally signed by Molly Welker
DN: cn=Molly Welker, o=Bristol Environmental Remediaiton Services, ou, email=mwelker@bristol-companies.com, c=US
Date: 2013.05.09 15:13:59 -08'00'

Molly Welker
Project Manager

Dunkin, Curtis S (DEC)

From: Palmer, Valerie Y POA <Valerie.Y.Palmer@usace.army.mil>
Sent: Monday, May 13, 2013 2:02 PM
To: Dunkin, Curtis S (DEC)
Cc: Benjamin, Sean P POA
Subject: Request for approval of microwave extraction for DRO/RRO for NE Cape (UNCLASSIFIED)
Attachments: TA-OP-0367 Rev 2 Microwave Extraction 3546.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Classification: UNCLASSIFIED
Caveats: NONE

Hi Curtis,

Bristol's lab, TestAmerica, is requesting to use microwave extraction (EPA method 3546) for DRO/RRO soil at NE Cape. Some advantages to the method are:

- Rapid extraction to help meet rush turnaround times
- Very consistent treatment of samples and lab QC with this automated process
- Reduced solvent usage and waste.
- Requires minimal solvent extract concentration, which results in a lower probability of target analyte loss.

I've attached the TestAmerica SOP for review/submittal. If you could please run this past your chemist and let us know if ADEC approves it we can have Bristol incorporate it into the NE Cape 2013 QAPP.

Thank you,
Valerie Palmer
Project Manager
U.S. Army Corps of Engineers, Alaska District
907-753-2578 (ph)
907-753-2829 (fax)
valerie.y.palmer@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

Dunkin, Curtis S (DEC)

From: Palmer, Valerie Y POA <Valerie.Y.Palmer@usace.army.mil>
Sent: Friday, May 10, 2013 8:25 AM
To: Dunkin, Curtis S (DEC)
Subject: Northeast Cape requests (UNCLASSIFIED)
Attachments: H-0005 Variance request for Site 21 VOCs and SG treated results.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Curtis,

Please see that attached letter from Bristol. The following are being requested:

- Conditional acceptance of silica gel treated results for Sites 8 and 28. We will not be sampling Site 8 this year, but we'd still like the option to have the silica gel results considered in any future Site 8 decisions.
- Reporting variance for 4 VOC analytes at Site 10.
- Approval of alternate sampling frequency at Site 21.

The attached letter has more details. If you have questions please don't hesitate to contact me. We could also discuss this when we receive responses to work plan comments from Bristol.

Thank you,
Valerie Palmer
Project Manager
U.S. Army Corps of Engineers, Alaska District
907-753-2578 (ph)
907-753-2829 (fax)
valerie.y.palmer@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

James, Russell

To: Welker, Molly
Subject: RE: 2013 NE Cape Work Plan Comment Resolution Meeting Minutes/ADEC Approval of Variance Requests

From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Tuesday, June 04, 2013 11:27 AM
To: Welker, Molly
Cc: Palmer, Valerie Y POA; Craner, Jeremy POA
Subject: RE: 2013 NE Cape Work Plan Comment Resolution Meeting Minutes/ADEC Approval of Variance Requests

Molly, thank you for forwarding the minutes of our meeting; I don't have any edits or revision requests. This email confirms ADEC's approval of two of the 4 variance requests; the proposed confirmation sampling frequency at site 21 and the reporting variance for the 4 VOC analytes at site 10 are approved. I intend on finalizing the conditional approval of the microwave extraction method and the proposed use of the silica gel results for sites 8 and 28 later today. ADEC also conditionally approves the use of the proposed polymer flocculant (Spinpro 410) and requests that TAH/TAqH analysis be conducted on the polymer flocculent to determine whether or not it might contribute bias to the results and/or cause an exceedance of water quality standards. Please let me know if you have any questions. Thanks and regards

---

From: Welker, Molly [mailto:mwelker@bristol-companies.com]
Sent: Friday, May 31, 2013 9:56 AM
To: Dunkin, Curtis S (DEC)
Cc: Palmer, Valerie Y POA
Subject: 2013 NE Cape Work Plan Comment Resolution Meeting Minutes

Hi Curtis:

Please find attached the meeting minutes from our teleconference on Wed. May 29th discussing the 2013 NE Cape Work Plan. If you have any revisions to the meeting minutes please let me know.

Thanks,

Molly

Molly Welker
Senior Project Manager
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
FAX : (907) 563-6713
mwelker@bristol-companies.com
http://www.bristol-companies.com/

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DAILY QUALITY CONTROL REPORT
ENVIRONMENTAL QUALITY CONTROL/QUALITY ASSURANCE REPORT
(ER 415-1-302)

Contract No. / Delivery Order No.	UPC/Project Title and Location of Work
W911KB-13-C-0004	Northeast Cape HTRW Remedial Actions. Northeast Cape, St. Lawrence Island, Alaska.

CQC Report Number: NEC 2013-50
Date or Time Period: Monday August 26, 2013
Client: USACE, Alaska District

Weather Conditions: Mostly cloudy with periods of broken skies and intermittent fog. Southwest winds 5 – 15 mph.

Morning Temp: 47°F Afternoon Temp: 49°F

Quality Control Inspections Performed This Date (Include inspections, results, deficiencies, and corrective action.)

Preparatory: No
Initial: No
Follow-up: No

Have Data Quality Objectives been achieved?	Yes ☒	No ☐	N/A ☐
Have QA and QC samples been collected in the specified quantity?	Yes ☒	No ☐	N/A ☐
Have samples been properly labeled and packaged?	Yes ☒	No ☐	N/A ☐
Have appropriate QC laboratory tests been ordered? (matrix spikes, method blanks, surrogates, reference standards, etc.)	Yes ☒	No ☐	N/A ☐
Have required amount of QC trip blanks and rinsates been achieved?	Yes ☒	No ☐	N/A ☐

Health and Safety

Worker protection levels this date:	Level C ☐	Level D ☒	
Was any work activity conducted within a confined space?	Yes ☐	No ☒	N/A ☐
Was any work activity conducted within an area determined to be immediately dangerous to life and health?	Yes ☐	No ☒	N/A ☐
Were approved decontamination procedures used on workers and equipment as required?	Yes ☒	No ☐	N/A ☐
Was a Job Safety Meeting held this day?	Yes ☒	No ☐	N/A ☐
Were there any "Lost Time" accidents this day? (If YES, attach copy of completed accident report)	Yes ☐	No ☒	N/A ☐
Was hazardous waste/material released into the environment?	Yes ☐	No ☒	N/A ☐

Safety Comments: (include any infractions of approved safety plan, and include instructions from government personnel. Specify corrective action taken.)

A Health and Safety Meeting was held today. The following topics were discussed:

- Proper lifting techniques
- Diabetes

Safety signature sheet attached to DQCR.

Work Activities Performed This Date

Specification or Contract Reference	Activity and Location
General Site Work, including shipping and transportation	The Sam Taalak was loaded four times today (two times per tide). One-hundred (100) flats were shipped off-island and loaded onto the barge. Flats were staged at Cargo Beach in preparation for shipping. A Bering Air charter flight arrived at 1430 hrs. Russell James (CQCSM) and Chuck Croley (SS) arrived onsite. Matt Faust (Alt. CQCSM) and Scott Kingeekuk (BERS labor) departed the site.
Site 28 Sediment Removal Operations	
Miscellaneous debris, poles and drums	
Site 21 Arsenic Investigation and Soil Removal	Confirmation samples for arsenic analysis from the excavation floor and sidewalls were shipped to TestAmerica today.
POL Soil Removal	Excavations continued at the A plume. Thirty-one (31) bulk bags were weighed, totaling 302.1 tons. Forty-two (42) field screening samples were collected from the A-excavation and submitted to the field lab for DRO/RRO analysis. Five (5) waste characterization samples were collected from the bulk bags and submitted to the field lab for DRO/RRO analysis. Nine (9) confirmation samples were collected from excavations at the MOC and will be submitted to TestAmerica for DRO/RRO analysis.
Site 10	Excavation sidewalls have been confirmed clean by fixed base laboratory analysis. The floor of the excavation is currently at bedrock refusal. Bristol will request direction from ADEC on whether this excavation can be now backfilled.
PCB Road Sampling	Samples were shipped on 8/19/13; currently waiting on results.

Manpower and Equipment

Labor Classification	Number	Hours	Equipment Type	Number	Hours Used
Proj. Mgr.—Molly Welker			White GMC Crewcab, Gas, Long Box w/gas Service Tank	50-115	1 Day
C.I.H.—Clark Roberts			White Chev Extended Cab 4X4 PU	50-132	1 Day
Site Superintendent—Chuck Croley	1	12	White Chevy 2500, Extended Cab, Gas, Short Box	50-137	1 Day
CQCSM—Russell James	1	12	White Chev Crewcab 4X4 PU	50-169	1 Day

Labor Classification	Number	Hours	Equipment Type	Number	Hours Used
Alt. CQCSM – Matt Faust	1	10	Red GMC Crewcab 4X4 PU w/diesel & gas service tanks	50-171	1 Day
Op./Foreman—Maze Thompson	1	17	White Chev Straight cab 4X4 PU	50-173	1 Day
Master Mechanic—Johnny Willis	1	10	Ford Escape	50-179	1 Day
Oiler/Laborer---Carl Calugan	1	17.5	Ottawa Yard Goat, 5th wheel tractor	50-320	1 Day
Admin Assistant— Suzanne Lovell			International S4700 Fuel/Lube Truck	50-205	1 Day
Alt. Admin Assistant—Rhonda Nicazio	1	10	Ford F700 Mechanic Truck w/compressor, Welder, & Hyd Boom	50-206	1 Day
Bear guard/Laborer---Eugene Toolie	1	10	Kaiser Jeep 6X6 Cargo Truck w/water Tank	50-322	Down
Operator/Alt. Foreman---George Mack	1	19	Cat 988B Loader w/bucket & Forks	50-505	1 Day
Operator---Allen Dennis	1	17	Cat 160H Motor Grader	50-702	1 Day
Operator---Jack Willis	1	10	Cat TH508B Telehandler	50-803	1 Day
			JD 850J Dozer	1-187	1 Day
Operator---- Dale Winslow	1	10	JD 850J Dozer	1-214	1 Day
Operator---Jebb Adkins	1	10	Polaris Ranger 800EFI SideXSide	80-909	1 Day
			Arctic Cat Side by Side	50-925	1 Day
			Suzuki Side By Side	50-918	1 Day
Laborer - Doug Byers	1	10	IR Light Tower	52-128	1 Day
Laborer - Bruce Schneuer	1	10	IR Light Tower	52-125	1 Day
Laborer - Charles Kava	1	12	Frost Fighter Heater	52-206	1 Day
Laborer - Mylon Kingeekuk	1	10	IR 60KW Generator	52-210	1 Day
Laborer - Scott Kingeekuk	1	5	Volvo 330L Loader/Forklift	50-515	1 Day
Laborer - Albert Kulowiyi			287B Skid Steer	50-516	1 Day
Laborer - Michael Toolie	1	10	Cat D400 Rock Truck	C1 80-301	1 Day
Lab Manager - Marty Hannah			Cat D400 Rock Truck	C2 80-304	1 Day
Lab Intern - Josh Arms	1	12.5	Cat D400 Rock Truck	C4 80-302	1 Day
Lab Intern – Lindsay Cameron	1	10.75	JD-450 Excavator	3-101	1 Day
			JD-370 Excavator	3-148	1 Day
			JD-200 Excavator	3-195	1 Day
SSHO/Scientist - Eric Barnhill	1	18	DeWalt Compressor w/engine	BERS #1	1 Day
Geologist - Lyndsey Kleppin	1	10	DeWalt Generator	Environ #1	1 Day
Env. Scientist - Julie Clark	1	10	DeWalt Generator	Environ #2	1 Day
Env. Scientist – Lesa Nelson			Cat 980G Loader	80-501	1 Day
			JD-544J Loader	2-243	1 Day
			Stone 54" Roller (AER)	6-435	1 Day
Waste Specialist - Tyler Ellingboe			Chiefton Screening Plant	52-508	1 Day
			Allmand Light Pro	52-133	1 Day
			Hotsey Pressure Water-BERS	Hotsey	1 Day
Totals	22	220			

Labor Classification	Number	Hours	Equipment Type	Number	Hours Used
Ecoland			**Equipment**		
Jamie Allan	1	10			
Sam Jackson	1	10			
Totals	2	20			

Test America	Number	Hours	Equipment		
Lab Analyst – Richard Losche	1	10			
Lab Analyst – Winston Maupin	1	10			
Lab Analyst – John Oravec					
Totals	2	20			

Fairweather			Equipment		
Medic – John Majors	1	1 Day			
Medic – Slate Uys					
Totals	1	1 Day			

Global Services			Equipment		
Cook- Roger Wall			90 KW Generator		1 Day
Baker- Matt Chimenti	1	1 Day	Camp Facility		1 Day
Baker – Mike Gillham	1	1 Day			
Bull Cook – Richard Bissett	1	1 Day			
Camp Maint. – Dan Walker	1	1 Day			
Totals	4				

Environmental Sampling and Testing

Type of Test	Method/Matrix	Quantity of Samples	Total*
Water Sampling at 3 locations near the MOC	Water	0	7
Arsenic Surface Water Samples at Site 21	Total and dissolved Arsenic / Water	0	5
MOC Impoundment Water	Water	0	
MI Sampling for DRO/RRO and PCBs at Cargo Beach	Soil	0	
MI Sampling for DRO/RRO and PCBs at MOC	Soil	0	
MI Sampling for DRO and PCBs at Site 6	Soil	0	
Groundwater sampling from MOC Wells (7 wells)	BTEX, GRO, DRO/RRO, PAHs, PCBs, total and dissolved metals (plus nickel, vanadium and zinc) / Water	0	8
Site 28 Sediment Sampling	Sediment	0	
Arsenic Soil at Site 21	Arsenic / Soil	0	89
Arsenic Waste Characterization	Soil	0	5
Drum Waste Characterization – Site 10	Liquid	0	

Type of Test	Method/Matrix	Quantity of Samples	Total*
Site 10 Soil Samples	GRO, DRO/RRO, VOCs, PAHs, PCBs, metals (plus nickel, vanadium and zinc), and glycol / Soil	0	13
Site 10 Soil Samples	Glycol / Soil	0	6
Site 10 Soil Samples	DRO/RRO	0	9
Site 10 Soil Waste Characterization Samples	GRO, DRO/RRO, TCLP VOCs, TCLP metals (plus nickel, vanadium and zinc), TCLP PAHs, and TCLP PCBs / Soil	0	2
DRO/RRO samples from MOC Excavations	AK102/103 / Soil	9	118
Surface Water Samples from 3 locations in Site 28.	GRO/BTEX, DRO/RRO, PAHs, PCBs, Metals (plus zinc) / Surface Water	0	7
Site 28 Surface Water Samples at one location near the sediment trap	BTEX, DRO/RRO, PAHs, PCBs, Metals / Surface Water	0	3
Site 28 Water Impoundment	BTEX, DRO/RRO, PAHs, PCBs, Metals (plus nickel, vanadium and zinc)	0	9
Site 28 Soil Confirmation Samples	BTEX, DRO/RRO, PAHs, PCBs, Metals	0	13
Pipeline Break between Sites 7 and 3	GRO/BTEX, DRO/RRO	0	9
Road Sampling	GRO, BTEX, DRO/RRO, PAHs, PCBs, and RCRA 8 metals	0	9

Notes: *total numbers include primary and duplicate (QC) samples.

Samples Collected for Field Laboratory Analysis

Type of Test	EPA Test Method/Matrix	Daily Samples	Total Samples
DRO/RRO Field Screening	AK102/103	42	328
DRO/RRO Stockpile Screening	AK102/103	0	43
DRO/RRO Waste Characterization	AK102/103	5	123
PCB Field Screening	EPA8082	0	
PCB Waste Characterization	EPA8082	0	
PCB Correlation Samples	EPA8082	0	

Materials Received to be Used on or Incorporated into Site

Instructions Given by QAR to Bristol (include names, reactions, and remarks)

Contractor Response:

Instructions Given by Bristol to Subcontractors (include names, reactions, and remarks.)

Work Progress

Are there any Contractor-caused delays or potential finding of fact? Yes ☐ No ☒
Are there any Government-caused delays or potential finding of fact? Yes ☐ No ☒
Are there any unforeseeable or weather-related delays? Yes ☐ No ☒

Comments/Remarks (include any visitors to project and miscellaneous remarks pertinent to work):

PROJECT SUMMARY TO DATE			
Item	**Today's Total (Units)**	**Previous Total**	**Project Total**
Material Hauling – CAT D400 – C-1	0 loads	85 loads	85 loads
Material Hauling – CAT D400 – C-2 (80-304)	0 loads	2 loads	2 loads
Material Hauling – CAT D400 – C-4 (80-302)	0 loads		
MOC POL Soil Removed (Scoped for 6,000 tons; Options exercised 3,500 tons additional)	302.1 tons	8701.67 tons	9003.77 tons
MOC POL Bulk Bags Loaded	31 bags	908 bags	939 bags
Drum liquids from the MOC	0 gallons	50 gallons	50 gallons
Site 13 PCB Soil Excavation	0 tons		
Site 13 Bulk Bags Loaded	0 bags		
Site 31 PCB Soil Excavation	0 tons		
Site 31 Bulk Bags Loaded	0 bags		
PCB Soil Removal Total Weights (Scoped for 135 tons)	0 tons		
PCB Soil Removal Total Bulk Bags	0 bags		
Arsenic Soil Borings (hand auger borings) installed (scoped for 17 initial locations, 3 additional, 20 total)	0 borings	20 borings	20 borings
Arsenic investigation samples collected (scoped for 51 initial primary samples, 9 additional, 60 total)	0 samples	60 samples	60 samples
Arsenic soil removed from Site 21 (Scoped for 100 tons; Options exercised for 200 additional tons)	0 tons	262.05 tons	262.05 tons
Bulk bags loaded with Arsenic soil from Site 21	0 bags	29 bags	29 bags
Site 28 Sediment Removal (Scoped for 260 bank cubic yards)	0 tons		
Site 28 Bags Loaded	0 bags		
Wire and Miscellaneous Debris (Scoped for 25 tons; Options exercised for 10 tons additional)	0 tons	17.92 tons	17.92 tons
Drums across the site (Scoped for 1 ton)	0 tons	1 ton	1 ton
Poles removed across the site (Scoped for 20; Options exercised for 10 additional poles)	0 poles	55 poles	55 poles
Site 10 Drums Removed (Scoped for 0.25 tons)	0 tons	0.11 tons	0.11 tons

PROJECT SUMMARY TO DATE			
Item	**Today's Total (Units)**	**Previous Total**	**Project Total**
Site 10 Soil Removal (Scoped for 100 tons; Options exercised for 250 additional tons)	0 tons	290.49 tons	290.49 tons
Site 10 Bulk Bags Loaded	0 bags	25 bags	25 bags
Site 10 Soil Drums	0 drums	2 drums	2 drums
MNA sampling of groundwater at the MOC (Scoped for 7 wells)	0 wells	7 wells	7 wells

Phase of Work	**Progress**
Base POL Soil Removal (MOC)	100%
Optional POL Soil Removal (MOC)	86%
PCB Soil Removal (Sites 13 and 31)	0%
Base Arsenic Soil Removal (Site 21)	100%
Optional Arsenic Soil Removal (Site 21)	81%
Miscellaneous Debris Drums	72%
Pole Removal	100%
Drum Removal (Sitewide)	100%
MNA of Groundwater at the MOC	100%
Post-MI Soil Sampling at Site 26	0%
Post-MI Soil Sampling at MOC	0%
Post-MI Soil Sampling at Site 6	0%
Pre- and Post-MI Sampling at bag staging area adjacent to ISO Tanks	0%
Site 28 Sediment Removal	0%
Site 10 Drum Removal	0%
Site 10 Soil Removal	100%
Optional Site 10 Soil Removal	76%
Road Sampling	100%

PHOTOS:



Photo 1 Bulk bag loading operations continue at Pad 98. View to the south. Photographer: R. James



Photo 2 Twenty-five flats are loaded onto the Sam Taalak landing craft when a barge sits offshore in Kitnagak Bay. The landing craft is loaded twice per tide during good weather. View to the north. Photographer: M. Faust

Contractor's Verification: On behalf of the Contractor, I certify that the above report is complete and correct and that all materials and equipment used, work performed, and tests conducted during this period were in strict compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

Digitally signed by Russell James
DN: cn=Russell James, o=Bristol Environmental Remediation Services, LLC, ou, email=rjames@bristol-companies.com, c=US
Date: 2013.08.28 11:09:25 -08'00'

CQCSM Signature | Date

Digitally signed by Chuck Cooley
DN: cn=Chuck Cooley, o=Bristol Environmental Remediation Services, LLC, ou=BERS, email=ccooley@bristol-companies.com, c=US
Date: 2013.08.28 11:27:23 -08'00'

Site Superintendent Signature | Date

Government Quality Assurance Comments

Was QA testing performed this day?	Yes ☐	No ☐	N/A ☒
Concurs with the QC report?	Yes ☒	No ☐	N/A ☐

Additional comments or exceptions:

Weather: Cloudy with southwest winds 5-15 MPH. High temp around 50°F.

POL Excavations

Soil bagging operations continued at Pad 98 today. There is still a segregated pile on the western end of the pad that needs to be run through the power screen.

TOTALS TODAY		GRAND TOTALS	
31 bags	302.1 tons	1,258 bags	12,180.86 tons

* The total tonnage under both contracts is 12,677.09 tons.



Photo 1: Sampling from one of the hotspot digouts on the northwestern edge of plume A2, facing northwest.



Photo 2: Pumping rain water from the fuel storage containment area, facing southeast.



Photo 3: Water pumped from the fuel containment goes through a water scrubber before being discharged.

Site 28

No work today at this site.

Site 10

The ADEC regulator agreed that we have reached a point of compliance with the glycol excavation. The contractor may backfill this excavation.

TOTALS TODAY		GRAND TOTALS	
0 bags	0 tons	29 bags	331.09 tons

* The total tonnage under both contracts is 390.6 tons.

Site 13
PCB soil excavation is complete.

Site 31
PCB soil excavation is complete.

Site 21
Confirmation samples that were taken in previous days will be packaged and prepared to send on the Monday Bering Air flight.

TOTALS TODAY		GRAND TOTALS	
0 bags	0 tons	29 bags	262.05 tons

* The total tonnage under contract is 300 tons.

Miscellaneous

- The contractor loaded the Sam Taalak with 100 flats on two tides today.
- Russell James and Chuck Croley arrived at the site today and laborer Scott and Matt Faust left for Savoonga for some R&R today on the Bering Air flight.



Photo 4: Loading the Sam Taalak with 25 flats on the afternoon high tide, facing northeast.



Photo 5: Close-up of the loader placing a flat on the Sam Taalak, facing north.

Ronald S Broyles

Digitally signed by BROYLES.RONALD.S.1231992258
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=BROYLES.RONALD.S.1231992258
Date: 2013.08.28 11:44:13 -08'00'

QAR Signature **Date** **Supervisor's Initials** **Date**

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC

111 W. 16th Avenue, Third Floor
Anchorage, AK 99501
phone (907) 563-0013
fax (907) 563-6713
www.bristol-companies.com

TOOLBOX SAFETY MEETING RECORD

DATE: AUGUST 26, 2013

SUBJECTS:

1. Proper Lifting Techniques
2. Diabetes!
3.
4.
5.
6.
7.
8.

	PRINTED NAME	SIGNATURE	COMPANY
1.	Eric Barnhill	[signature]	BERS
2.	Allen Dennis	[signature]	BERS
3.	Richard W. Losche	[signature]	TestAmerica
4.	Carl D Calagan	[signature]	BERS
5.	Douglas Byers	[signature]	BERS
6.	Johnny Willis	[signature]	Bers
7.	Maze Thompson	[signature]	BERS
8.	Jack Willis	[signature]	BERS
9.	Michael Toolie	[signature]	BERS
10.	[illegible] MAJORS	[signature]	EWR
11.	EUGENE TOOLIE	[signature]	BERS
12.	Dale Winston	[signature]	BERS
13.	[illegible]	[signature]	Eco-Land
14.	JAMISON L. ALLAN	[signature]	ECO-LAND
15.	Julie Clark	[signature]	BERS
16.	Ron Broyles	[signature]	USACE
17.	Joshua Arms	[signature]	BERS
18.	Winston Maupin	[signature]	TestAmerica
19.	Lindsay Cameron	[signature]	BERS
20.	Lyndsey Kleppin	[signature]	BERS
21.	Scott K	[signature]	BERS
22.	Mylon K.	[signature]	BERS
23.	Charles Kuna	[signature]	BERS
24.	Bruce Schneuer	[signature]	BERS
25.	Jeb Perkins	[signature]	Bers
26.	RHONDA NICAZO	[signature]	BI
27.			
28.			
29.			
30.			

DAILY QUALITY CONTROL REPORT
ENVIRONMENTAL QUALITY CONTROL/QUALITY ASSURANCE REPORT
(ER 415-1-302)

Contract No. / Delivery Order No.	UPC/Project Title and Location of Work
W911KB-13-C-0004	Northeast Cape HTRW Remedial Actions. Northeast Cape, St. Lawrence Island, Alaska.

CQC Report Number: NEC 2013-53
Date or Time Period: Thursday August 29, 2013
Client: USACE, Alaska District

Weather Conditions: Mostly cloudy. Northeast winds 5 – 10 mph in the morning building to become north winds 15 – 25 mph in the afternoon.

Morning Temp: 46°F Afternoon Temp: 45°F

Quality Control Inspections Performed This Date (Include inspections, results, deficiencies, and corrective action.)

Preparatory: No
Initial: No
Follow-up: No

Have Data Quality Objectives been achieved?	Yes ☒	No ☐	N/A ☐
Have QA and QC samples been collected in the specified quantity?	Yes ☒	No ☐	N/A ☐
Have samples been properly labeled and packaged?	Yes ☒	No ☐	N/A ☐
Have appropriate QC laboratory tests been ordered? (matrix spikes, method blanks, surrogates, reference standards, etc.)	Yes ☒	No ☐	N/A ☐
Have required amount of QC trip blanks and rinsates been achieved?	Yes ☒	No ☐	N/A ☐

Health and Safety

Worker protection levels this date:	Level C ☐	Level D ☒	
Was any work activity conducted within a confined space?	Yes ☐	No ☒	N/A ☐
Was any work activity conducted within an area determined to be immediately dangerous to life and health?	Yes ☐	No ☒	N/A ☐
Were approved decontamination procedures used on workers and equipment as required?	Yes ☒	No ☐	N/A ☐
Was a Job Safety Meeting held this day?	Yes ☒	No ☐	N/A ☐
Were there any "Lost Time" accidents this day? (If YES, attach copy of completed accident report)	Yes ☐	No ☒	N/A ☐
Was hazardous waste/material released into the environment?	Yes ☐	No ☒	N/A ☐

Safety Comments: (include any infractions of approved safety plan, and include instructions from government personnel. Specify corrective action taken.)

A Health and Safety Meeting was held today. The following topics were discussed:

- Road right-of-way
- Excavation Safety

Safety signature sheet attached to DQCR.

Work Activities Performed This Date

Specification or Contract Reference	Activity and Location
General Site Work, including shipping and transportation	The Sam Taalak was loaded twice on the evening tide. Fifty flats (100 bags) were loaded onto the landing craft and then loaded onto the barge.
Site 28 Sediment Removal Operations	Dredging continued today. Dredging has proceeded into the southern end of Removal Area 4. Water is being treated as soon as it becomes available. Surface water samples continue to be collected at the frequency of one sample per 2 hours of active dredging. Two (2) surface water samples were collected today from the pond immediately downstream from the sediment trap.
Miscellaneous debris, poles and drums	
Site 21 Arsenic Investigation and Soil Removal	Confirmation samples for arsenic analysis from the excavation floor and sidewalls have been received. Results indicate that ten (10) locations remain in the excavation where arsenic concentrations exceed cleanup levels (6 from the floor and 4 from sidewalls).
POL Soil Removal	POL-contaminated soil was processed through the screen plant today. The 2-inch minus material was stockpiled for bag loading. Twenty-three (23) bulk bags were weighed, totaling 215.92 tons. POL excavations continue to be backfilled. Borrow material is being hauled from the borrow pit to the excavations. The bulldozer is backfilling in one-foot lifts and track-walking for compaction.
Site 10	Excavation sidewalls have been confirmed clean by fixed base laboratory analysis. The floor of the excavation extended to bedrock refusal. The site was backfilled and graded.
PCB Road Sampling	Samples were shipped on 8/19/13; currently waiting on results.

Manpower and Equipment

Labor Classification	Number	Hours	Equipment Type	Number	Hours Used
Proj. Mgr.—Molly Welker			White GMC Crewcab, Gas, Long Box w/gas Service Tank	50-115	1 Day
C.I.H.—Clark Roberts			White Chev Extended Cab 4X4 PU	50-132	1 Day
Site Superintendent—Chuck Croley	1	13	White Chevy 2500, Extended Cab, Gas, Short Box	50-137	1 Day
CQCSM—Russell James	1	13	White Chev Crewcab 4X4 PU	50-169	1 Day
Alt. CQCSM – Matt Faust			Red GMC Crewcab 4X4 PU w/diesel & gas service tanks	50-171	1 Day

Labor Classification	Number	Hours	Equipment Type	Number	Hours Used
Op./Foreman—Maze Thompson	1	13	White Chev Straight cab 4X4 PU	50-173	1 Day
Master Mechanic—Johnny Willis	1	10	Ford Escape	50-179	1 Day
Oiler/Laborer---Carl Calugan	1	13	Ottawa Yard Goat, 5th wheel tractor	50-320	1 Day
Admin Assistant— Suzanne Lovell	1	10	International S4700 Fuel/Lube Truck	50-205	1 Day
Alt. Admin Assistant—Rhonda Nicazio			Ford F700 Mechanic Truck w/compressor, Welder, & Hyd Boom	50-206	1 Day
Bear guard/Laborer---Eugene Toolie	1	10	Kaiser Jeep 6X6 Cargo Truck w/water Tank	50-322	Down
Operator/Alt. Foreman---George Mack	1	13	Cat 988B Loader w/bucket & Forks	50-505	1 Day
Operator---Allen Dennis	1	13	Cat 160H Motor Grader	50-702	1 Day
Operator---Jack Willis	1	10	Cat TH508B Telehandler	50-803	1 Day
			JD 850J Dozer	1-187	1 Day
Operator---- Dale Winslow	1	10	JD 850J Dozer	1-214	1 Day
Operator---Jebb Adkins	1	10	Polaris Ranger 800EFI SideXSide	80-909	1 Day
			Arctic Cat Side by Side	50-925	1 Day
			Suzuki Side By Side	50-918	1 Day
Laborer - Doug Byers	1	13	IR Light Tower	52-128	1 Day
Laborer - Bruce Schneuer	1	10	IR Light Tower	52-125	1 Day
Laborer - Charles Kava			Frost Fighter Heater	52-206	1 Day
Laborer - Mylon Kingeekuk	1	10	IR 60KW Generator	52-210	1 Day
Laborer - Scott Kingeekuk			Volvo 330L Loader/Forklift	50-515	1 Day
Laborer - Albert Kulowiyi	1	10	287B Skid Steer	50-516	1 Day
Laborer - Michael Toolie	1	10	Cat D400 Rock Truck	C1 80-301	1 Day
Lab Manager - Marty Hannah			Cat D400 Rock Truck	C2 80-304	1 Day
Lab Intern - Josh Arms	1	10	Cat D400 Rock Truck	C4 80-302	1 Day
Lab Intern – Lindsay Cameron	1	11	JD-450 Excavator	3-101	1 Day
			JD-370 Excavator	3-148	1 Day
			JD-200 Excavator	3-195	1 Day
SSHO/Scientist - Eric Barnhill	1	13	DeWalt Compressor w/engine	BERS #1	1 Day
Geologist - Lyndsey Kleppin	1	10	DeWalt Generator	Environ #1	1 Day
Env. Scientist - Julie Clark	1	10	DeWalt Generator	Environ #2	1 Day
Env. Scientist – Lesa Nelson			Cat 980G Loader	80-501	1 Day
			JD-544J Loader	2-243	1 Day
			Stone 54" Roller (AER)	6-435	1 Day
Waste Specialist - Tyler Ellingboe			Chiefton Screening Plant	52-508	1 Day
			Allmand Light Pro	52-133	1 Day
			Hotsey Pressure Water-BERS	Hotsey	1 Day
Totals	22	245			

Labor Classification	Number	Hours	Equipment Type	Number	Hours Used
Ecoland			**Equipment**		

Jamie Allan	1	10			
Sam Jackson	1	10			
Totals	2	20			

Test America	**Number**	**Hours**	**Equipment**		
Lab Analyst – Richard Losche	1	10			
Lab Analyst – Winston Maupin	1	10			
Lab Analyst – John Oravec					
Totals	2	20			

Fairweather			**Equipment**		
Medic – John Majors	1	1 Day			
Medic – Slate Uys					
Totals	1	1 Day			

Global Services			**Equipment**		
Cook- Roger Wall			90 KW Generator		1 Day
Baker- Matt Chimenti	1	1 Day	Camp Facility		1 Day
Baker – Mike Gillham	1	1 Day			
Bull Cook – Richard Bissett	1	1 Day			
Camp Maint. – Dan Walker	1	1 Day			
Totals	4				

Environmental Sampling and Testing

Type of Test	Method/Matrix	Quantity of Samples	Total*
Arsenic Surface Water Samples at Site 21	Total and dissolved Arsenic / Water	0	5
MOC Impoundment Water	Water	0	
MI Sampling for DRO/RRO and PCBs at Cargo Beach	Soil	0	
MI Sampling for DRO/RRO and PCBs at MOC	Soil	0	
MI Sampling for DRO and PCBs at Site 6	Soil	0	
Groundwater sampling from MOC Wells (7 wells)	BTEX, GRO, DRO/RRO, PAHs, PCBs, total and dissolved metals (plus nickel, vanadium and zinc) / Water	0	8
Site 28 Sediment Sampling	Sediment	0	
Arsenic Soil at Site 21	Arsenic / Soil	0	89
Arsenic Waste Characterization	Soil	0	5
Drum Waste Characterization – Site 10	Liquid	0	
Site 10 Soil Samples	GRO, DRO/RRO, VOCs, PAHs, PCBs, metals (plus nickel, vanadium and zinc), and glycol / Soil	0	13
Site 10 Soil Samples	Glycol / Soil	0	6
Site 10 Soil Samples	DRO/RRO	0	9

DAILY QUALITY CONTROL REPORT
ENVIRONMENTAL QUALITY CONTROL/QUALITY ASSURANCE REPORT
(ER 415-1-302)

Contract No. / Delivery Order No.	UPC/Project Title and Location of Work
W911KB-13-C-0004	Northeast Cape HTRW Remedial Actions. Northeast Cape, St. Lawrence Island, Alaska.

CQC Report Number: NEC 2013-53
Date or Time Period: Thursday August 29, 2013
Client: USACE, Alaska District

Weather Conditions: Mostly cloudy. Northeast winds 5 – 10 mph in the morning building to become north winds 15 – 25 mph in the afternoon.

Morning Temp: 46°F Afternoon Temp: 45°F

Quality Control Inspections Performed This Date (Include inspections, results, deficiencies, and corrective action.)

Preparatory: No
Initial: No
Follow-up: No

Have Data Quality Objectives been achieved?	Yes ☒	No ☐	N/A ☐
Have QA and QC samples been collected in the specified quantity?	Yes ☒	No ☐	N/A ☐
Have samples been properly labeled and packaged?	Yes ☒	No ☐	N/A ☐
Have appropriate QC laboratory tests been ordered? (matrix spikes, method blanks, surrogates, reference standards, etc.)	Yes ☒	No ☐	N/A ☐
Have required amount of QC trip blanks and rinsates been achieved?	Yes ☒	No ☐	N/A ☐

Health and Safety

Worker protection levels this date:	Level C ☐	Level D ☒	
Was any work activity conducted within a confined space?	Yes ☐	No ☒	N/A ☐
Was any work activity conducted within an area determined to be immediately dangerous to life and health?	Yes ☐	No ☒	N/A ☐
Were approved decontamination procedures used on workers and equipment as required?	Yes ☒	No ☐	N/A ☐
Was a Job Safety Meeting held this day?	Yes ☒	No ☐	N/A ☐
Were there any "Lost Time" accidents this day? (If YES, attach copy of completed accident report)	Yes ☐	No ☒	N/A ☐
Was hazardous waste/material released into the environment?	Yes ☐	No ☒	N/A ☐

Safety Comments: (include any infractions of approved safety plan, and include instructions from government personnel. Specify corrective action taken.)

A Health and Safety Meeting was held today. The following topics were discussed:

- Road right-of-way
- Excavation Safety

Safety signature sheet attached to DQCR.

Work Activities Performed This Date

Specification or Contract Reference	Activity and Location
General Site Work, including shipping and transportation	The Sam Taalak was loaded twice on the evening tide. Fifty flats (100 bags) were loaded onto the landing craft and then loaded onto the barge.
Site 28 Sediment Removal Operations	Dredging continued today. Dredging has proceeded into the southern end of Removal Area 4. Water is being treated as soon as it becomes available. Surface water samples continue to be collected at the frequency of one sample per 2 hours of active dredging. Two (2) surface water samples were collected today from the pond immediately downstream from the sediment trap.
Miscellaneous debris, poles and drums	
Site 21 Arsenic Investigation and Soil Removal	Confirmation samples for arsenic analysis from the excavation floor and sidewalls have been received. Results indicate that ten (10) locations remain in the excavation where arsenic concentrations exceed cleanup levels (6 from the floor and 4 from sidewalls).
POL Soil Removal	POL-contaminated soil was processed through the screen plant today. The 2-inch minus material was stockpiled for bag loading. Twenty-three (23) bulk bags were weighed, totaling 215.92 tons. POL excavations continue to be backfilled. Borrow material is being hauled from the borrow pit to the excavations. The bulldozer is backfilling in one-foot lifts and track-walking for compaction.
Site 10	Excavation sidewalls have been confirmed clean by fixed base laboratory analysis. The floor of the excavation extended to bedrock refusal. The site was backfilled and graded.
PCB Road Sampling	Samples were shipped on 8/19/13; currently waiting on results.

Manpower and Equipment

Labor Classification	Number	Hours	Equipment Type	Number	Hours Used
Proj. Mgr.—Molly Welker			White GMC Crewcab, Gas, Long Box w/gas Service Tank	50-115	1 Day
C.I.H.—Clark Roberts			White Chev Extended Cab 4X4 PU	50-132	1 Day
Site Superintendent—Chuck Croley	1	13	White Chevy 2500, Extended Cab, Gas, Short Box	50-137	1 Day
CQCSM—Russell James	1	13	White Chev Crewcab 4X4 PU	50-169	1 Day
Alt. CQCSM – Matt Faust			Red GMC Crewcab 4X4 PU w/diesel & gas service tanks	50-171	1 Day

Labor Classification	Number	Hours	Equipment Type	Number	Hours Used
Op./Foreman—Maze Thompson	1	13	White Chev Straight cab 4X4 PU	50-173	1 Day
Master Mechanic—Johnny Willis	1	10	Ford Escape	50-179	1 Day
Oiler/Laborer—Carl Calugan	1	13	Ottawa Yard Goat, 5th wheel tractor	50-320	1 Day
Admin Assistant— Suzanne Lovell	1	10	International S4700 Fuel/Lube Truck	50-205	1 Day
Alt. Admin Assistant—Rhonda Nicazio			Ford F700 Mechanic Truck w/compressor, Welder, & Hyd Boom	50-206	1 Day
Bear guard/Laborer—Eugene Toolie	1	10	Kaiser Jeep 6X6 Cargo Truck w/water Tank	50-322	Down
Operator/Alt. Foreman—George Mack	1	13	Cat 988B Loader w/bucket & Forks	50-505	1 Day
Operator—Allen Dennis	1	13	Cat 160H Motor Grader	50-702	1 Day
Operator—Jack Willis	1	10	Cat TH508B Telehandler	50-803	1 Day
			JD 850J Dozer	1-187	1 Day
Operator— Dale Winslow	1	10	JD 850J Dozer	1-214	1 Day
Operator—Jebb Adkins	1	10	Polaris Ranger 800EFI SideXSide	80-909	1 Day
			Arctic Cat Side by Side	50-925	1 Day
			Suzuki Side By Side	50-918	1 Day
Laborer - Doug Byers	1	13	IR Light Tower	52-128	1 Day
Laborer - Bruce Schneuer	1	10	IR Light Tower	52-125	1 Day
Laborer - Charles Kava			Frost Fighter Heater	52-206	1 Day
Laborer - Mylon Kingeekuk	1	10	IR 60KW Generator	52-210	1 Day
Laborer - Scott Kingeekuk			Volvo 330L Loader/Forklift	50-515	1 Day
Laborer - Albert Kulowiyi	1	10	287B Skid Steer	50-516	1 Day
Laborer - Michael Toolie	1	10	Cat D400 Rock Truck	C1 80-301	1 Day
Lab Manager - Marty Hannah			Cat D400 Rock Truck	C2 80-304	1 Day
Lab Intern - Josh Arms	1	10	Cat D400 Rock Truck	C4 80-302	1 Day
Lab Intern – Lindsay Cameron	1	11	JD-450 Excavator	3-101	1 Day
			JD-370 Excavator	3-148	1 Day
			JD-200 Excavator	3-195	1 Day
SSHO/Scientist - Eric Barnhill	1	13	DeWalt Compressor w/engine	BERS #1	1 Day
Geologist - Lyndsey Kleppin	1	10	DeWalt Generator	Environ #1	1 Day
Env. Scientist - Julie Clark	1	10	DeWalt Generator	Environ #2	1 Day
Env. Scientist – Lesa Nelson			Cat 980G Loader	80-501	1 Day
			JD-544J Loader	2-243	1 Day
			Stone 54" Roller (AER)	6-435	1 Day
Waste Specialist - Tyler Ellingboe			Chiefton Screening Plant	52-508	1 Day
			Allmand Light Pro	52-133	1 Day
			Hotsey Pressure Water-BERS	Hotsey	1 Day
Totals	22	245			

Labor Classification	Number	Hours	Equipment Type	Number	Hours Used
Ecoland			**Equipment**		

Jamie Allan	1	10			
Sam Jackson	1	10			
Totals	2	20			

Test America	**Number**	**Hours**	**Equipment**		
Lab Analyst – Richard Losche	1	10			
Lab Analyst – Winston Maupin	1	10			
Lab Analyst – John Oravec					
Totals	2	20			

Fairweather			**Equipment**		
Medic – John Majors	1	1 Day			
Medic – Slate Uys					
Totals	1	1 Day			

Global Services			**Equipment**		
Cook- Roger Wall			90 KW Generator		1 Day
Baker- Matt Chimenti	1	1 Day	Camp Facility		1 Day
Baker – Mike Gillham	1	1 Day			
Bull Cook – Richard Bissett	1	1 Day			
Camp Maint. – Dan Walker	1	1 Day			
Totals	4				

Environmental Sampling and Testing

Type of Test	**Method/Matrix**	**Quantity of Samples**	**Total***
Arsenic Surface Water Samples at Site 21	Total and dissolved Arsenic / Water	0	5
MOC Impoundment Water	Water	0	
MI Sampling for DRO/RRO and PCBs at Cargo Beach	Soil	0	
MI Sampling for DRO/RRO and PCBs at MOC	Soil	0	
MI Sampling for DRO and PCBs at Site 6	Soil	0	
Groundwater sampling from MOC Wells (7 wells)	BTEX, GRO, DRO/RRO, PAHs, PCBs, total and dissolved metals (plus nickel, vanadium and zinc) / Water	0	8
Site 28 Sediment Sampling	Sediment	0	
Arsenic Soil at Site 21	Arsenic / Soil	0	89
Arsenic Waste Characterization	Soil	0	5
Drum Waste Characterization – Site 10	Liquid	0	
Site 10 Soil Samples	GRO, DRO/RRO, VOCs, PAHs, PCBs, metals (plus nickel, vanadium and zinc), and glycol / Soil	0	13
Site 10 Soil Samples	Glycol / Soil	0	6
Site 10 Soil Samples	DRO/RRO	0	9

Type of Test	Method/Matrix	Quantity of Samples	Total*
Site 10 Soil Waste Characterization Samples	GRO, DRO/RRO, TCLP VOCs, TCLP metals (plus nickel, vanadium and zinc), TCLP PAHs, and TCLP PCBs / Soil	0	2
DRO/RRO samples from MOC Excavations	AK102/103 / Soil	0	125
Surface Water Samples from 3 locations in Site 28.	GRO/BTEX, DRO/RRO, PAHs, PCBs, Metals (plus zinc) / Surface Water	0	7
Site 28 Surface Water Samples at one location near the sediment trap	BTEX, DRO/RRO, PAHs, PCBs, Metals / Surface Water	2	9
Site 28 Water Impoundment	BTEX, DRO/RRO, PAHs, PCBs, Metals (plus nickel, vanadium and zinc)	0	9
Site 28 Soil Confirmation Samples	BTEX, DRO/RRO, PAHs, PCBs, Metals	0	13
Pipeline Break between Sites 7 and 3	GRO/BTEX, DRO/RRO	0	9
Road Sampling	GRO, BTEX, DRO/RRO, PAHs, PCBs, and RCRA 8 metals	0	9

Notes: *total numbers include primary and duplicate (QC) samples.

Samples Collected for Field Laboratory Analysis

Type of Test	EPA Test Method/Matrix	Daily Samples	Total Samples
DRO/RRO Field Screening	AK102/103	0	332
DRO/RRO Stockpile Screening	AK102/103	0	45
DRO/RRO Waste Characterization	AK102/103	0	132
PCB Field Screening	EPA8082	0	
PCB Waste Characterization	EPA8082	0	
PCB Correlation Samples	EPA8082	0	

Materials Received to be Used on or Incorporated into Site

Instructions Given by QAR to Bristol (include names, reactions, and remarks)

Bristol was involved in a teleconference with the USACE and the ADEC at 1100 hrs this morning to discuss Site 28 water treatment. Attendees included R. James (BERS CQCSM), C. Croley (SS), M. Welker (BERS PM), G. Jarrell (BERS Environmental Manager), R. Broyles (USACE Contracting Officer's Rep), V. Palmer (USACE PM) and C. Dunkin (ADEC PM). The discussions are summarized as follows:

- Treated water at Site 28 will be containerized and sampled prior to discharge. Discharge may occur before sample results are received. The samples will not be analyzed on a rush turnaround time. The field team will continue to visually monitor water quality prior to discharge.
- Pre-treated water samples will no longer be collected.

- After all water has been discharged to the ground, the discharge area will be sampled. One surface soil sample, plus QC, will be collected from the point of discharge.

Contractor Response:

Instructions Given by Bristol to Subcontractors (include names, reactions, and remarks.)

Work Progress

Are there any Contractor-caused delays or potential finding of fact? Yes ☐ No ☒
Are there any Government-caused delays or potential finding of fact? Yes ☐ No ☒
Are there any unforeseeable or weather-related delays? Yes ☐ No ☒

Comments/Remarks (include any visitors to project and miscellaneous remarks pertinent to work):

PROJECT SUMMARY TO DATE			
Item	**Today's Total (Units)**	**Previous Total**	**Project Total**
Material Hauling – CAT D400 – C-1	29 loads	98 loads	127 loads
Material Hauling – CAT D400 – C-2 (80-304)	0 loads	2 loads	2 loads
Material Hauling – CAT D400 – C-4 (80-302)	0 loads		
MOC POL Soil Removed (Scoped for 6,000 tons; Options exercised 3,500 tons additional)	215.92 tons	9322.15 tons	9538.07 tons
MOC POL Bulk Bags Loaded	23 bags	972 bags	995 bags
Drum liquids from the MOC	0 gallons	50 gallons	50 gallons
Site 13 PCB Soil Excavation	0 tons		
Site 13 Bulk Bags Loaded	0 bags		
Site 31 PCB Soil Excavation	0 tons		
Site 31 Bulk Bags Loaded	0 bags		
PCB Soil Removal Total Weights (Scoped for 135 tons)	0 tons		
PCB Soil Removal Total Bulk Bags	0 bags		
Arsenic Soil Borings (hand auger borings) installed (scoped for 17 initial locations, 3 additional, 20 total)	0 borings	20 borings	20 borings
Arsenic investigation samples collected (scoped for 51 initial primary samples, 9 additional, 60 total)	0 samples	60 samples	60 samples
Arsenic soil removed from Site 21 (Scoped for 100 tons; Options exercised for 200 additional tons)	0 tons	262.05 tons	262.05 tons
Bulk bags loaded with Arsenic soil from Site 21	0 bags	29 bags	29 bags
Site 28 Sediment Removal (Scoped for 260 bank cubic yards)	0 tons		
Site 28 Bags Loaded	0 bags		
Wire and Miscellaneous Debris (Scoped for 25 tons; Options exercised for 10 tons additional)	0 tons	17.92 tons	17.92 tons

PROJECT SUMMARY TO DATE			
Item	**Today's Total (Units)**	**Previous Total**	**Project Total**
Drums across the site (Scoped for 1 ton)	0 tons	1 ton	1 ton
Poles removed across the site (Scoped for 20; Options exercised for 10 additional poles)	0 poles	55 poles	55 poles
Site 10 Drums Removed (Scoped for 0.25 tons)	0 tons	0.11 tons	0.11 tons
Site 10 Soil Removal (Scoped for 100 tons; Options exercised for 250 additional tons)	0 tons	290.49 tons	290.49 tons
Site 10 Bulk Bags Loaded	0 bags	25 bags	25 bags
Site 10 Soil Drums	0 drums	2 drums	2 drums
MNA sampling of groundwater at the MOC (Scoped for 7 wells)	0 wells	7 wells	7 wells

Phase of Work	**Progress**
Base POL Soil Removal (MOC)	100%
Optional POL Soil Removal (MOC)	100%
PCB Soil Removal (Sites 13 and 31)	0%
Base Arsenic Soil Removal (Site 21)	100%
Optional Arsenic Soil Removal (Site 21)	81%
Miscellaneous Debris Drums	72%
Pole Removal	100%
Drum Removal (Sitewide)	100%
MNA of Groundwater at the MOC	100%
Post-MI Soil Sampling at Site 26	0%
Post-MI Soil Sampling at MOC	0%
Post-MI Soil Sampling at Site 6	0%
Pre- and Post-MI Sampling at bag staging area adjacent to ISO Tanks	0%
Site 28 Sediment Removal	0%
Site 10 Drum Removal	44%
Site 10 Soil Removal	100%

Phase of Work	Progress
Optional Site 10 Soil Removal	76%
Road Sampling	100%

PHOTOS:



Photo 1 Backfilling the E excavation. View to the west. Photographer: R. James



Photo 2 Screen plant operations at Pad 98. View to the west. Photographer: R. James

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Contractor's Verification: On behalf of the Contractor, I certify that the above report is complete and correct and that all materials and equipment used, work performed, and tests conducted during this period were in strict compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

Digitally signed by Russell James
DN: cn=Russell James, o=Bristol Environmental Remediation Services, LLC, ou, email=rjames@bristol-companies.com, c=US
Date: 2013.08.31 07:36:08 -08'00'

CQCSM Signature Date

Digitally signed by Chuck Croley
DN: cn=Chuck Croley, o=Bristol Environmental Remediation Services, LLC, ou=BERS, email=ccroley@bristol-companies.com, c=US
Date: 2013.08.31 09:17:07 -08'00'

Site Superintendent Signature Date

Government Quality Assurance Comments

Was QA testing performed this day?	Yes ☐	No ☐	N/A ☒
Concurs with the QC report?	Yes ☒	No ☐	N/A ☐

Additional comments or exceptions:

Weather: Cloudy with north winds 10-15 MPH. High temp around 45°F.

POL Excavations

Soil screening and stockpiling at Pad 98 occurred today. The contractor filled 16 bulk bags (8 CY). New soil that is bagged will be the with the smaller 5 CY bags that arrived with the landing craft. The contractor is now 38.07 tons above the contract amount, however a contract modification was sent to BERS today to add an additional 1,500 tons to the contract. There is also additional screened soil at Pad 98 that needs to be bagged. It is an estimated 75-100 tons.

The extra tonnage added to the contract is only to address obtaining clean lateral extents to Plume A2. Once that excavation is deemed clean, the MOC pad excavation will cease. There are still a few hotspots to dig out, but they are in proximity to each other.

The contractor has also been hauling clean backfill to fill in some of the excavations. They hauled 29 rock truck loads today and have hauled a total of 127 loads from the beginning of the field season.

TOTALS TODAY		GRAND TOTALS	
23 bags	215.92 tons	1,314 bags	12,715.16 tons

* The total tonnage under both contracts is 12,677.09 tons.

Site 28

The contractor continued dredging today. They have begun working in Sediment Removal Area 4. Water is being treated after it travels from the sumps, through the polymer injection area, and then into the geotubes that reside in containment. The treated water is crystal clear after it goes through the GAC.

There was a conference call today between USACE, ADEC, and BERS. The result of the conversation was that the treated water from the GAC will be pumped into containment (roughly 20K gallons), the water will be sampled, and then the water will be released (prior to receipt of sample results). The area where the treated water is discharged to the tundra will be sampled (primary and duplicate). All parties agreed to this methodology. Also, pretreated water sample will no longer be required.



Photo 1: Dredging the northern portion of Sediment Removal Area 3, facing east.



Photo 2: The surveyors were also mapping the drainage basin behind the dredging operation, facing northwest.

Site 10
The no work at Site 10 today.

TOTALS TODAY		GRAND TOTALS	
0 bags	0 tons	29 bags	331.09 tons

* The total tonnage under both contracts is 390.6 tons.

Site 13
PCB soil excavation is complete.

Site 31
PCB soil excavation is complete.

Site 21
The confirmation sample results from the analytical lab were received today. There are still 10 locations where arsenic is above the cleanup level of 11 mg/Kg. 6 samples were floor results and 4 were sidewall results. As there is approximately 38 tons remaining, it would be prudent to chase the hotspots that aren't submerged.

TOTALS TODAY		GRAND TOTALS	
0 bags	0 tons	29 bags	262.05 tons

* The total tonnage under contract is 300 tons.

Miscellaneous

- The contractor loaded the Sam Taalak with 50 flats on the evening tide.



Photo 3: An arctic fox kit is enjoying some sunshine at Cargo Beach

Ronald S Broyles

Digitally signed by BROYLES.RONALD.S.1231992258
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=BROYLES.RONALD.S.1231992258
Date: 2013.08.31 09:47:04 -08'00'

QAR Signature **Date** **Supervisor's Initials** **Date**

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC

111 W. 16th Avenue, Third Floor
Anchorage, AK 99501
phone (907) 563-0013
fax (907) 563-6713
www.bristol-companies.com

TOOLBOX SAFETY MEETING RECORD

DATE: August 29, 2013

SUBJECTS:

1. Screening Plant
2. Excavations and rain
3. Road Right of way
4. Hauling
5.
6.
7.
8.

	PRINTED NAME	SIGNATURE	COMPANY
1.	Eric Barnhill	[signature]	Bristol Environmental Remediation Services LLC
2.	Lindsay Cameron	[signature]	Bristol Environmental Remediation Services LLC
3.	Winston Manlin	[signature]	Testamerica
4.	Allen Dennis	[signature]	Bers
5.	EUGENE TOOLIE	Eugene Toolie	BERS
6.	Jon P MAJORS	[signature]	FWK
7.	Dale Winslow	[signature]	BERS
8.	Carl D Calugan	Carl D Calugan	BERS
9.	Jack Willis	Jack Willis	BERS
10.	JAMISON L. ALLAN	[signature]	ECO-LAND
11.	Michael Toolie	Michael Toolie	BERS
12.	Richard W. Losche	Richard W. Losche	TestAmerica
13.	Chuck Croley	Charles L. Croley	BERS
14.	GEORGE MACK	[signature]	BERS
15.	Marie Thompson	Marie Thompson	BERS
16.	[illegible]	[signature]	Eco-Land
17.	Julie Clark	Julie Clark	BERS
18.	Russell James	[signature]	BERS
19.	Joshua Arms	[signature]	BERS
20.	Albert Kulawiyi	[signature]	BERS
21.	Job Adkins	[signature]	Bers
22.	Johnny Willis	[signature]	Bers
23.	Ron Broyles	[signature]	USACE
24.	Lyndsey Klepper	[signature]	BERS
25.	Myron K	[signature]	BERS
26.	Douglas Byers	[signature]	BERS
27.	Bruce Schrener	Bruce Schrener	Bers
28.	Suzanne Lovell	[signature]	BI
29.			
30.			

APPENDIX D

Field Documents

Site Sign-In Log

2013
~~2012~~ Debris & Soil Removal Actions
Northeast Cape, St. Lawrence Island, Alaska

Name	Firm Name	Date of Visit	Signature
Chuck Croley	BERS	6-21-13	Charles L. Croley
Allen Dennis	BERS	6-21-13	Allen Dennis
Maze Thompson	BERS	6-21-13	Maze Thompson
George Mack	BERS	6-21-13	[illegible]
Jack Willis	BERS	6-21-13	
John Willis	BERS	6-21-13	
Dave MacPherson	Sat Alask	6-24-13	[illegible]
Roger Wall	Global	6-24-13	[illegible]
George Rowe	Global	6-24-13	[illegible]
Paul Gauthier	Global Svcs	6-24-13	[illegible]
Douglas Byers	Global	6-24-13	[illegible]
Matt Chimenti	Global	6-24-13	Matthew Chimenti
Steve Byers	Global	6-24-13	Steve Byers
George E Meyer	Global	6-28-13	George E Meyer
Bobby Mykulkiky	Global	6-28-13	[illegible]
Daniel S Walker	Global	6-28-13	Daniel S Walker
x Marty Hannah	BERS	6-30-13	[illegible]
x Richard Loesch	Test America	6-30-13	
x Carl Calagan	Bers	7-3-13	Carl D Calagan

Site Sign-In Log

2013 Debris & Soil Removal Actions
Northeast Cape, St. Lawrence Island, Alaska

Name	Firm Name	Date of Visit	Signature
Suzanne Lovell	Bristol	7-9-13	
Charles Kava	Bristol	7-9-13	
Albert Kulowiyi	Bristol	7-9-13	
Michael Toolie	Bristol	7-9-13	
Matt Sinda	Test America	7.9.13	
Sam Jackson	Eco-Land	7-9-13	
Jon P. Majors	FWX	7-9-13	
Eric Barnhill	Bristol	7-9-13	
Russell James	Bristol	7-9-13	
Jamison L. Allan	Eco-Land	7-9-2013	
Lyndsay Kehoan	Bristol	7/9/2013	
Scott H. Kingeekuk	Bristol	7/9/13	
Eugene Toolie	Bristol	7/8/13	
Joshua Aren	BEES	7/9/13	
Linksay Cameron	Bristol	7/9/13	
Jeremy Crane	USACE	7/9/13	
Jebbadiah Akiwe	Bees	7/9/13	
Dale Winslow	Bristol	7/9/13	
Richard Burnett	Richard	7/10/13	
Russell Rowe	Bering Air	7/12/13	
Julie Clark	Bristol	7/17/13	

Site Sign-In Log

2013 Debris & Soil Removal Actions
Northeast Cape, St. Lawrence Island, Alaska

Name	Firm Name	Date of Visit	Signature
Ron Broyles	USACE	18 Jul 2013	RmBroyles
JERRY MORRIS	S&C AV	"	
Steve Jones	Security	7-18-13	
Slate Uys	FWX	7-19-13	
Mary Morris	Archipelago Marine	20 July 13	
JOHN HARPER	COASTAL & OCEANS	20 JUL 13	
COREY KOWICK	BERING AIR	20 JUL 13	
JOHN DRAVES	Test America	7-22-13	
JESSE GOLDBERGSEN	ACAT	7-26-13	
Jeremy Comer	USACE	7-31-13	
Aldane Groh	USACE	7-31-13	
CHRIS LESTOCHAL	USACE	7-31-13	
Ken Andrascko	USACE	7-31-13	
Colen Matthews	SECURITY.	✓	
NATHAN FRATZKE	SECURITY	7/31/13	
Lesa Nelson	BERS	7/31/13	
JIM FREDENHAGEN	SEC. AV.	8/7/13	
Morgan Stanton	"	"	
LISA GEIST	USACE	8/7/13	
Lyndsey Kleppin	BERS	8/7/13	
MICHAEL GILLHAM	GLOBAL	8/9/13	

Site Sign-In Log

2013 Debris & Soil Removal Actions
Northeast Cape, St. Lawrence Island, Alaska

Name	Firm Name	Date of Visit	Signature
Joe Sarcone	ATSDR	8/12/2013	Sarcone
Andy Dudley	"	"	
Ron Schreiber	RAB Adv.	8/12/2013	
Isaac Kulowiyi	Savoonga group	8/12/2013	
Paul Rookok, Sr.	SAVOONGA RAB	8/15/13	
JESSE GOLDBERGEN	ACAT	8/12/13	
Amy Kolowiyi		8/12/13	

Site Sign-In Log

2013 Debris & Soil Removal Actions
Northeast Cape, St. Lawrence Island, Alaska

Name	Firm Name	Date of Visit	Signature
Jon Majors	FWX	8-12-13	[illegible]
Winston Maupin	T.A.	8-12-13	[illegible]
Curtis Dunkin	ADEC	8/12/13	[illegible]
AARON SHEWMAN	USACE	13 AUG 13	[illegible]
JIM FREDENHAGEN	SECURITY AV.	8/14/13	[illegible]
NATHAN FRATCKS	SECURITY	8/14/13	[illegible]
Matt Chimenti	Global	8/14/13	[illegible]
Michael Toolie	BERS	8/14/13	Michael Toolie
Chuck Cooley	BERS	8-14-13	Charles L Cooley
Eddie Ungott	NVG	8-15-13	Eddie Ungott
Mark Nupowhokuk	NVG	8-15-13	[illegible]
Perry Pungowiyi	Kukulget Inc	8-15-13	Perry Pungowiyi
BRYAN ROOKOK JR.	" "	8-15-13	[illegible]
Archie Ungwiluk	Sivugag Inc	8-15-13	[illegible]
Jeanette Iya	Kukulget, Inc	8-15-13	[illegible]
Morris Toolie Sr.	Kukulget Inc.	8-15-13	[illegible]
Julie Clark	BERS	8/16/13	Julie Clark
Matt Faust	BERS	8/19/13	[illegible]
RHONDA WICAZOO	BI	8/19/13	[illegible]
Eric Barnhill	BERS	8/19/13	[illegible]
Ron Broyles	USACE	8/23/13	Ron Broyles

Site Sign-In Log

2013 Debris & Soil Removal Actions
Northeast Cape, St. Lawrence Island, Alaska

Name	Firm Name	Date of Visit	Signature
Molly Walker	Bristol	8/23/13	
Curtis Deakin	ADEC	8/23/13	
Lisa Geist	USACE	8/23/13	
Russell James	BERS	8/26/13	
Chuck Cooley	BERS	8-26-13	
[illegible]	BI	8-28	Suzanne Love
Albert Kulowiyi	BERS	8-28-13	
Charles Kava	BERS	8-30-13	
Shirley's	FWS	9-3-13	
Scott K.	BERS	9-3-13	
Valerie Palmer	USACE	9-5-13	
Cory Irwin	BI	9-5-13	
Jeremy Cramer	USACE	9-5-13	
Glen Montagne	Security	9.5.13	
Bryan Carrigan	Security	9-5-13	
Marty Hannah	BERS	9-6-13	
Kevin Maher	Jacobs	9-11-13	
Christopher Dipell	Jacobs	9-11-13	
Julieanna Orczewska	Jacobs	9-11-13	
Tyler Ellingboe	BERS	9/18/13	
George Rowe	CSI	9/18/13	

Site Sign-In Log

2013 Debris & Soil Removal Actions
Northeast Cape, St. Lawrence Island, Alaska

Name	Firm Name	Date of Visit	Signature
Douglas Byers	Global	9-18-13	
Paul Barthier	Global	9-18-13	
Steve Byers	Global	9-18-13	

Site Sign-OUT Log

2013
~~2012~~ **Debris & Soil Removal Actions**
Northeast Cape, St. Lawrence Island, Alaska

	Name	Firm Name	Date of Visit	Signature
	George Meyer	Global	7-1-13	CLC
	Bobby McKulecky	Global	7-3-13	[illegible]
IN	Marty Hannah	BERS	6-30-13	[illegible]
OUT	Marty Hannah	BERS	7-3-13	[illegible]

Site Sign-Out Log

2013 Debris & Soil Removal Actions
Northeast Cape, St. Lawrence Island, Alaska

Name	Firm Name	Date of Departure	Signature
Steve Byers	Global	July 9 2013	[signature]
George Rowe	Global	July 9 2013	[signature]
Paul Gauthier	Global	July 9-13	[signature]
Russell Rowe	Bering	7/12/13	N/A
Jeremy Craner	USACE	7/18/13	[signature]
J. MORRIS	SEC AV	"	[signature]
S. JONES	SEC AV	"	[signature]
Jon Majors	FWX	7.19.13	[signature]
Matt Suda	TestAmerica	7.22.13	[signature]
JESSE GOLDGERGER	ACAT	7.29.13	[signature]
Lyndsey Kleppin	BERS	7/31/13	[signature]
Ron Broyles	USACE	07/31/13	[signature]
Chris Lestochi	USACE	07/31/13	[signature]
Ken Andiaschko	USACE	07/31/13	[signature]
Aldana Grahm	USACE	07/31/13	[signature]
NATHAN FROTZKE	SECURITY	7/31/13	[signature]
Glen Northcote	SECURITY	✓	[signature]
Chuck Croley	BERS	8-2-13	[signature]
Jeremy Craner	USACE	8-7-13	[signature]
Jim Fredenhagen	Security	8-7-13	
Morgan Stanton	Security	8-7-13	

Site Sign-Out Log

2013 Debris & Soil Removal Actions
Northeast Cape, St. Lawrence Island, Alaska

Name	Firm Name	Date of Departure	Signature
Michael Toolie	BERS	8-7-13	Michael Toolie
Chimenti	Matt	8-9-13	[illegible]
Eric Barnhill	BERS	8-12-13	[illegible]
JOHN ORAVEC	Test America	8-12-13	[illegible]
Slate Uys	FWX	8-12-13	[illegible]
Julie Clark	BERS	8/12/13	Julie Clark
Andy Dudley	ATSDR	8/12/13	[illegible]
JESSE GOWGOREN	ACAT	8/12/13	[illegible]
Ron Scrucchio	RAB	8/12/13	[illegible]
ISAAC Kulowiyi	Savoonga group	8/12/13	[illegible]
Paul Rookok Sr.	Savoonga Rep	8/12/13	[illegible]
Joe Sarcone	ATSDR	8/12/13	[illegible]
Curtis Dunkin	ADEC	8/14/13	[illegible]
NATHAN FRATZKE	SECURITY	8/14/13	[illegible]
JIM FREDENHAGEN	SEC AV	8/14/13	[illegible]
LISA GEIST	USACE	8/14/13	[illegible]
Roger Wall	Global	8/14/13	[illegible]
BRYAN ROOKOK JR.	KUKULGET, INC.	8-15-13	[illegible]
Archie Ungwilyk	Sivugag Inc	8-15-13	[illegible]
Perry Pungowiyi	Kukulget Inc	8-15-13	Perry Pungowiyi
Morris Toolie Jr	Kukulget Inc	8-15-13	[illegible]

Site Sign-Out Log

2013 Debris & Soil Removal Actions
Northeast Cape, St. Lawrence Island, Alaska

Name	Firm Name	Date of Departure	Signature
Mark Nugowhotok	NVG	8-15-13	[illegible]
Eddie Ungott	NVG	8-15-13	Eddie Ungott
Jeanette Iya	Kukulgetpsm	8-15-13	Jeanette Iya
Lesa E. Nelson	BERS	8-16-13	Lesa E. Nelson
Russell James	BERS	8/19/13	[illegible]
Suzanne Lovell	BI	8/21/13	S Lovell
Chuck Croley	BERS	8-23-13	Charles L. Croley
AARON SHENNAN	USACE	23 AUG 13	[illegible]
Albert Kulowiyi	BERS	23 Aug 13	[illegible]
Molly Welker	BERS	8/23/13	[illegible]
LISA GEIST	USACE	8/23/13	[illegible]
Curtis Dunkin	ADEC	8/23/13	[illegible]
Matt Faust	BERS	8/26/13	[illegible]
Scott Kingeetuk	BERS	8/26/13	[illegible]
RHONDA NICAZIO	BI	8/28/13	[illegible]
Charles Kava	BERS	8/28/13	[illegible]
Winston Maupin	Testamerica	8/30/13	[illegible]
Jon P Majors	FXNX	9-3-13	[illegible]
Douglas Byers	BERS	9.3.13	[illegible]
Ron Broyles	USACE	09/05/13	[illegible]
BRYAN CARRICABURU	SECURITY	9/5/13	[illegible]

Site Sign-Out Log

2013 Debris & Soil Removal Actions
Northeast Cape, St. Lawrence Island, Alaska

Name	Firm Name	Date of Departure	Signature
Glen Marthaler	Security	9/5/13	
Valerie Palmer	USACE	9/5/13	
Julie Clark	BERS	9/6/13	
Richard W. Loesche	West America	9/09/13	
Marty Hannah		9.9-13	
Joshua Arms	BERS	9.9-13	
Jack Willis	Bers	9-11-13	
	BERS	9-11-13	
Joel Adkins	Bers	9/11/13	
Scott K.	BERS	9/11/13	
Eugene Joshi	BERS	9/11/13	
Kevin Maher	Jacobs	9/17/13	
Lyndsey Kleppin	BERS	9/13/13	
Lindsay Cameron	BERS	9/16/13	
Christopher Fell	JACOBS	9/16/13	
Julieanna Orczewska	Jacobs	9/16/13	
Michael Tjoelker	BERS	9/18/13	
Suzanne Lovell	B1	9-18-13	
Jamison L. Allan	ECO-LAND	9-18-2013	
Slade Uys	FWX	9-18-13	
Sam Jackson	Eco-Land	9-18-13	

Site Sign-Out Log

2013 Debris & Soil Removal Actions
Northeast Cape, St. Lawrence Island, Alaska

Name	Firm Name	Date of Departure	Signature
Maze Thompson	BERS	9-20-13	Maze C. Thompson
Albert Kulowiyi	Bers	9-22-13	[illegible]
Charles Kava	BERS	9-22-13	[illegible]
Mylon Kingeekuk	BERS	9-22-13	Mylon Kingeekuk
Corey Imen	BI	9-22-13	Corey Imen
Jeremy Craner	USACE	9-23-13	Jeremy Craner
Russell James	BERS	9-24-13	[illegible] James
Eric Bainhill	BERS	9-24-13	[illegible]
R. Bissett	GSI	9-20	CLC
D. Walker	GSI	9-20	CLC
T. Ellingboe	BERS	9-20	CLC
Bruce Schneuer	BERS	9-27	CLC
Mike Gillham	Global	9-27	CLC

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: NB Cape -2013 Well No.: 26MW-1
Job Number: 341300 68 Well Type: ☒ Monitor ☐ Extraction ☐ Other
Company: BERS Well Material ☒ PVC ☐ St. Steel ☐ Other
Date: 7/19/13 Time: set-up @ 1000
Purged by: BERS - J. Clark (Signature) Julie Clark

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other

Total Depth of Casing (TD in feet BTOC): 41.81'

Water Level Depth (WL in feet BTOC): 38.69'

PURGE METHOD

☒ Pump – Type: SS Mini Monsoon
☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Peristaltic.
☐ Other – Type:

PUMP INTAKE SETTING

☒ Near Bottom ☐ Near Top ☐ Other
Depth in feet (BTOC): ~41' Screen Interval in Feet (BTOC)

PURGE TIME

1038 Start 1129 Stop 51 min. Elapsed

PURGE RATE

Initial 0.0625 gpm Final 0.039 gpm

ACTUAL PURGE VOLUME

2 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒ °C ☐ °F	Specific Cond. (µS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
1047 / 4 min	38.70	13.6	NM	3.15	63	4.60	317.2	15.01	23.9	0.25 g
1045 / 10 min	38.70	15.2		3.76	55	3.74	301.1	14.18	12.9	0.5 g
1056 / 17 min	38.70	15.3		4.01	52	3.94	259.4	14.51	6.51	0.75 g
1103 / 25 min	38.70	15.3		4.09	51	5.25	251.1	14.05	5.01	1 g
1109 / 31 min	38.70	15.3		4.16	51	5.36	242.6	14.14	4.07	1.25 g
1114 / 36 min.	38.70	15.3		4.11	51	5.42	228.6	14.21	2.49	1.5 g
1121 / 43 min.	38.70	15.3		4.07	50	5.47	225.0	14.05	2.62	1.75 g
1129 / 51 min.	38.70	15.3		4.19	50	5.49	222.7	13.99	1.69	2 g

Sample ID 13NCMOCGW01
Sample time = 1130
* Triple Volume for MS/MSD

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name 2013 NE Cape
Job Number 34130068 Date 7/19/13 Time: 1130
Recorded by Julie Clark (Signature) Sampled by Julio Clark

WELL INFORMATION

Well Number 26MW-1 ~~22MW-2~~ JC **Well Location** MOC

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other

Total Depth of Casing (TD in feet BTOC): ~~34.52~~ JC 41.81
Water Level Depth (WL in feet BTOC): ~~30.28~~ JC 38.69

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ Grab – Type
☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Other – Type:

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
13NCM006WB1	6-40 mL VOAs	GRO/BTEX	HCl	TA-Tacoma	
	3-40 mL VOAs	Methane	HCl		
	2-1L Ambers	DRO/RRO	HCl		
	2-1L Ambers	PAHs	—		
	2-1L Ambers	PCBs			
	1-500mL poly	Total Metals	HNO_3		
	1-500mL poly	Dissolved Metals (filtered)	HNO_3		
	1-500mL poly	MNA parameters	—	NE Cape Mobile Lab	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.
MS/MSD	Triple Vol.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name 2013 NE Cape Well No.: 13MW-2
Job Number 34130068 Well Type: ☒ Monitor ☐ Extraction ☐ Other
Company BERS Well Material: ☒ PVC ☐ St. Steel ☐ Other
Date 7/19/13 Time: Setup @ 1435
Purged by BERS-J Clark Julie Clark
(Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other
Total Depth of Casing (TD in feet BTOC): 34.52'
Water Level Depth (WL in feet BTOC): 30.28'

PURGE METHOD

☒ Pump – Type: 55 Mini Monsoon
☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Peristaltic.
☐ Other – Type:

PUMP INTAKE SETTING

☒ Near Bottom ☐ Near Top ☐ Other
Depth in feet (BTOC): ~32.5 Screen Interval in Feet (BTOC)

PURGE TIME

1456 Start 1536 Stop 40 min. Elapsed

PURGE RATE

Initial 0.05 gpm Final 0.056 gpm

ACTUAL PURGE VOLUME

2.25 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒ °C ☐ °F	Specific Cond. (µS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
1501 / 5 min.	30.31	13.5	NM	5.02	69	5.08	212.3	15.19	14.4	0.25 g
1506 / 10 min.	30.31	13.5		5.07	69	5.07	209.4	15.23	12.1	0.5 g
1510 / 14 min.	30.31	14.1		5.14	69	5.44	180.9	15.23	6.44	0.75 g
1514 / 18 min.	30.31	14.2		5.17	69	5.64	170.5	15.03	4.35	1 g
1518 / 22 min	30.30	14.3		5.25	69	5.83	151.8	14.94	2.65	1.25 g
1522 / 26 min	30.30	14.1		5.34	69	5.91	136.2	14.90	1.83	1.5 g
1527 / 31 min.	30.30	14.0		5.38	69	5.96	135.8	14.90	2.47	1.75 g
1531 / 35 min.	30.30	14.0		5.41	69	5.96	133.0	14.84	1.53	2 g
1536 / 40 min.	30.30	14.2		5.42	69	5.93	129.5	14.82	1.68	2.25 g

Sample ID = 13NCMOCGW02
Sample time = 1540

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name 2013 NE Cape
Job Number 34130068 Date 7/19/13 Time: 1540
Recorded by Julie Clark (Signature) Sampled by Julie Clark

WELL INFORMATION

Well Number 22MW-2 **Well Location** MOC

Casing Diameter (D in inches): ☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other

Total Depth of Casing (TD in feet BTOC): 34.52

Water Level Depth (WL in feet BTOC): 30.28

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ Grab – Type

☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Other – Type:

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
13NCMOC6W02	3-40mL VOAs	GRO/BTEX	HCl	TA-Tacoma	
	3-40mL VOAs	Methane	HCl		
	2-1L Ambers	DRO/RRO	HCl		
	2-1L Ambers	PAHs	—		
	2-1L Ambers	PCBs	—		
	1-500 mL poly	Total Metals	HNO_3		
	1-500 mL poly	Dissolved Metals	HNO_3		Field filtered
	1-500 mL poly	MNA Parameters	—	Mobile lab	

QUALITY CONTROL SAMPLES N/A

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: 203 NE Cape Well No.: 17MW-1
Job Number: 34130068 Well Type: ☒ Monitor ☐ Extraction ☐ Other
Company: BERS Well Material: ☒ PVC ☐ St. Steel ☐ Other
Date: 7/20/13 Time: 0900
Purged by: BERS - J. Clark Julie Clark (Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other
Total Depth of Casing (TD in feet BTOC): 16.71
Water Level Depth (WL in feet BTOC): 14.12
~16

PURGE METHOD

☒ Pump – Type: SS Mini Monsoon
☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Peristaltic
☐ Other – Type:

PUMP INTAKE SETTING

☒ Near Bottom ☐ Near Top ☐ Other
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC)

PURGE TIME

0921 Start 1025 Stop 64 min Elapsed

PURGE RATE

Initial 0.0357 gpm Final 0.0547 gpm

ACTUAL PURGE VOLUME

3.5 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒ °C ☐ °F	Specific Cond. (µS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
0928/7 min	14.12	12.3	NM	3.45	74	3.69	256.7	9.68	214	0.25g
0936/15 min	14.17	11.5		4.04	68	4.44	220.0	9.19	123	0.5g
0941/20 min	14.12	12.5		2.21	65	3.12	296.5	10.25	56.0	1 g
0945/24 min	14.12	10.5		2.67	65	3.30	275.8	9.61	48.1	1.5 g
0953/32 min	14.12	10.0		2.60	65	4.49	216.5	9.72	43.7	2 g
0959/38 min.	14.12	10.0		3.15	66	5.13	174.8	9.24	33.4	2.5g
1009/48 min	14.12	10.7		3.20	66	5.40	153.8	9.82	28.5	2.75 g
1015/54 min.	14.12	11.0		3.25	67	5.34	151.2	9.88	27.3	3 g
1020/59 min.	14.12	10.4		3.55	67	5.43	144.1	9.73	29.0	3.25 g
1025/64 min.	14.12	10.5		3.46	65	5.45	149.2	9.77	33.7	3.5 g

started truck

Sample ID: 13NCMCCGW03
Sample time = 1030

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name 2013 NE Cape
Job Number 34130068 Date 7/20/13 Time: 1030
Recorded by Julie Clark (Signature) Sampled by Julie Clark

WELL INFORMATION

Well Number 17MW-1 **Well Location** MOC

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other _____

Total Depth of Casing (TD in feet BTOC): 16.71
Water Level Depth (WL in feet BTOC): 14.12

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: _____ ☐ Grab – Type _____
☒ Submersible ☐ Centrifugal ☐ Bladder _____ ☐ Other – Type: _____

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
13NCMOCGW03	3-40 mL VOAs	GRO/BTEX	HCl	TA-Tacoma	
	3-40 mL VOAs	Methane	HCl		
	2-1L ambers	DRO/RRO	HCl		
	2-1L ambers	PAHs	—		
	2-1L ambers	PCBs	—		
	1-500mL poly	Total metals	HNO_3		
	1-500 mL poly	Dissolved metals	HNO_3		Field Filtered
	1-500 mL poly	MNA parameters	—	Field lab	

QUALITY CONTROL SAMPLES N/A

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: 2013 NE Cape | Well No.: MW-10-1
Job Number: 3413006B | Well Type: ☒ Monitor ☐ Extraction ☐ Other
Company: BERS | Well Material: ☒ PVC ☐ St. Steel ☐ Other
Date: 7/20/13 | Time: 1300
Purged by: BERS - J. Clark | Julie Clark (Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):

☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other

Total Depth of Casing (TD in feet BTOC): 11.33

Water Level Depth (WL in feet BTOC): 7.43

~11

PURGE METHOD

☒ Pump – Type: SS Mini Monsoon

☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Peristaltic.

☐ Other – Type:

PUMP INTAKE SETTING

☒ Near Bottom ☐ Near Top ☐ Other

Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC)

PURGE TIME

1325 Start 1423 Stop 58 min. Elapsed

PURGE RATE

Initial 0.0313 gpm Final 0.0345 gpm

ACTUAL PURGE VOLUME

2 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒ °C ☐ °F	Specific Cond. (µS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
1333/8 min.	7.81	6.2	NM	3.61	74	3.75	141.7	3.91	288	0.25 g
1340/15 min.	7.90	6.3		3.67	76	5.06	78.5	2.83	109	0.5 g
1346/21 min	7.95	6.3		3.64	76	5.27	70.4	2.36	58.4	0.75g
1352/27 min.	8.00	6.3		3.70	76	5.36	68.2	2.05	44.2	1 g
1359/34 min	8.04	6.3		3.67	77	5.44	66.8	1.56	24.0	1.25 g
1406/41 min.	8.07	6.3		3.72	77	5.45	67.1	1.37	19.1	1.5 g
1414/49 min.	8.10	6.3		3.78	78	5.43	68.9	1.27	21.3	1.75g
1423/58 min.	8.12	6.3		3.79	78	5.43	68.9	1.26	20.3	2 g

Sample ID = 13NCMOCGW04
Sample time = 1425

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol

ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name 2013 NE Cape
Job Number 341300068 Date 7/20/13 Time: 1425
Recorded by Julie Clark (Signature) Sampled by Julie Clark

WELL INFORMATION

Well Number MW10-1 **Well Location** MOC

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other _____

Total Depth of Casing (TD in feet BTOC): 11.33
Water Level Depth (WL in feet BTOC): 7.43

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: _____ ☐ Grab – Type _____
☒ Submersible ☐ Centrifugal ☐ Bladder _____ ☐ Other – Type: _____

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
13NCMOCGW004	3-40mL VOAs	GRO/BTEX	HCl	TA-Tacoma	
	3-40mL VOAs	Methane	HCl		
	2-1L ambers	DRO/RRO	HCl		
	2-1L ambers	PAHs	—		
	2-1L ambers	PCBs	—		
	1-500mL poly	Total metals	HNO_3		
	1-500mL poly	Dissolved metals	HNO_3		Field filtered
	1-500mL poly	MNA parameters	—	Field lab	

QUALITY CONTROL SAMPLES N/A

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name 2013 NE Cape Well No.: 20 MW-1
Job Number 34130068 Well Type: ☒ Monitor ☐ Extraction ☐ Other
Company BERS Well Material ☒ PVC ☐ St. Steel ☐ Other
Date 7/20/13 Time: 1525
Purged by BERS- J. Clark (Julie Clark) (Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other
Total Depth of Casing (TD in feet BTOC): 28.82
Water Level Depth (WL in feet BTOC): 24.99
~27.5

PURGE METHOD

☒ Pump – Type: SS Mini Monsoon
☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Peristaltic.
☐ Other – Type:

PUMP INTAKE SETTING

☒ Near Bottom ☐ Near Top ☐ Other
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC)

PURGE TIME

1343 Start 1624 Stop 41 min. Elapsed

PURGE RATE

Initial 0.1 gpm Final 0.0853 gpm

ACTUAL PURGE VOLUME

3.5 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒ °C ☐ °F	Specific Cond. (µS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
1548/5 min	25.44	11.5	NM	3.24	79	4.72	153.3	11.36	66.1	0.5g
1553/10 min	25.45	11.6	|	3.19	79	4.67	139.1	10.95	65.1	1g
1559/16 min.	25.46	11.6	|	3.32	80	5.29	100.2	10.55	37.0	1.5g
1605/22 min.	25.47	11.6	|	3.50	81	5.57	72.7	10.49	20.3	2g
1611/28 min.	25.47	11.6	|	3.57	82	5.64	64.9	10.46	12.8	2.5g
1617/34 min.	25.47	11.6	|	3.56	82	5.69	58.5	10.42	10.1	3g.
1624/41 min.	25.50	11.6	|	3.56	83	5.68	62.4	10.45	8.15	3.5g

Sample ID = 13NCMOCGW05
Sample time = 1625

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol

ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name 2013 NE Cape
Job Number 34130068 Date 7/20/13 Time: 1625
Recorded by Julie Clark (Signature) Sampled by Julie Clark

WELL INFORMATION

Well Number 20 MW-1 **Well Location** MOC

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other _____

Total Depth of Casing (TD in feet BTOC): 28.82
Water Level Depth (WL in feet BTOC): 24.99

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: _____ ☐ Grab – Type _____
☒ Submersible ☐ Centrifugal ☐ Bladder _____ ☐ Other – Type: _____

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
13NCMOCGW05	3-40mL VOAs	GRO/BTEX	HCl	TA-Tacoma	
	3-40mL VOAs	Methane	HCl		
	2-1L ambers	DRO/RRO	HCl		
	2-1L ambers	PAHs	—		
	2-1L ambers	PCBs	—		
	1-500mL poly	Total metals	HNO_3		
	1-500mL poly	Dissolved metals	HNO_3		Field filtered
	1-500mL poly	MNA parameters	—	Field lab	

QUALITY CONTROL SAMPLES N/A

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: 2013 NE Cape Well No.: MW 88-10
Job Number: 34130068 Well Type: ☒ Monitor ☐ Extraction ☐ Other
Company: BERS Well Material: ☒ PVC ☐ St. Steel ☐ Other
Date: 7/21/13 Time: 0840
Purged by: BERS - J. Clark (Signature) Julie Clark

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other
Total Depth of Casing (TD in feet BTOC): 25.42'
Water Level Depth (WL in feet BTOC): 23.31
~25'

PURGE METHOD

☒ Pump – Type: GS Mini Monsoon
☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Peristaltic.
☐ Other – Type:

PUMP INTAKE SETTING

☒ Near Bottom ☐ Near Top ☐ Other
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC)

PURGE TIME / PURGE RATE / ACTUAL PURGE VOLUME

0859 Start 1011 Stop 72 min. Elapsed Initial 0.083 gpm Final 0.069 gpm 5 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒ °C ☐ °F	Specific Cond. (µS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
0905/6 min.	23.75	12.3	NM	2.36	65	3.75	331.3	0.74	44.9	0.5 g
0911/12 min.	23.68	13.1		2.50	69	3.78	327.0	0.78	32.7	1 g
0918/19 min.	23.68	13.0		3.20	72	4.90	222.2	0.54	19.5	1.5 g
0924/25 min.	23.68	13.0		3.45	73	5.20	190.4	0.52	8.79	2 g
0930/31 min.	23.68	12.8		3.54	74	5.35	173.9	0.47	6.13	2.5 g
0937/38 min.	23.61	12.5		3.84	76	5.63	152.0	0.47	4.99	3 g
0944/45 min.	23.60	13.4		3.71	75	5.75	146.4	0.42	3.54	3.5 g
0954/55 min.	23.61	13.4		3.70	74	5.79	138.4	0.44	2.96	4 g
1002/63 min.	23.60	13.4		3.68	74	5.81	133.7	0.43	2.60	4.5 g
1011/72 min.	23.61	13.4		3.64	75	5.82	129.6	0.37	2.03	5 g

Sample ID = 13NCMOCGW06 DUPLICATE: 13NCMOCGW07 @ 1100
Sample Time = 1015

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol

ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name 2013 NE Cape
Job Number 34130068 Date ~~7/22/13~~ JC 7/21/13 Time: 1015
Recorded by Julie Clark (Signature) Sampled by ~~ER/EB~~ JC Julie Clark

WELL INFORMATION

Well Number MW88-10 **Well Location** MOC

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other _____

Total Depth of Casing (TD in feet BTOC): 25.42
Water Level Depth (WL in feet BTOC): 23.31

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: _____ ☐ Grab – Type _____
☒ Submersible ☐ Centrifugal ☐ Bladder _____ ☐ Other – Type: _____

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
13NCMOCGW06	3-40 mL VOAs	GRO/BTEX	HCl	TA-Tacoma	
	3-40 mL VOAs	Methane	HCl		
	2-1 L ambers	DRO/RRO	HCl		
	2-1 L ambers	PAHs	—		
	2-1 L ambers	PCBs	—		
	1-500 mL poly	Total Metals	HNO_3		
	1-500 mL poly	Dissolved Metals	HNO_3		Field Filtered
	1-500 mL poly	MNA parameters	—	Field lab	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.
13NCMOCGW06	13NCMOCGW07

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: 2013 NE Cape | Well No.: MW 88-1
Job Number: 34130065 | Well Type: ☒ Monitor ☐ Extraction ☐ Other
Company: BERS | Well Material: ☒ PVC ☐ St. Steel ☐ Other
Date: 7/21/13 | Time: 1155
Purged by: BERS-J. Clark (Julie Clark) (Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other
Total Depth of Casing (TD in feet BTOC): 23.25
Water Level Depth (WL in feet BTOC): 19.67

PURGE METHOD

☒ Pump – Type: SS Mini Monsoon
☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Peristaltic.
☐ Other – Type:

PUMP INTAKE SETTING

☒ Near Bottom ☐ Near Top ☐ Other
~22 Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC)

PURGE TIME

1210 Start 1259 Stop 49 min. Elapsed

PURGE RATE

Initial 0.1 gpm Final 0.102 gpm

ACTUAL PURGE VOLUME

5 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒ °C ☐ °F	Specific Cond. (µS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
1215/5 min.	19.73	12.0	NM	2.20	69	4.35	206.1	2.31	347	0.5g
1220/10 min.	19.73	12.0		2.00	68	4.13	192.1	1.94	115	1g
1225/15 min.	19.73	12.2		2.19	68	4.09	183.0	2.03	43.6	1.5g
1230/20 min.	19.72	12.4		2.47	69	4.57	159.8	2.07	23.9	2g
1235/25 min.	19.72	12.4		2.53	68	4.83	144.6	2.20	17.8	2.5g
1240/30 min.	19.72	12.4		2.50	68	5.00	135.1	2.20	10.6	3g
1245/35 min.	19.72	12.4		2.53	68	5.12	128.1	2.26	6.76	3.5g
1249/39 min.	19.72	12.5		2.55	68	5.22	121.4	2.31	7.06	4g
1254/44 min.	19.72	12.4		2.57	68	5.23	116.9	2.26	7.11	4.5g
1259/49 min.	19.72	12.4	↓	2.60	68	5.31	114.3	2.23	6.84	5g

Sample ID = 13NCMOCGW08
Sample time = 1300

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol

ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name 2013 NE Cape
Job Number 34130068 Date 7/21/13 Time: 1300
Recorded by Julie Clark (Signature) Sampled by Julie Clark

WELL INFORMATION

Well Number MW88-1 **Well Location** MOC

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other _____

Total Depth of Casing (TD in feet BTOC): 23.25
Water Level Depth (WL in feet BTOC): 19.67

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: _____ ☐ Grab – Type _____
☒ Submersible ☐ Centrifugal ☐ Bladder _____ ☐ Other – Type: _____

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
13NCMOCGW88	3-40mL VOAs	GRO/BTEX	HCl	TA-Tacoma	
	3-40mL VOAs	Methane	HCl		
	2-1L ambers	DRO/RRO	HCl		
	2-1L ambers	PAHs	—		
	2-1L ambers	PCBs	—		
	1-500mL poly	Total metals	HNO_3		
	1-500mL poly	Dissolved metals	HNO_3		Field filtered
	1-500mL poly	MNA parameters	—	Field lab	

QUALITY CONTROL SAMPLES N/A

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC

BOREHOLE ID: 215B01-04

Client: USACE

Job No. 3413006.B

Site Name: site 21
Site Location:
Date Started: 7/11/13
Date Completed: 7/11/13
Logged By: LK
Company: BERS
Total Depth: 3' unless otherwise specified

Drilling Company:
Driller: n/a
Drill Rig: hand auger / excavator
Borehole Diameter:
Sampling Method:

Depth in Feet	Sample Interval	Blow Count	% Recovery	Sample ID	DESCRIPTION	PID (ppm)	WATER LEVEL	USCS	Estimated % Fines	Estimated % Sand	Estimated % Grave	REMARKS
1				13NC215501-0.5	1030 silty peat with some clay loose, wet dark brown to black peat, dark brown to reddish brown silt							
2				13NC215501-2	1040 silt with peat soft, moist dark reddish brown							
3				13NC215501-3	1045 organic silt, moist, medium stiff with peat, brown							
1				13NC215502-0.5	1050 peaty silt, dark brown, moist, medium stiff							
2				13NC215502-2	1100 silt with peat, moist, soft, dark brown to brown							
3				13NC215502-3	1105 silt, moist, medium stiff, dark brown							
1				13NC215503-0.5	1109 peaty silt, wet, loose, dark brown							
2				13NC215503-2	1112 silt, moist, soft to medium stiff, reddish brown							
3				13NC215503-3	1115 peaty silt, moist, medium stiff, reddish brown							
					surface is a moist vegetative mat with dead grass							
1				13NC215504-0.5	1121 silt with peat, moist to dry, medium stiff, dark brown							
2				13NC215504-2	1127 silt with peat, moist, medium stiff, brown							
3				13NC215504-3	1132 peaty silt with sand, medium stiff, moist, dark brown to greyish brown							

215B01
215B02
215B03
215B04

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC

BOREHOLE ID: 215B05 - 215B08

Client: USACE

Job No. 3913006B

Site Name:
Site Location:
Date Started: 7/11/13
Date Completed: 7/11/13
Logged By: LK
Company:
Total Depth: 3' unless otherwise specified

Drilling Company:
Driller :
Drill Rig : Auger
Borehole Diameter:
Sampling Method:

Depth in Feet	Sample Interval	Blow Count	% Recovery	Sample ID	DESCRIPTION	PID (ppm)	WATER LEVEL	USCS	Estimated % Fines	Estimated % Sand	Estimated % Grave	REMARKS
215B05												
1				13NC215505-0.5 1138	Silty peat, reddish brown, moist, medium stiff,							
2				13NC215505-2 1140 / 13NC215505-2.5 1142	silt, moist, medium stiff, greyish brown							DUPLICATE SAMPLE
3				13NC215505-3 1148	silt with sand, moist, greyish brown, medium stiff, fine to medium sand							
215B06				13NC215506-0.5 1308	hand-sampled under vegetative mat Peat with silt, dark brown, wet, loose to medium dense							
1												
2				13NC215506-2 1310	silt with fine sand and clay, ~~moist~~, dry, firm greyish brown							
3				13NC215506-3 1315	as above							
				~~13NC215506~~								
215B07				13NC215507-0.5 1330	peat with silt, wet, medium dense, reddish brown							
1												
2				Refusal w/ auger @ 1' - large gravel								
3				13NC215507-2 0904	frozen peat, brown			13NC215507-2.5 0908				DUPLICATE
				13NC215507-3 0915	silty frozen, ~~grey~~brownish grey with clay							MS/MSD
215B08				13NC215508-0.5 1335	peaty silt, wet, loose, reddish brown to dark brown							
1												
2				refusal @ 7 inches - gravel								
3				silty gravel with peat coarse gravel, cobbles (40%)								
				13NC215508-2 0924	peat, moist, brown							
				13NC215508-3 0926	peat, moist, brown							

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC

Client: USACE

Job No. 34130006 B

BOREHOLE ID: 21SB09 - 12

Site Name: Site 21
Site Location:
Date Started: 7/11/13
Date Completed: 7/12/13
Logged By: LK
Company: BERS
Total Depth: 3'

Drilling Company:
Driller :
Drill Rig : hand auger / excavator
Borehole Diameter:
Sampling Method:

Depth in Feet	Sample Interval	Blow Count	% Recovery	Sample ID	DESCRIPTION	PID (ppm)	WATER LEVEL	USCS	Estimated % Fines	Estimated % Sand	Estimated % Grave	REMARKS
					13NC215509-0.5 1345 silty peat with sand, medium stiff, moist greyish brown							
					refusal @ 1' - gravel, cobbles							
					13NC215509-2 0931 silty peat, wet, loose, brown to reddish brown							
					13NC215509-3 0933 brown peat, brown							
					13NC215510-0.5 1347 peat with silt and sandy, wet, dark brown loose							
					refusal at 7" - cobbles, gravel							
					13NC215510-2 0832 / 13NC215510-2.5 0836 gravel with cobbles: silt with some peat wet, loose, greyish olive brown							DUPLICATE SAMPLE
					13NC215510-3 1044 MS/MSD Peat, medium stiff, moist, brown with silty grey sand							MS/MSD
					13NC215511-0.5 1352 peaty silt, wet, loose, dark brown to very dark brown							
					refusal @ 1' - cobbles							
					13NC215511-2 0815 / 13NC215511-2.5 0818 silty peat, moist, soft, dark brown with gravel, cobbles							DUPLICATE SAMPLE 7/12/13 excavator
					13NC215511-3 0822 gravel + woody man-made debris - peat, dark brown, moist, wood 1355							
					13NC215512-0.5 silty peat with fine gravel, wet, loose, dark brown to dark reddish brown							
					refusal at 8"							
					13NC215512-2 828 silty peat, moist, soft dark brown with cobbles to black, grassy							
					13NC215512-3 0830 silty peat, moist, ~~firm~~ very dark brown/black grassy with cobbles							

21SB09
21SB10
21SB11
21SB12

blue pen - 7/12/13 excavator

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC

Client: USACE

Job No. 34130068

BOREHOLE ID: 215B13 - 16

Site Name: Site 21
Site Location:
Date Started: 7/11/12
Date Completed: 7/12/12
Logged By: LK
Company: BERS
Total Depth: 31

Drilling Company:
Driller :
Drill Rig : hand auger/excavator
Borehole Diameter:
Sampling Method:

Depth in Feet	Sample Interval	Blow Count	% Recovery	Sample ID	DESCRIPTION	PID (ppm)	WATER LEVEL	USCS	Estimated % Fines	Estimated % Sand	Estimated % Grave	REMARKS
					13NC215513-0.5 1609 silty peat, wet, medium dense, reddish brown							
1					refusal @ 1' bgs - gravel 13NC215513-2 0855 gravel silt, loose, wet, greyish olive brown							
2					13NC215513-3 0900 peat, frozen, brown							
3												
					13NC215514-0.5 1412 silty peat, moist, reddish brown, medium dense							
1												
2					13NC215514-2 1418 silty peat with clay, moist, dark brown, medium							
3					auger refusal @ 2.5' ft - ~~cobbles + gravel~~ permafrost ~~+ frozen~~ ~~13NC215514-3~~							
					13NC215514-3 1425 silty peat, frozen, with trace coarse sand ~~brown~~ brown							
					13NC215515-0.5 0935 / 13NC215515-1 peaty silt, reddish brown, moist, soft		0940					duplicate sample
1												
2					13NC215515-2 0945 silty gravel, wet, loose, ~~red~~ olive grey							
3					13NC215515-3 0948 peat, dark brown with silt							
					13NC215516-0.5 1358 peaty silt, wet, loose to medium dense, greyish brown							
1												
2					13NC215516-2 1402 silt, moist, medium dense, greyish brown							
3					13NC215516-3 1406 sandy silt, fine sand, moist, with clay, grey medium stiff							

215B13
215B14
215B15
215B16

SB17	
Depth (bgs)	mg/Kg
0.5	14
2	7.4 J
2 dup	4
3	4.6

SB05	
Depth (bgs)	mg/Kg
0.5	12
2	4.1
2 dup	4.2
3	3.9

SB06	
Depth (bgs)	mg/Kg
0.5	2.6
2	3.8
3	6

SB16	
Depth (bgs)	mg/Kg
0.5	5.3
2	5.6
3	3.8

SS018	
Depth	mg/Kg
Sidewall Sample	320

12NCWA0001/002	
Depth	mg/L
Surface Water	0.0052*

SS017	
Depth	mg/Kg
Sidewall Sample	110

SB18	
Depth (bgs)	mg/Kg
0.5	33
2	9.1
3	4.1

SS012	
Depth	mg/Kg
Floor Sample	5.6

SB07	
Depth (bgs)	mg/Kg
0.5	210
2	6.6
2 dup	6.5
3	4.2 J

SB08	
Depth (bgs)	mg/Kg
0.5	43
2	3.5
3	2.2

SB03	
Depth (bgs)	mg/Kg
0.5	5.5
2	3.1
3	4

SS002	
Depth	mg/Kg
Floor Sample	32 D

SS021	
Depth	mg/Kg
Floor Sample	5.3

SB15	
Depth (bgs)	mg/Kg
0.5	88
0.5 dup	49
2	9
3	12

4 cubic yards

40 cubic yards

38 cubic yards

SB04	
Depth (bgs)	mg/Kg
0.5	4.6
2	5.8
3	8.1

3 cubic yards

SS019	
Depth	mg/Kg
Sidewall Sample	23

SS020	
Depth	mg/Kg
Sidewall Sample	99

SB19	
Depth (bgs)	mg/Kg
0.5	6.4
2	23
3	4.4

SS001	
Depth	mg/Kg
Floor Sample	56 D

SB09	
Depth (bgs)	mg/Kg
0.5	16
2	6.9
3	5.4

SB02	
Depth (bgs)	mg/Kg
0.5	6.5
2	5.6
3	4

SB14	
Depth (bgs)	mg/Kg
0.5	11
2	5.5
3	5.9

SB01	
Depth (bgs)	mg/Kg
0.5	27
2	4.2
3	5.3

SS003	
Depth	mg/Kg
Floor Sample	22 D

55 cubic yards

SB11	
Depth (bgs)	mg/Kg
0.5	21
2	29
2 dup	34
3	30

SB10	
Depth (bgs)	mg/Kg
0.5	23
2	4.2
2 dup	4.1
3	15

SB12	
Depth (bgs)	mg/Kg
0.5	24
2	34
3	14

SB13	
Depth (bgs)	mg/Kg
0.5	14
2	3.8
3	1.1

SB20	
Depth (bgs)	mg/Kg
0.5	10.0
0.5 dup	7.6
2	4.8
3	8.9

Legend

- Sample Location Below Cleanup Level at -0.5 feet
- Sample Location Above Cleanup Level at -0.5 feet
- Sample Location Below Cleanup Level at -2.0 feet
- Sample Location Above Cleanup Level at -2.0 feet
- Sample Location Below Cleanup Level at -3.0 feet
- Sample Location Above Cleanup Level at -3.0 feet
- 2011 Floor Sample Location
- 2012 Sidewall Sample Location
- 2012 Surface Water Sample
- 2012 Floor Sample Location
- Edge of Disturbed Ground
- Current Excavation Extent
- Proposed Extent of Excavation to -1.0 feet (43 cubic yards)
- Proposed Extent of Excavation to -2.5 feet (38 cubic yards)
- Proposed Extent of Excavation to -3.5 feet (59 cubic yards)

N W E S

0 5 10

Feet

Total Prosed Excavation
140 cubic yards
Approximately 224 tons

Notes:
Estimated weight assumes 1.6 tons per cubic yard.

* highest concentration analyzed
mg/kg milligrams per kilogram
mg/L milligrams per liter
bgs below ground surface
D sample was analyzed at a dilution
dup duplicate
J estimated

Figure 1
Northeast Cape, AK
Site 21 Proposed Excavation Extents

Bristol Environmental Remediation Services, LLC
Phone (907)563-0013 Fax (907)563-6713

DATUM:			
NAD83	DATE	08/05/13	SHEET
PROJECTION:	DWN.	NAP	1
AK SP 9 FT	SCALE	1" = 10'	of
Project No. 34130068	APPRVD.	MW	1

Document Path: G:\Jobs\34130068 NE Cape 2013\MAPS\Figure-1.mxd

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS0001 Depth: 0-0.5

Date: 8/5/13 Time: 1450

Sampling instrument: (Hand auger) Clam gun Other: _____

Sample Description: Clayey silt, gray, med. dense, moist,
(material type, moisture content, color, etc.) no odor. Soil matrix. Collected from Removal Area 8.

Comments: * MS/MSD - Triple Volume

Sample ID: 13NC28SS0002 Depth: 0-0.5'

Date: 8/5/13 Time: 1515

Sampling instrument: (Hand auger) Clam gun Other: _____

Sample Description: 75% clayey silt, 25% peat, brown w/ some
(material type, moisture content, color, etc.) dark gray staining, med. dense, moist, strong HC odor. Soil matrix.

Comments: * Duplicate 13NC28SS0003 @ 1520 hrs. Collected from Removal Area 7.

Sample ID: 13NC28SS0004 Depth: 0-0.5'

Date: 8/5/13 Time: 1535

Sampling instrument: (Hand auger) Clam gun Other: _____

Sample Description: Clayey silt w/ ~5% large gravel, brown,
(material type, moisture content, color, etc.) med. dense, moist-wet, no odor.

Comments: Soil matrix. Collected from Removal Area 5 North.

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS005 Depth: 0-0.5'

Date: 8/5/13 Time: 1555

Sampling instrument: (Hand auger) Clam gun Other: _____

Sample Description: 75% Clayey silt, ~25% peat, gray (silt), brown (material type, moisture content, color, etc.) (peat), med. dense, no odor, moist-wet

Comments: Soil matrix. Collected from Removal Area 5 South.

Sample ID: 13NC28SS006 Depth: 0-0.5'

Date: 8/5/13 Time: 1625

Sampling instrument: (Hand auger) Clam gun Other: _____

Sample Description: 90% peat, 10% silt, brown (peat), dark gray (silt), (material type, moisture content, color, etc.) med. dense, moist (peat), wet (silt), strong HC odor.

Comments: Soil matrix - thin layer of sediment on top. Collected from Removal Area 6.

Sample ID: 13NC28SS007 Depth: 0-0.5'

Date: 8/5/13 Time: 1645

Sampling instrument: (Hand auger) Clam gun Other: _____

Sample Description: 60% peat, 40% silt, brown, med. dense, moist, (material type, moisture content, color, etc.) mod.-strong HC odor

Comments: Soil matrix. Collected from Removal Area 6

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS006 Depth: 0-0.5'

Date: 8/11/13 Time: 0940

Sampling instrument: (Hand auger) Clam gun Other: _____

Sample Description: Primarily vegetation-grass, ~~10~~ 25% SC. silt, wet,
(material type, moisture content, color, etc.) brown, med. dense, no odor

Comments: Soil matrix. Collected from Removal Area 3

Sample ID: 13NC28SS009 Depth: 0-0.5

Date: 8/11/13 Time: 0950

Sampling instrument: Hand auger Clam gun (Other:) Manual removal - hand

Sample Description: ~75% vegetation-grass, 25% silt, wet,
(material type, moisture content, color, etc.) black, med. dense, mod.-strong HC odor

Comments: Soil matrix. Collected from Removal Area 3.
* Too many rocks at sample location to use hand auger.

Sample ID: 13NC28SS010 Depth: 0-0.25

Date: 8/11/13 Time: 1005

Sampling instrument: Hand auger Clam gun (Other:) Manual removal - hand

Sample Description: Gravelly sand, trace vegetation and mucky
(material type, moisture content, color, etc.) silt, brown ~~(silt)~~ SC & black, wet, loose - med. dense, mod. HC odor

Comments: Soil matrix. Collected from Removal Area 3.

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS011 Depth: 0-0.5'

Date: 8/11/13 Time: 1015

Sampling instrument: (Hand auger) Clam gun Other: _____

Sample Description: 90% peat, 10% mucky silt, brown (peat),
(material type, moisture content, color, etc.) black (silt), moist (peat), wet (silt),
med. dense, mod. - strong HC odor

Comments: Soil matrix. Collected from Removal Area 3.

Sample ID: 13NC28SS012 Depth: 0-0.5'

Date: 8/11/13 Time: 1025

Sampling instrument: (Hand auger) Clam gun Other: _____

Sample Description: ~50% vegetation-grass, 25% peat, 25%
(material type, moisture content, color, etc.) silt, brown & black, wet, med. dense, slight-mod.
HC odor

Comments: Soil matrix. Collected from Removal Area 3.

Sample ID: 13NC28SS013 Depth: 0-0.5'

Date: 8/11/13 Time: 1035

Sampling instrument: (Hand auger) Clam gun Other: _____

Sample Description: ~50% peat, 25% silt, 25% gravelly sand,
(material type, moisture content, color, etc.) brown/black, wet, med dense, mod. HC odor

Comments: Soil matrix. Collected from Removal Area 3.

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS014 Depth: 0-0.5

Date: 8/30/13 Time: 1405

Sampling instrument: Hand auger Clam gun Other: Manual removal - hand

Sample Description: 50% veg. mat, 50% silt, brown/black,
(material type, moisture content, color, etc.) wet, med. dense, mod. - strong HC odor

Comments: Soil matrix. Collected from Removal Area 3.
* DUPLICATE 13NC28SS015 @ 1410.

Sample ID: 13NC28SS016 Depth: 0-0.5

Date: 8/30/13 Time: 1420

Sampling instrument: Hand auger Clam gun Other: 75% native silt (gray)

Sample Description: 25% grass/vegetation (brown/dark brown), wet,
(material type, moisture content, color, etc.) med dense, no odor

Comments: Soil matrix. Collected from Removal Area 3.

Sample ID: 13NC28SS017 Depth: 0-0.5

Date: 8/30/13 Time: 1440

Sampling instrument: Hand auger Clam gun Other:

Sample Description: 90% grass/vegetation, 10% mucky silt, wet,
(material type, moisture content, color, etc.) dark brown, no odor

Comments: Soil matrix. Collected from Removal Area 3.

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS018 Depth: 0-0.5'

Date: 8/30/13 Time: 1455

Sampling instrument: Hand auger Clam gun (Other:) Manual- hand

Sample Description: 50% grass/vegetation, 50% mucky silt, wet,
(material type, moisture content, color, etc.) med. dense, dark brown, slight-mod. HC odor

Comments: Soil matrix. Collected from Removal Area 3.

Sample ID: 13NC28SS019 Depth: 0-0.5'

Date: 8/30/13 Time: 1515

Sampling instrument: (Hand auger) Clam gun Other:

Sample Description: 50% grass/vegetation, 50% mucky silt, wet,
(material type, moisture content, color, etc.) med. dense, dark brown, slight HC odor

Comments: Soil matrix Collected from Removal Area 3
* Triple volume for MS/MSD

Sample ID: 13NC28SS026 Depth: 0-0.5

Date: 8/30/13 Time: 1530

Sampling instrument: Hand auger Clam gun (Other:) Manual- hand

Sample Description: 75% mucky silt, 25% grass/vegetation, wet,
(material type, moisture content, color, etc.) med. dense, brown, poss. slight HC odor

Comments: Soil matrix. Collected from Removal Area 3.

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS021 Depth: 0-0.5'

Date: 8/30/13 Time: 1545

Sampling instrument: Hand auger Clam gun (Other:) Manual-hand

Sample Description: 75% grass/vegetation, 25% mucky silt,
(material type, moisture content, color, etc.) dark brown and black, wet, ~~dten~~ JC med. dense, med. HC odor

Comments: Soil matrix. Collected from Removal Area 3.

Sample ID: 13NC28SS022 Depth: 0-0.5

Date: 8/30/13 Time: 1555

Sampling instrument: Hand auger Clam gun (Other:) Manual-hand

Sample Description: 75% mucky silt, 25% grass/vegetation, dark brown,
(material type, moisture content, color, etc.) wet, loose-med. dense, poss. slight HC odor

Comments: Soil matrix. Collected from Removal Area 3

Sample ID: 13NC28SS023 Depth: 0-0.75

Date: 8/30/13 Time: 1610

Sampling instrument: Hand auger Clam gun (Other:) Manual-hand

Sample Description: 90% grass/vegetation, 10% silt, dark brown
(material type, moisture content, color, etc.) w/ some black, wet, med. dense-dense, slight HC odor.

Comments:

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SSØ24 Depth: 0-0.5

Date: 8/30/13 Time: 1620

Sampling instrument: Hand auger Clam gun (Other:) Manual-hand

Sample Description: 90% grass/vegetation, 10% silt, dark brown/ black, wet, med. dense, med. HC odor
(material type, moisture content, color, etc.)

Comments: Soil matrix Collected from Removal Area 3.

Sample ID: 13NC28SSØ25 Depth: Ø" - 0.5"

Date: September 12, 2013 Time: 16ØØ

Sampling instrument: (Hand auger) Clam gun Other: Hand

Sample Description: Dark brown silt, wet, with angular coarse sand and organic material/grass
(material type, moisture content, color, etc.)

Comments: Collected from Removal Area 4

Sample ID: 13NC28SSØ26 Depth: Ø" - Ø.5"

Date: September 12, 2013 Time: 1612

Sampling instrument: Hand auger Clam gun (Other:) Hand

Sample Description: Dark brown silt, wet, with dead root mass
(material type, moisture content, color, etc.)

Comments: Collected from Removal Area 4

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS027 Depth: 0"-0.5"

Date: September 12, 2013 Time: 1620

Sampling instrument: Hand auger Clam gun (Other): Hand

Sample Description: Brown peat, wet, with coarse subangular sand
(material type, moisture content, color, etc.)

Comments: Collected from Removal Area 4

Sample ID: 13NC28SS028 Depth: 0" - 0.5"

Date: September 12, 2013 Time: 1630

Sampling instrument: Hand auger Clam gun (Other): Hand

Sample Description: Dark brown silt with peat, wet, sheen
(material type, moisture content, color, etc.)

Comments: Collected from Remove Area 4

Sample ID: 13NC28SS029 Depth: 0 - 0.5"

Date: September 12, 2013 Time: 1635

Sampling instrument: Hand auger Clam gun (Other): Hand

Sample Description: Dark brown silty ~~with~~ EB peat, wet, fuel odor
(material type, moisture content, color, etc.)

Comments: Collected from Removal Area 4
MS/MSD

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS030 Depth: 0" - 0.5"

Date: September 12, 2013 Time: 1650

Sampling instrument: Hand auger Clam gun (Other: Hand)

Sample Description: Dark brown silt with peat, wet, sheen
(material type, moisture content, color, etc.)

Comments: Collected from Removal Area 4
Duplicate paired with 13NC28SS031

Sample ID: 13NC28SS031 Depth: 0" - 0.5"

Date: September 12, 2013 Time: 1655

Sampling instrument: Hand auger Clam gun (Other: Hand)

Sample Description: Dark brown silt with peat, wet, sheen
(material type, moisture content, color, etc.)

Comments: Collected from Removal Area 4
Duplicate paired with 13NC28SS030

Sample ID: 13NC28SS032 Depth: 0 - 0.5"

Date: September 12, 2013 Time: 1700

Sampling instrument: Hand auger Clam gun (Other: HAND)

Sample Description: Dark brown peaty silt, wet, fuel odor
(material type, moisture content, color, etc.)

Comments: Collected from Removal Area 4

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS033 Depth: 0" - 0.5"

Date: September 12, 2013 Time: 1705

Sampling instrument: Hand auger Clam gun Other: HAND

Sample Description: Dark brown peaty silt, wet, fuel odor
(material type, moisture content, color, etc.)

Comments: collected/ Removed from Removal Area 4

Sample ID: 13NC28SS034 Depth: 0" - 0.5"

Date: September 12, 2013 Time: 1710

Sampling instrument: Hand auger Clam gun Other: HAND

Sample Description: Dark brown peaty silt, wet, fuel odor
(material type, moisture content, color, etc.)

Comments: collected/ Removed from Removal Area 4

Sample ID: 13NC28SS035 Depth: 0 - 0.5"

Date: September 14, 2013 Time: 1440

Sampling instrument: Hand auger Clam gun Other: Hand

Sample Description: Dark brown/black saturated silty clay - layered - minor
(material type, moisture content, color, etc.) organic root/grass. No petroleum odor, but sheen occured during sample collection

Comments: Collected from Removal Area 9

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS036 Depth: 0-0.5"

Date: September 14, 2013 Time: 1446

Sampling instrument: Hand auger Clam gun (Other: Hand)

Sample Description: Loose dark brown/black organic silt with some clay - saturated

(material type, moisture content, color, etc.) Petroleum odor / sheen

Comments: Collected from Removal Area 9

Sample ID: 13NC28SS037 Depth: 0-0.5"

Date: September 14, 203 Time: 1457

Sampling instrument: Hand auger Clam gun (Other: Hand)

Sample Description: Loose dark brown/black organic silt with some clay - saturated; layered black/brown

(material type, moisture content, color, etc.) Petroleum odor - sheen

Comments: Collected from Removal Area 9

Sample ID: 13NC28SS038 Depth: 0-0.5"

Date: September 14, 2013 Time: 1505

Sampling instrument: Hand auger Clam gun (Other: Hand)

Sample Description: Brown and black, loose organic silt material - with silt - minor; roots and grass - petro sheen and odor

(material type, moisture content, color, etc.)

Comments: Collected from Removal Area 9

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS039 Depth: 0" - 0.5"

Date: September 14, 2013 Time: 1520

Sampling instrument: Hand auger Clam gun Other: Hand

Sample Description: Gray sand; roots/grass - sand is bound by the root mass; No sheen or odor
(material type, moisture content, color, etc.)

Comments: Removed from Removal Area 10
Duplicate paired with 13NC28SS040

Sample ID: 13NC28SS040 Depth: 0" - 0.5"

Date: September 14, 2013 Time: 1530

Sampling instrument: Hand auger Clam gun Other: Hand

Sample Description: Gray sand; root/grass - sand is bound by the root mass; No sheen or odor
(material type, moisture content, color, etc.)

Comments: Removed from Removal Area 10

Duplicate paired with 13NC28SS039

Sample ID: 13NC28SS041 Depth: 0" - 0.5"

Date: September 14, 2013 Time: 1540

Sampling instrument: Hand auger Clam gun Other: Hand

Sample Description: No sheen or odor; Loosely bound brown/black organic silt with/in organic root mat; minor clay and say; Saturated
(material type, moisture content, color, etc.)

Comments: Removed from Removal Area 10
MS/MSD

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS042 Depth: 0 - 0.5"

Date: September 14, 2013 Time: 1610

Sampling instrument: Hand auger Clam gun (Other): Hand

Sample Description: Organic silt with clay, bound by vegetative mat (roots and grasses), brown / black silt; gray clay - No sheen or odor; saturated; minor sand

(material type, moisture content, color, etc.)

Comments: Removed from Removal Area 10

Duplicat paired with 13NC28SS043

Sample ID: 13NC28SS043 Depth: 0 - 0.5"

Date: September 14, 2013 Time: 1620

Sampling instrument: Hand auger Clam gun (Other): Hand

Sample Description: Organic silt with clay, bound by vegetative mat (root/ and grasses); brown/black silt; gray clay - No sheen or odor; saturated; minor sand

(material type, moisture content, color, etc.)

Comments: Removed from Removal Area 10

Duplicate paired with 13NC28SS042

Sample ID: 13NC28SS044 Depth: 0 - 0.5"

Date: September 14, 2013 Time: 1632

Sampling instrument: Hand auger Clam gun (Other): Hand

Sample Description: Brown organic silt bound with/in root/grass vegetative mat; some sand; No sheen or Petroleum odor

(material type, moisture content, color, etc.)

Comments: Removed From Removal Area 10

NE CAPE SITE 28 FIELD FORM

Sample ID: 13NC28SS045 Depth: 0" – 0.5"

Date: September 14, 2013 Time: 1640

Sampling instrument: Hand auger Clam gun Other: Hand

Sample Description: Brown organic silt, veg mat, very minor clay – layered clay/silt; some sand and grass – No sheen or odor
(material type, moisture content, color, etc.)

Comments: Removed from Removal Area 10

Sample ID: 13NC28SS046 Depth: 0" – 0.5"

Date: September 15, 2013 Time: 0940

Sampling instrument: Hand auger Clam gun Other: Hand

Sample Description: Sandy silt; minor clay; grass/veg mat (black and deteriorating) No sheen
(material type, moisture content, color, etc.)

Comments: R Collected from Removal Area 11

Sample ID: Depth:

Date: Time:

Sampling instrument: Hand auger Clam gun Other:

Sample Description:
(material type, moisture content, color, etc.)

Comments:

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
50-320	9/6/13	Joshua Willis		NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	✓		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	✓		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	good			
Belts Pulleys	good			
Exhaust & Rain Cap	good			
Battery & Cables	good			
Hydraulic Cylinders	good			
Operators Compartment	good			
Hoses & Lines	good			
Fuel / Oil Leaks	good			
Cracks	NA			
Cutting Edges	NA			
Sprockets	NA			
Rollers & Idlers	NA			
Tracks or Tires	good			
Trans Operation	good			
Service Brakes	good			
Parking Brake	good			
Gauges Operational	good			
Backup Alarm	New		Install new on 9/6/13	
Wipers & Washer	good			
Lights	good			
Horn	NA			
Seat & Seat Belts	good			
Windows		✓	Window roller stiff	

Machine Damage:

Standard Equipment Inspection Form

NOTES (continued):

Deficiencies noted: ☑ Yes ☐ No Explain: Changed Bell Alarm

Deficiencies fixed: ☑ Yes ☐ No Date: 9/6/13

Inspection 100% complete ☑ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: 9/6/13

Bristol Representative Johnny Willis Date: 9/6/13

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours (miles)	Location
50-925	7/10/13	GEORGE MACK	6371	NE CAPE

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓	ADDED 2qt	Batteries	✓	
Engine	✓	ADDED 1qt	Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	✓		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap		✓	exhaust leak	
Battery & Cables	G			
Hydraulic Cylinders	N/A			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	N/A			
Wipers & Washer	N/A			
Lights	G			
Horn	G			
Seat & Seat Belts	G			
Windows	G			

Machine Damage:

Standard Equipment Inspection Form

NOTES (continued):

Exhaust Leak

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours (Miles)	Location
80-909	7/10/13	George Mack	218.2	NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓	ADDED	Batteries	✓	
Engine	✓	ADDED	Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	N/A		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	N/A			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	N/A			
Sprockets	G			
Rollers & Idlers	G			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	N/A			
Wipers & Washer	G			
Lights	G			
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:				

Standard Equipment Inspection Form

NOTES (continued):

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
80-905	7/10/13	George Mack	1102.3	DE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	N/A		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	N/A			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	N/A			
Wipers & Washer	G			
Lights	G			
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:				

Standard Equipment Inspection Form

NOTES (continued):

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
50-515	7/10/13	GEORGE MACK	4949 [illegible]	NE CAPE

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	✓		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	replace filters

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders		✓	Both front tilt cylinder seal leak	
Operators Compartment	G			
Hoses & Lines		✓	Hyd line under tilt cylinder	
Fuel / Oil Leaks		✓	Hyd line	
Cracks	G			
Cutting Edges	G			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake		✓	NEEDS pads replaced	
Gauges Operational	G			
Backup Alarm	G			
Wipers & Washer	G			
Lights		✓	Taillights lens, work light	
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:	SEE NOTES			

Standard Equipment Inspection Form

NOTES (continued):

FIRE EXT ✓
NEEDS FIRST AID KIT
CB RADIO NEEDS WORK

BOTH TILT CYLINDERS SEALS LEAK
HYD LINE LEAK UNDER FRONT OF LOADER
PARKING BRAKE NOT WORKING NEEDS PADS
BOTH TAILLIGHTS NOT WORKING NEEDS LEFT HAND SIDE LENS
1 WORK LIGHT OUT

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours (miles)	Location
SO-171	7/10/13	George Mack	239089	NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓	1/2 Gal	Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	N/A		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	N/A			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	N/A			
Wipers & Washer	G			
Lights	[illegible]	✓	Brake lights	
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:				

Standard Equipment Inspection Form

NOTES (continued):

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
C-4	7/10/13	George Mock	10480	NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System			Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	G			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational		✓	Fuel gauge	
Backup Alarm	G			
Wipers & Washer	G			
Lights		✓	Tail lights not working	
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:	SEE NOTES			

Standard Equipment Inspection Form

NOTES (continued):

Fire ext ✓
First Aid kit ✓
CB radio work

fuel gauge not working
Taillights not working

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours (MILES)	Location
50-322	7/10/13	GEORGE MACK	557.6	NE CAPE

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	N/A		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	N/A			
Operators Compartment		✓	WIPERS DID NOT WORK	
Hoses & Lines		✓	RADIATOR HOSES CRACKED NOT LEAKING	
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm		✓	needs	
Wipers & Washer		✓	NON WORKING	
Lights				
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:	SEE NOTES			

Standard Equipment Inspection Form

NOTES (continued):

FIRE EXT ✓
FIRST AID KIT NONE
CB RADIO NONE

Needs windshield wipers fixed
coolant hoses cracked not leaking
Needs backup Alarm

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours (Miles)	Location
50-205	7/10/13	George Mack	238948	NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓	2qt	Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	✓		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	N/A			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks		✓	water pump leak	
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm		✓	NO alarm	
Wipers & Washer	G			
Lights		✓	marker lights out NO tail lights 3 work lights out	
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:	SEE NOTES			

Standard Equipment Inspection Form

NOTES (continued):

CB RADIO ✓
FIRE EXT ✓
FIRST AID KIT ✓

WATER PUMP LEAK
NO BACK UP ALARM
NO tail lights all functions
NO marker lights
3 work lights out
WASTE OIL PUMP NEEDS WORK less then half functioning
NEEDS DRIVER SIDE MIRROR

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
2-243	7/10/13	George Mack	1422.3	NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓	2qts anti	Batteries	✓	
Engine	✓	2qts oil	Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	✓		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	n/a		Air Induction & Filter	✓	new cutting edge

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	G			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	G			
Sprockets	n/a			
Rollers & Idlers	n/a			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	G			
Wipers & Washer	G			
Lights	G			
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:				

Standard Equipment Inspection Form

NOTES (continued):

Reattached oil breather
Replaced cutter air filter
CB RADIO ✓
FIRE EXT ✓
NO FIRST AID KIT

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
W-435	7/10/13	GEORGE MACK	1062.8	NE CAPE

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	✓		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	G			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	G			
Wipers & Washer	N/A			
Lights	N/A			
Horn		✓	NOT WORKING	
Seat & Seat Belts	G			
Windows	N/A			

Machine Damage:

Standard Equipment Inspection Form

NOTES (continued):

HORN NOT WORKING

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
I-167	7/10/13	GEORGE MACK	4452.4	NE CAPE

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓	1qt	Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	✓		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	✓		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	G			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	G			
Sprockets	G			
Rollers & Idlers	G			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	G			
Wipers & Washer	G			
Lights	G			
Horn	G			
Seat & Seat Belts	G			
Windows	G			

Machine Damage:

Standard Equipment Inspection Form

NOTES (continued):

CB item 10 ✓
Fire ext ✓
First Aid Kit ✓

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours (MILES)	Location
50-179	7/9/13	George Mack		NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	N/A		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/A		Air Induction & Filter		

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	N/A			
Operators Compartment		✓	Some water issues & cleaning	
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires		✓	Need replacement	
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	N/A			
Wipers & Washer	G			
Lights	G			
Horn	G			
Seat & Seat Belts	G			
Windows		✓	needs windshield replacement	
Machine Damage:				

Standard Equipment Inspection Form

NOTES (continued):

CB Radio Damaged
Fire Ext ✓
First Aid Kit ✓
Both side mirrors needs replacement
Tires need replaced
windshield needs replaced
Cab need cleaning, due to water & glass

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
50-803	7/9/13	George Mack	5631.5	NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓	2qts	Batteries	✓	
Engine	✓	2qts	Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	Low		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	✓		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	G			
Operators Compartment	G		Seat cover	
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	G			
Wipers & Washer	G			
Lights	G			
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:				

Standard Equipment Inspection Form

NOTES (continued):

Service door for Hyd tank in need of repair.
Intermittent gauge failure

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours (Mile)	Location
50-169	7/9/13	George Mack	101299	NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓	Oil lgt	Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	N/A		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	N/A			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	N/A			
Wipers & Washer	G			
Lights		✓	Driver Headlight & tail light	
Horn	G			
Seat & Seat Belts	G			
Windows		✓	Windshield NEED Replacment At Shop PAO	
Machine Damage:	SEE NOTES			

Standard Equipment Inspection Form

NOTES (continued):

CB RADIO ✓
FIRE EXT ✓
FIRST AID KIT ✓
DRIVER SIDE HEADLIGHT OUT
DRIVER SIDE TAILLIGHT OUT
WINDSHIELD DAMAGED NEEDS REPLACE

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours (MILES)	Location
50-206	7/9/13	George Mack	560158	NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓	3qts	Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	N/a		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/a		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds				
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	N/a			
Operators Compartment	G			
Hoses & Lines		✓	LOOKS LIKE	
Fuel / Oil Leaks		✓	POWER STEER TANK LEAK	
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm		✓	NO	
Wipers & Washer	G			
Lights		✓	NO BLINKERS REAR PASS light PASS WORK light	
Horn		✓	NO	
Seat & Seat Belts	G			
Windows	G			
Machine Damage:				

SEE NOTES

Standard Equipment Inspection Form

NOTES (continued):

FIRE EXT ✓
FIRST AID KIT ✓
CB RADIO ✓
Power steer tank leak
NO BACK UP ALARM
NO HORN
REAR- PASS TAIL inner light out
PASS. WORK light out

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
50-505	7/9/13	GEORGE MACK	3199	NE CAPE

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	LOW		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders		✓	Front right main Tilt cylinder seal leak	
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks		✓	looks to be engine oil leaking	
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm		✓	NO ALARM	
Wipers & Washer	G			
Lights		✓	right side work light outter	
Horn		✓	NO HORN	
Seat & Seat Belts	G			
Windows	G			
Machine Damage:				

Standard Equipment Inspection Form

NOTES (continued):

CB RADIO ✓
FIRE EXT ✓
FIRST AID KIT ✓

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
3-195	7/9/13	GEORGE MACK	6851.9	NE CAPE

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	✓		Drain Fuel Sediment	✓	
Differentials	N/A		Pivot Shaft	✓	
Planetaries / Final Drives	✓		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders		✓	Front bucket cylinder leak	
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks		✓	Cylinder leak	
Cracks	G			
Cutting Edges				
Sprockets	G			
Rollers & Idlers	G			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	G			
Wipers & Washer	G			
Lights	G			
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:	SEE NOTES			

Standard Equipment Inspection Form

NOTES (continued):

CB works ✓
looks like seals on bucket cylinder leaking
Fire Ext ✓
First Aid Kit ✓

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
80-501	7/9/13	GEORGE MACK	7681.8	NE CODE

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓	AT MIN NEEDS ADD	Fuel Level	✓	
Hydraulic System	✓		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	G			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	G			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	G			
Wipers & Washer	G			
Lights		✓	Firont left work light	
Horn	G			
Seat & Seat Belts	✓G			
Windows	✓G			
Machine Damage:	SEE NOTES			

Standard Equipment Inspection Form

NOTES (continued):

CB RADIO NEEDS FUSE
FIRST AID NEEDS REFILLS
FIRE EXT ✓

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
1-214	7/9/13	George Mack		NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	✓		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	✓		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	✓ G			
Belts Pulleys	✓ G			
Exhaust & Rain Cap	✓ G			
Battery & Cables	✓ G			
Hydraulic Cylinders	✓ G			
Operators Compartment	G			
Hoses & Lines	✓ G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	✓ G			
Sprockets	✓ G			
Rollers & Idlers	✓ G			
Tracks or Tires	✓ G			
Trans Operation	G			
Service Brakes	✓ G			
Parking Brake	✓ G			
Gauges Operational	✓ G			
Backup Alarm	G			
Wipers & Washer	G			
Lights	G			
Horn	G			
Seat & Seat Belts	G			
Windows	G			

Machine Damage:

Standard Equipment Inspection Form

NOTES (continued):

First AID ✓
Fire ext ✓
NOCB radio ✓

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours (mile)	Location
50-173	7/9/13	George Mack	121217	NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓	1qt oil	Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	N/A		Drain Fuel Sediment	N/A	
Differentials	✓		Pivot Shaft	N/A	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	N/A			
Operators Compartment	G		needs HEater Knobs	
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	N/A			
Wipers & Washer	G			
Lights	G			
Horn	G			
Seat & Seat Belts	G			
Windows	G			

Machine Damage: SEE NOTES

Standard Equipment Inspection Form

NOTES (continued):

NEEDS Both side MIRRORS Replaced
DRIVER SIDE DOOR handle REPLACED

BED SERVICE tank good (GAS)
CB WORKS

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours (MILES)	Location
50-115	7/9/13	George Mack	886410	NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	N/A		Drain Fuel Sediment	N/A	
Differentials	✓		Pivot Shaft	N/A	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	N/A			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	N/A			
Wipers & Washer	G			
Lights		✓	NEED REAR PASS BLINKER & BRAKE RED	
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:	SEE NOTES			

Standard Equipment Inspection Form

NOTES (continued):

NEEDS Driver side Door handle replaced

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours (Miles)	Location
P.L. 1241	7/9/13	George Mack	17,144	NE Cape

2010 1500 Gmc

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓	1qt oil	Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	N/A		Drain Fuel Sediment	N/A	
Differentials	✓		Pivot Shaft	N/A	
Planetaries / Final Drives	N/A		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	N/A			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	N/A			
Sprockets	N/A			
Rollers & Idlers	N/A			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	N/A			
Wipers & Washer	G			
Lights	G			
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:	SEE NOTES			

Standard Equipment Inspection Form

NOTES (continued):

NEEDS BOTH SIDE MIRRORS REPLACED

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
SO-510	7/9/13	GEORGE MACK	1479.6	NE CAPE

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓	1/2 gal	Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level	✓	
Hydraulic System	LOW		Drain Fuel Sediment	✓	
Differentials	✓		Pivot Shaft	✓	
Planetaries / Final Drives	✓		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	G			
Battery & Cables	G			
Hydraulic Cylinders	G			
Operators Compartment	G			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	G			
Cutting Edges	G			
Sprockets	G			
Rollers & Idlers	G			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	G			
Wipers & Washer	G			
Lights	G			
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:				

Standard Equipment Inspection Form

NOTES (continued):

NEEDS AIR FILTER COVER REPLACED

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
Ambulance	7-7-13	Maze Thompson		N.E. Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	Low		Batteries		
Engine	✓		Lubrication Points		
Transmission			Fuel Level		
Hydraulic System			Drain Fuel Sediment		
Differentials			Pivot Shaft		
Planetaries / Final Drives			Air Induction & Filter		

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	—			
Battery & Cables	Bad			
Hydraulic Cylinders	—			
Operators Compartment	E			
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	—			
Cutting Edges	—			
Sprockets	—			
Rollers & Idlers	—			
Tracks or Tires	G			
Trans Operation	G			
Service Brakes	G			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	G			
Wipers & Washer	G			
Lights	G			
Horn	G			
Seat & Seat Belts	G			
Windows	G			
Machine Damage:				

Standard Equipment Inspection Form

NOTES (continued):

Did not start, Batteries Weak

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
50-137	7-7-13	Maze Thompson		NE Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission			Fuel Level	✓	
Hydraulic System	—		Drain Fuel Sediment	—	
Differentials	—		Pivot Shaft	—	
Planetaries / Final Drives	—		Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	G			
Belts Pulleys	G			
Exhaust & Rain Cap	—			
Battery & Cables	G			
Hydraulic Cylinders	—			
Operators Compartment	G		hole in drivers seat	
Hoses & Lines	G			
Fuel / Oil Leaks	G			
Cracks	—			
Cutting Edges	—			
Sprockets	—			
Rollers & Idlers	—			
Tracks or Tires	E			
Trans Operation	?			
Service Brakes	G ✓			
Parking Brake	G			
Gauges Operational	G			
Backup Alarm	—			
Wipers & Washer	G			
Lights		✓	R. side running, out	
Horn	G			
Seat & Seat Belts	G			
Windows		✓	Severely cracked	

Machine Damage: outside mirrors broken

Standard Equipment Inspection Form

NOTES (continued):

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

Standard Equipment Inspection Form

Equipment No.	Date	Inspector Name	Hours	Location
50-132	7-7-13	Mare Thompson		N.E. Cape

A. SERVICE CHECKS:

ITEM	OK	AMT NEEDED	ITEM	OK	AMT ADDED
Radiator & Freeze Protection	✓		Batteries	✓	
Engine	✓		Lubrication Points	✓	
Transmission	✓		Fuel Level		
Hydraulic System			Drain Fuel Sediment		
Differentials			Pivot Shaft		
Planetaries / Final Drives			Air Induction & Filter	✓	

B. EQUIPMENT INSPECTION

	CONDITION Bad/Good/ Excellent	Attn Needed	Explanation	Corrected? (Y/N)
Fan & Shrouds	Good			
Belts Pulleys	G			
Exhaust & Rain Cap	—			
Battery & Cables	Good			
Hydraulic Cylinders	—			
Operators Compartment		✓	Needs cleaning	
Hoses & Lines	✓			
Fuel / Oil Leaks	✓			
Cracks	—			
Cutting Edges	—			
Sprockets	—			
Rollers & Idlers	—			
Tracks or Tires		✓	Low Tire	
Trans Operation	✓			
Service Brakes	✓			
Parking Brake	✓			
Gauges Operational	✓			
Backup Alarm	—			
Wipers & Washer	✓			
Lights	✓			
Horn	✓			
Seat & Seat Belts	✓			
Windows	✓			

Machine Damage: Mirrors Broken by snow load

Standard Equipment Inspection Form

NOTES (continued):

Deficiencies noted: ☐ Yes ☐ No Explain: _____

Deficiencies fixed: ☐ Yes ☐ No Date: _____

Inspection 100% complete ☐ Yes ☐ No

USCOE Rep. Signature _____ Date all items passed inspection: _____

Bristol Representative _____ Date: _____

SWPPP Construction Site Inspection Report

General Information			
Project Name	2013 Northeast Cape HTRW Remedial Actions		
APDES Tracking No.	AKR10DY50	**Location**	NE Cape Saint Lawrence Island
Date of Inspection	7-15-13	**Start/End Time**	1400 - 1430
Inspector's Name(s)	Eric Barnhill		
Inspector's Title(s)	CESCL		
Inspector's Contact Information	On site – 907-273-0045 / Offsite – 907-273-0045		
Inspector's Qualifications	ACESCL Certificate		
Describe present phase of construction	NA		

Type of Inspection:
Regular Pre-storm event During storm event Post-storm event

Weather Information

Has there been a storm event since the last inspection? Yes No
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
Clear Cloudy Rain Sleet Fog Snowing High Winds
Other: Partly Cloudy / mod winds Temperature: ≈ 50°

Have any discharges occurred since the last inspection? Yes (No)
If yes, describe:

Are there any discharges at the time of inspection? Yes (No)
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1	Fuel containment	(Yes) No	Yes (No)	Berms appear to be in good working order. No apparent leaks/spills
2	Non Hazardous waste accumulation area	(Yes) No	Yes (No)	Waste accumulated and in a closed Conex shipping container
3	Silt Fencing - MOC	(Yes) No	(Yes) No	Fence needs attention due to wear and tear from weather
4	Diversion Ditch-Site 31	(Yes) No	Yes (No)	

5	Dewatering Impoundment - MOC	(Yes) No	Yes (No)	Not currently active
6	Stockpiles of below 9200 ppm POL Soil	(Yes) No	Yes (No)	Stockpiles are active. Liner remains in place and stockpiles remain on liner
7	~~Water Diversion Berm - Site 31~~ Site 10	(Yes) No	(Yes) No	Site is active. Excavation remains dry. Silt fence needs adjustment
8	Site 31- Stockpile	Yes No	Yes No	stockpiles actively being added to
9	Pad 9B berms	Yes No	Yes No	Functional
10	Site 28 Silt trap	Yes No	Yes No	In place- No dredging is occuring
11	Site 28 - water containment	Yes No	Yes No	adequate
12		Yes No	Yes No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	(Yes) No	Yes (No)	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	(Yes) No	Yes No ongoing	BMPs are in place and holding. Will need attention to keep effective
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	(Yes) No	(Yes) No	Ongoing adjustments will be made throughout the season
4	Are discharge points and receiving waters free of any sediment deposits?	(Yes) No	(Yes) No	When dredging begins silt trap will be adjusted and other BMPs, if necessary will be installed (sidecast)
5	Are storm drain inlets properly protected?	Yes No	Yes No	N/A
6	Is the construction exit preventing sediment from being tracked into the street?	Yes No	Yes No	NA - Digital removal of gross soils when going from PCB site to POL site is occuring
7	Is trash/litter from work areas collected and placed in covered dumpsters?	(Yes) No	Yes (No)	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	Yes No	Yes No	NA

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	(Yes) No	Yes (No)	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	(Yes) No	Yes (No)	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	(Yes) No	Yes No	
12	(Other)	Yes No	Yes No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: Eric Barahill - CESCL

Signature:  **Date:** 7/15/13

SWPPP Construction Site Inspection Report

General Information			
Project Name	2013 Northeast Cape HTRW Remedial Actions		
APDES Tracking No.	AKR10DY50	**Location**	NE Cape Saint Lawrence Island
Date of Inspection	July 24, 2013	**Start/End Time**	0900 - 1000 Hours
Inspector's Name(s)	Eric Barnhill		
Inspector's Title(s)	CESCL		
Inspector's Contact Information	On site – 907-273-0045 / Offsite – 907-273-0045		
Inspector's Qualifications	ACESCL Certificate		
Describe present phase of construction	NA		

Type of Inspection:
(Regular) Pre-storm event During storm event Post-storm event

Weather Information

Has there been a storm event since the last inspection? Yes No First inspection - No recent rain events
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
Clear (Cloudy) Rain Sleet (Fog) Snowing High Winds
Other: Temperature:

Have any discharges occurred since the last inspection? Yes (No)
If yes, describe:

Are there any discharges at the time of inspection? Yes (No)
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1	Fuel containment	(Yes) No	Yes (No)	NA
2	Non Hazardous waste accumulation area	(Yes) No	Yes No	NA – Materials contained in shipping container
3	Silt Fencing - MOC	(Yes) No	(Yes) No	Site 10, Plume E need silt Fence attention/ adjustment/re-installation
4	Diversion Ditch-Site 31	(Yes) No	Yes No	Ditch still in place. Weather has been windy but dry (No rain)

5	Dewatering Impoundment - MOC	(Yes)	No	Yes	No	
6	Stockpiles of below 9200 ppm POL Soil	(Yes)	No	Yes	No	Stockpiles on lined area. Stockpiles being added to/manipulated regularly
7	~~Water Diversion Berm – Site 31~~ Site 10	Yes	No	Yes	No	Needs silt fence attention or removal
8	Site 31 stockpiles for fill	Yes	No	Yes	No	Currently being manipulated to Fill excavation
9	Pad 98 berms	Yes	No	Yes	No	Still in place; functional
10	Site 28 - Silt trap	Yes	No	Yes	No	In place - No activity / dredging in area yet
11	Site 28 - Containments	Yes	No	Yes	No	Some holding water to be discharged per state permit
12		Yes	No	Yes	No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?		Maintenance Required?		Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	(Yes)	No	Yes	(No)	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	(Yes)	No	(Yes)	No	Site wide silt fencing needs adjustments
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	Yes	(No)	Yes	No	Silt fencing needs attention, keying in to substrate
4	Are discharge points and receiving waters free of any sediment deposits?	(Yes)	No	Yes	No	
5	Are storm drain inlets properly protected?	Yes	No	Yes	No	NA - no storm drains on site
6	Is the construction exit preventing sediment from being tracked into the street?	Yes	No	Yes	No	NA - Sitewide roads and all areas of similar substrate and road in some areas is up for excavation
7	Is trash/litter from work areas collected and placed in covered dumpsters?	(Yes)	No	Yes	No	Trash kept in [illegible] Conner shipping Containers prior to burning
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	Yes	No	Yes	No	NA

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	(Yes) No	Yes (No)	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	(Yes) No	Yes (No)	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	(Yes) No	Yes (No)	
12	(Other)	Yes No	Yes No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: Eric Barnhill AKCESCL

Signature: _____ **Date:** 7-24-13

SWPPP Construction Site Inspection Report

General Information			
Project Name	2013 Northeast Cape HTRW Remedial Actions		
APDES Tracking No.	AKR10DY50	**Location**	NE Cape Saint Lawrence Island
Date of Inspection	July 30, 2013	**Start/End Time**	1000 - 1030
Inspector's Name(s)	Eric Barnhill		
Inspector's Title(s)	CESCL		
Inspector's Contact Information	On site – 907-273-0045 / Offsite – 907-273-0045		
Inspector's Qualifications	ACESCL Certificate		
Describe present phase of construction	NA		

Type of Inspection:
Regular Pre-storm event During storm event Post-storm event

Weather Information

Has there been a storm event since the last inspection? Yes (No)
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in): No measurable precipitation

Weather at time of this inspection?
Clear (Cloudy) Rain Sleet Fog Snowing High Winds
Other: Temperature:

Have any discharges occurred since the last inspection? (Yes) No
If yes, describe: Under discharge permit clean site 28 water was discharged to the tundra
Road dust suppression with water from local stream

Are there any discharges at the time of inspection? Yes (No)
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1	Fuel containment	(Yes) No	Yes (No)	
2	Non Hazardous waste accumulation area	(Yes) No	Yes (No)	
3	Silt Fencing - MOC	(Yes) No	Yes (No)	
4	Diversion Ditch-Site 31	(Yes) No	Yes (No)	

5	Dewatering Impoundment - MOC	Yes (No)	Yes No	
6	Stockpiles of below 9200 ppm POL Soil	(Yes) No	Yes (No)	Active Stockpiles
7	Site 10	Yes No	Yes No	NO BMPs necessary - dormant
8	Site 31 stockpile	Yes No	Yes No	NO longer an active Site
9	Pad 98 berms	(Yes) No	Yes No	
10	~~Pad 28 silt fence~~ Pad 28 Silt Trap	(Yes) No	(Yes) No	New Filter media to be installed
11	Pad 28 water containments	(Yes) No	Yes No	Holding water

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	(Yes) No	Yes (No)	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	(Yes) No	Yes (No)	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	(Yes) No	Yes (No)	
4	Are discharge points and receiving waters free of any sediment deposits?	(Yes) No	Yes No	monitoring occurring periodically (Turbidimeter)
5	Are storm drain inlets properly protected?	Yes No	Yes No	N/A
6	Is the construction exit preventing sediment from being tracked into the street?	Yes No	Yes No	N/A
7	Is trash/litter from work areas collected and placed in covered dumpsters?	(Yes) No	Yes (No)	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	Yes No	Yes No	N/A

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	(Yes) No	Yes (No)	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	(Yes) No	Yes (No)	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	(Yes) No	Yes No	
12	(Other)	Yes No	Yes No	

Non-Compliance

Describe any incidents of non-compliance not described above:

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Print name and title: Eric Barnhill AKCESCL

Signature: [signature] **Date:** 7-30-13

SWPPP Construction Site Inspection Report

General Information			
Project Name	2013 Northeast Cape HTRW Remedial Actions		
APDES Tracking No.	AKR10DY50	**Location**	NE Cape Saint Lawrence Island
Date of Inspection	August 5, 2013	**Start/End Time**	1100 - 1140
Inspector's Name(s)	Eric Barnhill		
Inspector's Title(s)	CESCL		
Inspector's Contact Information	On site – 907-273-0045 / Offsite – 907-273-0045		
Inspector's Qualifications	ACESCL Certificate		
Describe present phase of construction	NA		

Type of Inspection:
Regular Pre-storm event During storm event Post-storm event

Weather Information

Has there been a storm event since the last inspection? Yes (No)
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
Clear Cloudy (Rain) Sleet Fog Snowing High Winds
Other: Temperature: 48 F

Have any discharges occurred since the last inspection? (Yes) No
If yes, describe:

Are there any discharges at the time of inspection? (Yes) No
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1	Fuel containment	(Yes) No	Yes (No)	
2	Non Hazardous waste accumulation area	(Yes) No	Yes (No)	
3	Silt Fencing - MOC	(Yes) No	Yes (No)	
4	Stockpiles of below 9200 ppm POL Soil	Yes	NO	on liner - active stockpile

5	Water Diversion Berm – Site 31	(Yes) No	Yes No	inactive site Site has been backfilled
6	Site 28 Silt Trap	(Yes) No	(Yes) No	Site trap media needs changing Prior to dredging activity
7	Site 28 Water containment	(Yes) No	Yes (No)	
8	Pad 98 berms	(Yes) No	Yes (No)	Adequate condition
9		Yes No	Yes No	
10		Yes No	Yes No	
11		Yes No	Yes No	
12		Yes No	Yes No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	(Yes) No	Yes (No)	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	(Yes) No	Yes (No)	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	(Yes) No	Yes (No)	
4	Are discharge points and receiving waters free of any sediment deposits?	(Yes) No	Yes (No)	
5	Are storm drain inlets properly protected?	Yes No	Yes No	NA
6	Is the construction exit preventing sediment from being tracked into the street?	Yes No	Yes No	NA
7	Is trash/litter from work areas collected and placed in covered dumpsters?	(Yes) No	(Yes) No	Trash/litter maintained inside a closed shipping container.
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	Yes No	Yes No	NA

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	(Yes) No	Yes (No)	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	(Yes) No	Yes (No)	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	(Yes) No	Yes (No)	
12	(Other) Camp heating fuel water containment ponds (plastic/rubber)	(Yes) No	(Yes) No	No immediate attention necessary Containment ponds are periodically emptied as necessary.

Non-Compliance

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Print name and title: Eric Barnhill

Signature: EB **Date:** 8-5-13

SWPPP Construction Site Inspection Report

General Information			
Project Name	2013 Northeast Cape HTRW Remedial Actions		
APDES Tracking No.	AKR10DY50	**Location**	NE Cape Saint Lawrence Island
Date of Inspection	August 12, 2013	**Start/End Time**	0930 10:15
Inspector's Name(s)	Eric Barnhill		
Inspector's Title(s)	CESCL		
Inspector's Contact Information	On site – 907-273-0045 / Offsite – 907-273-0045		
Inspector's Qualifications	ACESCL Certificate		
Describe present phase of construction	NA		

Type of Inspection:
Regular Pre-storm event During storm event Post-storm event

Weather Information

Has there been a storm event since the last inspection? (Yes) No
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):
Not Large rain event. Not a single Storm, days with rain mist etc etc 2-3"

Weather at time of this inspection?
Clear (Cloudy) Rain Sleet Fog Snowing High Winds
Other: Temperature: 48

Have any discharges occurred since the last inspection? Yes (No)
If yes, describe:

Are there any discharges at the time of inspection? Yes (No)
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1	Fuel containment	(Yes) No	Yes (No)	
2	Non Hazardous waste accumulation area	(Yes) No	Yes (No)	
3	Silt Fencing - MOC	(Yes) No	Yes (No)	
4	Stockpiles of below 9200 ppm POL Soil	Yes	NO	

5	Water Diversion Berm – Site 31	(Yes) No	Yes (No)	inactive site
6	Site 28 Silt Trap	(Yes) No	Yes (No)	New media has been switched in since last inspection. Dredging has occured
7	Site 28 Water containment	(Yes) No	Yes (No)	
8	Pad 98 berms	(Yes) No	Yes (No)	
9		Yes No	Yes No	
10		Yes No	Yes No	
11		Yes No	Yes No	
12		Yes No	Yes No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	(Yes) No	Yes (No)	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	(Yes) No	Yes (No)	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	(Yes) No	Yes (No)	
4	Are discharge points and receiving waters free of any sediment deposits?	Yes No	Yes No	NA
5	Are storm drain inlets properly protected?	Yes No	Yes No	NA
6	Is the construction exit preventing sediment from being tracked into the street?	Yes No	Yes No	NA
7	Is trash/litter from work areas collected and placed in covered dumpsters?	(Yes) No	Yes (No)	Trash Consolidated in shipping Container
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	Yes No	Yes No	NA

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	(Yes) No	Yes (No)	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	(Yes) No	Yes (No)	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	Yes No	Yes No	Not applicable
12	(Other)	Yes No	Yes No	

Non-Compliance

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Print name and title: Eric Barnhill

Signature: _____ **Date:** August 12, 2013

SWPPP Construction Site Inspection Report

General Information			
Project Name	2013 Northeast Cape HTRW Remedial Actions		
APDES Tracking No.	AKR10DY50	**Location**	NE Cape Saint Lawrence Island
Date of Inspection	AUGUST 21, 2013	**Start/End Time**	1300 - 1400
Inspector's Name(s)	Eric Barnhill		
Inspector's Title(s)	CESCL		
Inspector's Contact Information	On site – 907-273-0045 / Offsite – 907-273-0045		
Inspector's Qualifications	ACESCL Certificate		
Describe present phase of construction	NA		

Type of Inspection:
(Regular) Pre-storm event During storm event Post-storm event

Weather Information

Has there been a storm event since the last inspection? (Yes) No
If yes, provide:
Storm Start Date & Time: Approximately 1 day Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
Clear Cloudy Rain Sleet Fog Snowing High Winds
Other: Temperature:

Have any discharges occurred since the last inspection? Yes (No)
If yes, describe:

Are there any discharges at the time of inspection? Yes (No)
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1	Fuel containment	(Yes) No	Yes (No)	
2	Non Hazardous waste accumulation area	(Yes) No	Yes (No)	
3	Silt Fencing - MOC	(Yes) No	Yes (No)	Additions have been made due to berm filling and possible overflow
4	Stockpiles of below 9200 ppm POL Soil	Yes	NO	

5	Water Diversion Berm – Site 31	(Yes) No	Yes (No)	
6	Site 28 Silt Trap	(Yes) No	Yes (No)	
7	Site 28 Water containment	(Yes) No	Yes (No)	water to be released to the tundra under permit
8	Pad 98 berms	(Yes) No	Yes (No)	
9		Yes No	Yes No	
10		Yes No	Yes No	
11		Yes No	Yes No	
12		Yes No	Yes No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	(Yes) No	Yes (No)	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	(Yes) No	Yes (No)	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	(Yes) No	Yes (No)	
4	Are discharge points and receiving waters free of any sediment deposits?	Yes No	Yes No	Monitoring occurring during site 20 (Suqui R.) dredging
5	Are storm drain inlets properly protected?	Yes No	Yes No	NOT APPLICABLE
6	Is the construction exit preventing sediment from being tracked into the street?	Yes (No)	Yes No	Roads of the same substrate as work areas / excavations.
7	Is trash/litter from work areas collected and placed in covered dumpsters?	(Yes) No	Yes (No)	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	Yes No	Yes No	NOT Applicable

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	(Yes) No	Yes (No)	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	(Yes) No	Yes (No)	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	(Yes) No	Yes No	
12	(Other)	Yes No	Yes No	

Non-Compliance

Describe any incidents of non-compliance not described above:

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Print name and title: ERIC BARNHILL

Signature: _____ **Date:** August 21, 2013

SWPPP Construction Site Inspection Report

General Information			
Project Name	2013 Northeast Cape HTRW Remedial Actions		
APDES Tracking No.	AKR10DY50	**Location**	NE Cape Saint Lawrence Island
Date of Inspection	August 29, 2013	**Start/End Time**	1100/1130
Inspector's Name(s)	Eric Barnhill		
Inspector's Title(s)	CESCL		
Inspector's Contact Information	On site – 907-273-0045 / Offsite – 907-273-0045		
Inspector's Qualifications	ACESCL Certificate		
Describe present phase of construction	NA		

Type of Inspection:
(Regular) Pre-storm event During storm event Post-storm event

Weather Information

Has there been a storm event since the last inspection? Yes (No)
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
Clear (Cloudy) Rain Sleet Fog Snowing High Winds
Other: gray Temperature: ~40

Have any discharges occurred since the last inspection? Yes No
If yes, describe: Permit approved discharges to gravel

Are there any discharges at the time of inspection? Yes (No)
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1	Fuel containment	(Yes) No	Yes (No)	
2	Non Hazardous waste accumulation area	(Yes) No	Yes (No)	
3	Silt Fencing - MOC	(Yes) No	Yes (No)	
4	Diversion Ditch-Site 31	(Yes) No	Yes No	- Active excavation is ceased. Project site inactive

5	Dewatering Impoundment - MOC	Yes (No)	Yes (No)	
6	Stockpiles of below 9200 ppm POL Soil	(Yes) No	Yes (No)	
7	Site 10	Yes No	Yes No	NA
8	Site 31 stockpile	Yes No	Yes No	NA
9	Pad 98 berms	(Yes) No	Yes (No)	
10	Pad 28 ~~silt fence~~	Yes No	Yes No	NA
11	Pad 28 water containments	(Yes) No	Yes (No)	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	(Yes) No	Yes (No)	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	(Yes) No	Yes (No)	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	(Yes) No	Yes (No)	
4	Are discharge points and receiving waters free of any sediment deposits?	(Yes) No	Yes (No)	
5	Are storm drain inlets properly protected?	(Yes) No	Yes No	NA
6	Is the construction exit preventing sediment from being tracked into the street?	Yes No	Yes No	NA - None installed
7	Is trash/litter from work areas collected and placed in covered dumpsters?	(Yes) No	Yes (No)	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	Yes No	Yes No	NA

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	(Yes) No	Yes (No)	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	(Yes) No	Yes (No)	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	Yes No	Yes No	NA
12	(Other)	Yes No	Yes No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

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Print name and title: Eric Barnhill AK CESCL

Signature: [signature] **Date:** 8/29/2013

SWPPP Construction Site Inspection Report

General Information			
Project Name	2013 Northeast Cape HTRW Remedial Actions		
APDES Tracking No.	AKR10DY50	**Location**	NE Cape Saint Lawrence Island
Date of Inspection	September 5, 2013	**Start/End Time**	1400 1430
Inspector's Name(s)	Eric Barnhill		
Inspector's Title(s)	CESCL		
Inspector's Contact Information	On site – 907-273-0045 / Offsite – 907-273-0045		
Inspector's Qualifications	ACESCL Certificate		
Describe present phase of construction	NA		

Type of Inspection:
(Regular) Pre-storm event During storm event Post-storm event

Weather Information

Has there been a storm event since the last inspection? Yes No
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
Clear (Cloudy) Rain Sleet Fog Snowing High Winds
Other: misty Temperature:

Have any discharges occurred since the last inspection? Yes No
If yes, describe: Permitted discharges only - camp Site 29

Are there any discharges at the time of inspection? Yes (No)
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1	Fuel containment	(Yes) No	Yes (No)	
2	Non Hazardous waste accumulation area	(Yes) No	Yes (No)	
3	Silt Fencing - MOC	(Yes) No	Yes (No)	
4	Diversion Ditch-Site 31	(Yes) No	Yes (No)	Inactive Site

5	Dewatering Impoundment - MOC	Yes (No)	Yes No	NA
6	Stockpiles of below 9200 ppm POL Soil	(Yes) No	(Yes) (No)	
7	Site 10	Yes No	Yes No	NA
8	Site 31 stockpile	Yes No	Yes No	NA
9	Pad 98 berms	(Yes) No	Yes (No)	
10	Pad 28 ~~silt fence~~ filter media	(Yes) No	Yes No	NA
11	Pad 28 water containments	Yes No	Yes No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	(Yes) No	Yes (No)	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	(Yes) No	Yes (No)	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	(Yes) No	Yes (No)	
4	Are discharge points and receiving waters free of any sediment deposits?	(Yes) No	Yes (No)	
5	Are storm drain inlets properly protected?	Yes (No)	Yes (No)	NA
6	Is the construction exit preventing sediment from being tracked into the street?	Yes (No)	Yes (No)	NA
7	Is trash/litter from work areas collected and placed in covered dumpsters?	(Yes) No	Yes (No)	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	Yes No	Yes No	NA

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	(Yes) No	Yes (No)	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	(Yes) No	Yes (No)	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	Yes No	Yes No	NA
12	(Other)	Yes No	Yes No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: Eric Barnhill AKCESCL

Signature: _____ **Date:** September 5, 2013

SWPPP Construction Site Inspection Report

General Information			
Project Name	2013 Northeast Cape HTRW Remedial Actions		
APDES Tracking No.	AKR10DY50	**Location**	NE Cape Saint Lawrence Island
Date of Inspection	Sept 14 2013	**Start/End Time**	
Inspector's Name(s)	Eric Barnhill		
Inspector's Title(s)	CESCL		
Inspector's Contact Information	On site – 907-273-0045 / Offsite – 907-273-0045		
Inspector's Qualifications	ACESCL Certificate		
Describe present phase of construction	NA		

Type of Inspection:
(Regular) Pre-storm event During storm event Post-storm event

Weather Information

Has there been a storm event since the last inspection? Yes (No)
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
Clear Cloudy Rain Sleet Fog Snowing High Winds
Other: Misty Temperature:

Have any discharges occurred since the last inspection? Yes (No)
If yes, describe: Permitted discharges only - GAC, Tundra, ground

Are there any discharges at the time of inspection? Yes (No)
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1	Fuel containment	Yes (No)	Yes No	
2	Non Hazardous waste accumulation area	(Yes) No	Yes (No)	
3	Silt Fencing - MOC	(Yes) No	Yes (No)	
4	Diversion Ditch-Site 31	Yes No	Yes No	NA

5	Dewatering Impoundment - MOC	Yes No	Yes No	NA
6	Stockpiles of below 9200 ppm POL Soil	(Yes) No	Yes (No)	
7	Site 10	Yes No	Yes No	NA
8	Site 31 stockpile	Yes No	Yes No	NA
9	Pad 98 berms	Yes No	Yes No	NA
10	Pad 28 ~~silt~~ fence Filter media	(Yes) No	Yes (No)	
11	Pad 28 water containments	(Yes) No	Yes (No)	N

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	(Yes) No	Yes No	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	(Yes) No	Yes No	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	(Yes) No	Yes No	
4	Are discharge points and receiving waters free of any sediment deposits?	(Yes) No	Yes No	
5	Are storm drain inlets properly protected?	Yes No	Yes No	NA
6	Is the construction exit preventing sediment from being tracked into the street?	Yes No	Yes No	NA
7	Is trash/litter from work areas collected and placed in covered dumpsters? Cover Containers	(Yes) No	Yes No	Containers
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	Yes No	Yes No	NA

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	Yes No	Yes No	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	Yes No	Yes No	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	Yes No	Yes No	NA
12	(Other)	Yes No	Yes No	

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Print name and title: Eric Barnhill AR CESCL



Signature: [signature] **Date:** September 14, 2013

SWPPP Construction Site Inspection Report

General Information			
Project Name	2013 Northeast Cape HTRW Remedial Actions		
APDES Tracking No.	AKR10DY50	**Location**	NE Cape Saint Lawrence Island
Date of Inspection	SEPT 22, 2013	**Start/End Time**	1300-1320
Inspector's Name(s)	Eric Barnhill		
Inspector's Title(s)	CESCL		
Inspector's Contact Information	On site – 907-273-0045 / Offsite – 907-273-0045		
Inspector's Qualifications	ACESCL Certificate		
Describe present phase of construction	NA		

Type of Inspection:
(Regular) Pre-storm event During storm event Post-storm event

Weather Information

Has there been a storm event since the last inspection? Yes No
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
Clear Cloudy Rain Sleet Fog Snowing High Winds Low wind
Other: Partly Cloudy Temperature: 30+

Have any discharges occurred since the last inspection? Yes (No)
If yes, describe:
Permitted discharges only

Are there any discharges at the time of inspection? Yes (No)
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1	Fuel containment	Yes (No)	Yes No	NA
2	Non Hazardous waste accumulation area	(Yes) No	Yes No	
3	Silt Fencing - MOC	Yes (No)	Yes (No)	NA
4	Diversion Ditch-Site 31	Yes No	Yes No	NA

5	Dewatering Impoundment - MOC	Yes No	Yes No	NA
6	Stockpiles of below 9200 ppm POL Soil	Yes No	Yes No	NA
7	Site 10	Yes No	Yes No	NA
8	Site 31 stockpile	Yes No	Yes No	NA
9	Pad 98 berms	Yes No	Yes No	NA
10	Pad 28 ~~silt fence~~ Filter media	Yes No	Yes No	NA
11	Pad 28 water containments	Yes No	Yes No	NA

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	(Yes) No	Yes No	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	Yes No	Yes No	NA - Inactive
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	Yes No	Yes No	NA- Inactive
4	Are discharge points and receiving waters free of any sediment deposits?	Yes No	Yes No	NA- Inactive
5	Are storm drain inlets properly protected?	Yes No	Yes No	NA
6	Is the construction exit preventing sediment from being tracked into the street?	Yes No	Yes No	NA
7	Is trash/litter from work areas collected and placed in covered dumpsters?	(Yes) No	Yes No	Conex Containers
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	Yes No	Yes No	NA

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	(Yes) No	Yes (No)	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	(Yes) No	Yes (No)	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	Yes No	Yes No	NA
12	(Other)	Yes No	Yes No	

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Print name and title: Eric Barnhill AIC CESCL

Signature: E Barnhill **Date:** September 22, 2013

ERIC BARNHILL
Bristol Environmental Remediation Services LLC
Northeast Cape HTRW 2013
W911KB-13-C-0004
W911KB-12-C-0003



Rite in the Rain®
ALL-WEATHER
FIELD
№ 351

7-8-2013 → 8-5-13

INCH

Rite in the Rain®
ALL-WEATHER WRITING PAPER

Name ERIC BARNHILL

Address 111 W 16th Ave
Anchorage AK 99504

Phone 907 563 6013

Project NE Cape

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Helps protect your notebook from wear & tear. Contact your dealer or the J. L. Darling Corporation

CONTENTS

PAGE	REFERENCE	DATE

July 8, 2013

0800

packing up gear for flight to Nome Alaska.

(1100) on flight with:

Suzanne Lovell
Russell James
Lyonsey Kleppin
Matt Suda
John Majors

Arrived Nome ≈ 1230

Waited for weather report from NE cape
weather bad.
Flight cancelled

Arrived at Aurora Inn @ 1730 hours

9.5 hours

JULY 9, 2013

0800

meet with Crew in hotel lobby
- Russell James
- Lyndsay Kleppin
- Matt Suda (Test America)
- John Majors (Medic)
- Suzanne Lovell
- @ bering - Jaimie (Eioland)
- @ bering - Sam Jackson (Eioland)

1000 - Bering air flight
all of the above on flight

1040 arrive in Savonga
to pick up:
- Michael Toolie
- Albert Kulowiyi
- Scott Kingeekuk
- Charles Kaug

≈ 1130
arrived at NE Cape

July 9, 2013 (continued)

Site 28 Containment Samples - water containment Sample

Sample 13NC28TWA01 - @ 1700

BTEX -
DRO/RRO -
PAH -
PCB -
Total metals -

MS/MSD Collected

Samples taken from water Containment #2.
(Containment after Geo tube on site 28 work Pad)

duplicate → of "02"

Samples 13NC28TWA02 and 13NC28TWA03
@ 1715 @ 1730
BTEX, DRO/RRO, PAH, PCB, Total metals

Collected from Containment #3 (North of site 28 work pad)

July 10, 2013
Cool, mostly cloudy, breezy
Site Orientation - Chuck Croley / safety

- Slower is faster

- Sample Connex delivered to camp containing bottles ordered in 2013

- COC created for site 28 containment waters (sampled 7/9/13)
1200 - 1250 lunch

- Sample management - site 28 Samples

1300
Prep Phase meeting(s)

- Site 21 borings and excavation
→ borings first, Map → dig

- Site 13 & 91
→ find hot spots → dig → @ 13 continue onto dig POL

July 10, 2013

POL @ MOC

Site 10 first - additional probing and soil then on to E plume continue following hot spots

Site 10 - investigation of a Schonstadt (metal detector) Ping that yields no drum; in this case for now (according to QAR) we can replace the dirt to the small investigation area.

Bag holding

Site North of the fuel containment area is open. Craver would like us to get a sample now that is open. It remains unclear if this is a pe or post

Bottle/Jar Container/cones Cleaning and organization.

Coolers of site 28 Containment shipped!

10 hours

July 11, 2013

Cloudy, sprinkles - Cool

Safety:
- Proper PPE for area of work
- John (medic) reminder to use him ASAP

Environmental Meeting:

- Surveyor will find hot spots at 10, 13 and 31.
- Site 21 borings will be begun
-

Site 21 (Sampling with Lyndsey Kleppin)
- borings and Arsenic Analysis Samples
samples logged in Lyndsey Kleppin's notes due to mud/water one kept notes (LK) and one dealt with Muck (LES)

10.25

July 12, 2013
Foggy, Fairly Calm

PPE
- Hard toe boots
- Safety glasses
- Vest / reflective upper body wear (High Visibility)
- Hearing Protection during certain activities
- BUGS
  - available bug dope
  - Bees (anaphylactic shock)

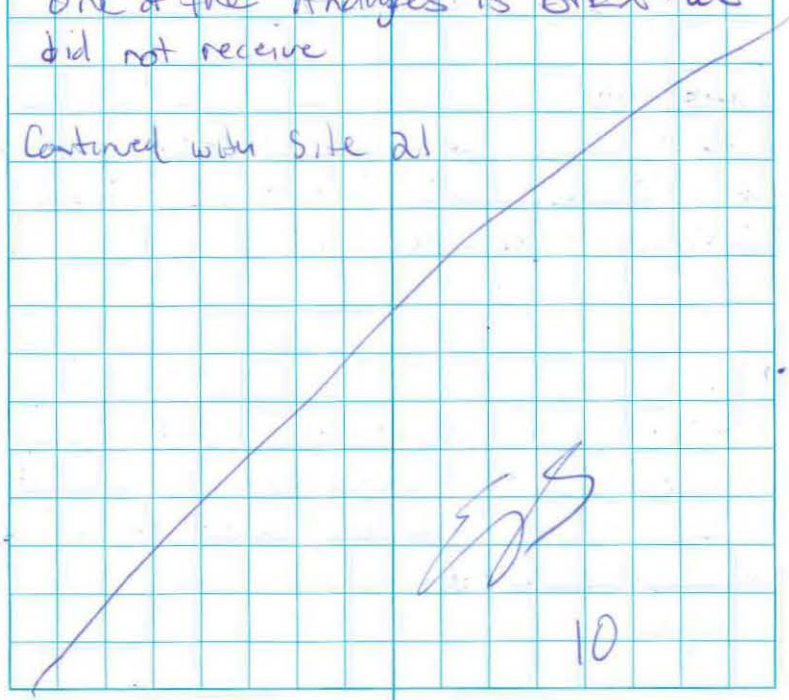
Environmental
Site 21 - with excavator for remaining Samples
Site 10 - beginning in lower area; bagging 2" plus stuff probably.

0745
Meeting with Chuck Croley, Russell James, L Klepper and I. Chuck would like an MI Grid to the Right of the existing pad so he can build additional pad

0815
Arsenic Sampling

Preparing to Create new MI grid to the East of Existing Site 28 well pad. The new MI grid will be for additional water containment.
One of the Analytes is BTEX - We did not receive

Continued with Site 21



10

July 13, 2013 <continued
Mostly Sunny

Safety:
- warm day
- Bugs
Site 10 - began yesterday, discuss what the excavator operator wants. COMMUNICATE

Environmental
- Site 10
- Site 13 perhaps
- MOC surface waters

Calibrating YSI - The YSI we have is malfunctioning. One is on the way. This one will only calibrate Conductivity and DOC (dissolved oxygen). pH will be taken at MOC waters using pH strips

July 13, 2013 <continued
Windy

MOC Surface water Sampling

13NCMOCWA001
sampled for BTEX, PAH, DRO/RRO
@ 1050
YSI
4.61 pH
9.01 °C
0.315 ms/cm²
219 µs/cm
92.3 DO%
10.67 DO mg/L
pHstrip 4-5 → same
→ same
→ same
→ same
NO odor, Orange bubbly mucky surface scum
Turbidity 19.9 NTU

13NCMOCWA004
(duplicate of 001)
Sample for BTEX, PAH, DRO/RRO
@ 1115
→ same

13NCMOCWA002 (MS/MSD)
pH 5.35 (pHstrip 5)
76.0 pH mV
-0.1 ORP
9.07 °C
0.0906 ms/cm²
67 µs/cm
106.7 DO%
Turbidity 10.2
Biogenic Sheen
NO odor
@ 1140

13NCMOCWA003
pH 5.12 (pH strip 5)
83.6 pH mV
-4.6 ORP
5.83° C
0.117 ms/cm²
74 µs/cm
25.6 DO%
3.17 DO mg/L
NO odor, No sheen
Turbidity 3.59
@ 1315

July 13, 2013

SITE 13 Confirmation Samples

13NC13SS001@ MS/MSD 1400 ~~13NC13SS003 @ 0810~~

13NC13SS002@ dup 1415 ~~13NC13SS004 @ 0815~~

Site 13

Digging out spot from 2012 field season that was above site specific Cleanup level of 1.0 ppm

One Bulk bag removed - 13-62A

SAMPLES

13-001 → Eastern Sidewall
13-002 Floor
(BW 13-62)

Site 31-

Digging out spot from 2012 field season that was above site specific Cleanup level of 1.0 ppm

One bulk bag removed 31-57A

SAMPLES

WAL-001 Center of grid
(BW 31-57)

10:25 EJS

July 14, 2013

Cool, high winds, rain

Safety meeting:

High wind awareness
- doors
- Vehicles
- Flying material

Environmental

Site 10 - Clean out area - results indicate one spot to dig today

Site 13 - One spot to dig out, also stockpile are from prior years to be dismantled and cleaned up. sampled underneath.

Sample management - MOC waters (SW's)

Site 13

Removed an additional bulk bag from the excavation

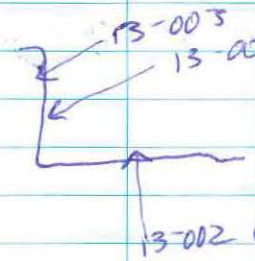
field samples 13-003 + 13-004

13-003 from upper sidewall 13-004 from lower sidewall.

July 14, 2013

Bulk Bag

13-62B



Removing clean overburden and liner from site 13 stockpile area. Will sample underneath for PCBs

Sampling under old stockpile lined area adjacent to Site 13 Excavation

Samples SP13-001 → SP13-072

More samples to take.

Turn in Samples

10

July 15, 2013

partly cloudy, breeze

Safety

- possible chop saw work = Paper PPE
- Rock Truck and People on the ground keep aware of one another.

Environmental

Site 13 PCB - Clear

site 10 - additional ~~dig out~~ dig outs & plume

Sample management

Site 13 Samples

BNC 13SS001 @ 0800 MS/MSD
13NC 13SS002 @ 0805
13NC 13SS003 @ 0810
13NC 13SS004 @ 0815 (Top of 3)

13SP73 → 13SP118 (field QA Samples)
Samples located by Surveyor.
Continuation of Sampling from July 14, 2013. Samples are from underneath a former lined stockpile area.

LUNCH

PAD 98
Bulk Bag Sampling



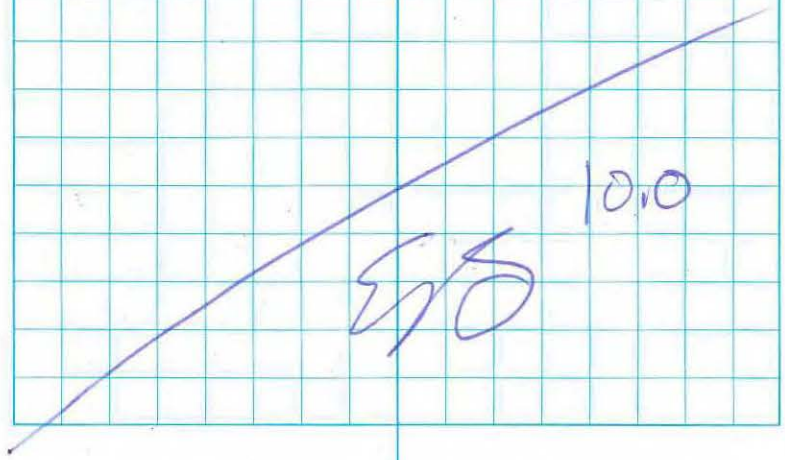
July 16, 2013

Safety
- Swing Radius - be aware - stay out of it
- Take time to do job right and safely
- Be courteous = start being quiet around 9:00/9:30

0800
Pad 98 waste sampling

1200 Lunch

1300 Pad 98 waste sampling. Fairly high winds. Wind monitored averaging approximately 20 mph. high dust.



1010

July 17, 2013

Windy, gray skies, cool

Safety

Be aware and prepared - Bring additional eye wash solution.

Mark edges of open excavations

Be careful by edges of excavation - Wind Gusts!

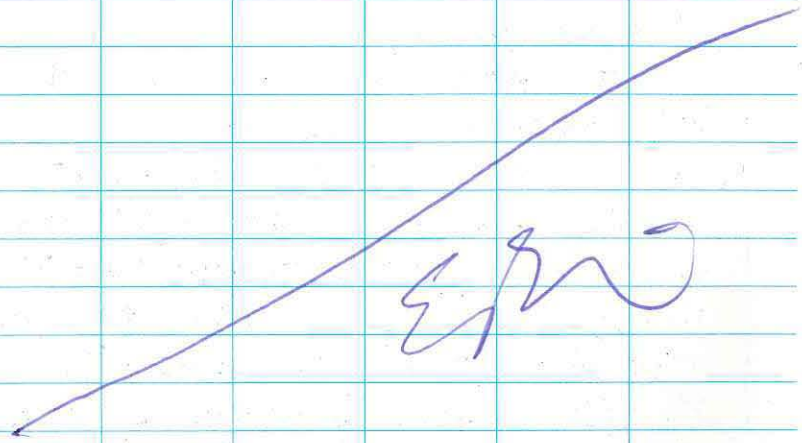
ENVIRONMENTAL

Site 10 - excavator sampling

Pad 98 - Bulk Bags

Camp water sample - send out on security Aviation flight Thursday

PAD 98 Bulk Waste Sampling



July 18, 2013

Partly cloudy, cool

Safety:

- Stay aware on Jobs with a good deal of repetition
- Fire Safety - if you see or smell something say something

Enviro

- Site (E plume) MDC - Continue digging
- Pad 98 Continue bagging
- MI Samples begin
- Camp water sample to be collected by Bristol

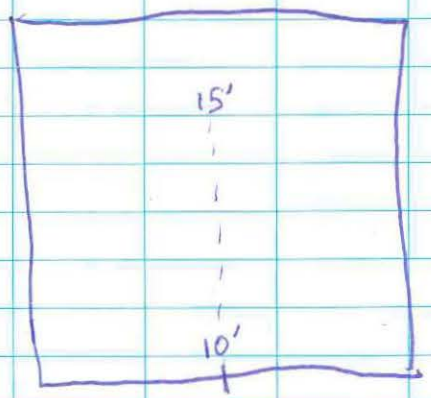
0800

Laying out Decision unit Northeast of fueling area.

Decision unit will be 120' x 120', with 36 increments of 20' x 20' each.

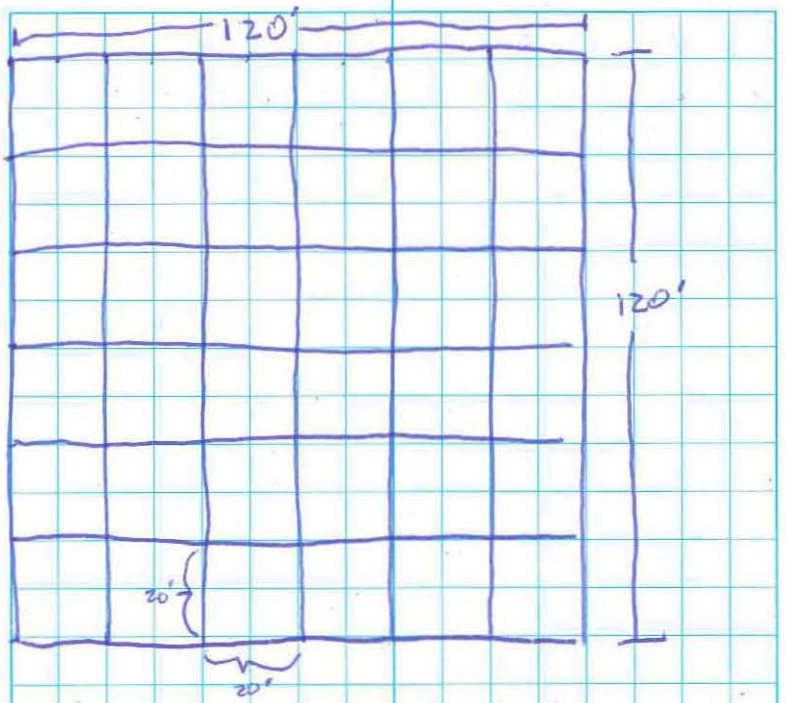
Corresponded with Bristol Chemist and concluded that the triplicate collected from the MDC area last season still count towards the triplicate sampling requirements this unit will only be collected as a primary sample. an MS/MSD will be requested

MI NE of fuel area. The increments will be sampled 10' to the right on the X axis and 15' up the Y Axis



Tar or Asphalt (pliable) with a petrolium odor in a few increments

Sample
Collected into a clean dry 5 gallon bucket and all incremental samples transferred into a 1 gallon bag once all were collected. Incremental samples were a ½ cup each.



Decision Unit - Bulk bag area N/NE of fuel containment are

13NCBGSS01@1430

EM

July 19, 2013
gray / rain ; light breeze

SAFETY:
NEW DUDES
SHIP LOADING - New Captain, may change up things - be aware,

EWTPO
- Bagging at Pad 98
- well sampling
-

PAD 98 — bulk bag filling and bulk waste sampling

10

July 10, 2013
sunny - some clouds/fog - cool

Safety
PADS - Physical Agent Data Sheets
• Heat stress

Environmental
Site 10 - more drum exploration
E plume - additional soil excavation
Pad 98 - Bulk Bagging
MOC wells - Water Sampling

PAD 98 bulk waste Sampling all day (see bulk bag book)

JULY 21, 2013
Windy; Mostly sunny - Partly Cloudy

Safety
wear proper PPE for the conditions (wind).

PAD 98 - bulk waste

1100 hours
Site 13 bagging operations prep

1200 Lunch
1230 - Site 13 bagging

BAG
13-62C 1325
13-62D 1352
E
F 144
G
BW 13 62

13-63 A 1330
13-63 B
13-63 C

July 21, 2013 <continued>

10

7 (site 13
3 (pad 98)

July 22, 2013
Windy - Partly Cloudy

SAFETY
Wind Safety

ENVIRONMENTAL
Pad 98 G+H plume
Site 13

Site 13 - Post hot spot excavation sampling
0900

Samples Collected
13SP 139, 140, 141, 142, 143, 144, 145
146, 147, 148, 149, 150, 151, 152
1005
Pad 98
Bulk waste sampling

Kestrel wind Monitoring
Avg 21 MPH
Max 45.7 M/H

July 22, 2013

(Lunch) 1200

-Pad 98 bulk waste sampling

1530
Site 13 stockpile sampling (continued)

Collected samples 153 → 206

SS

10.25

July 23, 2013 - windy-partly cloudy

Safety meeting.
Secure sites with wind

Environmental meeting
MOC surface waters - during Sample to be collected.
H + G + F plume - POL digging to continue
Pad 98 - Bulk waste sampling / Bagging to continue

0800
Pad 98 bulk waste sampling

1100 photos of site 31 - beginnings; fill will be deposited in one foot lifts and track walked

1200 lunch

1230
Pad 98 - bagging operations continue; bulk waste sampling

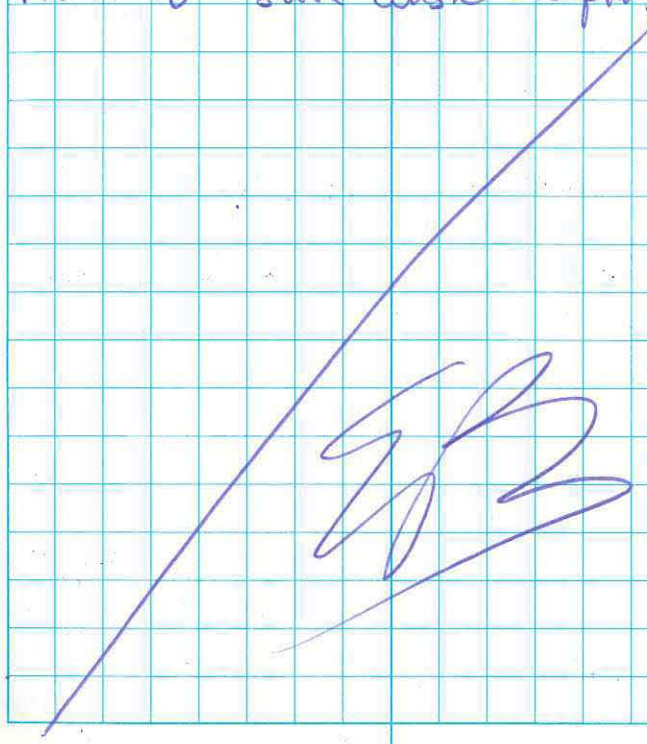
10.50

July 24, 2013 - gray misty calm Fog

Safety
Communication

Enviro

PAD 98 - Bulk waste Sampling



10.5

July 25, 2013
Partly Sunny; Calm, warm

Safety
AHAs

13NC13550045 @0840
046 @0841
047 @0842
048 @0843
049 @0844
13NC13550050 @0845
051 @0846
(ms/msd) → 052 @0847
053 @0848
054 @0849
055 @0850

Environmental
Pad 98 - Julie
MOC Rd plumes paused for Site 10 glycol hit removal and Site 21 additional borings

SITE 13 Samples
13NC13550005 @0800
006 @0801
007 @0802
008 @0803
009 @0804
010 @0805
011 @0806
012 @0807
013 @0808
014 @0809
015 @0810
016 @0811
13NC13550017 @0812
018 @0813
(ms/msd) → 019 @0814
020 @0815
(ms/msd) → 021 @0816
022 @0817
023 @0818
[redacted] 024 @0819
025 @0820
026 @0821
027 @0822
028 @0823

13NC13550029 @0824
030 @0825
031 @0826
032 @0827
033 @0828
034 @0829
035 @0830
036 @0831
037 @0832
038 @0833
039 @0834
040 @0835
041 @0836
042 @0837
043 @0838
044 @0839
[redacted] 045
056 @0851
057 @0852
058 @0853
(ms/msd) 059 @0854
060 @0855
061 @0856
062 @0857
063 @0858
13NC13550064 @0859
065 @0900
066 @0901
067 @0902
068 @0903
069 @0904
070 @0905
071 @0906
072 @0907
(dup of 005) → 073 @0908
(dup of 028) → 074 @0909
(dup of 030) → 075 @0910
(dup of 033) → 076 @0911
(dup of 039) → 077 @0912
(dup of A6) → 078 @0913
(dup of 055) → 079 @0914

Boat loading until 1900

EWS
11.5 hours

July 26, 2013
Grey slight breeze, Partly cloudy

Safety
Medic = make sure you check out over the counter medicine

E. Evaluate situation / Job hazards
R. Re-evaluate throughout the day to adjust tactics / PPE etc.
I. Initiate Protocol to keep safe
C. Communicate; let others know what you learn. Bring new people into the ring of knowledge

0800
Sample management

1000-1115 (NALEMP) Drum / small super soil Sampling

July 27, 2013
Partly cloudy

0345 -
Barge landing Craft loading - went on board loading vessel 11. Assisted with manifests. 23 fuls of bags loaded 140 empty flats delivered
0700
Safety meeting
Fatigue - what is it; how to combat it, causes etc. etc.

Environmental
Continue bagging at pad 98
removing drums from near Camp adjacent to creek.
MOL POL plumes continue excavation

Pad 98 Sampling - Bulk waste Samples

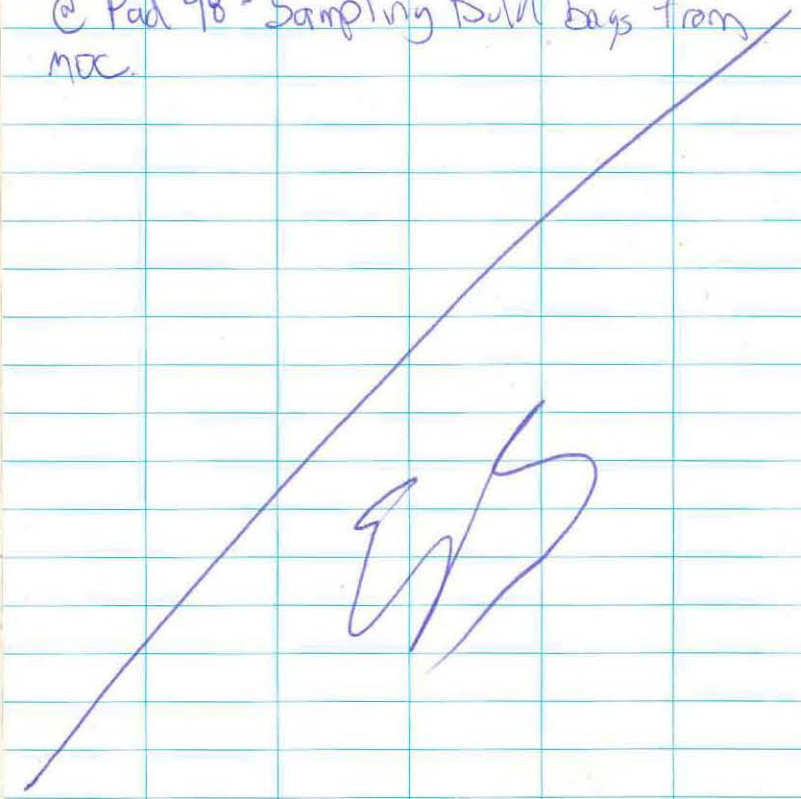
Safety talk prep

13.5

July 28, 2013
grey, cloudy, cool, dry

Safety
Site updates
Be aware of traffic from locals

0800
@ Pad 98 - Sampling Bulk bags from MOC.



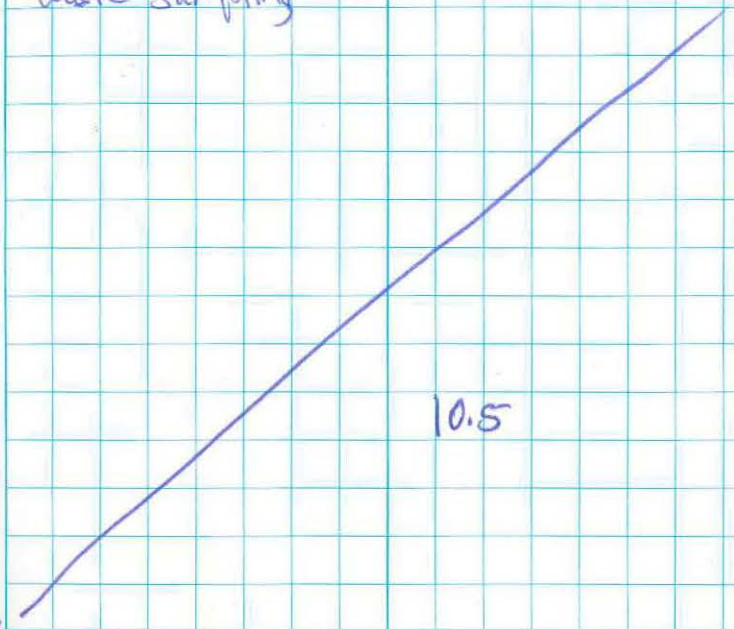
11.0

July 29, 2013
grey cloudy

Safety
Lessening the spread of colds/flu/disease

Environmental
more pad 98
removing additional clean overburden

0800
PAD 98 - bulk bag filling - bulk waste sampling



10.5

July 30, 2013
partly sunny

Safety
Effects of weather:

Enviro
No bagging
emphasis on Site 28

- Site 28 preparation
  - Hose making
  - pump placement
  - Site scouting
  - flocculent mix mate setup

Boat load 2
SSHP 1.5
Site 28 prep 9.0
12.5

July 31, 2013
Partly Cloudy, dry, calm

Safety:
- AHAs
- Excavations greater than 4 feet
- Excavations less than 4 feet
- Dredging and pumping
- Pole removal
- Fueling
- PCB and Pol removal

Environmental
Pad 98 on hold
Site 28 - Preparing for dredging/Sampling
MOC - No hauling for now until
Pad 98 is partially emptied

MOC tour with L Klepper

Pad 98 preparation - Freshwater source piping

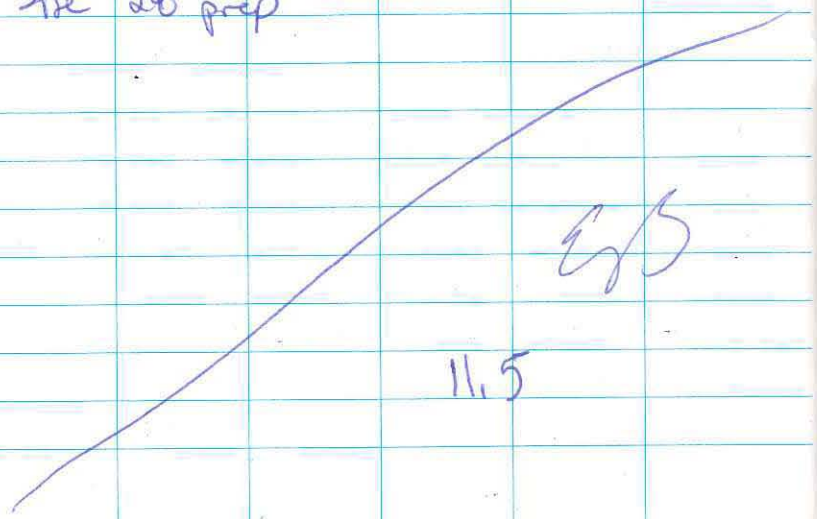
28 - MOC
98 - Site 28

August 1, 2013
rain, grey, calm, cool

Safety
Drowning - drowning doesn't always look like drowning.

Environmental meeting
- Pad 98 bagging and screening will continue/start
- Site 28 - pump testing
MOC - No new digging until pad 98 gets partially cleared

Site 28 prep



August 2, 2013
rain, grey, cool

Safety Meeting
Safety Award - Maze Thompson

Safety Quiz

Environmental Meeting
- Pad 98 continuing sorting and bagging when available
- Site removal

Site 28
at site 28 removing decaying plant matter from bottom of Southernmost pond (by hand - drysuits)

Continued to pond NE of first pond

- Surface water sample just below site 28 silt trap

August 2, 2013 (continued)

One sample collected @ 1430

- 13NC28STW01
  - PAHs
  - PCBs
  - BTEX
  - METALS
  - DRO/RRO

  turbidity 18.2 NTU
  no sheen

Sample labeled and refrigerated

Back to assist with sediment removal at site 28.

Boat loading

12.25

August 3, 2013

rain, grey, cool, calm

Safety

unsafe condition

Environmental

- resume digging on MOC plume
- Dagging resumed
- Site 28 - dredging

- 0800

MOC plumes

Continuing F plume removing contaminated soil in NE end of excavation. Removing clean overburden in Northwest and contamination beneath. There is a lot of water in excavation lots of Petroleum odor

10.5

August 4, 2013
cool, grey

Safety
~~Ens~~ Vehicle Safety

Environmental
- Boat loading at 11:00 - Jack will switch to bagging
- Moving to plume B to remove overburden and remove two dig out spots. And F plume to remove blown confirmation sample

0730
- Beginning to remove ~~field~~ Confirmation hot spot in F plume. Removing approximately 8' to 10' of width and 5'-6' of depth.
dry material.
Sampled FSMOCG-20

1015 Boat load

B-Plume - removed overburden and additional soil from FS MOCB16 + 10
Samples Collected
FSMOCB22 (old 16) FSMOCB23+24 (old 10)

1300
preparing to dig additional soil from site 10
Confirmation Samples: Contaminated Samples
13NC10SS018
13NC10SS023
13NC10SS024
All being additionally excavated
018 will be re-excavated and sampled for RRO
023 and 024 will be sampled for glycol.

9 moc
1 2%
.5 SSMO

August 5, 2013 - Calm, grey, cool

Safety

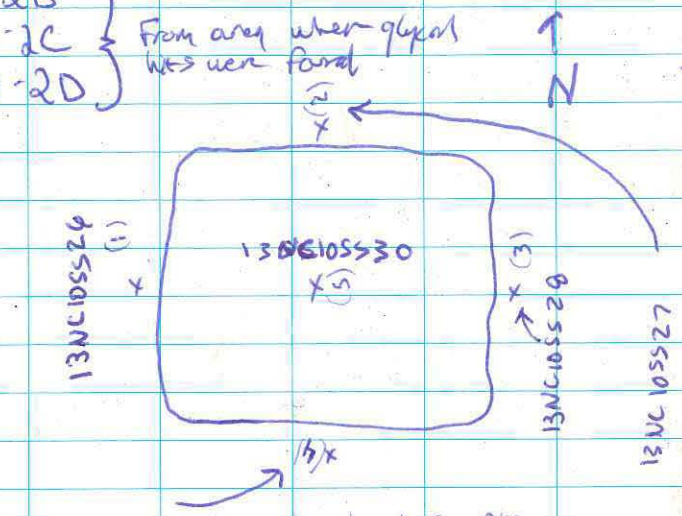
Be safe in after hours fun

Enviro

Containing MOC, Pad 9-8 and Site 200

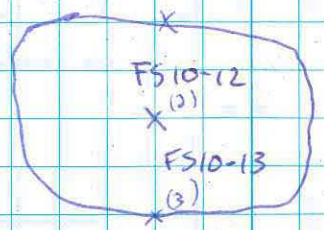
13 NC 10 SS 26 @ 0940
13 NC 10 SS 27 @ 0945 MS/MSD
13 NC 10 SS 28 @ 0950
13 NC 10 SS 29 @ 0955
13 NC 10 SS 30 @ 1000

Site 10
Burn bays
13-10-2B
13-10-2C
13-10-2D
} From area where glycol was seen found



Burn Bay
13-10-2E

RDO Hut excavated and Field Samples FS10-11, 12 & 13



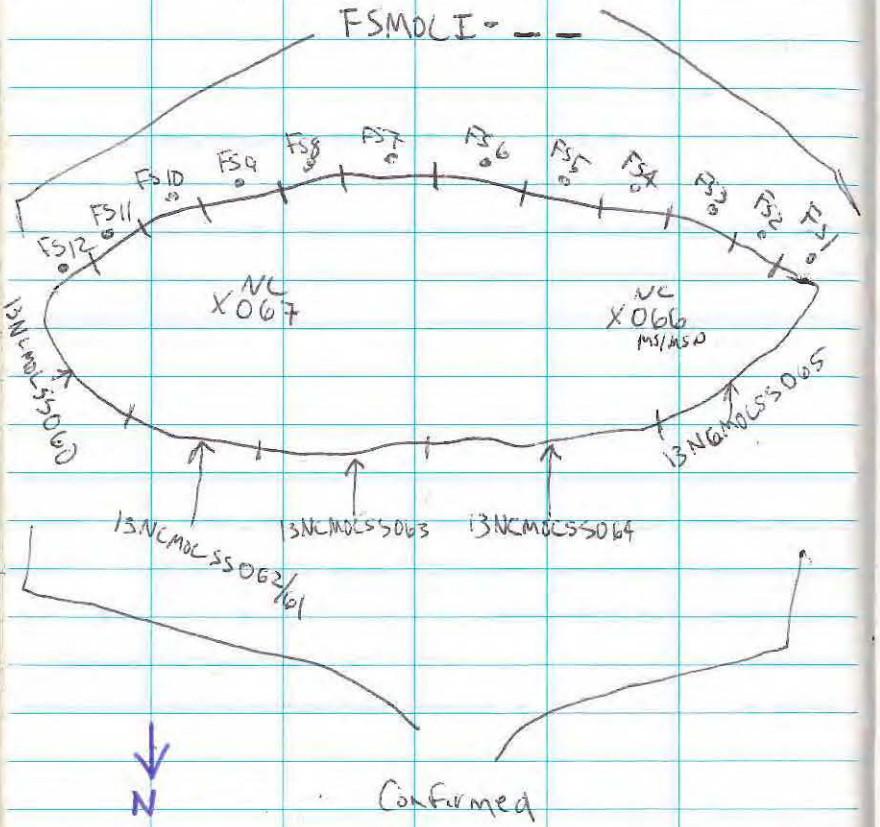
Site plume "B" FSMOC B-23 re-dig due to slightly hot results. drawing of re dig added to "B" drawing in large notebook. Excavated an additional 5'. Sampled (FSMOC B-25)

Sample Management

5 Samples from Site 10 sampled for Glycol. 5 samples on COC 13NC025

8/5/13

13NCMOCSS060 @1619
13NCMOCSS061 @1620
13NCMOCSS062 (duplicate of 61) @1624
13NCMOCSS063 @1627
13NCMOCSS064 @1628
13NCMOCSS065 @1631
13NCMOCSS066 (MS/MSD) @1636
13NCMOCSS067 @1638



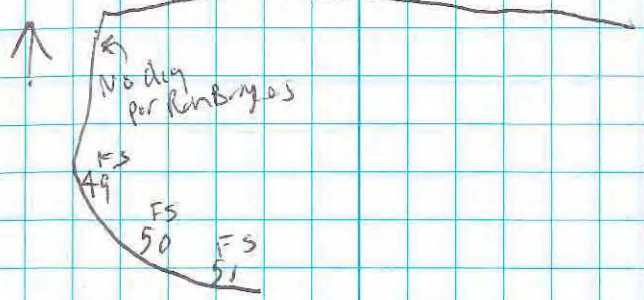
Confirmed

8/5/13

Collected Samples from dig out spot in NW section where digging had begun

Collected Field Samples

FSMOCE-49 westernmost
" " 50
" " 51 eastern most



Spoke with QAR Jeremy about taking no further ~~samples~~ Excavation from furthest NW section of E plume this section shall remain as is. The western edge of Eplume will only advance another few yards to the west to avoid water infiltration into the adjacent water gulley (area between two humps and containing a culvert)

10.75

M.x Mate
Model # M202-62X-3
Serial # 130400002

Pump
Model #
C781-30HV

Conductivity + ORP

BNC-2155

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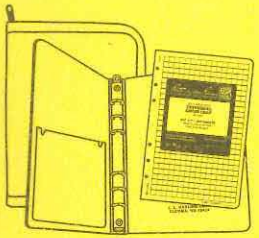

Loose Leaf
with Ring Binder



Memo Books



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Eric Barnhill

Bristol Environmental Remediation Services LLC

Northeast Cape HTRW 2013

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CONTENTS

PAGE	REFERENCE	DATE

August 6, 2013
grey, moist

Safety

Environmental
Site 28 continues - dredging today
MOC - additional excavation; A2
Pad 98 - Bagging Continues

MOC
Removing Clean overburden from plume A2.

Boat load 1200

MOC - A2 continues - no sampling yet

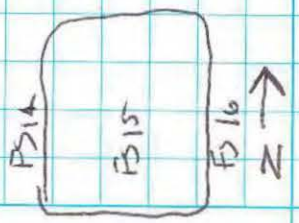
10.75

August 7, 2013
grey, dusty, misty/moist

Environmental/Safety
- weather distractions
- stay alert
- Switching from activity to activity has worked well. Much appreciated. Continue to be safe

Environmental
Site 28 - Continuing
MOC - A2 will continue
Site 10 - additional excavation in DRO/RRO spot (Hit of 4K, 21K + 11K)
B-plume - one additional spot (hit of 7.5K)

Site 10
Remove 2 bags (bulk bags 13-10-2F + 2G) from glycol hot spot.



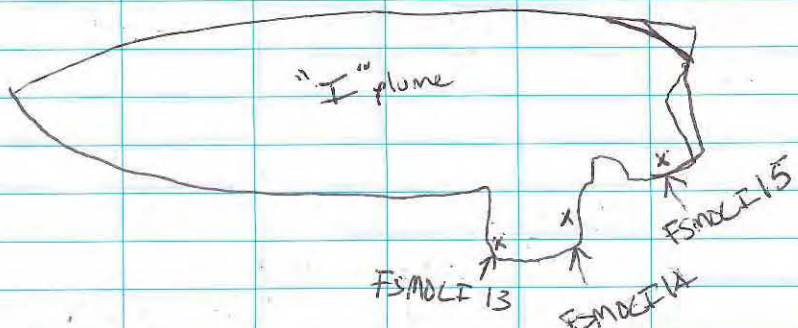
Field Samples
FS10-14
FS10-15
FS10-16

August 7, 2013

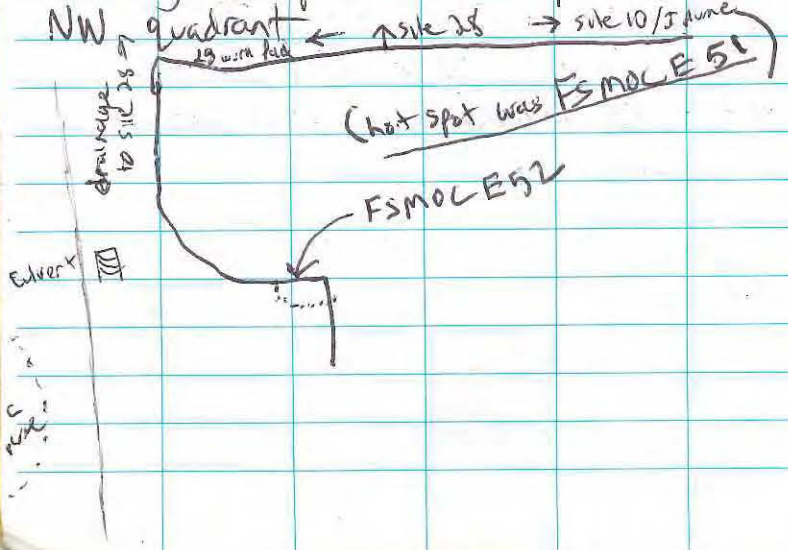
Removing hot spots from I plume

FSMOC I10 (54,989.9 mg/kg)

FSMOC I12 (11,140.8 mg/kg)



Removing hot spot from E plume in NW quadrant



August 7, 2013

~~Safety:~~

Enviro:

sites: MOC, Site 28, 10, Pad 98 - all to continue

MOC

digging "Hot spots in MOC"

- Site 10 (DRO/RRO spot
- "I" plume two spots (10 + 12 Fold Depths) being additionally excavated

L Kleppin returns (~2:00) shared her site and the state of the excavations in MOC since her break.

10.5

August 8, 2013

Safety:
- Boat coming frequently over the coming weeks.
  - boat not the hazard but lots of heavy equipment in tight spaces. heavy loads
  - If you come to observe stay out of harms way
  - an operator who's peculiarity we do not know will be on our beach.
  - If you don't know if you should be some where, ask
  - Keep your head on a swivel - Georges Loader

(Tomorrow - bring up tie issues)

Excavation at MOC with L. Kleppin (A2)

Boat loading

PCB waste - Placed in PCB bag on beach

10.75

August 9, 2013
FOG, Mist/Rain

Safety
Operator/Laborer entered Safety tips
- Let people know of you expect to be out late as well as where you are headed after hours

Environmental
- 28 on Pause (waters being re-run)
- MOC dig as available
- Paid 98 - buoys

PAD 98 - remainder of the day

10.5

August 10, 2013

11:5am - early boat load
3:15 - done

0655 55th talk
- slips trips falls
- floating in wet areas

Environmental

Be aware of MOC tonnage - Approaching our allocation of 6000 tonns.
- Continue MOC dig
- Continue Pad 98 bagging

PAD 98 -

August 11

Cool, misty

Safety

Environmental

- Be aware of MOC tonnages
- bagging continues at pad 98
- Barge loading @ 3:00pm

PAD 98

1200 Lunch

PAD 98

1500 Barge loading

10.5

August 12, 2013
Cool, mostly Clear

AM boat loading
0300
↓
0715
in camp

CESCL inspection -
Site 31
MOC
Pod 98
Non haz Collection area
Site 28 - Containment
- Silt trap

Lunch

(HOME TO ANCHORAGE FOR BREAK UNTIL THE 19th)

August ~~20~~ 19th, 2013

Returning to Camp from break in Anchorage

Airport in ~~Anchorage~~ to Nome (0900)

NOME - ~~BERING~~ AIR

Made initial leg for Island landing aborted. Returned to Bering Air at approximately 15:30/1600. another attempt at approximately 1800 hours. Landed Successfully.

August 20, 2012
Cloudy, Cold, dry, Calm

Safety

Environmental

Stock pile sampling -
sampling two clean stockpiles at the MOC with Julie Clark
Samples taken were MOC SP 38 → MOC SP 51.

Site 28
GAC setup and hose making - water filtering

Stopped pumping @ 1815

10.25

August 21, 2013
rainy, grey, cool

Safety

Environmental

- check site 10 for drums of liquids

NO APPARENT DRUMS OF LIQUIDS ON SITE

- SITE 28 - Changing hoses for additional water GAC treatment

PAD 98 - Bulk Waste Sampling

10.5

August 22, 2013

Safety

Environmental

- Site 21
- MOC excavation

at Site 21 digging out arsenic contaminated soil

- Started with Sample 21-12. Collecting bulk waste samples at 1 per bag and compositing 7 bags together for bulk waste analysis.

with Julie Clark (see her notes)

10.5

August 23, 2013

Safety

- Site 21 - Be careful with footing mud etc. etc.

Environmental

Continue Site 21 excavation

Beginning on bag 21-13G

spoke with QAR: we can dig up to 300 tons @ site 21

21-13G

21-14A, B, C, D, E, F, G

21-15A, 15B

10.75

21-8.25
.8 2.0
SSHO <

August 24, 2013

Safety:
site hazard review

Environmental:
- site 21
- MOC backfilling

Site 21 Sidewall Sampling - notes in Julie Clarks book

Gel ice drying

Pad 98

Boat loading 1430 - 1900

12 hours

8-25-13 cloudy/rainy WINDY

Safety
Physical Agent Data Sheets
- Cold Stress / Hypothermia

Environmental
- Pad 98 bulk bagging

PAD 98
- Bulk Waste Sampling

High winds ended
bagging operations early

10

August 26, 2013

0300 - Barge loading
-2 loads

Pad 98 bulk bag sampling

1600 barge loading
- 2 loads

Stop @ 2130

18

August 27, 2013

0345 - Barge loading
- 2 loads

Assisting Johnny Willis adjust load frame (weld)
Pad 98 bulk waste sampling

Barge loading

Pad 98 - bulk waste

16

Aug 28 - Cloudy, slight breeze

Safety
- Road traffic - ROW ; Buckle up
- Visitors to site

Environmental
Pad 98
Site 28 - dredging

BOAT LOADING

Site 28

August 29 Cool, grey

Safety
- Road ROW - Screen Plant
- Excavation Safety - Hauling

Environmental
- Continuing to work on digging
- Site 28 dredging

Site 28 -
Assisting with pumps and hoses and inserting a new Geo tube

Boat load -
Sam T

August 30 - rainy, cool

Safety

Safety award - Albert Kulaviyi

- Police area
- Close Conexes
- New boys - be aware of what works and how loads behave

0700

Landing Craft - loading / Paperwork

0930

Landing Craft - loading / Paperwork

August 31, 2013

Safety

- handwashing, Dracula sneeze, HAND WASHING
- Remember the medic is here to help in time of sickness - give advice KEEP HIM BUSY don't allow minor injuries and pains to foster and get worse

Load frame M00
PAD 98

Sept 1, 2013

Safety

Environmental
- Site 29 GAC issued
- A2 Continuing excavation and sampling
- Pad 98 - bag fitting and screening as available
- Removing liner in areas - order liner samples to be taken

PAD 98 - Rest of day

10.5

Sept 2, 2013

Safety
Vehicle safety - STATDELTS, walkarounds
Road safety
PPE - to be prepared

Enviro
- waiting on A2 dyed results
- Pad 98
- holding discolored water from GAC

PAD 98 - BULK WASTE SAMPLING

10.5

September 3, 2013 grey, rain, clouds

Safety Meeting
- Arsenic safety - gloves, mvem, rocks
- Containment building
  - Communication
  - good grip
  - Careful footing

Environmental
- Site 21
- stockpile - under stockpile liner sampling
- possible containment building

Site 21
Checking on hot spots
Original samples results
#23 - 25 mg/kg
#24 - 26 mg/kg
#26 - 79 mg/kg
#27 - 33 mg/kg
#28 - 23 mg/kg
#29 - 34 mg/kg
#30 - 17 mg/kg
#32 - 25 mg/kg

#35 - 24 mg/kg
#36 - 12 mg/kg
#40 - 340 mg/kg
#41 - 140 mg/kg

BULK WASTE SAMPLING - Site 21

Map

1101 21 - 17 A
1121 21 - 17 B
1135 21 - 17 C
21 - 17 D
1303 21 - 17 F
21 - 17 F
21 - 17 G

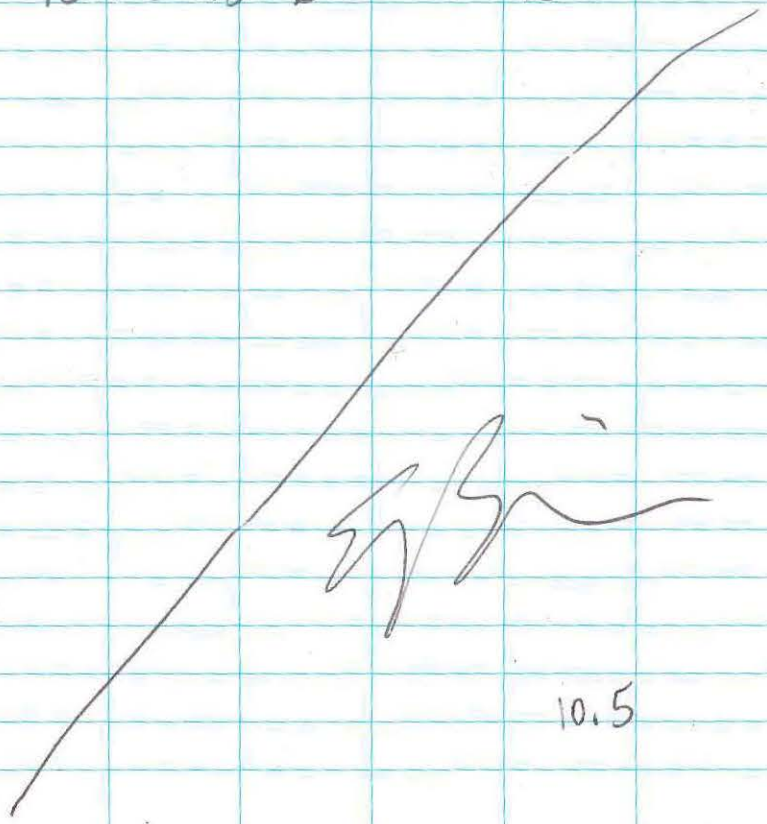
Combining all into one Bulk Waste Sample BW21-17_18

21 - 18 A

Field Sample

13NC215S043 @ 1530
044 @ 1535

13NC21SS045 @ 1540
13NC21SS046 @ 1545 MS/MSD
13NC21SS047 @ 1550
13NC21SS048 @ 1555
13NC21SS049 @ 1600
13NC21SS050 @ 1605
13NC21SS051 @ 1610



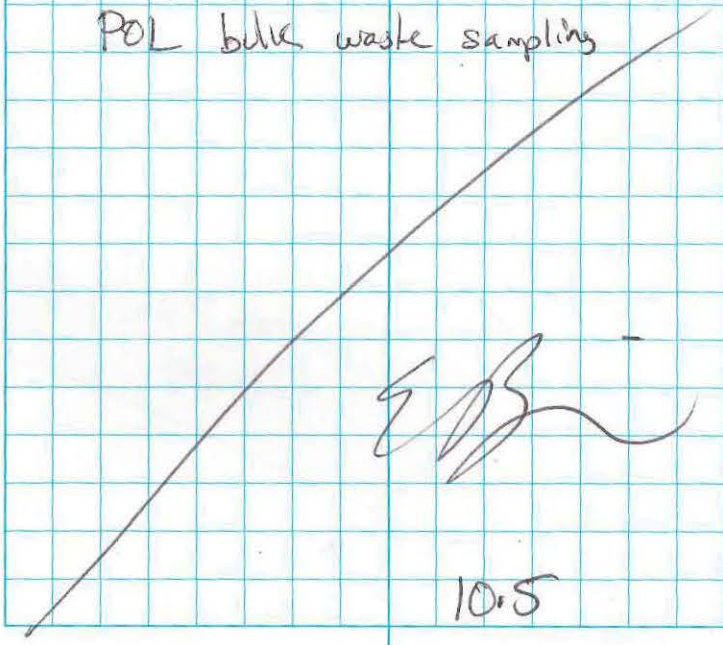
10.5

September 4, 2013

Safety
- screening plant
  - Proper PPE
    - clothing, ear protection
  - * Ear plug insertion demonstration
- 10 interesting safety facts

Pad 98 -

POL bulk waste sampling



10.5

September 5, 2013
Cloudy overcast misty

Safety
Site updates
- Pad 98
- Backfilling
- Site 28

Environmental
- Finishing bagging
- Stock pile Sampling

PAD 98 Sampling
- Finished (MC 440G) ≈ 2:30

Arsenic Sample management

September 6, 2013 - Partly cloudy, cool, dry

Safety
Safety stories

Environmental
2 hot spots from underneath stock pile. - To be removed and re-tested

Samples to go out - Site 21, Site 10. drum oil.

Site 28 = Julie Clark is leaving today I got all of her procedures up to this point. (Samples, duplicates, field forms)

Site 21 - Arsenic
sample management
Packaging Shipping

10.5

Sept 7, 2013

Safety

Safety Avoid
Beach hauling

Site 28: waters clean -
Site 28: Sample 13NC28STW13 (South Containment)
1300 - 1330 dredge ← @ 1310
1400 - 1430 dredge
1500 - 1520 dredge

Downstream Monitoring Sample @
1540 hours
13NC25STW15
Biogenic sheen observed
Turbidity 20.7 NTU

1551 Dredge start 16 [redacted] 10.4.00

1630 to 1650

Assisting Dredge

11.25

September 8, 2013

Cool, cloudy

Safety meeting

Buddy system, Beach hauling / Site 29

Safety Jokes!

Environmental

Site 29

Site 29:

Containment water sampling

13NC29TWA14 @0745

No odor; No sheen, calm winds

Turbidity 30.3

DRIDGE TIME

Start	Stop	Total Time
1040	1100	20 min
1125	1143	38 min
1500	1545	83 min
1615	1650	35 min

Surface water sample

13NC29STW16

@ 1535

Turbidity 37.1

Biogenic sheen; floating plant matter

breezy

September 9, 2013

Safety
Safety Quiz - Prizes Awarded

Environmental
- Site 28 continuing
- MI Sampling beginning

Spoke to Surveyors about re-marking edges of 2012 MI grids.

Sample management
- Wrapping and shipping Site 28 Soil Samples (post dredge)

LUNCH

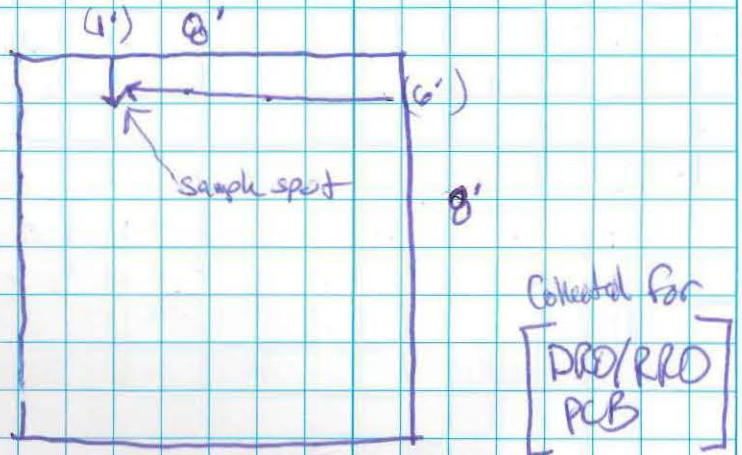
Lab packout up - Josh Arms, Richard Losche and Marty Hannah out.

MI re sampling beginning

First re Sample is area West of fuel containment.

Sample grid is 56' x 56'. Same grid as last year used.

Each grid interval is 8' x 8' square

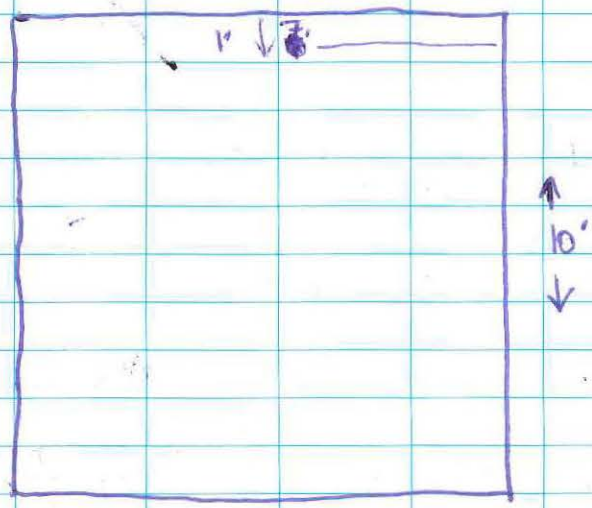


Collected for [DRO/RRO PCB]

Sample 13NC-BG-SS0[illegible]2 @ 1430

Re-sample / Post sample of area South of Fuel containment area

Decision unit is the same as the unit from 2012. 60' x 60'
Each increment will be 10' x 10'



collected for [DRO RRO PCB]

Sample 13NCBGSS03
@ 1630

Sept 10 - cloudy, light rain

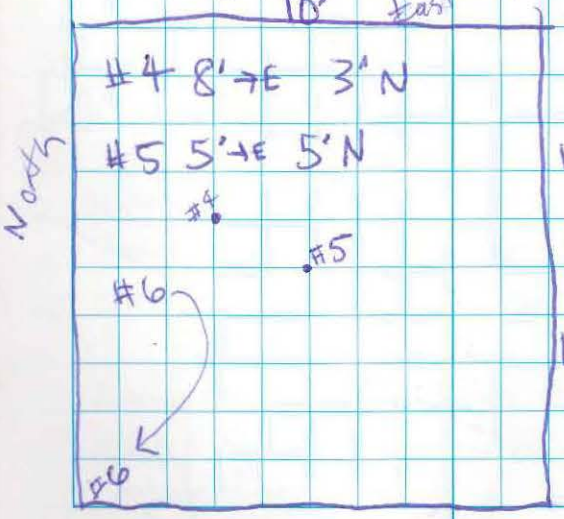
Safety

Seatbelts - how they protect

Environmental

MT sampling
Site 28

Sampling are South of ~~field~~ fuel containment area. Decision unit is 60' by 60' each increment is 10' x 10'. This site is being sampled in triplicate.

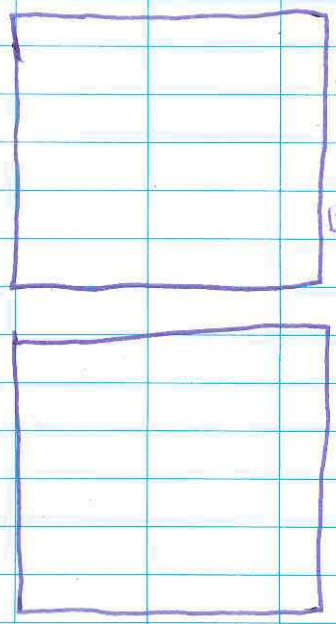


collected for [DRO/RRO PCB]

44

N E S W

Site Six



Closest to the road heading into site 6
8'E 4'N

13NCBGSS07
@ 1400

Second from road heading into site six (Corp Began)
13NCBGSS08
@ 1455

All collected for [DRO/RRO; PCB]

making grid for fuel containment area
MI Sample

11 EB

September 11 - clear cool

~~Safety~~
Be careful
Stay patient
buddy left

Environmental
- MI Sampling
- Site 2% inclines

Sampling (MI) grid under fuel containment area. Samples taken in triplicate

Samples collected for GRO, BTEX, DRO/RRO

Unit is 50 x 60

Samples (triplicate)

EB ~~13NCBGSS09~~ @ 1425 13NCISOMI01
EB ~~13NCBGSS10~~ @ 1508 13NCISOMI02
EB ~~13NCBGSS11~~ @ 1550 13NCISOMI03

Name changed away from field to reflect location at ISO tank Containment.

September 12

Safety

Keep Health

Watch Road traffic - Locals / Trucks in camp

on site

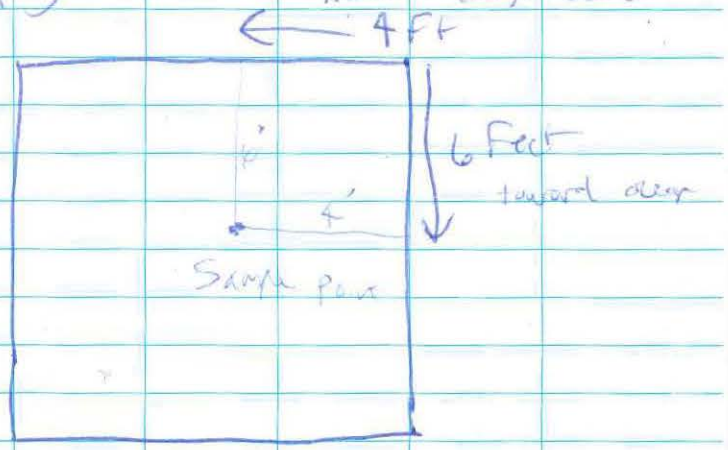
ENVIRO

MI finishin

Site 28

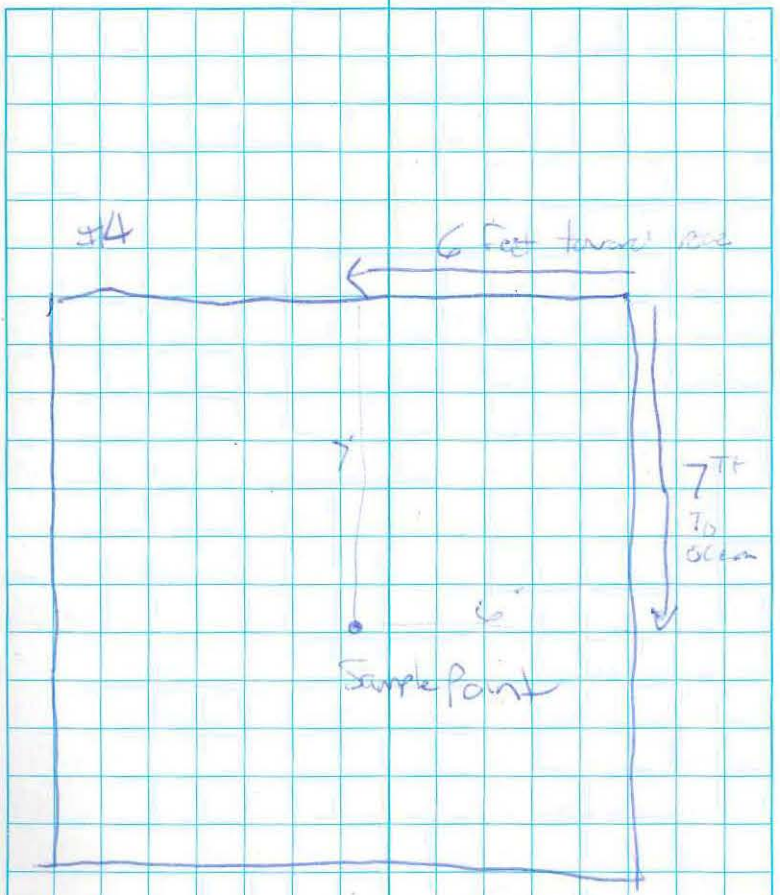
Site 6 MI

#3



13NCBGSS09 @1020

Third Decision heading into site Six from Cargo Beach Road



13NCBGSS10 @1120

Last Decision Unit heading into Site 6 from Cargo Beach Road

Site 28:

Sample labels for Soil/sediment Sampling in Removal Area 4.

starting with Sample 13NC28SS025.

Sample area 4 is 3279 sq feet
We are taking 400sq ft per Sample
we are going to take 9 primary samples and one duplicate and 1 ms/msd

13NC28SS025 @ 1600
13NC28SS026 @ 1612
13NC28SS027 @ 1620
13NC28SS028 @ 1630
13NC28SS029 - ms/msd @ 1635
13NC28SS030] duplicates @ 1650
13NC28SS031 @ 1655~~1700~~
13NC28SS032 @ 1700
13NC28SS033 @ 1705
13NC28SS034 @ 1710

Soil sample descriptions taken by Lyndsey Kleppin.

11.5

Turbidity every H_2O sample

Containment Samples (2 dupes so far)

Start

13NC28TWA13

Downstream

START

13NC28STW15

two duplicates taken so far

---

if our dredge area and Jamies dragnet move our area with lath with an "X" on it. DO NOT REMOVE SURVEY LATH!

NOTE DREDGE TIME - START/STOP

TOTAL PER DAY

Site 28

methods

- BTEX — Exceeded Quantities!
- DRO/RRO
- DRO/RRO SG
- 4(8oz) PAH
- PCB
- 11 metals
- TOC

2 duplicates taken so far

get calculation of removal area of Ponds:

Staten 1 per 30 linear feet
Ponds 1 per 400 sq feet
QUAP

22 overall Some shipped

TRY NOT TO

start low on sample material with BTEX sample if we add a 2nd method note on chain and Field Form

MOCSP 38

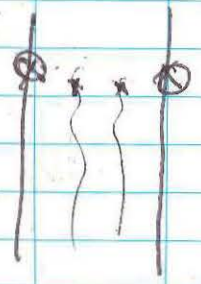
6 on one
8 on other

Yard goat – backup alarm??

leaving loader with frame up

Fire extinguishers

equipment – proper training? locals



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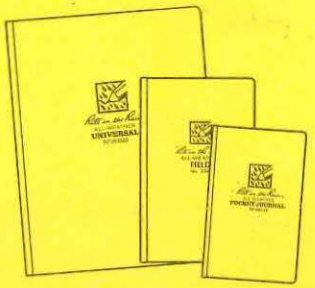
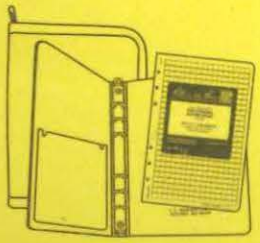


Bound Books



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CONTENTS

PAGE	REFERENCE	DATE

September 13, 2013 - sprinkles

Environmental + Safety meetings

SAfety: Site 28 + 21 - footing, mud, water

ENVIRO:

28 continuing

21 back filling

DREDGE TIME

Start @ 1430 Stop @ 1500

@ 1600 1635

TOTAL: 1:05

Downstream monitoring sampling

13NC28STW23 @ 1500

No sheen noted

MS/MSD

34.6 NTU

Sample Management

9.5

September 14, 2013

Safety

common sense

Enviro

Sampling - site 28

Site 28 post dredge Sampling

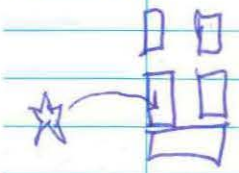
13NC28SS035		@ 1440	(5 jars)
13NC28SS036		@ 1446	(5 jars)
13NC28SS037		@ 1457	(5 jars)
13NC28SS038		@ 1505	(5 jars)
13NC28SS039	dupes	@ 1520	(5 jars)
13NC28SS040	dupes	@ 1530	(5 jars)
13NC28SS041	MS/MSD	@ 1540	(15 jars)
13NC28SS042	dupes	@ 1610	(5 jars)
13NC28SS043	dupes	@ 1620	(5 jars)
13NC28SS044		@ 1632	(5 jars)
13NC28SS045		@ 1640	(5 jars)

9 Sept 15, 2013

Safety
- proper lifting
- team lift
- Footing in site 20
- Weather = be prepared

Environmental
Site 20 sampling
MOC waters

Site 20 Containment sampling



Sample 13NC20TWA020
@ 0910
DRO/RRO, BTEX, Metals, PAH, PCB
74.2 NTU
No sheen

Site 20 Post dredge soil Samples

in-for North pond
13NC20SS046 @ 0940
No sheen
Sandy, Silt. mirror Clay, grass (black

deteriorating) No sheen

Sampled for DRO/RRO, DRO/RRO SG, 11 metals, TOC, PAH, PCB, BTEX

Site 21
Post water sample

13NC21SW008 @ 1000
MS/MSD — 28.4 NTU
No sheen FOR: TOTAL Arsenic
Dissolved Arsenic (Filtered in field)

13NC21SW009 @ 1010
97.6 NTU
NO sheen FOR: TOTAL Arsenic
Dissolved Arsenic (Filtered in field)

MOC Surface waters -
(Post sampling)

13NC MOC SWA 008 @ 1515
7.68°C
Conductivity 0.418 mS/cm²
280 microsiemens/cm

September 15, 2013

Dissoulal Oxygen: 3.2%
DO: 0.37 mg/L
Turbidity >1000

PH: 5.72
ORP: 40.7

13NCMOCSW009 @ 1525
9.32° C
0.099 milisiemens/cm²] conductivity
69 microsiemens/cm]
DO 8.0%
DO 0.94 mg/L
Turbidity >1000

PH: 6.06
ORP 2.5

13NCMOCSW010 @ 1540
11.93°C
0.092 milisiemens/cm²
69 microsiemens/cm
DO % 92.5
DO m/L 9.90
Turbidity 140
pH 5.79 pH
ORP 59.0

9.75

September 16, 2013

Safety
Truck/vehicle safety refresher

Environmental
- site 28 - focus of the day
- Barge/Landing crafts coming early
- Bad weather headed our way

Treated water sample
13NC28TWA021 @ 1400
NTU 23.0 MS/MSD
Began MI sampling in site 28

lower sump
13NC28MI01 @ 1810

11.0

September 17, 2013 - cool, windy, dry

Safety

- Site 28 - moving hoses, equipment : Table time
- Beach loading - Barge / Landing imminent Possibly working with new boat Crew. New beach crew on backhoe end (ask questions, stay out of the way)

Environmental

- Metal plates near creek - remove
- re-grade sumps after sampling

Lower Sump Finished MI Sampling

EOT

Upper sump MI Sampling

13NC28MI02 @ 1530

WATER Sampling

Containment + 28 Surface Part removed.

Triplicate

13NC28PSW03	(NTU 42.4)	@ 1716	near surge
13NC28PSW02	(NTU 35.5)	@ 1725	middle
13NC28PSW01	(NTU 25.9)	@ 1735	nearest trap

Containment Sample @ 1745

13NC28SWA22

NTU 22.5

EOT

12.5

September 18, 2013

Safety

Environmental

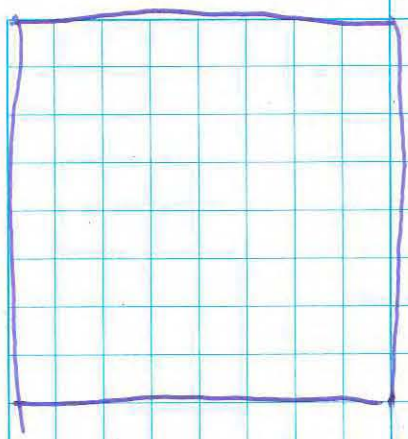
Containment Samples

13NC28TWA23 1000] duplicates
13NC28TWA 24 1015]

NTU 3.8

13NC28MI03 @ 1715

(upper sump sampling; second of triplicate)



September 19, 2013

Safety

Beach operations - be careful, thoughtful

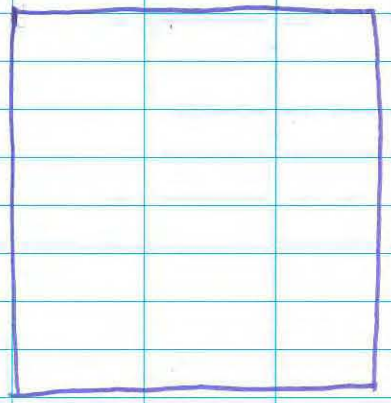
Miscellaneous - be prepared

Environmental

T. Ellingboe here, taking care of shipping things

Upper Sump - Third of triplicate

13NC28MI04 @ 1000



Grab Sampling Site 28 water Treatment area/ Water Dispersal Area.

duplicates

13NC28WDA01 (MS/MSD) @ 1530

13NC28WDA02 @ 1545

Samples being Analyzed for the same Analytes as Sumps in Site 28

EJ

September 20, 2013 - cold, crisp

Safety

How the body reacts to cold

Environmental

Samples going out

Sample management

MI samples

Water Dispersal Area samples

2 coolers to Tacoma TestAmerica

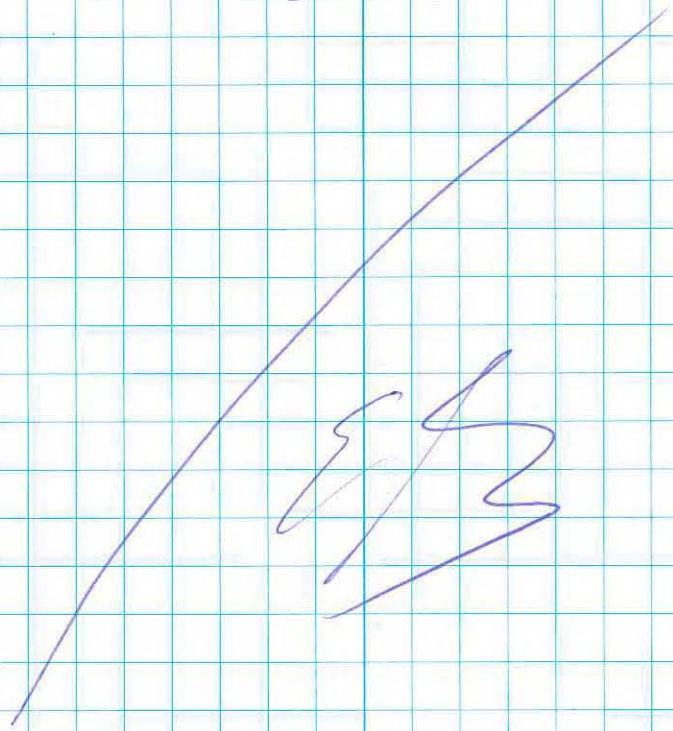
September 21, 2013 cool, rain/snow, breeze

0700

Safety: Cold weather

Beware of slippery surfaces with ice and snow.

Environmental Connex and Bottle storage Connex Cleaning and inventory.

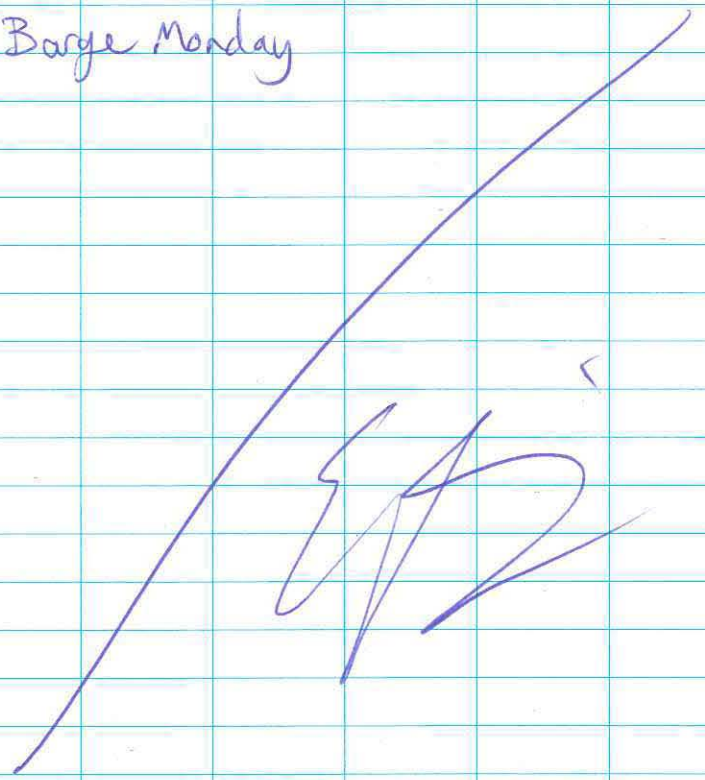


September 22, 2013
Cool, Partly Cloudy

0700 safety
Getting near the end, it is important to not let Complacency get the better of us

- Camp and Site cleanupp

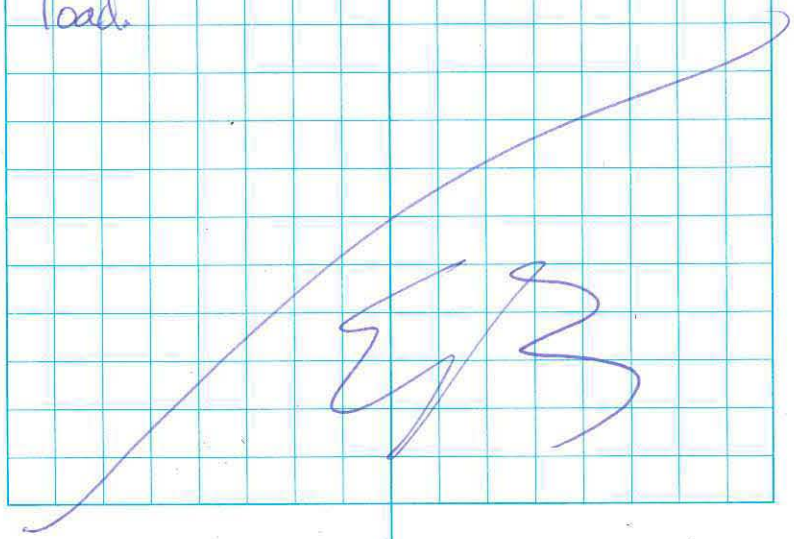
- Barge Monday



September 23, 2013

0230 - Boat (0345)
Paperwork for barge / landing craft in wheelhouse.
0700
Safety -
Boat loading + Beach safety: Be careful on beach in dark with heavy equipment moving back and forth. Stay in operators site. Stay out of way

Several loads taken in evening load.



September 24, 2013 - high clouds

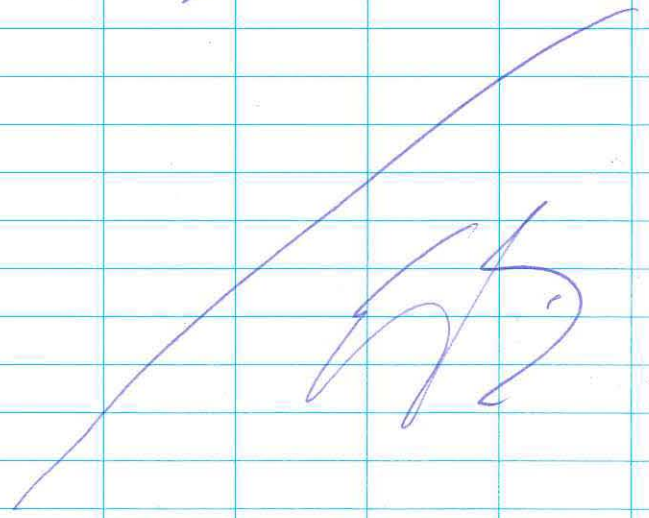
0330

Last Loading craft (SAM TANANA)

0700 slower is faster (safety)

Clearing out tent and packing personal gear and equipment to be shipped back to Anchorage

Departure to Nome to overnight in nome and ship out on the 25th to Anchorage.

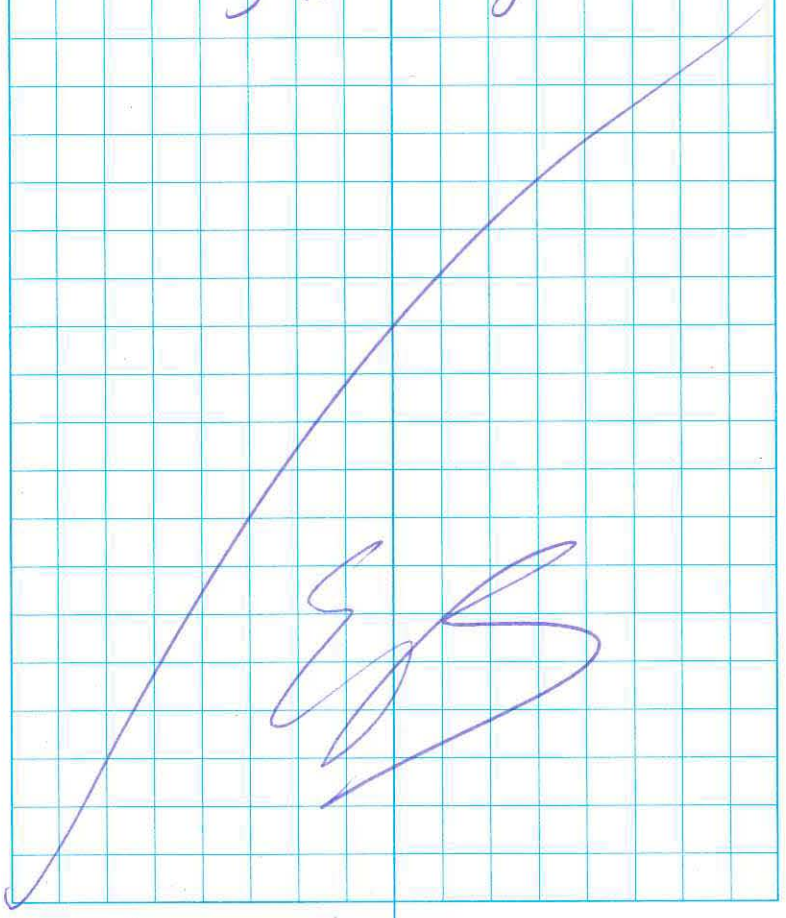


cool, clear

September 25 -

In Nome

Returning to Anchorage



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CONTENTS

PAGE	REFERENCE	DATE

7/17/13 2013 NE Cape 34130068

0430 J. Clark (Bristol) at Anchorage airport for AK Airlines flight to Nome.
0600 AK Airlines flight departs for Nome.
0900 Arrive in Nome, check in at Bering Air to see when charter to NE Cape is. Charter will leave ~1300.
1300 Boarding Bering Air flight to NE Cape.
1400 J. Clark arrives at NE Cape.
1500 J. Clark out to POL bagging area to assist E. Barhill. One sample collected per bag, and 7 bags (samples) are composited into a sample. Daily QA/QC
1615 Jeremy Craner (USACE QAR) onsite at POL bagging operation.
1630 Jeremy Craner departs.
1720 Finished bagging for today, head back to camp.
1730 Done for today.

Julie Clark
7/17/13

7/18/13 2013 NE Cape 34130068

0700 Daily safety meeting.
0705 Daily enviro. meeting.
0730 Will prepare bottles for MOC GW sampling at camp.
1200 Lunch.
1300 J Clark out to Site 98 for POL bulk waste bagging.
1720 Finished bagging POL soil for today; we completed 25 bags today (this afternoon).
1730 Back at camp, done for today.

Julie Clark
7/18/13

7/19/13 2013 NE Cape 34130068

0700 Daily safety meeting.
0705 Daily enviro meeting.
0720 J. Clark will sample MOC wells today. Prep. for GW sampling.
0925 Head to MCC. Will gauge all 7 MCC wells before sampling. (CLK & JC)

Time	Well	DTW	ID JC	Comments
0935	26MW-1	38.69'		
0940	22MW-2	30.28'		
0944	17MW-1	14.09'		
0948	MW10-1	7.71'		
0953	MW-88-1	19.71'		
0957	20MW-1	25.02'		
0959	88-10			Ice at ~6'

1000 Finished gauging wells. Prepare to begin sampling. Set up at 26MW-1.
1020 L. Kleppin heads down to E plume.
1038 Begin purging 26MW-1.
1130 Stable readings. Collect sample 13NCMOCGW01 for GRO, BTEX, Methane, DRO/RRO, PAH, PCBs, total & dissolved metals, and MNA parameters.
* Collect triple volume for MS/MSD.
1220 Finished sampling 26MW-1. Pack up gear/equipment.
1240 Back at camp for lunch
1310 J. Clark labeling/processing sample from 26MW-1.

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1420 J. Clark heads back out to MOC.
1435 Begin setting up at 22MW-2.
1456 Begin purging 22MW-2. See field form for water quality readings.
1540 Stable readings. Collect sample 13NCMOCGW02 from 22MW-2 for GRO/BTEX, Methane, DRO/RRO, PAH, PCB, total/dissolved metals, and MNA parameters.
1615 Finished sampling 22MW-2. Decon equipment and pack up.
1640 Back at camp for sample processing.
1800 Done for today.

Julie Clark 7/19/13

7/20/13 2013 NE Cape 34130068

0700 Daily safety meeting.
0710 Daily enviro meeting.
0730 Prepare to continue sampling MOC wells - Calibrate YSI, put together gear/supplies, etc.
0900 Begin setting up to sample 17MW-1.
0921 Begin purging 17MW-1. See field form for water quality readings.
0950 Pump voltage has been jumping around when just using truck battery. Started truck to see if that helps keep pumping consistent
1030 Stable readings. Collect sample 13NCMOCGW03 from 17MW-1 for GRO/BTEX, methane, DRO/RRO, PAHs, PCBs, total metals, dissolved metals (field-filtered) and MNA parameters.
1105 Finished collecting sample. Decon equipment and pack up gear.
1135 Back at camp to process samples and get some more gel ice frozen.
1210 Lunch.
1300 J. Clark at MW 10-1, set up to begin purging.
1325 Begin purging MW 10-1. See field forms for water quality readings.
1425 Stable readings. Collect sample 13NCMOCGW04 from MW 10-1 for GRO/BTEX, Methane, DRO/RRO, PAHs, PCBs, total/dissolved metals (field filtered) and MNA parameters.

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1505 Finished sampling MW 10-1. Decon equipment and pack up gear.
1525 Begin setting up at 20MW-1.
1543 Begin purging 20MW-1. See field forms for water quality readings.
1625 Stable readings. Collect sample 13NCMOCGW05 from 20MW-1 for GRO/BTEX, Methane, DRO, RRO, PAHs, PCBs, total metals, dissolved metals (field filtered) and MNA parameters
1655 Finish sampling 20MW-1. Decon equipment and pack up gear.
1715 Finished at 20MW-1. Head back to camp for sample processing.
1800 Dinner.
1900 Work on paperwork from today's sampling.
1930 Done for today.

Julie Clark
7/20/13

7/21/13 2013 NE Cape 34130068

0700 Daily safety meeting.
0705 Daily enviro. meeting.
0720 Prepare to continue GW sampling at MOC. Calibrate YSI, gather equipment, sample containers, etc.
0840 At MW88-10. Set up to begin purging.
0859 Begin purging MW88-10. See field forms for water quality readings and other info.
1015 Stable readings. Collect sample 13NCMOCGW06 from MW88-10 for GRO/BTEX, Methane, DRO/RRO, PAHs, PCBs, total metals, dissolved metals (field filtered), and MNA parameters. *Called DUPLICATE 13NCMOCGW07 @1100 hrs. for same analyses as primary sample.
1115 Finished sampling MW88-10. Decon equipment and pack up gear.
1135 Finished at MW88-10.
1155 Begin setting up at MW88-1.
1210 Begin purging MW88-1. See field form for water quality readings and other info.
1300 Stable readings. Collect 13NCMOCGW08 from MW88-1 for GRO/BTEX, Methane, DRO/RRO, PAHs, PCBs, total metals, dissolved metals (field-filtered) and MNA parameters.

JC 7/21/13

7/21/13 2013 NE Cape 34130068

1320 Finished collecting sample. Will decon equipment back at camp - heavy equipment has been waiting on me to finish sampling so as not to dust me out.
1330 Head back to camp.
1345 Lunch.
1400 Process samples, complete paperwork and COC, make sure gel ice is frozen and temperature blanks are ready, clean and store equipment.
1730 Done for today.

Paul Clark 7/21/13

7/22/13 2013 NE Cape 34130068

0700 Daily safety meeting.
0705 Daily enviro meeting, J. Clark will go to Pad 98 this morning for bulk waste samples, then return to camp ~1000 to pack coolers of MOC GW samples for shipment to the lab.
0755 J. Clark at Pad 98 to begin bulk waste sampling.
1020 Back at camp to prepare coolers for shipment.
1215 Lunch.
1240 Continue preparing coolers for shipment to TestAmerica (MOC GW samples).
1545 Baring Air arrives onsite, coolers are loaded onto plane.
1615 J. Clark to Pad 98 for bulk waste sampling.
1725 Depart Pad 98. Done for today.

Julie Clark
7/22/13

7/23/13 2013 NE Cape 34130068

0700 Daily safety meeting.
0705 Daily enviro meeting. J. Clark will collect MOC surface water samples ("during" portion of the before, during, and after sampling). Get sample containers together and calibrate YSI.
0845 J. Clark out at MOC. L. Kleppin shows J. Clark where MOC surface water sample locations are.
0910 J. Clark sets up at MOC SW-03 location.
0920 Collect sample 13NCMOCSWA0005 for BTEX, DRO, RRO, and ~~PAH~~ JP-5 analysis
* Collect triple volume for MS/MSD.
Water quality readings:
Temp. = 11.74°C ORP = 22.9
pH = 6.51 DO = 9.82 mg/L
Sp. Cond. = 69 µS/cm Turbidity = 4.60
1010 J. Clarks sets up at MOCSW-02 location.
1015 Collect sample 13NCMOCSWA0006 at MOCSW-02 for BTEX, DRO, RRO, and PAH analysis.
Water quality readings:
Temp. = 10.90°C ORP = -5.6
pH = 6.22 DO = 1.37 mg/L
Sp. Cond. = 119 µS/cm Turbidity = 59.9

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1050 Set up at MOCSW-Ø1 location.
1055 Collect sample 13NCMOCSWAØØ7 at MOCSW-Ø1 for BTEX, DRO, RRO, and PAH analysis.
Water quality readings:
Temp. = 12.12°C ORP = 48.5
pH = 6.72 DO = 9.75 mg/L
Sp. Cond. = 203 µS/cm Turbidity = 16.5
1120 Back to camp to process samples.
1210 Lunch.
1245 Prep. for surface water sample collection at site 28. This is the pre-sediment removal surface water sampling at 3 locations (same locations as 2012.
1330 Head down to work area.
1355 Setting up at 28-SW-Ø1 location.
1400 Collect sample 13NC28PRWAØ1 from 28SW-Ø1 location. ~~Collect~~ Analyses: BTEX, DRO, RRO, PAHs, PCBs, 11 Metals. Collect DUPLICATE 13NC28PRWAØ2 @ 1415 hrs for same parameters as primary. Turbidity = 20.4.
1445 Set up at 28-SW-Ø2 location.
1450 Collect sample 13NC28PRW~~Ø3~~Ø2 from 28SW-Ø2 location for BTEX, DRO, RRO, PAHs, PCBs, and 11 metals. Collect triple volume for MS/MSD. Turbidity = 10.2.

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1535 Set up at ~~13NC28~~ JC 28SW-Ø3 location.
1540 Collect sample 13NC28PRWAØ~~3~~4 (4) at 28SW-Ø3 location for BTEX, DRO, RRO, PAH, PCB, and 11 metals analysis.
Turbidity = 12.5
1555 Finished collecting site 28 pre-sediment removal surface water samples.
1615 Head back to camp to process samples and make sure enough ice is frozen.
1800 Dinner.
1900 Finish processing samples.
1930 Done for today.

Julie Clark
7/23/13

7/24/13 2013 NE Capo 34130068

0655 Daily safety meeting.
0700 Daily enviro. meeting.
0715 J. Clark will pack coolers of samples collected yesterday (MOC SW and Site 28 SW) for shipment to the lab.
1215 Lunch.
1230 Finish packing sample coolers.
1345 Bering Air onsite, sample coolers loaded. Will be Goldstreaked to TA-Tacoma, AWB # 82750006.
1510 J. Clark down to Pad 98 for bulk waste sampling - take over for E. Barnhill.
1730 Back at camp. Done for today.

Julie Clark
7/24/13

7/25/13 2013 NECapo 34130068

0655 Daily safety meeting.
0715 Daily enviro meeting.
0815 J. Clark at Pad 98 for bulk waste sampling.
1145 Head back to camp for lunch.
1255 J. Clark back at Pad 98 for more bulk waste sampling.
1730 Back to camp. Done for today.

Julie Clark
7/25/13

7/26/13 2013 NE Cape 34130068

0655 Daily safety meeting.
0715 Daily enviro. meeting.
0730 Chores in enviro connex.
1015 Down to work site. E. Barnhill and J. Clark will collect a couple of waste samples from the 2012 NALEMP project.
1036 Collect sample 13NVNCCH02 from Drum #6 for TCLP VOC, TCLP SVOC, and PCB analysis. Drum contains an old metal drum, booms, and some soil. Sample is collected from the soil.
1050 Collect sample 13 NVNCCH01 from Drum #5 for TCLP VOC, TCLP SVOC, and PCB analysis. Drum contains an old metal drum, absorbants, soil, and an oily sludge. Sample collected from a mix of the absorbants, soil, and oily sludge.
1105 Head back to camp, to call Tyler Ellingboe to verify which small supersacks of soil to sample.
1255 E. Barnhill/J. Clark back out to site to collect the remaining 2 samples for Savoonga NALEMP waste from last year.
1300 Collect 13NVNCCH04 from supersack NVNCCH12 for DRO/RRO analysis. (Matrix: Soil). (Note: COC says sample from supersack 17.)

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1305 Collect sample 13NVNCCH03 from supersacks NVNCCH11a, -b, -c for DRO/RRO analysis. (Matrix: soil) * Note: COC says sample was collected from supersack 116a, -b, -c. Tyler Ellingboe needs to figure out what the discrepancy is, and why.
1320 E Barnhill/J. Clark back at camp to pack cooler of NALEMP samples for shipment to TA-Tacoma via Bering Air and AK Airlines Goldstreak.
1400 Bering Air at camp, sample coolers loaded onto plane. E Barnhill pre-books an AWB for the samples.
1430 Housekeeping tasks around camp (make sure enough gel ice frozen, temp. blanks in fridge, etc.)
1730 Done for day.

Julie Clark
7/26/13

7/27/13 2013 NE Cape 34130068

0655 Daily safety meeting.
0705 Daily enviro. meeting.
0900 J. Clark / E. Barnhill at Pad 98 for bulk waste sampling.
1200 Lunch.
1300 J. Clark / E. Barnhill / EC Lindsay Cameron onsite at Pad 98 for bulk waste sampling.
1480 Lindsay Cameron departs site
1730 Back to camp for dinner. Done for today.

Julie Clark
7/27/13

7/28/13 2013 NE Cape 34130068

0655 Daily safety meeting.
0705 Daily enviro. meeting.
0720 Tasks around camp.
1200 Lunch.
1245 J. Clark at Pad 98 for POL bulk waste bagging.
1730 Back to camp, done for today.

Julie Clark
7/28/13

7/29/13 2013 NE Cape 34130068

0655 Daily safety meeting.
0705 Daily enviro meeting.
0720 Tasks around camp.
1300 E. Barnhill / J. Clark at Pad 98 for bulk waste sampling.
1330 Johnny Willis, Russell James and J. Clark go to Site 28. Some of the hoses from 2012 sediment removal in Sediment Removal Area 4 will be moved closer to the MOC. When sediment removal begins this year, we will likely start removing sediment near MOC (i.e. Sediment Removal Areas 5, 6, 7, and 8).
1500 J. Clark back to Pad 98.
1545 R. James has asked ECO-Land to stake out limits of Sed. Removal Areas 5, 6, 7, 8 tomorrow morning. J. Allan (ECO-Land) needs some clarification on last year's survey data from the probing/mapping effort – so J. Clark heads back to camp to assist J. Allan.
1730 Done for day.

Julie Clark
7/29/13

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0655 Daily safety meeting.
0705 Daily enviro meeting.
1040 J. Clark and ECO-Land out to Site 28 to stake out sediment removal areas 5, 6, 7, and 8.
1145 Have staked out limits of removal area 6, and half of 5 (the water body with an island). Will finish staking out removal areas after lunch, as well as getting some additional elevation data in ponds where there is not very much probing data (& elevation data) from 2012's mapping and probing effort.
1320 J. Clark and ECO-Land back at Site 28 to continue staking sediment removal areas (finish 5, and get 7 and 8).
1420 ECO-Land finished staking out the 4 removal areas near the MOC. There is no probing data in Removal Area 8, so Eco-Land getting an elevation in the area. (currently no water in area)
1430 ECO-Land getting a water elevation in Removal Area 7. Then we'll use a tape to measure depth to top of sediment to make sure we have an elevation of top

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1430 cont. of the sediment in the two removal areas in Removal Area 7.

1445 ECO-Land getting a water elevation in the "Star Trek" pond - the north pond in removal area 5. Will measure depth of water to top of sediment in the center of the pond ~~for JC at~~ to be able to calculate an elevation of the top of the sediment (2012 probing / mapping effort only got data in the corners, so we're getting data now in the center).

1540 J. Clark at NOC POL digs to assist L. Kleppin.

1630 J. Clark to Site 28 to check out the hose-laying that Johnny Wills and E. Barnhill are doing.

1730 Done for today.

Julie Clark 7/30/13

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0655 Daily safety meeting.

0705 Daily enviro meeting.

1000 J. Clark down to NOC POL excavations w/ L. Kleppin and E. Barnhill to get the status on all the plumes and current state of the excavations. (L. Kleppin, who has been running the digs, is taking R&R).

1300 Out to Site 28 to check out and help w/ the preparations for sediment removal.

1730 Done for day.

Julie Clark 7/31/13

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0655 Daily safety meeting.
0705 Daily enviro. Meeting.
0800 J. Clark / L. Nelson at Site 28.
0900 J. Clark drops L. Nelson off at Pad 98.
0915 At Site 28. Crew working on pumping out upper sump into the Geotube/water containment area. (thru flocculent).
1300 Preparatory phase meeting for Site 28 sediment removal. Present: Russell James, Jeremy Craner, Maze Thompson, Chuck Croley, Lesa Nelson, Johnny Willis, Eric Barnhill, Julie Clark.
1420 J. Clark out at Site 28. Upper sump continues to be pumped out.
1515 Setting up dredge at Sediment Removal Area 6.
1600 J. Willis, E. Barnhill, and J. Clark in pond at Sediment Removal Area 6, ready to begin dredging.
1610 Having problems priming the dredge. The check valve (thin rubber flap) is not working properly.
1705 Finally get the dredge working. Will try to get part of Removal Area 6 done.

JC 8/1/13

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1720 Dredge sucking up big clumps of moss or something like that. Some of the hose/pumps downstream of the dredging (that are piping water from pond to upper sump) are getting clogged with the clumps of material. Johnny Willis reaches down to feel material, and he can rip it out and roll it up like a carpet. He suggests that instead of trying to dredge this material, perhaps we can remove it by hand and put it directly into bags. Jeremy Craner (USACE QAR) and Russell James (CQCSM) will discuss what to do with ponds like this - will we remove by hand? Leave the sediment in place?
1800 Done for today.

Julie Clark 8/1/13

8/2/13 2013 NE Cape 34130068

0655 Daily safety meeting.

0710 Daily enviro meeting. Chuck says we will have laborers remove organic material in Sediment Removal Area 6 by hand. This method will likely be used in other ponds where clumps of organic material are present.

0845 J. Clark and L. Nelson onsite at site 28. Johnny Willis and laborers are moving dredge and hoses from pond at Removal Area 6. Manual sediment removal will begin in Removal Area 6 a bit later today.

0900 Jeremy Craner (USACE) arrives at site 28. Short discussion about manual sediment removal, we'll remove what we can, even if it's beyond the 2012 mapped boundaries.

0930 Johnny Willis heads up to camp w/ Albert - they will get dry suits on and when they return, we will begin manual removal.

1020 Johnny / Albert / E. Barnhill onsite.

1030 Begin manually removing material in Removal Area #6.

1145 Stop removal, break for lunch.

1250 J. Clark and ECO-Land at Removal Area #6.

1300 J. Willis/Albert/E. Barnhill onsite

1315 Continue manual sediment removal in Area #6.

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1335 Finished w/ removal in Area #6. ECO-Land surveys the extent of removal, as well as taking some elevation shots in the area where sediment was removed. Laborers begin manual sediment removal in the south pond of Area #5.

1350 Laborers finding quite a bit of non-loose material (vegetation) in areas that were mapped as sediment in 2012. J. Clark directs them to leave the non-loose material in place and only remove the loose material.

1400 Finished manual removal of sediment in the south pond of Area 5.

1405 Laborers begin manually removing sediment in north pond of Removal Area 5. ECO-Land surveys the extent of removal and elevations in the south pond of Area 5.

1410 E. Barnhill departs site to collect a surface water sample downstream of the sediment trap.

1425 Finished w/ manual sediment removal in north pond of Removal Area 5.

1430 Speak w/ Russell James. Agree that only one surface water sample will be collected downstream of the sediment trap today (even though time of removal is > 2 hrs).

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1430 cont. because manual removal causes much less disturbance than dredging.

1440 ECO-Land finished surveying south pond in Removal Area 5.

1445 Begin manual removal of sediment in Removal Area 7. This material looks much more like typical sediment.

1550 Jeremy Craner arrives onsite, observes removal in Area 7. Asks if we are planning to dredge in this removal area, since it may not clog up the dredge like in Area 6. Johnny Willis replies that the water may be too shallow, and that there is only a thin layer of sediment.

1615 Finished manual removal of sediment in Area 7. ECO-Land surveys the extent of Removal Area 7, as well as elevations.

1630 All personnel except J. Clark and ECO-Land depart.

1635 ECO-Land finished surveying the area of removal in Area 7.

1640 ECO-Land surveying the extent of sediment removed in the north pond of Area 5, as well as elevations in the removal area.

1655 J. Clark / ECO-Land depart site.

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1715 Speak w/ Russell James about Removal Area 7. After discussion, decide that since the pond had typical sediment, we will go ahead and attempt to dredge the sediment, probably tomorrow. Dredging will augment the manual removal effort and possibly capture more sediment, and get it removed.

1730 Done for today.

Julie Clark 8/2/13

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0655 Daily safety meeting
0705 Daily enviro meeting. We will JC re-dredge Removal Area 7 today to augment yesterday's manual removal. If we have time, we will remove sediment in Area 8 using an excavator.
0800 Johnny Willis / laborers moving dredge / hoses to Removal Area 7.
0945 Johnny Willis, Albert, J. Clark at site 28 to dredge Removal Area 7.
1010 Begin dredging Removal Area 7.
1030 J. Craner stops by to observe dredging.
1045 J. Willis taking apart intermediate pump that is pumping the sediment/water mix because dredge is not sucking material like it should.
1100 Pulled a clump from the intermediate pump.
1105 Resume dredging in Removal Area 7.
1130 Sump that we are pumping water to is almost full - stop dredging for now. Also we're lowering the water level of the pond with our dredging activities.
1200 Lunch.
1310 J. Clark/ECO-Land onsite at site 28.
1335 Resume dredging in Removal Area 7.
1345 J. Clark heads down drainage to collect

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1345 cont. a surface water sample immediately downstream of the sediment trap.
1355 Collect sample 13NC28STW02 from just downstream of the sediment trap for BTEX, DRO/RRO, PAH, PCBs, and 11 Metals analysis. *Collect triple volume for MS/MSD. Turbidity = 8.43
1425 J. Clark finished collecting surface water sample.
1430 J. Clark back at Removal Area 7. Ran out of water in pond at ~1415 hrs. ECO-Land has surveyed extent of removal, as well as taken some elevation shots. Work will be done to get water treatment system (filters and PAC scrubber) set up this afternoon, so water can be pumped from the primary containment thru treatment system into secondary containment.
1500 J. Clark and ECO-Land head back to camp.
1530 Sample management.
1730 Done for today.

Jul Clark
8/3/13

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0655 Daily safety meeting.
0700 Daily enviro meeting.
0755 J. Clark out to Site 28 to collect a surface water sample from the primary water impoundment before it is treated.
0805 Collect sample 13NC28SWA01 from primary water impoundment (that contains Geotube), pre-treatment, for BTEX, DRO/RRO, PAH, PCBs, and 11 Metals analysis. *Collect triple volume for MS/MSD. Turbidity = 112.
0810 Johnny Willis/ laborers at Site 28 impoundment area to set up treatment system to treat primary impoundment water.
0845 J. Clark back to camp for sample management.
1000 J. Clark at Site 28. Treatment system is up and running - water from primary Geotube impoundment is being pumped thru filters and POL scrubber into secondary impoundment.
1100 Back at camp.
1310 J. Clark at Site 28. We will be digging out Removal Area 8 with an excavator.
1335 Excavator removed about a bucket of material from removal Area 8. Put directly into bag.
1340 ECO-Land surveys extent of Removal Area 8.
1350 Excavator removes an old piece of metal debris (looks like a generator) ~50' WSW of removal area.

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1405 Excavator is collecting sediment that was manually removed from Removal Area 6. will put in same bulk bag that sediment from Removal Area 8 was placed in.
1420 Collect sample 13NC28TWA02 from treated water in the secondary impoundment for BTEX, DRO/RRO, PAHs, PCBs, and 11 Metals analysis. * Collect DUPLICATE 13NC28TWA05 @ 1500 hrs for same analyses. Turbidity = 60.0.
1500 Back at camp for sample processing.
1730 Done for today.

Photolog for 8/4/13:

DSCN2312, -2313: Sediment Removal Area 8, view NE
-2315: Flocculant injection & treated H2O discharge area, view N
-2317, -2318: Primary water impoundment containing Geotube and pre-treated water. View NNE
-2319: Landing craft, Site 28 sed. trap, view NE
-2322: J. Willis checking POL scrubber, view NW
-2323, -2324: J. Clark collecting pre-treatment water sample. View N.
IMGP1018: Sediment Removal Area 8, view N.
-1019, -1020: Excavated ~1 foot in Removal Area 8, view SW.

JC 8/4/13

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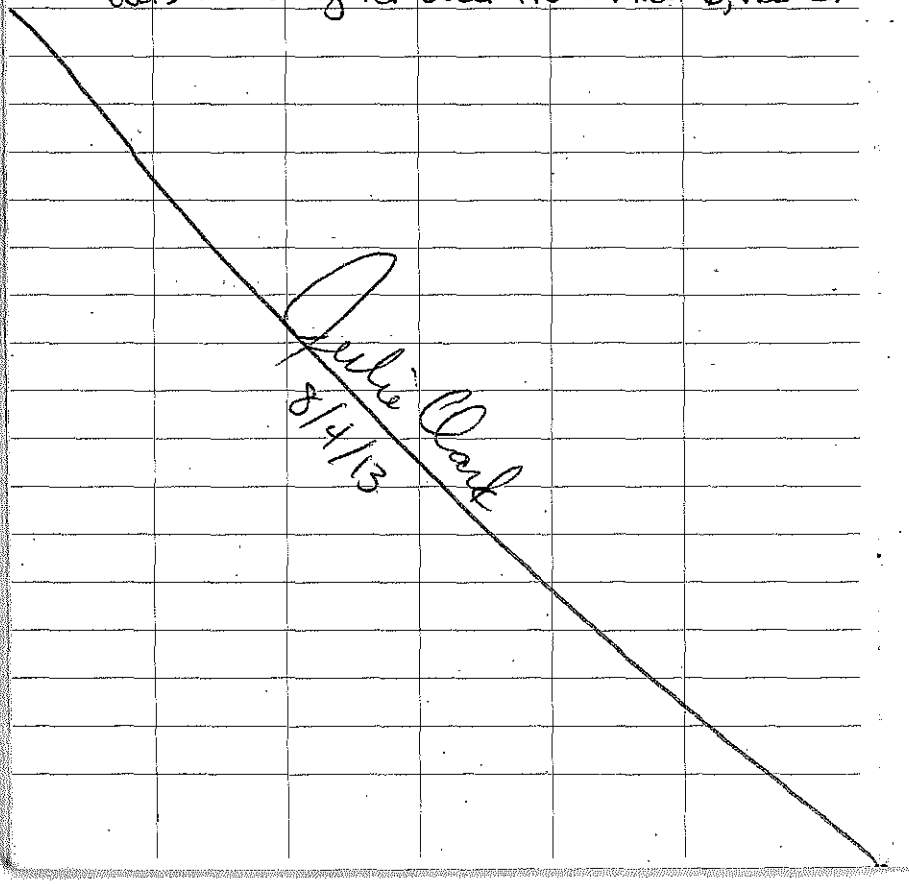
Photolog for 8/4/13 (cont.)

IMGP1021: J. Allan (ECO-Land) surveying extent of sediment removed in Area 8, view SE

-1025 thru -1032: Excavator removing metal debris in site 28, ~50' WSW of Removal Area 8. View SW.

-1033, -1034: Excavator moving sediment that was manually removed from Area 6, view E.



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0655 Daily safety meeting.

0700 Daily envire. meeting.

0720 J. Clark prepping site 28 H_2O samples (downstream monitoring and pre/post treatment) for shipment to Test America Tacoma.

1330 Finish packing coolers - 7 total. E. Barnhill will pre-book coolers on AK Airlines Goldstreak.

1345 Get gear together for confirmation sampling of the upper sediment removal areas.

1420 J. Clark and ECO-Land at site 28. J. Willis / laborers have moved dredge and hoses down to stream channel. They will do a test run w/ dredge in stream channel, J. Clark ~~JC~~ directed J. Willis not to do any significant dredging until I can be there.

1435 J. Clark begins collecting confirmation samples. ECO-Land follows to survey sample locations. See field forms for sample details

1700 Finished collecting samples from the upper sediment removal areas (5, 6, 7, and 8).

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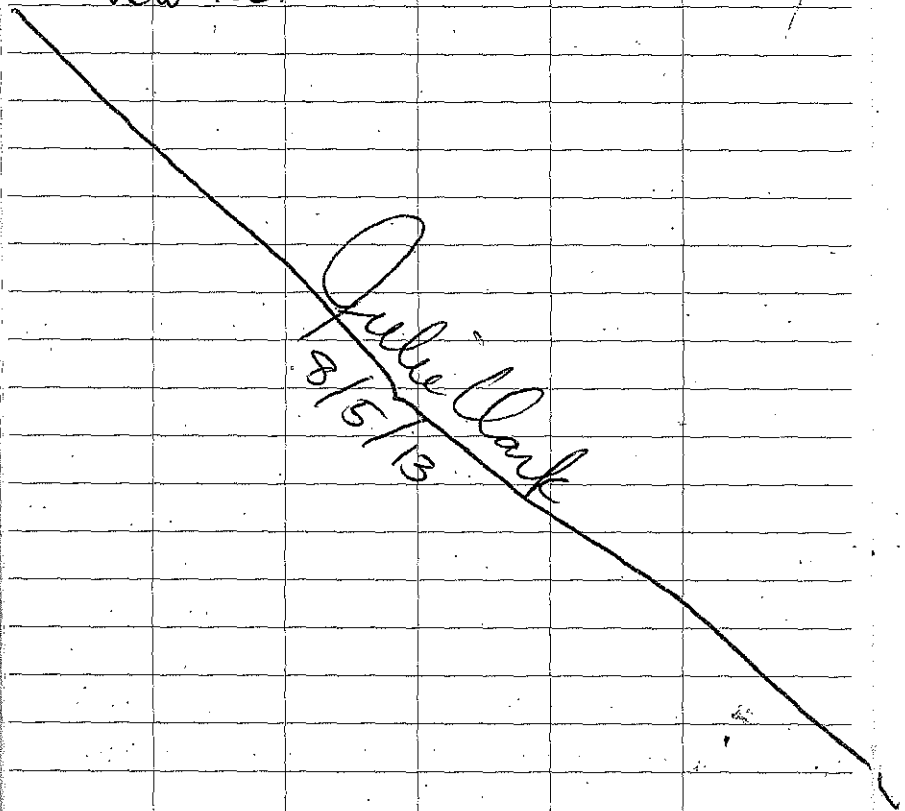
1730 At camp for sample processing.
1800 Dinner.
1830 More sample processing.
1930 Done for today.

Photolog for 8/5/13:

IMGP 1037-1045: Collecting confirmation sample 13NC28SS006 from Removal Area 6, view NE.



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0655 Daily safety meeting.
0705 Daily enviro. meeting.
0800 J. Clark at site 28. Will be changing the jute/boom in the sediment trap.
0835 Excavator removing old jute matting from sediment trap.
0855 Adding new jute matting.
0910 Finished adding jute matting to the sediment trap. Dredging in the stream channel should start after lunch & boat arrival.
1000 Back at camp to prep for water sampling when dredging begins.
1410 Onsite at Site 28.
1430 Johnny Willis begins dredging stream channel, starting from upper end (S). Water generated from dredging going into Sump #1, from there being pumped up to flocculant injection area, then to water processing area.
1300 Increased turbidity in the stream channel as dredging is performed, but lake that stream channel empties into is not getting much increased turbidity, and none observed below sediment trap.

JC 8/6/13

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1510 Sump #1 full of water - Stop dredging for now to let water be pumped from sump to water processing/impoundment area.

1530 J. Craner (USACE) onsite to check out dredging.

1610 Begin dredging stream channel again.

1620 J. Clark heads down to sediment trap to collect SW sample immed. downstream (sampling during active sediment removal). J. Craner departs.

1630 Collect SW sample ~~13SFTW~~ 13NC28STW03 at ~~3S~~-SW-a location (just downstream of sediment trap) for BTEX, DRO/RRO, PAH, PCBs, and 11 Metals analysis. Turbidity = 16.6

1640 Stop dredging - Sump 1 full and needs to be pumped. * Note: ECO-Land has been onsite this afternoon collecting elevation data as dredging has progressed.

1720 Depart site 28.

Photolog for 8/6/13

IMGP1046 thru -1048: Excavator pulling out old boom/jute matting from sediment trap, view N.

-1049: Removing old boom/jute from sed. trap, view SE

-1050: Adding new jute matting to sed. trap, view E.

-1051: " " , view N

-1052: Sed. trap, finished adding new materials. view N

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Photolog for 8/6/13 (cont.)

IMGP1053, -1054: Dredging sediment in stream channel, view NW.

-1055 and -1056: Close up of dredging in stream, view NW

-1057: Dredging in stream channel (Area 3), view NW

-1058: " , view SW

-1059: ECO-Land surveying dredged area, view S

-1060: Some increased turbidity observed in stream channel downstream of active dredging, view S

-1061: Close-up of increased turbidity in stream

-1062: Water from dredging emptying in to sump #1. View NNW.

-1063: Close up of water from dredging emptying in to Sump #1.

Julie Clark 8/6/13

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0655 Daily safety meeting.
0705 Daily enviro meeting.
0730 Some work needs to be done at site 28 before more dredging occurs – hose fittings need to be changed, and "pillows" in POL scrubbers need to be changed. J. Clark will catch up on misc. office work until dredging is ready to be performed.
1400 J. Clark at site 28.
1410 Dredging in stream channel resumes.
1420 After 10 min. of dredging, turbidity from dredging upstream has migrated down to the lake that the stream empties into.
1425 Like yesterday; turbidity dissipates upon entering the pond below.
1445 Collect sample 13NC28DSW01 at location 28-SW-1 immediately downstream of the sediment trap for BTEX, DRO/RRO, PAH, PCBs, and 11 Metals analysis. Turbidity = 17.8
* Collect triple volume for MS/MSD.
* This sample serves as both the "during" sample of SW samples before, during, and after sediment removal activities, at 3 locations, as well as the downstream monitoring during active sediment removal.

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1525 Collect sample 13NC28DSW02 from location 28-SW-2 for BTEX, DRO/RRO, PAH, PCB, and 11 metals analysis. Turbidity = 28.2 ("During" sample at 3 locations before, during, and after sediment removal).
1550 Collect sample 13NC28DSW03 from location 28-SW-3 for BTEX, DRO/RRO, PAH, PCB, and 11 metals analysis. Turbidity = 13.3. ("During" sample at 3rd SW sample location).
1610 Finished collecting surface water samples, go back to stream to check out dredging operations. Currently stopped to allow water to be pumped up to treatment area. Have done two cycles of dredging so far:
1st cycle started @ 1410, stopped @ 1435
2nd cycle started @ 1505, stopped @ 1535
1630 Begin 3rd cycle of dredging Removal Area 3.
1640 Stop dredging. Total dredge time today = 65 minutes.
1720 Depart Site 28. Done for today.

Julie Clark
8/7/13

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0655 Daily safety meeting.
0705 Daily enviro meeting.
0800 Down at Site 28. Laborers pumping water from the sumps into the Geotubes/primary impoundment, so dredging can occur. Also, they will be adding a third Geotube to the primary impoundment.
0845 Collect sample 13NC28WA02 from primary impoundment (untreated water) for BTEX, DRO/RRO, PAHs, PCBs, and Metals analysis. Turbidity = 32.6
0920 Johnny/laborers adding 3rd Geotube to primary impoundment.
0945 Collect sample 13NC28TWA06 from treated water in secondary impoundment for BTEX, DRO/RRO, PAH, PCBs, and Metals. Turbidity = 28.7. * Collect triple volume for MS/MSD.
1030 Begin dredging stream channel (Removal Area 3) for today.
1050 Have been dredging 20 min. - no increased turbidity below sediment trap (see pics).
1055 Sump #1 full - stop dredging to let pumps catch up.
1120 Begin dredging again.

JC 8/8/13

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1130 Collect surface water sample 13NC28STW01 immediately downstream of the sediment trap for BTEX, DRO/RRO, PAH, PCB, and Metals analysis. * Collect DUPLICATE 13NC28STW05 @ 1145 hrs. for same analyses as primary. Turbidity = 13.0
1140 Sump full - dredging stops.
1200 Back at camp for lunch.
1245 Sample management for samples collected today.
1500 J. Clark at Site 28. Laborers erecting a third containment pond on the work pad.
1610 Begin pumping treated water into new third containment.
1645 J. Clark departs site.
1730 Done for day.

Photolog for 8/8/13:

IMG_1064, -1065: Switching intake from one Geotube to another view SE
-1066: Dredging Removal Area 3, view NE
-1067: Close up of dredged area in stream
-1069, -1070: No increased turbidity below sed. trap
-1071: 3rd Geotube in primary containment, view SW
-1072, -1073: New 3rd containment, view NW
-1074 thru -1076: Pumping treated H_2O from one containment to new containment. View N, NW, W

Julie Clark 8/8/13

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0700 Daily safety meeting.
0705 Daily enviro. meeting.
0720 It looks like results for the first post-treatment water sample (Site 28 impoundment) are going to fail TAlk and TAqlt criteria, and so water cannot be discharged to the ground. This morning, work will be done to augment water treatment system.
0800 J Clark and L. Nelson prepare coolers of Site 28 water samples for shipment to lab.
1600 Bering Air arrives onsite, they pick up 9 coolers of samples (Site 28 water) for shipment to TestAmerica Tacoma via AK Airlines Goldstreak.
1730 Done for today.

Julie Clark
8/9/13

8/10/13 2013 NE Cape 34130068

0655 Daily safety meeting.
0705 Daily enviro. meeting.
0840 J. Clark, L. Nelson (Bristol), and Lisa Geist (USACE) head out to Cargo Beach Road to look for suspected location of pipeline break.
0915 Having problems determining where the pipeline and pipeline break might have been. Head back to camp to find Eugene Todie, see if he can help.
0935 Back out at area w/ Eugene Todie. He shows us where pipeline used to be, he says pipeline went under the road in the first culvert, and that the pipeline was very close to the road running alongside of it.
0945 Choose sample locations in consultation with USACE.
1000 Back to camp.
1105 J. Clark / L. Nelson, Albert at pipeline break site to collect samples. Lisa Geist onsite to observe.
1115 Collect sample 13NCPBSS01 from 1' bgs of 1st "borehole" (have to use shovel, too many rocks for hand auger) GRO/BTEX, DRO/RRO analysis

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1140 Collect sample 13NCPBSS02 from 2' bgs in PBR-1, 1st borehole at Pipeline Break site. GRO/BTEX

1200 Back at camp for lunch.

1250 At pipeline break site. Begin digging second hole, PBR-2.

1300 Collect sample 13NCPBSS03 from 1' bgs in location PBR-2 for GRO/BTEX, DRO/RRO analysis. * Collect DUPLICATE 13NCPBSS04 @ 1305 hrs for same analyses.

1315 Collect sample 13NCPBSS05 from 2' bgs in location PBR-2 for GRO/BTEX analysis.

1325 Collect sample 13NCPBSS06 from 1' bgs in third "borehole" location, PBR-3 for GRO/BTEX, DRO/RRO analysis.

1340 Collect sample 13NCPBSS07 from 2' bgs in PBR-3 for GRO/BTEX, DRO/RRO analysis.

1355 Collect sample 13NCPBSS08 from 1' bgs in 4th borehole, PBR-4, for GRO/BTEX, DRO/RRO analysis. ~~* Triple volume for MS/MSD.~~ DS Did not collect MS/MSD from 1' bgs - too much vegetation.

1410 Collect sample 13NCPBSS09 from 2' bgs in PBR-4 for GRO/BTEX, DRO/RRO analysis. * Triple volume for MS/MSD.

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1500 Back at camp for sample management, prepare COC, etc.

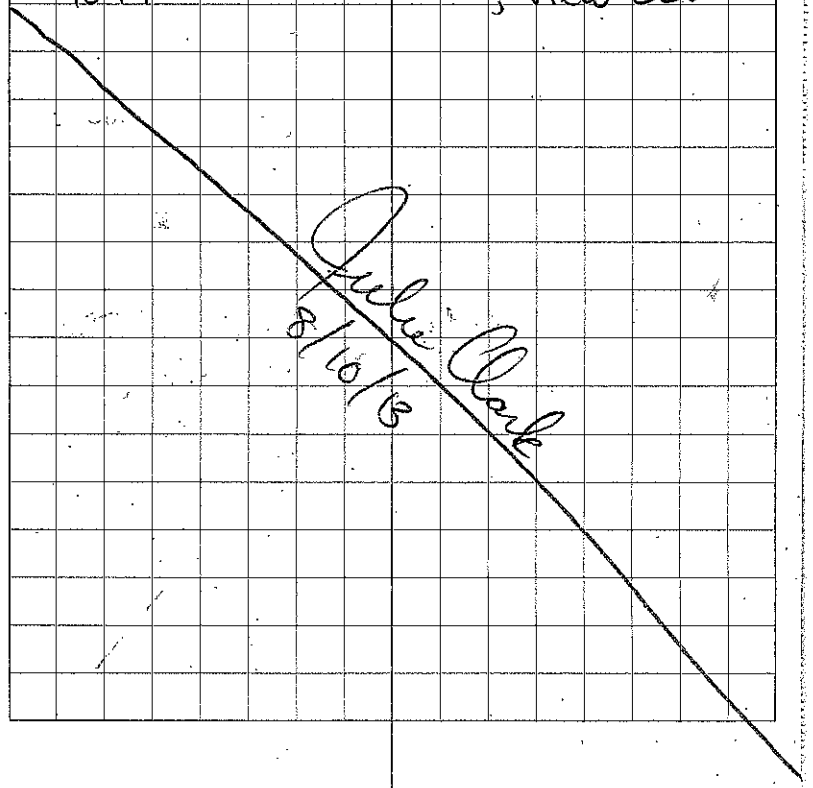
1730 Done for today.

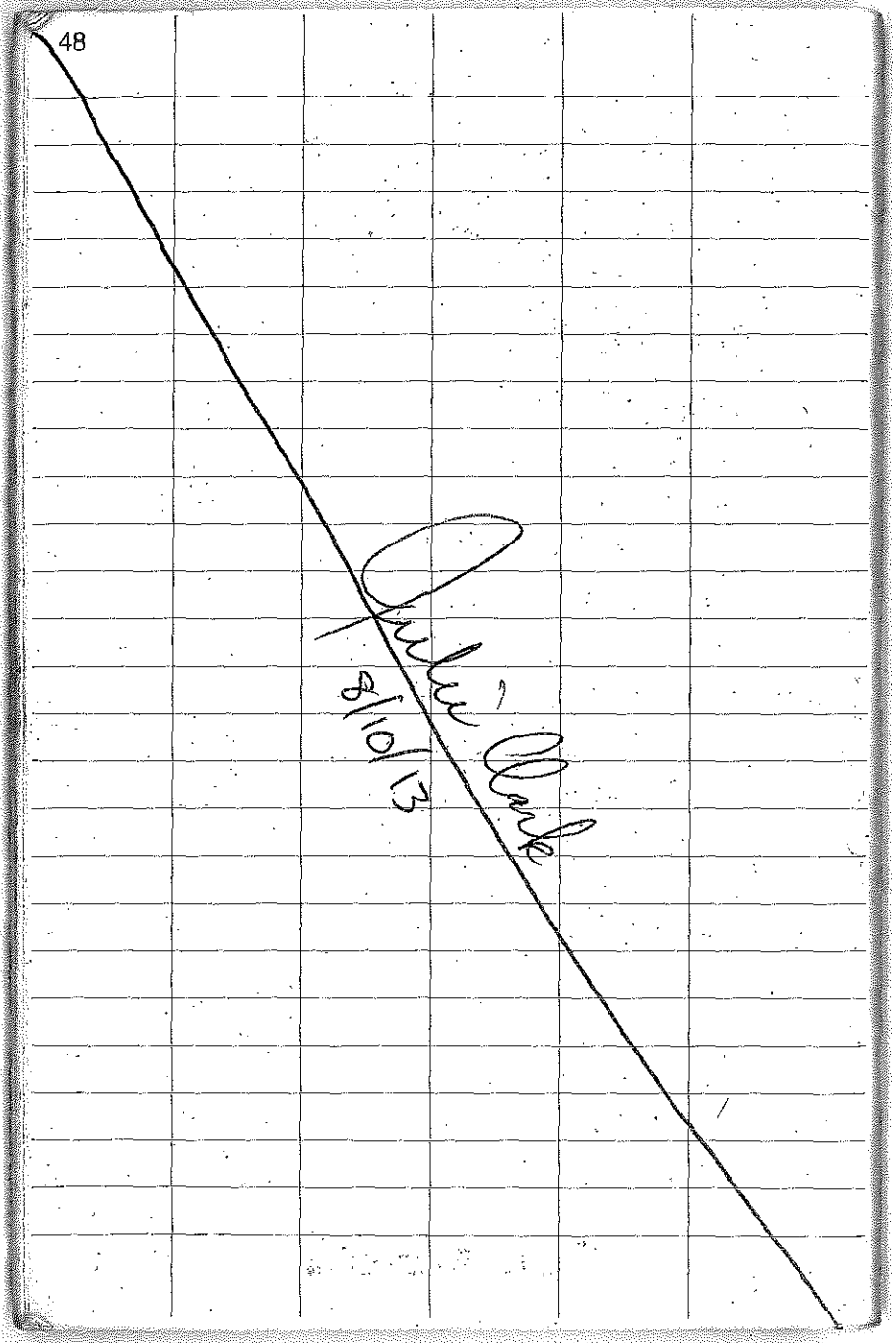
Photolog for 8/10/13:

IMGP1077: Pipeline break near Site 7 sampling - shoveling to 1' depth at PBR-1 borehole location, view NW.

-1078: " , view WNW

-1079: " , view SE.

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Julie Clark
8/10/13

2013 NE Cape

Job # 34130068



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ALL-WEATHER WRITING PAPER

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Project 2013 NE Cape
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8/11/13 2013 NE Capes 34130068

0655 Daily safety meeting.
0705 Daily enviro. meeting.
0925 J. Clark / L. Nelson at site 28 to collect confirmation samples from the portion of stream channel that has been dredged - Sediment Removal Area 3. ECO-Land onsite - they will survey locations of the samples. See field forms for sample IDs, descriptions, etc.
1055 Finished collecting site 28 samples.
1115 Show ECO-Land sample locations collected near Site 7 Pipeline Break.
1145 Sample management.
1730 Done for today.

Julie Clark 8/11/13

8/12/13 2013 NE Capes 34130068

0655 Daily safety meeting.
0800 Pack coolers of site 28 confirmation soil samples and Pipeline Break near Site 7 soil samples for shipment to lab.
1345 On Boring Air flight to Nome.
2030 J. Clark arrives in Anchorage for short R&R.

Julie Clark 8/12/13

8/16/13 2013 NE Cape 34130068

0900 J. Clark in Anchorage, at airport for flight to Nome

1220 Arrive in Nome, head to Bering Air to await flight to NE Cape.

1430 Bering Air flight departs Nome.

1515 Arrive at NE Cape.

1600 J. Clark out to Pad 98 for POL bulk waste bagging.

1720 Depart Pad 98, head back to camp for dinner. Done for day.

Julie Clark
8/16/13

8/17/13 2013 NE Cape 34130068

0655 Daily safety meeting.

0700 Daily safety meeting.

0740 J. Clark out to Pad 98 for POL bulk waste sampling.

1155 Lunch.

1240 J. Clark back out at Pad 98 for more POL bulk waste bagging/sampling.

1730 Done for day.

Julie Clark
8/17/13

8/18/13 2013 NE Capo 34130068

0655 Daily safety meeting.

0705 Daily enviro. meeting. We get the GACs last night on the boat - so no bagging this morning. ~~J.~~ JC Laborers will be at site 28 setting up the GACs and another water containment. J. Clark will collect roadway samples this morning.

0800 R. James shows J. Clark the locations that C. Croley (BERS) and Aaron Shewman (USACE) chose for the roadway sampling. Four locations total.

0855 At first roadway sample location, west of primary bag staging area at MOC. Begin excavating. Will excavate to 1' bgs, collect sample, then excavate to 2' bgs and collect another sample. If any staining is located/observed, sample will be collected from stained area. A. Shewman (USACE) observing.

0900 Collect sample 13NCRWSS01 from 1' bgs at first roadway sample location (RWS-01) for GRO/BTEX, DRO/RRO, PAH, PCBs, and RCRA 8 metals plus zinc.

0910 Collect sample 13NCRWSS02 from ~2' bgs at RWS-01 for GRO/BTEX, DRO/RRO, PAHs, PCBs, and RCRA 8 metals plus Zn.

JC 8/18/13

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0915 ECO-Land onsite to survey test pit and sample locations. ECO-Land will be with J. Clark this morning to survey all test pit extents and sample locations for the roadway samples.

0920 Backfill test pit RWS-01. Note: Fill material from 0-1' seemed to be different than the fill material from 1-2' bgs. See pictures.

0940 Begin excavating test pit at second roadway sample location, RWS-02, near the south end of Site 8.

0945 Collect sample 13NCRWSS03 from ~1' bgs at RWS-02 for GRO/BTEX, DRO/RRO, PAHs, PCBs, and RCRA 8 metals plus Zn.

0955 Collect sample 13NCRWSS04 from ~2' bgs at RWS-02 location for GRO/BTEX, DRO/RRO, PAHs, PCBs, and RCRA 8 metals + Zn.

1000 Backfill RWS-02 test pit.

1010 Begin excavating test pit at third roadway sample location, RWS-03, just north of Y by Site 8.

1015 Collect 13NCRWSS05 from ~1' bgs at RWS-03 for GRO/BTEX, DRO/RRO, PAH, PCBs, and RCRA 8 + Zn. * DUP 13NCRWSS06 @ 1020.

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1025 Collect 13NCRWSS07 from ~2' bgs in RWS-03 for GRO/BTEX, DRO/RRO, PAHs, PCBs, and RCRA 8 metals + Zn.

1035 Backfill test pit at RWS-03.

1055 Begin excavating test pit at fourth roadway sample location, RWS-04, on Cargo Beach Road between Site 6 and Site 7.

1105 Collect sample 13NCRWSS08 from ~1' bgs for GRO/BTEX, DRO/RRO, PAHs, PCBs, and RCRA 8 metals + Zn. * Collect triple volume for MS/MSD.

1120 Collect 13NCRWSS09 from ~2' bgs in RWS-04 location for GRO/BTEX, DRO/RRO, PAHs, PCBs, and RCRA 8 metals + Zn.

1125 Backfill test pit at RWS-04. Notes: large rocks in test pit from 1-2' bgs.

1135 Depart site.

1200 Lunch.

1240 Sample management and COCs for roadway samples.

1500 J. Clark to Pad 98. Material is being screened right now - no bagging occuring. J. Clark will stay at Pad 98 in case bagging begins.

1510 Check out Site 28 - new GACs are set up, and 4th containment has been built.

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1600 Weather turning nasty, so we are stopping early today. Done for day.

*Note: Descriptions for photos taken today are on pg. 11 - 8/19/13's field notes. Julie Clark 8/18/13

Julie Clark 8/18/13

8/19/13 2013 NE Cape 34130068

0655 Daily safety meeting.
0700 Daily enviro. meeting.
0720 Pack cooler of roadway samples for shipment to lab.
0845 J. Clark is told that GAC is up and running — new treated water sample can be collected.
0910 J. Clark / R. James at Site 28.
0915 J. Clark collects sample 13NC28TWA07 for BTEX, DRO/RRO, PAHs, PCBs, and 11 metals analysis. Turbidity = 1.89 This sample is water that had already been treated thru the filters and POL scrubber, but now has also been run thru the new GAC system. * Triple vol. for MS/MSD.
0945 J. Clark / R. James back at camp. J. Clark will pack coolers of the Site 28 treated water sample just collected and have it shipped to lab today.
1200 Lunch.
1240 Finish strapping up coolers, cleaning up enviro connex, replenishing ice, etc.
1515 J. Clark to Pad 98 for bulk waste bagging/sampling. Take over for L. Cameron.
1730 Done for today.

JC 8/19/13

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Photolog for 8/18/13:

IMGP1085: Stratigraphy in roadway sample location RWS-Ø1 - different material 0-1' bgs.
-1086: Surveying RWS-Ø1, view SSW
-1087: Backfilling RWS-Ø1, view SE
-1088: " , view SW
-1089 thru -1092: RWS-Ø2 location. View SW, N, WNW, and NE respectively
-1093 thru -1096: RWS-Ø3 location. Views SW, S, SW, and SE respectively
-1097: Close up of stratigraphy in RWS-Ø3
-1098 and -1099: Backfilling RWS-Ø3, views S and SW respectively
-1100: RWS-Ø4 location (Site 6 in background) view NE
-1101 and -1102: RWS-Ø4, view SW
-1103 and -1104: Close-up of 0-2' sidewall in RWS-Ø4
-1105 thru -1108: Backfilling RWS-Ø4, views ENE, SE, SW, and SW respectively
-1109 and -1110: RWS-Ø4 backfilled. Views SW and W respectively
-1111: New containment and new GACs at Site 28 impoundment area, view N
-1112 and -1113: New Site 28 GACs, view NW.

Julie Clark 8/19/13

8/20/13 2013 NE Capo 34130068

0655 Daily safety meeting.
0700 Daily enviro. meeting.
0900 J. Clark / E. Barnhill out to MOC to collect samples of clean stockpiles from MOC POL digs. Collect a total of 14 samples from 2 stockpiles for the field lab.
0945 J. Clark / E. Barnhill to Site 28 water impoundment. Johnny Willis continues to treat all water we'd already treated - now running it thru the GAC system.
1020 J. Clark to camp to drop off stockpile samples to the field lab.
1050 J. Clark to Pad 98 for POL bulk waste bagging/sampling.
1200 Lunch
1240 J. Clark back to Pad 98.
1730 Done for today.

Julie Clark
8/20/13

8/21/13 2013 NE Capo 34130068

0655 Daily safety meeting.
0700 Daily enviro. meeting.
0815 J. Clark to Pad 98 for POL bulk waste bagging/sampling.
1200 Lunch
1245 J. Clark / E. Barnhill to Pad 98 for POL bulk waste bagging.
1730 Done for today.

Julie Clark
8/21/13

8/22/13 2013 NE Capo 34130068

0655 Daily safety meeting.
0700 Daily enviro. meeting.
0830 J. Clark (E. Barnhill to jobsite. Talk to Maze Thompson, let him know we'd like to excavate in Site 21 this morning. Maze will arrange to get heavy equipment moved to Site 21.
1025 Begin excavating at Site 21, start on west side - the small chunk around SB01.
1045 ECO-Land onsite to mark locations of 2013's SB-18, SB-19, and SB-20.
1115 Begin excavating the ~3.5' depth south, southeast, and east of the 2012 excavation.
1120 Have filled one bag - bulk waste sample 21-12-A.
1135 Filled 2nd bag - sample 21-12B.
1150 Filled 3rd bag - sample 21-12C.
1200 Lunch.
1240 Back onsite at Site 21. Adding fill to the road to Site 21 so loader won't get stuck.
1300 Resume excavation in the ~3.5' removal area.
1320 Filled 4th bag - sample 21-12D.
1325 Collect surface water sample 13NC21SW0004 from 21SW01 location for total & dissolved arsenic analysis. Turbidity = 13.2

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1325 cont. This surface water sample is the "during" excavation sample for the before, during and after excavation surface water sampling.
1345 Collect surface water sample 13NC21SW0005 from 21SW02 location for total & dissolved arsenic analysis. Turbidity = 5.00 "During" excavation sample. * MS/MSD
~~1350 Filled 5th bag - sample 21-12E.~~ JC 8/22/13
1355 J. Clark departs site for sample management. E. Barnhill remains onsite while excavation continues.
1445 J. Clark back onsite. Have removed two more bags while J. Clark gone: 21-12E and 21-12F.
1500 Loader picking up bag 21-12G.
1520 Loader picks up bag 21-13A.
1540 Loader picks up bag 21-13B.
1600 Loader picks up bag 21-13C.
1625 Loader picks up bag 21-13D.
1645 Loader picks up bag 21-13E.
1650 Finished excavating 3.5' area E, SE, and S of the 2012 excavation. J. Clark/A. Shewman mark out the 1' excavation area.
1700 Begin excavating 1' area.

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1710 Sample bag 21-13F - and loader takes bag.

1730 Depart site, done for today.

Photolog for 8/22/13:

IMGP1160: Site 21 excavation, view WSW

-1161: Bagging excavated soil at site 21, view SW

-1162: Excavating on W side of previous 2012 excavation, view WSW

-1163: " , view SE

-1164 and -1165: Loader picking up bag of arsenic-contaminated soil, view SW

-1166: Paint on ground delineating 1' removal area, view SW

-1167: Digging in 1' removal area, view SW

Julie Clark
8/22/13

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0655	Daily safety meeting.
0700	Daily enviro meeting.
0820	J. Clark / E. Barnhill at Site 21.
0825	Collect bulk waste sample 21-13G and loader removes bag.
0845	Bulk waste sample 21-14A.
0905	Bulk waste sample 21-14B.
0925	Bulk waste sample 21-14C.
0935	Bulk waste sample 21-14D.
0945	Bulk waste sample 21-14E.
1000	Bulk waste sample 21-14F.
1020	Finished excavating 1' removal area. Mark out boundary of 2.5' removal area.
1025	Begin excavating in 2.5' removal area.
1030	Bulk waste sample 21-14G.
1055	Bulk waste sample 21-15A.
1110	Bulk waste sample 21-15B.
1120	Bulk waste sample 21-15C.
1135	Bulk waste sample 21-15D.
1145	Bulk waste sample 21-15E.
1200	Lunch.
1245	Back on site at Site 21, continue excavating.
1300	Bulk waste sample 21-15F.
1315	Bulk waste sample 21-15G.

1330 Bulk waste sample 21-16A.

1340 Finished w/ Site 21 excavating.

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1350 Collect confirmation soil sample 13NC21SS021 from the 3.5' excavation (just E, SE, and S of the 2012 excavation). Floor is flooded so have the excavator scoop material in bucket, and collect sample from bucket. Sample to be analyzed for arsenic.

1400 Collect confirmation soil sample 13NC21SS022 from the 3.5' excavation for arsenic analysis.

1440 Collect confirmation soil sample 13NC21SS023 from the small 1' excavation west of the 2012 excavation. Arsenic analysis.

1445 Collect confirmation soil sample 13NC21SS024 from the small 3.5' excavation where 2013's SB15 was located. Arsenic analysis.

1550 Collect sample 13NC21SS025 for arsenic analysis from 1' excavation.

1555 Collect sample 13NC21SS026 from 1' excavation area for arsenic analysis. * Triple vol., MS/MSD

1600 Collect sample 13NC21SS027 from 1' excavation area for arsenic analysis. * DUPLICATE 13NC21SS028 @ 1605 hrs.

1608 Collect 13NC21SS029 from floor of 2.5' excavation area for arsenic analysis.

JC 8/23/13

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1610 Collect sample 13NC21SS030 from floor of 2.5' excavation area for arsenic analysis.

1615 Collect sample 13NC21SS031 from floor of 2.5' excavation area for arsenic analysis.

1620 Finished collecting the floor samples from the Site 21 excavation. Measure sidewalls of the excavation to determine how many sidewall samples will be needed.

1645 Back at camp for sample management.

1730 Done for day.

Photolog for 8/23/13:

IMGP1168: Surveying boundary of 1' removal area in Site 21, view W

-1169 and -1170: " , view SW

-1171 thru -1173: large rocks removed during the Site 21 excavation, "Rock monument." View W

-1174: Final extent of 2013 Site 21 excavation, view NE

-1175: 2012 excavation, plus some of the 2013 excavation, view WNW.

Julie Clark 8/23/13

8/24/13 2013 NE Cape 34130068

0655 Daily safety meeting.
0700 Daily enviro. meeting.
- E. Barnhill, J. Clark will finish sampling Site 21 excavation.
- Received results for Site 28 treated water - good to discharge.

0805 J. Clark / E. Barnhill at Site 21 to collect excavation sidewall samples.

Site 21 Sidewall Sample Info:

Sample ID	Time	Analysis	Comments
13NC21550 32	0810	Arsenic	
-033	0813	"	
-034	0815	"	
-035	0818	"	* DUPLICATE -036 @ 0820
-036	0820	DUPLICATE OF -035	
-037	0822	"	
-038	0825	"	
-039	0827	"	
-040	0830	"	
-041	0835	"	
-042	0838	"	

0845 J. Clark / E. Barnhill finished sampling Site 21.
0855 JC / EB to Site 28 - show Johnny Willis where treated water can be discharged.
0915 JC / EB depart Site 28. Johnny Willis about to start discharging treated water.

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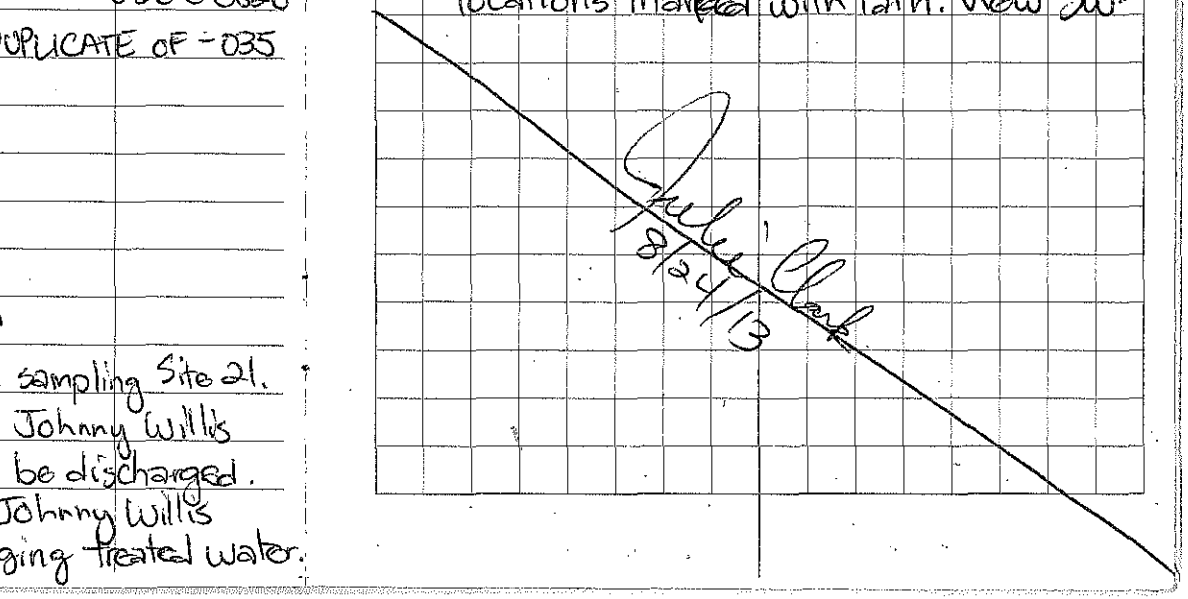
0930 JC / EB at camp for sample management.
1030 J. Clark / J. Allan (ECO-Land) out to Site 21 to verify the limits of the surveyed excavation.
1100 Back at camp. Prepare COC for Site 21 samples.
1215 Lunch.
1300 J. Clark w/ ECO-Land while they pick up sample locations and add excavation boundary where SB5 was.
1400 Back at camp.
1430 Done for today.

Photolog for 8/24/13:
IMGP1176: Site 21 excavation with sample locations marked with lath. View SW.



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0655 Daily safety meeting.
0705 Daily enviro meeting.
0810 J. Clark to Pad 98 for bulk waste bagging/sampling.
1300 Lunch.
1240 Tasks around camp.
1500 Shift ends early due to poor weather conditions.

Julie Clark
8/25/13

8/26/13 2013 NE Capo 34130068

0655 Daily safety meeting.
0715 J. Clark prepares Site 21 samples for shipment to lab.
0835 J. Clark at Pad 98 for bulk waste bagging/sampling.
JC ~~Lunch~~ 1200 Lunch.
1240 Tasks around camp.
1730 Done for today.

Julie Clark
8/26/13

8/27/13 2013 NE Cape 34130065

0655 Daily safety meeting.
0710 Daily enviro. meeting.
0910 J. Clark at site 28 for sediment removal via dredging.
0915 Begin dredging in stream channel (Removal Area 3). West fork of channel where stream diverges is pretty dry (see pics).
0925 Like previously when dredging stream, turbidity is entering the pond directly below the stream, and dissipating in the pond.
0930 Lower sump is full - stop dredging to allow pump to catch up (and pump material into the treatment area).
0950 Start dredging again.
1010 Stop dredging - lower sump full.
1035 Begin dredging.
1050 J. Clark collects surface water sample 13NC28SW06 from just downstream of the sediment trap (loc. 28-SW-01) for BTEX, DRO/RRO, PAHs, PCBs, and 11 metals analysis. Turbidity = 22.4 * Triple volume for MS/MSD.
1055 Stop dredging - lower sump full.
1130 R. Brayles (USACE) onsite, talks to Johnny Willis. Brayles says we can collect a treated water sample every 50,000 gallons - and don't need to wait for sample results before discharge

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1215 Lunch. Total dredge time this a.m. = 55 min.
1300 J. Clark at site 28. Bring Mace Thompson down to the lower sump - one side is pretty low, so sump doesn't get very full before it has to be emptied. Mace will see about getting some heavy equipment down to the sump to build up the low side.
1330 Begin dredging in stream channel (Removal Area 3).
1340 Sump full - stop dredging.
1415 Resume dredging in stream channel.
1440 Sump full - stop dredging. * NOTE: The GAC was running, treating water during lunch. Lindsey Cameron will note times that GAC was running every day, give totals to J. Clark at the end of every day, so we can track approx. when 50,000 gallons of water have been treated, and a sample needs to be collected of pre-treatment and post-treatment water. (Assume GAC is putting out ~100 gallons/minute, so 500 min. of GAC treatment = ~50,000 gallons).
1520 ECO-land surveying the areas dredged today.
1535 Resume dredging in stream channel.
1555 Sump full - stop dredging. Turbidity at loc. 28-SW-01 immed. downstream of sediment trap = 58.4.

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1620 Finished dredging for today - Johnny Willis needs to get ready to load the boat with flats of bulk bags. Total dredge time today: 120 min.

1700 Back at camp for sample management.

1830 Times noted by Lindsey Cameron that the GAC was running at Site 28 today:

1310 - 1405 = 55 min.
1455 - 1515 = 20 min.
1530 - 1600 = 30 min.
1635 - 1700 = 25 min.
1730 - 1830 = 60 min.

Total = 190 min.

- L. Cameron noted that the GAC was not discharging 100 gal/min today. Estimate about 60 gallons per minute (ROUGH estimate)

Photolog for 8/27/13:

IMGP 1177 thru 1179: Dry western channel of stream where stream diverges. Johnny Willis diverted it for dredging. Views S, S, and N.

IMGP 1180 thru 1182: New channel (with sediment) going between the two divergent channels. View S.

Julie Clark
8/27/13

8/28/13 2013 NE Cape 34130068

0655 Daily safety meeting.

0705 Daily enviro meeting.

* - R James tells J. Clark that a pre-/post-treatment water sample needs to be collected every 20,000 gallons, instead of every 50,000 gallons

0845 J. Clark out to Site 28. Lindsey Cameron has been running the GAC, but other than that, no activity.

1030 J. Clark back out to Site 28. Dredging is in process in the stream channel, according to L. Cameron, it began @1020.

1035 Turbidity downstream of sed. trap = 21.3.

1045 Lower sump full - stop dredging.

1130 Begin dredging again.

1140 Stop dredging - need to move hoses.

1200 Lunch. Total dredge time this a.m. = 35 min.

1300 Back at Site 28.

1320 Check turbidity downstream of sed trap = 22.0

1335 Moving hoses and dredge downstream

1355 Resume dredging in stream channel

1415 Sump full - stop dredging. ECO-Land surveying today's dredged area.

1435 Resume dredging.

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1445 Collect sample 13NC28STW07 immediately downstream of the sediment trap for BTEX, DRO/RRO, PAHs, PCBs, and 11 metals analysis. Turbidity = 47.4

1455 Stop dredging. (Sump full)

1520 Resume dredging.

1540 Sump full - stop dredging.

1610 Resume dredging, but dredge is clogged with grass so stop immediately. Johnny Willis needs to go get tools to fix.

1650 No more dredging today - head back to camp for sample processing. Total dredge time today = 95 min.

1730 From L Cameron, GAC times for today:
0730-0935 = 125 min. > 145 min.
0950-1010 = 20 min.
Cumulative total GAC time = 335 min.
L Cameron used a 5-gal. bucket to gauge discharge from the GAC, and calculated ~60 gal./minute. So, 335 x 60 = 20,100 gallons discharged (approx.) J. Clark will collect a pre- and post-treatment water sample first thing tomorrow before more water is treated thru GAC.

Julie Clark 8/28/13

8/29/13 2013 NE Cape 34130068

0655 Daily safety meeting.

0705 Daily envira meeting.
- R James tells J. Clark that after GAC treatment, we are discharging into a containment prior to discharge to ground.

0750 J. Clark at Site 28 to collect pre and post treatment samples

0805 Collect 13NC28WA03 from pre-treated water in impoundment for BTEX, DRO/RRO, PAHs, PCBs, and 11 Metals analysis. Turbidity = 90.0

0835 Collect 13NC28TWA08 from GAC-treated water for BTEX, DRO/RRO, PAHs, PCBs, and 11 Metals analysis. Turbidity = 0.92
* Collect triple volume. If analysis for this sample is RUSH, we will need an MS/MSD. If not, will just submit 1 set.

1000 Prepping to begin dredging today. Will continue dredging in stream channel (Area 3). Turbidity prior to dredging = 20.6. (immed. downstream of sed. trap)

1020 Begin dredging in stream channel.

1035 Stop dredging - need to refuel dredge and move hoses.

1040 Resume dredging.

1045 ECO - Land staking out limits of Removal Area 4.

1050 Sump full - stop dredging.

1110 Resume dredging

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1125 Stop dredging - have to move hoses.
1140 Resume dredging.
1155 Stop dredging - lunchtime. Total dredge time this a.m. = 55 min.
1300 Back at site 28.
1320 R. James onsite. He had a conference call before lunch w/ Curtis Dunkin (ADEC). It was decided that:
- 1 post treatment sample will be collected after 1 containment is full of treated water (and each thereafter), will be standard TAT, NOT rush analysis. (SO MS/MSD collected this morning at 0835 will not be submitted, just the primary).
- Samples do NOT need to be collected of the pre-treated water. (SO sample 13NC28WA08 collected this a.m. at 0805 will not be submitted).

1340 Begin dredging again.
1400 Stop dredging - dredge losing suction and lower sump pretty full.
1405 Collect sample 13NC28STW08 immed. downstream of sed. trap for BTEX, DRO/RRO, PAHs, PCBs, and 11 Metals analysis. Turbidity = 24.1
1450 Resume dredging in stream channel.
1505 Stop dredging.
1515 Resume dredging.
1525 Stop dredging.

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1535 Resume dredging.
1545 Turbidity immed. below sed. trap = 41.5
1550 Stop dredging.
1620 ~~1605~~ Resume dredging.
1635 Active dredging today has exceeded 2 hours, so collect sample 13NC28STW09 immed. downstream of sediment trap (28-SW-01) for BTEX, DRO/RRO, PAHs, PCBs, and 11 Metals analysis. Turbidity = 46.9
~~1650~~ 1650 Stop dredging. Have completed dredging in the stream (Removal Area 3) and moved into Removal Area 4.
1700 Head back to camp. Total dredge time today = 155 min.
1730 Dinner
1830 Paperwork.
1900. Done for today.

Julie Clark
8/29/13

8/30/13 2013 NE Cape 34130068

0655 Daily safety meeting.
0700 Daily enviro. meeting.
0735 J. Clark/L. Cameron down to site 28. Both treated water containments are ~½ full. L. Cameron turns on GAC. J. Clark will collect samples from both containments, and when the impoundments are full, they can be emptied immediately.
0740 Collect sample 13NC28TWA09 from SE treated water impoundment for BTEX, DRO/RRO, PAHs, PCBs, and 11 Metals analysis. Turbidity = 0.88
0750 Collect sample 13NC28TWA10 from SW treated water impoundment for BTEX, DRO/RRO, PAHs, PCBs, and 11 Metals analysis. Turbidity = 1.50
0815 L. Kleppin packing coolers of site 28 water samples.
1200 Lunch.
1255 J. Clark at site 28. Will collect confirmation samples while dredging resumes in Area 4. See field forms for sampling details.
1325 J. Willis begins dredging.
1335 Stop dredging - sump full
1355 Start dredging again.
1440 Sump full - stop dredging.
1435 Start dredging again.
1455 Sump full - stop dredging.

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1525 Resume dredging.
1540 Sump full - stop dredging.
1605 Resume dredging.
1620 Sump full, stop dredging.
1630 J. Clark finished collecting confirmation samples in stream channel (Area 3). ECO-Land surveys confirmation sample locations, as well as today's dredged area.
1700 Resume dredging
1705 J. Clark collects sample 13NC28STW10 at 28-SW-01 location immed. downstream of sed. trap for BTEX, DRO/RRO, PAHs, PCBs, and 11 Metals analysis. Turbidity = 22.3
1715 Stop dredging. Total dredge time today = 90 min.
1730 Back at camp - sample management/paperwork.
1800 Dinner. Done for today.

Julie Clark
8/30/13

8/31/13 2013 NE Cape 34130068

0655 Daily safety meeting.
0700 Daily enviro meeting.
0745 J. Clark at site 28. J. Willis / L. Cameron fiddling with pumps/treatment system.
0950 Start dredging today. Working in Area 4. Turbidity downstream of sed. trap = 14.2
1005 Sump full - stop dredging.
1030 Resume dredging.
1050 Sump full - stop dredging.
1120 Resume dredging. Ron Broyles (USACE) at site 28. He would like BERS to look at data collected downstream of the sed. trap - perhaps we can make the argument that conditions are the same during dredging, and scale back the sampling downstream of the sed. trap.
1130 Collect sample 13NC28STW11 downstream of the sed. trap for BTEX, DRO/RRO, PAHs, PCBs, and 11 Metals. * Triple volume for MS/MSD. Turbidity = 16.2
1145 Stop dredging - sump full
1200 Lunch. Total dredge time this a.m. = 60 min.
1300 Back out at site 28.
1345 Resume dredging in Area 4.
1405 Sump full - stop dredging.
1455 Resume dredging.
1515 Sump full - stop dredging.

8/31/13 2013 NE Cape 34130068

1540 Resume dredging.
1600 Sump full - stop dredging. Turbidity downstream of sed. trap = 43.5
1635 Resume dredging.
1640 ECO-Land surveying today's dredged area.
1650 Collect sample 13NC28STW12 (surface water) immed. downstream of sed. trap for BTEX, DRO/RRO, PAHs, PCBs, and 11 metals analysis. Turbidity = 91.9
1655 Sump full - stop dredging.
1710 Get up to water treatment area, and find out there is an issue with the GAC that L. Cameron noted a little earlier: the treated water is more turbid than usual - it is not crystal clear anymore. J. Willis and L. Cameron will work on GAC after dinner to see if they can fix the problem. Total dredge time = 140 min
1800 Dinner
1830 Sample management and paperwork.
1900 Done for today.

Julie Clark
8/31/13

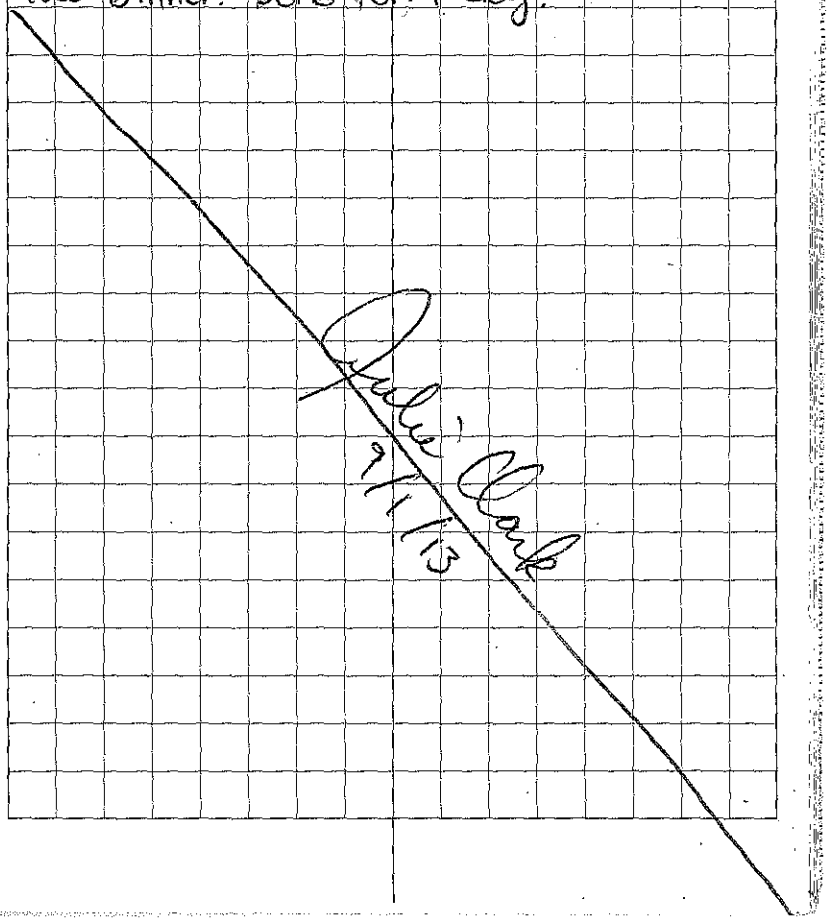
9/1/13 2013 NE Cape 34130068

0655 Daily safety meeting.
0700 Daily enviro. meeting.
0715 Some work still needs to be done on GAC before dredging begins. in Site 28. J. Clark does housekeeping tasks around camp.
1250 J. Clark to site 28. The two treated water containments are full of the more turbid treated water. They are ready to be sampled. Chuck Crosby (Bristol super) would like to have analytical results for these two containments before water is discharged to the tundra.
1345 Collect sample 13NC28TWA11 from SW water impoundment for BTEX, DRO/RRO, PAHs, PCBs, and 11 metals analysis. *Triple volume for MS/MSD. Turbidity = 31.3
1400 Collect sample 13NC28TWA12 from SE water impoundment for BTEX, DRO/RRO, PAHs, PCBs, and 11 metals analysis. Turbidity = 24.9
1430 Begin dredging in Removal Area 4. Turbidity downstream of sediment trap = 12.7
1450 Sump full - stop dredging to allow it to pump to treatment area.
1515 Resume dredging.
1540 Sump full - stop dredging.
1615 Resume dredging

JC 9/1/13

9/1/13 2013 NE Cape 34130068

1620 Collect sample 13NC28STW13 (plus DUP 13NC28STW14 @ 1640 hours) immed. downstream of the sed. trap for BTEX, DRO/RRO, PAHs, PCBs, and 11 metals. Turbidity = 22.1
1640 Sump full - stop dredging.
1720 Head back to camp to process samples.
1800 Dinner. Done for today.



9/2/13 2013 NE Capo 34130068

0655 Daily safety meeting.
0700 Daily enviro. meeting.
0730 J. Clark packing coolers of Site 28 samples for shipment to the lab.
1730 Plane did not come today - We'll try shipping samples tomorrow.

Julie Clark
9/2/13

9/3/13 2013 NE Capo 34130068

0655 Daily safety meeting.
0700 Daily enviro. meeting.
0730 Housekeeping tasks around camp.
1100 Plane is scheduled to be here around 1300 hours today, and the weather currently looks good. J. Clark checks the ice in the 7 coolers packed yesterday, and straps them up for shipment.
1315 Plane arrives at NE Capo, picks up sample coolers.
1400 More tasks around camp (Site 28 GAC is still not working properly, so no dredging is taking place).
1730 Done for today.

Julie Clark
9/3/13

9/4/13 2013 NE Cape 34130068

0655 Daily safety meeting.
0700 Daily enviro. meeting.
0730 Tasks around camp.
1730 Done for today.

Julie Clark
9/4/13

9/5/13 2013 NE Cape 34130068

0655 Daily safety meeting.
0700 Daily enviro. meeting.
0800 E. Barnhill / J. Clark 3t Pad 98 for POL bulk waste bagging/ sampling.
1200 Lunch.
1240 Tasks around camp.
1730 Done for today.

Julie Clark
9/5/13

9/6/13 2013 NE Cape 34130068

0655 Daily safety meeting.
0705 Daily enviro meeting.
0730 Tasks around camp - cleanup/organize enviro. connex, make sure enough gel ice frozen, etc.
1330 J. Clark boards Bering Air plane for Nome.
1900 At AK Airlines in Nome, waiting for flight to Anchorage.
2200 J. Clark arrives in Anchorage.

Julie Clark
9/6/13

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Project Northeast Cape HTRW Remedial Actions

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Location SL1 Date 7/9/13

Project / Client Northeast Cape HTRW

0800 Call Berry Air for flight update - weather @ NE Cape is good, flight scheduled for 1000.

1000 Depart Berry Air with

Russel James	Bristol
Eric Barnhill	Bristol
John Majors	Fairweather
Matt Suda	Test America
Jamison Allen	Eco-land
Sam	Eco-land
Suzanne Lovell	Bristol

Arrive ~~Northeast Cape~~ ZK Savoonga Pick up

Charles Kava

Albert Kulowi

Micheal Toolie

Scott Kingeejuk

Arrive Northeast Cape. Unload cargo, unpack and locate printers/office supplies.

1400 Site tour with Charles Croley, R. James, E. Barnhill

"armor" bags removed from excavations

- 55 poles removed and stayed @ MOC
- flat assembly of super sacks @ MOC
- GPS "undisturbed" road samples for PCBs (4 locations)

Location SL1 Date 7/9/13

Project / Client Northeast Cape HTRW 2013

- two remaining PCB spots - site 31 and site 13
- PCB staging area @ MOC clear - may begin MI sampling

Collect surface water samples from containment NW corner of dredge water containment #2

13NC28TWA01	MS/MSD	1700
13NC28TWA02		1735
13NC28TWA03 (DUP of 02)		1730

taken from lower containment by E. Barnhill (containment #3)

BTEX, DRO, PAH, PCB, total metals

Samples stored in fridge in environmental connex.

End 1740

ZK

Location SL1 Date 7/10/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Meeting
Site Orientation Meeting
Environmental Meeting – Preparatory Phase
Today after lunch.
containment #3 turbidity 233 NTU
containment #2 turbidity 1.70 NTU

Train lab personnel on how to calibrate turbidimeter and YSI
YSI – pH reading drifting, after calibration is outside of confidence solution acceptable range
ORP outside of acceptable range.

1300 Preparatory Phase Meetings
POL soil removal
debris removal
MOC groundwater
Arsenic site 21 excavation
PCB soil removal
Site 10 drum removal/excavation

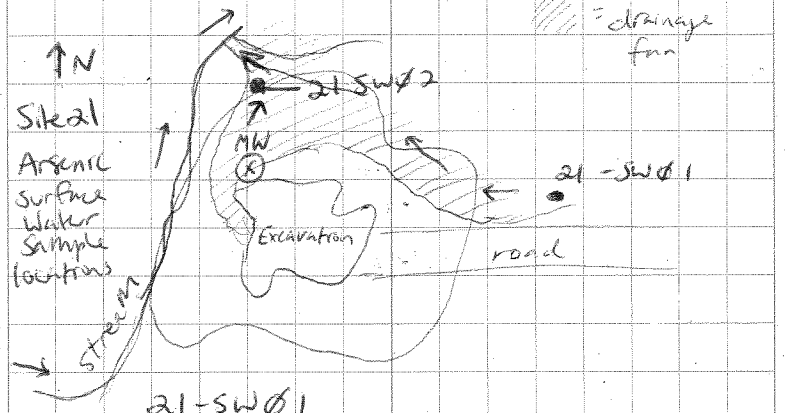
Chuck Coley, Mare Thompson, Jeremy Craner, Eric Barnhill, Lyndsey Kleppin

Location 7/10/13 Date 7/10/13

Project / Client Northeast Cape

site 21 – 2 locations: 1 upstream, 1 downstream
consult with Jeremy Craner on sample locations for surface water

21-SW02 NW of excavation in drainage fan leading to W stream
Sample ID 13NC21SWA01 (MS/MSD) 1630
7.72°C 7.61 pH 25.6 NTU
0.209 mS/cm 112.4 ORP orange floc + algae



Sample ID 13NC21SWA02 and 03 DUPLICATE
1645 1700
moss/greenish brown floc/algae 0.51 NTU
0.71°C 6.25 pH – probe outside of accepted range
0.148 mS/cm 122.3 ORP
67% 9.69 mg/L DO
End 1730

Location _____ Date 7/11/13

Project / Client Northeast Cape HTRW

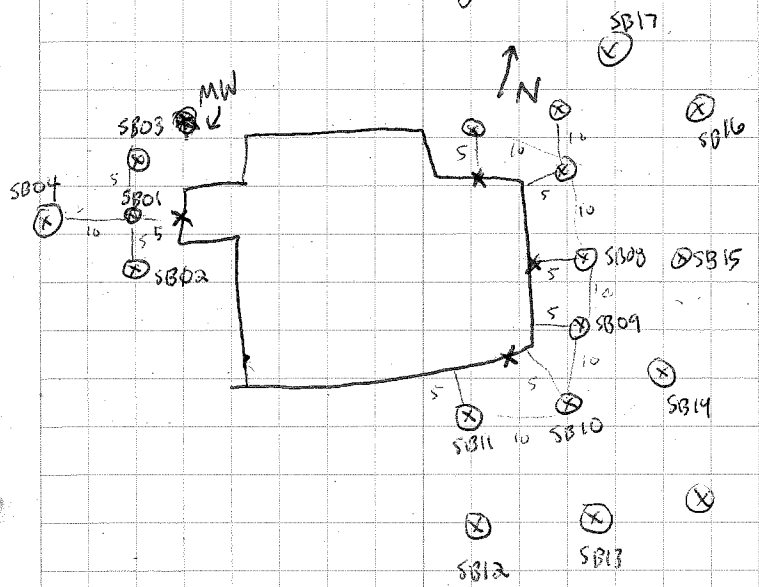
0700 Health and Safety Meeting - medic capabilities
Environmental Meeting
Gather equipment for sampling @ site 21
site walk with Eric Barnhill, Jeremy Cramer
to approve field selected borring locations.
Decided on 5' step-outs from excavation during
preparatory phase meeting due to limited tonnage
available.
Michael Todie, Charles Kava, Eric Barnhill, Lyndsey Klepper
hand auger sampling @ 17 boring locations

21SB01	13NC215501	-0.5	1070
		-2	1070
		-3	1075
21SB02	13NC215502	-0.5	1050
		-2	1100
		-3	1105
21SB03	13NC 215503	-0.5	1109
		-2	1112
		-3	1115
21SB04	13NC215504	-0.5	1121
		-2	1127
		-3	1132

Location _____ Date 7/11/13

Project / Client Northeast Cape

Site 21 Arsenic Dig Excavation



Interior borings and 5' ft
from the excavation sidewall, spaced 10 feet
laterally. Exterior boring locations are spaced @ 10 + 20'
intervals

21SB04	13NC215504	-0.5	1125
		-2	~~DUPLICATE 25~~ 1127
		-3	1132

Location SLI Date 7/11/13

Project / Client Northeast Cape HTRW

21SB05	13NC21SS05 – 0.5	1138	
	– 2	1140	/13NC21SS05-2.5 1142 DUPLICAT
	– 3	1148	
21SB06	13NC21SS06 – 0.5	1308	
	– 2	1310	
	– 3	1315	
21SB07	13NC21SS07 – 0.5	1330	refusal w/auger @ 1'
21SB08	13NC21SS08 – 0.5	1335	7"
21SB09	13NC21SS09 – 0.5	1345	1'
21SB10	13NC21SS10 – 0.5	1347	7"
21SB11	13NC21SS11 – 0.5	1352	1'
21SB12	13NC21SS12 – 0.5	1355	8"
21SB13	13NC21SS13 – 0.5	1609	1'
21SB14	13NC21SS14 – 0.5	1412	
21SB14	– 2	1418	
	– 3	1425	
21SB16	13NC21SS16 – 0.5	1358	
	– 2	1402	
	– 3	1406	
21SB17	13NC21SS17 – 0.5	1440	
	– 2	1445	MS/MSD
	– 3	1455	/13NC21SS17-2.5 1450 DUPLICATE SAMPLE

End 1730

Location SLI Date 7/12/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Meeting – PPE
Environmental Meeting – site 21, site 10
48°F, foggy, calm

Site 21 Arsenic dig – Allen to use excavator in areas of hand auger refusal
Refer to 7/12/13 Boring Logs by L. Klepper.
4 duplicates, 2 MS/MSD. taken today
General soil profile: ~1ft reddish brown s/t vegetative mat
gravel – peat dark brown
gravel – silt olive brown
~3 ft frozen peat

Excavator grab samples @ site 21:

13NC21SS07-2 0904 frozen peat
↑ DUPLICATE: 13NC21SS07-2.5 0908
13NC21SS07-3 0915 MS/MSD
13NC21SS08-2 0924
13NC21SS08-3 0926
13NC21SS09-2 0931
13NC21SS09-3 0933
13NC21SS10-2 0837
13NC21SS10-2.5 0806 DUPLICATE OF 10-2
13NC21SS10-3 1044 MS/MSD
13NC21SS11-2 0815/DUPLICATE 13NC21SS11-2.5 0818
13NC21SS11-3 0822
13NC21SS12-2 0828
13NC21SS12-3 0830
13NC21SS13-2 0855
13NC21SS13-3 0900
13NC21SS15-0.5 0935 ↩
13NC21SS15-1 0940 DUPLICATE
13NC21SS15-2 0945
13NC21SS15-3 0948
13NC21SS17-0.5 1440
13NC21SS17-2 1445 (MS/MSD)

Site 21 Arsenic: 6 dups, 3 MS/MSD 51 primary
13NC21SS17-3 – 1455 DUPLICATE 13NC21SS17-2.5 1450

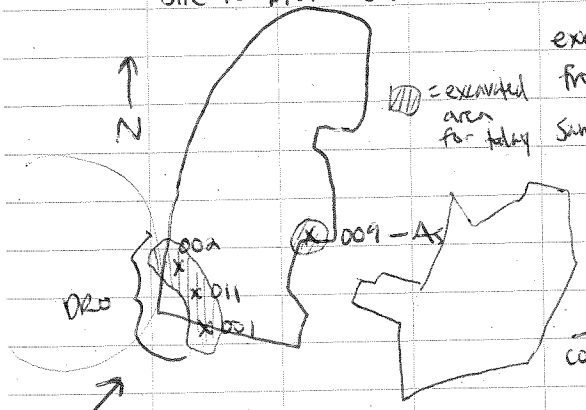
Location SL1 Date 7/12/13

Project / Client Northeast Cape HTRW

Sample shipment COC 13NC002 (site 21 soil)
13NC003 (site 21 surface water) - Goldstreak, 2 coolers
to Test America Tacoma

Locate pin flags

Site 10 Drum Excavation



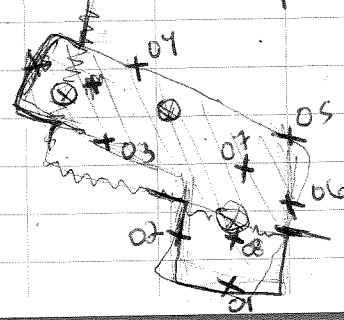
excavate 5' out from contaminated sample locations, 2 feet deep.
13-10-1A
13-10-1B
13-10-1C
containing Arsenic dig-at spot

see inset below

former excavation extent

@ = 2012 confirmation sample with DRO = 10K ≤ mg/kg

Field screening locations - site 10 DRO hotspots



FS10-01 to FS10-08

FS10-01 to FS10-06 are sidewalls

FS10-07 and 08 are floor

Location SL1 Date 7/12/13

Project / Client Northeast Cape HTRW

13NC10BU01 1700 Arsenic (dig at spot)
from bag # 13-10-1C

End 1730

Location SL1 Date 7/13/13

Project / Client Northeast Cape HTRW

0700 Health and Safety -
clear, calm 4
Environmental Meeting - Finish site 10
dig - do MOC surface water sampling
PAH and BTEX ok'd
- New YSI did not arrive on plane
site 10 confirmation sampling, upper excavation
GRO/VOC/DRO/PAH/PCB/metals/glycol
1 pre-tared 4oz jar w/septa
1 16 oz jar
- do one composite site 10 waste characterization sample per R. James - run full suite
(GRO/DRO/RRO, glycols, TCLP PAH, TCLP PCBs, TCLP VOC, TCLP metals (11))

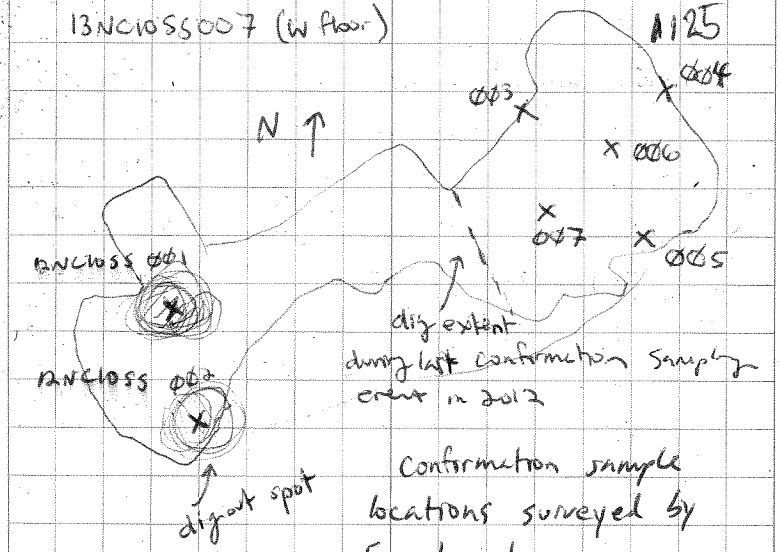
James @ site 10 to determine depth to sample location
Erin to sample BTEX/PAH/DRO @ MOCSW01-03.
one bag removed from 2 dig-out spots @ upper site 10 excavation
13-18-01D
bulk waste analytical samples
- 13NC10WS01 (MS/MSD) 0930
- 13NC10WS02 (duplicate) 0940

Location SL1 Date 7/13/13

Project / Client Northeast Cape HTRW

(13NC10BW01 from 7/12/13 discarded)
confirmation sample dig out spots @ upper excavation, site 10

13NC10SS001 (west dig out spot)	1040
13NC10SS002 (south dig out spot)	1050
DUPLICATE SAMPLE 13NC10SS008	1055
13NC10SS003 (N sidewall)	~~1100~~ 1105
13NC10SS004 (E sidewall)	1115
13NC10SS005 (S sidewall)	1100
13NC10SS006 (E floor)	1120
13NC10SS007 (W floor)	1125



Confirmation sample locations surveyed by Eco-Land

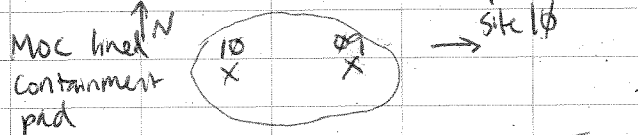
Location SL1 Date 7/13/13

Project / Client Northeast Cape HTRW

MOC surface water sampling (pre-excavation event)
See Eric Barnhill Notes
YSI pH/ORP probe out of calibration – alternate YSI en route – will arrive Monday. Used pH strips to corroborate instrument pH.
New Turbidimeter standards (formazin) arrived – used to calibrate Turbidimeter.
Sampled MOCSW03 (sample ID: 13NLMOCSW00

Site 13 PCB dig-out spot: 2 field screen samples
move to site 31 for 1 dig-out spot

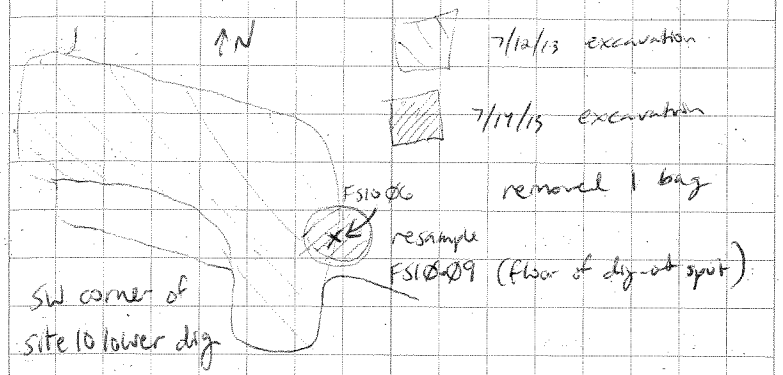
Arsenic samples received by lab in Tacoma
site 10 upper excavation stockpile surveyed
by Jamie – 17 cubic yards = 2 lab samples
13NC10SS09 (east side of stockpile) 1550
13NC10SS10 (west side of stockpile) 1600



Location SL1 Date 7/14/13

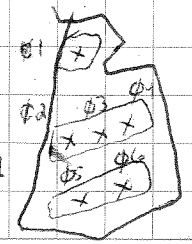
Project / Client Northeast Cape HTRW

0700 Health and Safety – high winds, rain
50 mph gusts, rain
Environmental Meeting – field lab results back one dig-out spot @ 13,
FS10-06 (see page 12 map) site 10 floor



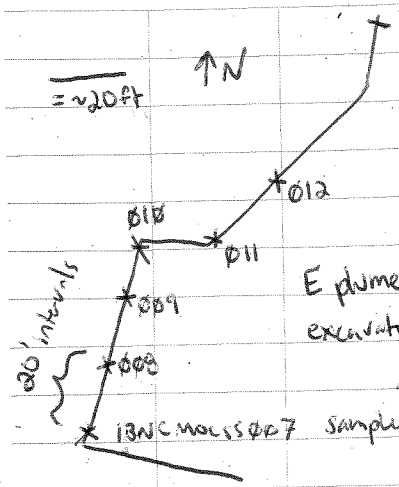
13-10-01E
13NC10WS03 850

E plume floor samples – confirmation – taken from trench
– 1250 ft² unsubmerged, 1 sample taken in 2012
take 6 samples
13NCMOCSS01 – 06
frozen grey silty clay ~~except 06~~ 12"
~~this sample was very dark brown, OS, peat~~
13NCMOCSS01 – 06 floor



Location SL1 Date 7/14/13

Project / Client Northeast Cape HTRW



Need Jamie to locate dirty field screening locations from 2012, survey new confirmation

E plume sidewall (West)
excavator bucket sample through liner
~ 4-5 feet to water
samples taken at ~ 3-4 feet bgs

13NCMOCSS	Ø07	greyish brown silt, frozen
" "	Ø08	brown frozen peat, fuel odor
	Ø09	greyish brown frozen silt with brown peat, odor
	Ø10	as above / Ø13 DUPLICATE
	Ø11	as above
	Ø12	grey silty clay with some gravel MS/MSD

Eric - Dig out spot @ 13, collected 1 bag and took 2 field screening samples
Removed PCB soil stockpile liner, sampled underneath

Johnny - Site 28 pump/sump/flocculant/dredge set up underway

Location SL1 Date 7/14/13

Project / Client Northeast Cape HTRW

13NCMOCSSØØ1	1300	E plume
" " ØØ2	1305	floor samples
ØØ3	1307	
ØØ4	1309	
ØØ5	1310	
ØØ6	1315	

samples taken from trenches dug in fill material down to native soil (grey silty clay)

E plume western sidewall confirmation samples ← see description

13NCMOCSSØØ7	1330	
" " ØØ8	1335	
ØØ9	1340	
Ø10	1345	(Ø13 DUPLICATE)
Ø11	1350	
Ø12 (MS/MSD)	1355	
Ø13 (DUPLICATE OF Ø10)	1400	

site walk with Jeremy Crane, Russel James to determine North extent of removing E plume dig out spots. Will be consistent with last year.
COCs started for site 10

End 1730

Location SL1 Date 7/15/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - chop saw + Rock truck operation
MOC excavation, slips/trips/falls
Environmental Meeting - field lab results:
FS10-09 dirty, dig-out; site 13 clean

Site 10 - dig one bag out of FS10-09
take screening sample FS10-10

13-10-01F Bag number
13NC10WS04 Bulk Waste Sample 0850

MOC230A - bag start name

E plume - dig out in 15' step-out from
Northern extent of excavation to 2012
Field screening location E-35
peat and gravel has strong fuel odor.
Material moved to Pad 98 for bulk bagging.

Site 10 excavation (upper), stockpile and bulk
waste samples shipped on bering air.
CoC # 007 MOC E
008 site 10 excavation
009 site 10 bulk waste

Cooler # 071513-04 contains all MeOH preserved
samples + trip blank

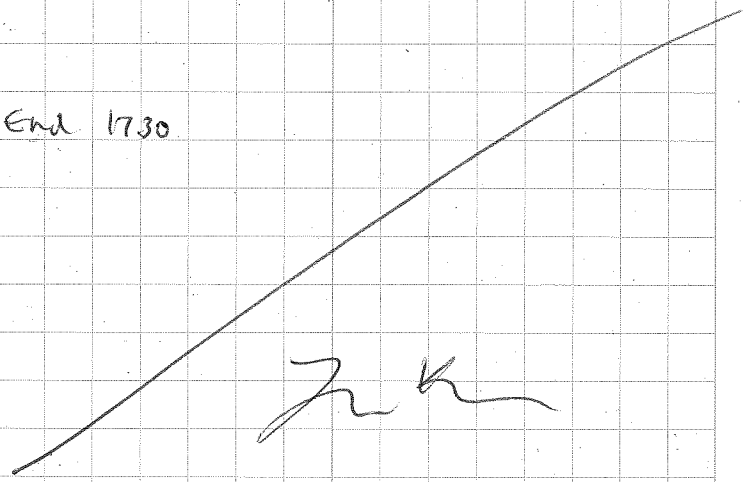
Location SL1 Date 7/15/13

Project / Client Northeast Cape HTRW

E plume - E4 area: surface to 15' bgs.
No overburden (5' in WP) was taken due to
presence of contiguous peat layer with strong fuel
odor, sheen observed in 2012.
E3 - surface to 8' bgs. Jack will remove
rest of "wall" working the water for bagging,
continue dig southward to 8' bgs.
Shallow seeps at 7' - water accumulating in excavation.

Bulk bagging at Pad 98 - silty peat with gravel,
strong fuel odor. Derived from NW corner of E plume.
MOC231E - MOC232C

End 1730



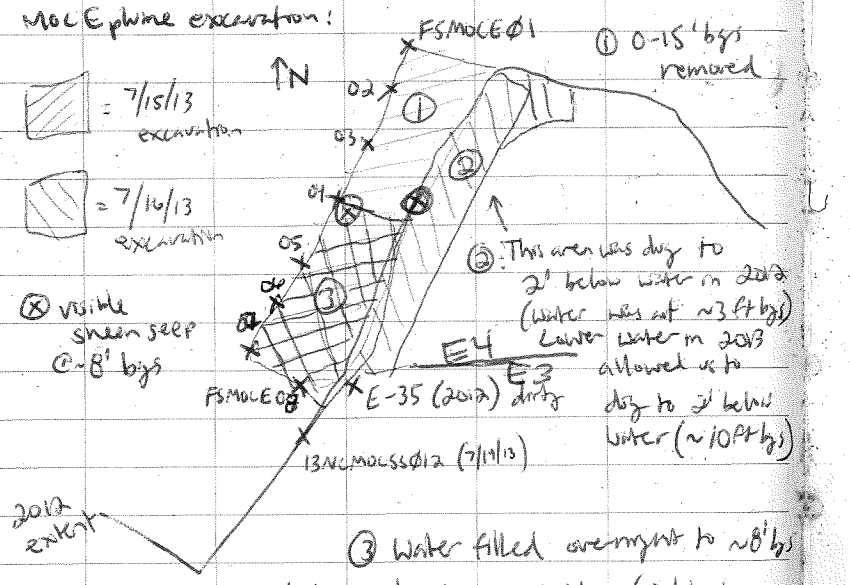
Location SC1 Date 7/16/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - swing radius on the excavator
Environmental Meeting - site 10 ready for confirmation sampling (FS10-10 clean)
E plume excavation, field screening

E plume, north, water up to ~8' bgs
continue E to capture material that was submerged last year. Dig to 2' below water (≈10 ft bgs) as far North as indicated by Jeremy Coner on 7/14/13

MOCE plume excavation:



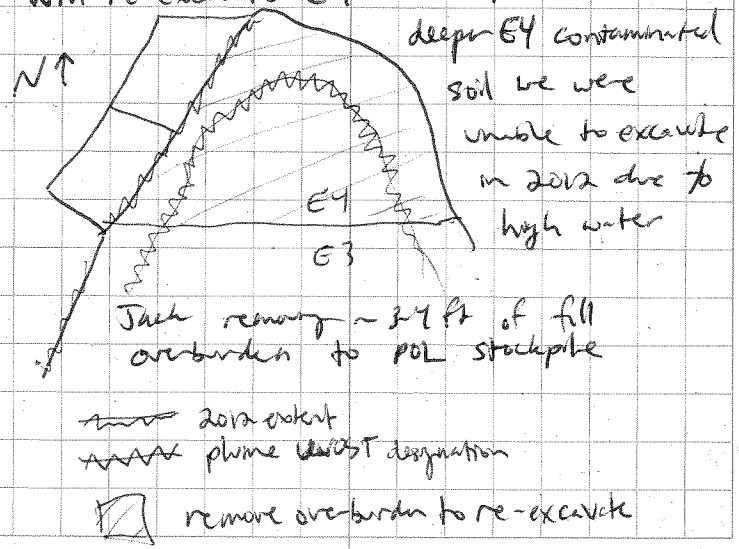
Location SC1 Date 7/16/13

Project / Client Northeast Cape HTRW

FSMOCE01	dry dark brown peat, strong odor
FSMOCE02	dry grey silt + brown peat, odor
FSMOCE03	peat, dry, brown above + some grey silt
FSMOCE04	dry brown peat, some grey silt
05	peat, strong odor (strata right above existing water table ~8' bgs
06	peat as above
07	peat, brown + dark brown (dark brown has strong fuel odor)
08	peat + grey silt, fuel odor

MOCE 23C

Will re-excavate E4 area to access deeper E4 contaminated soil we were unable to excavate in 2012 due to high water



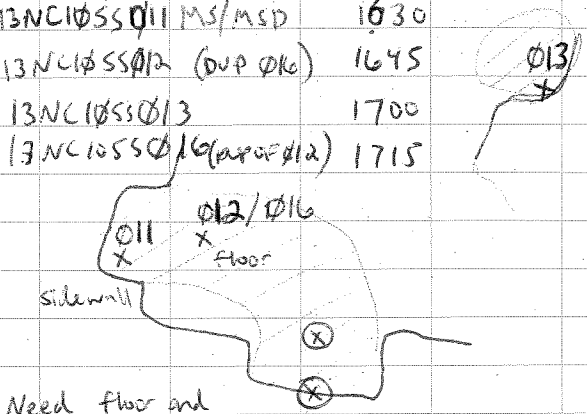
Location SLI Date 7/16/13

Project / Client Northeast Cape

increasing winds - 35 mph @ Pad 98

separate 402 jars for glycols per Molly email 7/16

13NC10SS011 MS/MSD	1630	
13NC10SS012 (DUP 010)	1645	
13NC10SS013	1700	
13NC10SS014 (DUP 012)	1715	



Need floor and sidewall at spots marked ⊗ taken with excavator tomorrow

End 1730

Location SLI Date 7/16/13

Project / Client Northeast Cape HTRW

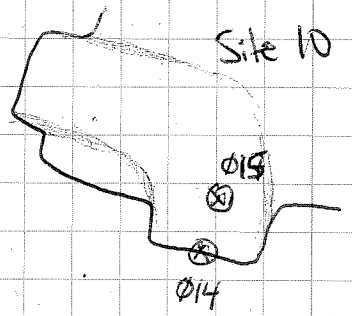
0700 Health and Safety Meeting - Awareness of green excavations / wind

Environmental Meeting - Site 10 confirmation, (need 2), Pad 98 bagging, E plume excavation

E plume - Tech has removed overburden from E4 area - water has risen slightly. (~6" overnight)

Site 10 excavator sampling - S sidewall, floor

13NC10SS014	0800	sidewall
13NC10SS015	0810	floor



1 cooler COC# 13NC0009

Review E plume - FSMOCE 1 and 8 dirty

Finish E4 to 15' depth* (2' below water)

~8ft to water, dry approx 6' bgs

2 dirty floor confirmation samples on E4 from 2012

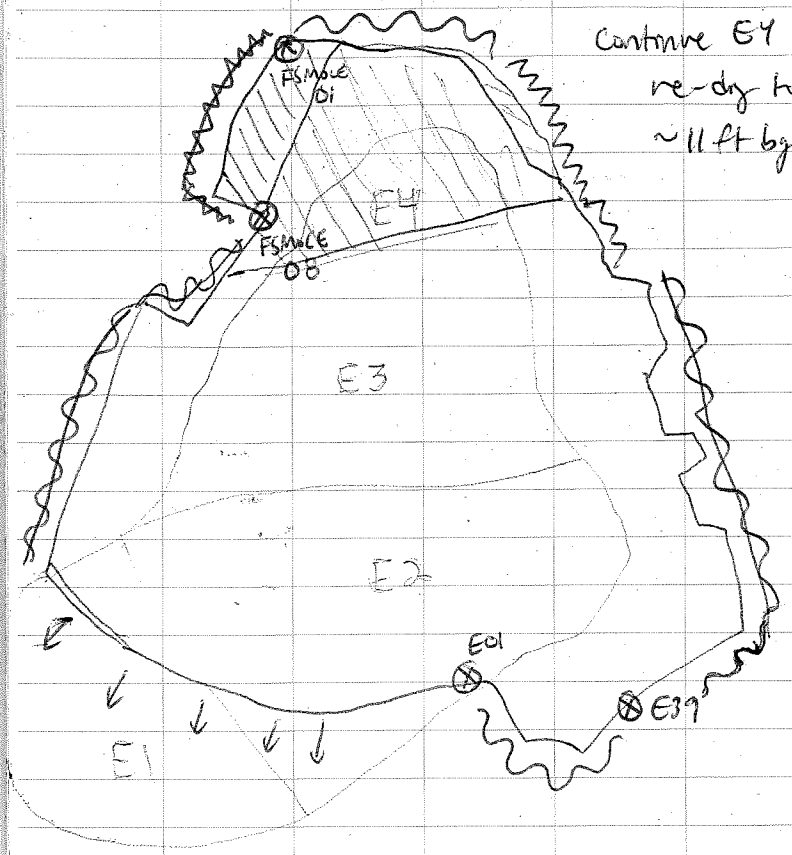
one clean - above target depth between UVOST peaks

D2 (on hill rock) 2'-7' / D3 5'-11'

Location SL1 Date 7/17/13

Project / Client Northeast Cape HTRW

Julie Clark arrives — shipment out (site ID confirmation)



Continue E4 re-dig to ~11 ft bgs

- dig at spot
- UVOST plume delineation
- 2012 extent
- 2013 excavation
- dig extension
- needs confirmation
- needs field screen
- confirmation complete
- field screen complete

Location SL1 Date 7/18/13

Project / Client Northeast Cape HTRW

Bagging operations @ MoC

TO DO:

- MI sampling near ISO tanks (Env)
- MoC GW sampling (Julie)
- Pad 9B POL bagging
- Backfill site 31
- Dig-at spots @ E plume.
- Determine 3 boring locations at site 21

17:30 End

Location SL1 Date 7/18/13

Project / Client Northeast Cape HTRW

0700 Health and safety - electricity + fire hazards
Environmental Meeting - Bagging @ 98, excavation @ E4, MI sampling @ ISO tanks
overcast, calm, intermittent fog, 50°

244G - BWMOC244 } E4 peat mixed with clayey grey gravel
BW MOC 245 }
BW MOC 246 }
BW MOC 247 }

E plume sidewall excavator sampling for data gaps. E4 dry to ~10-11' bgs (2 feet below calc.)

FSMOCE 09 brown clayey peat w/ grey clayey sand seq
FSMOCE 10 pale brown silty clay, strong fuel odor
FSMOCE 11 - SC grey clayey sand below peat layer
FSMOCE 12 - PT brown/light brown organic silt in peat band
FSMOCE 12 - PT brown dry peat
FSMOCE 12 - SC grey clayey sand beneath peat band
FSMOCE 13 - greyish olive brown clayey sand below peat

pink flags - field screening
yellow flags - confirmation

Jamie will survey confirmation and field screen points.

Location SL1 Date 7/18/13

Project / Client Northeast Cape HTRW

13NCMOCSS Ø18 DUP Ø19 Floor
grey clayey sand, wet, loose, strong fuel odor
(NE corner of E4) 30' out from FSMOCE 13

13NCMOCSS Ø14 1330
grey clayey sand and greyish brown clayey organic silt, soft, moist, strong fuel odor
13NCMOCSS Ø15 1335
grey silt and clayey brown organic silt (under peat band)
13NCMOCSS Ø16 1340
brown peat, dry, loose, with roots (dead)
13NCMOCSS Ø17 1345
black/dark brown peat, odor, moist
13NCMOC SS Ø18/Ø19 see above 1400/1405
13NCMOCSS Ø20 floor ~ 30' out from MW10
NW corner of E4 peaty clay
13NCMOCSS Ø21 floor ~30' out from 1420
former E 35 silty clay, grey, sheen, wet

Need MS/MSD - pull from heavy jar?
Sample location map →

Security Aviation - Jeremy Crane out, Ron Broyles in

Location SL1 Date 7/18/13

Project / Client Northeast Cape HTRW

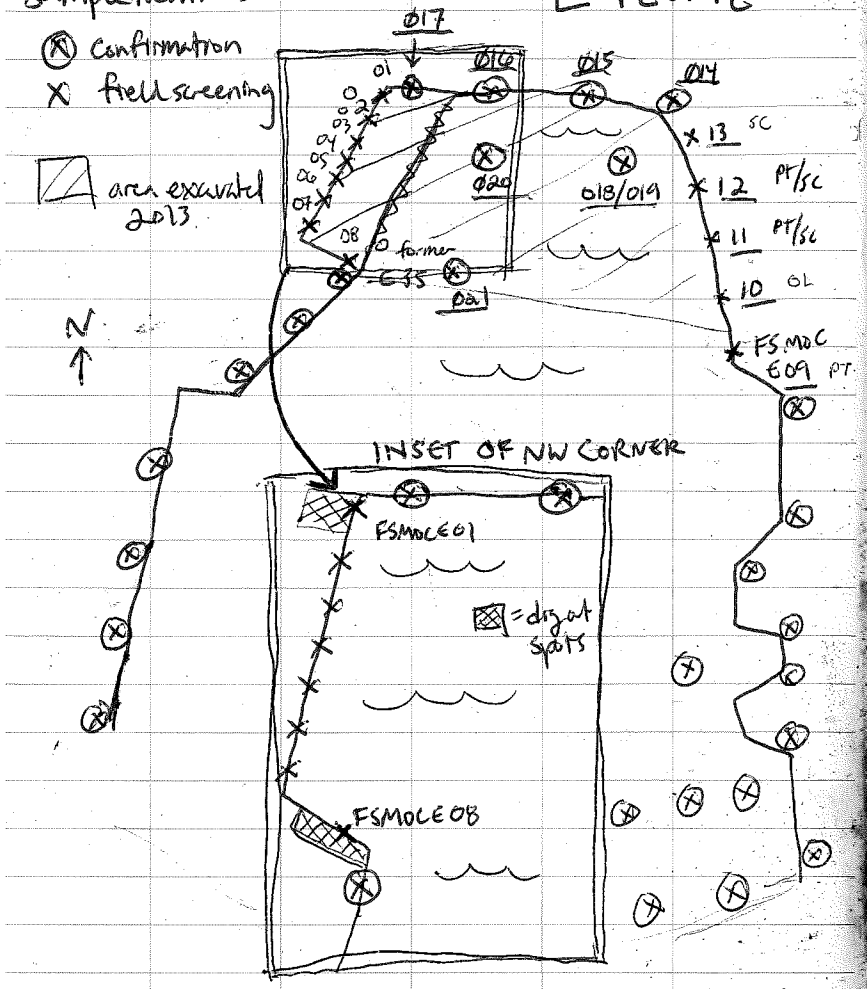
Sample locations

⊗ confirmation

X field screening

area excavated 2013

E PLUME



FSMOCE 13
13NCMOCEØ21 } latest sample names

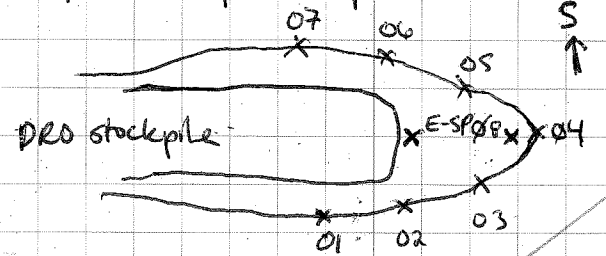
Location SL1 Date 7/18/13

Project / Client Northeast Cape HTRW

Eric - M1 sampling @ Iso tanks
13SP dirty spots to dig out (~12/120)
Julie - MOC GW sampling / Pad 98 bagging

Calculate new E4 area - need more floor samples? 1x 1600 sq ft

E plume stockpile samples: E-SPØ1 to Ø8



End 1730

Location SLI. Date 7/19/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - barge operations 800 boat
Environmental - E plume results, water sampling

Dig-out spots : 13NMACSS008/11 (see page 18)
FSMOCE 1, 8, 9, 10, 11 PT, 12 SC

Barging @ Pad 98, boat operations, monitoring well sampling. Measure water levels in MW with J. Clark.
FSMOCE 14 - Dig out spot @ FSMOCE01
FSMOCE 15 - Dig out spot @ ~~FSMOCE08~~ 13NCMACSS011
16
17
18

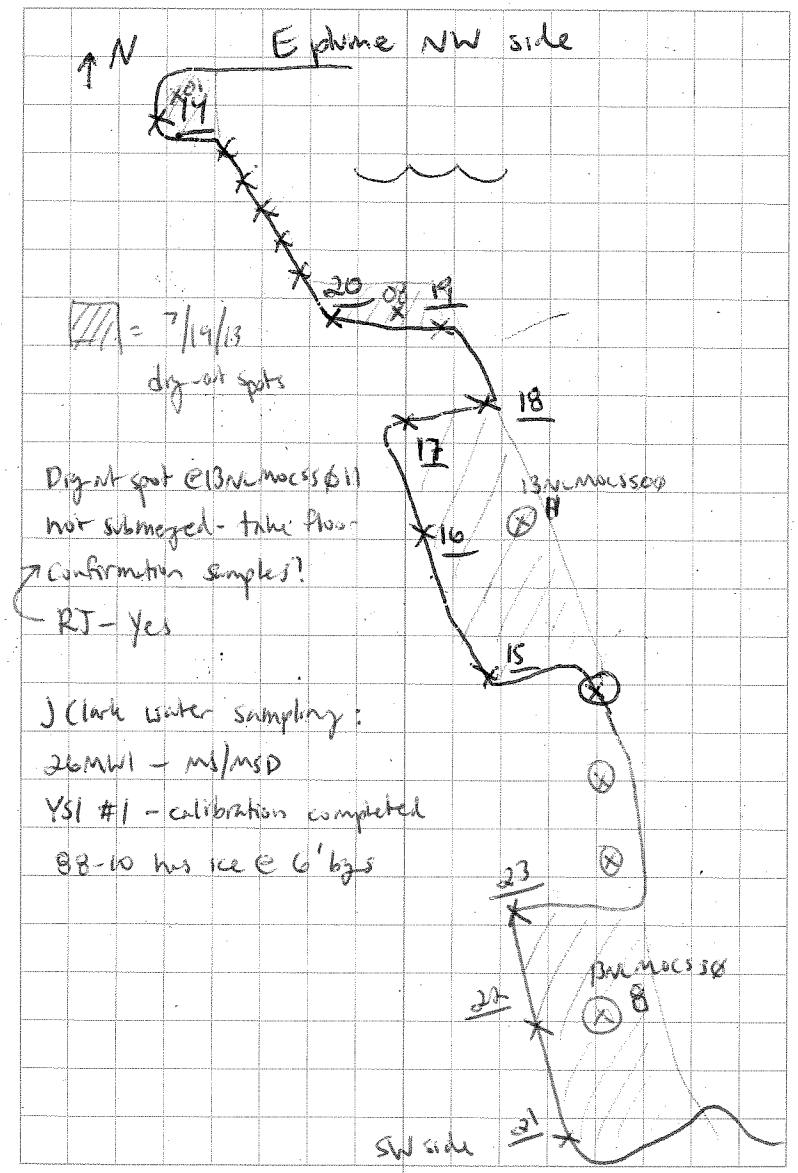
FSMOCE 14 - brown to light brown peaty silt, loose, moist, strong fuel odor

FSMOCE 18 peat, strong odor, brown, moist
17 as above, no fuel odor
16 peat no fuel odor, moist, loose
15 peat " "

FOSMOCE 19 peat - no fuel odor
20 peat - no fuel odor
21 - peat, strong fuel odor, grassy
22 - " "
23 - " "

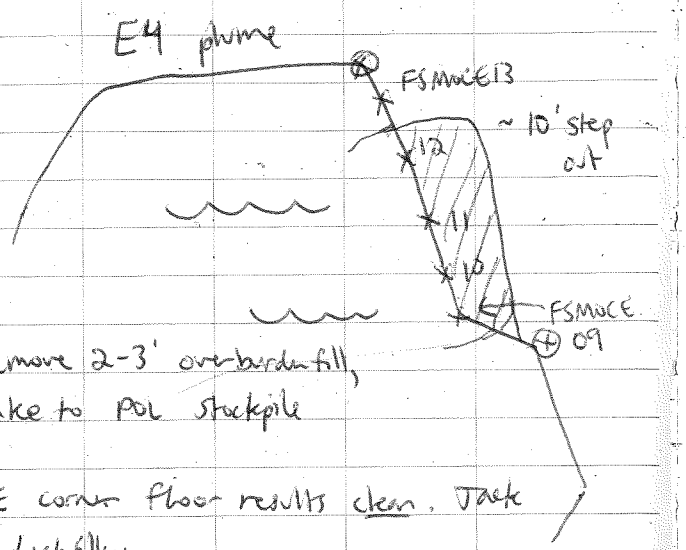
Location SLI Date 7/19/13

Project / Client Northeast Cape HTRW



Location SL1 Date 7/19/13

Project / Client Northeast Cape HTRW



Remove 2-3' overburden fill, take to POL stockpile

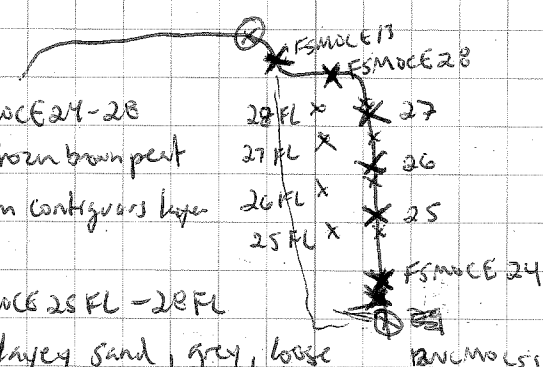
SE corner floor results clean. Jack is backfilling.

Jamie - excavation footprint ≈ 5,000 sq ft @ 1600 sq ft/floor sample = 4 samples - have 3

Location SL1 Date 7/20/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Meeting - PADS sheets, heat stress, camp speed limit
Environmental Meeting - E plume, move to site 10 while Jamie surveys depth @ E4, Pad 98 bagging, MOC GW sampling
Continue peat excavation @ FSMOCE09-12 - excavated to 1' below peat - not submerged. Will sample the floor of this shelf.
Not excavated to 15' bgs due to data from samples FSMOCE 11 and 12 SC - clayey sand clean below contaminated peat.



FSMOCE24-28
frozen brown peat from contiguous layer

FSMOCE25FL-28FL
clayey sand, grey, loose moist, fuel odor

Site 10 - use 370 w/teeth to investigate metal detector hits

Location SL1 Date 7/20/13

Project / Client Northeast Cape HTRW

Site 10 debris - bed frames, cable, car frame, bumper, crushed oil cans

Some stained soil on bottom on tundra mat active layer immediately above debris

MW 88-10 - ice @ 6' BTOC

use decontaminated pipe/blowtorch to thaw

Jack - removing liner from E side of E plume

Site 10 - removed crushed, empty oil cans, 2 beds, car parts, assorted metal debris.

No liquids were encountered. Probed to ~3' bgs with excavator bucket NE of lower dry area.

13NC10WS05 MS/MSD	1010	bulk waste sample
13NC10SS017 MS/MSD	1630	floor sample

End 1730

Location SL1 Date 7/21/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Meeting - high winds

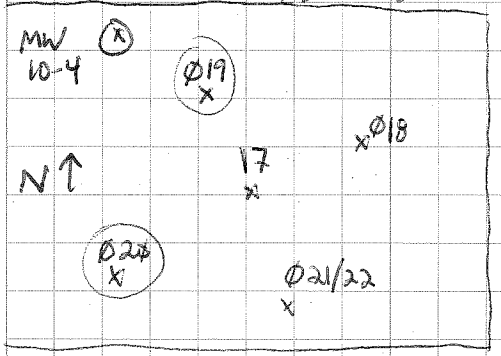
Environmental Meeting

Site 10 - bagging visibly stained soil

13-10-1G bag number

13NC10WS05 (7/20)

13NC10SS017	floor sample	7/20	1630
018	NE perimeter corner		1030
019	NW		1035
020	SW		1040
021	SE		1050
022	DUP of 21		1100



017 - 022 → gravelly sand with silt

discard 019 and 020

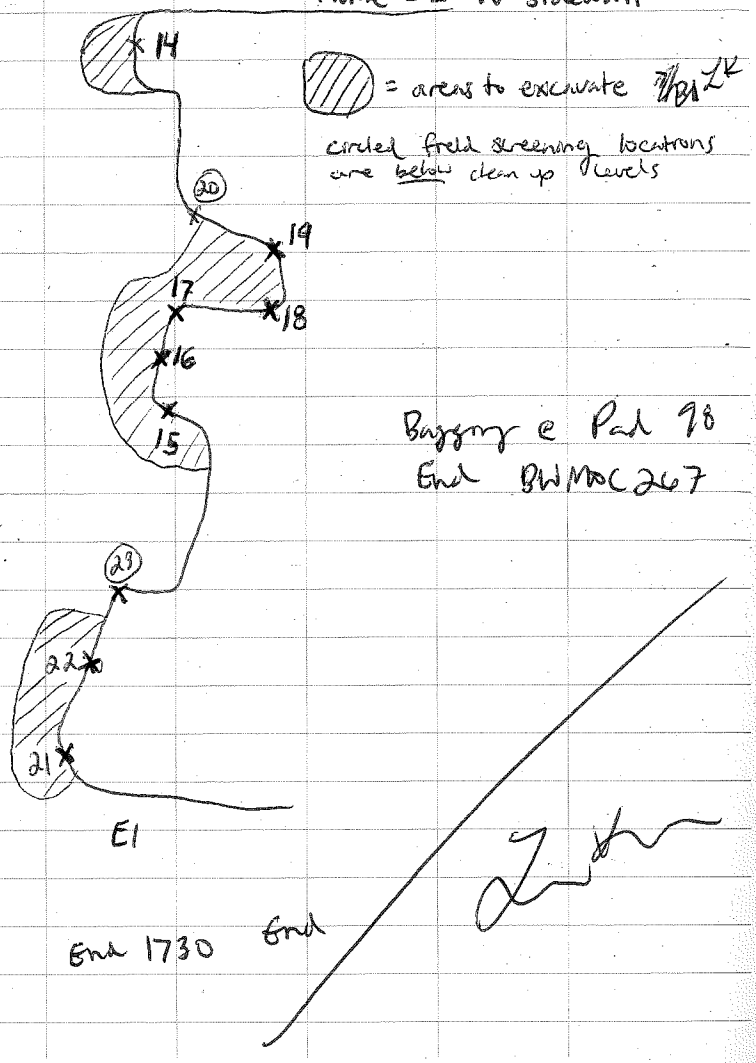
Walk around site 10 with Jamie to delineate survey boundary of excavation

Location SLI Date 7/21/13

Project / Client Northeast Cape HTRW

POL Field Lab Results FSMOCE14-26 m

Plume E1 W sidewall



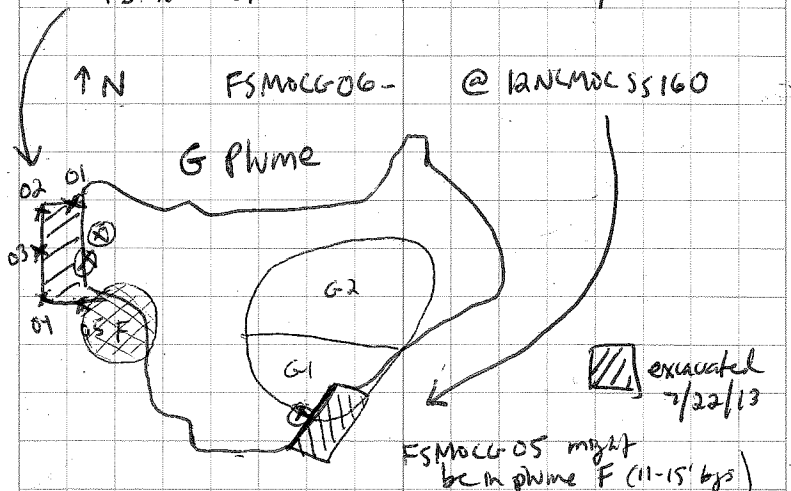
Bagging @ Pad 98
End BWMOC267

End 1730 End

Location SLI Date 7/22/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Meeting - high winds
Environmental Meeting - Julie
Remove 6' overburden, dig out to 15' - water show to infiltrate
FSMOCG01-05 @ 12NCMOCSS066/070



Need bentonite for MW 15-1
Remove MW15-1 in 10ft sections - interval
& filled with bentonite - unable to tremie down
hydrated

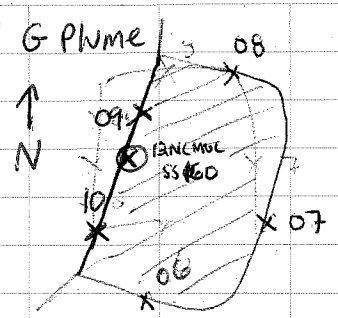
Sample shipment COC# 13NC010-014
MOC GW / MOC G plume soil / site 10
site 10 glycol / site 10 bulk waste

9 coolers - 1 excepted quantity

Location SL1 Date 7/22/13

Project / Client Northeast Cape HTRW

SW G Plume



FSMOCG-06

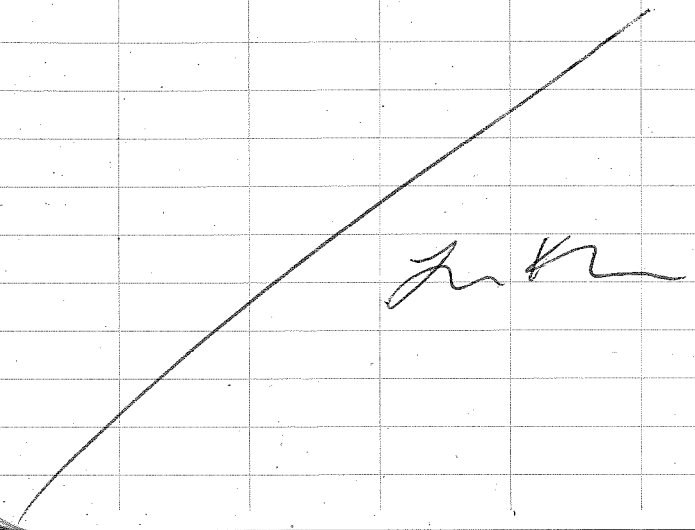
FSMOCG-06-10

N

Dig at spots at 12NCMOCSS016

Remove overburden (11 bgs) @ F plume (11-15' bgs)

sandy beach fill



Location SL1 Date 7/23/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - continued high winds

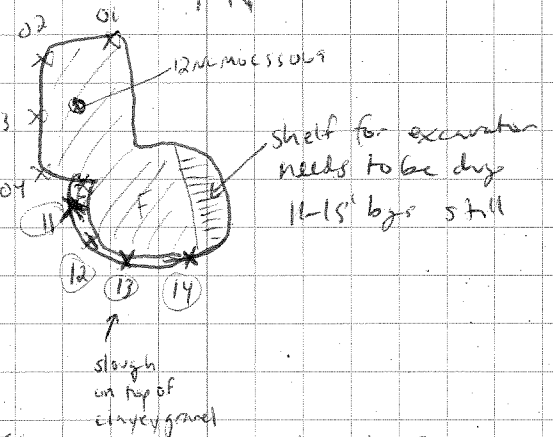
Environmental Meeting - MOC surface water FSMOCG-04 and 05 dirty - dig out

Calibrate turbidimeter, YSI for MOC surface water "during" excavation sampling.

Continue excavation at F plume footprint, dig out spots @ FSMOCG-04/05

Mark SW G plume field screening locations for Jamie

↑ N



FSMOCG-011 - grey clayey gravel, wet, fuel odor

FSMOCG-012 - greyish brown gravelly sand

FSMOCG-13 - greyish brown clayey sand, moist

FSMOCG-14 SP - brown sand, moist

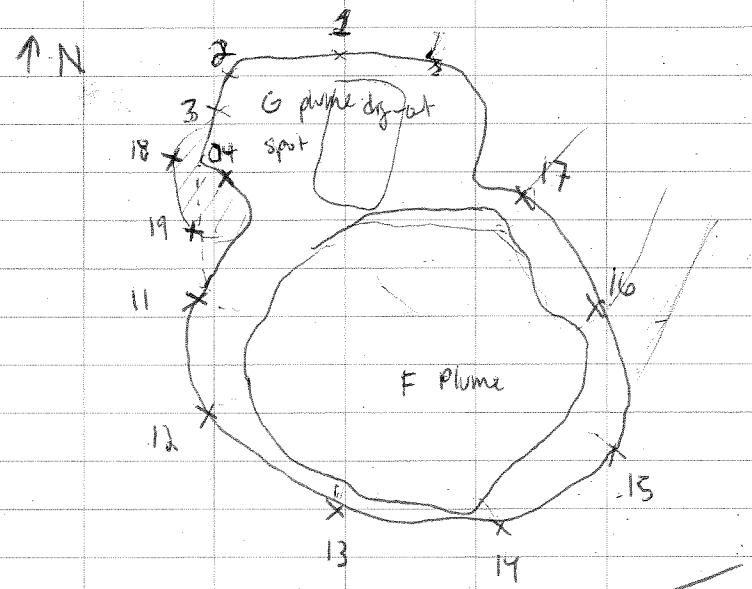
FSMOCG-14 CL - grey clay with sand, wet

Location SL1 Date 7/23/13

Project / Client Northeast Cape HTRW

F plume excavation

FSMOC G 015	greyish brown silty sand; ~~wet~~ moist
016	grey silty sand, wet
017	grey clayey ~~sand~~ silt with sand



End 1730

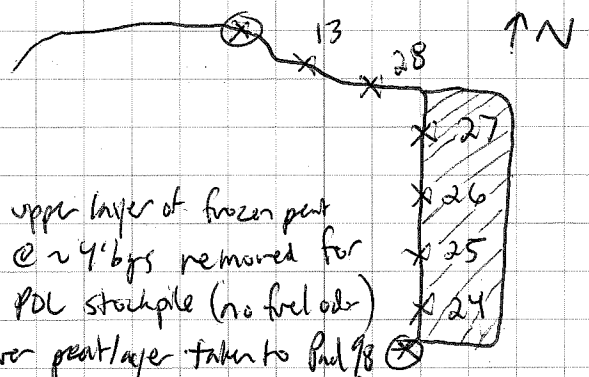
Location SL1 Date 7/24/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Meeting - Communication Environmental Meeting - Tube to ship site 28 water samples, MOC "during" surface water samples. Eric to complete CECRL report, continued excavation @ E plume

Moved from G/F plume to E dry-out spots (map on page 38) and NE sidewall

MOC E plume NE sidewall



upper layer of frozen peat @ ~4' bgs removed for PDL stockpile (no fuel odor)

lower peat layer taken to Pad 98 for bagging (strong fuel odor) dry, loose, brown

FSMOC E 33 - bottom of contiguous peat band (1' above water) and some clayey brown gravel w/ strong fuel odor

Location SL1 Date 7/24/13

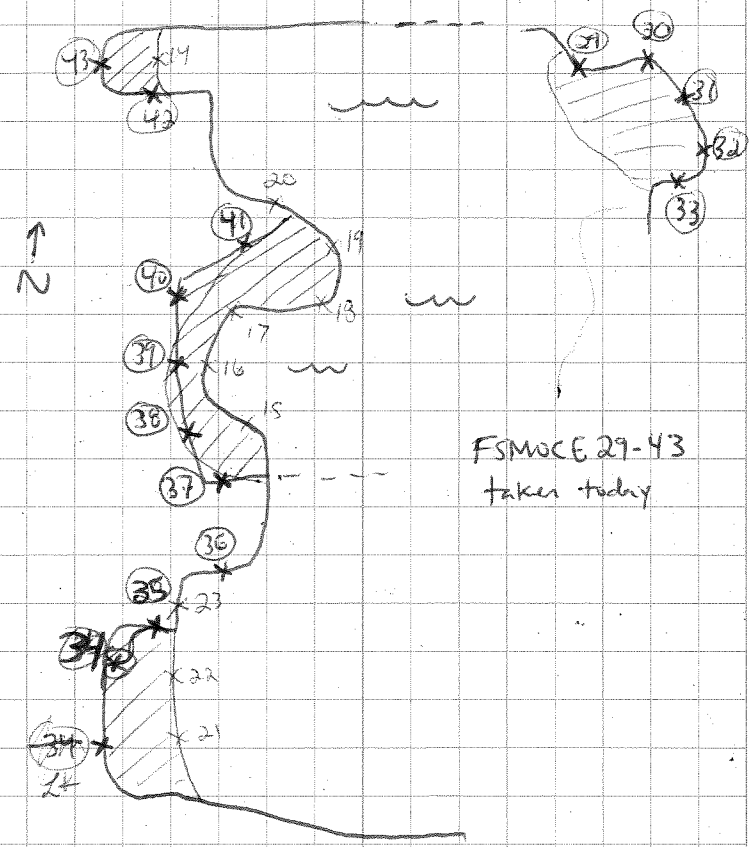
Project / Client Northeast Cape HTRW

FSMOCE	32	CL	brownish grey silty clay below peat
		PT	contiguous peat band
FSMOCE	31		brown dry peat
FSMOCE	30	PT	contiguous dry peat
	30	CL	brownish grey clayey sand, wet
FSMOCE	29		brownish grey clayey sand, moist, below contiguous peat band (peat above had no fuel odor)
FSMOCE	34		grey silt underneath culvert, moist, dense
	35		grey silt with sand very dark brown frozen PT
	36		greyish brown silt, moist, dense immediately under peat band
	37		PT, loose, moist, discontinuous leaves below contiguous peat layer, above grey silt (~1' above water)
	38		PT, loose, brown, moist
	39		PT, loose, brown, discontiguous peat layers below contiguous layer, above grey silt.
	40		PT, contiguous layer, loose, moist
	41		PT, brown, rooty, no fuel odor, dense

Location SL1 Date 7/24/13

Project / Client Northeast Cape HTRW

E Plume Field Screening Dig-out spots



FSMOCE 29-43 taken today

x (#) Field screening location 7/24

x # Previous 2013 field screening location

1730

Location SLI Date 7/25/13

Project / Client Northeast Cape

0700 Health and Safety - AHA's
Environmental Meeting - Erin - PCB confirmation sampling / Tukee Pad 90 / Site 21 Borings
Site 21 Arsenic Additional 3 Borings

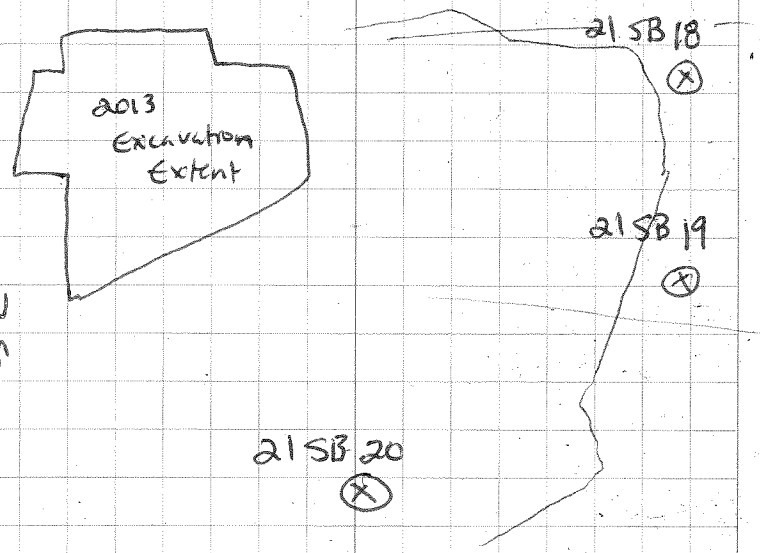
21SB18 730	13NC21SS18-0.5		reddish brown silt and brown gravelly peat
735	13NC21SS18-2		dark brown peat
740	13NC21SS18-3	MS/MSD	greyish brown silt, moist
	Boring filled with water to 8" bgs		
21SB19 745	13NC21SS19-0.5		reddish brown/brown organic silt
750	13NC21SS19-2		brown peat, rooty, moist
755	13NC21SS19-3		greyish brown silt with gravel
800	Boring is from a mixed-reworked area (upper 1')		
21SB20	13NC21SS20-0.5		silty dark brown peat, rooty DUP
810	13NC21SS20-2		greyish brown silt, moist w/gravel
815	13NC21SS20-3		greyish brown silt, moist w/gravel
805	13NC21SS20-1	DUP of	13NC21SS20-0.5

Taken with excavator bucket - 0.5 sample taken with trowel. Boring notes:
SB18 - some woody debris (lumber)
SB19 - upper 1' disturbed by excavator activity in 2012
SB20 - Intact native stratigraphy
Large cobbles and small boulders on road bed.
Move to site 10

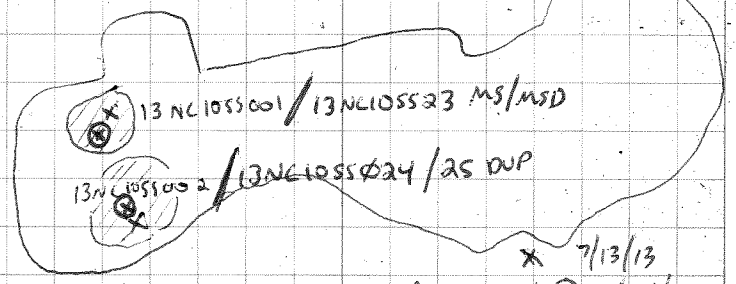
Location SLI Date 7/25/13

Project / Client Northeast Cape HTRW

Site 21 Arsenic Dig



Site 10 Glycol Dig - at Spot



Removed 1 bulk bag of material 7/25/13
13-10-2A (Bag number)
1130 13NC10WS06 (waste characterization - glycol)

Location SLI Date 7/25/13

Project / Client Northeast Cape HTRW

13NC10SS023 (west) MS/MSD 1140
13NC10SS024 (south) 1145
025 DUP of 024 1150

Mobile lab - field screens for G011 - G19 are clean
Need 2 floor samples @ F, ~~2~~ 1
floor sample @ Eastern G dry-out spot
(both excavations are inundated w/ water)
Confirmation Sampling @ G dry-out spots + F Plume:

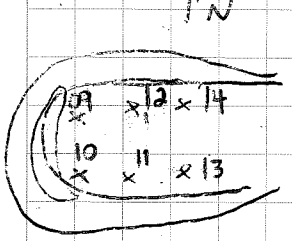
13NCMOCSS030		grey silt and brown gravelly sand, moist
1340	31	grey silt, moist MS/MSD
1345	32	grey silt, moist, slight fuel odor
~~1350~~		
1355	24	orangish brown gravelly sand, moist
1400	23	dark brown sandy silt with gravel, moist
1405	22	dark grey silt, moist DUP 33
1410	29	dark brown + grey silt with fuel odor
1415	28	greyish brown gravelly silt, ~~brown~~ odor
1420	27	sand, brown, strong fuel odor DUP 34
1425	26	sand, brown, clean, strong fuel odor
1430	25	sand and dark grey silt, moist to wet, fuel odor
1435	33	DUP of 22
1440	34	DUP of 27

Remove overburden from B1/B2 - / Tuck
End 1730

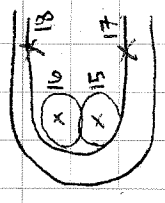
Location SLI Date 7/26/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - communication
Environmental Meeting - hold on bagging operations
sample shipments / stockpile samples
COC # 13N17~~18~~20 Site 10 cooler 072613-04
~~18~~21 MOC Soil
19 Site 21 Soil cooler 072613-03
Jake + Eric collect waste characterization samples for Tyler NALEMP
B1/B2 Plume - overburden removal
overburden @ B1 has strong fuel odor - stockpiled @ Pad 98 and sampled (MOCSP19-21)
Large and small POL stockpiles sampled for field screening

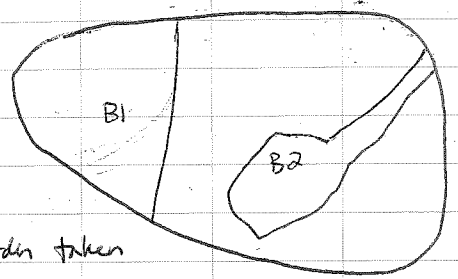


POL Stockpile
Field Screen
MOCSP09-18



Location SL1 Date 7/26/13

Project / Client Northeast Cape HTRW



0-7' overburden taken to POL Stockpile

@ B1 7-11' overburden taken to Pad 98 for field screening; 11-15' @ B1 and 7-15' @ B2 taken to Pad 98 for bagging

Material is silty, dry, with cobbles and boulders - @ ~ 10' bgs transitions to grey cohesive dry clay unsuitable for screening.

1730

Location SL1 Date 7/27/13

Project / Client Northeast Cape HTRW

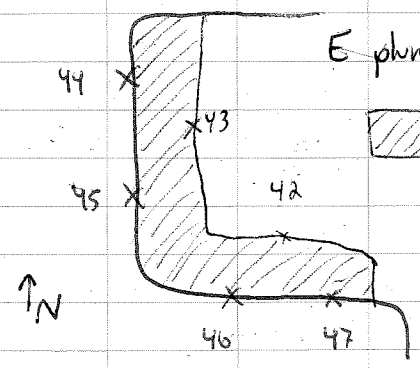
0700 Health and Safety - fatigue
Environmental Meeting - resume bagging
sunny, 60°F, slight breeze (really nice out)
Field Screening samples MOCSP89-21
results in - all clean. Stockpile @ 98 (SP19-21) moved to POL stockpile on liner.
- Resume excavation at B1/B2, 7-15' bgs Pad 98 full. Bagging resumed.
- Jamie staked at I1, A2 and C plumes.
- Jack moved to I1 to begin hauling 10' overburden. Excavating only to 8' to prevent ponding prior to excavation of 10-15' bgs interval.
- Ron Broyles (QAR) asks about Northern extent of excavation - I1 excavation approved by Jeremy Craner. Broyles advises no further Northern excavation in pursuit of contamination on field screening samples.

End 1730

Location SL1 Date 7/28/13

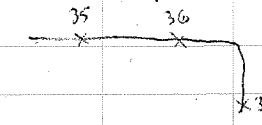
Project / Client Northeast Cape HTRW

0700 Health and Safety - changing excavation location
Environmental Meeting - excavate E plume, buggy
Haul overburden from I, dig at spots @ E
(FSMOCE 42/43, 30/31/32)
Dig at spots @ E to Pad 98 (2' below water



FSMOCE	44	peat, brown, dry	SFO
	45	peat, brown to very dark brown	SFO
NW	46	peat, brown, dry, loose	
	47	peat, brown to very dark brown, rooty, dry, loose	
NE	48	peat, brown, dry, loose	

13NCMOCSS035	NE	1630	dry peat, brown
13NCMOCSS036	NE	1635	" "
13NCMOCSS037	NE	1637	" "



Location SL1 Date 7/28/13

Project / Client Northeast Cape

MOC POL excavation status

I1: some overburden removed. Not to target depth.
No field screening or confirmation sampling.

E4: FSMOCE 42/43 dug at, field screened.
FSMOCE 30,31,32 dug at, field screened
North sidewall confirmation sampled
→ Need to dig at FSMOCE 37/38
Need 3 more floor samples

E1: Survey stakes in place, no excavation

F/G: Confirmation sampled, need floor samples (2 at F, 1 at G)

B1/B2: Partially ~~active~~ excavated, no field or confirmation sampling or field screen.

A2: Survey stakes in place, no excavation

C: Survey stakes in place, no excavation

1730 End

Location SL1 Date 7/29/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - health and sickness Environmental Meeting -

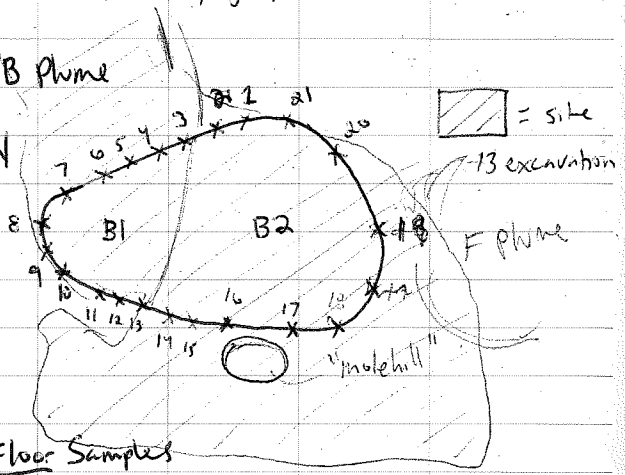
-Jamie survey FSMOCE44-48 this morning

FSMOCB01-21 taken @ B1/B2

~1-2' above floor (standing water, ~15' bgs)

gravel, silty-sand, grey to brown, moist, SFO

MOC B Plume



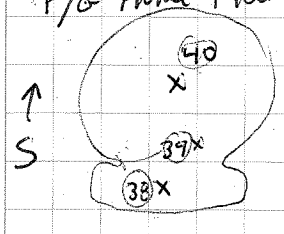
MOC Floor Samples

13NCMOCSS0038	1030	F	
13NCMOCSS0039	1035	F	
40	1040	F	DUP 44 1100
41	1045	G	
42	1050	E	MS/MSD
43	1055	E	

Location SL1 Date 7/29/13

Project / Client Northeast Cape HTRW

F/G Plume Floor Confirmation Samples



Taken @ ~15' bgs, below water

brownish grey fine sandy silt, wet, sheen

Other G dry ar spot (east) cave-in material → wet grey silt (13NCMOCSS0041) floor sample

E Plume floor samples 13NCMOCSS0042, 0043

Begin backfill of E plume - walk excavation with Ron Broyles

End 1730

Location SLI Date 7/30/13

Project / Client Northeast Cape

0700 Health and Safety - weather impacts
Environmental Meeting - no buggy today
POL results back from Lab
FSMOCB10 and FSMOCB16 dirty
- will confirmation sample B floor and North sidewall
- continue backfill at E plume
- monitor water level @ E - berm as necessary

MOC B Plume confirmation samples
Sidewall:

13NCMOCSS Ø45	grayish brown silty gravel, moist, dense	1600	
13NCMOCSS Ø46	grey silty gravel with sand, moist, dense	1605	
13NCMOCØ47 (DUPLICATE Ø59)	SFO	1610/	1638
	sandy gravel, olive brown, loose, moist, well graded sand ~~tools~~		
13NCMOCSS Ø48	sandy gravel, olive brown, moist, loose	1615	
13NCMOCSS Ø49	sandy gravel with silt, dark olive grey, loose, moist	1620	
13NCMOCSS Ø50	silty gravel with sand, "	1625	
~~13NCMOCSSØ52~~ Ø51		1630	

Floor samples, B Plume

13NCMOCSSØ52	1635	1655 Ø56	
Ø53	1640	1700 Ø57	
Ø54	1645	1705 Ø58	
Ø55	1650	1710 ~~Ø54~~	

End 1730

Location SLI Date 7/31/13

Project / Client Northeast Cape

0700 Health and Safety - AHAs
Environmental Meeting - no buggy today
Site 28 set-up

Provide MOC POL dig overview via email, site walk with Eric and Julie.

Cooler # 073113-01, COC # 13NC022
MOC POL confirmation samples

Sample location summary for 7/31 shipment:

		Plume	SW/FL			SW/FL	Plume	
13NCMOCSSO	35	E	SW		49	SW	B	
	36	E	SW		50	SW	B	
	37	E	SW		51	SW	B	
	38	F	FL		52	FL	B	
	39	F	FL		53	FL	B	
	40	F	FL		54	FL	B	
	41	G	FL		55	FL	B	
	42	E	FL	MS/MSD	56	FL	B	MS/MSD
	43	E	FL		57	FL	B	
	44	DUP of 40			58	FL	B	
	45	B	SW		59	DUP of 47		
	46	B	SW					
	47	B	SW					
	48	B	SW					

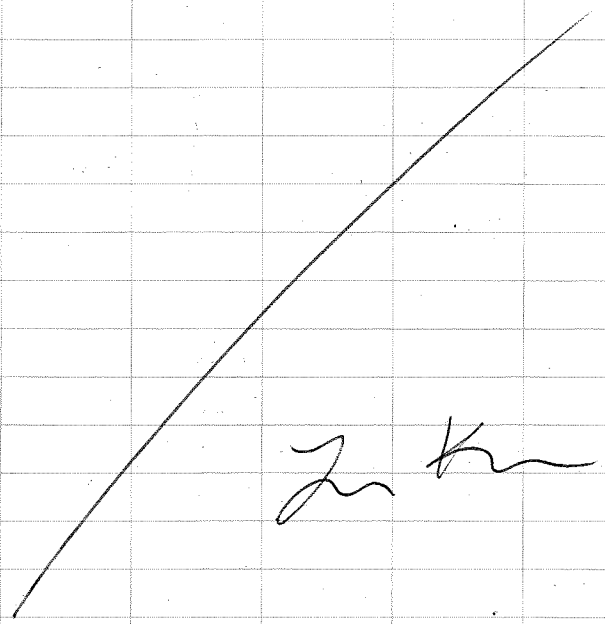
Location SL1 Date 7/31/13

Project / Client Northeast Cape

— leave for Bethel

Bering Air Flight @ 1400

NOM → ANC → 1030pm.



Location SL1 Date 8/07/13

Project / Client Northeast Cape HTRW

0900 Check in AKAir ANC → NOM

1040 ANC → NOM

go to Bering Air - depart @ 1400

1500 Arrive Northeast Cape

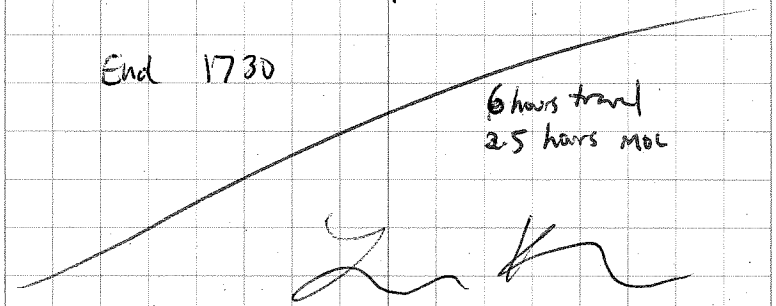
MOC POL - review field lab results, new survey data from Jamie walk site 28, view water treatment/ flocculant injection set up

MOC POL - field screening @ I, B, E, F, A2. Still need to excavate C, to full N extent of A2.

Glycol disposal spot @ site 10

DRO/RRO disposal spot @ site 10

End 1730



Location SLI Date 8/08/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Meeting
Environmental Meeting

Excavation at A2 - bottom to 18' bgs
sloped down to North to follow
topography (surface)

Bagging at Rd 98.

End 1730

Location SLI Date 8/09/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Meeting - safety awards

Site 10 drums - catalog contents/weights
ongoing bagging operations

01 yellow overpack drum "site 10 9/8/12 dirt waste"
brown and black moist soil

02 black drum "boot wash water" 50 gal
empty - some dirty sorbent on bottom

03 yellow overpack drum "site 10 9/8/12 dirt waste"
brown moist soil, 3/4 full

04 yellow overpack drum "site 10 9/8/12 liner waste"
black and clear liner waste

05 " " as above
black liner waste

06 black overpack "site 10 8/10/12" drum debris
drum debris

07 yellow overpack "site 10 8/10/12 drum debris"
metal drum debris

08 black overpack "site 10"
drum debris

09 black overpack "site 10 8/10/12"
drum debris - metal

10 yellow overpack "site 10 drum debris"
drum debris

Location SL1 Date 8/9/13

Project / Client Northeast Cape HTRW

11	yellow overpack "site 10 drum debris"
~~12~~	drum debris (metal)
12	black overpack "site 10 8/10/12 drum debris" and small amounts of liquid metal drum debris
13	black overpack "site 10 8/10/12 metal drum debris" metal drum debris
14	black overpack "site 10 drum debris" metal drum debris
15	yellow overpack "site 10 drum debris" metal drum debris
16	yellow overpack "site 10 drum debris" metal drum debris
17	black overpack "site 10 drum debris" metal drum debris - 55 gal

- 2 drums of soil
- 2 drums of liner waste
- 1 empty drum
- 12 drums of metal drum debris

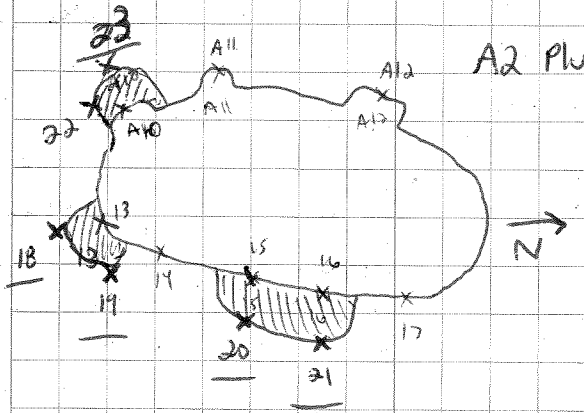
Dig out spot @ B plume B
B28/B29

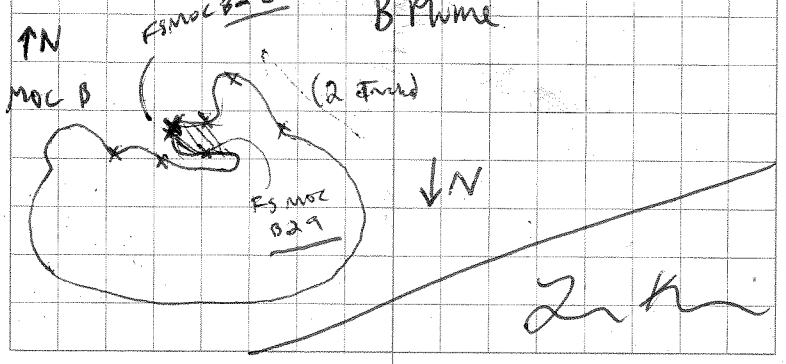
Location SL1 Date 8/9/13

Project / Client Northeast Cape HTRW

Dig-out spot @ A2

Jamie - floor of A2 is from 12'-15' bgs. will excavate more before confirmation floor samples are taken

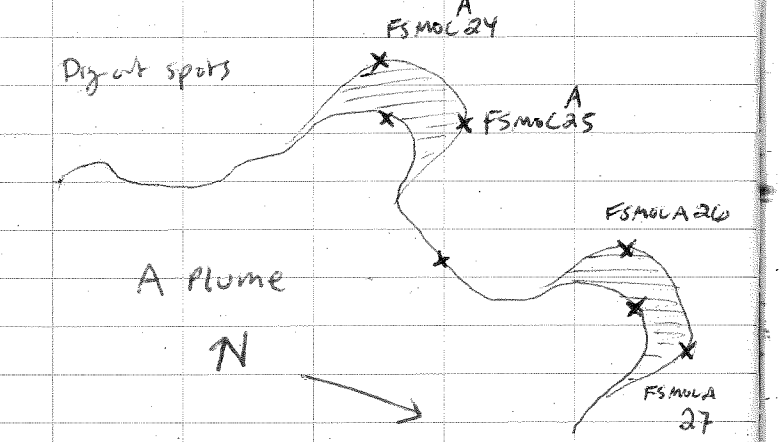


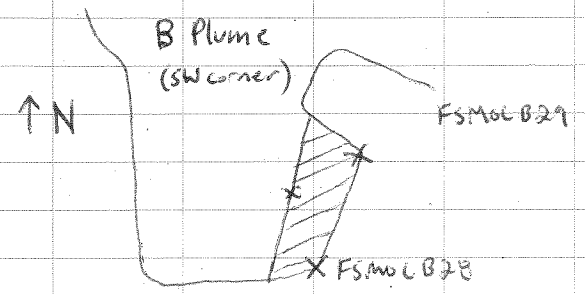


Location SL1 Date 8/10/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Meeting
Environmental Meeting





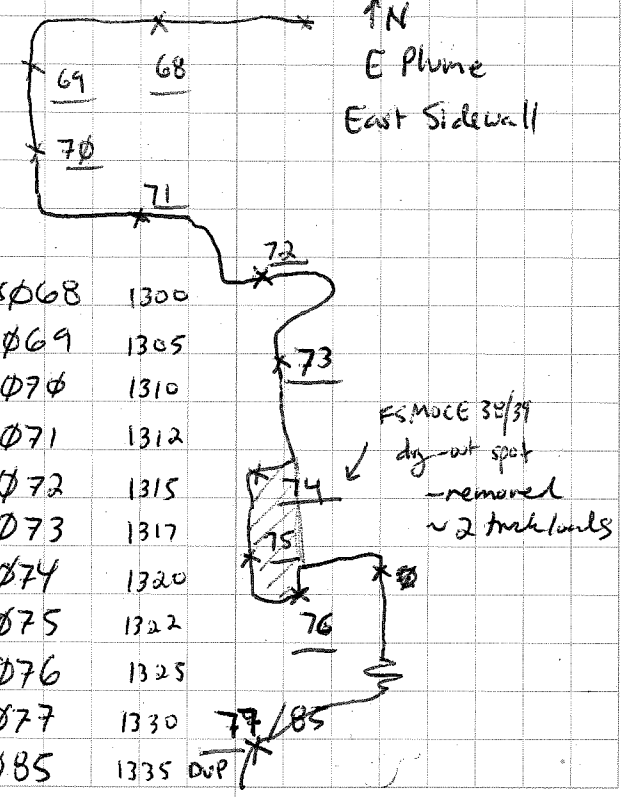
Bagging at Pad 98

End 1730

Location SL1 Date 8/11/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - barge today
Environmental Meeting
MoC POL confirmation sample QC check
- results for 13NLMoCSS006 (floor of E)
missing from Marty's tables.
- correct missing field screen locations for Jaime
- Generator stage

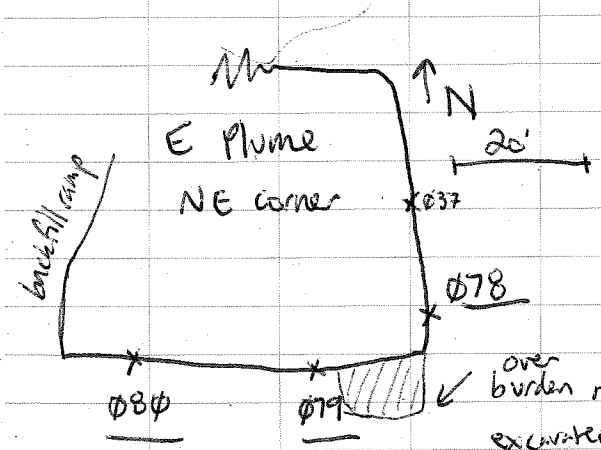


13NLMoCSSØ68	1300	
ØG9	1305	
Ø7Ø	1310	
Ø71	1312	
Ø72	1315	
Ø73	1317	
Ø74	1320	
Ø75	1322	
Ø76	1325	
Ø77	1330	77/85
DUP Ø85	1335	DUP

Location SLI Date 8/11/13

Project / Client Northeast Cape HTRW

FSMoCE48 dig at spot – water too high to reach target depth (>2 ft below water)
Dig in peat 2' below water – no fuel odor

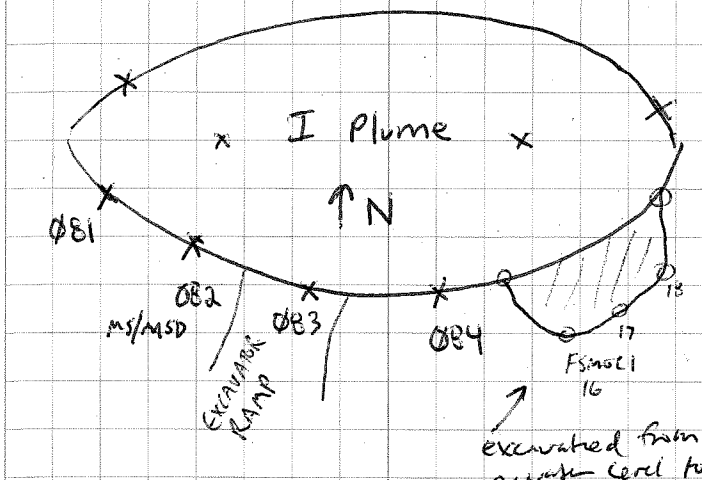


brown peat with grey/tan brown silty gravel moist, no fuel odor

13NCMoCSSØ78	1340
13NCMoCSSØ79	1342
13NCMoCSSØ8Ø	1345

Location SLI Date 8/11/13

Project / Client Northeast Cape HTRW



13NCMoCSSØ81	1350	approx. ½ truck load
13NCMoCSSØ82	1355	→ MS/MSD
13NCMoCSSØ83	1357	
13NCMoCSSØ84	1400	
Ø85	1335	→ DUP of Ø77 @ E Plume

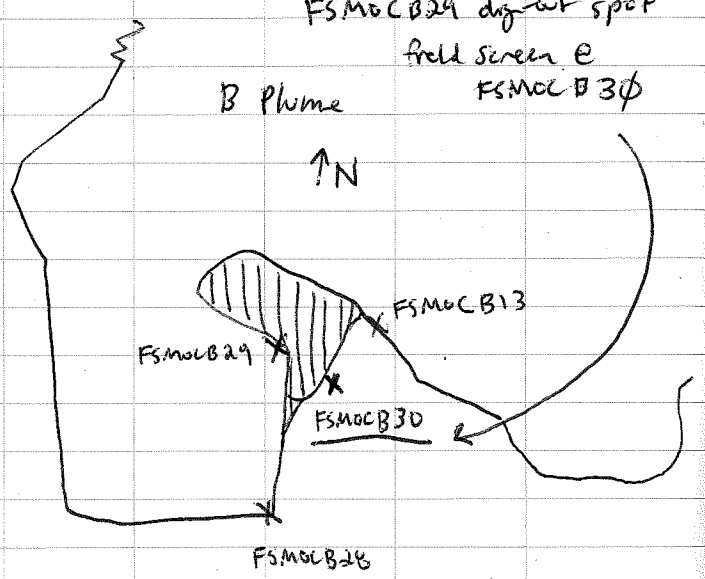
End 1730

Location SL1 Date 8/12/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Meeting
- site visitors today - new traffic pattern

Environmental Meeting
- bagging @ Pad 98
- dig-out spots @ B/A
- confirmation sampling @ B/I

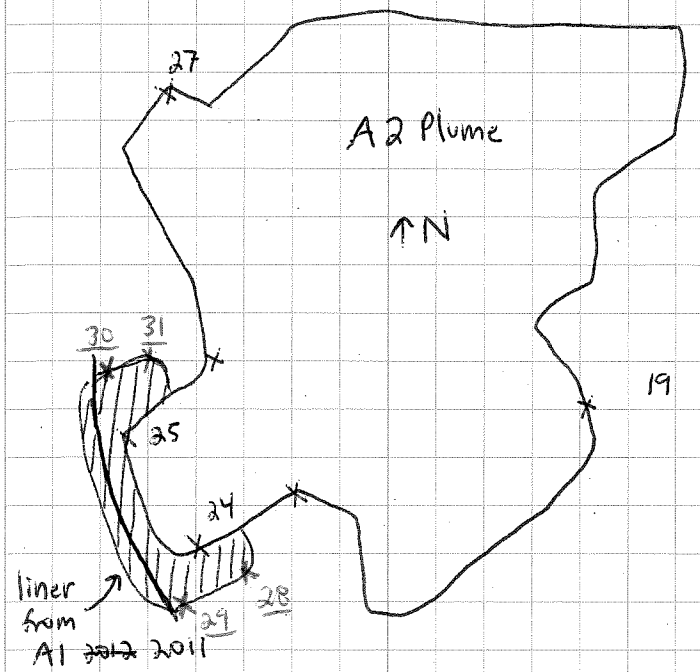


Approaching 2013 tonnage

Location SL1 Date 8/12/13

Project / Client Northeast Cape HTRW

Eric Barnhill / Julie Clark / State Ulys / John O
out — John Powers



FSMOCA	28	grey clayey sand	SM
FSMOCA	29	brownish grey clayey sand	SM immediately adjacent to liner
FSMOCA	30	grey clayey sand	SM
FSMOCA	31	brown and grey sandy clay	CL

Location SL1 Date 8/12/13

Project / Client Northeast Cape HTRW

4 coolers sent to Test America

COC#s 13NC028, 29 (Julie soil samples)

13NC030 ↓

13NCMOCSS061 - 13NCMOCSS085

Locate floor sample locations for Jamie @ E, I Plumes

Barge arrive @ 7pm

End 2000

11.5 hours

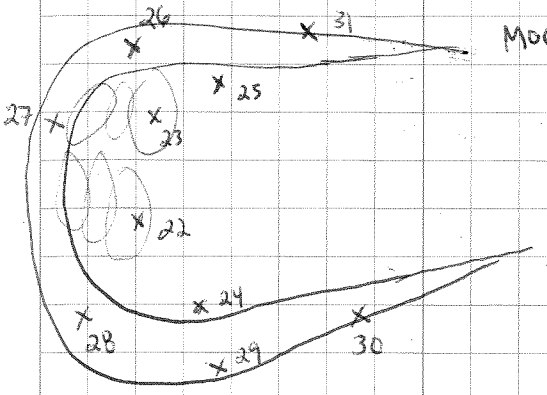
Location SL1 Date 8/13/13

Project / Client Northeast Cape HTRW

0700 Health and Safety

Minor/neglected injuries

Environmental Meeting - bagging/stockpile sampling

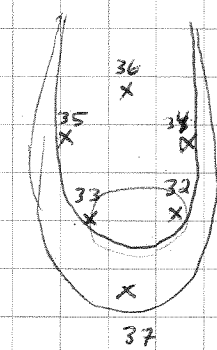


MOC SP22 - 37

↑N

← bagging area

↓ hill



MOC POL stockpiles

I Confirmation Sidewall Sampling

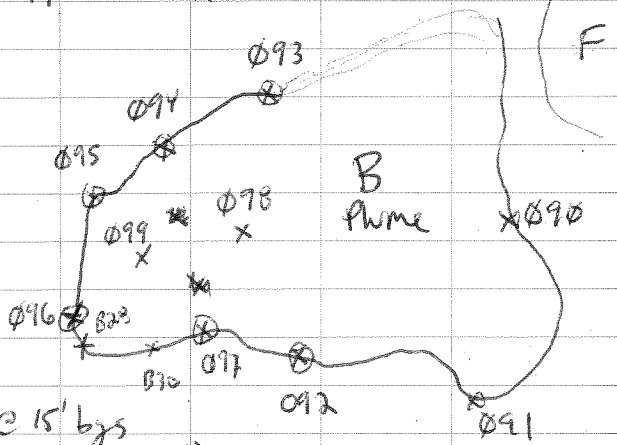
13NCMOCSS 86	1100	
87	1105	
88	1110	DUP silty gravel, moist, loose
89	1115	sand, strong fuel odor, loose, moist
101	1120	DUP of 088

Location SL1 Date 8/13/13

Project / Client Northeast Cape HTRW

B Plume sidewall confirmation sampling

90	1130 DUP	brown silty sand with gravel, strong fuel odor
91	1135	brown ~~clayey~~ sandy gravel, w/clay, moist, slight odor + grey
92	1200	grey clayey gravel w/fuel odor, moist
93	1300	silty sand, moist, brown, strong fuel odor
94	1305	brownish grey sandy gravel with silt, moist, strong odor
95	1310	" "
96	1312	" "
97	1315	" "
98	1320	Floor brownish grey wet silty sand, SFO
99	1325	Floor



B Floor: @ 15' bgs
Some water (up to 8") present as puddles in excavation

Location Date 8/13/13

Project / Client Northeast Cape HTRW

13NCMOCSS160 1335 E Plume Floor East
MS/MSD – wet silty sandy gravel with sheen, fuel odor

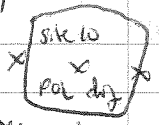
101 (DUP of Ø88) 1120

102 (DUP of Ø90) 1132

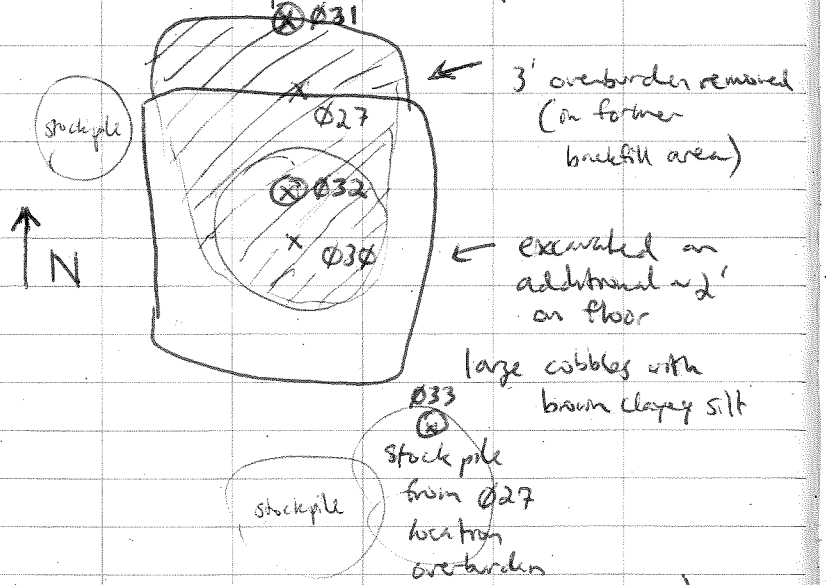
Location SL1 Date 8/14/13

Project / Client Northeast Cape HTRW

Ø700 Health and Safety – accident causes; Arsenic



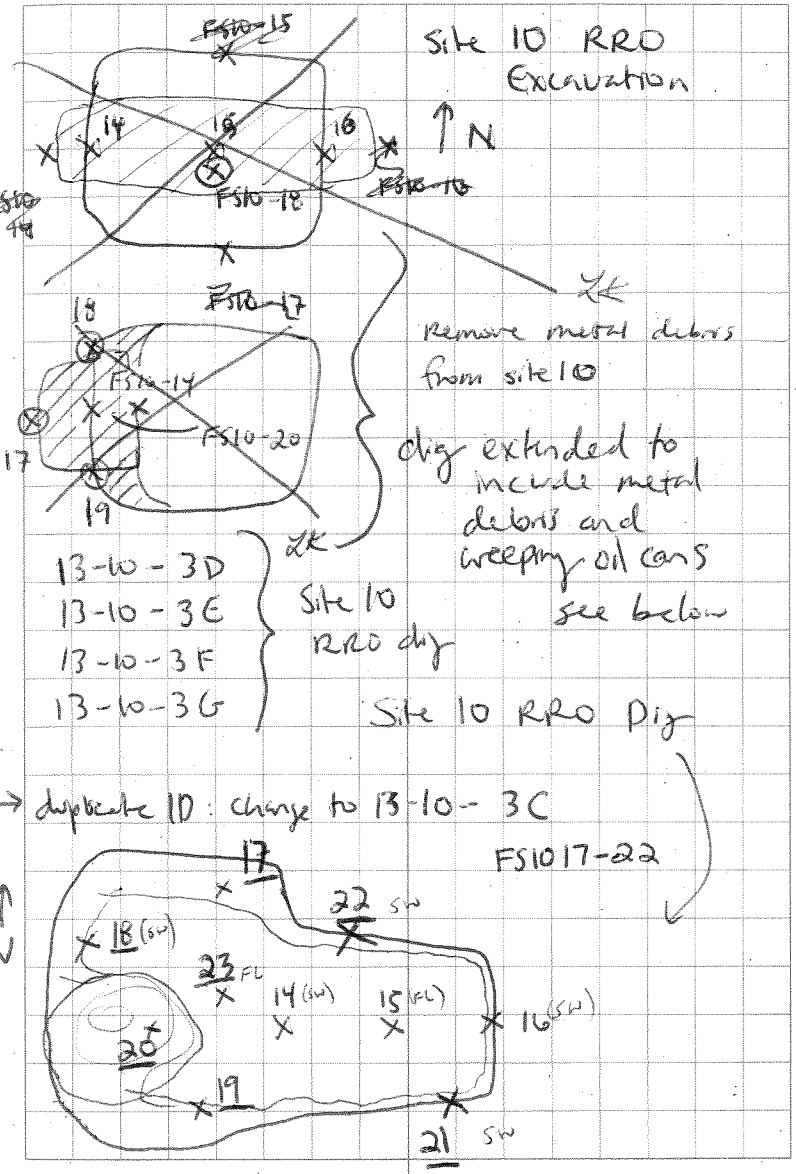
Site 10 Glycol Excavation



13-10-2G	(floor @ 13NC10SS Ø30)	
13-10-3A	(sidewall @ 13NC10SS Ø27)	
13-10-3B	(floor/sidewall Ø27/Ø30)	
13NC10SS Ø31	0850	ms/msp sidewall
13NC10SS Ø32	0855	floor
13NC10SS Ø33	0900	stockpile
13NC10SS Ø34	0905	DUP of Ø32

Location SL1 Date 8/14/13

Project / Client Northeast Cape



Location SL1 Date 8/14/13

Project / Client Northeast Cape HTRW

3,500 additional tons awarded

out - Lisa Geist, QAR

in - Aaron Shewman, QAR

Chuck Coley

Micheal Tookie

COC # 13NCØ31 MOC soil to Test America SEA

13NCØ32 Site 10 Glycol to Test America DEN

2 coolers shipped via Goldstreak Plume I + B

soil conformation, site 10 Glycol dig

A2 Plume excavation - remove 8' overburden, dig floor and out to Northern extent.

End 1730

Location SL1 Date 8/15/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Meeting - routine, repetitive

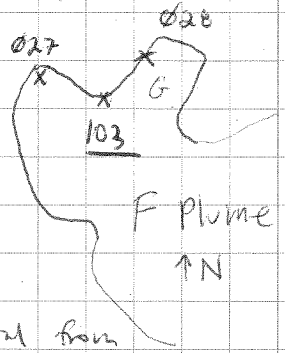
Environmental Meeting -

G/H backfill? - check with Jamie

Telehandler for Jamie for floor survey of C

one sample taken between 13NCMOCSS027 and 028 at West G Plume dig-out spot:

13NCMOCSS103 1000 sandy gravel, stony, frozen



Adjust G/F map to reflect extents of removed material

13NCMOCSS103 1000

Tour group from Svoboda/Gemmell

Material from A Plume segregated into dry and wet material and taken to Pad 9B for screening (dry) and bagging (wet)

Excavate remainder of A2 8' bgs - 6' bgs grey silty gravel with clay, large boulders

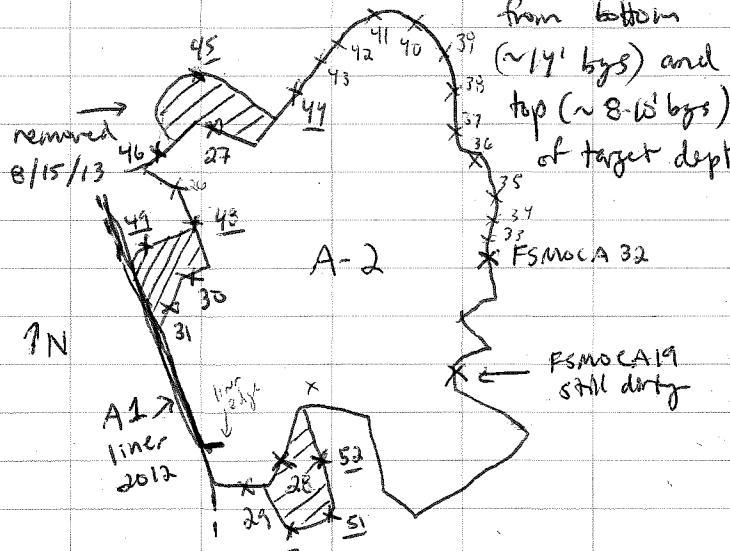
End 1730

Location SL1 Date 8/16/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - Top Workplace Fatality Causes - Falls
Environmental Meeting - screening, digging @ A1

A2 dry cut spots FSMOCA 30/31/28
8ft overburden removed
6'-15' of target soil - dry silty material taken for screening plant @ Rd 98 s
Aaron Shewman/Russell James request more vertical sampling - field screening taken from bottom (~14' bgs) and top (~8-10' bgs) of target depth



FSMOCA32 - A42 taken with Lindsay C

Location Date 8/16/13

Project / Client Northeast Cape

samples FSMOCA32 TOP - A52 TOP taken from brown-to-grey gravel interface within grey silty gravel
exception:
FSMOCA52 TOP - brown dry silt, strong fuel odor directly below beach fill layer @ ~8' bgs
All TOP samples @ approx 8' bgs
other taken from ~14' bgs
FSMOCA48-52 taken from dry cut spots FSMOCA30, 31, 28
No samples taken from A1 liner

Confirmation samples through 13NEMOCSSBS in dry cut spots at 77/85, 74 along west side of E plume

End 1730

Location SL1 Date 8/17/13

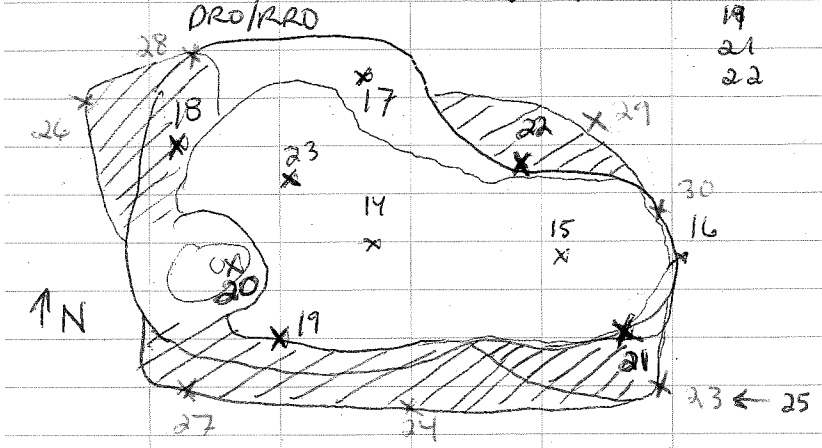
Project / Client Northeast Cape

0700 Heath and Safety - Humidity
Environmental Meeting

Site 10 Excavation dig at spots FS10-19

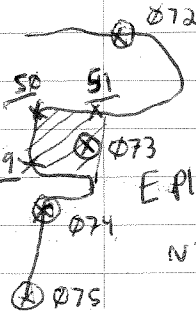
DRO/RRO

19
21
22



Start bag no. 13-10-4A 13-10-4E
13-10-4B 13-10-4F
13-10-4C brown organic silt except
13-10-4D FS10-24 yellowish brown silty clay, firm, moist

Dig at spot @ E Plume 13NCMOCSS0073



FSMOCE49-51
excavated to 2' below water (water @ ~1.5' bgs) brown loose dry organic silt/peat no fuel odor

Location SL Date 8/17/13

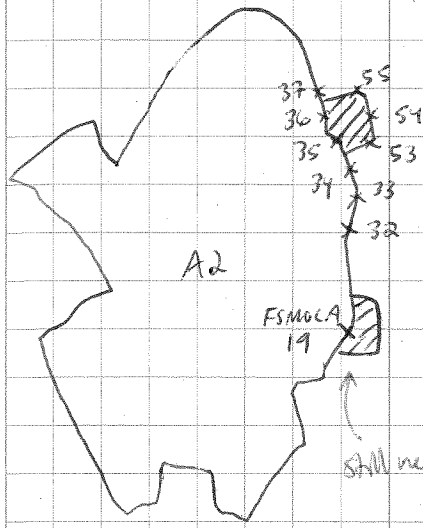
Project / Client Northeast Cape

Dig at spot at FSMOCA-19 8'-15' bgs excavated

Dig at spot at FSMOCA-34, 35, 36, 35 TOP @ 14' bgs, excavated 8' bgs - 15' bgs

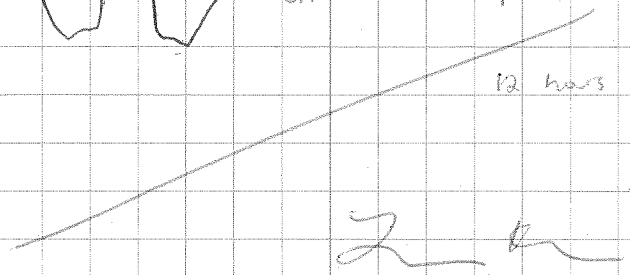
FSMOCA-53 to 55

FSMOCA-53 to 55 TOP



End 1730

Boat 10 pm
End 12 midnight
still need to sample



Location SL1 Date 8/18/13

Project / Client Northeast Cape HTRW

0700 Health and Safety – change in hours

Environmental Meeting –

Excavation @ A2 Pigeat spots FSMOCA 37/38

FSMOCA 41/42

FSMOCA 45/46/47

Upper material taken to screen plant

13NCM0SS035 – latest site ID

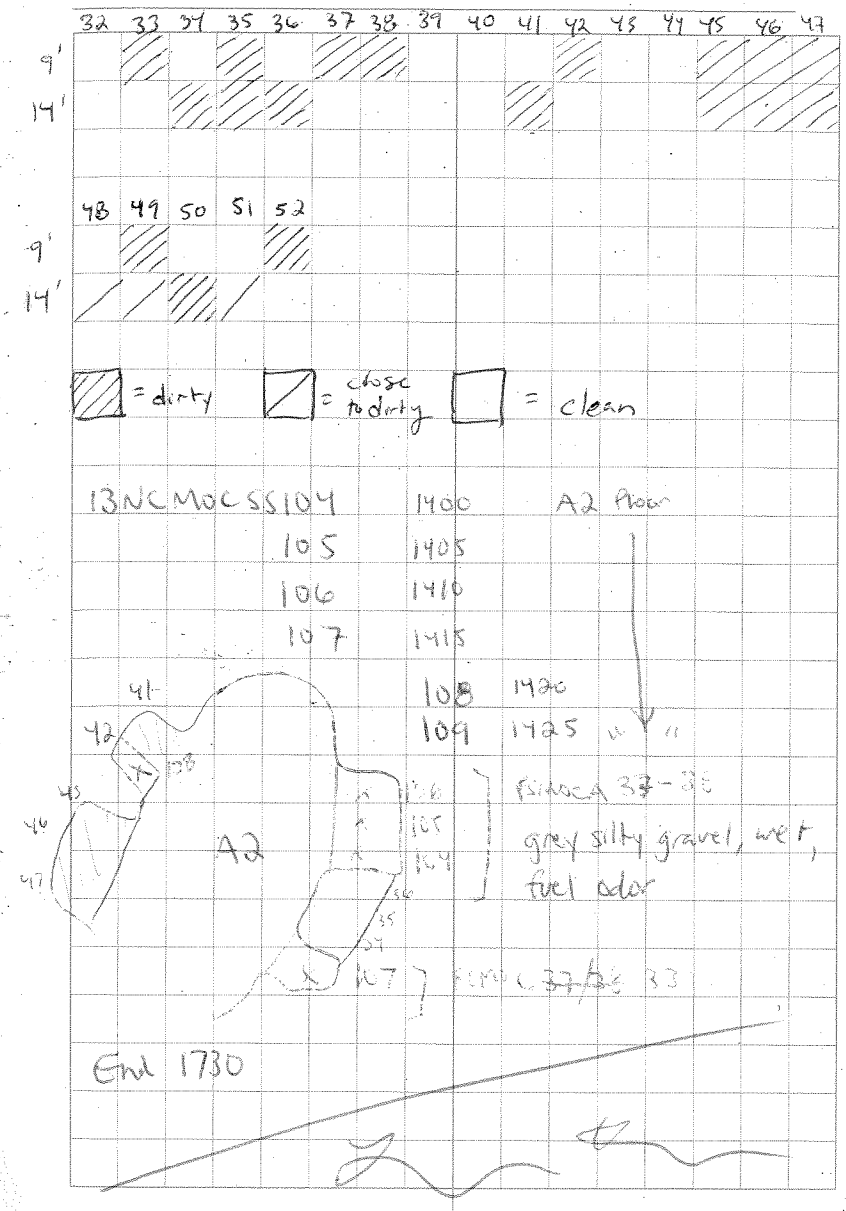
Increasing winds, rain

13NCM0SS035		1530	~~MS/MSD~~
	36	1535	MS/MSD
	37	1540	
	38	1545	DUP → 44
	39	1550	
	40	1555	
	41	1600	
	42	1605	
	43	1610	
	44	1615	DUP of 038

↑ taken near FS10-29

Location SL1 Date 8/18/13

Project / Client Northeast Cape HTRW



Location SL1 Date 8/19/13

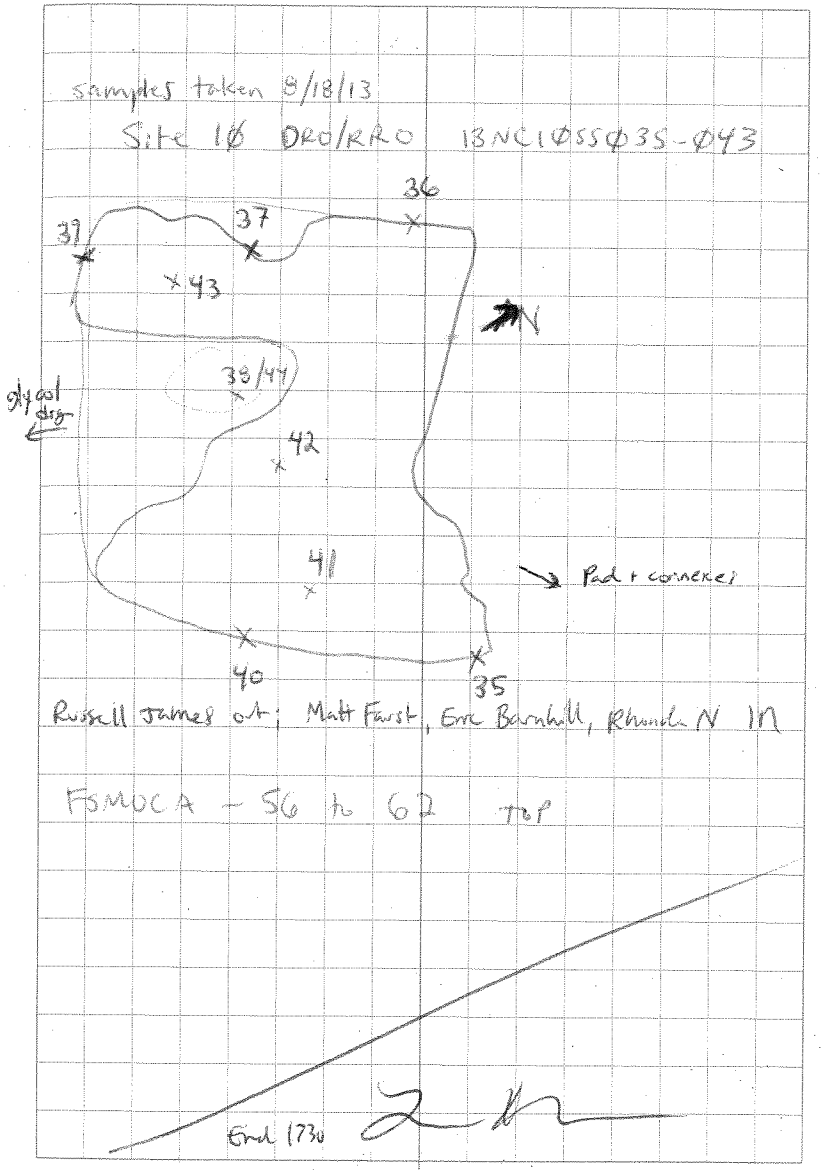
Project / Client Northeast Cape HTRW

0700 Health and Safety - high winds, rain
Environmental Meeting - site 28 filtration
Sample management: COC # 13NC-034
Site 10 13NCMOC103 - 109 (A2 floor, 1F SW)
COC# 13NC-035 13NC10SS035 - 47 (SW to DRO/RRO)
13NC10SS032/34 (glycol floor) hot
Site 10 glycol floor excavation - entire floor, down 3'
13-10-4C
13-10-5A
13-10-5B
13NC10SS045 1200 MS/MSD
(for Denver - glycol COC# 13NC-036)
cooler # 081913-03
E Plume Dig out FSMOCE-51
Confirmation sample 13NCMOCSS110 colocated at FSMOCE-50

Sample shipment - 5 coolers COC#s 13NC033-37
site to DRO/RRO soil
MOC POL soil confirmation
site to glycol

Location SL1 Date 8/19/13

Project / Client Northeast Cape HTRW



Location SL1 Date 8/20/13

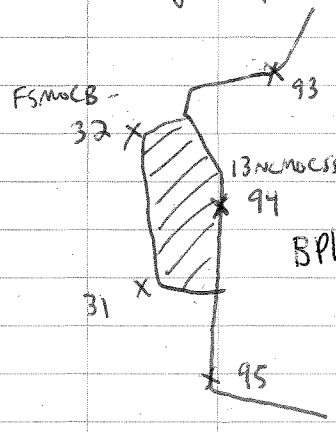
Project / Client Northeast Cape HTRW

0700 Health and Safety Meeting
Environmental Meeting
stockpile samples
Updated maps - new A2 extents from Jamie
Coolers shipped out this morning from Nome
- 13-10-462 (2 bags with ID 13-10-46 one the 17th and one the 19th)
- bag taken the 19th will be changed to 13-16-462.
- mislabeled bag @ site 10

Preliminary Moc POL results for 8/14 shipment

I - 13NCMOCSS089	FSMOCI-19
B- 13NCMOCSS094	FSMOCB-31

2 dig at spots on plume sidewalls



Location SL1 Date 8/21/13

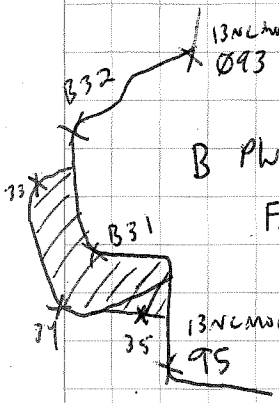
Project / Client Northeast Cape HTRW

0700 Health and Safety - cold wet weather
Environmental Meeting - backfill, site 28
Pending dig-at spots :
B31

A54	A55	A56	A52	A58	A59	...	A62
●	●	●	●	○	●	○	○
○	●	○	○	○	○	○	●

Excavate A54/55

Begin back fill of west B Plume using borrow pit material.



FSMOCB 33-35 at dig at spot B37

MOCSP-38 hot - will excavate 1 truckload (overburden from E1 - sand with gravel)

MOCSP-52 taken

FSMOCA63-78 taken along West and South side of A2 Plume

Excavate @ FSMOCA59

End 1730

Location SL1 Date 8/22/13

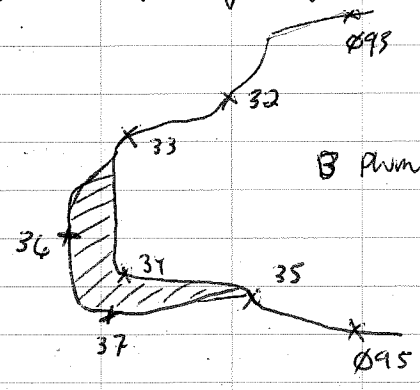
Project / Client Northeast Cape HTRW

0700 Health and Safety - Routine + Awareness Environmental Meeting

MWCSP-52 chem - large POL stockpile may be used as backfill

Julie + Eric E site 21 Arsenic excavation

FSMWCB 34 dirty - dig out with Jack Willis



→ FSMWCB 36, 37

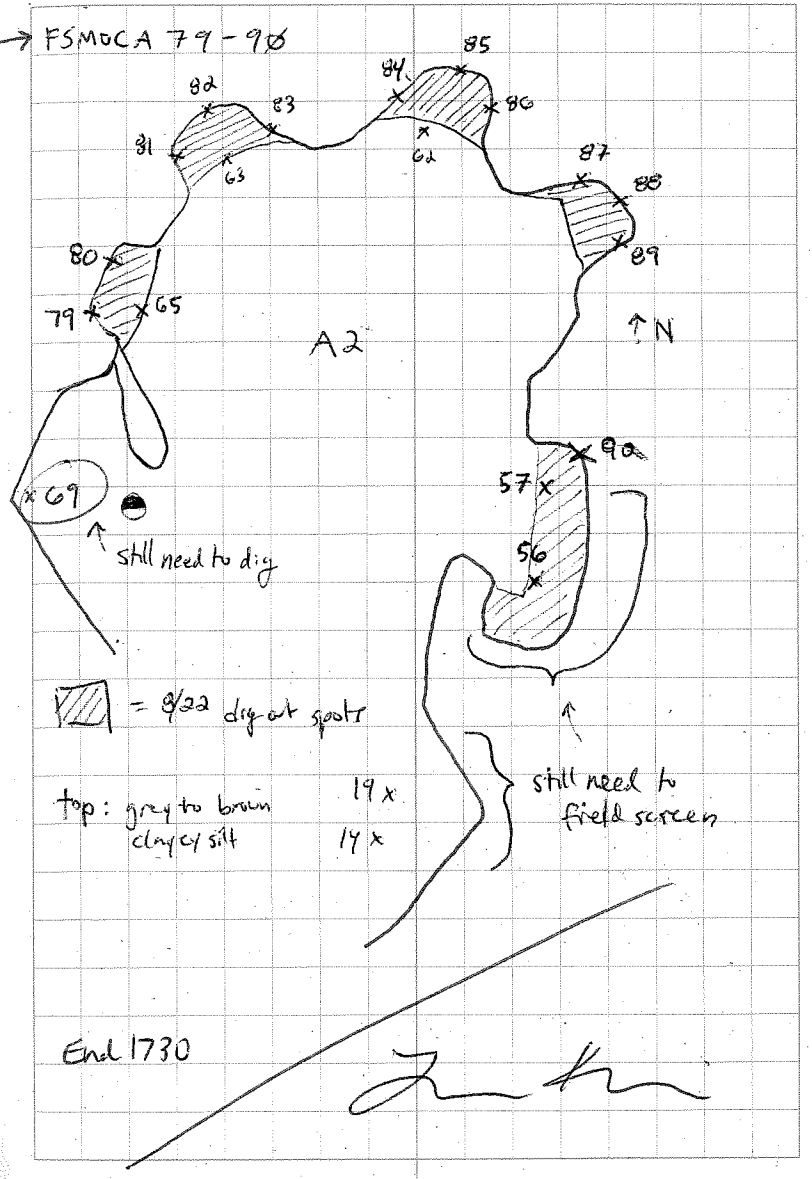
FSMWCA 56 and 57 excavated - need to fieldscreen

Need to dig out FSMWCA 62● and 63●, 65● 69●

Location SL1 Date 8/22/13

Project / Client Northeast Cape HTRW

→ FSMWCA 79-90

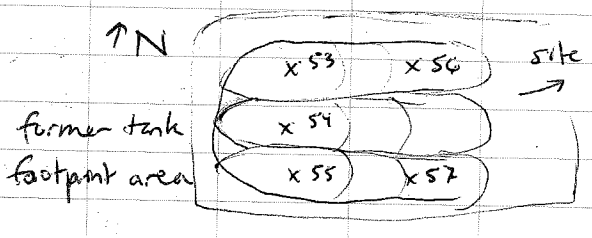


Location SL1 Date 8/23/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Meeting - tedrum/Arsenic
Environmental Meeting - site 21 Arsenic day 2

Stockpile sampling - MOCSP 53-57
@ site 10 stockpile on liner



clean field screens prepared as confirmation samples (per Molly Welker/Marty Hannah emails)

8/16	FSMOCA-39	13NCMOCSS111	1300	
8/16	FSMOCA-44	13NCMOCSS112	1330	DUP 114
8/21	FSMOCA-67	13NCMOCSS113	1400	MS/MSD
		13NCMOCSS114	1335	DUP of 112
8/21	FSMOCB-35	13NCMOCSS115	1000	
8/20	FSMOCB-32	13NCMOCSS~~114~~ 116	~~1030~~	1030
8/22	FSMOCB-36	13NCMOCSS117	0930	

Security Aviation Flight - Curtis Dunkin, Lisa Gerst,
QAR: Ron Broyles replace Aaron Sherman

Location SL1 Date 8/23/13

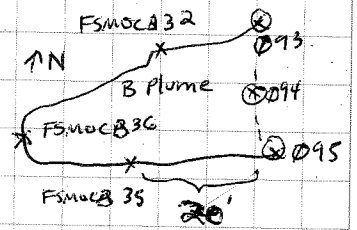
Project / Client Northeast Cape HTRW

COC 13NC-38 Site 21 Arsenic surface water
13N2-39 MOC soil confirmation
Code- 082313-01 prebooked

Pad 98 fill - no excavation
B Plume field screens B36 and 37 clean

A2 dig at spots:

FSMOCA69	●	74	●	
70	●	75	⊖	
71	●	76	●	
72	●	77	⊖	
73	⊖	78	●	



~ 80' between Ø93 and Ø95 - need 3 confirm from B (see facing page)

Pad 98 full, bagging @ Arsenic dig today
Wait for space to dig @ A2

Location SL1 Date 8/24/13

Project / Client Northeast Cape HTRW

0700 Health and Safety
Environmental Meeting
Site 10 glycol dig (810 mg/kg)

13-10-5C - mostly bedrock
13-10-5D - bottom material, some slough
→ taken to pad 98 to empty and screen

Site 10 glycol down to bedrock - fractured, no soil - water present at bottom of the hole
No >2" material to sample.

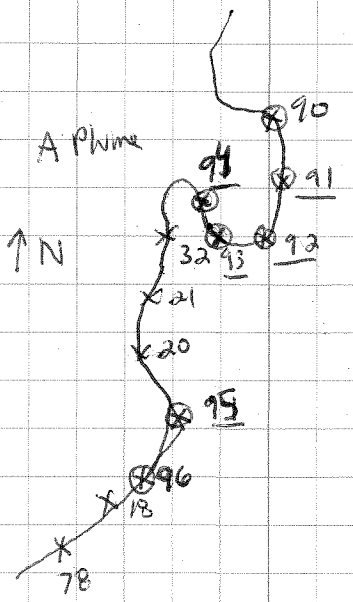
Site 10 RRO dig - begin backfill
F plume begin backfill
- Wait for Jamie to survey to begin site 10 glycol backfill

Site 10 MOC stockpile - clean, may use as backfill
A2 results in: FSMOCA98 ⊙

Location SL1 Date 8/24/13

Project / Client Northeast Cape HTRW

FSMOCA-91 to 96



select field screen locations for confirmation

FSMOCA-53	8/17
75	8/21
77	8/21
80	8/22
81	8/22
83	8/22
87	8/22
89	8/22

1730

Location _____ Date 8/25/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - Cold Stress
Environmental Meeting - site 2B dredging
Bagging @ Pad 9B Barge in the afternoon
Dig at spots at A2

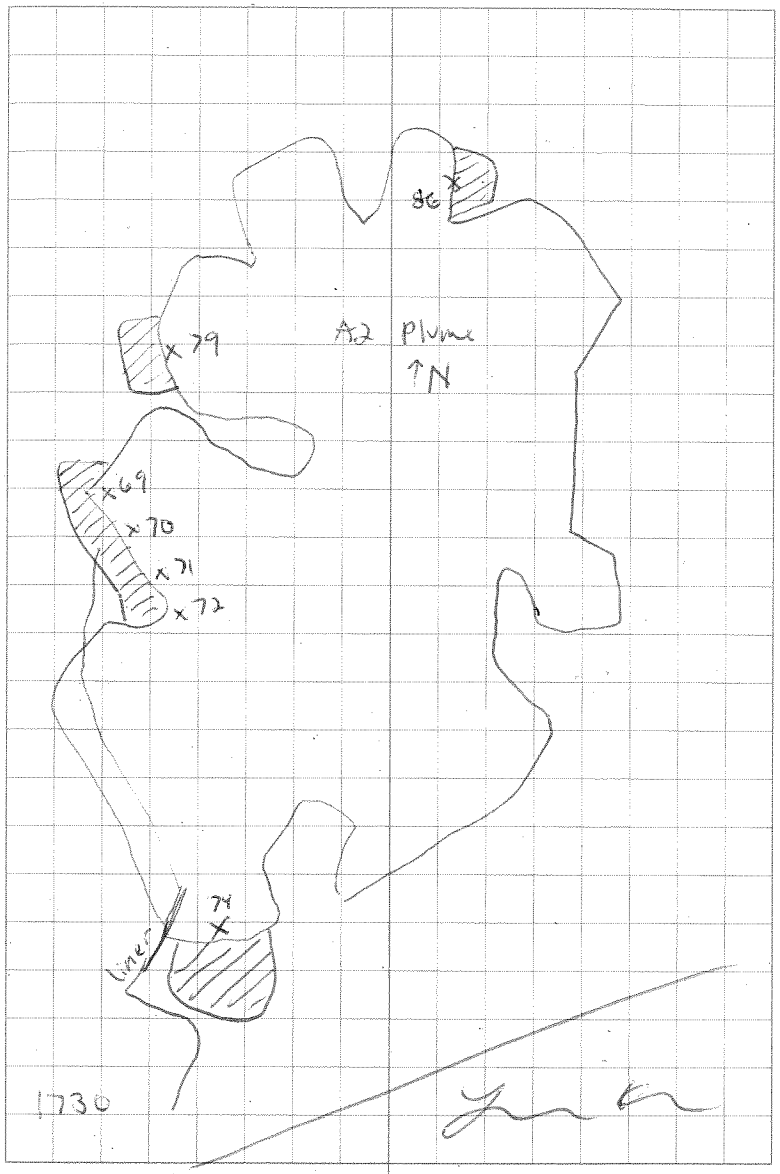
Page 91 - pending dig at spots as well as:

FS MOCA - 79
86
90
91
94

Dig at spots @ A2 FSMOCA 74/50
FSMOCA 71/70/72/69
FSMOCA 86
FSMOCA 79

Location SL1 Date 8/25/13

Project / Client Northeast Cape HTRW



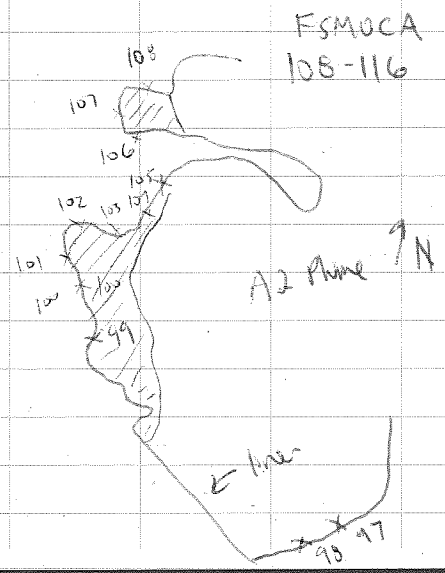
Location SL1 Date 8/26/13

Project / Client Northeast Cape HTRW

0700	Health and Safety – back injuries Environmental Meeting			
8/17	FSMOCA – 53	13A/CMOC SS118	1400	
8/21	75	119	1500	
8/21	77	120	1510	
8/22	80	121	1430	
8/22	81	122	1435	
8/22	83	123	1440	
8/22	87	124	1445	DUP 126 1455
8/22	89	125	1450	MS/MSD

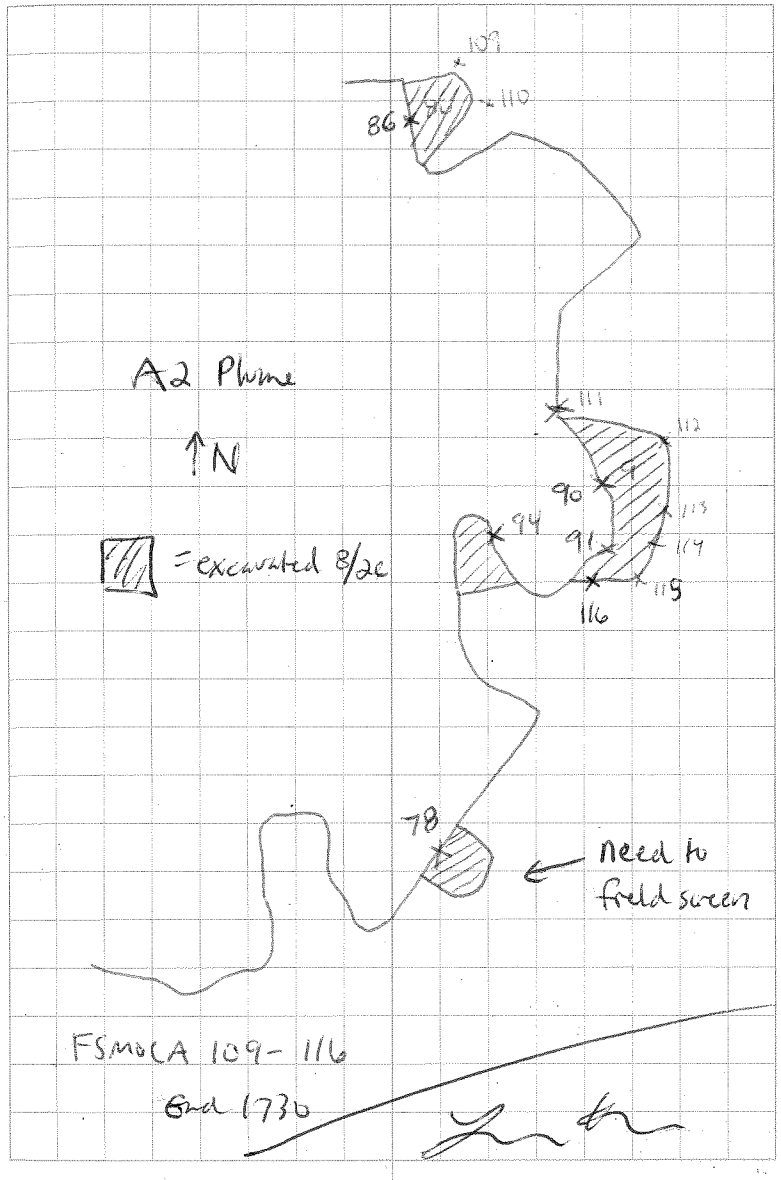
Field screening at A2

FSMOCA 97 -108



Location SL1 Date 8/26/13

Project / Client Northeast Cape HTRW



Location SL1 Date 8/27/13

Project / Client Northeast Cape

0700 Health and Safety - Boating accident @ fishcamp
bank injury @ fishcamp + medevac

Environmental - Barge this morning, afternoon

FSMOCAFS 97 - 108 results:

98 ●
99 ● - no dig
102 ●
103 ●
104 ●

Take confirmation from: 99-101 range 100
95-97 range 95, 97
105/106-108 106
~~100-101~~ 93
~~95-96~~ 85

FSMOCA	85	13NCMOC55127		8/22	1442		
pvp	93		128	8/27	1300	pvp 133	1305
	95		129	8/24	1305		
	97		130	8/26	1500		
	100		131	8/26	1515	MS/MSD	
	106		132	8/26	1550		
			133	8/24	1310		

grey moist silty gravel with sand, strong hydrocarbon odor

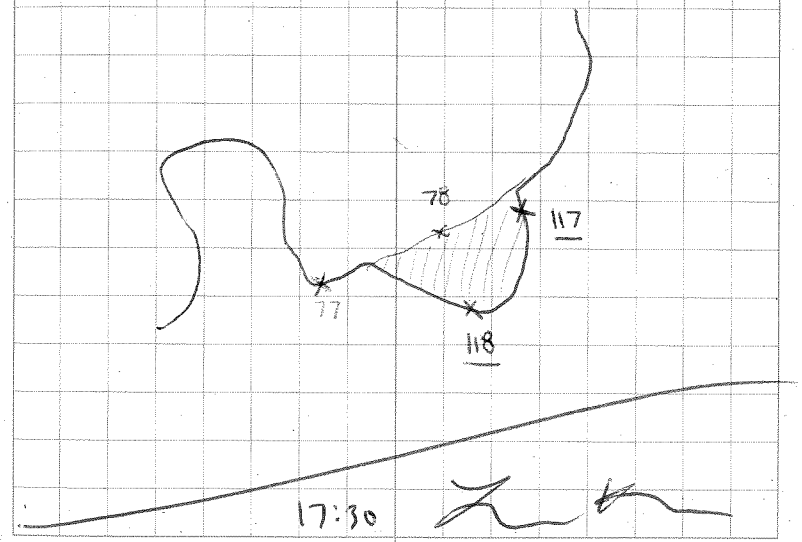
Location SL1 Date 8/27/13

Project / Client Northeast Cape HAZWOPER

FSMOCA117/118 @ depot spot 78

conference call w/ Molly Welker, Bill Burke, Greg Jarrell
Charles Croley, Russell James

- estimate 650 ton minimum left in ground
(A2 depots pending, E1 high water cereal mtg)
- up to 6,000 tons
(E1 target depths reached, C excavated,
E1 step-outs minus A2 - 50% of field
screening samples dirty)
- No further digging until new proposal
is drawn up, tonnage awarded



17:30

Location SC1 Date 8/28/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - vehicle traffic comp visitors
Environmental Meeting

Digging at Pad 98 BWMOC 415

FSMOCA	110	13NCMOCSS134	8/26/13	1600
FSMOCA	114	13NCMOCSS135	8/26/13	1605
FSMOCA	116	13NCMOCSS136	8/27/13	1610 – DUP 137
FSMOCA	117	13NCMOCSS137	8/27/13	1430
FSMOCA	118	13NCMOCSS138	8/27/13	1435
		13NCMOCSS139	DUP of 136	1615

COC 13NC042 one cooler

13NCMOCSS127 – 139 sent out

More dry out spots at A2. Currently pending:

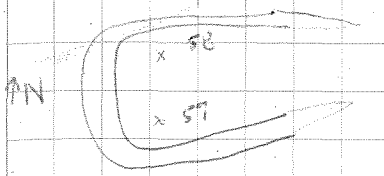
98	No digging until new
99	mod accepted.
102	No further "top" field
108	screening due to lab
109	supply stocks per Molly
111	Welker / Marty Hannah
113	

Location SC1 Date 8/28/13

Project / Client Northeast Cape HTRW

Results for MOC B Plume confirmation back
B plume backfilled

MOCSP58 and MOCSP59



End 1730

Location SL1 Date 8/29/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - night of way
Environmental Meeting

Sample QC - Test America reported
conformation results for Moc POL soil
- comprehensive stats spreadsheet

Pad 98 - screening ongoing
Extra 1500 tons pending mod

Site 28 dredging - Johnny Wills/Russell James

End 1730

Location SL1 Date 8/30/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - work transitions/new bags
Environmental Meeting - continued screening, dredge @
site 28
Site 21 Arsenic results in - additional digout spots
COC # 043 - Site 28 water samples
5 cooler shipment

On hold until further notice for digging @ A 2
(Pending digout spots @ Page 100)

Site 28 dredging upper pond
Y Johnny Wills

End 1730

Location SC1 Date 8/31/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - deteriorating weather
Environmental Meeting - bagging @ 98
dredging at site 28

Switch to 57 ton bags
Bagging at Pad 98

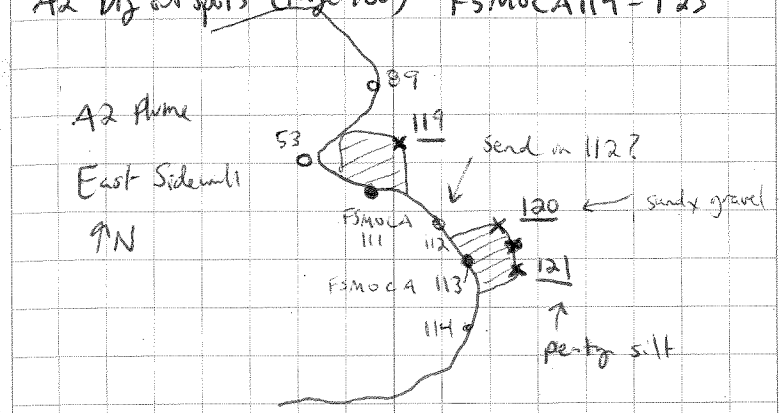
End
1730

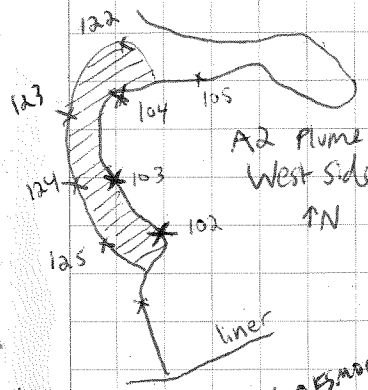
Location SC1 Date 9/1/13

Project / Client Northeast Cape HTRW

0700 Health and Safety -
Environmental Meeting

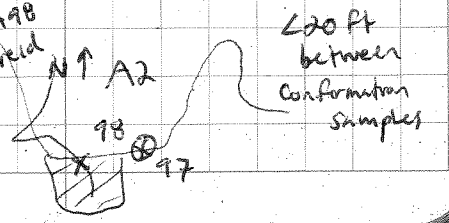
A2 Dig out spots (Page 100) FSMOCA119-125





FSMOCA 119
FSMOCA 120
FSMOCA 121
FSMOCA 122
" " 123
124
125

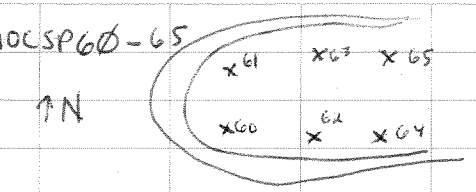
excavated @ FSMOCA98 to A1 liner, not field screened



Location SLC Date 9/1/13

Project / Client Northeast Cape HTRL

MOCSP60-65 stockpile samples





A2 Floor samples - taken under 1-2' water

grey w/ fuel odor

visible sheen

End 1730

9/1/13	13NCMOCSS140	silt	1500	
	141	silt	1505	
	142	gravel	1510	
	143	~~gravel~~ silt	1515	
	144	silt	MS/MSD 1520	
	145	silt	1525	
	146	silty sand	1530	

Location SLC Date 9/2/13

Project / Client Northeast

0700 Health and Safety - vehicle safety/seatbelt

Environmental Meeting - Bagging @ Pad 98

Maintenance day @ site 28

8/26	FSMOCA105	13NCMOCSS147		1400	
9/1	FSMOCA123	13NCMOCSS148		1405	
9/1	FSMOCA125	13NCMOCSS149		1410	DUP152
8/26	FSMOCA112	13NCMOCSS150		1415	
9/1	FSMOCA120	13NCMOCSS151		1420	DUP153
9/1	FSMOCA125	13NCMOCSS152	DUP	1412	DUP149
9/1	FSMOCA120	13NCMOCSS153	DUP	1422	DUP151

A2: FSMOCA119-125, MOCSP60-65 } Field lab clean

No plane - low ceiling

Bagging at Pad 98

wind, rain, low temps

Finish screened material MOC 434 D

End 1730

Location SL1 Date 9/3/13

Project / Client Northeast Cape HTRW

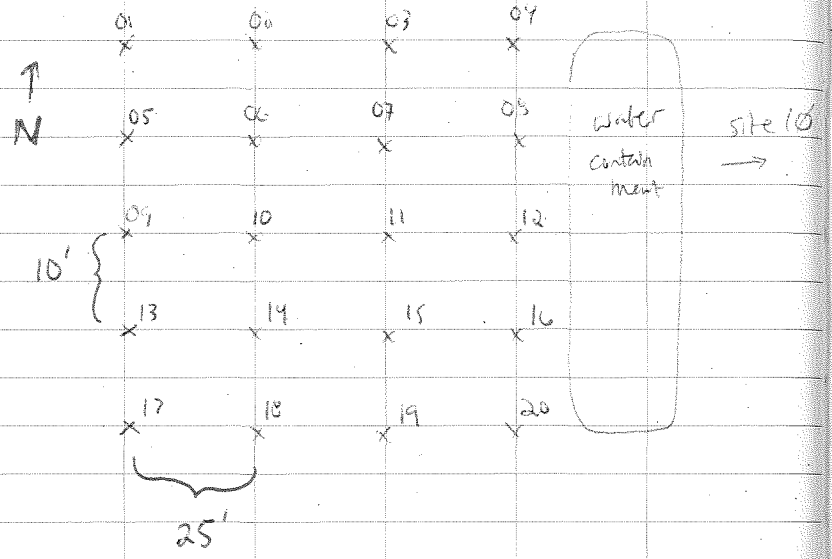
0700 Health and Safety - Site 21 Arsenic Environmental Meeting Eric @ site 21 Arsenic

POL post-stockpile sampling

Pre stockpile samples - 3 areas

250 sq ft

MOCSPE-01 to 20 East stockpile (POL)



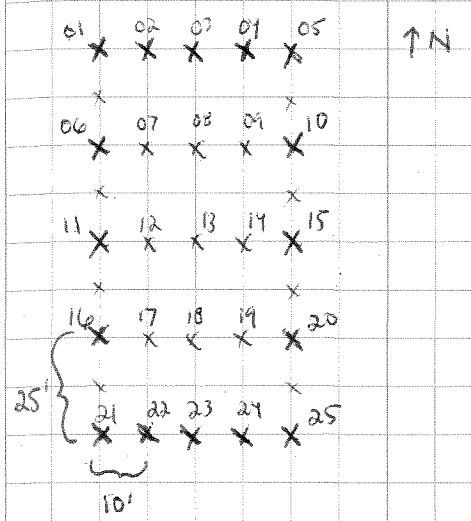
Get floor sample locations to Jamie

Confirmation sample to 13NCMOCSS139 results in - all clean. Can backfill most of A2 with remaining POL stockpile material

Location SL1 Date 9/3/13

Project / Client Northeast Cape HTRW

MOCSPS-01 to 25 South stockpile (POL)



13NC044 (MOC soil samples) sent out on Bering Air

1730

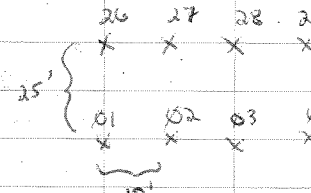
Location SL1 Date 9/4/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - hearing protection
Environmental Meeting
Building containment at site 28 - patch 2 holes
Metal debris @ Pad 98 - screening

Pad 98 big screened material MOC 434F

MOCSPS 26-30 south stockpile additional



Jack + Dale backfill A2 with stockpile material - clear liner from West POL stockpile, set up 25' x 10' grid

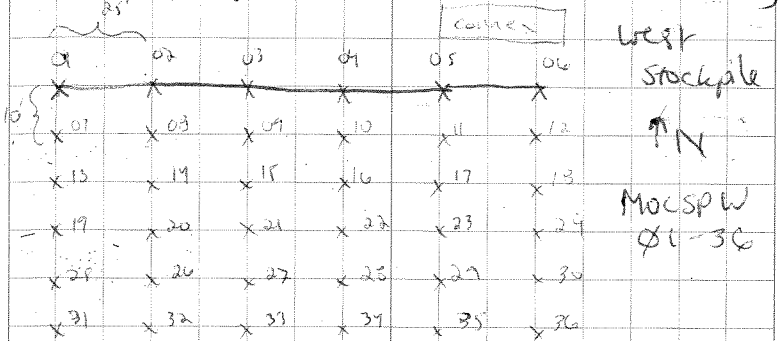
1730

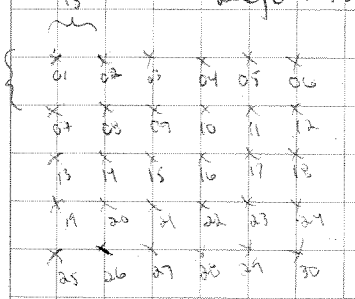
Location SL1 Date 9/5/13

Project / Client Northeast Cape

0700 Health and Safety
Environmental Meeting
foggy, calm, warm
MOCSPS-21/22 over 7200

Estimate # samples @ West stockpile
POL overburden ≈ 125' x 50' = 36 (25' x 10' grid)
screening reject rock ≈ 85' x 65' = 24 (15' x 15')





Finish Bagging, Clean Pad 98

1730

Location SLI Date 9/6/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - PPE
Environmental Meeting

COC # 13NC-047 Site 10
soil drum waste characterization

Dig at samples MOCSPS-21 and 22
resamples → MOCSPS-31 and 32

Photograph contents of site 10 overpack drums?
Locate end cap break/bentonite for well abandonment

AMW-01 near FSMOC A-44
Attempt to abandon well at NW side of A2
2' of exposed screen along edge of excavation sidewall. Attempted to take WL - obstruction @ 1'. Drove 4' steel rod to 3' to break off end cap - screen full of dirt, unable to remove end cap. Pulled casing out by hand - 8' total

1730

Location SLI Date 9/7/13

Project / Client Northeast Cape HTRW

0700 Health + Safety - safety onward
Environmental Meeting - should get site 20 treated water results today

- Monitoring Well Abandonment

Removed 1.5" steel rod

AMW-02
8.96' Below surface to water
10' TD - open hole (unable to remove cap) 3' stickup
14.8' length of 1.5" diameter steel ~2 gal bentonite pellets to 6" bgs, filled w/ soil @ top

MW 16-2
16.51' BTOC to water 16.64' BTOC to bottom
Removed end cap with rod, attempted to sling out w/excavator, screen in place, top 6' removed. Backfill w/ ~ gal bentonite

MW 16-3
16.64' BTO metal casing to bottom - dry well
Top 4' removed (PVC, 2") ~2.5 gal bentonite pellets
unthreaded PVC coupler
13.70' to bottom from surface - bentonite to 1' bgs

MW16-1
16.55' BTOC to water 16.67' to bottom
-need more bentonite to complete abandonment

AMW-01 near FSMOCA44
AMW-02 S of Pad 98
MW-16-2 near site 20 containment
MW 16-3 near site 20 containment

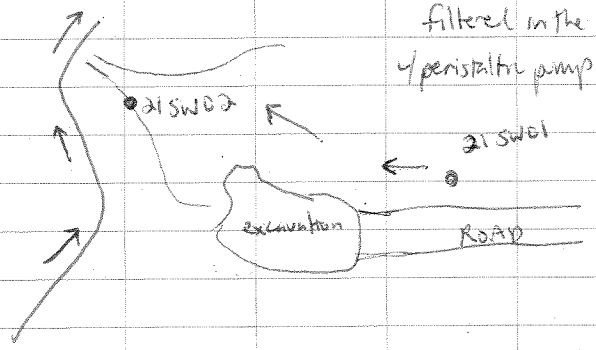
Location SL1 Date 9/7/13

Project / Client Northeast Cape HTRW

Loc: 21-SW-01 upgradient — 13NC21SW006 — 1330 — no sheen present - flow

Loc: 21-SW-02 downgradient — 13NC21SW007 MS/MSD — 1340 — high water, iron flow

filtered in the field w/ peristaltic pump



Site 28 dredging operation

1730

Location SL1 Date 9/8/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Environmental Meeting - site 28 dredging, relocate sediment trap, water sampling

Photolog

MOCSPR-22 dirty post stockpile of reject rock

44/A → post stock pile dig out spots

13NCMOCSP0001 - no MS/MSD per M. Hannah

1330 1000 lbs (MOCSPR-31 Freil screen ID)

Order 2 more 5 gal buckets of bentonite chips

Debris removal from well decommissioning

Pending Wells to Decommission

- Site 21 well locate - far E side along site 21 access road
- 16-1
- site 9 landfill jacked well (near Allen Creek)

~~Pad 98~~ Site 28

1730

Location SC1 Date 9/9/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - safety qwiz

Environmental Meeting - MI sampling @ MoC

Dredging at site 28, lab shutdown

contouring @ MoC

COC 13NCØ48 and Ø49 MoC soil 13NCMOCSPOOL
site 21 surface water 13NC21SW 06-07

Dredge start 845 stop 930 45 minutes

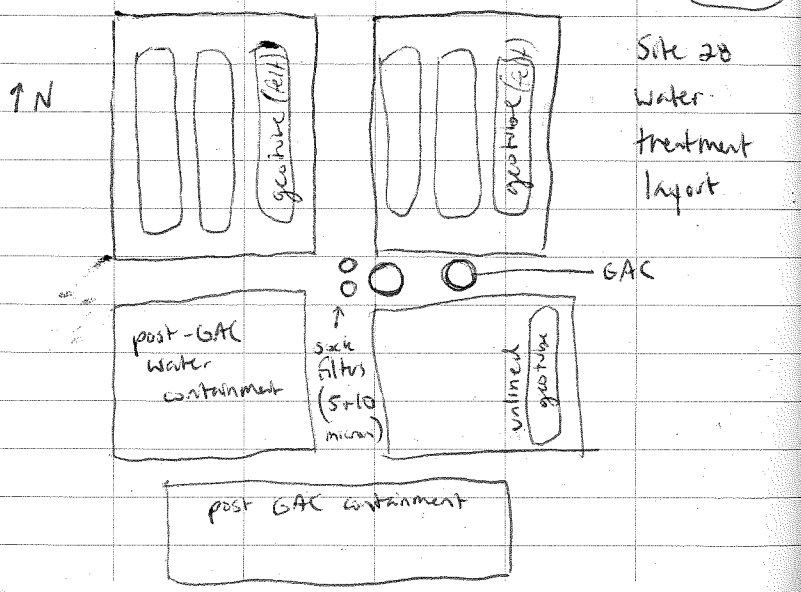
→ 13NC28STW17 1000 MS/MSD

biogenic sheen present, active dredging

Turbidity: 49.3 NTU

Dredge start 1040 stop 1115 35 minutes

Pump into civil geotube (no felt lining)



Location SC1 Date 9/9/13

Project / Client Northeast Cape HTRW

Dredge start: 1325 Stop: 1400 35 minutes

→ 13NC28STW18 1430 Turbidity: 38 NTU

biogenic sheen present

→ 13NC28STW19 1445 DUPLICATE of 18

Dredge start: 1525 Stop: 1600 35 minutes

150 min of dredging so far today

240 min (for 2 samples) allowable

→ 13NC28TWA15 1640 west containment - no odor

Turbidity: 7.98 NTU some biogenic sheen (platey)

Dredge start: 1645 Stop: 1710

Summary of Dredge

start	Stop	Elapsed
0845	0930	45
1040	1115	35
1325	1400	35
1525	1600	35
1645	1710	25

175 minutes of dredging today

1730

Location SL1 Date 9/10/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - seat belts
Environmental Meeting - barge will arrive 9/20
M1 Sampling @ MoC, Site 6 for Eric
Dredge pond upstream of steel sediment trap
Organize enviro connex, stock Pad 28
connex w/ sample bottles/jars
Dredging start: 925 Stop: 1000 45 min

→ 13NC28STW20 1000
Turbidity: 13.3 NTU
Dredging start: 1045 1105 20 min

→ 13NC28TWA16 1030
Turbidity 5.99 NTU containment water
no odor, slight biogenic sheen, clear

→ GAC01 1100 for TCLP BTEX
4oz 90% carbon 10% sediment (orange-brown silty clay) from 1st GAC, top

Move hose, pumps to pond downstream of sediment trap, place sediment control measure downstream of pond

65 minutes of dredging today

1730 [signature]

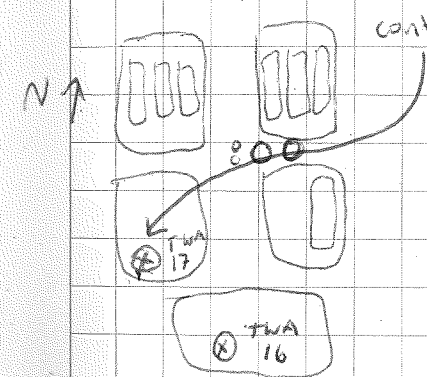
Location SL1 Date 9/11/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - site 28, shut down
Environmental Meeting - site 28, large shipment
Dredge in pond downstream of steel sediment trap
Start Dredge Stop 1025
→ begin sampling below new sediment trap
Start Dredge 1100 Stop: 1120

→ 13NC28STW21 1040 MS/MSD
Turbidity: 51.7 NTU no odor, no sheen
sample taken from ST02 in stream channel
overlying flattened grass w/ iron floc accumulation

→ 13NC28TWA17 1130
Turbidity: 8.20 NTU
no odor no sheen taken from this containment



Location SLI Date 9/11/13

Project / Client Northeast Cape HTRW

MW 16-1

16.52' BTOC to water 16.67' BTOC to bottom

knock off end cap, fill with bentonite chips,

remove PVC casing 45 lbs of bentonite chips

AMW Ø3 steel/concrete surface casing broken off,

screen exposed

2.12' BTOC* to water, 4.25' BTOC* to bottom

15 lbs of bentonite used

AMW Ø4 jacked casing up out of stick up

5.15' BTOC to water 10.29' BTOC to bottom

Removed by hand - 6' of screen below water, no end cap

Site 28 Dredge times (pond ~~so~~ downstream of sediment trap)

Start	Stop	Elapsed
940	1015	35
1055	1115	20
1355	1435	40
1520	1555	35

1730

[signature]

Location SLI Date 9/12/13

Project / Client Northeast Cape HTRW

0700 Health and Safety - new people on site - Jacobs Environmental Meeting

Containment water sample - GAC'd

13NC28TWA18 0820

Turbidity: 6.35 NTU

M1 Sampling @ site 6 w/ Eric Barnhill

Site 28 Dredge Operations Downstream of sed trap

Dredge start:	Stop:	
1110	1130	20
1410	1450	40

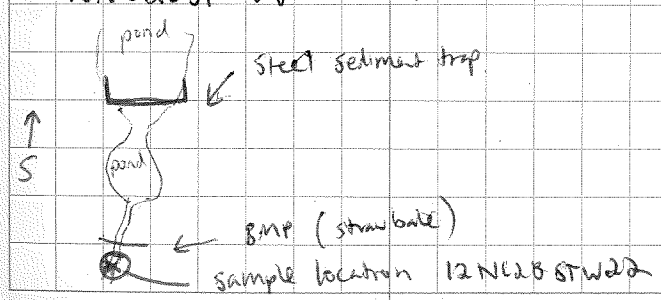
~~1120~~ LK

13NC28STW22 ~~1130~~ LK

Turbidity: 61.2 NTU

Wait to take sample until active dredging taking place

13NC28STW22 1430



Location SL1 Date 9/12/13

Project / Client Northeast Cape HTRW

Site 2B sediment post-dredge samples

Eric Barnhill

13NC28SS026 1600

dark brown silt, wet, with angular coarse sand and organic material/grass

13NC28SS026 1612

dark brown silt, wet, with dead root mass

13NC28SS027 1620

brown peat, wet with coarse subangular sand

13NC28SS028 1630

dark brown silt with peat, wet, sheen

13NC28SS029 1635 MS/MSD

dark brown silty peat, wet, fuel odor

13NC28SS030 1650 13NC28SS031 1655

as above

13NC28SS032 1700

dark brown peaty silt, wet, fuel odor

13NC28SS033 1705

as above

13NC28SS034 1710

as above

1730

Location SL1 Date 9/13/13

Project / Client Northeast Cape HTRW

0700 Health and Safety Environmental Meeting

13NC28TWA19 1000

Turbidity: 627 NTU

COC# 13NC052 4 coolers

1430 Bering Air depart Site 2B

Dredge times: 930 - 945 15

1010 - 1020 10

1120 - 1140 20

Depart NE Cape Bering Air @1400

Rite in the Rain.
ALL-WEATHER
FIELD
№ 351

Russell James
Bristol Environmental Remediation Svcs, LLC
Job No. 341300681 Northeast Cape 2013
USACE Contract No. W911KB-12-C-0003
and W911KB-13-C-0004
7/9/2013 – 8/8/2013

INCH

Rite in the Rain®
ALL-WEATHER WRITING PAPER

Name Russell James
BERS
Address 111 W 16 Ave, Third Floor
Anchorage, AK 99501
Phone (907) 563-0013

Project NE Cape NTRW 2013
Job #341300168
USACE Contract: W911KB-12-C-0003
W911KB-13-C-0004

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CONTENTS

PAGE	REFERENCE	DATE
2	Arrival NE Cape	7/9

Tuesday

7/9/2013 - NE Cape 2013 - Nome, AK

R. James, Breezy & Clear, Job 34130068

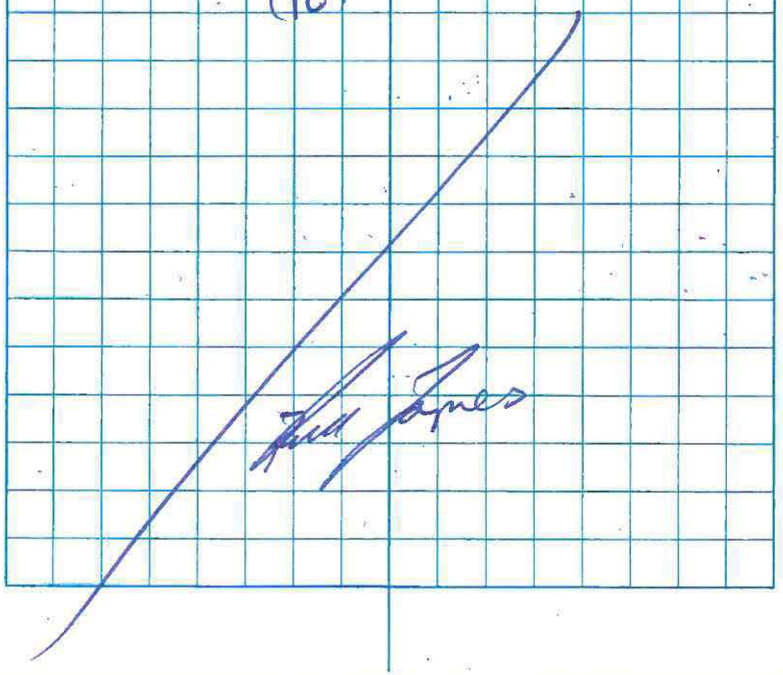
Objective: Travel to NE Cape

- Tried to Reach NE Cape on 7/8 (Mon) but fog was too thick on Island.
- Arrive @ Bering Air ~0900 hrs - leave for Savoonga → NE Cape ~1000 hrs
  - Arrive NE Cape ~1100
- Arrange office/tent. Setup Suzanne's computer online - troubleshoot her email. Install printer on Suzanne's computer.
- Drive site w/Croley, Barnhill and Kleppin.
  - 55 poles have been removed and are being staged south of the MOC in the old ballfield near the tar area (tar Removal Area)
- 4 locations were GPS'ed on the Road where PCB samples were collected for the field lab
- The Beach dozer location was GPS'ed - The excavation was filled in, but Croley said it was ~ 25 x 30'
- Borrow material is being hauled to

the Site 28 Work Pad and stockpiled for future improvements.
- Borrow material is also being hauled to Pad 98 for Screening.
- Markers are being installed along the runway.
- Debris is being removed from the edges of a small pond/lake south of the runway apron.
- Setup printer in Enviro Office/Tent
  - End @ 1900 hrs

(10)

Paul James



Wednesday 7/10/2013, NE Cape 31300.8
Partly Cloudy, low wind, Cool. K James

0700 safety mtg. — Site Orientation hand-outs were reviewed. Camp rules. Introductions.

Objectives: Complete DQCR; Complete prep phase meetings; Have prep phase meeting @ ~1230 hrs.

- Receive DQCR from Codey
- Complete pCard expense report @ 0900
- Temp @ 0900: 46°F. No wind
  - light rain
- Print prep phase paperwork for DFWs
- Begin work on DQCRs for the work remaining on 2012 contract
- Scan safety sign-in sheets from 6/22/13 to 7/10/13
- Prep phase @ 1300 hrs
  - 3 prep phases completed by 1420 hrs.
- Bering Air arrives @ 1420 - Navajo
  - Site 28 impound waters are shipped off on the Bering Air flight.
- E. Barnhill pre-booked the coolers w/ Ak Air and called Bering Air regarding ground service to work them over to Ak Air.
  COC No. 13NC-001-1
  Air Waybill = 8270 7450
- Scanned the prep phase check-lists and put in file
- Visit Site 21 w/ DAR and L Kleppin - Surface water sample locations are established.
- Instructions from DAR:
Cranes, following instructions from Ron Broyles instructed Bristol to collect BTEX and PAHs in addition to DRO/RRO when collecting the Surface Water samples & the MDC. The analytes are requested in the upcoming contract Mod, but it has not yet been funded.
- I emailed M. Weaver the DAR's instructions and am awaiting response. End 1830 (10.5)

Thursday 7/11/2013 NE Cape 34130068, Cloudy, Misty, Cool, 49°F, 10mph SE
R. James

0700 Safety – PPE-Hearing protection @ screen plant, rubber boots @ site 21; Heavy equipment has ROW

Objectives: Sample @ site 21; Screen Plant operations

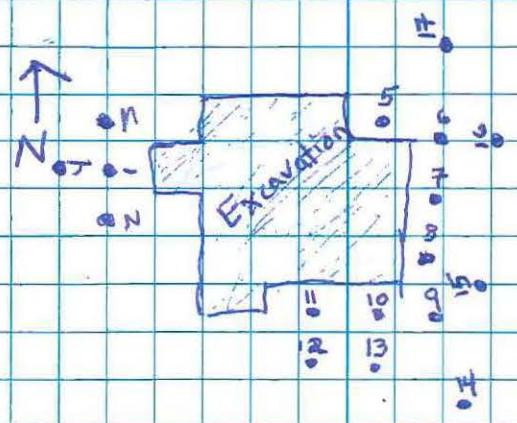
- Give Jamie the points @ 13, 31, and 10 where we want to relocate
- Following science meeting = gave Jamie Figure from our Work Plan showing sites 13, 31 and 10 w/the hot spots to be relocated.
- Continue work on DACRs for 7/8/2013.

@ 1150 hrs – Pass DACRs from 7/8 and 7/9 to Carver for review

- Eric, Lindsey and 2 laborers are establishing the boring locations and collecting Arsenic samples @ site 21. QAF Carver approved the locations of the borings established by the science crew.

R. James

Site 21 Sketch of boring locations



- Many of the boring locations on the eastern side of the excavation contain large rocks and fill Material
- The sample crew is having difficulty Augering deeper than 6" to 12". They tried using a shovel but that was proving difficult as well. They wish to use the excavator to get to depth @ these locations.

- Clean Material is being screened at the Pad 98 Screen plant
- 34 Arsenic samples were collected today from Site 21 borings - 2 dupes and 1 MS/D
- Bristol asked the QAR to approve the use of an excavator to aid in sample collection @ Site 21 ⇒ The QAR approved use of the excavator.

End 1745 (10) 54°F @ 1730 hrs

34150068. Light Fog R. James

R. James

0700 safety - PPE ⇒ wear it: safety-toe, glasses, vests or High vis.
- Hearing protection for screening ops. Bug repellent is available for mosquitoes

Science Mtg - Move excavator to Site 21, then move to site 10 for soil Removal, Prolly start on lower pit ⇒ Double check the COCs @ Site 10. Pack samples for Site 21 before moving to site 10 to get the samples on the plane today

0715 weather: 44°F, 1mph SW wind Fog has lifted in Camp and now blue skies. Still foggy @ MOC
- DQR for 7/10 is completed and passed to QAR for Review
- Site 21 As Samples were completed and packaged for shipment
- Asked QAR about sampling BTEX at the next MI grid @ site 28. Asked if our proposed method was approved.

Cranes emailed C-Dinkin to find out if DEC would approve the Method (to combine the ~~MeOH~~ 2gram soil "plugs" into 1 MeOH preserved jar). Dunkin said he'll give us an answer this afternoon.

- Begin Excavations @ Site 10-SW corner of the lower excavation
- Elic. begins laying out the MI grid @ Site 13 to the east of the current Work Pad.
- The bottom excavation @ Site 10 is completed and 8 DRO/RRO field lab samples are collected from the SW excavation where the DRO Hot spots were located

~~Field lab samples were collected~~ RJ

1700 weather 53°F 5mph NE Wind

Jul James

Clear, Sun, 51°F, 10mph NE R. James

0700 Safety: Bug Dope; Bagging ops;

Science Meeting: Continue w/ Site 10, start on PCB Site 13, MOC Surface water sampling.

Objectives: Site 10 soil Removal; MOC SW samples; Site 13 PCB soil Removal

- Complete DOCF for 7/11 and hand off to Cranes for Review
- 1 bag filled @ Site 10 for a total of 4 bags. Bag ID's are 13-10-1A Thru 13-10-1D
- Kleppin begins confirmation sampling @ Site 10 where excavations occurred and where no samples were collected in 2012
- Barnhill is collecting MOCSW samples - using 1L Amber to fill the Sample Jars.
- Yard goat is being repaired
- Hot spot @ Site 13 is excavated. - 1 bag is filled

- Kleppin sampled the Site 10 Stockpile (2 samples) ~~TBD~~ 13NC10SS009 and 010 - GRO, VOCs, DRO/RRO, PAHs, PCBs, Metals and glycol
- Hot Spot @ Site 31
  - 1 field lab sample was collected from Site 31
  - 2 samples were collected from Site 13
  - PCB samples (3) were submitted to the field lab.
  - Results should be available tomorrow Morning

End 1730 hrs (10)

34130068. Rain, Strong Winds, 47°F

0700 Safety: Winds gusting over 50 mph, collect the material that have blown around, 3-point mount/dismount, park vehicles into wind, Hang on to doors/Conex doors

Science Meeting: Results received for Site 10 DRO and Sites 13 and 31. 1 location @ Site 13 contained PCBs @ 3.2 mg/kg. Site 10 contained 1 location w/ RRO @ 18,487 mg/kg

Objectives: Remove hot spots @ Sites 10 and 13, then move to E Excavation.

Weather: 47°F, SE Winds 25 mph, Gusting 50+ mph, Rain

- Scan Docs from 7/11/13
- Print Docs from 7/12/13 for signatures
- Begin Docs for 7/13/13
- Kleppin is excavating the high RRO location @ Site 10

0900 weather: Winds remain strong, mist but no rain, clouds lifting

to reveal patches of blue sky.
- Drive Site w/ Cooley
- Liner @ Site 13 is being removed - samples will be collected from underneath and submitted to the field lab for PCB analysis
- 1 bag was filled at site 10 where the XRO results were above 9,200 mg/kg
- 1 bag was filed @ site 13 where the field lab results indicated PCBs @ 3.2 mg/kg
- Excavations are beginning @ the E-plume on the western sidewalls & the former excavation. The existing liner is being exposed.
- Emailed DACRs for 7/10 thru 7/12 to the email distribution group @ 1145 hrs.
- Kleppin collected 12 (6 FL, 6 SW) Confirmation Samples @ E Plume
  - Along SE floor and western sidewall

Tom James

34130068, Partly Cloudy, 44°F R. James

Winds SW @ 5-10 mph

Stop safety: Chop Saw Work - use proper PPE - face shield, chaps, gloves. Watch out for Rock Trucks. Keep speed down on the roads.

Science Mtg: Check the site 13 bag #'s. There will be a plane at ~1345 hrs. Eric will pack samples this morning

- DACR for 7/13 is emailed to PDT.
- Barnhill packs samples for shipment on today's flight - PCB confirms and MOCSW
- Kleppin directs excavations @ the E-Plume
- Johnny Willis tests the polymer pump and pumping rates to get to the goal of 115 mL/min
- DACRs for 7/14 are provided via hard drive to QAR Crane.
- Weather @ 1315 hrs: Rain is stopped, blue skies and low winds. TEMP = 53°F, SW winds 8 mph
- 1 bag was filled @ Site 10

- E plume excavations are occurring @ the west side of E Plume
- Soils are being hauled to Pad 98, where they are being bagged
- Field lab sample BWMOC230 is collected @ 1415 hrs. Begin bagging group 231.
- The material being hauled from the E-Plume is high in orginics and relatively lightweight. The wet material is being mixed w/drier Material.
- E. Barnhill completed collection of the Site 13 post-stockpile PCB samples
- Bering Air CASA arrived @ 1415 hrs with Groceries, Schonstedt, camera, pump supplies...
- Weather @ 1715 hrs - 53°F, SW winds @ 11 mph

End 1730 hrs (10)

[signature]

Tuesday 7/16/2013 NE Cape NTRW
34130068, Overcast, 49°F, SW wind 4 mph R. James

0700 Safety: Buddy System, Swing Radius, Weather, Take time and Mark bags carefully, Radio Communications. Quiet time @ 2100 hrs
Science Mtg: following Safety Meeting

Objectives: Bagging @ Pad 98, Field Screening @ E Plume, Confirm sampling @ Site 10

- Field lab results are received for Site 10 POL results - Final sample is below cleanup levels, so confirmation samples will be collected.
- Prelim As results are received from TAC A sketch is made and emailed to M. Welker w/ the 3 proposed boring locations. QAR Craner and I consulted on the locations of the 3 final borings.

- Instruction from QAE:
  - Crane instructed Kleppin to go deeper in areas of the E plume where higher water levels prevented removal during 2012. Overburden will require removal and stockpiling.
- 1300 - weather @ MOL ⇒ Very strong, gusty winds are kicking up a lot of dust. The water truck is currently down for repairs.
- Instruction from QAR:
  Remake the map for Site 21 to include estimated contamination extents (or note saying its unknown) and volumes, proposed excavation areas and submit to USACE who will pass it on to the ADEC.

1715 hrs Weather: 33mph S winds
50°F, Scattered Clouds
End 1730 (10)

3413 00648 Partly Cloudy, Winds 22mph SW
47°F

0700 safety: Heavy winds like yesterday. Use PPE for the dust - goggles and water truck. Crane says watch the gusty winds when standing close to excavations. don't get too close and get blown in.

Science Mtg: Site 10 confirmation sampling, Bagging @ Pad 98

- 0730 - Requested drawing from Jamie that shows the Site 21 boring locations and the excavation extents. Requested that he survey the extent of the "disturbed" area on the East side of the Site 21 excavation.
- Bering Air arrives ~ 1400 hrs. Julie Clark arrives
- Bagging @ Pad 98 and hauling material from the E-Plume
- 1700 weather ~ 54°F, Clear skies 7 mph S winds

Thursday 7/18/2013 NE Cape HTRW

341300168, Partly Cloudy, 42°F R. James

0 mph winds

0700 Safety: Bagging Ops - Buddy system, Fire Safety - Electrical Fires, Catey reads a story from Dave O'Donnel re: fire Safety

Science Mtg - Discuss FCS Results @ Site 31 (clean confirmation) and Field lab results @ site 13 stockpile area (a few hot spots)

- Excavation continue @ E Plume - surface water in Site 28 directly north of E Plume is exhibiting petro sheen - In between E-excavation and silt fence where sed was removed in 2012
- Barnhill MI Sampled the Bag staging area beside the fuel containment
- Site 10 was investigated w/ the schondstedt
- weather @ 1715 hrs, SW winds 10-15 mph - Chill = 43°F

Friday 7/19/2013 NE Cape HTRW

341300168, Light Rain, 47°F R. James

10 mph SW winds

0700 Safety: Catey introduces R. Broyles Safety Award - R. James

Science Mtg: DEC - E Plume confirm samples. FCS site status

Objectives: Bagging ops this morning

- LC loading this morning - Nunaniq
- Travel to Beach and wait for Nunaniq to come to shore
- Nunaniq plans on coming to shore @ 0800 hrs.
- First flat loaded @ 0837 hrs - Note: A site 10 bag (10-015) was loaded onto today's load - 18 flats loaded - 36 bags
- Groundwater monitoring is taking place: J. Clark is sampling the wells - 2 wells were sampled today
- Excavating west side of E Plume — strong fuel odor
- The surface water @ the MCL SW A001 area will show sheen when disturbed - this is the area where sediment was removed in 2013 ie - the western drainage

- Excavations were moved to the northeast section of the E-excavation. ~2' of overburden was being hauled to the POL stockpile area from this location

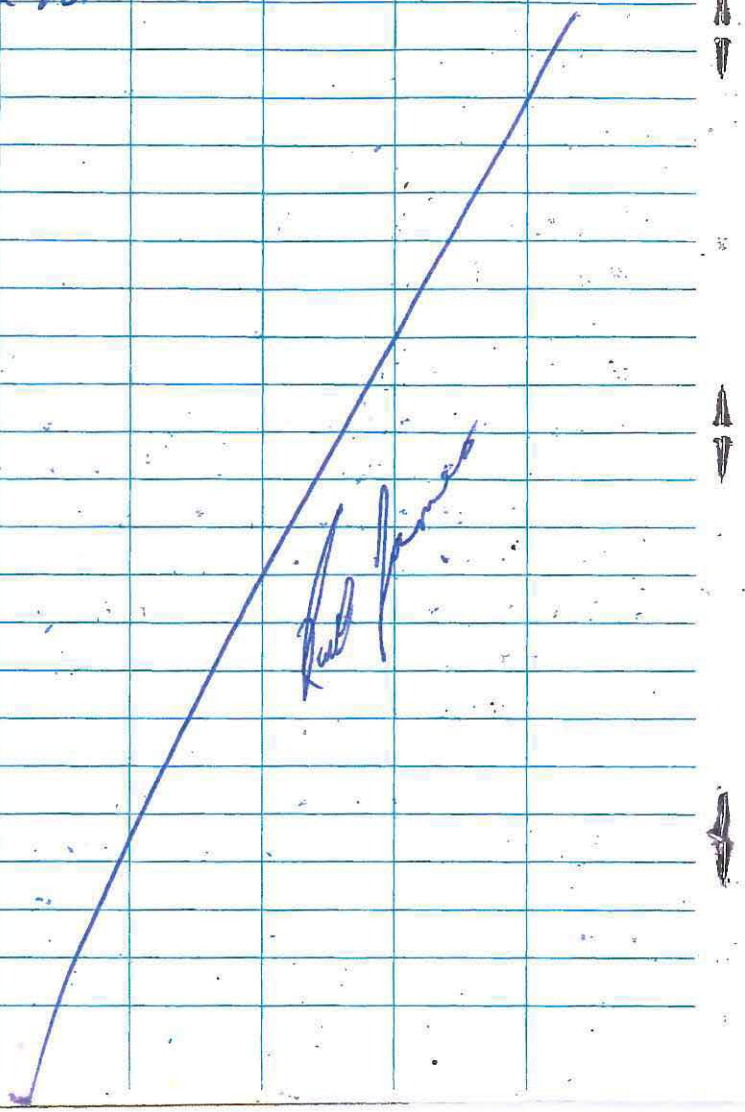
weather @ 1720 hrs - 51°F, 8 mph south winds - Cloudy

Partly Cloudy, Fog to the south, 45°F R. James
SW winds 15-20 mph
0700 Safety: Pairs - Cold stress, Heat Stress + Noise - Reviewed by Cooley

Objectives: Bagging and Hauling, GW sampling, Drum Search @ Site 10
Science Mtg: Discuss drum investigation @ Site 10, CK says we can backfill some of the E-excavation, she had collected floor confirmation samples as excavations have proceeded
- Bulk bagging @ Pad 98 - BMMC-259 is collected @ 1036 hrs.
- J. Clark is sampling MWs
- Site 10 Drum Investigation - Some crushed drums and Misc. trash are being pulled from the grassy hillside @ site 10. No liquid and @ 1115 hrs. - Some stained soil are discovered - The drums/debris are being stacked by the excavation on the gravel pad.

RJ

Gasoline for sidexside - Emptied the tank on Maze's truck.
- Bagging operations continuing @ Pad 98.



Sunday 7/21/2013 NE Cape HTRW
34130068, Windy, Partly Cloudy, 47°F R. James
25-30 mph SW winds
0700 Safety: Windy Conditions, Safety glasses, Firm handholds

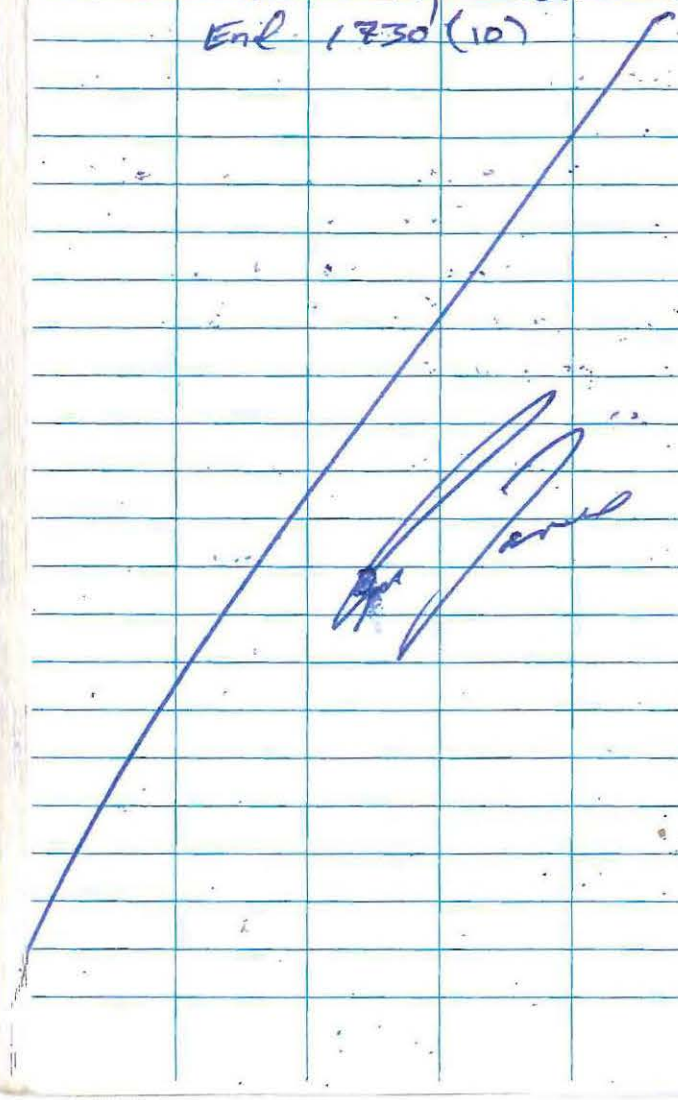
Science Mtg: Give Jamie Survey Locs @ ~~Sci~~ RS site 13.

EERS Mtg: Pull rebar @ 150's; Move the Conex to the other side @ Pad 98 (south side); Water truck is down -; Site 10 weights need to separate out the drum weights; PCB locations @ site 13 - use 450 exc. w/cleanup bucket; site 28 parts list

- Site 10 soil was bagged
  - confirmation soil samples were collected from the disturbed area.
- Site 13 locations were marked
  - EB is setting up a crew to bag @ 13 @ 1100 hrs.
- Bagging @ site 13 and Pad 98 @ 1445 hrs.

- Filled 8 bags @ Site 13 today.
- F5 Samples will be collected in the morning @ site 13.
- Flats are being built @ Site 26

End 1730 (10)



Partly Cloudy, High winds, 50°F R. Jase

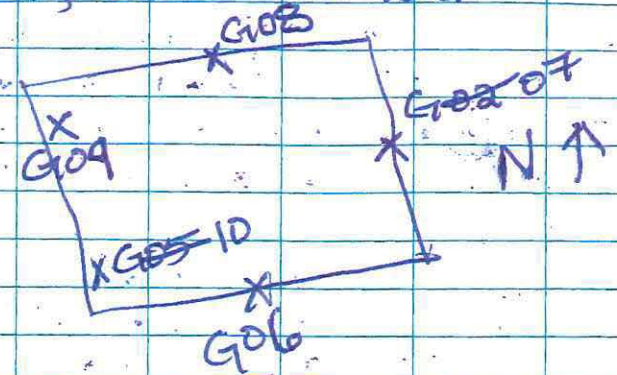
SW winds up to 45 mph

0700 Safety: Strong winds today, gusts up to 45 mph, Firm grips on handles, be careful @ the bagging area. Don't run after your gear that blows away- Park into wind.

Science Mtg: Objectives: Dig Hot spots @ Grtl. Field Screen samples @ Site 13. Bagging @ Pad 9.8. Pack + ship coolers/samples. Flight is likely (pending weather) this afternoon.

- Walk site 25 w/ Tommy Willis to discuss the dredging ops. - Water levels are relatively low compared to previous years.
- Site 10 Results received → Samples 001, 002, and 008 are high for Ethylene Glycol. All other COCs appear to be below CUL's.
- 1400 weather - 49°F, SW winds Avg 30 mph - Gusts to 40 mph or higher

G-Excavation -
sidewall samples collected directly above water level.



- Collected from the excavator bucket.
  Mostly a gray silt/clay
- Return samples to the lab.
- WC sampling @ Pad 98
- Bering Qir flight arrived and samples were shipped off-site
  - site 10 soils, MOC GW wells,

Tuesday 7/23/2013 NE Cape HTRW
341300008, Partly Cloudy, Windy, 49°F R. James

25 mph SW winds
0700 Safety: Windy Conditions; Site security - Secure the sites + pick up debris; Predicted 50 mph gusts
Science Mtg: A little more digging @ F-plume. Then return to E-Plume.
MOC SW Sampling - During EXC; Site 28 pre-SW sampling.
- EB and I talk to Chuck about ops when he leaves for vacation. EB will start handling SSHO duties effective immediately. Maze and I will cover Chuck's duties. Greg Jarrell will come on site to oversee operations. EB and I will load the next LC in prep for Chuck's departure.
- POL results received - One (1) location in the G-plume will require additional excavation
- Site 10 soil results have been received - some locations (2) are high for glycol and will be further excavated - M. Hannah is going to request that only

glycol analysis be run on the confirmation samples following the soil removal @ these locations.
- Ron agrees that only glycol samples should be collected/analyzed following additional excavation of glycol hot spots.
- Continue bagging @ Pad 98
- E plume is being excavated
- Mac sw samples and site 28 sw samples are being collected
- Volvo loader holed tire - will need to be replaced tomorrow

[signature]

Wednesday 7/24/13 NE Cape HTRW
34130068, Fog, Low wind, 45°F R. James

West wind 2mph
0700 Safety: Communications. Radio use. Hand Signals. If you see something, ~~do so~~ say something.
Science Mtg: Change flat on Volvo. Plane today, weather permitting. Samples will be shipped out.
- Yesterday - 3 Mac samples were collected + MS/D; 3 site 28 sw samps + dupe were collected
- Phone call w/Anchorage re: POL excavations and shipping
- Drum w/liquid was encountered in the E plume during excavations, it was placed into an overpack container.
- Bering Air @ ~1400
- Bagging @ Pad 98 - Volvo 330 tire is replaced and begins weighing bags.
- Backfill continues @ Site 31
End 1730 hrs (10)

[signature]

Thursday 4/25/2013 NE Cape HIRW
34130068, Partly Cloudy, low wind R. James
47°F, SW winds 5-10 mph

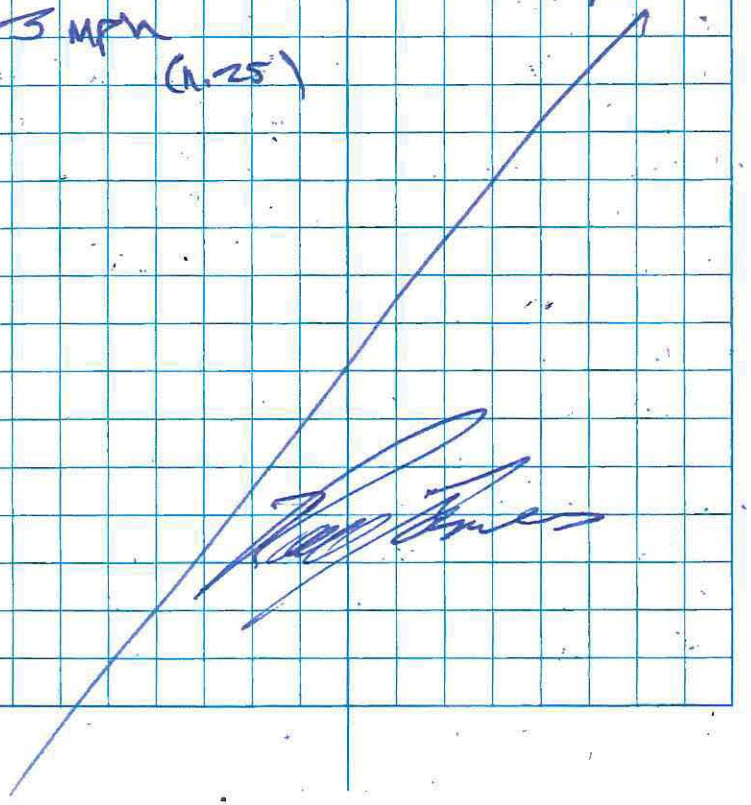
0700 Safety: AHAs Review - (1) Drum Removal
(2) Vehicle operations (3) Trucks
(4) Debris Removal (5) Sod Removal
(6) Barge loading & unloading. Kleppin reminds people of the deep excavations @ the MOC. Croley reminds group to take better care marking the bags. Use the orange markers for the bags. Good weather forecast.

Science Mtg: Site 21 followed by Site 10 glycol hot spots. Site 21 will attempt hand auger first, then use excavator as 2nd attempt if augering is unsuccessful. LC this afternoon @ ~1400 hrs.

- Site 21 borings completed.
- Site 10 hot spots were excavated ~1100 hrs - Confirm samples collected
- E excavation -- South of western drainage - Culvert was found ~10 ft bgs - Same culvert that extended to the Manhole that bristol removed in 2010. Oriented N-S, heading S toward Site 13.

- Kleppin is collecting confirm samples @ the F-Plume.
- Bags being filled @ Pad 98
- Forward DQCR to Croley for signature
- Landing Craft @ ~1715
  - 140 flats received
  - 22 flats loaded
- 1930 hrs Weather - 58°F, N winds 3 mph

(n.25)



34 Friday 7/26/2013 NE Cape HTRW

341300168, Partly Cloudy, 56°F R. James
SW winds 10mph

0700 Safety: E = examine, R = re-evaluate, I = initiate, Communicate = E.R.I.C.
Safety Award - Charles Kaiser
Croley discusses boat loading and EM-385-1-1. Don't rush - slower is faster.
Objectives: Housekeeping Duties.
See Maze for duties
Science Mtg: WALEMP waste samples; Site 10 waste; Excavate POL; Site 10 and debris weights; Silt Fence Repair; Flight today - 2 ACES people will arrive.

- Excavating the B-Plume
- 13 stockpile (TRO) samples collected
- Flats are being hauled to the MOC from the beach - 140 hauled
- Metal Debris can was weighed
- Being Air flight ~1400 hrs.
- Walked Site 28 w/ Johnny Willis discussed dredging plan

ORS 1712 weather: 59°F, NE winds 6 mph

Saturday 7/27/13 NE Cape HTRW 35

341300168, Partly Cloudy 52°F R. James
NW winds 0-5 mph

0700 Safety: Fatigue - what it is & how to prevent it
Science Mtg: - Excavate POL & bag @ Pad 98.

- 140 flats received this morning
- 23 flats loaded on the Sam Tealak this morning - Boat was loaded @ 0430 hrs, Completed by 0545 hrs.
- Work on database of bags, flats and boat loads - copy flat IDs and bag weights for database.

- 1720 weather 68°F, S winds 13 mph

Sunday 7/28/13 NE Cape HTRW

34130068, Fog, Windy, 49°F R. James

SW winds 20 mph

0700 Safety: Site Status - ① Site 31
② Site 13 - excavations growing
③ MOC - Deep excavations; Care around the excavation ④ Site 10 - open excavation
⑤ Site 21 - sewage outfall w/Arsenic
⑥ Site 28 - slip, trip, falls; drowning

Science Mtg: Bag @ Pad 98; Move Conex @ Site 13 to Site 28

- Bagging @ Pad 98
- Johnny is putting together the pumps + hoses for site 28
- Landing Craft @ 1730
  - 23 flats shipped

R. James

Monday 7/29/13 NE Cape HTRW

34130068, Partly Cloudy, 54°F R. James

SW winds 12 mph

0700 Safety: Cold/flu prevention:
① Sleep ② Drink water ③ Exercise
④ Avoid Sugar ⑤ Healthy Diet
⑥ Wash Hands ⑦ Reduce Stress & think positively

- Park equipment further down Cargo Beach away from Cabins

Science Mtg: Bag @ Pad 98; Backfill some areas @ the MOC; Confirm sample some Locs @ the MOC; Check lab Results

- Replaced alternator on generator @ 0900 hrs. - Completed by 0945
- Complete DQCR @ 11:45 and email to Ron
- Complete spreadsheets and database for bulk bags, flats, and field-Lab samples
- Print-out load sheet for next boat on 7/30 - Give to Suzanne for comparison.
- Setup hoses @ Site 28
- Backfilling E excavation w/overburden
- 1730 - SW 10mph, 53°F

R. James

 Tuesday 7/30/13 NE Cape HTRW R. James

34130068, Partly Cloudy, 54°F

SW Winds 3 mph

0700 Safety - Effects of weather.

Science Mtg: Working @ Site 28 - Setup, containments; Haul flats to Beach; LC @ 1930 hrs.

- Discuss Site 28 w/ Johnny + E. Barnhill
- Complete spreadsheets for bags, flats and samples (Field Lab)
- Complete DQCR for 7/29/13 and email to Ron Broyles
- Scan the morning safety sheet
- Stage Site 28
- Backfill @ E Plume
- Flats are being hauled
- LC arrives @ 1830 - 23 flats are loaded - 83 flats are received.

- Update spreadsheets -

End 2100

(12.5)

Russell James

Wednesday 7/31/2013 NE Cape HTRW

34130068, Partly Cloudy, 51°F R. James

E winds 3 mph

0700 Safety: AHA Review, Ron says will have visitors onsite today - Colonel; Contract officer; Jeremy returns

Science Mtg: Cubies for fresh water @ Site 28; Re-level containment; Repair tracked side-by; HEAD NETS! Bugs!

Objectives: prep for site 28; Check for sample Results from Test America; Lyndsey will pass the torch to EPC; Adjust Silt Fence @ E-Plume; Ron requests mopping up diesel/oil on water w/ boom or absorbents.

- Site 28 pumps + hoses are set up - only need water in the cubes to begin
- Site 10 backfilled.
- 1130 hrs - Security Aviation - Colonel LoStochi, Aldone Graham, Jeremy Craner
- 1400 hrs - Bering Air CASA - Lesa Nelson arrives; Lyndsey Kleppin leaves the site → Ken Andrasko → Security Aviation departed ~1400 hrs - Ron Broyles, Colonel LoStochi, Andrasko, Graham leave the site.

1700 - 54°F

[signature]

40 Thursday 8/1/2013 NE Cape HTRW

341300668, Light Rain, 50°F R. James

NE Winds 5 mph

0700 Safety: Drowning doesn't look like drowning

Science Mtg: Bagging + Screening today; Complete setup @ Site 28

Objectives: Begin test dredge @ Site 28; Bagging Ops → Screening Ops; Site 28 prep phase this afternoon

- Setup @ Site 28 - Fill water blivets
  - Pump sump into Geotube - Mix/Inject Polymer.
- Prep phase @ 1300 for Site 28
- Tour site w/Chuck + discuss future plans.

1700 weather - 53°F - NE winds 10 mph

Friday 8/2/2013 NE Cape HTRW 541300665 41

Light Rain, 52°F R. James

4 mph NE wind

0700 Safety: Safety Quiz; Safety Award

Science Mtg: Will use labor crew @ Site 28 for pulling Sediment

- Crew will throw veg Mat into trailer and haul to a bag
- Reminder - Get flat + Bag #s that have been built at the MOC
- Removal Area (e- Veg/Sed removed
  - Part of drum-Piping, TNV
  - Strong Diesel odor
- No diesel odor @ Removal Area #5
  - North side of RA5 has a gravel/rock bottom - significantly colder temp
- Boring Air arrives @ 1530 hrs - Caley departs site - Last hose arrived; Plumbing parts (Reducers)

Saturday 8/3/2013 NE Cape HTRW

Overcast, Light Mist/Rain, 51°F R. James
NW winds 1mph

0700 Safety: Recognize unsafe acts/conditions

Objectives: Bag a Pad 98; Haul Flats to beach; stage for boat.

- Bagging @ 98 - Linkson sampling dredging Removal Area 6 Fuel Sheen and petro odor.
Sheen persists through to GeoContainment - Tube appears to be filling up nicely.
- Some pinholes noticed in primary containment - Patched w/tape from Manufacturer.
- Filtration/Treatment system is plumbed in late in the day.
- Water side of beach is staged w/24 Flats
- Excavated @ the E-Plume.

1700 weather - 54°F, 3 winds 2mph

Sunday 8/4/2013 NE Cape HTRW

34°13'00"S, Cloudy, 51°F R. James

S winds 9 mph

0700 Safety

- Vehicle Safety
- Dock completed 8/3/13
- Filtration system begins running @ Site 28 in the AM
- Bagging @ Pad 98
- Hauling to Beach
- Sam Tea Lab @ 1100 hrs -
  - 24 flats shipped
  - Will return Mon Night @ 12:00 AM (Midnight)
- Excavate B-Plume
- Filter @ Site 28 - H2O samples collected from the impoundments
- Sediment @ Ponds is picked up and loaded into a bag
- Removal Area 7 is excavated and loaded into a bag
- Dredge is staged @ Removal Area 3 - Hose ends are kept.
- Site 10 overburden is removed
- 24 Flats are prepped for next boat

- 1840 hrs - Weather - 54°F
  S winds 10 mph
- Check on Filtration system
  @ 1900 hrs

Monday 8/5/2013, NE Cape HTRW
34130068, Cloudy 51°F R. James

N winds 5 mph
0700 Safety: After work safety
- Safety Jokes
Science Mtg: Bag @ 10, Site 28
filter
- Manifest signature
- Complete Excavations @
  Site 10
- Excavate @ the MOC
- Call from M. Welker - discuss
  job.
- Call from Sam Taalak & Will travel
  to NE Cape - ETA 2330 hrs.
- Complete DQCRs and email
  to Craner.
- Site 28 is prepping to dredge
  area 3. The sumps are
  pumped up to the Geotube.
  - New Geotube is installed
  into containment.
- MOC excavations @ E + I
- Site 10 excavations completed +
  samples taken.
- Bering Air @ 1730 - Samples Out
- Sam Called to cancel LC @ 2000 hrs

 Tuesday 8/6/2013 NE Cape HTRW

34130068, Fog/Mist, 49°F R. James

NE winds 5 mph

0700 Safety: Final AHAs Reviewed

- Bagging @ Pad 98
- Emptying the silt trap @ Site 28 @ ~ 0900 hrs
- LC calls and will leave for NE Cape - Arrive @ ~1230 hrs
- Field lab results received from R. Losche - 3 Hot Spots @ Site 10 for DRO/RRO. 1 Hot Spot @ B-Plume. 2 Hot Spots @ the I-Plume
- Matt Chimenti (Global Baker) will depart the site tomorrow for medical reasons
  - Awaiting additional info from Global
- Matt will change out on Friday
- Site 28 Area 3 is dredged for ~1.5 hrs. Filtrations continues.
- Sam Taalak is loaded w/22 flats @1230 hrs

Wednesday 8/7/2013 NE Cape HTRW

34130068, Light Rain, 52°F R. James

NE winds 18 MPH

0700 safety - Weather has worsened

- Site 10 bagging this morning
- Security Aviation weather call ~0915 - 2000' ceiling. Weather is improving - some broken clouds overhead.
- Michael Toolie will leave for Savoonga today.
- Groceries will be flown in on a Bering Air Beechcraft.
- Security Aviation arrives ~1145 hrs - Lisa Geist arrives on site
- Cramer leaves the site -
- Bering Air arrives ~1500 hrs - Lyndsey Kleppin arrives/Groceries arrive
- Tend the pump @ Site 28

48 Thursday 8/8/2013 NE Cape HTRW

34130068, Light Rain, 51°F R. James

E winds 2 MPH

0700 Safety: Beach Safety; Boat Loading Saf

Objectives: Bagging/Containment @ Site 28; Sam Taalak; Excavate Pole the MOC

- Sam Taalak arrives @ 1400 hrs
  - 24 flats are loaded onto the LC
- New Containment is setup @ Site 28. Water pumped from the 2ndary into this new Containment
- Treated water samples Results Check
- 2 loads from borrow
- Treated water appears to not meet discharge criteria - Final results have not been received -
- Will be re-run @ TA

1700 Weather - N winds 5 mph; 50°F Rain

(11.5)

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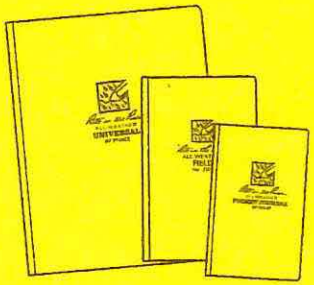
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CONTENTS

PAGE	REFERENCE	DATE

Friday NE Cape 34130068
8/9/2013, Fog, 48°F R. James
N wind 3 mph
0700 Safety: Safety Awards
Objectives: Excavate @ MOC; Bag @ Pad 98; Prep for LC; Site 10 weights
- weight of drums @ Site 10 - 3460 lbs
- Call M. Welker, S. Johnson, G. Jarrel and discuss the acquisition of a GAC filter.
- Anc office will gather info on costs and logistics of getting it out here
- Excavating POL @ the MOC

Evening weather: 52°F
N wind 11 mph

Saturday 8/10/2013 NE Cape MTRW
Cloudy, 45°F. 34130068 R. James
N winds 13 mph
0700 Safety: Wet conditions, watch footing; 3 point mount
Science Mtg: Pipeline break sampling. J. Clark - L Nelson will attempt to find the pipeline location b/t site 7 and Cargo Beach
- Bagging @ Pad 98
- Complete DQCRs and email to L. Geist.
- Email Tyler re: disposal of site 10 drums/soil/liner
- Sam Taalak @ 0200 hrs - 20 flats shipped-off. Will not return for afternoon tide.
- Barge - Bering Pacific has arrived to St. Lawrence and will remain for 120 flats (including the 20 from this morning)

Sunday 8/11/2013 NE Cape HTRW

Mist/Fog, 48°F R. James

N wind 5 mph

0700 Safety

Innovate/Ideas; Timecards/Dailies; progress

Objectives: Excavate w/side of E; Sediment confirmation samples

- Sam Taalak arrived @ 1530 hrs
  - 22 flats were loaded.
- 6 sed Confirm samples collected
- Global's GenSet ~~was~~ went down. Bristol's backup is put into use.
- Prep Manifests for AM LCs

Monday 8/12/2013 NE Cape HTRW

341300068, Mostly Cloudy, 46°F R. James

0 mph winds

- Sam Taalak @ 0330 - 25 flats
  - Again @ 0600 - 25 flats
- Will return @ 1630 hrs for 25 more flats.
- Prep Manifests for afternoon LCs.

6 Tuesday 8/13/2013 NE Cape HTRW

341300e8, Partly Cloudy, 48°F R. James
East winds 5mph
0800 Safety: Minor Injuries
Objectives: Complete FOL excavations up to 6,000 tons of removal; Haul flats to Beach and stage for landing Craft
- Tour sites 28, 21 and 9 w/Lisa Geist, Curtis Dunkin. Curtis will give feedback on site 21 excavations by COB Friday. Lisa proposed not excavating 21SB17 due to its location in flowing wetland/water.
- Rent Air Compressor from Q Trucking.
- Call Shawn Tucker @ Emerald To discuss the GAC units.
- Weigh the debris/Generator @ Debris Staging
1720 weather: 54°F, NE winds 11mph

Wednesday 8/14/2013 NE Cape HTRW 7

341300e8, Light Rain, 50°F R. James
W 2 mph winds
0700 Safety: Why Accidents occur - Arsenic
Objectives: Tag @ Pad 9B; Haul Flats to Beach; Dig @ Site 10-
Security Aviation arrives @ 1130
- Aaron Shewman arrives to Replace QAR Lisa Geist
- Bering Air arrives 1430 hrs - Groceries are received - C-Crolen and Matt Chimenti arrive on-site - Roger Wall leaves the site.
- Sam Taalak lands @ 1730 hrs and takes 24 Flats (48 bags).

End 1645 hrs

8 Thursday 8/15/2013 NE Cape HTRW

34130068, Overcast, Light Rain, 50°F R. James

SW winds 9 MPH

0700 Safety: Complacency; Slow & Steady pace

Science Mtg: Ask Aaron about Rd Sampling; Site 21 - waiting on DEC; Fill the bag frame hole @ the tar Area; MOC - E Plume w.n. move into E1 after digging @ A2; Landing Craft due tomorrow Morning @ 0630 hrs; Some material sits @ Pad 98 that can be screened.

• Review Road Sample Locations w/ Croley & Shewman
- Shewman approves the proposed locations.
- 4 locs total - will notify QAR when Sampling Begins
- 1800 weather: 49°F; W 4 mph

Rick James

Friday 8/16/2013 NE Cape HTRW 9

34130068, Mist/Fog, 46°F, N13mph R. James

• 0600: Landing Craft prep.
• Dam Taalak arrives @ 0700 and is loaded w/22 flats.
Safety: Falls; Motor Vehicle Accidents; Top Causes of workplace fatalities
~~1000 RJ~~ Generator arrives on Sam T and is setup in Camp.
- Air Compressor (185) arrives
- 1000 - Telecon w/ Northland re: demob and Bulk Bag Shiffer
- Discuss Site 21 w/ Shewman
- forward map to QAR to send to ADEC
• Spring Air arrived @ 1500 - Lisa Nelson left the site - Julie Clark arrived
• Discuss Site 21 map w/ Aaron Shewman - Send Lisa Geist's comments to Noyuk Peacock for edits to Site 21 Map

Rick James

Saturday 8/17/2013 NE Cape HTRW

341300GS, Overcast, 44°F R. James

Northwest Winds 5 mph

0700 Safety: Chill Factor - Stay Dry; Take care of your health;

Objectives: Excavate POL soil @ Site 10; Sam Taalak tonight @ 2030 Hrs

- Add Screening @ Pad 98
- DQCRs
- Site 10 - 6 bags filled @ the POL dig @ Site 10 - LK collecting Field Screen samples - 8 FS samples
- Yard goat being repaired - Hauling again @ 1100 hrs
- Excavating @ the A-Plume - East Side
- Washing Vehicles Today.
- Cutting Rebar off of Concrete @ MOC
- Bagging @ Pad 98

1700 weather: 49°F; N 5 mph

- Landing Craft @ 2300 - 24 Flats shipped off - Island - GAC Units Received.
- Excavated @ E + A Plumes Today.

Paul James

Sunday 8/18/2013 NE Cape HTRW

341300GS, Clear, Fog threatening R. James

44°F SE 0 mph

0700 Safety: Longer ~~30~~ 85 Hours, work or play; Watch out for each other; Safety Award

Objectives: Dig @ MOC; Install GACs and new containment - Patch some containments

- LK recommends backfilling parts of E
- Visit Road Sample locations w/J. Clark
- Photograph Site 28 GAC units and containment Construction.
- Jack + Lyndsey are Excavating @ A-Plumes
- ECOLAND is surveying the Road Sample Locations w/J. Clark
- Screen plant is running @ Pad 98
- MWs removed @ Site 6(2); One MW removed across from Site 7

1600 weather - 43°F, N 15 mph.

Paul James

Monday: 8/19/2013 NE Cape HTRW

34130068, Low Clouds 44°F R. James

NW winds 20 mph, Chill = 34°F

0700 Safety: Winds - Protect against; Guard against wind chill

Science Mtg: Pack Samples this morning; Reconstruct Containment.

- Water filtration through the GACs was begun this morning @ ~ 0820 - Treated water sample was collected by J. Clark - Water is very clear/clean looking - Photos collected. Some coal dust is apparent in the containment, but is flowing clear from the hose.
- Send DQCRs to Chuck for Signature
- Fill out updates for M. Faust
- Site 10 DRO/RRO and Site 28 TWA samples will be shipped to TA today

R. James

Monday 8/26/2013 NE Cape HTRW

34130068, Mostly Cloudy R. James

- Arrive to NE Cape @ ~~1430~~ RJ 1630 HRS
- Load Sam Taalak @ ~~1630~~ RJ 1830 HRS
- Check morning load sheets @ Cargo Beach - Sam will land @ 0430 tomorrow morning

R. James

Tuesday 8/27/2013 NE Cape HTRW
Mostly Cloudy, SW winds 15mph R James
48°F

0400 - Load Sam Taalak w/25 flats
0700 - Load 2nd Load onto Sam Taalak - 25 flats - Will load again @ 1730 hrs.
- Discuss quantities w/Molly and G. Jarrel, B. Burke in Anc. - We are instructed to stop digging @ the MOC b/c quantities have been reached.
- Ron Broyles instructs BERs to quit excavating @ the MOC until the USACE can come up with a Plan of Action for the rest of the season.
- Ron Instructs BERs to discharge treated water @ site 28 directly to the ground and to sample @ Regular intervals
- Complete/Sign DQCR for 8/25/13.
- Scan safety sheets @ 1100 hrs
- 1400 hrs - Site 10 backfilled
- Sam Taalak @ 1730 and 2000 - 50 Flats shipped off -

Wednesday 8/28/13 NE Cape HTRW
34130068, Mostly Cloudy, 46°F R. James
NE wind ~~19 mph~~ 7 mph
0700 Safety - Road Traffic - Watch out for visitors - Heavy equipment has the Right of-way - Buckle up!
Objectives: Haul to Beach; stage for LC; Ron mentions pulling the MW's around the site

- Overburden stockpile sampling
- Dredging near the northern section of Removal Area 3
- Sam @ 0530 - 25 flats
- Sam @ 0800 - 25 flats
- Weather strong from north - Surf is increasing/getting Chopp
1700 weather: 45°F; N wind 19 mph.
- No LC this evening or tomorrow Morning due to weather

Thursday 8/29/13 - NE Cape ATRW

Partly Cloudy, 39°F 34130068 R. James

N wind 9 mph

0700 Safety: Road ROW; Excavation Safety

Objectives: Screen plant; Backfill haul; dredge @ Site 28; 5-yard bags if bagging; ~~over~~

- Enter Bag Weights
- Work on DQCRs

1100 Hrs - Telecon w/ Palmer, Broyles, Croley, Welker, Jarrell, James, Dunkin re: Site 28.

⇒ Water (treated) will be contained and sampled prior to discharge. Will be discharged from containments.

- Treated water samples can be analyzed on standard TAT
- Pre-treatment samples are no longer necessary. Dunkin requests that science team continue to monitor the clean containments for sheen
- Grab soil sample and dupe will be collected from discharge point following end of discharge activities

1700 weather - 46°F; S 8 mph

Friday 8/30/13 NE Cape ATRW

34130068, Light Rain, 44°F R. James

S 2 mph

0700 Safety: Housekeeping; Work transition w/new bags @ Pad 98

Objectives: Dredging @ Site 28; Screen plant @ Pad 98; Backfill the MOC excavations.

- Bering Air - 1300 hrs - Winston-Maupin left the site - Charles Kava arrived on-site
- Ron (QAR) Instructs Bristol to Excavate AZ "Hot spots" and try to get the excavation below cleanup levels.
- Ron Instructs Bristol to excavate locations @ Site 21 where As remains above Cleanup levels. He said not to excavate above the contracted amount of 300 tons
- Treated water (2) samples collected
- One (1) downstream Monitoring sample collected @ Site 28
- Soil Confirmation samples (11) collected @ Site 28

- Evening weather: 47°F; 3 mph SE

18 Saturday 8/31/13 NE Cape HTRW

341300E, Light Rain, 45°F R. James
E wind 13 mph
0700 Safety - Health; Stay Warm/Wash Hands
Objectives: Pulling Liner; Bagging @ Pad 98; Haul borrow material
- Work on Docks for 8/30/2013. - Complete and send to Brayton for comments
- Visit to Pad 98 - 5-cy bags are being filled w/ dredged soil. Weights are about 11-12 K pounds
- Dredging operations @ Removal Area 4 in Site 28.
- The E-Plume is being backfilled and graded.
- Loaded flats are being hauled to the beach. Five
- Stockpile liners & the MOC are being picked up by the excavator.
- J. Willis is welding a load frame for the 5 cy bags.
- 4 waste Characterization samples submitted to Field Lab for ~~Radco~~ Analysis
- 1700 Weather: 48°F; ~~NE~~ 15 ~~Mph~~ 17

Sunday 9/1/2013 NE Cape HTRW 19

341300E, 47°F, Partly Cloudy R. James
14 mph NE winds
0700 Safety: Slips, trips, + falls - Statistics
Objectives: Excavate Hot Spots @ AZ excavation; Bagging @ Pad 98; Under Stockpile-liner sampling -

- GAC discharge is still relatively turbid - ~30 NTUs - J. Clark collected treated water samples (2), 1 from each of 2 clean containments - There is no fuel/diesel odor in the treated water. The water is being re-circulated thru the filters and GACs when the prime containments are not being pumped
- Moc Plumes are being backfilled
- AZ is being excavated and Material hauled to Pad 98
- Spill kits added to site 28
- J. Clark collected 1 SW monitoring sample in Site 28 stream
- UK-F confirm samples from A Plume

1700 weather: 48°F; NE 17 mph

 Monday 9/2/2013 NE Cape HTRW

34130068, Rain, 45°F, 35°F chill R. James

NE winds 23 mph

0700 Safety: PPE - Hard Hat, Hard-toe boots, Safety Glasses; Vehicle speed limits; Seat belts - No exceptions; Rain & Wind prevalent today - Stay warm & dry

Objectives: New containments @ Site 28;

- Bagging is taking place @ Pad 98
- Backfill is being hauled to Site 21 for access road. Additional removal will occur tomorrow
  - 21 loads hauled from pit on truck C1
- Site 28 Pumping/GAC and dredge setup.
  - One pole was removed from Area 4 Pond.
- J. Willis repairs exhaust manifold on Volvo 330 loader
- LK collected 7 confirm samples from A2 sidewalls

1700 weather: Rain/Mist, NWind 14 mph 45°F

Paul James

Tuesday 9/3/2013 NE Cape HTRW R. James

34130068, Partly Cloudy, 47°F, E 3 mph

0700 Safety: Site 21 Arsenic; Containment construction - gloves, lifting techniques; Slower is faster.

Objectives: Site 21 - EB; Airplane @ 12:30 or 13:00; Containment @ Site 28

- Backwashing the GAC @ Site 25 @ 1300 hrs
- Finishing Site 21 @ 1430 hrs
  - 2 WC samples collected
  - 8 prime Confirmation samples collected + 1 dupe
- 45 DRO/RRO Samples collected from under overburden stockpiles and submitted to field lab

Paul James

1700 - Light Rain 45°F; 8 mph North

Paul James

22 Wednesday 9/4/13 NE Cape HTRW R. James

341300es, 44°F, N 3mph, Partly Cloudy a/Rain/Fog

0700 Safety: Screen plant PPE - Ear Plug Demo; 10 Safety Facts

~~Objectives~~ Screening @ Pad 98; Containment construction @ Pad 98

- Bagging @ Pad 98
- Containment is setup @ Site 28
  - Patched w/tape & extra material
- Water treated @ Site 28 and more backflushing of GACs
- 5 SF samples and 2 QC samples submitted to field lab for RPO/RRO

1730: 47°F; N 1 mph

Thursday 9/5/2013 NE Cape HTRW 23

341300es, Fog, 42°F R. James

1 mph NW wind

0700 Safety: Sites Overview; Have all the right PPE for a job

Objectives: Knock down berms @ Pad 98 and collect samples for field lab; Bag soil @ Pad 98

- Complete TDCRs for 9/4 and email to Ron Boylee @ 0830 Hrs.
- Receive email from Boylee re: water treatment discharge permit. He asks about measuring pH, settleable solids, turbidity & total chlorine. I respond by saying we had those parameters waived → He asks about permit expiration and I forward some emails from July that address his questions
- Telecon w/Northland @ 0900 Hrs.
- Asked Ron about 2 hot spots from underneath the liner that were high for RRO - He instructed us to locate/survey the locations but to not excavate.

- Site to Tom waste sample
  - 13NC10D501 from drum 01
  - 13NC10D502 from drum 03
- Bagging is completed @ 1450 hrs
- Help Lyndsey collect under-liner stockpile samples from NW corner of MOC - 6 samples collected.
- 48°F, N 9mph @ 1700 hrs
- Security Aviation arrived today @ 1430 w/ J. Crouse and V. Palmer. Departs @ 1630 hrs w/ R. Broyles and V. Palmer.
- Re: Site 10. The drum debris will be added to the debris in a Conex
- Corey Inman arrived on the Security Aviation flight. He will be the new Mechanic while Johnny works Site 28.

3413300 08, 45°F, N 9 mph

0700 Safety/PPE stories; Hook/unhook bulk bags

Science mtg; Samples will go out today; Check for sample results from TA.

- LK submitted 2 samples to the field lab from the stockpile area where the 2 locations were over-excavated where R&O was above CUL
- Bering Air arrived ~1330. Marty Hannah arrived onsite. Julie Clark left the site.
- The berm around Pad 95 was removed
- 5-CY bags are being hauled to Cargo Beach
- Arsenic Samples from Site 21 and WC samps from Site 10 shipped out 1700, 45°F, N wind 12 mph

26 Saturday 9/7/2013 NE Cape HTRW.

341300e8 45°F

N wind 6 MPH

0700 safety: Safety Award - Allen Dennis;

- Field lab results from the stockpile samples are trickling in.
- Email signed DCRs from 9/3 and 9/4 to distribution group.
- LB abandoned 3 wells @ the MOC
- EB is collecting Treated Water sample from the southernmost containment @ 1310 hrs.
- Begin 2nd round of dredging in RA4 @ 1415 hrs

Fueling Rock truck - Diesel:
Start: 3939
End: 3951
= 12 gallons

1700: 46°F, NE 8 mph

Sunday 9/8/2013 NE Cape HTRW T. James 27

341300e8, 42°F, N wind 2mph

0800 Safety: PPE & Work Sites; Safety Jokes;

Objectives: Change Media in Silt Trap; Continue dredging @ Site 28

- Sample Results from the stockpile Area - 1 sample is above cul for RRO - Overexcavated into Bulk Bag.
  - Sample collected (1) and will be sent to TA for RRO/RRO analysis.
- Grading/Backfilling the MOC.
- 1100 hrs - Mark the locations of the MWs @ Site 6 and Site 7 w/ Lath
- Changed the oil in the generator ~ 1330 hrs
- Bags are being hauled to the beach
- EB collected a treated water sample from the Mid-East containment.
- Dredging RA4
- New Geotube added to

Mid-East containment.
- Debris is being consolidated into open-top conexes and weighed by the Volvo 330.
- Water is pumped from the sumps into the additional geotube. The geotube is one of the non-lined tubes from last year.

0700 weather: 44°F, N wind 10 mph

34130068, 43F N wind 11 mph

0700 Safety: Safety Quiz
Objective: Update the waste sheet for Tyler; Get gas cylinder count to Tyler; Dredge Removal Area 4

- 1 treated water sample collected
- Discussions w/ USACE
  - USACE will add the SP under-liner removal to the MOA
  - re: Site 21 - Check results and will decide on backfilling @ that time.
  - Seed/fertilize - No rolling - track-walk and then spread seed/fertilizer
- Bering Air Beechcraft C/330 - Marty, Josh, and Rich Loesche leave the site @ 1415 hrs.
- MW Sampling: Site 26 grad (DW) and MOA (Perimeter Rd) completed
- Dredging RA 4 @ Site 28 - 2 SW samples (1 dupe) were collected directly downstream from sed trap - 45°F, N 8 mph

39°F, 7 mph NW Winds R. James

0700 Safety: Seatbelts—How they protect
- EB Read Seatbelt article

Objectives: MI Sampling
- MI Sampling @ Area next to 150s
- MI Sampling @ 150s stopped
- Dredging @ Removal Area 4
  - Removal Area 4 completed—Moving Pumps/Hoses in prep for RA9
- Sample collected from GAC for TCLP BTEX - the carbon was sampled
- Grading the NOC w/ Dozer + Scraper
- Picking trash @ Site 28 and adding to debris pile.
- 1 TW sample and 1 SW monitoring sample @ Site 28
- EB Sampled the 2 southern IDWs @ Site 6

1700: 42°F. NW wind 6 mph

Partly Cloudy; 39°F, E wind 4 mph R. James

0700 safety: New variety of tasks - right tool for right job; Patience
- Dredging ~~RA4~~ RA9 - ~25%
  - Panel completed by 1200 hrs
- LK collects TW sample and SW sample beyond the Sed Mitigation
- Coolers are packed for shipping
- Bering Air arrives ~1315 hrs
  - Kevin Maher, Chris, Julianna arrive from Jacobs
- Jebb, Jack, Scott, Dale, Eugene leave the site
  - Coolers are shipped to Denver via Bering Air.
- EABL 0795 Inventory:
  - 1x 55 DM - Ash
  - 1x 85 DM - Ash
  - 2x 55 DM - USED TYVEK
  - 1x 85 DM overpack - Boot wash water
  - 1x 55 DM - Broken Glass, Aluminum
  - 1x 55 DM - Ash/Debris
  - 1x 55 DM - Burnt Metal

- 4 Batteries (LA)
- 6x Ziploc Bags - Alkaline batteries
- 1x trash Bag => Empty into soil container
- 2x 55DM - MT
- 1x 85DM - MT

• Dredging continued thru RA9
  - 1 TW sample @ Site 28 collected
  - 1 SW sample collected downstream of dredge
• 3 wells abandoned - 1 @ site 16; 1 @ site 9 and 1 @ site 21
1700 weather: ~~42°F~~ 50°F, S winds 10 mph

[signature]

Thursday 9/12/2013 NE Cape ATRW
341300068, Mist/Fog, 40°F, NW 6mph R. James

0700 Safety: Stay Healthy - Wash Hands; See the medic when necessary; Get Rest; Be safe on the roads; Be careful on nighttime excursions; Watch footing - Be careful for slips, trips, & falls:
- work shift will begin @ 0800 tomorrow morning.
- Batteries will be added to a Fish tote today
- MI sampling @ site 6
  - 2 DUs completed
• 10 geotubes are now in containment @ Site 28 @ 1100 hrs.
  GAC outflow is very clear and containments are clear
• Finish RA9 @ 1515 Hrs
• 9 primary plus 1 duplicate sample collected (soil) @ Removal Area 4
1700 weather: 47°F, 3 mph NW

[signature]

 Friday 9/13/2013 NE Cape HTRW

Mist/Light Rain, 45°F, SW 15mph R James

0700 Safety: Misc Activities - Stay Alert; Watch footing @ Site 28 in the wet areas; strong winds today

Objectives: Site 21 - Silt Fence will be installed @ the site and backfilled today.

- Dredging RA 10 9/1 today
  - 1 SW sample + 1 TW sample collected
- Backfilling Site 21 w/Borrow material
- Bering Air arrived ~1400 - freight was received - L. Kleppin left the site.
- Site 28 dredging completed by 1730 Hrs.
  - Sampling still needs to be completed + Hoses/Sumps pulled.
- Water treatment/GACing continued in the evening

Evening weather: 44°F, N wind 4 mph

[signature]

Saturday 9/14/2013 NE Cape HTRW

Overcast, Light Mist, 42°F, 0 wind R. James

0700 Safety: Common Sense -

- Seeding/Fertilizing Site 10 and the MOC
- Complete Backfill @ Site 21
- Soil Confirm Sampling @ Site 28

Confirmation Sampling @ Site 28

① 13NC28SS035 (photo)
- Dark brown/black saturated Silty Clay - layered - Minor organic root/grass - 4 FS
- No petro odor but sheen occurred during sample collection

Moderately dense

② 13NC28SS036 (photo of bowl)
Loose dark brown/black organic silt w/some Clay - saturated
- Petro odor - Sheen

③ 13NC28SS037 (photo of bowl)
- Similar to 35 + 36 - petro sheen in sample bowl
- The dense organic silt/clay are layered black/brown

④ 13NC28SS038 (photo of Bowl)
1505 Hrs - Brown + black loose organic silt material - w/silt - minor roots & grass - petro sheen and odor

1520 hrs

⑤ 13NC28550039 - Dupe of 040 - 1530 hrs
- Removal Area 10 -
- Gray sand; roots/grass - Sand is bound by the root mass.
- No sheen or odor

⑥ 13NC28550041 (MS/D) 1540
- No sheen or odor
- Loosely bound brown/black organic silt w/in organic root mat - Minor clay and sand - Saturated

⑦ 13NC28550042/043 (duplicates) 1610 hrs + 1620 hrs
Organic silt w/clay, bound by veg mat (roots/grass). brn/blk silt; gray clay - No sheen or odor - saturated - Minor sand

⑧ 13NC28550044 (photo) 1632
- Brown organic silt bound w/in root/grass veg mat. Some sand - NO sheen or petro odor

⑨ 13NC28550045 @ 1640
- Brown organic silt, veg mat, very minor clay - layered clay/silt; some sand and grass - No sheen/odor

1700 weather: 50°F, SW wind 9 mph

Site 28 photo - Sample IDs

Photo	Type	ID
DSCF1696	JPG	13NC28550035
DSCF1697	JPG	13NC28550036
" 1698	"	13NC28550037
" 1699	"	13NC28550038
" 1701	"	13NC28550039/40
" 1702	"	13NC28550041
" 1703	"	13NC28550042/043
" 1704	"	13NC28550044
" 1705	"	13NC28550045

- J. Wilkie & L. Cameron are cleaning/pumping the sumps into the sed tubes @ site 28; trying to get the settled sediment pumped into containment

 Sunday 9/15/2013 NE Cape HTRW

Partly Cloudy, 48°F, S wind 9 mph R James

0700 Safety: Inclement weather - Dress appropriately; Tear down @ Site 28 Team lift and PPE - boots, gloves

- Sign DQCR for 9/12 - 9/13 and forward to C. Croley.
- Begin DQCR for 9/14
- Jamie Allan informs me that the points that Jacob's wants him to survey are not marked on the ground - He can't find them. → I will pass this on to Jeremy Craner
- Punch-out Inspections w/ Craner @ 1300 hrs - will have another for site 28 on Thursday @ 1300
- Seeding & fertilizing Site 21 and the MOC

- 1 site 28 confirm sample collected
- 3 MOC SW samples collected
- 1 TW sample collected
- 2 SW samples collected @ Site 21

1700 weather: 51°F, 4 mph SE winds

Monday 9/16/2013 NE Cape HTRW R James

Light Rain 34130068, 46°F, 9 mph NE winds

0700 Safety: Vehicle Safety

Objectives: Site 28 - Remove Silt trap; New personnel for GAC water treatment; ~~BFS~~ Remove lower Sump

- Barge will arrive tomorrow afternoon
- 1 TW sample collected from the clean containments @ Site 28
- Lower Sump is being removed using the 200 excavator @ Site 28 @ 1130 Hrs.
- 1 bag - 28-03A is filled w/ Material from the lower and upper sumps - Upper Sump is removed using the excavator.
- EB collects the MI sample @ the lower sump
- Water in the primary
- Silt trap was removed from the Site 28 drainage
- Bering Air @ 1330 - Coolers shipped out - Lindsay Cameron + Jacob's Crew (2) left the site

1700 weather = 45°F, N wind 13 mph

Rudy James

 Tuesday 9/17/2013 NE Cape HTRW R. James

34130068, 39°F N wind 16 mph

0700 Safety: Site 28 Footing; Boat Loading — Cargo Beach operations

- Continue MI Sampling @ Site 28
- Work on DQCR for 9-16-13 — Complete and send to Craner @ 1020 hrs
- MI sample collected @ 1530 @ the upper sump #2.
- Hoses are being rolled up and put away.
- Debris + lath are being picked up.
- 2-inch minus is being hauled to borrow pit.
- Conexes are being staged for winter @ the apron of the runway
- 1 treated water sample was collected from secondary containment @ Site 28.

1700 weather: 40°F, N wind 18 mph.

R. James

 Wednesday 9/18/2013 NE Cape HTRW

Partly Cloudy, 38°F, N wind 7 mph R. James

0700 Safety: E. R. I. C.

- Craner instructs BERS to not collect the MI sample @ the treated water discharge area. The discrete grab sample will be sufficient.
- Bering Air arrived ~ 1400 hrs
- Tyler Ellingboe + Global Services (4 ppl) arrived.
- Suzanne Lovell, Jamie Allan, Sam Jackson, Slate Uys, and Michael Toole left the site.
- Additional water treatment is occurring @ site 28.
- Show T. Ellingboe the Haz Waste/NALEMP Conex so he can prep for shipping.
- Jeremy Craner informed BERS of a few locations where he found Metal @ Site 28. BERS will collect.

1700 weather: 39°F, N wind 4 mph

R. James

Thursday 9/19/2013 NE Cape HTRW

34130068, Partly Cloudy R. James

0700 Safety: Breakdown; Patience; Boat Loading

- T.E. is packing the NALEMP Cores for shipment
- Site 28 is in final stages of teardown.
- Landing Craft will arrive this Morning @ 1100 hrs
- LC @ 1130 hrs
- 24 (Sam) @ 1300 hrs
- Soil sample collected from the GAC discharge area
- Building flats @ Cargo Beach - 32 flats were built (64 bags)

Lee James

34130068, 37°F, NE wind 11 mph

0700 Safety: How cold affects your body.

Objectives: Camp Breakdown.

- Flats are being built on the beach - 25 flats are staged in prep for the next LCs
- Punch-Out Inspection for Site 28 - Final items are listed and will be completed ASAP (1100 hrs)
- Being Air @ 1400 - Tyler Ellinghoe, Dan Walker, Richard Bissett leave the site.
- Coolers are shipped out to Test America w/samples.
- Seeding is taking place @ the MOC - Across from Pad 98
- Empty flats are being hauled to the MOC
- Equipment is being washed

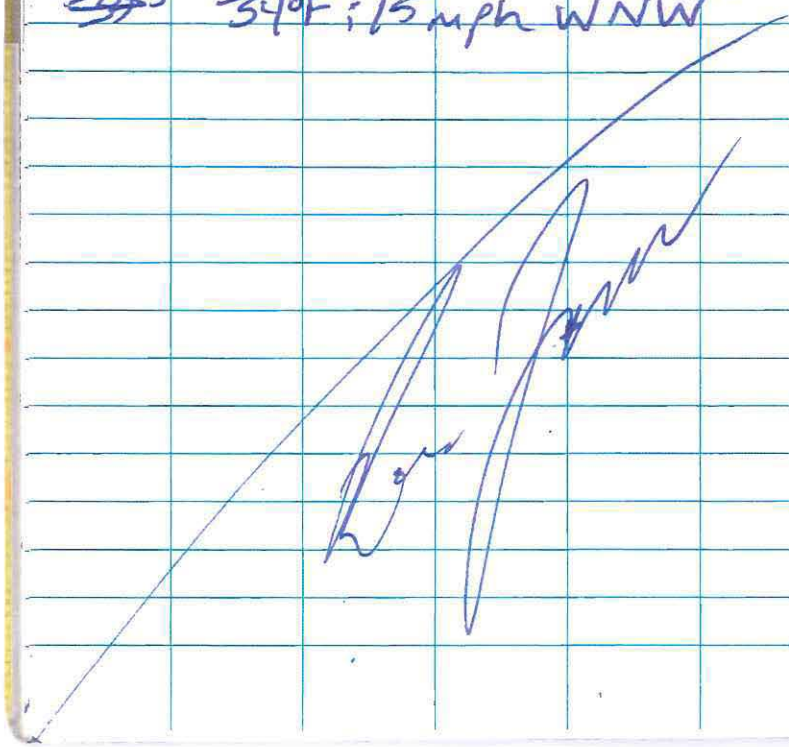
Lee James

 Saturday 9/21/2013. NU Cape HTRW

Mixed Precip, N wind 15mph. R. James

o 700 Safety: Cold weather: Ice/Snow
- prep manifests and load sheets for LCs. Two loads are manifested and ready to be shipped.
- Vehicles are being cleaned for storage
- Site 28 sumps were filled in and tracks were smoothed
- Seeded and fertilized

~~SJ~~ 34°F; 15mph WNW



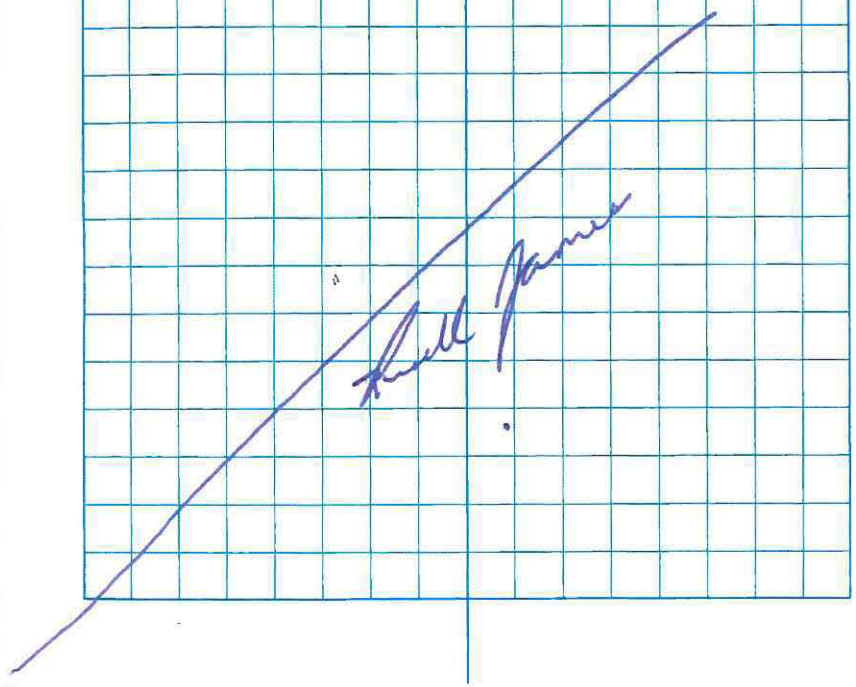
 Sunday 9/22/2013 NU Cape HTRW R. James

34130068. Partly Cloudy

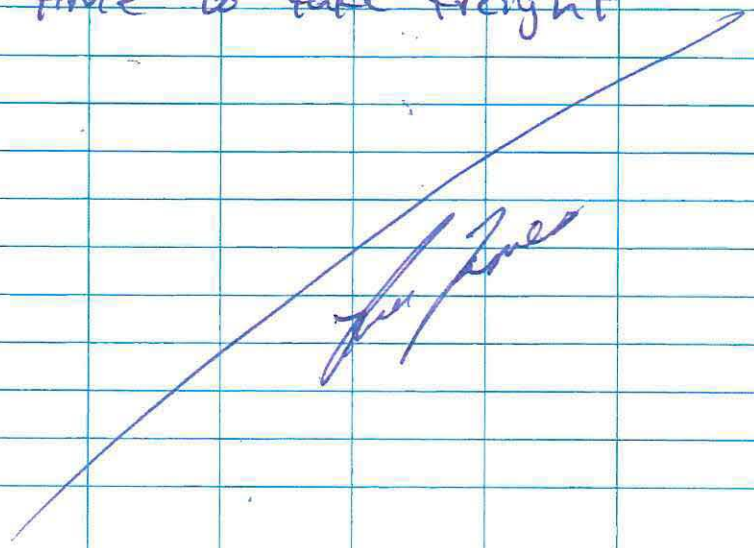
o 700 safety = Complacency - Stay Vigilent

Objective: Clean up site 28 - pack supplies away - load into Conexes.

- Move equipment into staging areas.
- Bulk Bags - Flats were prepped for shipping.
- Camp continues to be deconstructed.



Monday 9/23/2013 NE Cape HTRW
Partly Cloudy 35°F R. James
SW Winds 11 mph
0230 - Boat - Arrives 0345
- 25 Flats are loaded
0700 Safety: Boat Loading
& Beach Safety
Landing Craft @ 1530 hrs.
~~30~~ 25 flats were loaded
onto Sam Taalak
- Greta arrived ~1630 hrs
and took 31 flats.
- Sam T returned ~1730
and took 30 flats
- Greta returned one more
time to take freight



Tuesday 9/24/2013 NE Cape
34130068, High Clouds
0330 hrs - Cargo Beach →
Sam Taalak arrives
~0400 - Remaining freight
is loaded onto the LC
0700 Safety: Slower is
faster.
- Pack for departure

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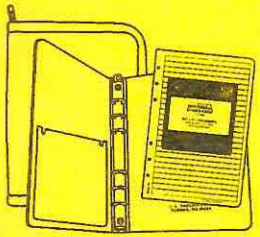

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APPENDIX E

Photograph Log

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Temporary construction camp.
Camp_DSCF1169.JPG

July 29, 2013 Southwest
Photographer: R. James



Temporary construction camp.
Camp_DSCF1170.JPG

July 29, 2013 South
Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Landing craft loaded with bulk bags. July 19, 2013 Northeast

CargoBeach_DSCF1036.JPG Photographer: R. James



Landing craft loaded with bulk bags. July 19, 2013 North

xxxxxx.JPG Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Bulk bags loaded on flats on Cargo Beach.

August 5, 2013 East

CargoBeach_DFSCF1266.JPG

Photographer: R. James



Landing craft approaching beach earthen ramp.

August 14, 2013 North

CargoBeachDSCF1310.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Bulk bags staged at Cargo Beach.
CargoBeachDSCF1606.JPG

September 9, 2013 East
Photographer: R. James



Metal debris.
Debris_DSCF1272.JPG

August 5, 2013 South
Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Bulldozer removed from Cargo Beach and placed on flat.

September 19, 2013 East

Debris_DSCN1499.JPG

Photographer: R. James



Sampling groundwater from MOC monitoring wells.

July 19, 2013 North

GWSamp_DSCF1038.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Hach Turbidimeter.
GWSamp_DSCF1040.JPG

July 19, 2013 Down
Photographer: R. James



YSI and turbidimeter for groundwater sampling.
GWSamp_DSCF1041.JPG

July 19, 2013 Down
Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Groundwater sampling.

July 21, 2013 South

GWSamp_DSCF1063.JPG

Photographer: R. James



Loading empty shipping flats onto truck for transport.

July 26, 2013 South

Haul_DSCF1129.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Moving flats of bulk bags to truck for transport to Cargo Beach.

July 30, 2013 North

Haul_DSCF1186.JPG

Photographer: R. James



Loading flat of bulk bags on truck for transport to Cargo Beach.

July 30, 2013 North

Haul_DSCF1187.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Removing flat of bulk bags from truck for staging at Cargo Beach.

July 14, 2013 Northeast

Haul_DSCN1467.JPG

Photographer: R. James



Collecting MI sample in decision unit, north of fuel containment.

July 18, 2013 North

MI_DSCF1615.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Removing clean overburden from "E" plume. July 17, 2013 Southwest

MOC_001_DSCF1006.JPG Photographer: R. James



Removing contaminated soil from "E" plume. July 15, 2013 South

MOC_01_DSCN1474.JPG Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Excavating contaminated soil.

MOC_02_DSCN1476.JPG

July 15, 2013 Down

Photographer: R. James



Loading soil into rock truck.

MOC_03_DSCN1473.JPG

July 15,2013 Southeast

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Unloading excavated contaminated soil onto pad 98 for bulk bag loading.

July 15, 2013 South

MOC_04_DSCN1478.JPG

Photographer: R. James



Loading contaminated soil into bulk bags.

July 15, 2013 West

MOC_05_DSCN1480.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Water with apparent oily sheen accumulated in MOC POL excavation.

July 19, 2013 Down

MOC_06_DSCF1047.JPG

Photographer: R. James



Water with apparent oily sheen accumulated in MOC POL excavation.

July 26, 2013 Down

MOC_07_DSCF1121.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Culvert uncovered in MOC excavation. July 25, 2013 Down

MOC_08_DSCF1108.JPG Photographer: R. James



Drum recovered from MOC excavation. July 24, 2013 Northwest

MOC_09_DSCF1101(2).JPG Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



MOC open excavations. September 5, 2013 Southeast

MOC_10_DSCF1556 Stitch.JPG Photographer: R. James

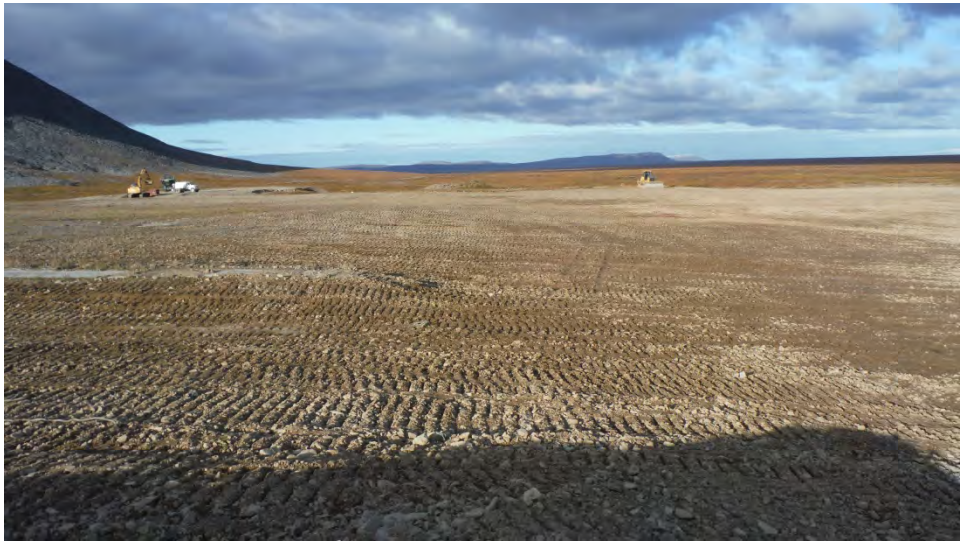


Track walking graded and backfilled MOC. September 10, 2013 West

MOC_11_DSCF1619.JPG Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Backfilled and excavated MOC.

MOC_12_DSCF1756.JPG

September 22, 2013 West

Photographer: R. James



Bentonite pellets for well abandonment activities.

MWAbnd_DSCF1125.JPG

July 26, 2013 Down

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Adding bentonite to abandoned well boring hole. August 18, 2013 East

MWAbnd_DSCF1126.JPG Photographer: R. James



Abandoned well backfilled with bentonite pellets. July 26, 2013 Down

MWAbnd_DSCF1364.JPG Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Power screening contaminated soil to remove two-inch plus rocks.

August 18, 2013 Northwest

Pad98_01_DSCF1358.JPG

Photographer: R. James



Loading contaminated soil into bulk bags.

July 16, 2013 Southwest

Pad_02_DSCF1003.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Loading contaminated soil into bulk bags.

August 17, 2013 North

Pad98_03_DSCF1339.JPG

Photographer: R. James



Waste sampling filled bulk bag at Pad 98.

July 20, 2013 South

Pad98_04_DSCF1053.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Writing unique identifier on bulk bag.

August 9, 2013 South

Pad98_05_DSCF1304.JPG

Photographer: R. James



Stacked wooden electrical and telephone poles.

July 17, 2013 North

Poles_DSCF1012.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Collecting the first roadway sample.

Road_DSCF1350.JPG

August 18, 2013 South

Photographer: R. James



Sampling at site 10, near removed debris.

Site10_DSCF1323.JPG

August 17, 2013 West

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Bedrock encountered in the floor of the Site 10 excavation.

August 24, 2013 South

Site10_DSCF1462.JPG

Photographer: R. James



Site 13 removal areas marked with lath and pink surveyors tape.

July 11, 2013 Southeast

Site13_01_DSCN1438.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Loading contaminated PCB soil from Site 13 excavation.

July 13, 2013 Southeast

Site13_02_EB_016.JPG

Photographer: E. Barnhill



Sample locations that were collected from underneath the PCB stockpile liner at Site 13 and analyzed in the field lab are marked by the survey crew and ready for excavation.

July 21, 2013 North

Site13_03_DSCF1061(2).JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Areas excavated at Site 13 from underneath the stockpile liner are visible.

Site13_04_DSCF1071.JPG

July 21, 2013 North

Photographer: R. James



Site 13 excavation overview.

Site13_05_DSCF1042.JPG

July 19, 2013 North

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Sample collection at boring 21SB08, Site 21. July 11, 2013 Close-up

Site21_01_DSCN1437.JPG Photographer: R. James



Site 21 during first round excavation of arsenic contaminated soil. August 22, 2013 Southwest

Site21_02_DSCF1432.JPG Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Loading arsenic-contaminated soil into bulk bag at Site 21.

August 22, 2013 Northwest

Site21_03_DSCF1532.JPG

Photographer: R. James



Removing bulk bag of arsenic-contaminated soil from loading frame at Site 21.

August 22, 2013 Northeast

Site21_04_DSCF1537.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Backfilling excavation at Site 21. September 13, 2013 Northeast

Site21_05_EB_249.JPG Photographer: E. Barnhill



Partially backfilled excavation at Site 21. September 13, 2013 Southwest

Site21_06_EB_244.JPG Photographer: E. Barnhill

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Site 21 graded and backfilled. September 14, 2013 Southwest

Site21_07_DSCF1695.JPG Photographer: R. James



Sediment removal Area 8, Site 28. July 26, 2013 North

Site28_01_DSCF1119.JPG Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Sediment Removal Area 8 following the removal of sediments via excavator.

August 4, 2013 Northeast

Site28_02_DSCF1259.JPG

Photographer: R. James



Hand-removing sediment from the northern portion of Sediment Removal Area 5.

August 2, 2013 Down

Site28_03_DSCF1224.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Close-up of hand-removed sediment from the northern portion of Sediment Removal Area 5.

August 2, 2013 Close-up

Site28_04_DSCF1218.JPG

Photographer: R. James



View of sheen on the water in Removal Area 7 during sediment removal operations in Removal Area 7.

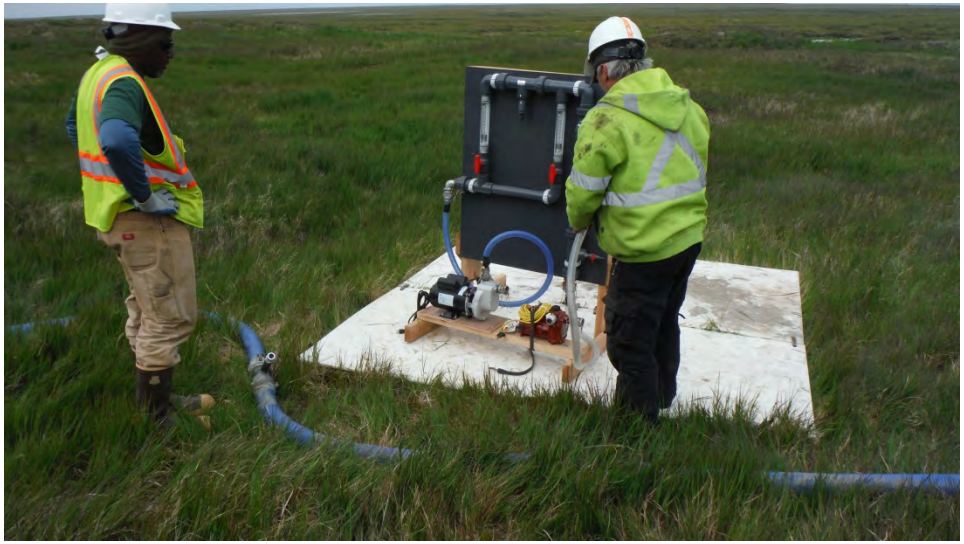
August 2, 2013 North

Site28_05_DSCF1233.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003

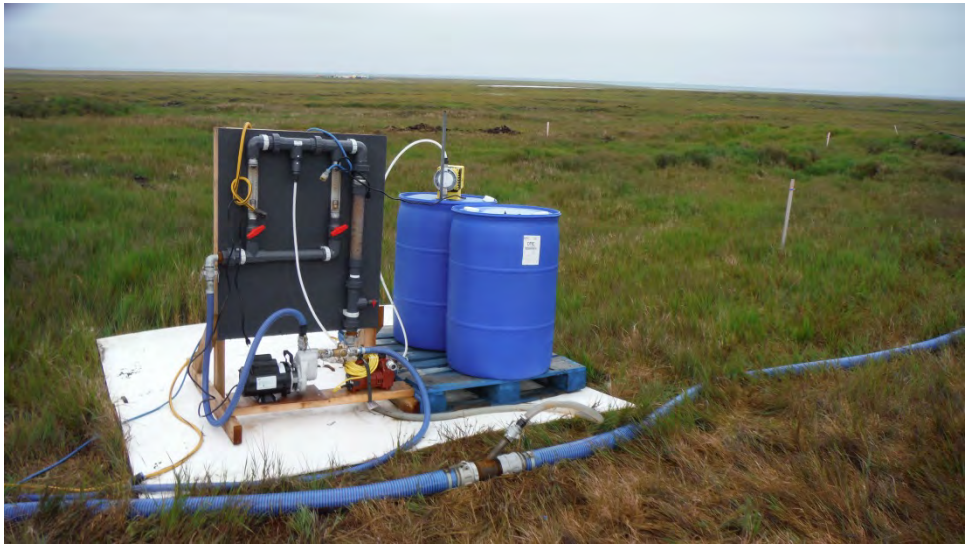


Installation of the flocculent mixing manifold at the flocculent injection site (Site 28).

July 30, 2013 Northwest

Site28_06_DSCF1191.JPG

Photographer: R. James



Site 28 polymer/flocculent injection area, mixing manifold, injection pump, and drums of polymer.

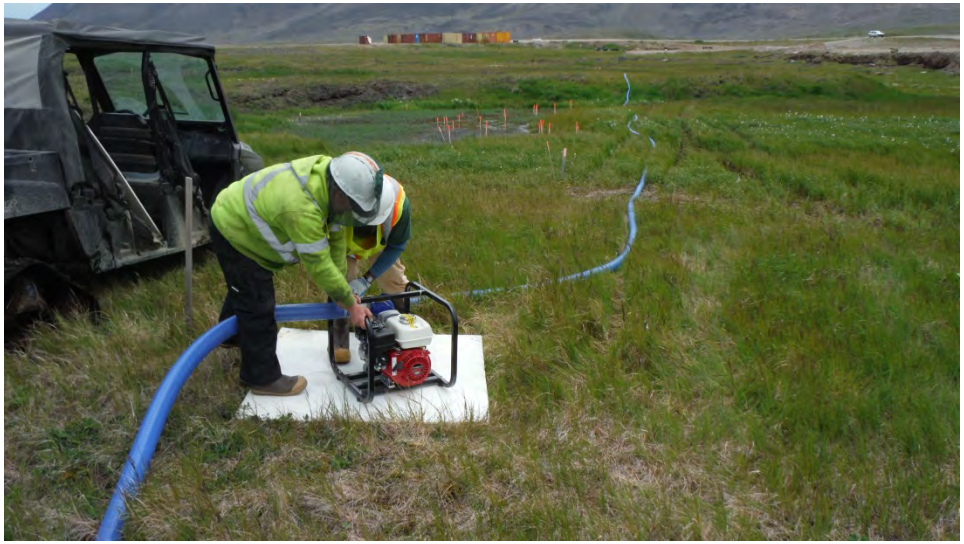
August 20, 2013 North

Site28_07_DSCF1384.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Preparing the inline pumps for dredging activities at Site 28.

July 30, 2013 Southeast

Site28_08_DSCF1192.JPG

Photographer: R. James



Laying a layer of protective geotextile on top of sand to create a base for a water containment.

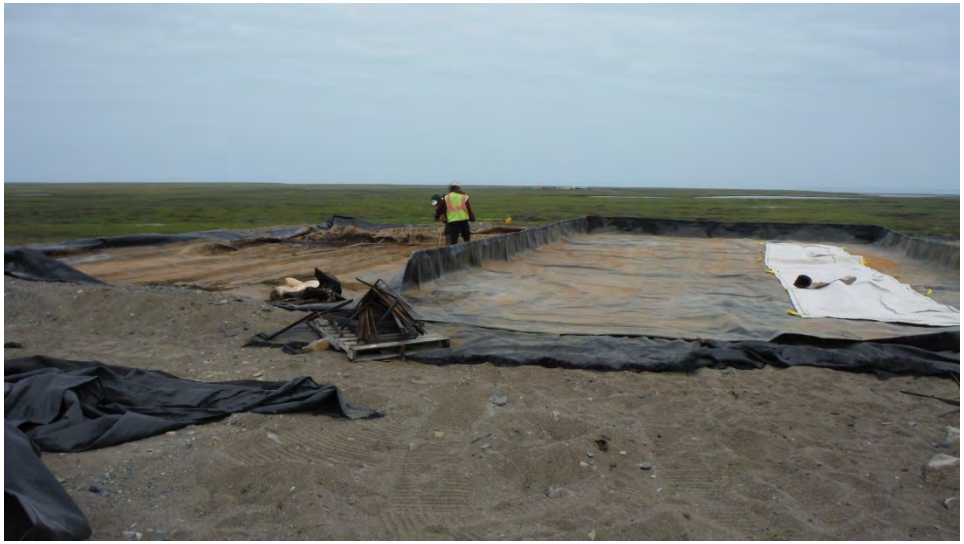
August 18, 2013 Northeast

Site28_09_DSCF1355.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Construction of the primary containments at the Site 28 work pad.

July 30, 2013 North

Site28_10_DSCF1181.JPG

Photographer: R. James



Dewatering tube in a primary containment on the work pad at Site 28.

July 30, 2013 North

Site28_11_DSCF1179.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003

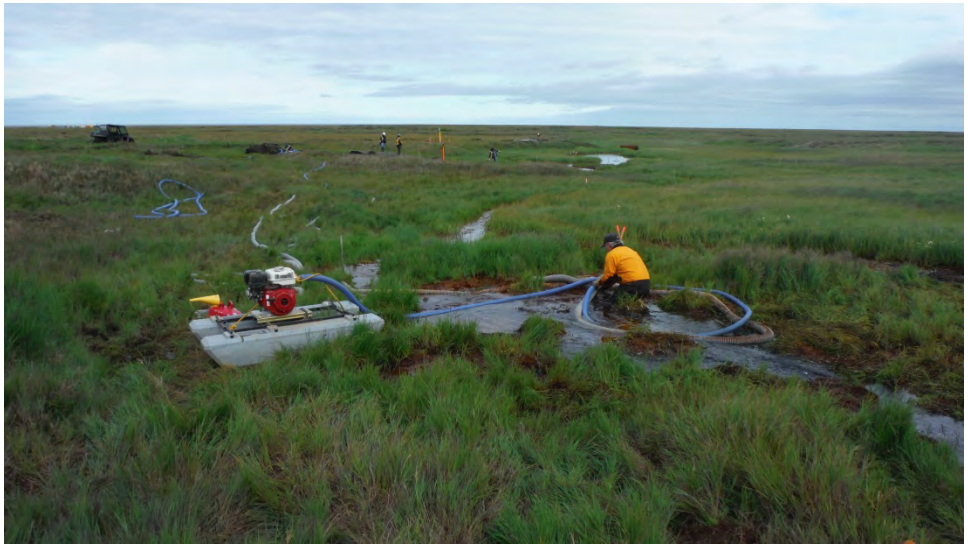


Close-up view of the sediment collection/dewatering tube.

July 30, 2013 Close-up

Site28_12_DSCF1180.JPG

Photographer: R. James



Dredging Sediment Removal Area 3, Site 28.

August 27, 2013 Northeast

Site28_13_DSCF1491.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Dredging Sediment Removal Area 3b Site 28. August 27, 2013 Southeast

Site28_14_DSCF1492.JPG Photographer: R. James

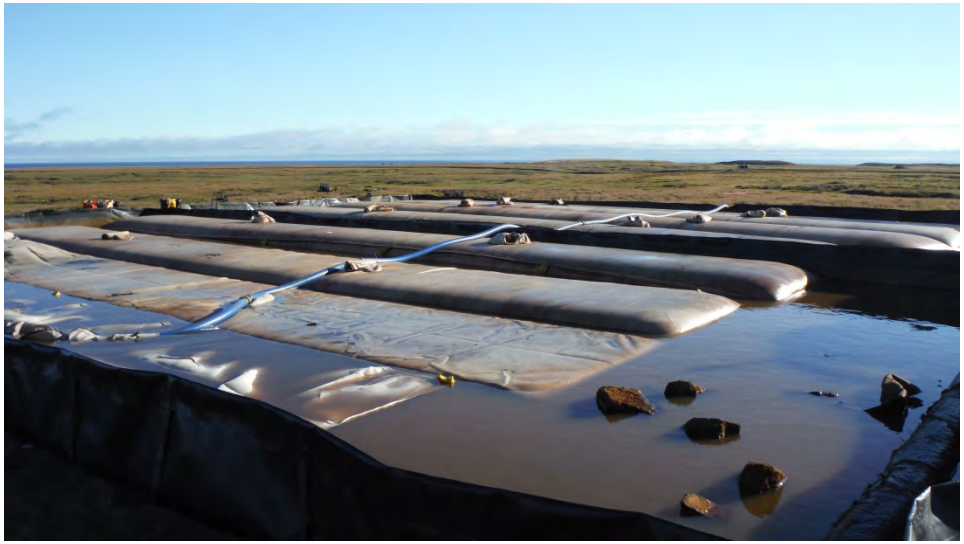


Sediment collection tube in primary containment expanding during pumping operations at Site 28. August 3, 2013 North

Site28_15_DSCF1241.JPG Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Two primary containments at the Site 28 work pad with dewatering tubes.

September 12, 2013 Northeast

Site28_16_DSCF1658.JPG

Photographer: R. James



Primary containment with two dewatering tubes in place.

September 12, 2013 South

Site28_17_DSCF1655.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Primary containment of water treatment system (sock filters and water scrubbers) and secondary containment holding treated water.

August 4, 2013 West

Site28_18_DSCF1255.JPG

Photographer: R. James



Discharge from water scrubbing system emptying into the secondary containment at Site 28.

August 7, 2013 Close-up

Site28_19_DSCF1298.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Granulated Activated Carbon (GAC) units and sock-filter housings at Site 28 work pad.
Site28_20_DSCF1371.JPG

August 19, 2013 Northeast

Photographer: R. James



Secondary containment with treated water from the GAC units.

Site28_21_DSCF1368.JPG

August 19, 2013 North

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Three secondary containments at the Site 28 work pad. The GAC units and sock filters are visible in the background.
Site28_22_DSCF1590.JPG

September 7, 2013 North

Photographer: R. James



Discharging clean, GAC-filtered water to the tundra from secondary containment at Site 28.

Site28_23_DSCF1466.JPG

August 24, 2013, South

Photographer: R. James

Northeast Cape 2013 Photo Log

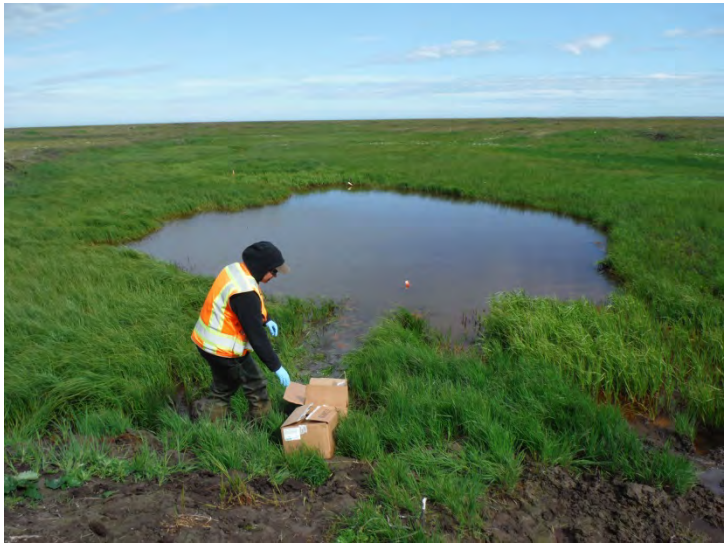
W911KB-13-C-0004
W911KB-12-C-0003



Clean, GAC-filtered water discharging onto tundra from the secondary containment.
Site28_24_DSCF1497.JPG

August 27, 2013 Close-up

Photographer: R. James



Surface-water monitoring during active dredging operations, downstream from Removal Area 9.

Site28_25_DSCF1296.JPG

August 7, 2013 Northeast

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003

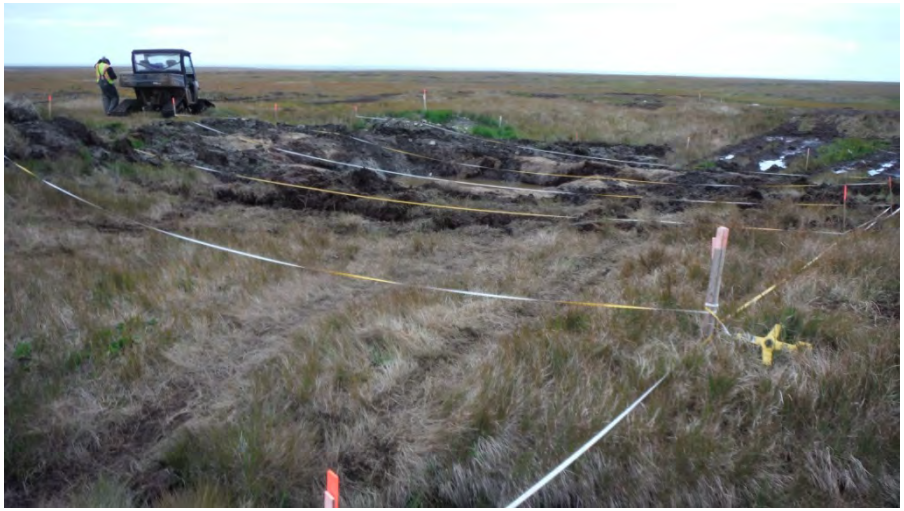


Removing sediment trap from Suqitughneq River drainage, Site 28.

September 16, 2013 Northeast

Site28_26_DSCF1736.JPG

Photographer: R. James



Measuring the Decision Unit at Sump #2, Site 28.

September 17, 2013 Northeast

Site28_27_DSCF1740.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Site 28 containments with geotextile dewatering tubes in place for over wintering.

September 19, 2013 North

Site28_28_DSCN1484.JPG

Photographer: R. James



Preparing a pad to allow excavator access to contaminated sample in Site 31. Sample marked in center of picture with lath.

July 13, 2013 West

Site31_01_NEC_EB_019.JPG

Photographer: E. Barnhill

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Removing contaminated sample from Site 31 excavation.

July 13, 2013 West

Site31_02_NEC_EB_020.JPG

Photographer: E. Barnhill



The excavation at Site 31 following the removal of sample location 12NC31SS199.

July 13, 2013 West

Site31_03_DSCN1462.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Site 31 middle stages of backfilling at excavation. July 23, 2013 West

Site31_04_NEC_EB_044.JPG Photographer: E. Barnhill



Site 31 middle stages of backfilling at excavation. July 23, 2013 Southwest

Site31_05_NEC_EB_054.JPG Photographer: E. Barnhill

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Site 31 post backfilling and grading.

July 30, 2013 Northeast

Site31_06_NEC_EB_098.JPG

Photographer: E. Barnhill



Aerial view of Site 31 post backfilling and grading.

July 29, 2013 Northwest

Site31_07_DSCF1165.JPG

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003

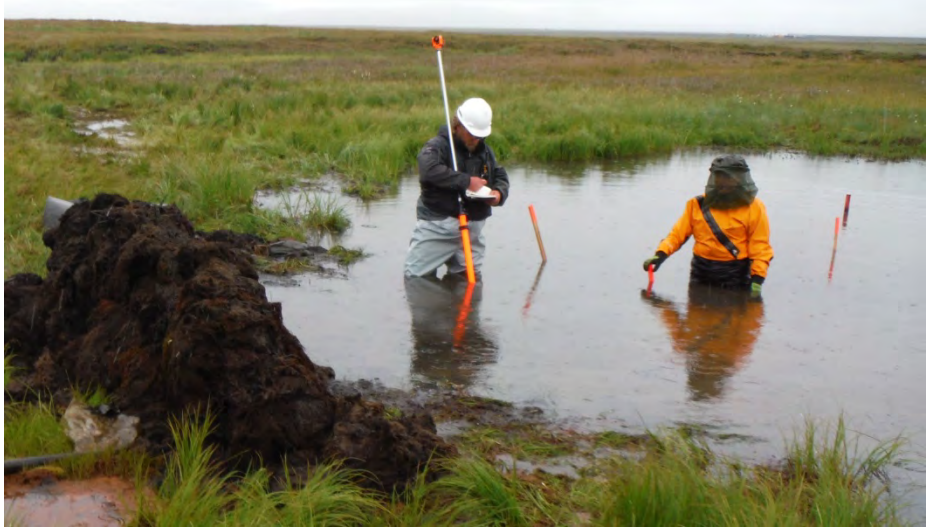


Overview of Site 31 with grass beginning to grow.

September 20, 2013 Northeast

Site31_08_DSCF1751.JPG

Photographer: R. James



Surveying Sediment Removal Area 6, Site 28.

August 2, 2013 Northwest

Survey_01_DSCF1217.jpg

Photographer: R. James

Northeast Cape 2013 Photo Log

W911KB-13-C-0004
W911KB-12-C-0003



Water truck suppressing dust.

WaterTruck_DSCF1025.JPG

July 18, 2013 Northeast

Photographer: R. James

APPENDIX F

Waste Documents

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

111 W. 16th Avenue, Third Floor
Anchorage, Alaska 99501
(907) 563-0013 Phone
(907) 563-6713 fax

November 7, 2013

U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101

Subject: **Exception Reporting for Uniform Hazardous Waste Manifests**
U.S. Army Corps of Engineers, Alaska District
NE Cape Formerly Used Defense Site (FUDS)
EPA I.D. #: AK0000228395
NE Cape, St. Lawrence Island, Alaska

To Whom It May Concern,

Attached are copies of the generator and transporter #1 signed uniform hazardous waste manifests 004786021FLE, 004786022FLE, and 004786023FLE, for hazardous wastes generated and shipped from the NE Cape FUDS site location on St. Lawrence Island, Alaska, on September 27, 2013. I have included transporter #1 signed copies as well as more legible copies of the original generator signed manifests.

The Treatment, Storage, and Disposal Facility (TSDF) signed copies will not be received by the generator by the 45th day since shipment which is November 11, 2013.

It has been determined that the materials are currently (as of 11/7/2013) located at Northern Air Cargo's (Transporter #2) Anchorage, Alaska terminal. Emerald Alaska, Inc. (Transporter #3) Anchorage Facility has been notified as to their availability for pick up.

Please let me know if you need further information or have questions relating to this issue.

Respectfully,

Bristol Environmental Remediation Services, LLC

Tyler Ellingboe
Project Manager/Senior Waste Specialist

Attachments: Manifests 004786021FLE, 004786022FLE, and 004786023FLE

AK20438 (RF)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) 004786021FLE Contract# 7619 Form Approved: OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
AK0000228395	1	1-800-424-9300	004786021 FLE

GENERATOR

5. Generator's Name and Mailing Address
USACE, AK DISTRICT, NE CAPE
PO BOX 6898, CEPOA-EN-EE-ER
JBER, AK 99506-6898
(907) 753-2689
Generator's Phone:

Generator's Site Address (if different than mailing address)
USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

6. Transporter 1 Company Name: BERING AIR, INC — U.S. EPA ID Number: AK0000662189

7. Transporter 2 Company Name: NORTHERN AIR CARGO, INC. — U.S. EPA ID Number: AKD003845526

8. Designated Facility Name and Site Address
EMERALD SERVICES INC
1825 ALEXANDER AVE
TACOMA, WA 98421
(253) 627-4822
Facility's Phone: — U.S. EPA ID Number: WAD981769110

9a. HM	9b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	UN1993, WASTE FLAMMABLE LIQUIDS, N.O.S.(HEXANE, ACETONE), 3, PGII, (FLASHPOINT = >-22.5C C.C.) (CARGO AIRCRAFT ONLY), ERG#128	1	DM	40	P	D001 F003
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1)4508LFB HEXANE/ACETONE/WATER MIXTURE (DM05)

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: [illegible] — Signature: [signature] — Month: [ ] Day: [ ] Year: 13

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name	Signature	Month	Day	Year
Stan Morgan Bering Air	Stan Morgan Bering Air	09	27	2013
Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1. H061	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name	Signature	Month	Day	Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. GENERATOR'S COPY

(1)

AK20436 (RE)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number	22. Page	23. Manifest Tracking Number
AK0000228395	2 / 3	004786021FLE

24. Generator's Name: USACE, AF, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 3 Company Name: EMERALD ALASKA, INC — U.S. EPA ID Number: AKR000004184

26. Transporter 4 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AK0002848372

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 4 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

AK20436 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number	22. Page	23. Manifest Tracking Number
AK0000228395	3 of 3	004786021FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 5 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD070397955

26. Transporter 6 Company Name: EMERALD SERVICES, INC. — U.S. EPA ID Number: WAD058364647

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 5 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 6 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) 004786022FLE Contract# 7619 Form Approved: OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
	AK0000228395	4	1-800-424-9300	004786022 FLE

5. Generator's Name and Mailing Address
USACE, AK DISTRICT, NE CAPE
PO BOX 6898, CEPOA-EN-CE-ER
JBER, AK 99506-6898
Generator's Phone: (907) 753-2689

Generator's Site Address (if different than mailing address)
USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

6. Transporter 1 Company Name — BERING AIR, INC — U.S. EPA ID Number: AK0000662189

7. Transporter 2 Company Name — NORTHERN AIR CARGO, INC. — U.S. EPA ID Number: AKD003845526

8. Designated Facility Name and Site Address
US ECOLOGY IDAHO, INC.
20400 LEMLEY RD
GRAND VIEW, ID 83624
Facility's Phone: (800) 274-1516
U.S. EPA ID Number: ID0073114654

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, UN3077, WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (METHYLENE CHLORIDE), 9, PGIII, RQ-F002, ERG#171	2	DM	500	P	F002
X	2. RQ, UN3082, WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (CADMIUM), 9, PGIII, RQ-D006, ERG#171	2	DF	50	P	D006
X	3. UN1830, WASTE SULFURIC ACID, 8, PGII, (CARGO AIRCRAFT ONLY), ERG#137	1	DF	4	P	D002
	4.					

14. Special Handling Instructions and Additional Information
1)USE31587 LAB HOOD FILTERS C/W ME(DM85)
2)USE31588 NACH AQUEOUS LAB WASTE C(DF05)
3)16560 SULFURIC ACID (DF05)

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year 03

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name	Signature	Month	Day	Year
Stan Morgan Bering Air	Stan Morgan	09	27	2005
Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month | Day | Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name | Signature | Month | Day | Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. GENERATOR'S INITIAL COPY

2

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	23. Manifest Tracking Number
	AK0006228395	2/ 4	004786022FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 3 Company Name: SMERALD ALASKA, INC — U.S. EPA ID Number: AKR000064184

26. Transporter 4 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AKD002840372

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 4 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete. GENERATOR'S INITIAL COPY

AK20438 (RF)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved: OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	23. Manifest Tracking Number
	AK0000226395	3 / 4	004786022FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 5 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD070399795

26. Transporter 6 Company Name: EMERALD SERVICES, INC. — U.S. EPA ID Number: WAD058364647

GENERATOR

27a. HM	27b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 5 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 6 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete. GENERATOR'S INITIAL COPY

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number	22. Page	23. Manifest Tracking Number
AK0000228395	4 / 4	004786022FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 7 Company Name: STEVE FORLER TRUCKING — U.S. EPA ID Number: WARU000012

26. Transporter 8 Company Name — U.S. EPA ID Number:

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

GENERATOR

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 7 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 8 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete. GENERATOR'S FINAL COPY

3

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) 004786023FLE Contract# 7619 Form Approved: OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
	AK0000228395	4	1-800-424-9300	004786023 FLE

GENERATOR

5. Generator's Name and Mailing Address: US ARMY ENGINEER DISTRICT, ALASK
PO BOX 6898, CEPOA-EN-EE-ER
JBER, AK 99506-6898
(907) 753-2578

Generator's Site Address (if different than mailing address): USACE, AK, NEC FACILITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
SAVOONGA, AK 99769

Generator's Phone:

6. Transporter 1 Company Name: BERING AIR, INC — U.S. EPA ID Number: AK0000662189

7. Transporter 2 Company Name: NORTHERN AIR CARGO, INC. — U.S. EPA ID Number: AK0003845526

8. Designated Facility Name and Site Address: CLEAN HARBORS (ARAGONITE), LLC
11600 N. APTUS ROAD, EXIT 56
ARAGONITE, UT 84029
(435) 884-8100 — U.S. EPA ID Number: UTD981552177

Facility's Phone:

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, UN1593, WASTE DICHLOROMETHANE SOLUTION, 6.1, PGIII, RQ-F002, ERG#160	1	DM	100	P	F002
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1)CH685083 SPENT METHYLENE CHLORIDE (DM15)

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year: 13

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Stan Morgan Bering Air | Signature: Stan Morgan Bering Air | Month: 09 | Day: 17 | Year: 2013

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) | U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) | Month | Day | Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name | Signature | Month | Day | Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

3

AK20436 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number: AK0000228395

22. Page: 2 of 4

23. Manifest Tracking Number: 004786023FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
SAVOONGA, AK 99769

(907) 753-2576

25. Transporter 3 Company Name: EMERALD ALASKA, INC — U.S. EPA ID Number: AKR000004184

26. Transporter 4 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AKD002846372

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 4 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved: OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	23. Manifest Tracking Number
	AK0000228395	3/ 4	004786023FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
(907) 753-2578 SAVOONGA, AK 99769

25. Transporter 5 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD070397955

26. Transporter 6 Company Name: Emerald Services, Inc. ~~EMERALD ALASKA, INC~~ — U.S. EPA ID Number: WAD05~~8314647~~ ~~AKR000004184~~

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes

32. Special Handling Instructions and Additional Information

GENERATOR

TRANSPORTER

33. Transporter 5 Acknowledgment of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

34. Transporter 6 Acknowledgment of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete. GENERATOR'S INITIAL COPY

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	23. Manifest Tracking Number
	AK0000228395	4 / 4	00478602 3FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
(907) 753-2578 SAVOONGA, AK 99769

25. Transporter 7 Company Name: CLEAN HARBORS — U.S. EPA ID Number: SCR000074591

26. Transporter 8 Company Name: SLT EXPRESS WAY INC — U.S. EPA ID Number: AZR000506515

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 7 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 8 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete. GENERATOR'S INITIAL COPY

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) 004786021FLE Contract# 7619 Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
AK0000228395	3	1 800 424 9300	004786021 FLE

GENERATOR

5. Generator's Name and Mailing Address
USACE, AK DISTRICT, NE CAPE
PO BOX 6898, CEPOA-EN-EE-ER
JBER, AK 99506-6898
Generator's Phone: (907) 753-2689

Generator's Site Address (if different than mailing address)
USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

6. Transporter 1 Company Name: BERING AIR, INC — U.S. EPA ID Number: AK0000662189

7. Transporter 2 Company Name: NORTHERN AIR CARGO, INC. — U.S. EPA ID Number: AKD003845526

8. Designated Facility Name and Site Address
EMERALD SERVICES INC
1825 ALEXANDER AVE
TACOMA, WA 98421
Facility's Phone: (253) 627-4822
U.S. EPA ID Number: WAD981769110

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit WL/Vol.	13. Waste Codes		
X	UN1993, WASTE FLAMMABLE LIQUIDS, N.O.S.(HEXANE, ACETONE), 3, PGII, (FLASHPOINT = >-22.5C C.C.) (CARGO AIRCRAFT ONLY), ERG#128	1	DM	40	P	D001	F003	
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
1)45081FB HEXANE/ACETONE/WATER MIXTURE(Dm05)

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Ron Broyles — Signature: Ron Broyles on behalf of DoD — Month: 09 — Day: 19 — Year: 13

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month — Day — Year

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H061			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name — Signature — Month — Day — Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	23. Manifest Tracking Number
	AK0000228395	2/ 3	004786021FLE

24. Generator's Name: ~~USACE, AK, NEC FACILITY WIDE~~ NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 3 Company Name: EMERALD ALASKA, INC — U.S. EPA ID Number: AKR000004184

26. Transporter 4 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AKD002848372

27a. HM	27b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes

GENERATOR

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 4 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	23. Manifest Tracking Number
	AK0000228395	3/ 3	004786021FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 5 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD070397955

26. Transporter 6 Company Name: EMERALD SERVICES, INC. — U.S. EPA ID Number: WAD058364647

GENERATOR

27a. HM	27b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 5 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 6 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) 004786022FLE Contract# 7619 Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
AK0000228395	4	1-800-424-9300	004786022 FLE

GENERATOR

5. Generator's Name and Mailing Address
USACE, AK DISTRICT, NE CAPE
PO BOX 6898, CEPOA-EN-EE-ER
JBER, AK 99506-6898
Generator's Phone: (907) 753-2689

Generator's Site Address (if different than mailing address)
USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

6. Transporter 1 Company Name: BERING AIR, INC — U.S. EPA ID Number: AK0000662189

7. Transporter 2 Company Name: NORTHERN AIR CARGO, INC. — U.S. EPA ID Number: AKD003845526

8. Designated Facility Name and Site Address
US ECOLOGY IDAHO, INC.
20400 LEMLEY RD
GRAND VIEW, ID 83624
Facility's Phone: (800) 274-1516
U.S. EPA ID Number: IDD073114654

9a. HM	9b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, UN3077, WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (METHYLENE CHLORIDE) 9, PGIII, RQ=F002, ERG#171	2	DM	500	P	F002
X	2. RQ, UN3082, WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (CADMIUM), 9, PGIII RQ=D006, ERG#171	2	DF	50	P	D006
X	3. UN1830, WASTE SULFURIC ACID, 8, PGII, (CARGO AIRCRAFT ONLY), ERG#137	1	DF	4	P	D002
	4.					

14. Special Handling Instructions and Additional Information
1)USE31587 LAB HOOD FILTERS C/W ME (DM85)
2)USE31588 HACH AQUEOUS LAB WASTE C (DF05)
3)16560 SULFURIC ACID (DF05)

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Ron Broyles — Signature: Ron Broyles on behalf of DoD — Month: 09 — Day: 19 — Year: 13

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Transporter 1				
Transporter 2				

DESIGNATED FACILITY

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name	Signature	Month	Day	Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number AK0000228395	22. Page 2/ 4	23. Manifest Tracking Number 004786022FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 3 Company Name: EMERALD ALASKA, INC — U.S. EPA ID Number: AKR000004184

26. Transporter 4 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AKD002848372

27a. HM	27b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

GENERATOR

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 4 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	23. Manifest Tracking Number
	AK0000228395	3/ 4	004786022FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 5 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD070397955

26. Transporter 6 Company Name: EMERALD SERVICES, INC. — U.S. EPA ID Number: WAD058364647

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes

GENERATOR

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 5 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 6 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	23. Manifest Tracking Number
	AK0000228395	4 / 4	004786022FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 7 Company Name: STEVE FORLER TRUCKING — U.S. EPA ID Number: WAR000001263

26. Transporter 8 Company Name — U.S. EPA ID Number:

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

GENERATOR

TRANSPORTER

33. Transporter 7 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 8 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) 004786023FLE Contract# 7619 Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number AK0000228395	2. Page 1 of 4	3. Emergency Response Phone 1-800-424-9300	4. Manifest Tracking Number 004786023 FLE

GENERATOR

5. Generator's Name and Mailing Address: US ARMY ENGINEER DISTRICT, ALASK
PO BOX 6898, CEPOA-EN-EE-ER
JBER, AK 99506-6898
(907) 753-2578
Generator's Phone:

Generator's Site Address (if different than mailing address): USACE, AK, NLC FACILITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
SAVOONGA, AK 99769

6. Transporter 1 Company Name: BERING AIR, INC — U.S. EPA ID Number: AK0000662189

7. Transporter 2 Company Name: NORTHERN AIR CARGO, INC. — U.S. EPA ID Number: AKD003845526

8. Designated Facility Name and Site Address: CLEAN HARBORS (ARAGONITE), LLC
11600 N. APTUS ROAD, EXIT 56
ARAGONITE, UT 84029
(435) 884-8100
Facility's Phone: — U.S. EPA ID Number: UTD981552177

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. RQ, UN1593, WASTE DICHLOROMETHANE SOLUTION, 6.1, PGIII, RQ=F002, ERG#160	1	DM	100	P	F002		
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
1)CH685083 SPENT METHYLENE CHLORIDE (DM15)

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Ron Broyles — Signature: Ron Broyles on behalf of DoD — Month: 09 — Day: 19 — Year: 13

TRANSPORTER

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month — Day — Year

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name — Signature — Month — Day — Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number AK0000228395	22. Page 2/ 4	23. Manifest Tracking Number 004786023FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
(907) 753-2578 SAVOONGA, AK 99769

25. Transporter 3 Company Name: EMERALD ALASKA, INC — U.S. EPA ID Number: AKR000004184

26. Transporter 4 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AKD002848372

27a. HM	27b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

GENERATOR

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 4 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number: AK0000228395

22. Page: 3/ 4

23. Manifest Tracking Number: 004786023FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
(907) 753-2578 SAVOONGA, AK 99769

25. Transporter 5 Company Name: TOTEM OCEAN TRAILER EXPRESS
U.S. EPA ID Number: WAD070397955

26. Transporter 6 Company Name: Emerald Services, Inc. ~~EMERALD ALASKA, INC~~
U.S. EPA ID Number: WAD058364647 ~~AKR000004184~~

GENERATOR

27a. HM	27b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 5 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 6 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	23. Manifest Tracking Number
	AK0000228395	4/ 4	004786023FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
(907) 753-2578 SAVOONGA, AK 99769

25. Transporter 7 Company Name: CLEAN HARBORS — U.S. EPA ID Number: SCR000074591

26. Transporter 8 Company Name: SLT EXPRESS WAY INC — U.S. EPA ID Number: AZR000508515

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 7 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 8 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) 004786021FLE Contract# 7619 Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
AK0000228395	1	1-800-424-9300	004786021 FLE

GENERATOR

5. Generator's Name and Mailing Address
USACE, AK DISTRICT, NE CAPE
PO BOX 6898, CEPOA-EN-EE-ER
JBER, AK 99506-6898
(907) 753-2689
Generator's Phone:

Generator's Site Address (if different than mailing address)
USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

6. Transporter 1 Company Name: BERING AIR, INC — U.S. EPA ID Number: AK0000662189

7. Transporter 2 Company Name: NORTHERN AIR CARGO, INC. — U.S. EPA ID Number: AK0003845526

8. Designated Facility Name and Site Address
EMERALD SERVICES INC
1825 ALEXANDER AVE
TACOMA, WA 98421
(253) 627-4822
Facility's Phone:
U.S. EPA ID Number: WAD981769110

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	UN1993, WASTE FLAMMABLE LIQUIDS, N.O.S.(HEXANE, ACETONE), 3, PGII, (FLASHPOINT < -22.5C C.C.) (CARGO AIRCRAFT ONLY), ERG#128	1	DM	40	P	D001 F003
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1)45081FB HEXANE/ACETONE/WATER MIXTURE(DM05)

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year 13

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name	Signature	Month	Day	Year
Stan Morgan Bering Air	Stan Morgan Bering Air	09	27	2013
Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator) U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1. H061	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name	Signature	Month	Day	Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. **GENERATOR'S INITIAL COPY**

(1)

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number	22. Page	23. Manifest Tracking Number
AK0000228395	2 of 3	004786021FLE

24. Generator's Name: USACE, AF, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 3 Company Name: EMERALD ALASKA, INC — U.S. EPA ID Number: AKR000004184

26. Transporter 4 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AKD002848372

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 4 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

AK20436 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number	22. Page	23. Manifest Tracking Number
AK0000228395	3 of 3	004786021FLE

24. Generator's Name: USACE, AK, NBC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 5 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD077039595

26. Transporter 6 Company Name: EMERALD SERVICES, INC. — U.S. EPA ID Number: WAD058364647

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 5 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 6 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) 004786022FLE Contract# 7619 Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
AK0000228395	4	1-800-424-9300	004786022 FLE

GENERATOR

5. Generator's Name and Mailing Address
USACE, AK DISTRICT, NE CAPE
PO BOX 6898, CEPOA-EN-EE-ER
JBER, AK 99506-6898
Generator's Phone: (907) 753-2689

Generator's Site Address (if different than mailing address)
USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

6. Transporter 1 Company Name: BERING AIR, INC — U.S. EPA ID Number: AK0000662189

7. Transporter 2 Company Name: NORTHERN AIR CARGO, INC. — U.S. EPA ID Number: AKD003845526

8. Designated Facility Name and Site Address
US ECOLOGY IDAHO, INC.
20400 LEMLEY RD
GRAND VIEW, ID 83624
Facility's Phone: (800) 274-1516
U.S. EPA ID Number: IDD073114654

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, UN3077, WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (METHYLENE CHLORIDE) 9, PGIII, RQ-F002, ERG#171	2	DM	500	P	F002
X	2. RQ, UN3082, WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (CADMIUM), 9, PGIII RQ-D006, ERG#171	2	DF	50	P	D006
X	3. UN1830, WASTE SULFURIC ACID, 8, PGII, (CARGO AIRCRAFT ONLY), ERG#137	1	DF	4	P	D002
	4.					

14. Special Handling Instructions and Additional Information
1)USE31587 LAB HOOD FILTERS C/W ME(DM85)
2)USE31588 HACH AQUEOUS LAB WASTE C(DF05)
3)16560 SULFURIC ACID (DF05)

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year 13

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name	Signature	Month	Day	Year
Stan Morgan Bering Air	Stan Morgan	09	27	203
Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

DESIGNATED FACILITY

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator) U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name	Signature	Month	Day	Year

2

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number	22. Page	23. Manifest Tracking Number
AK0000228395	2/ 4	004786022FLE

24. Generator's Name: USACE, AK, NBC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 3 Company Name: EMERALD ALASKA, INC — U.S. EPA ID Number: AKR000004164

26. Transporter 4 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AKD002840372

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 4 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

AK20438 (RF)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number: AK0000226395

22. Page: 3 / 4

23. Manifest Tracking Number: 004786022FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 5 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD070397953

26. Transporter 6 Company Name: EMERALD SERVICES, INC. — U.S. EPA ID Number: WAD058364647

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 5 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 6 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

AK20438 (RF)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number: AK0000228395

22. Page: 4 / 4

23. Manifest Tracking Number: 004786022FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
(907) 753-2689 SAVOONGA, AK 99769

25. Transporter 1 Company Name: STEVE FORLER TRUCKING
U.S. EPA ID Number: WAR000001262

26. Transporter 2 Company Name:
U.S. EPA ID Number:

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes

32. Special Handling Instructions and Additional Information

GENERATOR

TRANSPORTER

33. Transporter 1 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 2 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

3

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) 004786023FLE Contract# 7619 Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
AK0000228395	4	1-800-424-9300	004786023 FLE

GENERATOR

5. Generator's Name and Mailing Address: US ARMY ENGINEER DISTRICT, ALASK
PO BOX 6898, CEPOA-EN-EE-ER
JBER, AK 99506-6898
(907) 753-2578

Generator's Site Address (if different than mailing address): USACE, AK, NEC FORMITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
SAVOONGA, AK 99769

Generator's Phone:

6. Transporter 1 Company Name: BERING AIR, INC — U.S. EPA ID Number: AK0000662189

7. Transporter 2 Company Name: NORTHERN AIR CARGO, INC. — U.S. EPA ID Number: AK0003845526

8. Designated Facility Name and Site Address: CLEAN HARBORS (ARAGONITE), LLC
11600 N. APTUS ROAD, EXIT 56
ARAGONITE, UT 84029
(435) 884-8100 — U.S. EPA ID Number: UTD981552177

Facility's Phone:

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. RQ, UN1593, WASTE DICHLOROMETHANE SOLUTION, 6.1, PGIII, RQ=F002, ERG#160	1	DM	100	P	F002		
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
1)CH685083 SPENT METHYLENE CHLORIDE (DM15)

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name — Signature — Month — Day — Year: 13

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Stan Morgan Bering Air — Signature: Stan Morgan Bering Air — Month: 09 — Day: 27 — Year: 13

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name — Signature — Month — Day — Year

3

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number: AK0000228395

22. Page: 2 of 4

23. Manifest Tracking Number: 004786023FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
SAVOONGA, AK 99769
(907) 753-2578

25. Transporter 3 Company Name: EMERALD ALASKA, INC — U.S. EPA ID Number: AKR000004184

26. Transporter 4 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AKD002848372

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 4 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

AK20438 (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	23. Manifest Tracking Number
	AK0000228395	3/ 4	004786023FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
(907) 753-2578 SAVOONGA, AK 99769

25. Transporter 5 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD070397955

26. Transporter 6 Company Name: Emerald Services, Inc. ~~EMERALD ALASKA, INC~~ — U.S. EPA ID Number: WAD058364647 ~~[illegible]~~

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

GENERATOR

TRANSPORTER

33. Transporter 5 Acknowledgment of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

34. Transporter 6 Acknowledgment of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

AK2043B (RP)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number	22. Page	23. Manifest Tracking Number
AK0000228395	4 / 4	00478602 3FLE

24. Generator's Name: USACE, AK, NEC FACILITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
(907) 753-2578 SAVOONGA, AK 99769

25. Transporter 7 Company Name: CLEAN HARBORS — U.S. EPA ID Number: SCR000074591

26. Transporter 8 Company Name: SLT EXPRESS WAY INC — U.S. EPA ID Number: AZR000508515

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 7 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 8 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

SHIPPER'S DECLARATION FOR DANGEROUS GOODS **(Provide at least three copies to the airline.)**

Shipper

USACE, AK District, NE Cape Facility Wide
NE Cape, St. Lawrence Island
Savoonga, Alaska 99769
(907) 563-0013 Tyler Ellingboe

Air Waybill No.

Page 1 of 2 Pages

Shipper's Reference Number
34130068

Consignee

Emerald Alaska, Inc.
2020 Viking Drive
Anchorage, Alaska 99501
NOA (907) 258-1558

NORTHERN AIR CARGO

Two completed and signed copies of this Declaration must be handed to the operator

WARNING

Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.

TRANSPORT DETAILS

This shipment is within the limitations prescribed for: *(delete non applicable)*

PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY
XXX	

Airport of Departure: NE Cape, St. Lawrence Island, AK and Nome, AK

Airport of Destination: Anchorage, AK

Shipment type: *(delete non-applicable)*
NON-RADIOACTIVE ~~RADIOACTIVE~~

NATURE AND QUANTITY OF DANGEROUS GOODS

Dangerous Goods Identification				Quantity and type of packaging	Packing Inst.	Authorization
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Packing Group			
UN 3077	RQ, Waste Environmentally Hazardous Substances, Solid, n.o.s. (Dichloromethane), RQ=F002	9	III	2 - UN1A2 Steel Drums x 115 KG per drum	956	
UN 3082	RQ, Waste Environmentally Hazardous Substances, Liquid, n.o.s. (Cadmium), RQ=D006	9	III	2 - UN1H1 Poly Drum x 12 KG per drum	964	
UN 1830	Waste Sulfuric Acid "CARGO AIRCRAFT ONLY"	8	II	1 - UN1H1 Poly Drum x 2 L per drum	855	

Additional Handling Information

Emergency Telephone Number 1-800-424-9300

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable International and National Governmental Regulations. I declare that all of the applicable air transport requirements have been met.

Name/Title of Signatory
Tyler Ellingboe/Project Manager/Sr. Waste Specialist
Place and Date 9/23/2013
Anchorage, Alaska
Signature *(see warning above)* Tyler G. Ellingboe

FOR RADIOACTIVE MATERIAL SHIPMENT ACCEPTABLE FOR PASSENGER AIRCRAFT, THE SHIPMENT CONTAINS RADIOACTIVE MATERIAL INTENDED FOR USE IN OR INCIDENT TO RESEARCH, MEDICAL DIAGNOSIS, OR TREATMENT.

SHIPPER'S DECLARATION FOR DANGEROUS GOODS **(Provide at least three copies to the airline.)**

Shipper

USACE, AK District, NE Cape Facility Wide
NE Cape, St. Lawrence Island
Savoonga, Alaska 99769
(907) 563-0013 Tyler Ellingboe

Air Waybill No.

Page 2 of 2 Pages

Shipper's Reference Number
34130068

Consignee

Emerald Alaska, Inc.
2020 Viking Drive
Anchorage, Alaska 99501
NOA (907) 258-1558

NORTHERN AIR CARGO

Two completed and signed copies of this Declaration must be handed to the operator

WARNING

Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.

TRANSPORT DETAILS

This shipment is within the limitations prescribed for: *(delete non applicable)*

~~PASSENGER AND CARGO AIRCRAFT~~ | CARGO AIRCRAFT ONLY

Airport of Departure: NE Cape, St. Lawrence Island, AK and Nome, AK

Airport of Destination: Anchorage, AK

Shipment type: *(delete non-applicable)*

NON-RADIOACTIVE | ~~RADIOACTIVE~~

NATURE AND QUANTITY OF DANGEROUS GOODS

Dangerous Goods Identification				Quantity and type of packaging	Packing Inst.	Authorization
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Packing Group			
UN 1993	Waste Flammable Liquids, n.o.s. (Hexane, Acetone) (Flashpoint > -22.5 degrees C) "CARGO AIRCRAFT ONLY"	3	II	1 - UN1A1 Steel Drum x 18 KG per drum	364	
UN 1593	RQ, Waste Dichloromethane, Solution, RQ=F002	6.1	III	1 - UN1H1 Poly Drum x 45 KG per drum	655	

Additional Handling Information

Emergency Telephone Number 1-800-424-9300

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable International and National Governmental Regulations. I declare that all of the applicable air transport requirements have been met.

Name/Title of Signatory
Tyler Ellingboe/Project Manager/Sr. Waste Specialist

Place and Date 9/23/2013
Anchorage, Alaska

Signature *(see warning above)* Tyler J. Ellingboe

FOR RADIOACTIVE MATERIAL SHIPMENT ACCEPTABLE FOR PASSENGER AIRCRAFT, THE SHIPMENT CONTAINS RADIOACTIVE MATERIAL INTENDED FOR USE IN OR INCIDENT TO RESEARCH, MEDICAL DIAGNOSIS, OR TREATMENT.

Profile Amendment Request Form

TYLER ELLINGBOE hereby requests an amendment to WMI profile #: 100514AK
(Contact Name)

to include the following:

Amendment Type: ☐ One Time Only Request (Event) ☑ Permanent Addition to Profile (Base)

☐ Additional Analytical/MSDS to be added to profile (see attached)

☑ Volume Increase (specify volume) 15 ☑ Tons ☐ Cubic Yards ☐ Drums ☐ Gallons ☐ Other (specify) _____

☑ Constituent(s) to be added and/or modify current range in chemical composition:

Chemicals or constituents to be added/modify	Low	High	Units
RUBBER	0	30	%

☐ Change current ranges on profile (specify below)

pH Range _____ to _____ Free Liquid Range _____ to _____

☐ Other (specify) _____

GENERATOR CERTIFICATION

By signing this form, the Generator hereby certifies:
The information provided in this document, the referenced Waste Management Generator's Waste Profile Sheet, and all other referenced documents contain true and accurate descriptions of the waste material. All information regarding known or suspected hazards in the possession of the Generator has been disclosed.

Generator/Customer Signature: Tyler S. Ellingboe Date: SEPTEMBER 9, 2013

Company Name: BRISTOL ENVIRONMENTAL REMEDIATION SERVICES LLC

Name (Print): TYLER ELLINGBOE Title: PROJECT MANAGER

FOR WASTE MANAGEMENT USE ONLY

Submitted By: _____ (W.M. Initials) Date: _____ Time: _____

WM Approval: _____ Date: _____

Agency Approval Required: ☐ Yes ☐ No

☐ Profile Extension
Original Expiration Date _____
Requested Extension _____
New Expiration Date _____

☐ Analytical Extension
Analytical Due Date _____
Requested Extension _____
New Analytical Due Date _____

Conditions/Precautions: _____

©2010 Waste Management, Inc.

WASTE MANAGEMENT, INC ....NON HAZARDOUS WASTE DISPOSAL SOLUTIONS FOR THE PACIFIC NORTHWEST

Columbia Ridge Landfill

18177 Cedar Springs Lane, Arlington Oregon 97812

Profile # 100514AK

PERMIT TO DISPOSE OF NON-HAZARDOUS MATERIALS

This permit authorizes disposal of Customer's waste materials in accordance with the Industrial Waste & Disposal Services Agreement dated _____ _____.

EXPIRES: 4/30/2014

GENERATOR: US ARMY CORPS OF ENGINEERS, ALASKA DISTRICT

DESCRIPTION: *TREATED WOOD*	**VOLUME:** *10*
☒ **SPECIAL WASTE** ☐ **PCS** ☐ **CLEAN-UP MATERIAL**	
LOCATION: *SAVOONGA, ALASKA ST. LAWRENCE NEC FACILITY -WIDE, NE CAPE*	**COUNTY:***
CONTACT: *TYLER ELLINGBOE*	**PHONE:** *907-563-0013*
	FAX : *907-563-6713*

BILLING: *Landfill account BRISTOL ENVIRONMENTAL REMEDIATION*	**PO#:** *32110002*	**JOB#:** *N/A*

TYPE OF DISPOSAL/ SPECIAL HANDLING/LOAD TYPE: *BULK, CO-MINGLE, NO FREE LIQUIDS*

****

ALL LOADS MUST BE SCHEDULED 24 HOURS IN ADVANCE.
CONTACT GREG AT 541-454-3220 OR JULIE AT 541-454-3310

APPROVED: *KRISTIN CASTNER* DATE: *04/12/13 4:38:13 PM*

A COPY OF THIS PERMIT MUST BE SHOWN BY EACH DRIVER

WASTE MANAGEMENT

WASTE MANAGEMENT, INC ....NON HAZARDOUS WASTE DISPOSAL SOLUTIONS FOR THE PACIFIC NORTHWEST

Alaska Street Reload and Recycling

70 South Alaska Street, Seattle Washington 98134

Profile # 110831OR

PERMIT TO DISPOSE OF NON-HAZARDOUS MATERIALS

This permit authorizes disposal of Customer's waste materials in accordance with the Industrial Waste & Disposal Services Agreement dated ___ _____.

EXPIRES: 6/1/2014

GENERATOR: US ARMY ENGINEER DISTRICT, AK	
DESCRIPTION: *PCS*	**VOLUME:** *14000TONS*
☐ DRUMS ☐ BR ☒ ADC ☐ CLEAN UP	
LOCATION: *ST. LAWRENCE ISLAND, SAVOONGA AK*	**COUNTY:** * *NOME*
CONTACT: *TYLER ELLINGBOE*	**PHONE:** *907-563-0013*
	FAX: *907-563-6713*
Recertification: ☐Yes ☐No	

BILLING: *LANDFILL ACCOUNT BRISTOL ENVIRONMENTAL REMEDIATION SRVS*	**PO#:** *34120057*	**JOB#:** *N/A*

TYPE OF DISPOSAL/SPECIAL HANDLING : ***BULK, ADC, NO FREE LIQUIDS***

******** FAILURE TO SCHEDULE LOADS MAY RESULT IN REFUSAL AT GATE*******

APPROVED: *KRISTIN CASTNER* DATE: *04/12/13 4:40:00 PM*

A COPY OF THIS PERMIT MUST BE SHOWN BY EACH DRIVER

PROJECTS MUST BE SCHEDULED PRIOR TO SHIPPING CALL : 206-763-5025

WASTE MANAGEMENT

HAZARDOUS WASTE IS STRICTLY PROHIBITED

Profile Amendment Request Form

TYLER ELLINGBOE hereby requests an amendment to WMI profile #: 110831OR
(Contact Name)

to include the following:

Amendment Type: ☐ One Time Only Request (Event) ☑ Permanent Addition to Profile (Base)

☐ Additional Analytical/MSDS to be added to profile (see attached)

☐ Volume Increase (specify volume) _____ ☐ Tons ☐ Cubic Yards ☐ Drums ☐ Gallons ☐ Other (specify) _____

☑ Constituent(s) to be added and/or modify current range in chemical composition:

Chemicals or constituents to be added/modify	Low	High	Units
DIESEL RANGE ORGANICS	0	58,000	mg/kg
RESIDUAL RANGE ORGANICS	0	5,400	mg/kg
POLYCHLORINATED BIPHENYLS	0	49	mg/kg

☐ Change current ranges on profile (specify below)

pH Range ____ to ____ Free Liquid Range ____ to ____

☐ Other (specify) _____

GENERATOR CERTIFICATION

By signing this form, the Generator hereby certifies:
The information provided in this document, the referenced Waste Management Generator's Waste Profile Sheet, and all other referenced documents contain true and accurate descriptions of the waste material. All information regarding known or suspected hazards in the possession of the Generator has been disclosed.

Generator/Customer Signature: Tyler G. Ellingboe Date: JULY 22, 2013

Company Name: BRISTOL ENVIRONMENTAL REMEDIATION SERVICES, LLC

Name (Print): TYLER ELLINGBOE Title: PROJECT MANAGER

FOR WASTE MANAGEMENT USE ONLY

Submitted By: _____ (W.M. Initials) Date: _____ Time: _____

WM Approval: _____ Date: _____

Agency Approval Required: ☐ Yes ☐ No

☐ Profile Extension

Original Expiration Date _____

Requested Extension _____

New Expiration Date _____

☐ Analytical Extension

Analytical Due Date _____

Requested Extension _____

New Analytical Due Date _____

Conditions/Precautions: _____

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Profile Amendment Request Form

TYLER ELLINGBOE hereby requests an amendment to WMI profile #: 110831OR
(Contact Name)

to include the following:

Amendment Type: ☐ One Time Only Request (Event) ☑ Permanent Addition to Profile (Base)

☑ Additional Analytical/MSDS to be added to profile (see attached)

☑ Volume Increase (specify volume) 500 ☑ Tons ☐ Cubic Yards ☐ Drums ☐ Gallons ☐ Other (specify) _____

☑ Constituent(s) to be added and/or modify current range in chemical composition:

Chemicals or constituents to be added/modify	Low	High	Units
Arsenic	0	210	mg/kg
Arsenic (non-detect at 0.008 mg/L)	0	0	mg/L

☐ Change current ranges on profile (specify below)

pH Range ____ to ____ Free Liquid Range ____ to ____

☐ Other (specify) _____

GENERATOR CERTIFICATION

By signing this form, the Generator hereby certifies:
The information provided in this document, the referenced Waste Management Generator's Waste Profile Sheet, and all other referenced documents contain true and accurate descriptions of the waste material. All information regarding known or suspected hazards in the possession of the Generator has been disclosed.

Generator/Customer Signature: Tyler G. Ellingboe Date: AUGUST 5, 2013

Company Name: BRISTOL ENVIRONMENTAL REMEDIATION SERVICES, LLC

Name (Print): TYLER ELLINGBOE Title: PROJECT MANAGER

FOR WASTE MANAGEMENT USE ONLY

Submitted By: _____ (W.M. Initials) Date: _____ Time: _____

WM Approval: _____ Date: _____

Agency Approval Required: ☐ Yes ☐ No

☐ Profile Extension
- Original Expiration Date _____
- Requested Extension _____
- New Expiration Date _____

☐ Analytical Extension
- Analytical Due Date _____
- Requested Extension _____
- New Analytical Due Date _____

Conditions/Precautions: _____

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Profile Amendment Request Form

TYLER ELLINGBOE hereby requests an amendment to WMI profile #: 110831OR
(Contact Name)

to include the following:

Amendment Type: ☐ One Time Only Request (Event) ☑ Permanent Addition to Profile (Base)

☑ Additional Analytical/MSDS to be added to profile (see attached)

☐ Volume Increase (specify volume) _____ ☐ Tons ☐ Cubic Yards ☐ Drums ☐ Gallons ☐ Other (specify) _____

☑ Constituent(s) to be added and/or modify current range in chemical composition:

Chemicals or constituents to be added/modify	Low	High	Units
DRO	0	67,000	mg/kg
RRO	0	8,300	mg/kg
Straw Wattles and Matting	0	50	%

☐ Change current ranges on profile (specify below)

pH Range _____ to _____ Free Liquid Range _____ to _____

☐ Other (specify) _____

GENERATOR CERTIFICATION

By signing this form, the Generator hereby certifies:
The information provided in this document, the referenced Waste Management Generator's Waste Profile Sheet, and all other referenced documents contain true and accurate descriptions of the waste material. All information regarding known or suspected hazards in the possession of the Generator has been disclosed.

Generator/Customer Signature: Tyler S. Ellingboe Date: SEPTEMBER 17, 2013

Company Name: BRISTOL ENVIRONMENTAL REMEDIATION SERVICES LLC

Name (Print): TYLER ELLINGBOE Title: Proj. Mgr./Sr. Waste Spec.

FOR WASTE MANAGEMENT USE ONLY

Submitted By: _____ (W.M. Initials) Date: _____ Time: _____

WM Approval: _____ Date: _____

Agency Approval Required: ☐ Yes ☐ No

☐ Profile Extension
Original Expiration Date _____
Requested Extension _____
New Expiration Date _____

☐ Analytical Extension
Analytical Due Date _____
Requested Extension _____
New Analytical Due Date _____

Conditions/Precautions: _____

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Table 5 Site 28 Bulk Waste Characterization Analytical Results

			Sample ID	12NC28BW01
			Laboratory ID	580-35168-10
			Location ID	12NC28BW01
			Collection Date	9/17/2012
Analytical Method	**Analyte**	**Unit**	**Regulatory Level***	
AK101	GRO	mg/kg	NS	180 ML
AK102	DRO	mg/kg	NS	67000
AK103	RRO	mg/kg	NS	8300
6020	Arsenic	mg/kg	100	7.1
6020	Barium	mg/kg	2,000	110
6020	Cadmium	mg/kg	20	0.72
6020	Chromium	mg/kg	100	27
6020	Lead	mg/kg	100	71
6020	Nickel	mg/kg	NS	16
6020	Selenium	mg/kg	20	1.2
6020	Silver	mg/kg	100	0.14 J
6020	Vanadium	mg/kg	NS	36
6020	Zinc	mg/kg	NS	140
7471A	Mercury	mg/kg	4	0.17
8082/DoD	PCB-1016	mg/kg	50	ND (0.0088)
8082/DoD	PCB-1221	mg/kg	50	ND (0.018)
8082/DoD	PCB-1232	mg/kg	50	ND (0.018)
8082/DoD	PCB-1242	mg/kg	50	ND (0.0088)
8082/DoD	PCB-1248	mg/kg	50	ND (0.0088)
8082/DoD	PCB-1254	mg/kg	50	ND (0.0088)
8082/DoD	PCB-1260	mg/kg	50	0.21
8260B/DoD	Benzene	µg/kg	10,000	240
8260B/DoD	Ethylbenzene	µg/kg	NS	3700
8260B/DoD	m,p-Xylene	µg/kg	NS	15,000
8260B/DoD	o-Xylene	µg/kg	NS	8,300
8260B/DoD	Toluene	µg/kg	NS	290
8270C SIM/DoD	1-Methylnaphthalene	µg/kg	NS	210,000
8270C SIM/DoD	2-Methylnaphthalene	µg/kg	NS	220,000

Table 5 Bulk Waste Characterization Samples (continued)

			Sample ID	12NC28BW01
			Laboratory ID	580-35168-10
			Location ID	12NC28BW01
			Collection Date	9/17/2012
Analytical Method	**Analyte**	**Unit**	**Regulatory Level***	
8270C SIM/DoD	Acenaphthene	µg/kg	NS	4,300
8270C SIM/DoD	Acenaphthylene	µg/kg	NS	1,700
8270C SIM/DoD	Anthracene	µg/kg	NS	ND (44)
8270C SIM/DoD	Benzo(a)anthracene	µg/kg	NS	79 J
8270C SIM/DoD	Benzo(a)pyrene	µg/kg	NS	ND (44)
8270C SIM/DoD	Benzo(b)fluoranthene	µg/kg	NS	ND (44)
8270C SIM/DoD	Benzo(g,h,i)perylene	µg/kg	NS	43 J
8270C SIM/DoD	Benzo(k)fluoranthene	µg/kg	NS	ND (44)
8270C SIM/DoD	Chrysene	µg/kg	NS	200
8270C SIM/DoD	Dibenz(a,h)anthracene	µg/kg	NS	ND (44)
8270C SIM/DoD	Fluoranthene	µg/kg	NS	340
8270C SIM/DoD	Fluorene	µg/kg	NS	6300
8270C SIM/DoD	Indeno(1,2,3-cd)pyrene	µg/kg	NS	ND (44)
8270C SIM/DoD	Naphthalene	µg/kg	NS	42,000
8270C SIM/DoD	Phenanthrene	µg/kg	NS	5,900
8270C SIM/DoD	Pyrene	µg/kg	NS	320
9060	Total Organic Carbon - Quad	µg/kg	NS	78,000

Notes:

Results compared to RCRA/TSCA levels from title 40 CFR for disposal

AK = Alaska test method

DoD = Department of Defense

DRO = diesel range organics

GRO = gasoline range organics

J = Result is an estimate.

mg/kg = milligrams per killigram

ML = Analyte result is considered estimated with a low bias due to matrix effects.

ND = non-detect; limit of detection in parentheses

RCRA = Resource Conservation and Recovery Act

RRO = residual range organics

SIM = selective ion monitoring

TSCA = Toxic Substances Control Act

µg/kg = micrograms per kilogram

*A total waste analysis can be used in lieu of the TCLP to determine that a waste does not exhibit the toxicity characteristic. For solids, this is accomplished by dividing the total concentration of a constituent in the waste by 20 (reflecting the weight ratio of solid sample to acetic acid in the TCLP) If this maximum theoretical leachate concentration is lower than the characteristic level for the constituent, the waste cannot exhibit the toxicity characteristic for that constituent, and the TCLP need not be run.

WASTE MANAGEMENT

EZ Profile™

Requested Facility: Columbia Ridge Landfill ☐ Unsure Profile Number: 113909OR

☐ Check if there are multiple generator locations. Attach locations. ☑ COD ☐ Renewal? Original Profile Number: _____

A. GENERATOR INFORMATION (MATERIAL ORIGIN)

1. Generator Name: U.S. ARMY CORPS OF ENGINEERS, AK
2. Site Address: ST. LAWRENCE ISLAND NEC FACILITY WIDE
   (City, State, ZIP) SAVOONGA AK 99769
3. County: NOME
4. Contact Name: VALERIE PALMER/PROJECT MANAGER
5. Email: valerie.y.palmer@usace.army.mil
6. Phone: (907) 753-2578 7. Fax: (907) 753-2578
8. Generator EPA ID: AK0000228395 ☐ N/A
9. State ID: _____ ☑ N/A

B. BILLING INFORMATION ☐ SAME AS GENERATOR

1. Billing Name: BRISTOL ENVIRONMENTAL REMEDIATION
2. Billing Address: 111 W. 16TH AVENUE, THIRD FLOOR
   (City, State, ZIP) ANCHORAGE AK 99501
3. Contact Name: Tyler Ellingboe
4. Email: tellingboe@bristol-companies.com
5. Phone: (907) 563-0013 6. Fax: (907) 563-6713
7. WM Hauled? ☐ Yes ☑ No
8. P.O. Number: 34130068

C. MATERIAL INFORMATION

1. Common Name: BEACH SAND CONTAMINATED WITH
   Describe Process Generating Material: ☐ See Attached

   CLEAN-UP OF SPILL FROM HEAVY EQUIPMENT

2. Material Composition and Contaminants: ☐ See Attached

1. BEACH SAND	95-100 %
2. CHEVRON RANDO HD HYDRAULIC OIL	0-5 %
3.	
4.	
	≥100%

3. State Waste Codes: _____ ☑ N/A
4. Color: BROWN
5. Physical State at 70˚F: ☑ Solid ☐ Liquid ☐ Other: _____
6. Free Liquid Range Percentage: _____ to _____ ☑ N/A (Solid)
7. pH: _____ to _____ ☑ N/A (Solid)
8. Strong Odor: ☐ Yes ☑ No Describe: _____
9. Flash Point: ☐ <140˚F ☐ 140˚–199˚F ☐ ≥200˚ ☑ N/A (Solid)

D. REGULATORY INFORMATION

1. EPA Hazardous Waste? ☐ Yes* ☑ No
   Code: _____
2. State Hazardous Waste? ☐ Yes ☑ No
   Code: _____
3. Is this material non-hazardous due to Treatment, Delisting, or an Exclusion? ☐ Yes* ☑ No
4. Contains Underlying Hazardous Constituents? ☐ Yes* ☑ No
5. Contains benzene **and** subject to Benzene NESHAP? ☐ Yes* ☑ No
6. Facility remediation subject to 40 CFR 63 GGGGG? ☐ Yes* ☑ No
7. CERCLA or State-mandated clean-up? ☐ Yes* ☑ No
8. NRC or State-regulated radioactive or NORM waste? ☐ Yes* ☑ No

***If Yes, see Addendum (page 2) for additional questions and space.**

9. Contains PCBs? → If Yes, answer a, b and c. ☐ Yes ☑ No
   a. Regulated by 40 CFR 761? ☐ Yes ☐ No
   b. Remediation under 40 CFR 761.61 (a)? ☐ Yes ☐ No
   c. Were PCB imported into the US? ☐ Yes ☐ No
10. Regulated and/or Untreated Medical/Infectious Waste? ☐ Yes ☑ No
11. Contains Asbestos? ☐ Yes ☑ No
    → If Yes: ☐ Non-Friable ☐ Non-Friable – Regulated ☐ Friable

E. ANALYTICAL AND OTHER REPRESENTATIVE INFORMATION

1. Analytical attached ☐ Yes
   Please identify applicable samples and/or lab reports:

2. Other information attached (such as MSDS)? ☑ Yes

F. SHIPPING AND DOT INFORMATION

1. ☐ One-Time Event ☑ Repeat Event/Ongoing Business
2. Estimated Quantity/Unit of Measure: 20
   ☐ Tons ☑ Yards ☐ Drums ☐ Gallons ☐ Other: _____
3. Container Type and Size: 8 CUBIC YARD SUPERSACK BAG
4. USDOT Proper Shipping Name: ☐ N/A
   MATERIAL NOT REGULATED BY D.O.T.

G. GENERATOR CERTIFICATION (PLEASE READ AND CERTIFY BY SIGNATURE)

By signing this EZ Profile™ form, I hereby certify that all information submitted in this and all attached documents contain true and accurate descriptions of this material, and that all relevant information necessary for proper material characterization and to identify known and suspected hazards has been provided. Any analytical data attached was derived from a sample that is representative as defined in 40 CFR 261 - Appendix 1 or by using an equivalent method. All changes occurring in the character of the material (i.e., changes in the process or new analytical) will be identified by the Generator and be disclosed to Waste Management prior to providing the material to Waste Management.

If I am an agent signing on behalf of the Generator, I have confirmed with the Generator that information contained in this Profile is accurate and complete.

Name (Print): Tyler Ellingboe Date: 09/08/2013

Title: Project Manager/Sr. Waste Specialist

Company: Bristol Environmental Remediation Services, LLC

Certification Signature

Tyler G. Ellingboe

©2013 Waste Management, Inc.

WASTE MANAGEMENT

EZ Profile™

Requested Facility: Columbia Ridge Landfill ☐ Unsure Profile Number: 114242OR

☐ Check if there are multiple generator locations. Attach locations. ☐ COD ☐ Renewal? Original Profile Number: _____

A. GENERATOR INFORMATION (MATERIAL ORIGIN)

1. Generator Name: U.S. Army Corps of Engineers, AK District
2. Site Address: Kanguksham MT 52.25 MI ESE
   (City, State, ZIP) Savoonga AK 99769
3. County: _____
4. Contact Name: Valerie Palmer
5. Email: valerie.y.palmer@usace.army.mil
6. Phone: (907) 753-2578 7. Fax: (907) 753-2829
8. Generator EPA ID: AK0000228395 ☐ N/A
9. State ID: _____ ☑ N/A

B. BILLING INFORMATION ☐ SAME AS GENERATOR

1. Billing Name: Bristol Environmental Remediation Services LLC
2. Billing Address: 111 W 16th Avenue, Third Floor
   (City, State, ZIP) Anchorage AK 99501
3. Contact Name: Tyler Ellingboe
4. Email: tellingboe@bristol-companies.com
5. Phone: (907) 536-0013 6. Fax: (907) 536-6713
7. WM Hauled? ☑ Yes ☐ No
8. P.O. Number: 34130068

C. MATERIAL INFORMATION

1. Common Name: Scrap Dozer
   Describe Process Generating Material: ☐ See Attached
   Clean up of old landfill site
2. Material Composition and Contaminants: ☐ See Attached

1. Scrap dozer	100 %
2.	
3.	
4.	
	≥100%

3. State Waste Codes: _____ ☑ N/A
4. Color: Varies
5. Physical State at 70˚F: ☑ Solid ☐ Liquid ☐ Other: _____
6. Free Liquid Range Percentage: _____ to _____ ☑ N/A (Solid)
7. pH: _____ to _____ ☑ N/A (Solid)
8. Strong Odor: ☐ Yes ☑ No Describe: _____
9. Flash Point: ☐ <140˚F ☐ 140˚–199˚F ☐ ≥200˚ ☑ N/A (Solid)

D. REGULATORY INFORMATION

1. EPA Hazardous Waste? ☐ Yes* ☑ No
   Code: _____
2. State Hazardous Waste? ☐ Yes ☑ No
   Code: _____
3. Is this material non-hazardous due to Treatment, Delisting, or an Exclusion? ☐ Yes* ☑ No
4. Contains Underlying Hazardous Constituents? ☐ Yes* ☑ No
5. Contains benzene **and** subject to Benzene NESHAP? ☐ Yes* ☑ No
6. Facility remediation subject to 40 CFR 63 GGGGG? ☐ Yes* ☑ No
7. CERCLA or State-mandated clean-up? ☐ Yes* ☑ No
8. NRC or State-regulated radioactive or NORM waste? ☐ Yes* ☑ No

***If Yes, see Addendum (page 2) for additional questions and space.**

9. Contains PCBs? → If Yes, answer a, b and c. ☐ Yes ☑ No
   a. Regulated by 40 CFR 761? ☐ Yes ☐ No
   b. Remediation under 40 CFR 761.61 (a)? ☐ Yes ☐ No
   c. Were PCB imported into the US? ☐ Yes ☐ No
10. Regulated and/or Untreated Medical/Infectious Waste? ☐ Yes ☑ No
11. Contains Asbestos? ☐ Yes ☑ No
    → If Yes: ☐ Non-Friable ☐ Non-Friable – Regulated ☐ Friable

E. ANALYTICAL AND OTHER REPRESENTATIVE INFORMATION

1. Analytical attached ☐ Yes
   Please identify applicable samples and/or lab reports:
2. Other information attached (such as MSDS)? ☐ Yes

F. SHIPPING AND DOT INFORMATION

1. ☑ One-Time Event ☐ Repeat Event/Ongoing Business
2. Estimated Quantity/Unit of Measure: 1
   ☑ Tons ☐ Yards ☐ Drums ☐ Gallons ☐ Other: _____
3. Container Type and Size: _____
4. USDOT Proper Shipping Name: ☑ N/A

G. GENERATOR CERTIFICATION (PLEASE READ AND CERTIFY BY SIGNATURE)

By signing this EZ Profile™ form, I hereby certify that all information submitted in this and all attached documents contain true and accurate descriptions of this material, and that all relevant information necessary for proper material characterization and to identify known and suspected hazards has been provided. Any analytical data attached was derived from a sample that is representative as defined in 40 CFR 261 - Appendix 1 or by using an equivalent method. All changes occurring in the character of the material (i.e., changes in the process or new analytical) will be identified by the Generator and be disclosed to Waste Management prior to providing the material to Waste Management.

If I am an agent signing on behalf of the Generator, I have confirmed with the Generator that information contained in this Profile is accurate and complete.

Name (Print): Tyler Ellingboe Date: 10/30/2013

Title: Project Manager/Sr. Waste Specialist

Company: Bristol Environmental Remediation Services, LLC

Certification Signature

Tyler G. Ellingboe

©2013 Waste Management, Inc.

EMERALD SERVICES INC

Waste Profile Questionnaire #: 45081FB

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2578

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title VALERIE PALMER Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name Waste flammable liquids, n.o.s. (HEXANE, ACETONE)

DOT ID UN1993 Hazard Class 3 Packing Group II ERG 128 RQ 100

C. Regulatory Information

Name of Material HEXANE/ACETONE/WATER MIXTURE Generating Proces LABORATORY ANALYSIS

Form Code W219 Source Code G09 Origin Code 1 System Code H061

EPA Codes D001,F003 State Codes

Container Type DE30 Number of Units 1 Frequency Year

D. Chemical / Constituent Composition

Constituent	PPM	% Volume
Acetone		10-50
SOIL		0-10
PCB	1.5	

Constituent	PPM	% Volume
Hexane		40-80
WATER		0-20

E. Physical Characteristics

Physical State (Including Range) % Liquid 90-100 % Sludges/Solid / 0-10 Bi-Layer Liqui Y Color COLORLESS

Odor / Describe ACETONE/HEXANE Specific Gravity 0.6-1.1 BTUs / Lb >5000 pH: ☐ <= 2 ☒ >2 and <12.5 ☐ >=12.5 ☐ N/A

FlashPt: ☒ <100F (38C) ☐ 100-140F (38-60C) ☐ 141-200F (61-93C) ☐ >200F (93C) ☐ None

F. Comments

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
111 W 16th Avenue, Third Floor
Anchorage, AK 99501

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: TYLER ELLINGBOE **Date** 9/17/2013

Name (Print) Tyler Ellingboe **Title** Project Manager/Sr. Waste Specialist

TSDF's Certification

EMERALD SERVICES INC
1825 ALEXANDER AVE
TACOMA, WA 98421

As an authorized representative of Emerald Services, Inc., I certify, by my signature below, that Emerald Services, Inc. has the necessary permits per WAC 173-303-290(3) and 40CFR 264.12(b) to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: MICHELLE LACKMAN **Date** 10/25/2012 12:00:00AM

Reviewer Information Only VOC Level 1 ☒ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam N

Process ☐ Storage ☒ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials ML

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\090713\B0907030.D Vial: 11
Acq On : 7 Sep 2013 7:01 pm Operator: RWL
Sample : PCB WASTE 2013 NE CAPE Inst : Curie-ECD
Misc : Multiplr: 1.00
IntFile : EVENTS.E
Quant Time: Sep 7 19:36 2013 Quant Results File: PCB907BF.RES

Quant Method : C:\HPCHEM\2\METHODS\PCB907BF.M (Chemstation Integrator)
Title : PCB 7-05-12 Front ICAL
Last Update : Sat Sep 07 18:28:33 2013
Response via : Initial Calibration
DataAcq Meth : ECDDUAL.M

9/07/13

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units	
		System Monitoring Compounds					
1)	S	TCMX	8.38	1764124	62.515	ug/L	m
12)	s	Decachlorobiphenyl	24.56	2012324	66.106	ug/L	
		Target Compounds					
2)	t	Aroclor-1016	0.00	0	N.D.	ug/L	
3)	t	Aroclor-1016 {2}	11.42	9972	9.268	ug/L	
4)	t	Aroclor-1016 {3}	12.51	20494	11.517	ug/L	
5)	t	Aroclor-1016 {4}	13.22	-2497	N.D.	ug/L	
6)	t	Aroclor-1016 {5}	14.17	29094	34.293	ug/L	
7)	t	Aroclor-1260	17.38	36323	211.212	ug/L	
8)	t	Aroclor-1260 {2}	19.13	74372	453.628	ug/L	
9)	t	Aroclor-1260 {3}	22.69	79524	351.671	ug/L	m
10)	t	Aroclor-1260 {4}	22.97	245426	446.541	ug/L	
11)	t	Aroclor-1260 {5}	23.90	64153	391.288	ug/L	m

1854.34 / 5 =

PCB's = 370.868 ppb

Hexane/Acetone

(f)=RT Delta > 1/2 Window (m)=manual int.

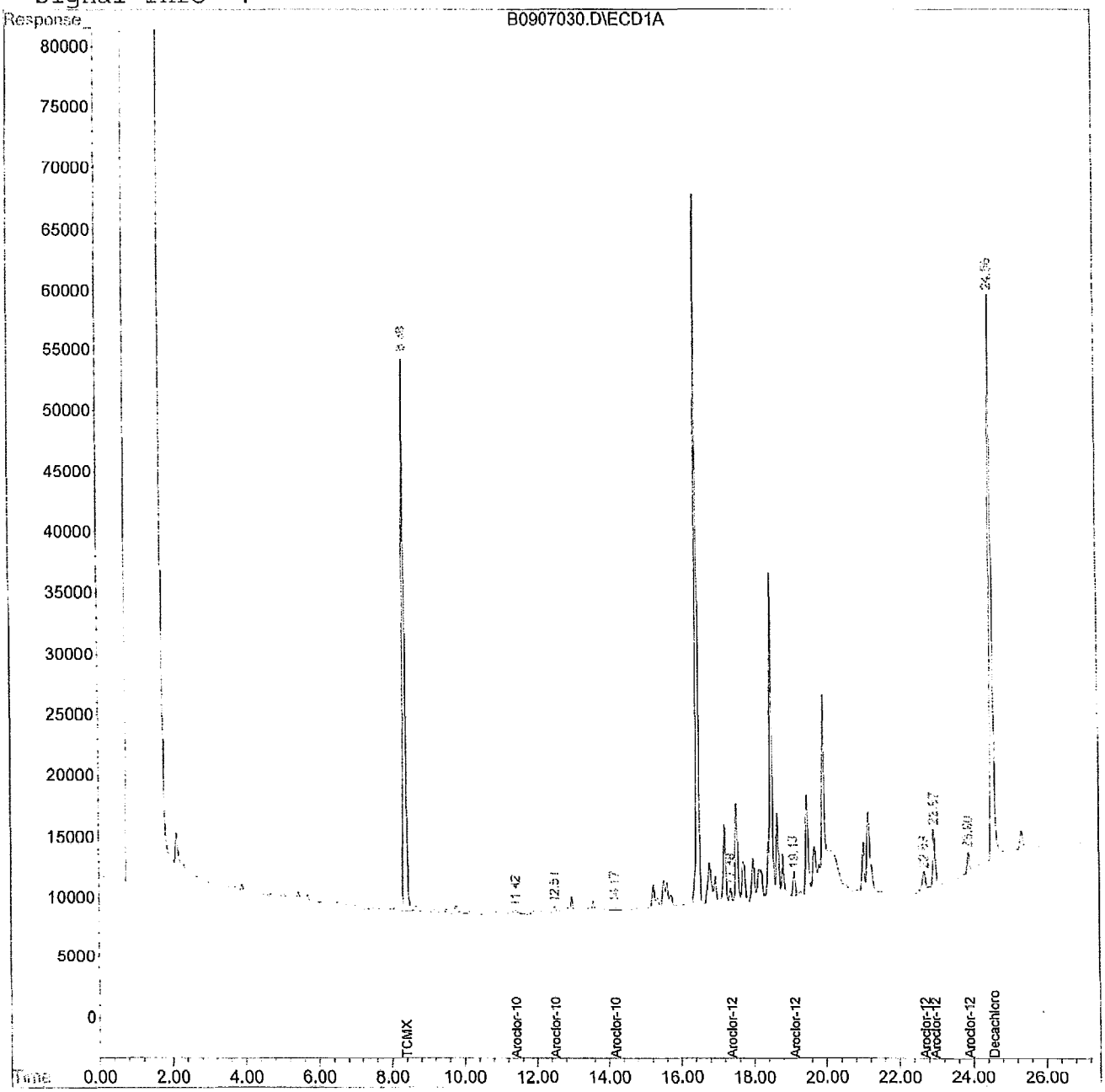
Quantitation Report

Data File : C:\HPCHEM\2\DATA\090713\B0907030.D
Acq On : 7 Sep 2013 7:01 pm
Sample : PCB WASTE 2013 NE CAPE
Misc :
IntFile : EVENTS.E
Quant Time: Sep 7 19:36 2013 Quant Results File: PCB907BF.RES

Vial: 11
Operator: RWL
Inst : Curie-ECD
Multiplr: 1.00

Quant Method : C:\HPCHEM\2\METHODS\PCB907BF.M (Chemstation Integrator)
Title : PCB 7-05-12 Front ICAL
Last Update : Sat Sep 07 18:28:33 2013
Response via : Multiple Level Calibration
DataAcq Meth : ECDDUAL.M

Volume Inj. :
Signal Phase :
Signal Info :



US ECOLOGY IDAHO, INC.

Waste Profile Questionnaire #: USE31587

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2578

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title VALERIE PALMER Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (METHYLENE CHLORIDE)

DOT ID UN3077 Hazard Class 9 Packing Group III ERG 171 RQ

C. Regulatory Information

Name of Material LAB HOOD FILTERS C/W METHYLENE CHLORIDE Generating Proces LAB WASTE

Form Code W002 Source Code G22 Origin Code System Code

EPA Codes E002 State Codes

Container Type Number of Units Frequency

D. Chemical / Constituent Composition

Constituent	PPM	% Volume
FILTERS		100

Constituent	PPM	% Volume
Methylene chloride	0-499	

E. Physical Characteristics

Physical State (Including Range) % Liquid % Sludges/Solid / 100 Bi-Layer Liqui N Color BLACK

Odor / Describe NONE Specific Gravity N/A BTUs / Lb N/A pH: ☐ <= 2 ☐ >2 and <12.5 ☐ >=12.5 ☒ N/A

FlashPt: ☐ <100F (38C) ☐ 100-140F (38-60C) ☐ 141-200F (61-93C) ☐ >200F (93C) ☒ None

F. Comments

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

111 W 16th Avenue, Third Floor
Anchorage, AK 99501

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler S Ellingboe **Date** 9/17/2013

Name (Print) Tyler Ellingboe **Title** Project Manager/Sr. Waste Specialist

TSDF's Certification

US ECOLOGY IDAHO, INC.
20400 LEMLEY RD
GRAND VIEW, ID 83624

As an authorized representative of Emerald Services, Inc. I certify, by my signature below, that Emerald Services, Inc. has the necessary permits to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: **Date**

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam N

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials

US ECOLOGY IDAHO, INC.

Waste Profile Questionnaire #: USE31588

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2578

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title VALERIE PALMER Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (CADMIUM)

DOT ID UN3082 Hazard Class 9 Packing Group III ERG 171 RQ CADMIUM

C. Regulatory Information

Name of Material HACH AQUEOUS LAB WASTE C/W CADMIUM Generating Proces LAB WASTE

Form Code W101 Source Code G22 Origin Code System Code

EPA Codes D006 State Codes

Container Type Number of Units Frequency

D. Chemical / Constituent Composition

Constituent	PPM	% Volume
WATER		100

Constituent	PPM	% Volume
Cadmium	4.2	

E. Physical Characteristics

Physical State (Including Range) % Liquid 100 % Sludges/Solid / Bi-Layer Liqui N Color BROWN

Odor / Describe NONE Specific Gravity 1.0 BTUs / Lb N/A pH: ☐ <= 2 ☒ >2 and <12.5 ☐ >=12.5 ☐ N/A

FlashPt: ☐ <100F (38C) ☐ 100-140F (38-60C) ☐ 141-200F (61-93C) ☐ >200F (93C) ☒ None

F. Comments

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
111 W 16th Avenue, Third Floor
Anchorage, AK 99501

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler Ellingboe Date 9/17/2013

Name (Print) Tyler Ellingboe **Title** Project Manager / Sr. Waste Specialist

TSDF's Certification

US ECOLOGY IDAHO, INC.
20400 LEMLEY RD
GRAND VIEW, ID 83624

As an authorized representative of Emerald Services, Inc. I certify, by my signature below, that Emerald Services, Inc. has the necessary permits to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: Date

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials

Analyte	CAS Number	Units	Specific Method	Reports To	Basis	580-40158-1 Hach001 9/5/2013 11:40 AM
Arsenic	7440-38-2	mg/L	Metals (ICP/MS)	MDL	Total Recoverable	**0.0063**
Barium	7440-39-3	mg/L	Metals (ICP/MS)	MDL	Total Recoverable	**0.93**
Cadmium	7440-43-9	mg/L	Metals (ICP/MS)	MDL	Total Recoverable	**4.2**
Chromiu	7440-47-3	mg/L	Metals (ICP/MS)	MDL	Total Recoverable	**0.0015** J
Lead	7439-92-1	mg/L	Metals (ICP/MS)	MDL	Total Recoverable	0.00025 U
Nickel	7440-02-0	mg/L	Metals (ICP/MS)	MDL	Total Recoverable	**0.039**
Selenium	7782-49-2	mg/L	Metals (ICP/MS)	MDL	Total Recoverable	0.0040 U
Silver	7440-22-4	mg/L	Metals (ICP/MS)	MDL	Total Recoverable	**0.00025** J
Vanadium	7440-62-2	mg/L	Metals (ICP/MS)	MDL	Total Recoverable	0.0050 U
Zinc	7440-66-6	mg/L	Metals (ICP/MS)	MDL	Total Recoverable	0.0050 U

US ECOLOGY IDAHO, INC.

Waste Profile Questionnaire #: 16560

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2578

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title VALERIE PALMER Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name Waste sulfuric acid

DOT ID UN1830 Hazard Class 8 Packing Group II ERG 137 RQ 100

C. Regulatory Information

Name of Material SULFURIC ACID Generating Proces SITE CLEANUP/FACILITY CLOSURE

Form Code W105 Source Code G44 Origin Code 2 System Code H129

EPA Codes D002 State Codes

Container Type Number of Units Frequency

D. Chemical / Constituent Composition

Constituent	PPM	% Volume
Sulfuric acid		95-95

Constituent	PPM	% Volume
WATER		5-5

E. Physical Characteristics

Physical State (Including Range) % Liquid 100 % Sludges/Solid / Bi-Layer Liqui Color VARIES

Odor / Describe NONE Specific Gravity 1.841 BTUs / Lb NA pH: [X] <= 2 [ ] >2 and <12.5 [ ] >=12.5 [ ] N/A

FlashPt: [ ] <100F (38C) [ ] 100-140F (38-60C) [ ] 141-200F (61-93C) [ ] >200F (93C) [X] None

F. Comments

Bristol

ENVIRONMENTAL REMEDIATION SERVICES, LLC

111 W 16th Avenue, Third Floor

Anchorage, AK 99501

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler D. Ellingsoe Date 9/17/2013

Name (Print) Tyler Ellingsoe **Title** Project Manager / Sr. Waste Specialist

TSDF's Certification

US ECOLOGY IDAHO, INC.
20400 LEMLEY RD
GRAND VIEW, ID 83624

As an authorized representative of Emerald Services, Inc. I certify, by my signature below, that Emerald Services, Inc. has the necessary permits to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: TIFFANY MYERS Date 12/20/2005 12:00:00AM

Reviewer Information Only VOC Level 1 [ ] < 11.1 psia [ ] >= 11.1 psia [ ] NA At Risk Waste Steam

Process [ ] Storage [ ] FB [ ] OB [ ] RY [ ] RR [ ] AF [ ] UW [ ] RY150 [ ] MT Initials

CLEAN HARBORS
(ARAGONITE), LLC

Waste Profile Questionnaire #: CH685083

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2578

Site Address NE CAPE, ST. LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax

Contact/Title VALERIE PALMER Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name WASTE DICHLOROMETHANE SOLUTION

DOT ID UN1593 Hazard Class 6.1 Packing Group III ERG 160 RQ

C. Regulatory Information

Name of Material SPENT METHYLENE CHLORIDE Generating Proces LAB WASTE

Form Code W202 Source Code G22 Origin Code System Code

EPA Codes E002 State Codes

Container Type Number of Units Frequency

D. Chemical / Constituent Composition

Constituent	PPM	% Volume
Dichloromethane		99-100

Constituent	PPM	% Volume
DIESEL RANGE ORGANICS	0-12250	

E. Physical Characteristics

Physical State (Including Range) % Liquid 100 % Sludges/Solid / Bi-Layer Liqui N Color BROWN

Odor / Describe SOLVENT Specific Gravity 1.3 BTUs / Lb <2000 pH: ☐ <= 2 ☐ >2 and <12.5 ☐ >=12.5 ☒ N/A

FlashPt: ☐ <100F (38C) ☐ 100-140F (38-60C) ☐ 141-200F (61-93C) ☒ >200F (93C) ☐ None

F. Comments

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC
111 W 16th Avenue, Third Floor
Anchorage, AK 99501

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler S. Ellingboe Date 9/17/2013

Name (Print) Tyler Ellingboe Title Project Manager / Sr. Waste Specialist

TSDF's Certification

CLEAN HARBORS (ARAGONITE), LLC
11600 N. APTUS ROAD, EXIT 56
ARAGONITE, UT 84029

As an authorized representative of Emerald Services, Inc. I certify, by my signature below, that Emerald Services, Inc. has the necessary permits to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: Date

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\090713A\A0907078.D Vial: 26
Acq On : 8 Sep 2013 10:21 am Operator: RWL
Sample : DCM WASTE SAMPLE (09/08/13) Inst : Pyro-FID
Misc : Multiplr: 1.00
IntFile : EVENTS.E
Quant Time: Sep 8 10:50 2013 Quant Results File: POL905AF.RES

Quant Method : C:\HPCHEM\1\METHODS\POL905AF.M (Chemstation Integrator)
Title : DRO-RRO 7-31 RTS UPDATED 8-17
Last Update : Thu Sep 05 22:13:09 2013
Response via : Initial Calibration
DataAcq Meth : DUAL2013.M

9/08/13

Volume Inj. : 1 uL
Signal Phase : RTX-5 30 m 0.53 ID 1 um df
Signal Info : s/n 967016

	Compound	R.T.	Response	Conc Units
	System Monitoring Compounds			
3)	s O-Terphenyl	9.66	2219318	83.544 mg/L
4)	s N-C30	14.35	1709610	99.277 mg/L
	Target Compounds			
1)	HM DRO	9.00	117810732	6097.958 mg/L
2)	HM RRO	15.00	4058361	1709.008 mg/L

DCM Waste Sample

2013 NE Cape, AK

POL waste

in

methylene chloride

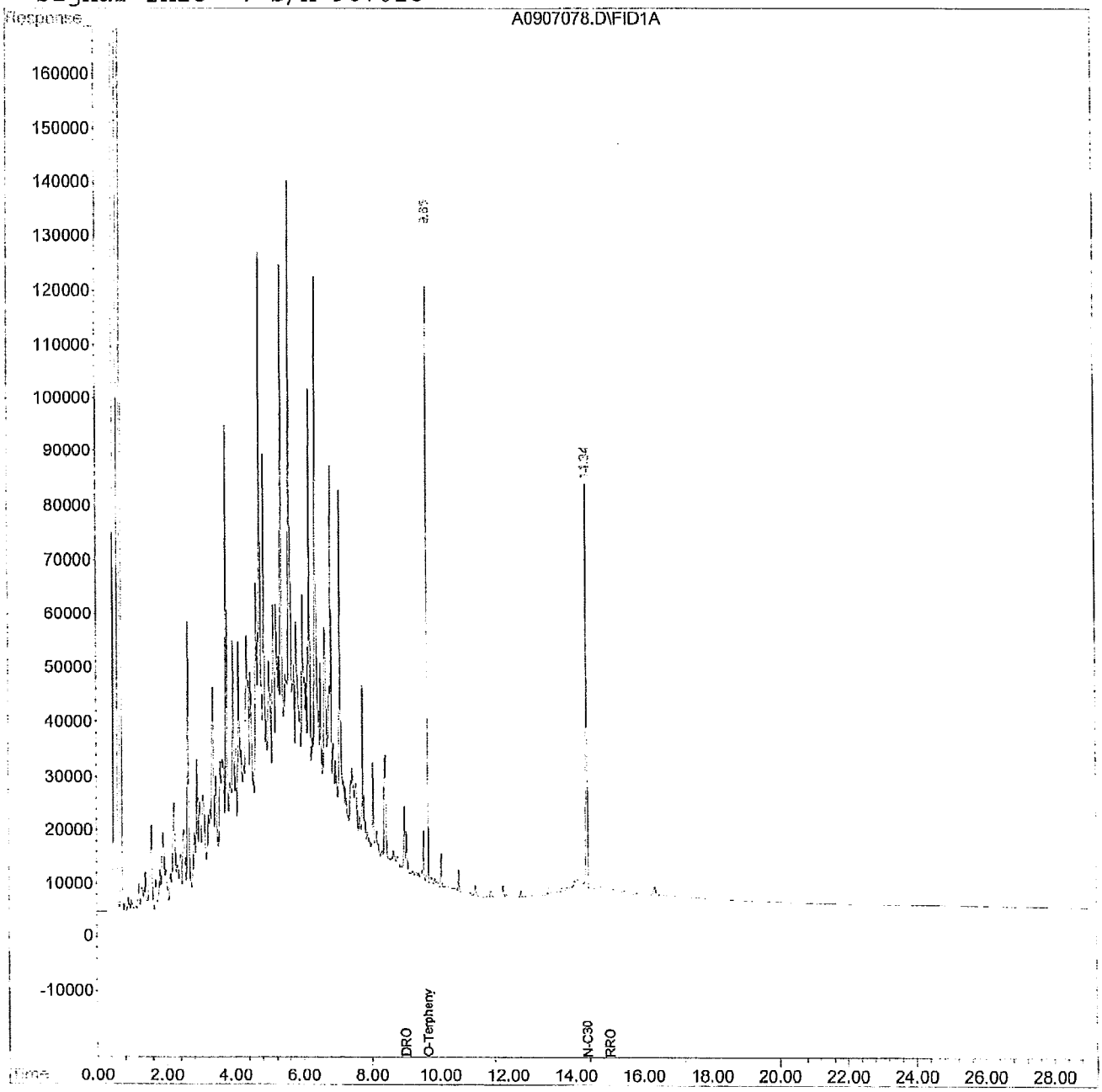
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\090713A\A0907078.D Vial: 26
Acq On : 8 Sep 2013 10:21 am Operator: RWL
Sample : DCM WASTE SAMPLE (09/08/13) Inst : Pyro-FID
Misc : Multiplr: 1.00
IntFile : EVENTS.E
Quant Time: Sep 8 10:50 2013 Quant Results File: POL905AF.RES

Quant Method : C:\HPCHEM\1\METHODS\POL905AF.M (Chemstation Integrator)
Title : DRO-RRO 7-31 RTS UPDATED 8-17
Last Update : Thu Sep 05 22:13:09 2013
Response via : Multiple Level Calibration
DataAcq Meth : DUAL2013.M

Volume Inj. : 1 uL
Signal Phase : RTX-5 30 m 0.53 ID 1 um df
Signal Info : s/n 967016



EMERALD PETROLEUM SERVICES

Waste Profile Questionnaire #: G02907

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2578

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title VALERIE PALMER Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name Non Regulated Waste - Liquid

DOT ID _____ Hazard Class _____ Packing Group ___ ERG ___ RQ _____

C. Regulatory Information

Name of Material USED OIL Generating Proces MAINTENANCE/TANK CLEANING/PUMPING

Form Code _____ Source Code G09 Origin Code _____ System Code NA

EPA Codes _____ State Codes _____

Container Type DM55 Number of Units 9 Frequency Year

D. Chemical / Constituent Composition

Constituent	PPM	% Volume
OIL		90-100
WATER		1-10

Constituent	PPM	% Volume
SOLIDS		0-10

E. Physical Characteristics

Physical State (Including Range) % Liquid 90-100% % Sludges/Solid _____ / 0-10% Bi-Layer Liqui ___ Color VARIES

Odor / Describe MILD Specific Gravity 1.2 BTUs / Lb >5000 pH: ☐ <= 2 ☐ >2 and <12.5 ☐ >=12.5 ☒ N/A

FlashPt: ☐ <100F (38C) ☐ 100-140F (38-60C) ☐ 141-200F (61-93C) ☒ >200F (93C) ☐ None

F. Comments

Bristol ENVIRONMENTAL REMEDIATION SERVICES, LLC

111 W 16th Avenue, Third Floor
Anchorage, AK 99501

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler D. Ellingboe Date 9/17/2013

Name (Print) Tyler Ellingboe **Title** Project Manager / Sr. Waste Specialist

TSDF's Certification

EMERALD PETROLEUM SERVICES
1300 W. 12TH STREET
VANCOUVER, WA 98660

As an authorized representative of Emerald Services, Inc. I certify, by my signature below, that Emerald Services, Inc. has the necessary permits to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: SHEILA SMITH Date 1/1/2000 12:00:00AM

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam ___

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials _____

Site 10 used Oil Drum Sample Results

		Sample ID	13NC10DS01	13NC10DS02	13NC10DS03
		Laboratory ID	28/0-46355-1	280-46355-2	28/0-46355-3
		Location ID	13NC10D01	13NC10D02	13NC10D05
		Collection Date	9/5/2013	9/5/2013	9/5/2013
Specific Method	Analyte	Units	Regulatory Limit		
1010A	Flashpoint	Degrees F		NR	NR	>160
8082	PCB-1016	ug/Kg	50000	NR	NR	ND (600)
8082	PCB-1221	ug/Kg	50000	NR	NR	ND (1200)
8082	PCB-1232	ug/Kg	50000	NR	NR	ND (600)
8082	PCB-1242	ug/Kg	50000	NR	NR	ND (600)
8082	PCB-1248	ug/Kg	50000	NR	NR	ND (600)
8082	PCB-1254	ug/Kg	50000	NR	NR	ND (600)
8082	PCB-1260	ug/Kg	50000	NR	NR	ND (600)
8260B	1,1-Dichloroethene	ug/Kg	14,000[1]	NR	NR	ND (5300)
8260B	1,1-Dichloroethene	ug/L	700	ND (4)	ND (4)	NR
8260B	1,2-Dichloroethane	ug/Kg	10,000[1]	NR	NR	ND (4200)
8260B	1,2-Dichloroethane	ug/L	500	ND (4)	ND (4)	NR
8260B	2-Butanone (MEK)	ug/Kg	4,000,000[1]	NR	NR	ND (11000)
8260B	2-Butanone (MEK)	ug/L	200,000	ND (32)	ND (32)	NR
8260B	Benzene	ug/Kg	10,000[1]	NR	NR	ND (5300)
8260B	Benzene	ug/L	500	ND (2)	ND (2)	NR
8260B	Carbon tetrachloride	ug/Kg	10,000[1]	NR	NR	ND (5300)
8260B	Carbon tetrachloride	ug/L	500	ND (4)	ND (4)	NR
8260B	Chlorobenzene	ug/Kg	2000[1]	NR	NR	ND (5300)
8260B	Chlorobenzene	ug/L	100.0	ND (2)	ND (2)	NR
8260B	Chloroform	ug/Kg	120,000[1]	NR	NR	ND (5300)
8260B	Chloroform	ug/L	6,000	ND (2)	ND (2)	NR
8260B	Tetrachloroethene	ug/Kg	14,000[1]	NR	NR	ND (5300)
8260B	Tetrachloroethene	ug/L	700	ND (4)	ND (4)	NR
8260B	Trichloroethene	ug/Kg	10,000[1]	NR	NR	ND (5300)
8260B	Trichloroethene	ug/L	500	17	ND (2)	NR
8260B	Vinyl chloride	ug/Kg	4000[1]	NR	NR	ND (5300)
8260B	Vinyl chloride	ug/L	200	ND (8)	ND (8)	NR
8270_SIM	1-Methylnaphthaler	ug/L	NS	0.1 J	1.9	NR
8270_SIM	2-Methylnaphthaler	ug/L	NS	0.12 J	1.7	NR
8270_SIM	Acenaphthene	ug/L	NS	ND (0.05)	0.086 J	NR
8270_SIM	Acenaphthylene	ug/L	NS	ND (0.059)	ND (0.059)	NR
8270_SIM	Anthracene	ug/L	NS	ND (0.05)	0.12 J	NR
8270_SIM	Benzo[a]anthracene	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Benzo[a]pyrene	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Benzo[b]fluoranther	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Benzo[g,h,i]perylene	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Benzo[k]fluoranther	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Chrysene	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Dibenz(a,h)anthrace	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Fluoranthene	ug/L	NS	ND (0.05)	0.052 J	NR
8270_SIM	Fluorene	ug/L	NS	ND (0.05)	0.58	NR
8270_SIM	Indeno[1,2,3-cd]pyre	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Naphthalene	ug/L	NS	2.1	1.6	NR
8270_SIM	Phenanthrene	ug/L	NS	0.2 J	1.5	NR
8270_SIM	Pyrene	ug/L	NS	ND (0.05)	0.042 J	NR
8270C	1-Methylnaphthaler	ug/Kg	NS	NR	NR	70000 J Q
8270C	2-Methylnaphthaler	ug/Kg	NS	NR	NR	120000 Q
8270C	Acenaphthene	ug/Kg	NS	NR	NR	ND (5100)
8270C	Acenaphthylene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Anthracene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Benzo[a]anthracene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Benzo[a]pyrene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Benzo[b]fluoranther	ug/Kg	NS	NR	NR	ND (9800)
8270C	Benzo[g,h,i]perylene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Benzo[k]fluoranther	ug/Kg	NS	NR	NR	ND (20000)
8270C	Chrysene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Dibenz(a,h)anthrace	ug/Kg	NS	NR	NR	ND (9800)
8270C	Fluoranthene	ug/Kg	NS	NR	NR	ND (20000)
8270C	Fluorene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Indeno[1,2,3-cd]pyre	ug/Kg	NS	NR	NR	ND (9800)
8270C	Naphthalene	ug/Kg	NS	NR	NR	57000 J Q
8270C	Phenanthrene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Pyrene	ug/Kg	NS	NR	NR	ND (9800)
6010B	Arsenic	mg/L	5	ND (0.0[illegible])	ND (0.[illegible])	NR
6010B	Barium	mg/L	100	0.[illegible]	0.[illegible] J	NR
6010B	Cadmium	mg/L	1	0.[illegible] J	ND (0.0014)	NR
6010B	Chromium	mg/L	5.0	0.0022 J	0.0008 J	NR
6010B	Lead	mg/L	5.0	0.[illegible] J	0.015	NR
6010B	Nickel	mg/L	NS	0.00[illegible]	0.0061 J	NR
6010B	Selenium	mg/L	1.0	ND (0.015)	ND (0.015)	NR
6010B	Silver	mg/L	5.0	ND (0.00[illegible])	ND (0.003)	NR
6010B	Vanadium	mg/L	NS	ND (0.0011)	ND (0.0012)	NR
6010B	Zinc	mg/L	NS	0.[illegible] J	0.1 J	NR
7470A	Mercury	mg/L	0.2	ND (8e-005)	ND (8e-005)	NR
6010B	Arsenic	mg/Kg	100	NR	NR	ND (1.00)
6010B	Barium	mg/Kg	2000	NR	NR	2.6
6010B	Cadmium	mg/Kg	20	NR	NR	0.4 J
6010B	Chromium	mg/Kg	100	NR	NR	ND (0.31)
6010B	Lead	mg/Kg	100	NR	NR	7.9
6010B	Nickel	mg/Kg	NS	NR	NR	ND (2.1)
6010B	Selenium	mg/Kg	20	NR	NR	2.3
6010B	Silver	mg/Kg	100	NR	NR	ND (0.21)
6010B	Vanadium	mg/Kg	NS	NR	NR	ND (0.21)
6010B	Zinc	mg/Kg	NS	NR	NR	440
7471A	Mercury	mg/Kg	4.0[1]	NR	NR	ND (0.022)

[1]-Non TCLP results have 20 times rule applied for regulatory limi[illegible]
NR-Analysis not reported in this matrix.

US ECOLOGY IDAHO, INC.

Waste Profile Questionnaire #: 16492

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2578

Site Address NE CAPE, ST. LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax

Contact/Title VALERIE PALMER Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name MATERIAL NOT REGULATED BY D.O.T.

DOT ID Hazard Class Packing Group ERG RQ

C. Regulatory Information

Name of Material NON-REGULATED SOLIDS Generating Proces VARIOUS

Form Code Source Code Origin Code System Code H132

EPA Codes State Codes

Container Type Number of Units Frequency

D. Chemical / Constituent Composition

Constituent	PPM	% Volume
NON-REGULATED SOLIDS/DEBRIS/SOIL/SLUDGE		100-10

Constituent	PPM	% Volume

E. Physical Characteristics

Physical State (Including Range) % Liquid % Sludges/Solid / 100 Bi-Layer Liqui Color

Odor / Describe Specific Gravity BTUs / Lb pH: ☐ <= 2 ☐ >2 and <12.5 ☐ >=12.5 ☐ N/A

FlashPt: ☐ <100F (38C) ☐ 100-140F (38-60C) ☐ 141-200F (61-93C) ☐ >200F (93C) ☐ None

F. Comments

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
111 W 16th Avenue, Third Floor
Anchorage, AK 99501

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST. LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler S. Ellingboe Date 9/17/2013

Name (Print) Tyler Ellingboe **Title** Project Manager / Sr. Waste Specialist

TSDF's Certification

US ECOLOGY IDAHO, INC.
20400 LEMLEY RD
GRAND VIEW, ID 83624

As an authorized representative of Emerald Services, Inc. I certify, by my signature below, that Emerald Services, Inc. has the necessary permits to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: Date

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials

		Sample ID		13NC10DS01	13NC10DS02	13NC10DS03
		Laboratory ID		28/0-46355-1	28/0-46355-2	28/0-46355-3
		Location ID		13NC10D01	13NC10D02	13NC10D03
		Collection Date		9/5/2013	9/5/2013	9/5/2013
Specific Method	Analyte	Units	Regulatory Limit			
1010A	Flashpoint	Degrees F		NR	NR	>150
8082	PCB-1016	ug/Kg	50000	NR	NR	ND (600)
8082	PCB-1221	ug/Kg	50000	NR	NR	ND (1200)
8082	PCB-1232	ug/Kg	50000	NR	NR	ND (600)
8082	PCB-1242	ug/Kg	50000	NR	NR	ND (600)
8082	PCB-1248	ug/Kg	50000	NR	NR	ND (600)
8082	PCB-1254	ug/Kg	50000	NR	NR	ND (600)
8082	PCB-1260	ug/Kg	50000	NR	NR	ND (600)
8260B	1,1-Dichloroethene	ug/Kg	14,000[1]	NR	NR	ND (5300)
8260B	1,1-Dichloroethene	ug/L	700	ND (4)	ND (4)	NR
8260B	1,2-Dichloroethane	ug/Kg	10,000[1]	NR	NR	ND (1200)
8260B	1,2-Dichloroethane	ug/L	500	ND (4)	ND (4)	NR
8260B	2-Butanone (MEK)	ug/Kg	4,000,000[1]	NR	NR	ND (11000)
8260B	2-Butanone (MEK)	ug/L	200,000	ND (32)	ND (32)	NR
8260B	Benzene	ug/Kg	10,000[1]	NR	NR	ND (5300)
8260B	Benzene	ug/L	500	ND (2)	ND (2)	NR
8260B	Carbon tetrachloride	ug/Kg	10,000[1]	NR	NR	ND (5300)
8260B	Carbon tetrachloride	ug/L	500	ND (4)	ND (4)	NR
8260B	Chlorobenzene	ug/Kg	2000[1]	NR	NR	ND (5300)
8260B	Chlorobenzene	ug/L	100.0	ND (2)	ND (2)	NR
8260B	Chloroform	ug/Kg	120,000[1]	NR	NR	ND (5300)
8260B	Chloroform	ug/L	6,000	ND (2)	ND (2)	NR
8260B	Tetrachloroethene	ug/Kg	14,000[1]	NR	NR	ND (5300)
8260B	Tetrachloroethene	ug/L	700	ND (4)	ND (4)	NR
8260B	Trichloroethene	ug/Kg	10,000[1]	NR	NR	ND (5300)
8260B	Trichloroethene	ug/L	500	17	ND (2)	NR
8260B	Vinyl chloride	ug/Kg	4000[1]	NR	NR	ND (5300)
8260B	Vinyl chloride	ug/L	200	ND (8)	ND (8)	NR
8270_SIM	1-Methylnaphthalen	ug/L	NS	0.1 J	1.9	NR
8270_SIM	2-Methylnaphthalen	ug/L	NS	0.12 J	1.7	NR
8270_SIM	Acenaphthene	ug/L	NS	ND (0.05)	0.094 J	NR
8270_SIM	Acenaphthylene	ug/L	NS	ND (0.059)	ND (0.059)	NR
8270_SIM	Anthracene	ug/L	NS	ND (0.05)	0.12 J	NR
8270_SIM	Benzo[a]anthracene	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Benzo[a]pyrene	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Benzo[b]fluoranthen	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Benzo[g,h,i]perylene	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Benzo[k]fluoranthen	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Chrysene	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Dibenz(a,h)anthrace	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Fluoranthene	ug/L	NS	ND (0.05)	0.052 J	NR
8270_SIM	Fluorene	ug/L	NS	ND (0.05)	0.58	NR
8270_SIM	Indeno[1,2,3-cd]pyre	ug/L	NS	ND (0.05)	ND (0.049)	NR
8270_SIM	Naphthalene	ug/L	NS	2.2	1.6	NR
8270_SIM	Phenanthrene	ug/L	NS	0.2 J	1.5	NR
8270_SIM	Pyrene	ug/L	NS	ND (0.05)	0.042 J	NR
8270C	1-Methylnaphthalen	ug/Kg	NS	NR	NR	70000 JQ
8270C	2-Methylnaphthalen	ug/Kg	NS	NR	NR	120000 Q
8270C	Acenaphthene	ug/Kg	NS	NR	NR	ND (5100)
8270C	Acenaphthylene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Anthracene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Benzo[a]anthracene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Benzo[a]pyrene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Benzo[b]fluoranthen	ug/Kg	NS	NR	NR	ND (9800)
8270C	Benzo[g,h,i]perylene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Benzo[k]fluoranthen	ug/Kg	NS	NR	NR	ND (20000)
8270C	Chrysene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Dibenz(a,h)anthrace	ug/Kg	NS	NR	NR	ND (9800)
8270C	Fluoranthene	ug/Kg	NS	NR	NR	ND (20000)
8270C	Fluorene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Indeno[1,2,3-cd]pyre	ug/Kg	NS	NR	NR	ND (9800)
8270C	Naphthalene	ug/Kg	NS	NR	NR	67000 JQ
8270C	Phenanthrene	ug/Kg	NS	NR	NR	ND (9800)
8270C	Pyrene	ug/Kg	NS	NR	NR	ND (9800)
6010B	Arsenic	mg/L	5	ND (0.013)	ND (0.013)	NR
6010B	Barium	mg/L	100	0.049 J	0.094 J	NR
6010B	Cadmium	mg/L	1	0.00091 J	ND (0.0014)	NR
6010B	Chromium	mg/L	5.0	0.0022 J	0.0008 J	NR
6010B	Lead	mg/L	5.0	0.02 J	0.015 J	NR
6010B	Nickel	mg/L	NS	0.0079 J	0.0061 J	NR
6010B	Selenium	mg/L	1.0	ND (0.015)	ND (0.015)	NR
6010B	Silver	mg/L	5.0	ND (0.003)	ND (0.003)	NR
6010B	Vanadium	mg/L	NS	ND (0.0012)	ND (0.0012)	NR
6010B	Zinc	mg/L	NS	0.19 J	0.1 J	NR
7470A	Mercury	mg/L	0.2	ND (8e-005)	ND (8e-005)	NR
6010B	Arsenic	mg/Kg	100	NR	NR	ND (1.0)
6010B	Barium	mg/Kg	2000	NR	NR	28
6010B	Cadmium	mg/Kg	20	NR	NR	0.4 J
6010B	Chromium	mg/Kg	100	NR	NR	ND (0.31)
6010B	Lead	mg/Kg	100	NR	NR	7.9
6010B	Nickel	mg/Kg	NS	NR	NR	ND (2.1)
6010B	Selenium	mg/Kg	20	NR	NR	2.3
6010B	Silver	mg/Kg	100	NR	NR	ND (0.21)
6010B	Vanadium	mg/Kg	NS	NR	NR	ND (0.31)
6010B	Zinc	mg/Kg	NS	NR	NR	440
7471A	Mercury	mg/Kg	4.0[1]	NR	NR	ND (0.02)

[1]-Non TCLP results have 20 times rule applied for regulatory limit.
NR-Analysis not reported in this matrix.

Site ID
Soil Drums
Analytical
Results

EMERALD SERVICES, INC.

Waste Profile Questionnaire #: AK08201

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2578

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title VALERIE PALMER Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name MATERIAL NOT REGULATED BY D.O.T.

DOT ID _____ Hazard Class _____ Packing Group ___ ERG ___ RQ _____

C. Regulatory Information

Name of Material SPENT GRANULATED CARBON Generating Proces WATER FILTRATION

Form Code _____ Source Code _____ Origin Code _____ System Code _____

EPA Codes _____ State Codes _____

Container Type _____ Number of Units _____ Frequency _____

D. Chemical / Constituent Composition

Constituent	PPM	% Volume
DIESEL RANGE ORGANICS		0-1
WATER		0-10
Selenium	<1	
Barium	<100	
Chromium	<5	

Constituent	PPM	% Volume
GRANULATED CARBON		90-100
Mercury	<.2	
Cadmium	<1	
Silver	<5	
Lead	<5	

E. Physical Characteristics

Physical State (Including Range) % Liquid <10 % Sludges/Solid _____ / <90 Bi-Layer Liqui ___ Color BLACK

Odor / Describe _____ Specific Gravity _____ BTUs / Lb _____ pH: ☐ <= 2 ☒ >2 and <12.5 ☐ >=12.5 ☐ N/A

FlashPt: ☐ <100F (38C) ☐ 100-140F (38-60C) ☐ 141-200F (61-93C) ☐ >200F (93C) ☒ None

F. Comments

ANALYSIS IS REQUIRED FOR EACH SHIPMENT.

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
111 W 16th Avenue, Third Floor
Anchorage, AK 99501

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler D. Ellingbe **Date** 9/17/2013

Name (Print) Tyler Ellingbe **Title** Project Manager/ Sr. Waste Specialist

TSDF's Certification

As an authorized representative of Emerald Services, Inc. I certify, by my signature below, that Emerald Services, Inc. has the necessary permits to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: _____ **Date** _____

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam ___

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials _____

		Sample ID		GAC01
		Laboratory ID		280-46550-1
		Location ID		GAC01
		Collection Date		9/10/2013
Specific Method	Analyte	Units	Reulatory Limit	Analtyical Result
TCLP/ZHE/8260B	Benzene	ug/L	500	ND (2)
TCLP/ZHE/8260B	Ethylbenzene	ug/L	NS	ND (2)
TCLP/ZHE/8260B	m & p-Xylene	ug/L	NS	ND (8)
TCLP/ZHE/8260B	o-Xylene	ug/L	NS	ND (4)
TCLP/ZHE/8260B	Toluene	ug/L	NS	ND (4)

GAC Results

APPENDIX G

Standard Operating Procedures

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AK102	Alaska Method determination of DRO
AK103	Alaska Method determination RRO
ASE	accelerated solvent extractor
CVS	Calibration Verification Standard
DCS	diesel calibration standard
DE	Diatomaceous Earth
DRO	diesel range organics
FID	flame-ionization detector
GC	gas chromatographic or gas chromatograph
ICAL	initial calibration
LCS	laboratory control sample
LFB	laboratory-fortified blank
MDL	method detection limit
mg/kg	milligrams per kilogram
mg/L	milligram per liter
mL	microliter
MSDS	Material Safety Data Sheet
NOM	naturally occurring materials
OTP	ortho-terphenyl
PQLS	practical quantitation limits
psi	pounds per square inch
QC	quality control
RCS	residual calibration standard
RRO	residual range organics (motor oil range)
RSD	relative standard deviation
RTW	retention time window
SOP	Standard Operation Procedure
VOA	volatile organic analysis

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1.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) describes the procedures for determining the concentration of diesel range organics and residual range organics (DRO/RRO) in soil using methodology developed by the Alaska Department of Environmental Conservation (ADEC), and described in the *Underground Storage Tank Procedures Manual* (ADEC, 2002).

1.1 OBJECTIVES

The objectives in the use of this method are to accurately determine the concentrations of diesel and residual range organics in soil.

1.1.1 Scope of Method

These methods are designed to measure the concentration of DRO and RRO in soil. DRO is determined by method AK102, and RRO is determined by method AK103. The diesel range corresponds to an n-Alkane range from the beginning of C_{10} to the beginning of C_{25}, and a boiling point range of approximately 170 degrees Celsius (°C) to 400 °C. An n-Alkane is a chemical compound that consists of only hydrogen and carbon, linked in a single bond in a straight chain. The residual range corresponds to an n-alkane range from the beginning of C_{25} to the end of $C_{36,}$ and a boiling range of 400 °C to 500 °C. Both methods are performed sequentially on a single sample extract, and a single analytical run on a gas chromatograph. The methods differ in the range of quantitation, based on the elution of n-alkanes on the gas chromatographic (GC) column.

1.1.2 Practical Quantitation Limits

The practical quantitation limits (PQLs) for these methods have been adjusted to reflect site-specific cleanup levels. The PQLs for DRO and RRO have been elevated to approximately 500 milligrams per kilogram (mg/kg).

1.1.3 Dynamic Range

The dynamic range for method AK 102 is 500 milligrams per liter (mg/L) to 25,000 mg/L. The dynamic range for method AK 103 is 500 mg/L to 25,000 mg/L. The dynamic ranges reflect the concentration of target analytes in the sample extract. Dilutions may be performed as necessary to put the chromatographic envelope (sample extract concentration) within the linear range of the method. The determination of soil concentrations is based on the sample weight and the percent moisture in the sample (Sections 9.12.1 and 9.12.2).

2.0 METHOD SUMMARY

2.1 METHOD PROCEDURE

This method provides GC conditions for the detection of semivolatile petroleum products, such as diesel and motor oil. Other non-petroleum compounds with similar characteristics and boiling points may also be detected with this method.

Samples are extracted from approximately 20 grams of soil using methylene chloride as the solvent. A surrogate mixture of known concentration is spiked into all field and quality control (QC) samples to evaluate the efficiency of the extraction process. An aliquot (2 micro liters [µL]) of the extract is injected into a gas chromatograph equipped with a capillary column and a flame ionization detector (FID). The GC is temperature programmed to facilitate separation of organic compounds.

2.1.1 DRO Range

Quantitation of DRO is performed by comparing the total chromatographic area between and including the peak start of C_{10} to the peak start of C_{25}, including both resolved and unresolved compounds, based on the FID response compared to a diesel calibration standard. Integration is performed using forced baseline-baseline integration.

2.1.2 RRO Range

Quantitation of RRO is performed by comparing the total chromatographic area between and including the peak start of C_{25} to the peak end of C_{36}, including both resolved and unresolved components. Integration is performed using forced baseline-baseline integration.

2.2 METHOD DEVELOPMENT

This method was developed by the ADEC and is based, in part, on a modification of the American Petroleum Institute consensus "Method for the Determination of Diesel Range Organics," Revision 2, 2/5/92, supplemented with information gathered by the State of Alaska, Department of Environmental Conservation, State Chemistry Laboratory, with support from the Storage Tank Program. It is also based in part on EPA Methods 8000 and 8100, SW – 846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* [1], adopted by reference in Title 18 Alaska Administrative Code, Chapter 78.090(i) [18 AAC

78.090(i)], Method OA-2 [2] and work by the EPA Total Petroleum Hydrocarbons Method Committee [3], and the State of Oregon, "Total Petroleum Hydrocarbon Methods" QAR 340-122-350, dated December 11, 1990.

3.0 DEFINITIONS

3.1 DIESEL RANGE ORGANICS (DRO)

All chromatographic peaks for DRO, both resolved and unresolved, eluting between the peak start of n-decane (C_{10}) and the peak start of n-pentacosane (C_{25}). Quantitation is based on direct comparison of the area within this range to the total area over the same (C_{10} - C_{25}) range of the calibration standard, as determined by FID response using forced baseline-baseline integration. Surrogate peak areas shall be determined by valley to valley integration.

3.2 RESIDUAL RANGE ORGANICS (RRO)

All chromatographic peaks for RRO, both resolved and unresolved, eluting between the peak start of n-pentacosane (C_{25}) and the peak end of n-hextriacontane (C_{36}). Quantitation is based on direct comparison of the area within this range to the total area over the same ($C_{25} – C_{36}$) range of the calibration standard, as determined by FID response using forced baseline-baseline integration. Surrogate peak areas shall be determined by valley-to-valley integration.

3.3 DIESEL CALIBRATION STANDARD (DCS)

The DCS is Commercial #2 diesel fuel or equivalent hydrocarbon mixture, in which greater than 95% of the hydrocarbon mass elutes within the diesel change and is diluted to appropriate concentrations in methylene chloride. The DCS serves as a calibration standard for DRO. The DCS standard will be injected without any other standards present to demonstrate the 95% elution criteria is met, based on the area of integration.

3.4 RESIDUALS CALIBRATION STANDARD (RCS)

RCS is an equal blend of 30 weight and 40 weight motor oils (1:1), diluted to appropriate concentrations in methylene chloride. The RCS serves as a calibration standard for RRO. The RCS standard will be injected without any other standards present to demonstrate the elution range of the RCS.

3.5 COMBINED CALIBRATION STANDARD

A stock standard mixture of DCS and RCS components is used for the initial and continuing calibration standards. Multiple concentrations of the combined calibration standards are used

for the initial calibration. The standard concentrations vary from the PQL of 500 mg/L to 25,000 mg/L, which is the upper dynamic range of the calibrations. A 10,000 mg/L standard is used as the continuing calibration standard.

3.6 CONTINUING CALIBRATION STANDARD (CCS)

The continuing calibration standard is a mid-range working standard diluted from the stock standard solution and is used to verify that the analytical system is responding in a manner comparable to the time of initial calibration. The continuing calibration standard is analyzed at the beginning of an analytical sequence, and after every 20 samples to ensure that reported sample concentrations are accurate, as determined by the calibration.

3.7 CALIBRATION VERIFICATION STANDARD (CVS)

The CVS is a QC standard, but with diesel from a source other than that used to prepare the DCS, (i.e., a second source). It is used by the laboratory to verify the accuracy of calibration and source materials. Greater than 95 % of the hydrocarbon mass must elute within the diesel range, as described in Section 3.1.

3.8 SURROGATE MIXTURES

Ortho-terphenyl is used as the DRO surrogate and n-triacontane d^{62} is used as the RRO surrogate. The surrogate mixture contains equal concentrations of the surrogates, and it is spiked into all extracted samples before the extraction begins.

3.9 RETENTION TIME WINDOW (RTW) STANDARD

The RTW is a mixture of the normal (n-) alkanes, including n-decane, n-pentacosane, and n-hexatriacontane (C_{10}, C_{25} and C_{36}), which are analyzed once every 24-hour day or with each analytical batch of samples. This standard defines the integration windows for methods AK102 and AK103.

3.10 STANDARD SOIL

Baked Ottawa sand is used in QC samples (method blank and laboratory-fortified blank) to represent the soil matrix. Quality control samples are extracted and analyzed using the same procedures as field samples.

3.11 METHOD BLANK

The method blank (also known as a procedural blank), demonstrates that the apparatus and reagents used to verify that the handling, extraction, and analysis of field samples is valid and that the reported concentrations in field samples were not biased due to contamination introduced in the extraction and analysis process.

3.12 INSTRUMENT BLANK

An instrument blank demonstrates that the instrument is free from contamination. The instrument blank is not extracted, and consists of methylene chloride solvent used in the extraction process.

3.13 SOLVENT BLANK

A solvent blank demonstrates that the solvent (in this case methylene chloride) used in the method is free from contamination. It may also serve as an instrument blank.

3.14 LABORATORY-FORTIFIED BLANK (LFB)

An LFB is a method blank sample spiked with diluted commercial #2 diesel fuel and motor oil which is the same as that used to make the Combined Calibration Standard (see Section 7.5 of this method). There are 2 laboratory-fortified blanks extracted with every extraction batch. The spike recoveries are used to evaluate method control for accuracy and precision (see Table 1 of this method in Section 11.2). The laboratory-fortified blank is synonymous with a laboratory control sample (LCS).

3.15 METHOD DETECTION LIMIT (MDL)

The MDL is the minimum concentration of a compound that can be measured and reported with 99% confidence that the value is greater than zero, determined from analysis of a sample in a given matrix containing the analyte(s). The MDL is determined prior to the analysis of any samples.

3.16 PRACTICAL QUANTITATION LIMIT (PQL)

The PQL is defined as the concentration in the sample extract that can be accurately determined and has a reproducible result. The PQL is generally between 2 and 5 times the MDL.

4.0 INTERFERENCES

4.1 NON-TARGET ANALYTES

Other organic compounds, including, but not limited to, animal and vegetable oil and grease, chlorinated hydrocarbons, phenols, phthalate esters, and biogenic compounds, are measurable under the conditions of this method.

4.2 BIOGENIC INTERFERENCE

Some site conditions contain non-petroleum compounds from naturally occurring materials (NOMs), such as plants. Many of these compounds found in natural settings also occur at varying concentrations in crude oil and refined petroleum products. When NOM is present in a DRO or RRO sample, there is no practical method to distinguish NOMs from petrogenic sources. This interference is termed biogenic interference. Silica gel may be used to remove some of the polar compounds and reduce the magnitude of quantitative interference to varying degrees. Sample chromatograms of refined products usually have a distinct characteristic hump, or bell shape. Chromatograms from NOM samples do not exhibit the bell shape and typically have a ramped look that extends from the middle diesel range past the residual range. The analysts experience will be used for the interpretation of chromatograms when the presence of NOM is suspected. Silica gel may be employed to lessen the magnitude of interference.

4.3 GLASSWARE CLEANING

Method interferences are reduced by washing all glassware with hot soapy water, followed by a rinse with tap water and methylene chloride At least one blank must be analyzed with each extraction batch to demonstrate that the laboratory samples are free from method interferences.

4.4 REAGENT QUALITY

High purity reagents must be used to minimize interference problems. All reagents are screened for contamination before being introduced to field and QC samples.

4.5 SAMPLE CARRYOVER

Contamination by carryover can occur whenever high-level and low-level samples are sequentially analyzed. Whenever an unusually concentrated sample is encountered, the successive analysis will be evaluated for possible carryover.

4.6 WATER

Water may be unintentionally extracted along with the target analytes during the extraction process, particularly when samples are wet. Water interferes with the proper concentration of the extract, and also interferes with the analysis. The water must be removed using steps outlined in Section 9.2.1.5.

5.0 SAFETY ISSUES

5.1 CHEMICAL EXPOSURE

The toxicity or carcinogenicity of each reagent in this method has not been precisely defined. However, each chemical compound should be treated as a potential health hazard. Exposure to these chemicals must be reduced to the lowest possible level by whatever means available, including personal protective equipment (PPE) and using fume hoods. A reference file of Material Safety Data Sheets will be maintained on site, and made available to all personnel involved in chemical analysis.

5.2 HEARING PROTECTION

Hearing protection will be used when performing sonication.

5.3 SAMPLE DRYING

The ADEC requires that moisture determinations must accompany all soils data (reported in mg/dry kg) in order to determine the results in the original soil condition. Because of the potential for high petroleum compound concentrations in the soil, all drying should be done under a functioning hood or with proper ventilation of the oven exhaust.

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6.0 APPARATUS AND MATERIALS

6.1 GLASSWARE

- 4-oz amber glass wide-mouth jars with Teflon®-lined screw caps
- 400 mL beakers
- Turbo-Vap tubes
- Two mL glass vials with Teflon-lined cap (autosampler vials)
- Disposable pipettes: Pasteur and volumetric
- Graduated cylinders: 250-mL
- Glass funnels
- Volumetric flasks: 10-mL, 25-mL, 50-mL, 250-mL, and 1000-mL
- Micro syringes 1-µL, 5-µL, 10-µL, 25-µL, 100-µL, and 500-µL.

6.2 ANALYTICAL BALANCE

An analytical balance capable of accurately weighing to 0.0001 grams will be used for preparing standards. A top-loading balance capable of weighing to the nearest 0.01 grams will be used for sample preparation and percent moisture determination.

6.3 SONICATION

6.3.1 Ultrasonic Cell Disrupter (Sonicator)

A dual horn-type sonicator equipped with a titanium tip (Misonix, Inc., Model 2020 (475 watt)) with pulsing capability and a No. 200, ½-inch tapped disrupter horn is used to perform extraction method 3550B.

6.3.2 Sonabox

The sonicator will be operated in a sonabox to decrease sound. Hearing protection will also be worn by lab personnel during sonication steps to prevent hearing loss.

6.4 SOLVENT CONCENTRATOR

A solvent evaporator (TurboVap®) with a nitrogen gas source will be used to concentrate sample extracts to their final volume.

6.5 MISCELLANEOUS APPARATUS

- Stainless steel spatula.
- Weigh boats
- Glass wool

6.6 GAS CHROMATOGRAPH (GC)

A GC is an analytical system that measures concentrations of analytes introduced with an autosampler and syringes into an injection port. The components in the sample extract separate inside of a 30-meter analytical column before their response is measured on an FID. A data system capable of measuring peak areas using a forced baseline-baseline projection is required. The data system is capable of storing and processing chromatographic data.

6.6.1 Columns

Columns are Restek DB-5 30 M x 0.53 mm 1.0 micron film thickness or equivalent.

6.6.1.1 Optional Columns

Other columns may be used as long as they are capable of achieving the necessary resolution. The column must resolve C_{10} from the solvent front in a mid-range DCS or CVS.

7.0 REAGENTS AND STANDARDS

7.1 REAGENT WATER

Reagent water is free of organics, target analytes, and interfering substances.

7.2 METHYLENE CHLORIDE

Methylene chloride – reagent grade or equivalent. At a minimum, the solvent must be shown to be free of DRO, as demonstrated by the analysis of a solvent blank.

7.3 SODIUM SULFATE

Sodium sulfate – (ACS grade) granular, anhydrous. Sodium sulfate is used to remove water from samples in extraction method 3550B. Water interferes with the extraction and concentration of sample extracts. Sodium sulfate is purified by heating it in a shallow tray at 400 °C for 4 hours in a muffle furnace. Incomplete cleaning of sodium sulfate can result in DRO contamination of samples. Refer to Section 4.0 for other interferences

Note: Sodium sulfate should not be used with samples that will be extracted with the ASE.

7.4 DIATOMACEOUS EARTH

Diatomaceous Earth (DE) is used to dry samples for extraction method 3545. DE is purified by heating it in a shallow tray at 400 °C for 4 hours in a muffle furnace. Incomplete cleaning of DE can result in DRO contamination of samples.

7.5 STOCK STANDARD SOLUTIONS

Stock Standard Solutions for AK102 and AK103 analyses are prepared in methylene chloride. Standard preparation will follow the procedures as described in Section 9.1. All standards prepared by the laboratory must be stored at less than 6 °C, and protected from light. The meniscus is marked and observed to ensure stock standard integrity. Standards must be replaced within 6 months of preparation. Prepared standards purchased from commercial suppliers may be kept indefinitely, and under the conditions, specified by the manufacturer if different than described in this paragraph. Stock standards often come in flame-sealed glass ampoules, and with proper storage are good for one year from receipt.

7.5.1 Surrogates

A Surrogate Control Standard is a working standard of 1 µg/mL each of OTP and hexatriacontane-d^{62} in methylene chloride is used as a working standard solution. A calculated volume of concentrated stock solution may be combined with initial and continuing calibration standards to verify that surrogate recoveries and chromatographic separation are adequate for the determination of extraction recovery efficiencies.

7.5.2 Diesel and Residual Range Calibration Standards

Diesel #2 is used to prepare stock calibration standards in methylene chloride. No fewer than 5 concentrations of this DCS are used for instrument calibration. Other than one standard concentration near the PQL, the expected range of concentrations found in project samples should define the working range of the GC.

7.5.2.1 Continuing Calibration Standard

A mid-range dilution of the diesel range and residual range blends serve as the Continuing Calibration Standard. The concentration is 10,000 mg/L.

7.5.3 Retention Time Window Standard

A Retention Time Window (RTW) Standard is a stock solution containing at a minimum, n-alkanes C_{10}, C_{25} and C_{36}, at a concentration of at least 2 µg/mL. This blend of alkanes is used to establish the RTW, which is used to define the integration ranges for DRO and RRO.

7.5.4 Stock Calibration Verification Standard (CVS)

The CVS is prepared from a second source of commercial Diesel #2 other than that used to prepare the DCS, as described in Section 7.5.2 of this method. A working solution is made at a recommended concentration of 5000 µg/mL in methylene chloride, which is near the mid-point of the calibration range.

8.0 SAMPLE COLLECTION, PRESERVATION, CONTAINERS, AND HOLDING TIMES

8.1 SAMPLE COLLECTION

Soils for field analyses may be collected in labeled Ziploc® bags or 4-oz amber glass jars with Teflon-lined lid. A separate Sampling and Analysis Plan and Field Standard Operating Procedures fully address the procedures used to collect field samples. Samples must be collected using clean sampling equipment, and new clean nitrile gloves. Sample gloves should be changed prior to the beginning of any collection activities and between samples.

8.2 SAMPLE PRESERVATION

All samples will be immediately placed in a gel iced cooler after collection, and stored at 4 ± 2 °C until extraction.

8.3 HOLDING TIMES

Sample extraction must be performed within 14 days [1]. All analyses of extracts must take place within 40 days.

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9.0 PROCEDURE

9.1 STANDARDS PREPARATION

9.1.1 Initial and Continuing Calibration Standards and Surrogates

DRO calibration standards are prepared from neat #2 Diesel. RRO standards are prepared from equal portions of 30-weight and 40-weight motor oil. Neat standards are weighed on a 4-place analytical balance. Approximately 2.5 grams of #2 Diesel and 2.5 grams of the mixed motor oils are added to a 100-mL volumetric flask. Methylene chloride is added to the volumetric flask to a final volume of 100 mL, generating a combined stock standard solution at a concentration of 25,000 mg/L. Other initial and continuing calibration standards are prepared from this stock standard solution.

Initial and continuing calibration standards are prepared by diluting the stock standard solution in volumetric flasks on a volume:volume basis. Initial calibration standards are prepared at concentrations of 500, 2500, 5000, and 10,000 mg/L. The stock standard solution is used for the 25,000 mg/L solution, which is the upper dynamic range of the calibrations.

The 10,000 mg/L solution is used at the continuing calibration standard.

Ortho-terphenyl and n-triacontane-d62 are added to the stock calibration standard at 10 mg/L from a vendor-prepared solution (Ultra Scientific). Subsequent dilutions of the stock standard will result in surrogate concentrations of 0.2, 1, 2, and 4 mg/L.

9.2 ACCELERATED SOLVENT EXTRACTION

Method 3545A (ASE) is used for soil samples and the extraction solvent is methylene chloride.

9.2.1 Soil Preparation – Accelerated Solvent Extraction

The following sections outline procedures used to prepare sample extracts for analysis.

9.2.1.1 Remove Excessive Water

Decant any water layer that may accompany the solid layer in the sample. Note the apparent condition of the sample (presence of foreign materials, variable particle size, presence of oil sheen, multiple phases, etc., on the bench sheet).

9.2.1.2 Sample Weighing

Weigh approximately20 grams of the original sample in a tared weighing dish or extraction beaker on a 2-place balance. Add an equal weight of DE, and stir the mixture well with a clean stainless steel or Teflon spatula. The sample should have a grainy texture after mixing. If the sample clumps, add more DE until a grainy texture is achieved, and note the addition. (Do this for all samples and standards.)

9.2.1.3 Sample Transfer and Spiking

Place the soil-DE mixtures into the ASE 33-mL extraction tubes, and add surrogate to both field and QC samples. Prepare the method blank and LFBs in a similar fashion to field samples. Add a known amount of spiking solution to the duplicate LFBs. These QC samples should contain 20 grams of Ottawa sand and an equal amount of DE.

9.3 SONICATION EXTRACTION

9.3.1.1 Remove Excessive Water

Decant any water layer that may accompany the solid layer in the sample. Note the apparent condition of the sample (presence of foreign materials, variable particle size, presence of oil sheen, multiple phases, etc) on the bench sheet.

9.3.1.2 Sample Weighing

Weigh approximately 20 grams of the original sample in a tared weighing dish, or extraction beaker on a 2-place balance. Add an equal weight of DE or sodium sulfate, and stir the mixture well with a clean stainless steel spatula or spoon. The sample should have a grainy texture after mixing. If the sample clumps, add more DE or sodium sulfate until a grainy texture is achieved and note the addition. (Do this for all samples and standards.)

9.3.1.3 Sample Transfer and Spiking

Place the dried soil mixture into a 250-mL beaker and add surrogate to both field and QC samples. Prepare the method blank and LFBs in a similar fashion to field samples. Add a known amount of spiking solution to the duplicate LFBs. These QC samples should contain 20 grams of Ottawa sand.

9.3.1.4 Sonication

Add approximately 50 mL of methylene chloride to the sample after surrogate has been added. Place the beaker under the sonicator and sonicate for 90 seconds. Transfer the solvent extract to a Turbo-Vap tube through a lined glass filter funnel filled with sodium sulfate. Repeat sonication twice more by adding 50 mL of solvent each time.

9.4 SAMPLE CONCENTRATION

Samples must be concentrated to a measurable final volume of 10 mL, using a TurboVap solvent concentrator. TurboVap tubes are placed in the TurboVap, and solvents are evaporated under a gentle nitrogen stream in a heated water bath. Samples must not go dry, or the extraction process will need to be repeated with fresh soil.

9.5 MOISTURE DETERMINATION FOR SOLIDS

9.5.1 Moisture Determination Procedure

To determine percentage of moisture, pre-weigh an aluminum drying pan and record the weight to the nearest 0.01 grams. Tare the balance to zero with the aluminum pan on the balance and add 9 to 11 grams of the sample to the drying pan. Record the weight to the nearest 0.01 gram. Exclude any large rocks while making sure the moisture determination sample is representative (similar) to the extraction portion of the sample. Dry the sample a minimum of 4 hours or overnight in an oven at 105 °C. Allow the sample and pan to cool to room temperature before weighing. Place the sample and weighing pan on the balance and record the weight to the nearest 0.01 gram.

9.5.2 Percent Moisture Calculation for Soils

Subtract the aluminum boat weight from the dry weight and divide the result by the wet weight. Multiply the result by 100% to determine the percent dry weight. The wet weight is equal to 1.0 minus the dry weight, expressed as a decimal. The macro formula is:
% Moisture = [(A-C)/(A-B)] x 100. The % Solid = 1-% moisture.

Where:

A = weight of boat + wet sample

B = weight of boat

C = weight of boat + dry sample

Note: Make sure drying oven is placed under a hood or has proper exhaust ventilation. Heavily contaminated soils will produce strong organic vapors.

9.5.3 Dry Weight Calculation for Extracted Soil

mg/dry kg soil = (100-% moisture)/100)) x wet weight of sample

Note: Excel spreadsheets with formulas will be used to determine the percent moisture, dry weight of samples, and soil sample concentrations.

9.6 SAMPLE EXTRACT DILUTION TECHNIQUE

Measure 1.0 mL of sample into a 10-mL volumetric flask. Dilute sample to 10-mL with methylene chloride. Transfer to a labeled vial with a Teflon-lined lid. Note the dilution on the vial. Mark meniscus and store at <4 °C.

9.7 GAS CHROMATOGRAPHY

9.7.1 Method Conditions

Set helium column pressure to 20 pounds per square inch (psi). Set oven temperature to 40 °C for 2 minutes, then ramp at a rate of 15 °C/minute to 320 °C, and hold for 12 minutes (run time = 30.6 minutes). Set FID to 320 °C and injector to 280 °C. Method conditions may be modified to achieve proper separation of analytes. The instrument must be calibrated after any method conditions have changed.

9.7.2 Method Performance Criteria

GC run conditions and columns must be chosen to meet the following criteria:

- Resolution of the methylene chloride solvent front from C_{10}.
- The column must be capable of separating typical diesel and residual components from the surrogates. There may be potential problems with separating the resolution of n-C_{19} from OTP and n-C_{21} at varying relative concentrations.

9.8 CALIBRATION

9.8.1 Initial Calibration

To calibrate the GC, set up as in Section 9.7 of this method. A minimum of five concentrations of DCS must be used for the calibration. The lowest initial calibration standard concentration will establish the PQL for the method, and the highest concentration standard defines the upper quantitation limit. Samples exceeding the upper calibration limit must be diluted and reanalyzed.

9.8.2 Initial Calibration Curve Verification

The calibration curve must be confirmed using the CVS. This standard independently verifies the accuracy of the calibration. The concentration of the CVS should be within the expected concentration range of the samples to be analyzed. A relative standard deviation (RSD) of less than 20% of true value is the acceptance criteria for the CVS.

9.8.3 Continuing Calibration Standards (CCS)

The working calibration curve must be verified on each working day (24 hours) by the injection of a continuing calibration standard (see Section 3.6 of this method) at a concentration near the mid-point of the calibration curve (10,000 mg/L). The continuing calibration standard is a diluted aliquot of the same standard used to initially calibrate the instrument. An initial calibration standard near the mid-point of the curve may be used for the continuing calibration standard, and it is recommended. If the response for the continuing calibration standard varies from the predicted response by more than 25%, check the instrument for leaking septa, dirty injection liners and gas leaks. Recheck the calibration, if it is not within limits, a new calibration curve must be prepared. The instrument should be checked and cleaned prior to establishing a new 5-point calibration.

9.8.4 Calibration Curve Linearity

Acceptable criteria for the initial calibration are dependent on the type of curve fit applied to the initial calibration. Acceptance criteria for the most used types of calibration curves are listed below.

- A linear regression curve fit must have an R^2 of 0.995 or better,
- A quadratic fit must have an R^2 of 0.995 or better,
- Average of response factors, the average percent relative standard deviation (%RSD) is less than 20% over the working range.
- Other curve fits may be employed as long as they meet acceptance criteria outlined in EPA method 8000B [2].

9.9 ESTABLISHING RTWS

9.9.1 RTW Definition

The RTW for individual peaks is defined as the average RT plus or minus three times the standard deviation of the absolute retention times for each component. The RTWs for this method are defined in Section 3.9. RTWs are crucial to the identification of target compounds. RTWs are established to compensate for minor shifts in absolute retention times as a result of sampling loadings and normal chromatographic variability.

9.9.2 Chromatographic Separation Definition

Chromatographic processes achieve separation by passing a mobile phase over a stationary phase. Constituents in a mixture are separated because they partition differently between the mobile and stationary phases, and thus have different retention times. Compounds that strongly interact with the stationary phase elute slowly (i.e., long RTs), while compounds that remain in the mobile phase with little interaction with the stationary phase elute quickly (short RTWs).

Before establishing RTWs, be certain that the GC system is within optimum operating conditions (Section 6.7). Make three injections of the RTW Standard (Section 7.5.3) and surrogates (Section 7.5.1) throughout the course of a 72-hour period. Serial injections over less than a 72-hour period result in RTWs that are too tight.

9.9.3 Calculation of RTWs

1. Record the retention times for decane, pentacosane, and hexatriacontane using an RTW standard (Section 7.5.3) and the surrogates (Section 7.5.5.) from at least 3 injections over a minimum 72-hour period.
2. Calculate the mean and standard deviation of the three absolute retention times for the RTW standards and surrogates.
3. In those cases where the standard deviation for a particular analyte is zero, the laboratory will use ±0.05 minute as the default standard.
4. The width of the RTW for each analyte, surrogate, and major constituent is multi-component analytes is defined as ± 3 times the standard deviation of the mean absolute RT established during the 72-hour period. If the default standard deviation in Step 3 is used, the width of the window will be 0.05 minutes.

9.9.4 Reestablishing RTWs

The laboratory must calculate RTWs for each standard on each GC column, and whenever a new GC column is installed or instrument conditions change. RTWs must be verified regularly and updated no less frequently than once a year.

9.10 GAS CHROMATOGRAPH ANALYSIS

9.10.1 Injection Volume

Samples are analyzed by GC/FID. Injection volumes are 2 µL, using the conditions established in Section 9.7 of this method.

9.10.2 Analytical Batch Window

If initial calibration (Section 9.8.1) has been successfully performed, verify the calibration by analysis of a mid-point continuing calibration standard prior to and immediately after any samples are analyzed. An analytical batch is defined as the analysis of standards, field samples, and QC samples analyzed sequentially until all samples are analyzed, or those samples analyzed within 24 hours.

9.10.3 Continuing Calibration Acceptance Criteria

Calculate the percent difference of the response from the known continuing calibration standard concentration and the established response factor in mg/L. If the reported continuing

calibration standard has a reported concentration difference greater than 25% from the known concentration, corrective action must be taken.

9.10.4 Instrument Blank Criteria

The instrument blank is essential for determining if analytical conditions are suitable for the proper analysis of samples. An unextracted solvent blank (methylene chloride) is analyzed each day to determine the area generated from normal baseline noise under the conditions prevailing in the 24-hour period. This area is generated by projecting a horizontal baseline between the retention times observed for the peak start of C_{10} and the peak start of C_{25}. This blank is integrated over the DRO area in the same manner as for the field samples, and is reported as the solvent blank. Baseline subtractions of instrument blanks is not allowed.

9.10.5 Carryover Blanks

Blanks may be run after samples suspected of being highly concentrated to prevent carryover. If the blank analysis shows contamination above the PQL, maintenance must be performed to remove the source of the carryover before any samples can be analyzed. New injector liners may be installed, or the column may be trimmed or baked out to remove the chromatographic contamination. Subsequent blanks must be analyzed until the system is shown to retain contaminant at concentrations less than the one-half the PQL.

9.10.6 Calibration Exceedances

If the DRO concentration exceeds the linear range of the method (as defined by the range of the calibration curve) in the final extract, corrective action must be taken. The sample should be diluted and the response of the major peaks should be kept in the upper half of the linear range of the calibration curve.

9.11 CHROMATOGRAPHIC INTERPRETATION

The analyst may perform a qualitative interpretation of sample chromatograms in order to determine if the sample result is attributed to natural (anthropogenic) or petroleum (petrogenic) sources. Chromatograms from known types of petroleum products may be used to compare the fuel patterns to those found in samples. Field notes and sample examination may also be used to identify potential origins of analytes in the chromatograms.

9.12 CALCULATIONS

9.12.1 Soil Concentration Calculation

External Sample Calculation:

Soil samples:

$$Cs = \frac{Cex * (Vt) * D}{(Ws)}$$

Where:

*****	=	times
Cs	=	Concentration of DRO or RRO in mg/kg in soil (dry weight)
Cex	=	Concentration in final extract
Vt	=	Volume of final extract in mL
D	=	Dilution factor, if dilution was performed on the sample prior to analysis. If no dilution was made, then D = 1, dimensionless
Ws	=	Dry weight of sample extracted in grams

9.12.2 Data Reduction Software

A software program from Agilent (Chemstation-Enviroquant) will be used to determine the concentration of the sample extract relative to Sections 9.12 of this method, based on the instrument calibration.

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10.0 QUALITY CONTROL

10.1 CURVE VERIFICATION STANDARD (CVS)

- The CVS is not extracted.
- The CVS is analyzed once after the initial calibration standards to verify calibration curve.
- The CVS recovery limit is 75-125% of true value.

10.2 CONTINUING CALIBRATION SAMPLES

- The continuing calibration standard is not extracted.
- The continuing calibration standard is analyzed at the start and end of an analytical batch, and for every 20 samples in that batch.
- The continuing calibration standard recovery requirement is 75-125% of true value.

10.3 BLANKS

- The instrument blank is analyzed prior to any samples and after calibration standards to demonstrate that the system is free from contamination.
- The method blank must be extracted and analyzed with each extraction batch.
- If additional cleanup steps are performed on field samples, the same steps must be applied to the method blank.
- **Acceptance Criteria**: Results for the method blank must be less than or equal to the reporting limit concentration.
- BLANK SUBTRACTION IS NOT ALLOWED. Blanks are reported by value.
- Other blanks may be analyzed as necessary following the recommendations of Chapter 2, Section 9 of the *UST Procedures Manual*.

10.4 LABORATORY FORTIFIED BLANKS (LFB)

- LFB is extracted using the same method procedure as the associated samples.
- Two LFBs are analyzed with each extraction batch.
- Acceptance Criteria: The LFB recovery requirement for AK102-DRO is 75-125% of true value. The LFB recovery requirement for AK103-RRO is 60-120%. The acceptance criterion is 20% RPD for both methods.
- If additional cleanup steps are performed on field samples, the same steps must be applied to the LFB samples.
- If any LFB recovery fails to meet method criteria, appropriate corrective action must be taken. See Section 10.6 Corrective Actions.

10.5 SURROGATES

10.5.1 Surrogate Concentration

The surrogate should be spiked at a level to produce a recommended extract concentration of 1.66 µg/mL.

10.5.2 Surrogate Acceptance Criteria

Surrogate recoveries must be 60-120% for LCS (continuing calibration standard, CVS, method blank, LFB), and 50-150 % for field samples (all other samples).

10.5.3 Surrogate Recovery Failure-Corrective Action

If any surrogate recovery fails to meet method criteria, corrective action must be taken if there is no reasonable explanation for the failed recovery. Some soil types such at peat and tundra often bias recoveries low. See Section 10.6 Corrective Actions.

10.5.4 Sample Qualifiers (Flags)

If field samples show poor surrogate recovery that is not attributable to laboratory error, DRO results must be flagged.

10.6 CORRECTIVE ACTIONS

The actions listed below are recommended and may not apply to a particular failure.

- If the CVS fails to meet acceptance criteria, recheck all calculations used to prepare the standards. If the CVS fails again, prepare new ICAL and CVS standards from neat standards.
- If the instrument fails to meet continuing calibration criteria, all samples analyzed since the last acceptable continuing calibration standard must be reanalyzed.
- If method blank acceptance criteria are not met, identify and correct the source of contamination and re-prepare and reanalyze the associated samples.
- If the LFB(s) acceptance limits are not met, reanalyze the LFB to confirm the original result is reliable. If the results are still outside control limits, the associated samples must be re-extracted and reanalyzed. If the LFB is above the upper control limit, and the associated samples are all below the PQL, the deviation should be described in a non-conformance memo.

- If surrogate recoveries are outside the established limits, verify calculations, dilutions, and standard solutions. Also, verify that instrument performance is acceptable. High recoveries may be due to co-eluting matrix interference, and the chromatogram should be examined for evidence of this. Low recoveries may be due to adsorption by the sample matrix (clay, peat, or organic material in the sample). Recalculate the results and/or reanalyze the extract if the checks reveal a problem. If the surrogate recovery is outside of established limits due to well-documented matrix effects, the results must be flagged.

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11.0 METHOD PERFORMANCE

11.1 METHOD DETECTION LIMIT

The MDL for soil is calculated according to Title 40 Code of Federal Regulations, Part 136 (40 CFR136), Appendix B (1994). The MDL is estimated to be 60 mg/kg (external standard calibration, Ottawa sand) for DRO and 89 mg/kg for RRO. MDL studies will be performed and MDLs will be updated prior to any sample analyses.

11.2 METHOD ACCEPTANCE CRITERIA FOR AK102

The method acceptance criteria for laboratory control and field samples analyzed by Method AK102 are presented in Table 1.

Table 1 Method AK102 Acceptance Criteria for Quality Control

	Control Limits	
Soils (mg/kg)	**% Recovery**	**Relative % Difference**
Laboratory-Fortified Blanks	75-125	20
Continuing Calibration	75-125	
Calibration Verification	75-125	
Surrogate Recovery:		
Laboratory Fortified Blanks**	60-120	
Field Sample	50-150	

Notes:

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% = percent

mg/kg = milligrams per kilogram

11.3 METHOD ACCEPTANCE CRITERIA FOR AK103

The method acceptance criteria for laboratory control and field samples analyzed by Method AK103 are presented in Table 2.

Table 2 Method AK103 Acceptance Criteria for Quality Control

	Control Limits	
Soils (mg/kg)	**% Recovery**	**Relative % Difference**
Laboratory Fortified Blanks	60-120	20
Continuing Calibration	75-125	
Calibration Verification	75-125	
Surrogate Recovery:		
Laboratory Fortified Blanks**	60-120	
Field Sample	50-150	

**Laboratory Fortified Blank is any laboratory prepared sample used for quality control, except for calibration standards. Field criteria from voluntary contribution of method performance information from approved laboratories, and method performance at SCL.

% = percent

mg/kg = milligrams per kilogram

12.0 REFERENCES

Alaska Department of Environmental Conservation (2002), *Underground Storage Tank Procedures Manual*. 18 AAC 75 (Appendix D).

U.S. Environmental Protection Agency. *SW 846-Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Solid Waste Method 8000B, Determinative Chromatographic Separations*. Revision 2, 1996. Washington, D.C.

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ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
ANSI	American National Standards Institute
ECD	electron capture detectors
EPA	U.S. Environmental Protection Agency
GC	gas chromatograph (or gas chromatogram)
LCS	laboratory control sample
LFB	laboratory-fortified blank
MDL	method detection limit
mg/kg	milligrams per kilogram
mL	milliliter
MSDS	Material Safety Data Sheet
NOM	natural organic matter
PCBs	polychlorinated biphenyls
PE	performance evaluation
PIDs	photoionization detectors
PPE	personal protective equipment
ppm	parts per million
QC	quality control
RF	response factor
RSD	relative standard deviation
SOP	Standard Operating Procedure
TCMX	tetrachlorometaxylene
TSDF	treatment storage disposal facility
VOA	volatile organic analysis

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1.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) describes the procedures for determining the concentration of polychlorinated biphenyls (PCBs) as Aroclors® using the methodology developed by U.S. Environmental Protection Agency (EPA) Region 1 and described in the *Standard Operating Procedure PCB Field Testing for Soil and Sediment Samples* (EPA 2002).

1.1 PURPOSE OF METHOD

This method may be used to determine the concentrations of PCBs as Aroclors in extracts from soil and solids using open-tubular, capillary columns with electron capture detectors (ECD). The Aroclors listed below have been determined by this method, using a single-column analysis system. This method also may be applied to other matrices, such as oils and wipe samples, if appropriate sample extraction procedures are employed.

Table 1 Aroclor® Classes

Aroclor Class	CAS Registry No.[a]
Aroclor 1016	12674-11-2
Aroclor 1221	11104-28-2
Aroclor 1232	11141-16-5
Aroclor 1242	53469-21-9
Aroclor 1248	12672-29-6
Aroclor 1254	11097-69-1
Aroclor 1260	11096-82-5

Notes:
[a]Chemical Abstract Service Registry No.

1.2 AROCLOR QUANTITATION

The seven classes of Aroclors listed in Table 1 are those that are commonly specified in EPA regulations. The quantitation of PCBs as Aroclors is appropriate for meeting standard State and EPA cleanup criteria.

1.3 AROCLOR IDENTIFICATION

Compound identification based on single-column analysis is appropriate when Aroclor patterns of known standards (fingerprints) can be compared to a sample chromatogram. Certified standards of the differing Aroclors are used to produce chromatograms, which can be compared to sample chromatograms to identify the Aroclor mixture so it can be properly quantitated. Software which incorporates chromatogram overlay tools or other means may also be used to compare chromatograms of unknown mixtures against standards. The overlay tool is especially useful in determining if weathering of the Aroclor has occurred.

1.4 AROCLOR MIXTURES

Aroclors are multi-component mixtures. When samples contain more than one Aroclor, a higher level of analytical expertise is required to attain acceptable levels of qualitative and quantitative analysis. The same is true of Aroclors that have been subjected to environmental degradation ("weathering") or degradation by treatment technologies. Such weathered multi-component mixtures may have significant differences in peak patterns compared to those of Aroclor standards.

2.0 SUMMARY OF METHOD

2.1 EXTRACTION

Approximately 10 grams of soil (wet weight) is weighed in a tared sample boat on a 2-place, top-loading balance for extraction and analysis. The sample weight is recorded on a spreadsheet. Approximately 10 grams of the same sample is weighed in a tared aluminum drying pan for percent moisture determination. The extraction sample is allowed to air dry before being placed in a VOA vial. Once dried, the sample is transferred to a 40 milliliter (mL) volatile organic analysis (VOA) vial then 1 mL of 2 milligrams per liter (mg/L) of surrogate is added to the sample using a gas-tight syringe. Twenty mL of a 1:1 hexane acetone mixture is then added to the VOA vial and sealed with a Teflon® cap. The contents of the vial are agitated for 1 minute using a vortex mixer or vigorous shaking by hand. Four mL of deionized water is added to the vial to facilitate the separation of hexane from acetone in the vial. The vial contents are briefly vortexed or hand mixed and allowed to settle. Separation and settling may be assisted by placing the vial in a centrifuge and spinning the vial(s) for 30 seconds. The hexane and all analytes of interest are contained in the top-floating layer in the vial. If the sample extract shows signs of petroleum contamination, sulfuric acid cleanup may be performed to remove interferents. Approximately 3 mL of the hexane layer is transferred to two 2mL crimp top vials. The sample extract is now ready for analysis.

2.2 ALTERNATE EXTRACTION METHODS

Solid samples may be extracted with hexane-acetone (1:1) using Method 3545A (2007a) (pressurized fluid extraction) or Method 3550C (2007b) (ultrasonic extraction), or other appropriate technique or solvents. Extraction methods are presented in Section 10.1.

2.3 EXTRACT CLEANUP

Extracts for PCB analysis may be subjected to a sulfuric acid cleanup (Method 3665) designed specifically for these analytes. This cleanup technique will remove (destroy) many single component organochlorine or organophosphorus pesticides, as well as petroleum. Therefore, this method is not applicable to the analysis of organochlorinated compounds, such as pesticides.

2.4 SAMPLE INJECTION

After cleanup, the extract is analyzed by injecting a 2-microliter (µL) aliquot into a gas chromatograph (GC), equipped with a wide-bore fused-silica capillary column and an electron capture detector (ECD).

2.5 SAMPLE QUANTITATION

Sample quantitation involves two distinct steps. First the Aroclor chromatographic pattern has to be qualitatively identified against a known standard (fingerprinting). Second, the five major quantitative peaks must be integrated using consistent integration technique in order to properly quantitate the concentration of Aroclor in the extract. Each peak is quantified separately, and the determined concentrations of each of the 5 peaks are added to determine to total PCB concentration in the extract. The soil concentration is calculated using the soil dry weight, final volume of the extract (hexane layer), and any dilutions performed on the final extract. Sample results are reported in milligrams per kilogram (mg/kg) on a dry weight basis.

3.0 DEFINITIONS

The following sections provide definitions that may be relevant to this procedure, but may not include all terms used in this method.

3.1 POLYCHLORINATED BIPHENYLS (PCBS)

PCBs are a class of chlorinated organic compounds with 1 to 10 chlorine atoms attached to the biphenyl rings. There are 209 possible compounds (congeners) of PCBs. Each congener contains varying levels of chlorine ions attached to the carbon atoms of 2 conjoined phenyl rings. The manufacturing of the PCBs produced 7 main classes of PCBs, known as Aroclors. The 7 main classes of Aroclors are listed in Table 1 in Section 1.1.

3.2 INTEGRATION

Integration is the determination of the area of a peak or peaks in a chromatogram. Integration determines the base or bottom of the peak, and it separates the integrated peak from other peaks. Software generally performs the integration automatically; however, the analyst may be required to manually integrate the peak. The peak integration must be consistent with the integration performed on the initial and continuing calibration standards. Proper integration is required for accurate quantitation.

3.2.1 Quantitation

Quantitation is the determination of standard and sample concentrations based on the instrument response to known standard concentrations. Quantitation is based on the ratio of response (area) to concentration, and the ratio is known as the calibration or response factor.

3.2.2 Extraction

Extraction is the transfer of analytes from the matrix (soil) into solvent (extract) for the determination of analyte concentrations in the matrix.

3.2.3 Elution

Elution is the transmittal of separated analytes from the GC column to the detector.

3.2.4 Combined Calibration Standard

A stock standard mixture of Aroclor 1016 and Aroclor 1260 is diluted in hexane to produce the initial and continuing calibration standards. Multiple concentration standards are used for the initial calibration and the standard concentrations vary from the practical quantitation limit (PQL) of 0.1 to 10 mg/L, which is the upper dynamic range of the initial calibration. A 1.0 mg/L standard is used as the continuing calibration standard.

3.2.5 Continuing Calibration Standard (CCS)

A mid-range working standard diluted from the Stock Standard Solution, used to verify that the analytical system is responding in a manner comparable to that at the time of initial calibration. The continuing calibration standard is analyzed at the beginning of an analytical sequence, and at minimum, after every 20 samples to ensure that reported sample concentrations are accurate as determined by the initial calibration.

3.2.6 Calibration Verification Standard (CVS)

The CVS is a quality control (QC) standard, prepared as outlined in Section 8.6 of this method, but with an Aroclor mixture from a source other than that used to prepare the Initial Calibration, i.e., a second source from a different vendor. It is used by the laboratory to verify the accuracy of calibration and standards. Acceptance criteria are +/- 20% of the initial calibration response factor.

3.2.7 Surrogate Mixture

Tetrachlorometaxylene (TCMX) and decachlorobiphenyl are used as the surrogates for this method. The surrogate mixture contains equal concentrations of the surrogates, and it is spiked into all extracted samples before the extraction begins. The surrogate mixture is also included in the initial calibration standard as varying concentrations. Decachlorobiphenyl is the primary surrogate used to evaluate the extraction efficiency. Tetrachlorometaxylene is the secondary surrogate standard and may be used to evaluate the extraction efficiency when decachlorobiphenyl is subject to interference, as described in Section 4.2.

3.2.8 Standard Soil

Baked Ottawa sand is used in QC samples (method blank and laboratory-fortified blanks) to represent the soil matrix. Quality control samples are extracted and analyzed using the same procedures as field samples.

3.2.9 Method Blank

Method blank, also known as a preparation blank, demonstrates that the apparatus and reagents used to verify that the handling, extraction, and analysis of field samples are valid, and that the reported concentrations in field samples were not biased due to contamination introduced in the extraction and analysis process.

3.2.10 Instrument Blank

Instrument blank demonstrates that the instrument is free from contamination. The instrument blank is not extracted and consists of hexane.

3.2.11 Solvent Blank

A solvent blank demonstrates that the solvent (in this case hexane) used in the method is free from contamination. It may also serve as an instrument blank.

3.2.12 Laboratory-Fortified Blank (LFB)

A method blank sample consisting of Ottawa sand is spiked with a known quantity of prepared standard that is the same as that used to make the Initial and Continuing Calibration Standards (see Section 3.2.4 and 3.2.5 of this method). Two LFBs are extracted with every extraction batch. The spike recoveries are used to evaluate method control for accuracy and precision (see Table 1 in Section 1.1 of this method). The LFB is synonymous with a laboratory control sample (LCS).

3.2.13 Method Detection Limit (MDL)

The MDL is the minimal concentration of a compound that can be measured and reported with 99% confidence that the value is greater than zero, determined from analysis of a sample in a given matrix containing the analyte(s). (See, Appendix B, for the method of determining MDL). The method detection limit is determined prior to the analysis of any field samples.

3.2.14 Practical Quantitation Limit (PQL)

The PQL is defined as the concentration in the sample extract that can be accurately determined, and has a reproducible result. The PQL is generally between 2 and 5 times the MDL.

3.2.15 Extraction Batch

An extraction batch is a set of field and QC samples extracted using the same consistent procedure throughout the batch. A sample batch consists of an extraction blank, two LFBs, and up to 20 field samples extracted in less than a 24 hour period.

4.0 INTERFERENCES

4.1 SOLVENTS, REAGENTS, GLASSWARE

Solvents, reagents, glassware, and other sample-processing hardware may yield artifacts and/or interferences to sample analysis. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by analyzing method blanks. Specific selection of reagents and solvents may be necessary. Refer to each method to be used for specific guidance on QC procedures, and to Section 6.4.1 for general guidance on the cleaning of glassware.

4.2 DECACHLOROBIPHENYL

Decachlorobiphenyl is used as a surrogate, but it may also be present as an analyte of interest when the PCB analyte is Aroclor 1268. Aroclor 1268 is not a major class of PCBs, and it was rarely used in practice. In this instance, dechlorobiphenyl is a target analyte, but the chromatographic result should not be used to determine surrogate recovery nor for quantitation of the Aroclor. Instead, TCMX should be used to measure recovery efficiency as a surrogate, and another major chromatographic peak should be used to quantitate the Aroclor against known calibration standards.

4.3 INTERFERENCES FROM PHTHALATES

Interferences by phthalate esters introduced during sample preparation can pose a major problem in PCB determinations. Interferences from phthalate esters can best be minimized by avoiding contact with any plastic materials and checking all solvents and reagents for phthalate contamination.

Common flexible plastics contain varying amounts of phthalate esters, which are easily extracted or leached from such materials during laboratory operations.

Exhaustive cleanup of solvents, reagents, and glassware may be required to eliminate background phthalate ester contamination.

These materials can be removed prior to analysis using EPA Method 3665 (sulfuric acid cleanup).

Cross-contamination of clean glassware can routinely occur when plastics are handled during extraction steps, especially when solvent-wetted surfaces are handled. Glassware must be scrupulously cleaned.

4.4 SULFUR (S_8)

Sulfur (S_8) is readily extracted from soil samples and may cause chromatographic interferences in the determination of PCBs. Sulfur contamination should be expected with sediment samples. Sulfur can be removed through the use of EPA Method 3665.

4.5 PETROLEUM

Petroleum may be extracted from samples as a non-target analyte. Petroleum interferes with the quantitation of PCBs when it co-elutes with the PCBs. Petroleum can be removed from samples following a sulfuric acid cleanup (EPA Method 3665) of the extract.

4.6 OTHER INTERFERENCES

Interferences extracted from the samples will vary considerably from matrix to matrix and sample to sample. While general cleanup techniques are referenced or provided as part of this method, unique samples may require additional cleanup approaches to achieve desired degrees of discrimination and quantitation. Sources of interference in this method can be grouped into three broad categories, as follows:

- Contaminated solvents, reagents, or sample processing hardware.
- Contaminated GC carrier gas, parts, column surfaces, or detector surfaces.
- Compounds extracted from the sample matrix to which the detector will respond, such as single-component chlorinated pesticides, including the DDT analogs (DDT, DDE, and DDD) may cause interference of some of the Aroclor peaks.

5.0 SAFETY

This method does not address all safety issues associated with its use. The laboratory is responsible for maintaining a safe work environment, and a current awareness file of OSHA regulations regarding the safe handling of the chemicals listed in this method. A reference file of Material Safety Data Sheets (MSDSs) will be maintained and will be available to all personnel involved in these analyses.

5.1 SAFETY REQUIREMENTS

5.1.1 Personal Protective Equipment (PPE)

Eye protection that satisfies ANSI Z87.1 specifications (splash-proof and shatter-proof eye protection), laboratory coat, and nitrile gloves must be worn while handling samples, standards, solvents, and reagents. Disposable gloves that have been removed are discarded as nonhazardous waste. Non-disposable gloves must be cleaned immediately.

5.1.2 High Temperature Surfaces

The GC contains zones that have elevated temperatures. The analyst needs to be aware of the locations in those zones, and must cool them to room temperature prior to working on them. Solid reagents, such as silica gel, Ottawa Sand, and diatomaceous earth, are baked in a muffle furnace at high temperatures (450°C). Care must be taken when placing solid reagents in the muffle furnace and removing them after heating. It is required that commercial-grade oven mitts and tongs are used for the muffle furnace. The soil-drying oven is used to remove water from soil samples in order to determine the percent moisture in samples. Oven mitts must be used when placing or removing samples from the oven.

5.1.3 Electrical Hazards

There are areas of high voltage in the GC. Depending on the work to be performed, either turn off the power to the instrument, or unplug the GC from the power source. It should be noted that the back of the GC has capacitors that store energy even if the GC is unplugged. Avoid contacting the capacitor. If working in the capacitor area, it is required that the analyst wears a grounding strap.

5.1.4 Radiation

The ECD contains radioactive nickel (^{63}Ni) that requires leak testing every six months. The detector can be maintained without risk to the operator as long as the source is left in its sealed vessel. Do not open up the source, it is in violation of licensing agreements with Agilent Technologies and the Nuclear Regulatory Commission. If a source leak is suspected, do not use the detector. Perform a wipe test to evaluate the potential leak and contact Agilent immediately for further instructions. A leaking source cannot be transported by air, unless it is in a container made specifically for shipping radioactive items. Proper documentation and manifesting is required. A non-leaking detector can be flown on aircraft as hazardous material in excepted quantities. The contained radiation of a single detector is 15 millicuries.

5.1.5 Solvent Handling

Solvents used for sample extraction may be flammable and/or hazardous. Personnel must minimize their exposure to solvent fumes and avoid contact with skin or clothing. Refer to each MSDS to properly identify hazards associated with each type of solvent. Eye protection is required when handling solvents. Solvents must be handled under a fume hood whenever they are transferred. Residual solvent may remain in soil after extraction, and the soil must be stored under a fume hood or in a proper container after extraction. Signs of solvent exposure include dizziness, coughing, lightheadedness, and headaches. Over exposure to hexane may cause irritation to the skin and eyes. Hexane and acetone are flammable and must be handled with care under a fume hood. Sulfuric acid is a corrosive material, and will produce chemical burns when exposed to the skin. Sulfuric acid must be handled under a fume hood. Sulfuric acid vapors are an irritant and may cause problems with the respiratory tract and mucous membranes. Organic vapor monitors (PIDs) and/or chemical badges may be worn to ensure exposure levels are minimized.

5.1.6 Target Analytes

Some target analytes have been tentatively classified as known or suspected human or mammalian carcinogens. Standard materials and stock standard solutions of these compounds and field samples should be handled with suitable protection to the skin, eyes, etc.

6.0 EQUIPMENT AND SUPPLIES

Glassware, reagents, supplies, equipment, and settings other than those listed in this procedure may be employed provided that method performance is appropriate and not impacted by the use of items not listed in this method.

6.1 GAS CHROMATOGRAPH

An analytical system complete with GC suitable for split-splitless injection and all necessary accessories, including auto-injectors, syringes, analytical columns, gases, ECDs, and a data system.

6.2 GC COLUMNS

The single-column approach will be utilized and involves a single analysis to determine if PCBs are present. The chromatographic pattern will confirm the identity of the compound. The single-column approach may employ narrow-bore (0.25 or 0.32-mm ID) or wide-bore (0.53-mm ID) columns. The GC may employ dual columns mounted in a single GC, but with each column connected to a separate injector and a separate detector.

The columns listed in this section may be used at the discretion of the analyst performing the method. The listing of these columns in this method is not intended to exclude the use of other columns that are available.

- 30-m DB-5 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with SE-54 (DB-5, SPB-5, RTx-5, or equivalent), 1.0-µm film thickness.
- 30-m DB-608 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with 35 percent phenyl methylpolysiloxane (DB-608, SPB-608, RTx-35, or equivalent), 0.5-µm or 0.83-µm film thickness.
- 30-m DB-1701 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with 14% cyanopropylmethylpolysiloxane (DB-1701, or equivalent), 1.0-µm film thickness.

6.3 ANALYTICAL BALANCES

- An analytical balance capable of weighing to 0.0001 gram balance is used for the preparation of standards.
- A 2-place, top-loading balance capable of weighing to 0.01 gram is used for the determination of sample weights for extraction and percent moisture determinations.

- Calibration weights will accompany the balances, and the balance calibration and accuracy are checked daily prior to sample or standard weighing.

6.4 GLASSWARE

- 4-oz amber glass wide-mouth jars with Teflon-lined screw caps
- 40-mL VOA vials with Teflon-lined screw caps are used as extraction vessels
- Two mL glass vials with Teflon-lined crimp caps (autosampler vials)
- Transfer pipettes
- Graded pipettes are pipettes with volumes etched on the glass of such quality to accurately measure the volume contained in the pipette
- Glass Beakers: 250-mL
- Glass funnels
- 10-mL, 25-mL, and 50-mL volumetric glass used for the preparation of standards.

6.4.1 Glassware Cleaning

Clean all glassware as soon as possible after use by rinsing with the last solvent used. This should be followed by detergent washing (Alconox®) with hot water, and rinsed with tap water and/or organic-free reagent water. Glassware should be covered with aluminum foil and stored in a clean environment between uses.

6.5 EXTRACTION EQUIPMENT

- Vortex Shaker
- Heat Systems Model W400 Ultrasonic Extractor with ½" horn or Misonix XL 2020 with dual horn.
- Thermo CL2 centrifuge or a Whirlybird® hand-crank centrifuge.

6.6 OTHER EQUIPMENT

- GOW-MAC® Model 21-250 helium leak detector. The leak detector is used to verify system integrity by checking all fittings and orifices for leaks that could affect system performance.
- Glass wool

7.0 REAGENTS AND STANDARDS

Reagent-grade or pesticide-grade chemicals are used in all preparations and extractions. Other grades may be used, provided the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination. Reagents should be stored in glass to prevent the leaching of contaminants from plastic containers.

NIST-certified standards will be used for the identification and quantitation of target analytes.

7.1 SOLVENTS

Solvents used in the extraction and cleanup procedures include *n*-hexane, acetone, sulfuric acid, and water. All solvents must be exchanged to *n*-hexane prior to analysis. All solvents are pesticide grade in quality or equivalent, and each lot of solvent must be determined to be free of phthalates. A manufacturer's certificate of analysis is sufficient determination, unless factors or interferences indicate otherwise.

Hexane is used for the preparation of all standards, surrogates and spiking solutions. All solvent lots must be reagent- or pesticide-grade in quality, or equivalent, and should be determined to be free of phthalates.

7.2 ORGANIC-FREE REAGENT WATER

All references to water in this method refer to organic-free reagent water

7.3 STANDARD SOLUTIONS

The following sections describe the preparation of stock, intermediate, and working standards for the compounds of interest. This discussion is provided as an example, and other approaches and concentrations of the target compounds may be used, as appropriate for the intended application. See EPA Method SW8000B for additional information on the preparation of calibration standards.

7.4 STOCK STANDARD SOLUTIONS

Stock standard solutions (1,000 µg/mL) of certified PCB standards in acetone are purchased from vendors such as Restek or AccuStandard. Certificates of analysis are maintained and

stored on site in order to ensure the accuracy of prepared standards. Lot numbers and each standard preparation are recorded in the Standards Log Book.

NOTE: Standard solutions (stock, composite, calibration, and surrogate) are stored at less than 6°C in Teflon-sealed glass containers in the dark once they are removed from flame-sealed vials. When a lot of standards are prepared, aliquots of that lot are stored in individual small vials. All stock and working standard solutions must be replaced after six months, or sooner if routine QC checks indicate a problem.

7.5 CALIBRATION STANDARDS FOR AROCLORS

7.5.1 Initial Calibration Standard Mixtures

A standard containing a mixture of Aroclor 1016 and Aroclor 1260 will include many of the peaks represented in the other five Aroclor mixtures. As a result, a multi-point initial calibration employing a mixture of Aroclors 1016 and 1260 are used to demonstrate the linearity of the detector response without the necessity of performing multi-point initial calibrations for each of the seven Aroclors. In addition, such a mixture can be used as a standard to demonstrate that a sample does not contain peaks that represent any one of the Aroclors. This standard can also be used to determine the concentrations of either Aroclor 1016 or Aroclor 1260, should they be present in a sample. If other Aroclors are identified, a five-point calibration with passing ICV is required.

A minimum of five calibration standards containing equal concentrations of both Aroclor 1016 and Aroclor 1260 are prepared by diluting a stock standard with hexane. The concentrations should correspond to the expected range of concentrations found in real samples, and must be within the linear range of the detector. Initial calibration standards are prepared in volumetric glassware at concentrations of 0.1, 0.5, 1.0, 10 and 20 mg/L from a 1000 mg/L stock standard solution. Other concentrations may be used as long as they demonstrate response and linearity consistent with other standards, and are within the linear dynamic range of the detector.

7.5.2 Single PCB Standards

Single standards of each of the other five Aroclors listed in Table 1 are required to aid the analyst in pattern recognition. Assuming that the Aroclor 1016/1260 standards described in Section 7.5.1 have been used to demonstrate the linearity of the detector, these single standards of the remaining five Aroclors listed in Table 1 also may be used to determine the calibration factor for each Aroclor when a linear calibration model is chosen. A standard for each of the other Aroclors is prepared at a concentration of 1.0 mg/L. The concentrations should generally correspond to the mid-point of the linear range of the detector, but lower concentrations may be employed at the discretion of the analyst based on project requirements.

7.5.3 Surrogate Standards

The extraction efficiency of the method is monitored using surrogates. Surrogate standards (TCMX and decachlorobiphenyl) are added to all samples, method blanks, laboratory-fortified blanks, and calibration standards.

7.5.4 Other Standards

Other standards (e.g., other Aroclors) and other calibration approaches (e.g., non-linear calibration for individual Aroclors) may be employed to meet project needs. When the nature of the PCB contamination is already known, standards of those particular Aroclors will be used to prepare initial and continuing calibration standards.

(Intentionally blank)

8.0 QUALITY CONTROL

The QC acceptance criteria for various aspects of this method are described in this section. Quality control limits are outlined in Table 2 and described in detail in the following sections.

Table 2 Quality Control Criteria

QC Item	Frequency	Acceptance Criteria	Corrective Action(s)
Initial Calibration	Before analysis of samples	<20% RPD or a linear regression correlation coefficient (r^2) value greater than 0.995	Check standard integrity and perform additional initial calibrations as necessary.
Continuing Calibration	Before introduction of samples, after every 20 samples, and at the end of an analytical batch	<20% RPD of the known standard concentration	Inject another standard, clean the injector port. Perform initial calibration.
Instrument Blank	Before introduction of samples, after every 20 samples, and at the end of an analytical batch	Reported concentrations less than ½ the practical quantitation limit	Repeat blank injection, clean injection port, and replace septa and liner.
Extraction Blank	One extraction blank is extracted and analyzed with each extraction batch.	Reported concentrations less than ½ the practical quantitation limit	Repeat blank injection, clean injection port, and replace septa and liner. If the blank concentration is less than 10 times the lowest concentration of any field samples, data must be qualified (flagged) or the entire sample batch must be re-extracted.
Laboratory-Fortified Blank (LFB)	Two LFBs are extracted and analyzed with each extraction batch.	Control limits are 60 to 130% of known spiked concentrations. The RPD between 2 LFBs from the same extraction batch must not exceed20%.	Repeat injection, if re-injection fails to meet acceptance criteria, all samples in the extraction batch must be re-extracted.

Table 2 Quality Control Criteria (continued)

QC Item	Frequency	Acceptance Criteria	Corrective Action(s)
Surrogates	Surrogates are included in all continuing calibration standards, method blanks, LFBs and field samples.	continuing calibration standard acceptance criteria are +/- 20% RPD of the known concentration. Method blanks and LFB acceptance criteria are 40-140% for TCMX and 60-130% for DCB.	Determine the cause of the failure. Failure to meet recovery criteria in method blanks and LFBs indicate that extraction or analysis problems exist. Failure of surrogate recoveries in field samples may indicate matrix interference if recoveries are acceptable in extraction blanks and LFBs.

Notes:
CCS = continuing calibration standard
QC = quality control
RPD = relative percent difference
RSD = relative standard deviation

8.1 SAMPLE COLLECTION

The collection of analytical field samples is described in the Sample Analysis Plan, which is a separate document. The Sample Analysis Plan translates project objectives and specifications into procedures used in the collection of samples. Samples must be collected using clean sampling equipment, and new clean nitrile gloves must be worn. Sample gloves should be changed prior to the beginning of any collection activities and between samples.

8.2 INITIAL CALIBRATION

The initial calibration is performed by analyzing standards at known variable concentrations over the expected concentration range of samples, or within the linear dynamic range of the detector. The area (response) of quantitative peaks is determined, and then the area is divided by the known concentration to develop individual response factors. The response factors may be incorporated into a calibration function, such as an average response factor or a linear regression. An average response factor incorporates the individual response factors into an average of the response factors. The average response must have a relative standard deviation (RSD) of less than 20% to be acceptable. A linear regression calibration curve uses the least squares method to produce a straight line that does not pass through the origin, when the regression calibration technique is used. The linear regression must have a correlation coefficient (r^2) greater than 0.995 to be acceptable. The software (Agilent ChemStation and

Enviroquant) performs the calculations necessary to determine the average RSD and correlation coefficient (r^2).

8.3 CONTINUING CALIBRATION

A continuing calibration standard is analyzed as a calibration check, after each group of 20 samples in the analysis sequence. Thus, injections of method blank and LFB extracts and other non-standards are counted in the total. Solvent blanks, injected as a check on cross-contamination, are also not counted in the total. The response factors for the continuing calibration must be within ±20 percent of the initial calibration to meet acceptance criteria. When the continuing calibration is outside of acceptance criteria, the laboratory will stop analyses and take corrective action.

8.4 LABORATORY FORTIFIED BLANK (LFB)

The LFB concentration of PCBs as Aroclor 1260 is spiked at sufficient volume to have the concentration at 1.0 mg/L in the blank sample. Other concentrations may be used, as appropriate for the intended application. The LFB is also known as the LCS. Two LFBs are extracted with each extraction batch.

8.5 METHOD BLANK

Initially, before processing any samples, the analyst should demonstrate that all parts of the equipment in contact with the sample and reagents are interference-free. This is accomplished through the analysis of a method blank. As a continuing check, each time samples are extracted, cleaned up, and analyzed, and when there is a change in reagents, a method blank is prepared and analyzed for the compounds of interest as a safeguard against chronic laboratory contamination. If a peak is observed within the RTW of any analyte that would prevent the determination of that analyte, identify the source and eliminate it, before processing the samples, if possible. The blanks should be carried through all stages of sample preparation and analysis. When new reagents or chemicals are received, the laboratory must monitor the preparation and/or analysis blanks associated with samples for any signs of contamination. A single method blank is extracted with each extraction batch.

8.6 SAMPLE QUALITY CONTROL FOR PREPARATION AND ANALYSIS

The laboratory must also have procedures for documenting the effect of the matrix on method performance (precision, accuracy, method sensitivity). This includes the analysis of QC samples, including a method blank and LFBs in each analytical batch and the addition of surrogates to each field sample QC sample when surrogates are used. Any method blanks, matrix spike samples, or replicate samples, should be subjected to the same analytical procedures (Section 11.0) as those used on actual samples.

8.7 SURROGATE RECOVERIES

The laboratory will evaluate surrogate recovery data from individual samples versus the surrogate control limits listed in Table 2.

8.8 INITIAL DEMONSTRATION OF PROFICIENCY (PERFORMANCE EVALUATION [PE] SAMPLE)

Each analyst must demonstrate initial proficiency with each sample preparation and determinative method combination it utilizes, by generating data of acceptable accuracy and precision for target analytes in a clean matrix. The laboratory must also repeat the demonstration of proficiency whenever new staff members are trained, or significant changes in instrumentation are made. PE samples are provided by manufacturers at concentrations unknown to the laboratory or analyst. Once the PE sample concentration is determined, the results are sent back to the manufacturer for confirmation. If the confirmation is within the manufacturer's criteria, a certificate of performance is issued by the manufacturer. If the confirmation result is outside of acceptance criteria, the cause(s) must be corrected before a new PE sample is requested. The analysis and determination of each PE sample, whether in or out of acceptance criteria, must be documented and maintained by the laboratory.

9.0 METHOD PROCEDURES

The following procedures have been demonstrated to be applicable for soil screening by the Office of Environmental Measurement and Evaluation (EPA Region 1). The method is also described in *Standard Operating Procedures for PCB Field Testing For Soil and Sediment Samples* (EPA, 2002).

9.1 SAMPLE EXTRACTION

Soil Samples are extracted by weighing approximately 10 grams (wet weight) of sample in a weigh boat. The sample is allowed to air dry for up to 12 hours to evaporate excess soil moisture.. The weighed sample is transferred to a 40-mL VOA vial, then surrogates are introduced to the sample. Twenty (20) mL of 1:1 hexane-acetone solvent is added to the sample and agitated with a vortex mixer for 90 seconds. 4 mL of organic-free water is added to separate the hexane from the acetone and the sample is again agitated on the vortex shaker for 30 seconds. The extraction vial is then centrifuged for 30 seconds or more to facilitate the separation of the hexane from the soil and acetone-water layer. The hexane layer is the top layer, and it is removed and transferred with a disposable Pasteur pipette to two 2 mL autosampler vials for analysis.

EPA Method 3550B, ultrasonic extraction, may be used to handle large sample loads, difficult matrices, or, in the event of mechanical breakdown, poor recoveries. A sample batch will only be extracted using one method.

The use of hexane-acetone solvents generally reduces the amount of interferences, and improves signal-to-noise ratio.

9.1.1 Extract Cleanup

Cleanup procedures may not be necessary for a relatively clean sample matrix, but most extracts from environmental and waste samples may require additional preparation to remove interferences before analysis. A modified Method 3665A will be used for PCB sample cleanup when sample extracts exhibit likely non-target interference due to the presence of POL or natural organic matter (NOM). The hexane layer is removed from the top of the sample extract after water has been added to facilitate the separation of the hexane and

acetone. Target analytes preferentially partition into the hexane layer. The hexane layer is removed and transferred to a clean 40-mL VOA vial using transfer pipettes. Five mL of 1:1 sulfuric-acid-water is then applied to sample extract, mixed on a vortex shaker, and allowed to settle before injection on the GC.

9.1.2 Method Applicability to Other Matrices

The extraction techniques for solids may be applicable to wipe samples and other sample matrices not addressed in Section 10.1. The analysis of oil samples may need special sample preparation procedures that are not described here.

9.1.3 Demonstration of Extraction Method Proficiency and Detection Limits

Reference materials, field-contaminated samples, and spiked samples will be used to verify the applicability of the selected extraction techniques. Samples will be spiked with the compounds of interest and surrogates in order to determine the percent recovery and the limit of detection for each extraction method.

A combination of Aroclor 1016 and Aroclor 1260 will be spiked at concentrations at or below the PQL to determine the detection limit. The PQL has been empirically determined to be 0.1 mg/kg in soil samples.

9.2 GC CONDITIONS

9.2.1 Single-Column Analysis

This capillary GC/ECD method allows the analyst the option of using 0.25-mm or 0.32-mm ID capillary columns (narrow-bore), or 0.53-mm ID capillary columns (wide-bore). Due to the likely presence of non-target interference, 0.53-mm ID columns will be used for this analysis. The GC is configured with dual injectors, dual columns, and dual detectors for simultaneous analysis of two independent samples.

9.2.2 GC Temperature Programs and Flow Rates

Table 3 lists the GC operating conditions for the analysis of PCBs as Aroclors for single-column analysis, using wide-bore capillary columns. The GC conditions in these tables are the GC temperature program and flow rates necessary to separate the analytes of interest.

Once established, the same operating conditions must be used for the analysis of samples and standards. Retention times and calibrations will be verified on a daily basis at the beginning of each analytical sequence and retention times will be verified by monitoring subsequent continuing calibration standards.

Note: Once established, the same operating conditions must be used for both calibrations and sample analyses**.**

Table 3 Instrument Conditions

Parameter	Settings
Injector Port Temperature	240°C
Detector Temperature	325°C
Temperature Program	100°C for 1 minute 10°C/min to 280°C 20°C /min to 300°C
Columns 1 and 2	30 m x 0.53 mm ID, 0.5 µm coating
Injection Volume	2 µL
Carrier Gas	Helium at 10 mL per minute.
Make-up Gas	5% Methane in Argon (P5) at 2.5 mL per minute

Notes:

°C	=	degrees Celsius	ID	=	identification
µL	=	micrograms per liter	mL	=	milliliter
µm	=	micrometers	mm	=	millimeter

9.3 INSTRUMENT CALIBRATION

9.3.1 Initial Calibration

Prepare calibration standards using the procedures in Section 7.5. PCBs will be determined and quantitated as Aroclors using an external standard calibration.

Note: Because of the sensitivity of the electron capture detector, always clean the injection port and column prior to performing the initial calibration.

To establish the calibration factor, estimate the linear range starting at the PQL, which is the lowest concentration that can be accurately quantitated using the established GC analysis conditions. The upper dynamic range of the calibration is dependent on the detector and

operating conditions. Upper calibration standards should demonstrate adequate sensitivity as evaluated using the response factor (RF) for each individual standard. The RF is equal to: RF=Peak Area in the Standard/Total Mass of the Standard Injected (in nanograms).

The initial calibration consists of two parts, described below.

9.3.1.1 Establishment of Linear Dynamic Range

As noted in Section 7.5, a standard containing a mixture of Aroclor 1016 and Aroclor 1260 will include many of the peaks represented in the other five Aroclor mixtures. Thus, such a standard may be used to demonstrate the linearity of the detector and to demonstrate that a sample does not contain peaks that represent any one of the Aroclors. This standard can also be used to determine the concentrations of either Aroclor 1016 or Aroclor 1260, should they be present in a sample. Therefore, an initial multi-point calibration is performed using the mixture of Aroclors 1016 and 1260.

9.3.2 Selection of Quantitative Peaks

Sample and standard concentrations will be determined using 5 quantitation peaks for each Aroclor. The peaks must be characteristic of the Aroclor in question. Selected quantitation peaks should be at least 25% of the height of the largest Aroclor peak. The 5 quantitative peaks are selected at the discretion of the analyst, and should demonstrate adequate separation from non-quantitative peaks. When practical, the quantitative peaks should have slopes returning to baseline and not co-elute or shoulder with other peaks. For each Aroclor, the set of quantitation 5 peaks should include at least one peak that is unique to that Aroclor. If the analyst is using the Aroclor 1016/1260 mixture, none of the individual congeners should be found in both of these Aroclors.

Inject 2 µL of each calibration standard and record the peak area and retention time of each characteristic Aroclor peak to be used for quantitation. Whether using automated or manual integration technique, the peak baseline must be integrated in the same manner as the initial and continuing calibration standards, in order to accurately determine analyte quantities in the sample extract. When five peaks are used for determining sample concentrations, each peak will be assigned a concentration at $1/5^{th}$ the total concentration in the standard. The

concentration in the sample extract is determined by totaling the concentrations of the five peaks. When field sample peaks do not demonstrate the same characteristics as the standards due to interferences, a peak may be excluded from the quantitation at the discretion of the analyst. The concentration is determined by totaling the concentration of the other four peaks and multiplying the sum by 1.25 in order to normalize the sample concentration. Exclusion of quantitated peaks should only be performed by an experienced analyst after confirmation that the Aroclor has been properly identified, and that no other classes of Aroclors are present in the sample. (See Section 4.0 for description of interferences).

9.3.2.1 Calibration Factors

For a five-point calibration, ten sets of calibration factors will be generated for each standard of the Aroclor 1016/1260 mixture, with each set consisting of the calibration factors for each of the five (or more) peaks chosen for this mixture. For example, there will be at least 50 separate calibration factors in the multi-point calibration.

9.3.2.2 Establishing the Calibration Function

If a linear calibration model is used, the response factors or calibration factors from the initial calibration are used to evaluate the linearity of the initial calibration. This involves the calculation of the mean response or calibration factor, the standard deviation, and the RSD for each Aroclor peak. When the Aroclor 1016/1260 mixture is used to demonstrate the detector response, the linear calibration models must be applied to the other five Aroclors for which only single standards are analyzed. If multi-point calibration is performed for other Aroclors (such as Aroclor 1254), use the same criteria to evaluate calibration factors from those standards to evaluate linearity. An RSD of less than or equal to 20% is considered an acceptable demonstration of linearity.

Refer to EPA Method 8000B for the specifics of the evaluation of the linearity of the calibration and guidance on performing non-linear calibrations. In general, non-linear calibrations will also consider each characteristic Aroclor peak separately.

9.3.2.3 Qualitative Identification of Other Aroclors

Standards of the other five Aroclors are necessary for pattern recognition. When employing the traditional model of a linear calibration, these standards are also used to determine a single-point calibration factor for each Aroclor, assuming that the Aroclor 1016/1260 mixture in Section 7.5.1 has been used to describe the detector response. The standards for these five Aroclors should be analyzed before the analysis of any samples, and may be analyzed before or after the analysis of the five 1016/1260 standards in Section 7.5.2. These Aroclors must be reinjected if the GC operating conditions are modified, or new columns are installed. If new columns are installed with the same characteristics as the one that is replaced, and no other operating conditions have changed, the analyst may use discretion in determining if the 5 Aroclor standards need to be reinjected. Criteria for the determination include similar retention times and chromatographic patterns nearly identical to those previously established for the qualitative determination of the classes of Aroclor standards.

9.3.2.4 Initial Calibration of Other Aroclor Classes

In situations where other Aroclors of interest are present at a site, the analyst may employ a multi-point initial calibration of the Aroclors of interest (e.g., five standards of Aroclor 1254 if this Aroclor is of concern and linear calibration is employed) and not use the 1016/1260 calibration mixture.

9.4 RETENTION TIME WINDOWS

Absolute retention times are generally used for compound identification. When absolute retention times are used, RTWs are crucial to the identification of target compounds, and should be established by one of the approaches described in EPA Method 8000B.

Retention time windows are established to compensate for minor shifts in absolute retention times as a result of sample loadings and normal chromatographic variability. The width of the RTW should be carefully established to minimize the occurrence of both false positive and false negative results. Tight RTWs may result in false negatives and/or may cause unnecessary reanalysis of samples when surrogates or spiked compounds are erroneously not identified. Overly wide RTWs may result in false positive results that cannot be confirmed upon further analysis. Analysts should reference EPA Method 8000B for the details of

establishing RTWs. Other approaches to compound identification may be employed, provided that the analyst can demonstrate and document that the approaches are appropriate for the intended application. A sum of the area of all peaks (congeners) in any class of Aroclors in not recommended due to the relative inaccuracy of the integration.

When conducting Aroclor analysis, it is important to determine that common single-component pesticides, such as DDT, DDD, and DDE, do not elute at the same retention times as the target congeners. There may be substantial DDT interference with the last major Aroclor 1254 peak in some soil and sediment samples.

9.5 GAS CHROMATOGRAPHIC ANALYSIS OF SAMPLE EXTRACTS

9.5.1 Operating Conditions for Field Samples

The same GC operating conditions used for the initial calibration must be employed for the analysis of all samples and continuing calibration standards.

9.5.2 Continuing Calibration Verification

Verify calibration at least once each 12-hour shift or every 20 samples, by injecting calibration verification standards prior to conducting any sample analyses. A calibration standard must also be injected at intervals of not less than once every 20 samples and at the end of the analysis sequence. For Aroclor analyses, the calibration verification standard will be a mixture of Aroclor 1016 and Aroclor 1260. The calibration verification process does not *require* analysis of the other Aroclor standards used for pattern recognition unless that Aroclor is present in a field sample.

9.5.2.1 Continuing Calibration Verification Criteria

The calibration factor for each analyte calculated from the CVS should not exceed a difference of more than ±20 percent when compared to the mean calibration factor from the initial calibration curve. If a calibration approach other than the RSD method has been employed for the initial calibration (e.g., a linear model not through the origin, a non-linear calibration model, etc.), consult Method 8000B for the specifics of calibration verification. % Difference = ((known concentration of standard-standard analytical result/ known concentration) * 100. RF × 100

9.5.2.2 Continuing Calibration Verification Failure

If the calibration does not meet the ±20% limit on the basis of each compound, check the instrument operating conditions, and if necessary, restore them to the original settings, and inject another aliquot of the calibration verification standard. If the response for the analyte is still not within ±20%, then a new initial calibration must be prepared. See Section 8.0 for a discussion on the effects of a failing calibration verification standard on sample results.

9.5.3 Qualitative Identification of Aroclors

Qualitative identifications of target analytes are made by examination of the sample chromatograms and comparison of target analytes to known standards injected on the GC under the same analytical conditions.

9.5.4 Quantitative Determination of Aroclor Concentrations

Quantitative results are determined for each identified analyte using the procedures described in Section 9.3 for the external calibration procedure (Method 8000B). If the responses in the sample chromatogram exceed the calibration range of the system, dilute the extract and reanalyze.

9.5.5 Sample Bracketing with Continuing Calibration Standards

Each sample analysis employing external standard calibration must be bracketed with an acceptable initial calibration, calibration verification standard(s) after every 20 field samples, or calibration standards interspersed within the samples. The results from these bracketing standards must meet the calibration verification criteria in Section 9.3. Multi-level standards are used in the initial calibration to ensure that detector response remains stable for all analytes over the calibration range.

When a calibration verification standard fails to meet the QC criteria, all samples that were injected after the last standard that met the QC criteria must be evaluated to prevent misquantitation and possible false negative results, and reinjection of the sample extracts is required. More frequent analyses of standards will minimize the number of sample extracts that would have to be reinjected if the QC limits are violated for the standard analysis. However, if the standard analyzed after a group of samples exhibits a response for an analyte

that is above the acceptance limit, i.e., >20% of true value, and the analyte was not detected in the specific samples analyzed during the analytical shift, then the extracts for those samples do not need to be reanalyzed, because the verification standard has demonstrated that the analyte would have been detected if it were present. In contrast, if an analyte above the QC limits was detected in a sample extract, then reinjection is necessary to ensure accurate quantitation. If an analyte was not detected in the sample and the standard response is more than 20% below the initial calibration response, then reinjection is necessary. The purpose of this reinjection is to ensure that the analyte could be detected, if present, despite the change in the detector response, e.g., to protect against a false negative result.

Sample injections may continue for as long as the CVS and other standards interspersed with the samples meet instrument QC requirements. It is *recommended* that standards be analyzed after every 10 samples (*required* after every 20 samples and at the end of a set per EPA Method 8082) to minimize the number of samples that must be re-injected when the standards fail the QC limits. The sequence ends when the set of samples has been injected, after 24 hours of continuous injections, or when qualitative or quantitative QC criteria are exceeded.

9.5.6 Retention Time Stability

Use the calibration standards analyzed during the sequence to evaluate retention time stability. If any of the standards fall outside their daily RTWs, the system is out of control. Determine the cause of the problem and correct it. Likely causes of retention time shifts are loss of system integrity due to a leaking gas system. Check regulator pressures at the cylinders and flow controls on the GC. If they are the same as the conditions used to initially determine the RTWs, replace the injector septa and/or check for leaks in the system with a helium leak detector.

9.5.7 Analytical Interferences

If compound identification or quantitation is precluded due to interferences (e.g., broad, rounded peaks or ill-defined baselines are present), corrective action is warranted. Cleanup of the extract, column trimming, or replacement of the capillary column or detector may be necessary. The analyst may begin by rerunning the sample on another column to determine if

the problem results from analytical hardware or the sample matrix. Refer to Section 9.1.1 for sample cleanup procedures.

9.6 QUALITATIVE IDENTIFICATION

The identification of PCBs as Aroclors using this method with an electron capture detector is based on agreement between the retention times of peaks in the sample chromatogram with the RTWs established through the analysis of standards of the target analytes. See Section 9.4 for information on the establishment of retention time windows. Tentative identification of an Aroclor occurs when peaks from a sample extract fall within the established RTWs for a particular Aroclor.

The results of a single column/single injection analysis may be confirmed, if necessary, on a second, dissimilar, GC column. In order to be used for confirmation, RTWs must have been established for the second GC column. In addition, the analyst must demonstrate the sensitivity of the second-column analysis. This demonstration must include the analysis of a standard of the target analyte at a concentration at least as low as the concentration estimated from the primary analysis. That standard may be the individual Aroclor or the Aroclor 1016/1260 mixture.

When samples are analyzed from a source known to contain specific Aroclors, the results from a single-column analysis may be confirmed on the basis of a clearly recognizable Aroclor pattern. This approach should not be attempted for samples that appear to contain mixtures of Aroclors. In order to employ this approach, the analyst must document:

- The peaks that were evaluated when comparing the sample chromatogram and the Aroclor standard.
- The absence of major peaks representing any other Aroclor.
- The source-specific information indicating that Aroclors are anticipated in the sample (e.g., historical data, generator knowledge, etc.).

Note: This information should either be provided to the data user or maintained by the laboratory.

9.6.1 Confirmation

Tentative identification of an analyte occurs when a peak from a sample extract falls within the daily RTW established by injection of a known standard. An experienced analyst must perform the confirmation.

9.7 QUANTITATION OF PCBS AS AROCLORS

The quantitation of PCB residues as Aroclors is accomplished by comparison of the sample chromatogram to that of the most similar Aroclor standard. A choice must be made as to which Aroclor is most similar to that of the residue and whether that standard is truly representative of the PCBs in the sample.

Use the individual Aroclor standards (not the 1016/1260 mixtures) to determine the pattern of peaks on Aroclors 1221, 1232, 1242, 1248, and 1254. The patterns for Aroclors 1016 and 1260 will be evident in the mixed calibration standards.

Once the Aroclor pattern has been identified, compare the response's 5 major peaks in the single-point calibration standard for that Aroclor with the peaks observed in the sample extract. The amount of Aroclor is calculated using the individual calibration factor for each of the 5 characteristic peaks chosen in Section 9.3 and the calibration model (linear or non-linear) established from the multi-point calibration of the 1016/1260 mixture. Non-linear calibration may result in different models for each selected peak, i.e. more than one type of calibration may be used for fitting the differing peaks but only one type of calibration per peak. A concentration is determined using each of the characteristic peaks and the individual calibration factor calculated for that peak in Section 9.2. Then, these 5 concentrations are totaled to determine the concentration of that Aroclor.

Weathering of PCBs in the environment and changes resulting from chemical or natural weathering processes, may alter the PCBs to the point that the pattern of a specific Aroclor is no longer recognizable.

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10.0 GC MAINTENANCE

The analytical system must be inspected and maintained on a daily basis to ensure accurate and determinative identification and quantitation of analytical samples.

10.1 METAL INJECTOR BODY

Turn off the oven, cool the detectors and injectors to room temperature, and remove the analytical columns once the oven has cooled. Remove the glass injection port insert. Inspect the injection port and remove any noticeable foreign material.

Place a beaker beneath the injector port inside the oven. Using a wash bottle, rinse the entire inside of the injector port with acetone and then hexane while catching the rinseate in the beaker.

Deactivated glass injection port liners should be replaced after every 3 days, or as indicated by instrument conditions. Replace the injector liner, reassemble the injector, replace the injector septa, and re-install the columns. Test all fittings with a leak detector to ensure a gas-tight system.

10.2 COLUMN RINSING

Rinse the column with several column volumes of an appropriate solvent. Both polar and nonpolar solvents are recommended. Depending on the nature of the sample residues expected, the first rinse might be water, followed by methanol and acetone. Fill the column with the appropriate solvent and allow it to stand flooded overnight to allow materials within the stationary phase to migrate into the solvent. Afterwards, flush the column with fresh hexane, drain the column, and dry it at room temperature with a stream of ultrapure nitrogen or helium.

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11.0 DATA ANALYSIS AND CALCULATIONS

The determination of sample concentrations is essential to project goals and quality assurance objectives. Whenever possible, spreadsheets with inserted formulas will be utilized to perform routine calculations, including determination of percent solids, sample extract concentrations, and sample concentrations. Sample extract concentrations are determined with Agilent Chemstation/Enviroquant software.

11.1 DETERMINATION OF PERCENT SOLIDS

The determination of the percent solids is performed using a spreadsheet with the following procedures and calculations:

1. Zero the 2 place balance.
2. Weigh the empty aluminum pan and record the weight.
3. Tare the balance with the aluminum pan on the balance.
4. Add approximately 10 grams of sample that is representative of the sample. Be sure to remove any rocks or twigs that may be present. Record the weight.
5. Place the panned sample in the drying oven, which is set at 104°C, for a minimum of 4 hours or until the sample is dry.
6. Remove the dry weight sample and allow to cool to room temperature.
7. Record the weight of the dried sample and pan.
8. Calculate the percent (%) solids.

Note: % Solids= (dry weight + pan weight)-pan weight)/ wet weight)*100

11.2 DETERMINATION OF SAMPLE CONCENTRATIONS

The concentration in the sample extract is calculated with the data system in Enviroquant and is based on the current calibration. The analyst must ensure that the data system is using the current calibration factors to calculate the concentration of analytes in the extract. The calculation for determining the soil sample concentration is performed on an Excel spreadsheet using the following formula.

Soil concentration= (Concentration of the sample extract (µg/L)/1000 µg/g) X (Volume of the sample extract (10mL of hexane)/dry weight of sample (g)) X dilution factor (1 or more). The result will be in µg/g, which equates to mg/kg (ppm).

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12.0 METHOD PERFORMANCE

Performance data and related information are provided in EPA SW-846 Solid Waste Methods only as examples and guidance. The data do not represent required performance goals for users of the methods. Instead, performance criteria should be developed on a project-specific basis, and the laboratory should establish in-house QC performance criteria for the application of this method. These performance data are not intended to be and must not be used as absolute QC acceptance criteria for purposes of laboratory accreditation.

The accuracy and precision obtainable with this method depend on the sample matrix, sample preparation technique, optional cleanup techniques, and calibration procedures used.

12.1 METHOD DETECTION LIMIT STUDY (MDL)

An MDL study is performed for with the same Aroclor mixture using in the ICAL and spiking solutions, but at a lower concentration. At minimum, the MDL spike should be at or below the PQL. The MDL samples go through the same extraction procedure as field and QC samples. Ten samples are extracted in the same batch along with a method blank. Sample concentrations are quantified and the standard deviation is calculated for all of the MDL samples. The standard deviation is then multiplied by the student T value to determine the MDL.

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13.0 POLLUTION PREVENTION

Pollution prevention encompasses any technique that reduces or eliminates the quantity and/or toxicity of waste at the point of generation. Numerous opportunities for pollution prevention exist in laboratory operations. The EPA has established a preferred hierarchy of environmental management techniques that places pollution prevention as the management option of first choice. Whenever feasible, laboratory personnel should use pollution prevention techniques to address their waste generation. When wastes cannot be feasibly reduced at the source, the Agency recommends recycling as the next best option.

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14.0 WASTE MANAGEMENT

Laboratory waste management practices will be conducted consistently with all applicable federal, state and local rules and regulations. The laboratory will use best practices to protect the air, water, and land, by minimizing and controlling all releases from hoods and bench operations, complying with all permits and regulations, and by complying with all solid and hazardous waste regulations, particularly the hazardous waste identification rules and land disposal restrictions. For further information on waste management, consult the *Waste Management Plan,* located inside the Bristol Work Plan, which is a separate document. Waste streams will be segregated and stored in categories, such as chlorinated and non-chlorinated solvents, acids and solid waste. Used solvents and acids will be stored in labeled bung top drums. Extracted and unextracted soil and solid reagents, such as sodium sulfate or diatomaceous earth, will be incorporated into the contaminated soil waste stream, which will be disposed of at the appropriate permitted treatment storage disposal facility (TSDF).

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15.0 REFERENCES

U.S. Environmental Protection Agency (EPA), 2007a. EPA Method 3545A Pressurized Fluid Extraction, Revision 1 and all promulgated updates. EPA Office of Solid Waste. February 2007.

EPA, 2007b. EPA Method 3550C Ultrasonic Extraction, Revision C and all promulgated updates. EPA Office of Solid Waste. February 2007.

EPA, 1996 (December). EPA Method 8000B and all promulgated updates. Determinative Chromatographic Separations. EPA Office of Solid Waste. December 1996.

EPA, 2005 (January). EPA SW846 Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods, Fourth addition and all promulgated updates. EPA Office of Solid Waste. January 2005.

EPA, 2002. Standard Operating Procedure for Polychlorinated Biphenyls (PCBs) Field Testing for Soil and Sediment Samples. The Office of Environmental Measurement and Evaluation. EPA Region New England. 2002.

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BRISTOL ENVIRONMENTAL REMEDIATION SERVICES, LLC

MULTI-INCREMENT® SAMPLING

STANDARD OPERATING PROCEDURE BERS-14

Record of Changes

Revision No.	Date	Prepared by	Approved by
0	02/23/10	L. Maserjian	P. Curl

MULTI INCREMENT® SAMPLING

STANDARD OPERATING PROCEDURE

Method Summary: *MULTI INCREMENT*®[1] sampling involves the extraction of a representative portion of material from within a single decision unit. In *MULTI INCREMENT* sampling, several increments from the same decision unit are combined to form one sample that is submitted for laboratory analysis. The procedures for *MULTI INCREMENT* sampling are specifically designed to minimize sampling errors caused by spatial and compositional heterogeneity.

Current sampling protocols involve the selection of multiple individual samples, where the separate results are then evaluated to answer questions regarding the distribution of contamination. The error associated with any measured pollutant concentration has contributions from the analysis, as well as where and how the sample was taken. The error associated with sampling is believed to contribute 70% or more of the overall measurement uncertainty, yet quality assurance protocols and certification programs focus almost exclusively upon the errors due to instrumental analysis.

The goal of *MULTI INCREMENT* sample collection is to obtain a mean concentration for a specified area by reducing sampling errors. Potential advantages of *MULTI INCREMENT* sampling include:

- Reduction of overall sampling error: final results are more closely representative of the arithmetic mean concentration of the analyte(s) of interest within the decision unit.
- Fewer samples are sent to the analytical laboratory for analysis, resulting in a potential reduction in analytical costs.
- The method can be useful as an initial screening procedure for sites with little or no historic information.
- *MULTI INCREMENT* sampling can be very effective for the determination of the arithmetic mean of constituents that exhibit a high degree of spatial/distributional heterogeneity.
- Various studies have shown that concentrations of contaminants that were measured using *MULTI INCREMENT* sampling were statistically more representative than traditional sampling and analytical protocols.
- The EPA may accept *MULTI INCREMENT* sampling for use in risk assessments in the future.

[1] *MULTI INCREMENT*® is a registered trademark of EnviroStat, Inc.

Different states may have their own guidance for performing *MULTI INCREMENT* sampling, which should be followed and incorporated into site-specific work plans. This SOP summarizes typical *MULTI INCREMENT* procedures.

MULTI INCREMENT Soil Sampling Procedures

I. Decision Unit Identification

A decision unit is defined as the area or volume in question. To be valid, *MULTI INCREMENT* sampling must be used in conjunction with an appropriate decision unit. The decision units must be clearly stated in the work plan and approved, prior to conducting work.

Decision units are restricted to actual source zones, and must not incorporate large uncontaminated areas. *MULTI INCREMENT* is not to be used to "dilute" contamination. Two examples of well-defined decision units are a stockpile and an open excavation. In the case of an open excavation, *MULTI INCREMENT* sampling would be used for collecting a soil sample to confirm that the contaminated material has been removed.

In the case of underground storage tank (UST) excavations, the piping and dispenser areas may need to be separate decision units from the main UST footprint.

II. Sampling Locations

For *MULTI INCREMENT* sampling, one analytical sample is composed of many increments within a decision unit. The increments are selected randomly. There are several types of random sampling techniques, including simple random (each location has an equal chance of being selected), stratified random (subgroups are identified and sampled), and systematic random (on a grid).

In addition to the increment locations, the sample increment depths must also be considered. In areas of subsurface contamination, more than one decision unit can be used for different depths, e.g., one decision unit at two feet below ground surface (bgs) and another at four feet bgs.

III. Sampling Methods

The *MULTI INCREMENT* Soil Sampling Process will involve:

1. Collecting a small amount of soil increments from randomly-located increments (at least 30 increments, 30 to 50 increments is standard).
2. Combining these soil increments into one "bulk" *MULTI INCREMENT* sample.
3. Sieving the "bulk" *MULTI INCREMENT* sample (some laboratories will perform sieving).

4. Sub-sampling the "bulk" *MULTI INCREMENT* sample (some laboratories will perform sub-sampling) into the required sample mass for that analyses.
5. Submitting the one *MULTI INCREMENT* sample for analysis.

Equipment Required

- Large stainless steel spoon or scoop
- Large clean container (a large stainless steel bowl, Ziploc® bags, or 5-gallon bucket)
- #10 (2 millmeter) sieve
- Steel cookie sheet or other tray
- Small spatula or spoon
- Sample containers
- Scale
- For volatile samples: volatile sample container (pre-tared, narrow mouth, approximately 250 to 500 milliliters) or disposable plastic coring device (such as En Core® samplers)

Non-Volatile Analyses *MULTI INCREMENT* Sampling Procedures

Prior to planning the field strategy, the laboratory must be contacted to determine the sample mass required for each analysis. In general, a minimum of 30 grams of soil is required in order to have a large enough sample mass.

For surface samples, remove the soil to a depth of at least six inches (depending on site conditions and analyses required) prior to collecting the sample. When sampling from an excavator bucket, sample from the center and remove at least six inches of soil. For subsurface sampling, collect the soil directly from the hand auger, split spoon, or Macro-Core®.

For each sample increment: Using a large spoon or scoop, collect the sample increment from the appropriate sample location and depth according to the work plan. Scoop approximately 30 to 60 grams (1 to 2 ounces) into the large, clean container, then move to the next sample increment location and repeat. Be careful of oversize material which will mean more mass may be needed from each increment to end up with the 30 to 50 gram sub-sample after sieving.

After the 30 to 50 sample increments have been collected into the bucket, use the #10 sieve to sieve the soil into another clean container (can also be sieved into the bucket at the time of collection).

Once the entire "bulk" *MULTI INCREMENT* sample has been sieved, approximately 500 to 1,000 grams of material should be available. Spread this sieved *MULTI INCREMENT* sample on the steel tray and spread evenly to an approximate ½ inch thickness. Roughly divide the tray into 30 to 50 sections using the small spatula. Then, collect approximately 1.0 gram

(approximately ½ tablespoon) from each of the sections. Make sure to scrape any fines from the spatula along the bottom of the tray in case fines have settled there. Place each sub-section sample into one sample jar (provided by laboratory). The final sample mass per jar submitted to the laboratory must meet the minimum amount of material required by the laboratory.

Repeat the process on the same tray of soil to be submitted to the laboratory for percent moisture, or as backup if re-analysis is required.

Soil drying may be necessary to facilitate sieving of the <2 mm fraction. Drying is only performed if necessary. Drying is performed at ambient room temperature, not at an elevated "baking" temperature.

Volatile Analysis *MULTI INCREMENT* Sampling Procedures

Volatile organics analyses require that samples be field preserved with a minimum 1:1 ratio of sample preservative to sample material (1.0 gram soil to 1.0 milliliter methanol). This is a minimum required ration, and additional soil mass is preferred as long as it is completely submerged by the methanol. The quantity that will be collected from each increment should be determined prior to contacting the laboratory. If the core-type sampler will collect 2 to 5 grams of material, and there are 30 increment locations, a pre-tared sample container containing 150 milliliters of methanol should be provided by the laboratory. It is recommended to use a narrow-mouth amber glass container. The container should be sized so that methanol is not lost due to splashing during the sampling event.

If sampling both volatile and non-volatile samples, the sampler should go to each of the sample increment locations and collect the volatile increments first, as follows:

Remove at least 6 inches of soil (depending on site conditions and analyses required) from the sample location. Collect a "plug" of soil, using the core-type sampler, from each random increment location. Each "plug" will be immediately placed into a pre-tared, narrow-mouth, laboratory bottle containing the methanol preservative. Place the lid back on the container between increments. Use a separate disposable core-type sampler for each increment.

No sieving or sub-sampling will be performed for the volatile samples. A non-preserved sample must also be collected for moisture determination (collect a 2 to 5 gram plug of material into a 4-ounce sample jar). This can be collected at the same time as the volatile sample collection.

Soil types that cannot be sampled using a core-type sampler (hard gravelly material) will require use of a "spoon" type sampling device to place sample material into a wide-mouth sample jar.

In order to guarantee that the 1:1 methanol to soil ratio is met, the sampling tools should be "field-calibrated" by weighing the soil to be sampled on a small balance to determine the approximate mass required from each random increment location. If the final sample mass does not meet the minimum requirements, additional soil increments from randomly-selected

locations may be added. If additional methanol is added, it must be documented on the chain-of-custody form.

Quality Assurance/Quality Control

Triplicate Sampling: Triplicate (two additional samples along with the project sample) samples must be collected for *MULTI INCREMENT* sampling to verify that the *MULTI INCREMENT* sample truly represents the decision unit. Triplicate samples are different from duplicate samples, because they are not located at the same point as the project sample, but within the same increment. A minimum of one triplicate set is required for *MULTI INCREMENT* sampling projects. For sites with only one decision unit, triplicate sampling and analysis is required. For sites with multiple decision units, a minimum of one triplicate sample set should be collected for every 10 decision units (a rate of 10%).

Triplicate samples must be collected from decision units with known or suspected reportable levels of contamination because non-detect results may prohibit the relative standard deviation (RSD) and 95% upper control limit (UCL) calculations for evaluating the *MULTI INCREMENT* sampling representativeness.

Triplicates should be collected in the same increment as the project sample, but not at the same location. A practical way to achieve this is to move to the right or left (forward or backward) a pre-determined distance from the project sample, and collect another increment for the second sample. The same procedure would be followed for the third sample (move in another direction). The method of obtaining triplicates and number of triplicate samples must be described in the work plan.

RSD and 95% UCL Calculations: An RSD of 30% or less is required for *MULTI INCREMENT* sampling. At RSDs greater than 35%, the data distribution starts to become non-normal and confidence in the representativeness of the *MULTI INCREMENT* sample results diminish. RSD is calculated as presented below:

$$RSD(\%) = 100s/x_m$$

Where:

s = standard deviation

x_m = mean

The 95% UCL are calculated using the standard deviation and mean. The 95% UCL is especially relevant for concentrations at or near the action level. The 95% UCL is calculated as presented below:

$$95\%UCL = x_m + [ts/n_{sqrt}]$$

Where:

n = number of samples

x_m = mean

t = 95% one-side student t factor (e.g., for n=3, t=2.92)

n_{sqrt} = square root of "n" (e.g, the square root of 3 = 1.73205…)

s = standard deviation

For *MULTI INCREMENT* triplicate data sets that include one or two non-detect results, the lowest value reported by the laboratory, either the method detection limit (MDL) or practical quantitation limit (PQL), should be substituted for the sample result to perform both calculations. If all three *MULTI INCREMENT* results are non-detect, the calculations are not required.

The standard deviation, mean, RSD, and 95% UCL will be calculated for each decision unit. The mean and standard deviation calculated from the triplicate sample are used for calculating the 95% UCL for the other decision units. In these situations, the ts/n_{sqrt} calculated from the triplicate *MULTI INCREMENT* sample are added to the *MULTI INCREMENT* result(s) for the remaining decision units. For example, if the *MULTI INCREMENT* result for a second decision unit at the site was 232 mg/kg, the 95% UCL for this decision unit would be 232 mg/kg + ts/n_{sqrt}.

Interferences and Potential Problems:

Highly organic samples (peat): Soil material, such as peat, are not conducive to sieving; therefore, *MULTI INCREMENT* sampling is not appropriate without alternate sample collection and preparation procedures.

Wet samples: Sieving wet samples can be difficult and might leave material behind. Drying samples for semivolatile and non-volatile analyses has not shown a significant decrease in contaminant concentrations, but may require a lot of time and space.

Sample Grinding: Grinding may be required for samples to be analyzed for metals or any other analytes where the analytical sample size is small. Some laboratories offer grinding and *MULTI INCREMENT* preparation.

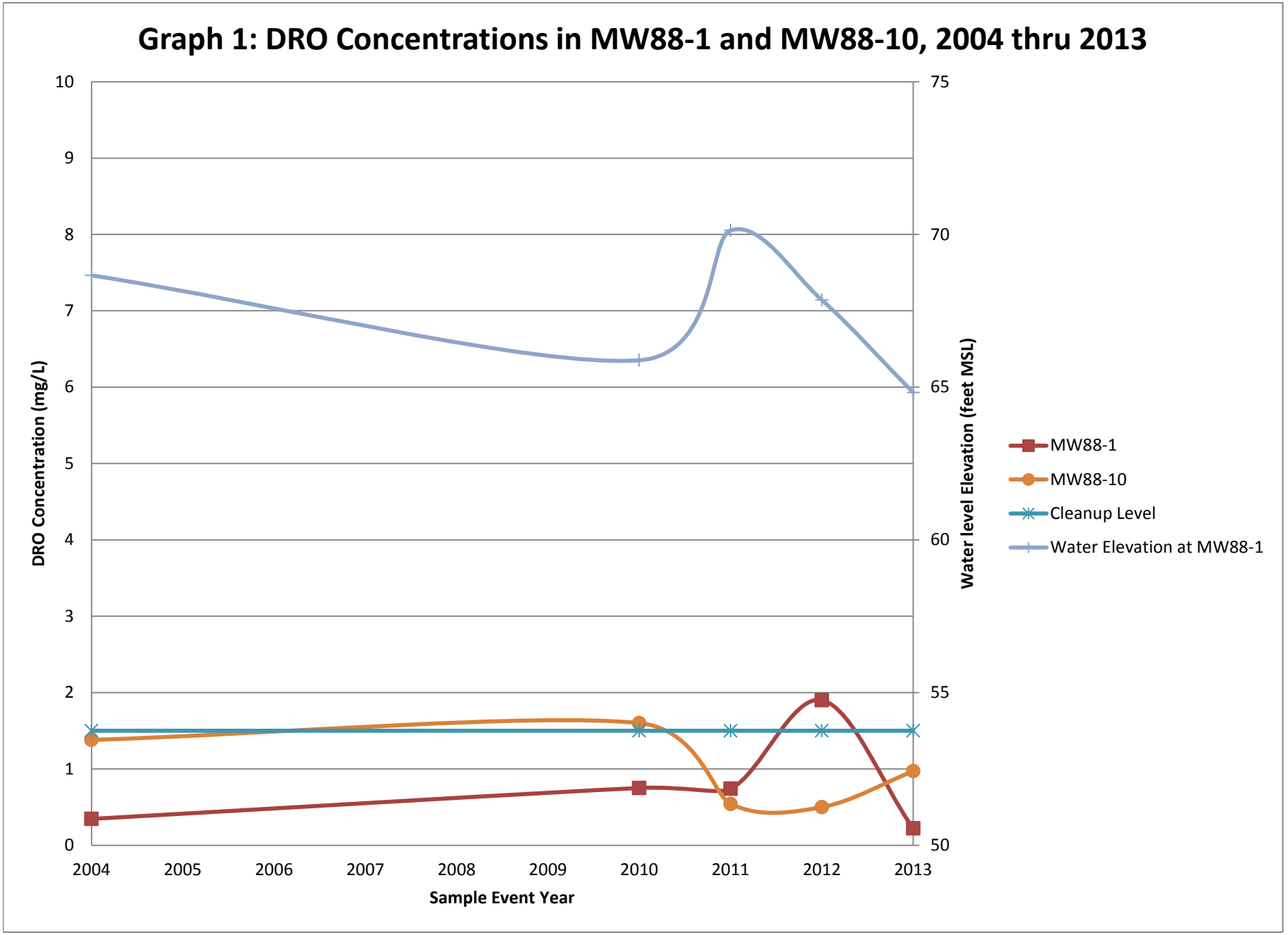
Volatile samples: Field studies have found that using a spoon or spatula with a wide-mouth jar results in loss of volatiles. A core-type sampler, or a narrow-mouth jar are recommended for use in collecting volatile soil samples.

MULTI INCREMENT Sampling is NOT designed for: *MULTI INCREMENT* sampling is not designed for identifying hot spots, delineating the extent of contamination, or determining the maximum concentration of contamination in soil from an area.

APPENDIX H

Analytical Results Tables

Graph 1 DRO in selected MOC Wells



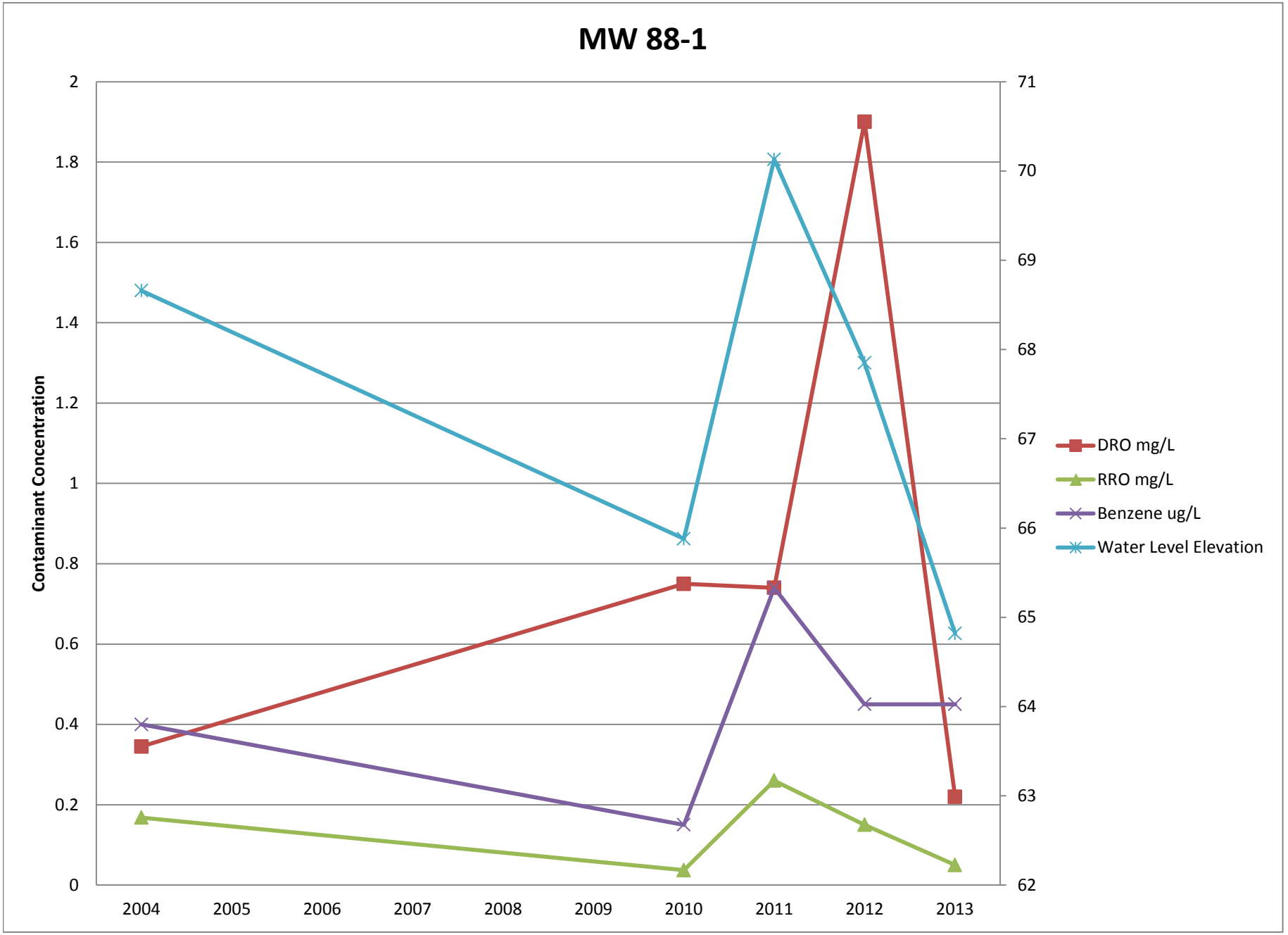

MW 88-1
Contaminant Concentration
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
71
70
69
68
67
66
65
64
63
62
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
DRO mg/L
RRO mg/L
Benzene ug/L
Water Level Elevation

Table H1 MOC MNA Groundwater Parameters 2010-2013

	Well ID		MW10-1				26MW1				22MW2			
	Sample ID		10WA01	WA01	WA07	13NCMOCGW-04	26WA01	WA02	WA02	13NCMOCGW-01	22WA01	WA03	WA01	13NCMOCGW-02
	Date		8/14/10	7/15/11	7/10/12	7/20/2013	8/16/10	7/16/11	7/8/12	7/19/2013	8/14/10	7/16/11	7/8/12	7/19/2013
Analyte	Units	Method Detection Limit												
Ferrous Iron	mg/L	0.01	<0.01	0.09	<0.03	0.23	<0.01	0.05	<0.03	0.05	<0.01	<0.01	<0.03	ND
Manganese	mg/L	0.2	<0.2	0.10	<0.2	ND	<0.2	0.20	0.20	0.5	<0.2	<0.2	0.1	0.2
Sulfate	mg/L	2	3.0	4.00	3.00	3	6.0	10.00	6.00	10	12.0	7.00	12.00	16
Nitrate	mg/L	0.4	0.3	0.40	<0.01	0.11	0.3	1.30	0.26	0.12	0.6	1.00	0.34	0.16
Alkalinity	mg/L	0	0.0	40	40	50	0.0	40	40	40	0.0	40	40	30
Temperature	°C	NA	6.6	6.03	4.42	3.79	3.0	3.47	3.22	4.19	3.9	6.40	3.54	5.42
Spec Cond	µS/cm	NA	63.0	56	0	78	47.0	61	84	50	65.0	60	108	69
pH	NA	NA	5.6	5.45	5.37	5.43	6.8	5.74	5.79	5.49	6.1	5.63	5.79	5.92
ORP	mV	NA	202.5	85.50	251.60	68.9	202.1	202.80	197.20	222.7	234.2	53.70	204.60	129.5
DO	mg/L	NA	5.6	4.74	2.93	1.26	11.5	12.63	12.40	13.99	10.1	10.99	12.45	14.82
Methane	µg/L	NA	0.5	0.29 J	0.85	26	0.4	ND (0.29)	ND (0.29)	ND (0.37)	0.8	ND (0.29)	ND (0.29)	ND (0.37)

Table H1 MOC MNA Groundwater Parameters 2010-2013 (continued)

	Well ID		20MW1				17MW1				MW88-5*			
	Sample ID		20WA01	WA04	WA03	13NCMOCGW-05	17WA01	WA05	WA04	13NCMOCGW-03	27WA03	WA06	WA07[D]	WA10
	Date		8/4/10	7/17/11	7/9/12	7/20/2013	8/4/10	7/17/11	7/9/12	7/20/2013	8/15/10	7/17/11	7/17/11	7/10/12
Analyte	Units	Method Detection Limit												
Ferrous Iron	mg/L	0.01	NR	<0.01	<0.03	ND	0.01	0.06	<0.03	0.01	45.50	3.30	3.30	11.45
Manganese	mg/L	0.2	NR	<0.2	0.3	0.2	<0.2	0.10	<0.2	0.3	<0.2	0.30	0.70	1.30
Sulfate	mg/L	2	NR	24.00	16.00	22	16	15.00	16.00	20	6	46.00	42.00	18.00
Nitrate	mg/L	0.4	NR	1.30	0.23	0.26	0.2	0.70	0.19	0.11	0.3	0.90	0.50	0.02
Alkalinity	mg/L	0	NR	80	40	45	0	40	40	37	80	180	180	80
Temperature	°C	NA	3.6	2.33	3.39	3.58	3.09	2.73	2.74	3.45	2.21	2.59	2.59	2.63
Spec Cond	µS/cm	NA	63.0	82	143	83	68	67	108	65	221	241	241	262
pH	NA	NA	6.3	5.89	5.76	5.65	5.76	5.78	5.45	5.45	8.25	6.64	6.64	6.18
ORP	mV	NA	101.4	125.80	231.50	62.4	160.8	237.10	205.50	149.2	-69.3	-100.30	-100.30	-25.40
DO	mg/L	NA	4.0	10.78	9.04	10.45	7.32	4.47	9.22	9.77	0.81	0.58	0.58	0.49
Methane	µg/L	NA	ND (0.19)	ND (0.29)	ND (0.29)	ND (0.37)	ND (0.19)	ND (0.29)	ND (0.29)	ND (0.37)	99	630	620	360

Table H1 MOC MNA Groundwater Parameters 2010-2013 (continued)

	Well ID		MW88-4*					MW88-1				MW88-10				
	Sample ID		27WA01	27WA02	WA08	WA08	WA09[D]	19WA01	WA09	WA06	13NCMOCGW-08	19WA02	WA10	WA05	13NCMOCGW-06	13NCMOCGW-07[D]
	Date		8/3/10	8/3/10	7/17/11	7/10/12	7/10/12	8/4/10	7/18/11	7/9/12	7/21/2013	8/15/10	7/18/11	7/9/12	7/21/2013	7/21/2013
Analyte	Units	Method Detection Limit														
Ferrous Iron	mg/L	0.01	21.40	20.00	3.30	12.25	10.80	<0.01	0.04	< 0.03	0.03	<0.01	0.02	0.49	1.04	1.08
Manganese	mg/L	0.2	0.3	0.5	0.40	1.10	1.00	0.3	0.30	<0.2	0.4	1.0	0.40	1.00	2.9	1.1
Sulfate	mg/L	2	4	1	1.00	3.00	3.00	7	8.00	8.00	9	6.0	8.00	16.00	8	8
Nitrate	mg/L	0.4	2.0	<0.4	0.20	<0.01	0.19	0.3	1.50	0.20	0.29	0.1	0.90	0.56	0.03	0.03
Alkalinity	mg/L	0	120	120	180	80	80	40	40	40	40	40.0	40	40	70	30
Temperature	°C	NA	3.28	3.28	1.16	2.01	2.01	2.85	2.30	3.27	2.66	2.9	4.43	1.61	3.64	2.66
Spec Cond	µS/cm	NA	190	190	173	230	230	68	60	111	68	65.0	61	124	75	68
pH	NA	NA	6.93	6.93	6.80	6.41	6.41	5.59	5.75	5.52	5.31	7.6	5.78	5.74	5.82	5.31
ORP	mV	NA	-72.1	-72.1	-86.20	-51.70	-51.70	190.1	70.90	225.90	114.3	146.0	47.7	146.6	129.6	114.3
DO	mg/L	NA	0.68	0.68	0.27	0.35	0.35	1.26	2.09	1.58	2.23	0.8	1.55	0.66	0.37	0.37
Methane	µg/L	NA	1900	2100	2100	2300	2000	0.34	0.44 J	0.37J	ND (0.37)	0.4	1.8	32.0	54	61

Notes:
*Well was decommissioned in 2012
< = less than
°C = degrees Celsius
µg/L = micrograms per liter
µS/cm = microsiemens per centimeter
[D]sample is a duplicate of the previous sample
DO = dissolved oxygen
J = result is an estimate
mg/L = milligrams per liter
MNA = monitored natural attenuation
MOC = Main Operations Complex
mV = millivolts
NA = not applicable
ND = non-detect; limit of detection in parentheses
NR = not reported
ORP = oxidation-reduction potential
pH = potential hydrogen
Spec Cond = specific conductance

Table H2 MOC Groundwater Sample Results

		Sample ID		13NCMOCGW01	13NCMOCGW02	13NCMOCGW03	13NCMOCGW04	13NCMOCGW05	13NCMOCGW06	13NCMOCGW07[b]	13NCMOCGW08
		Laboratory ID		580-39444-1	580-39444-2	580-39444-3	580-39444-4	580-39444-5	580-39444-6	580-39444-7	580-39444-8
		Location ID		26MW-1	22MW-2	17MW-01	MW10-1	20MW-1	MW88-10	MW88-10	MW88-1
		Collection Date		7/19/2013	7/19/2013	7/20/2013	7/20/2013	7/20/2013	7/21/2013	7/21/2013	7/21/2013
Analysis Method	Analyte	Units	Cleanup Level								
6020	Arsenic-total	mg/L	0.01 [1]	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)
6020	Barium-total	mg/L	2 [2]	0.0047 J	0.0084	0.019	0.034	0.021	0.016	0.017	0.011
6020	Cadmium-total	mg/L	0.005 [2]	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	0.00047 J	0.00051 J	ND (0.00025)
6020	Chromium-total	mg/L	0.1 [2]	0.003	ND (0.0015)	0.0099	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	0.0062
6020	Lead-total	mg/L	0.015 [1]	ND (0.00025)	ND (0.00025)	ND (0.00025)	0.00088 B	ND (0.00025)	0.00079 B	0.00083 B	ND (0.00025)
6020	Nickel-total	mg/L	0.1 [2]	ND (0.0025)	ND (0.0025)	0.008 J	0.0034 J	0.0063 J	0.0044 J	0.0045 J	0.006 J
6020	Selenium-total	mg/L	0.05 [2]	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)
6020	Silver-total	mg/L	0.1 [2]	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Vanadium-total	mg/L	0.26 [2]	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
6020	Zinc-total	mg/L	5 [2]	ND (0.005)	0.01	0.027	0.025	0.01	0.045 QN	0.16 QN	0.028
7470A	Mercury-total	mg/L	0.002 [2]	0.000058 J B	0.000058 J B	0.000056 J B	0.000059 J B	0.00006 J B	0.000053 J B	0.000058 J B	0.00006 J B
6020	Arsenic-dissolved	mg/L	0.01[1]	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)
6020	Barium-dissolved	mg/L	2 [2]	0.0046 J	0.0082	0.018	0.029	0.021	0.016	0.017	0.011
6020	Cadmium-dissolved	mg/L	0.005[2]	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	0.00047 J	0.00044 J	ND (0.00025)
6020	Chromium-dissolved	mg/L	0.1 [2]	ND (0.0015)	ND (0.0015)	0.0014 J	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	0.0036
6020	Lead-dissolved	mg/L	0.015[1]	0.00021 B	ND (0.00025)	ND (0.00025)	0.00023 B	ND (0.00025)	0.00025 B	ND (0.00025)	ND (0.00025)
6020	Nickel-dissolved	mg/L	0.1 [2]	ND (0.0025)	ND (0.0025)	0.0086 J	0.0034 J	0.0029 J	0.0044 J	0.0042 J	0.0046 J
6020	Selenium-dissolved	mg/L	0.05 [2]	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)
6020	Silver-dissolved	mg/L	0.1 [2]	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Vanadium-dissolved	mg/L	0.26 [2]	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
6020	Zinc-dissolved	mg/L	5 [2]	0.018 J	0.017	0.031	0.03	0.017	0.047	0.049	0.03
7470A	Mercury-dissolved	mg/L	0.002 [2]	0.000051 J B	0.000061 J B	0.000059 J B	0.000054 J B	0.000058 J B	0.000059 J B	0.000055 J B	0.00006 J B
8082 DoD	PCB-1016	mg/L	0.0005 [2]	ND (0.000047)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)
8082 DoD	PCB-1221	mg/L	0.0005 [2]	ND (0.000095)	ND (0.000096)	ND (0.000095)	ND (0.000096)	ND (0.000096)	ND (0.000096)	ND (0.000096)	ND (0.000096)
8082 DoD	PCB-1232	mg/L	0.0005 [2]	ND (0.000047)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)
8082 DoD	PCB-1242	mg/L	0.0005 [2]	ND (0.000047)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)
8082 DoD	PCB-1248	mg/L	0.0005 [2]	ND (0.000095)	ND (0.000096)	ND (0.000095)	ND (0.000096)	ND (0.000096)	ND (0.000096)	ND (0.000096)	ND (0.000096)
8082 DoD	PCB-1254	mg/L	0.0005 [2]	ND (0.000047)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)

Table H2 MOC Groundwater Sample Results (continued)

		Sample ID		13NCMOCGW01	13NCMOCGW02	13NCMOCGW03	13NCMOCGW04	13NCMOCGW05	13NCMOCGW06	13NCMOCGW07[D]	13NCMOCGW08
		Laboratory ID		580-39444-1	580-39444-2	580-39444-3	580-39444-4	580-39444-5	580-39444-6	580-39444-7	580-39444-8
		Location ID		26MW-1	22MW-2	17MW-01	MW10-1	20MW-1	MW88-10	MW88-10	MW88-1
		Collection Date		7/19/2013	7/19/2013	7/20/2013	7/20/2013	7/20/2013	7/21/2013	7/21/2013	7/21/2013
Analysis Method	**Analyte**	**Units**	**Cleanup Level**								
8082 DoD	PCB-1260	mg/L	0.0005 [2]	ND (0.000047)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)	ND (0.000048)
8260 DoD	Benzene	mg/L	0.005 [1]	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)
8260 DoD	Ethylbenzene	mg/L	0.7 [1]	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)
8260 DoD	m-Xylene & p-Xylene	mg/L	NS	ND (0.0009)	ND (0.0009)	ND (0.0009)	ND (0.0009)	ND (0.0009)	ND (0.0009)	ND (0.0009)	ND (0.0009)
8260 DoD	o-Xylene	mg/L	NS	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)
	Total Xylenes (m, p & o)	mg/L	10 [2]	ND (1.35)	ND (0.00135)	ND (0.00135)	ND (0.00135)	ND (0.00135)	ND (0.00135)	ND (0.00135)	ND (0.00135)
8260 DoD	Toluene	mg/L	1 [2]	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)
8270 SIM DoD	1-Methylnaphthalene	mg/L	0.15 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	0.00042 QN	0.0006 QN	ND (0.00003)
8270 SIM DoD	2-Methylnaphthalene	mg/L	0.15 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	0.000092	0.00011	ND (0.00003)
8270 SIM DoD	Acenaphthene	mg/L	2.2 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	0.00063 QN	0.00022 QN	ND (0.00003)
8270 SIM DoD	Acenaphthylene	mg/L	2.2 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	0.00011	0.000037 J	ND (0.00003)
8270 SIM DoD	Anthracene	mg/L	11 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	0.000055	ND (0.00003)	ND (0.00003)
8270 SIM DoD	Benzo[a]anthracene	mg/L	0.0012 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)
8270 SIM DoD	Benzo[a]pyrene	mg/L	0.0002 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)
8270 SIM DoD	Benzo[b]fluoranthene	mg/L	0.0012 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)
8270 SIM DoD	Benzo[g,h,i]perylene	mg/L	1.1 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)
8270 SIM DoD	Benzo[k]fluoranthene	mg/L	0.012 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)
8270 SIM DoD	Chrysene	mg/L	0.12 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)
8270 SIM DoD	Dibenz(a,h)anthracene	mg/L	0.00012 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)
8270 SIM DoD	Fluoranthene	mg/L	1.5 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	0.000013 J	ND (0.00003)
8270 SIM DoD	Fluorene	mg/L	1.5 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	0.0013	0.00045	ND (0.00003)
8270 SIM DoD	Indeno[1,2,3-cd]pyrene	mg/L	0.0012 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)
8270 SIM DoD	Naphthalene	mg/L	0.73 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	0.00074	0.00084	0.000019 J
8270 SIM DoD	Phenanthrene	mg/L	11 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	0.000017 J	0.000019 J	ND (0.00003)
8270 SIM DoD	Pyrene	mg/L	1.1 [2]	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)	ND (0.00003)
AK101	Gasoline Range Organics (GRO)-C6-C10	mg/L	1.3 [1]	ND (0.044)	ND (0.044)	0.018 J	ND (0.044)	ND (0.044)	0.036 B	0.032 B	ND (0.044)
AK102 103	DRO (nC10-<nC25)	mg/L	1.5 [1]	0.029 J	0.025 J	0.038 J	0.4	0.032 J	0.97	0.94	0.22
AK102 103	RRO (nC25-nC36)	mg/L	1.1 [1]	ND (0.047)	ND (0.047)	0.045 J	0.17	ND (0.048)	0.042 J	0.043 J	0.05 J
RSK 175	Methane	mg/L	NS	ND (0.00037)	ND (0.00037)	ND (0.00037)	0.026	ND (0.00037)	0.054	0.061	ND (0.00037)

Notes:

[1]Cleanup level set in 2009 Decision Document

[2]Cleanup level as stated in 18AAC75.345 Table C (groundwater cleanup levels).

[D]Sample is a duplicate of the previous sample

J = Result is an estimate.

LOD = limit of detection

mg/L = milligrams per liter

ND = Result is non-detect with limit of detection (LOD) in parentheses.

ND (LOQ) B = Analyte was detected in the method blank at a concentration similar to the sample result; result was changed to ND with the limit of quantitation (LOQ) in parentheses

QN = Analyte result is considered an estimated value with uncertain bias since the field duplicates not meet relative percent difference (RPD) limits but meet other acceptance criteria.

NS = not specified

Table H3 MOC POL E Plume Soil Sample Results

		Sample ID	13NCMOCSS001	13NCMOCSS002	13NCMOCSS003	13NCMOCSS004	13NCMOCSS005	13NCMOCSS006	13NCMOCSS007	13NCMOCSS008	13NCMOCSS009
		Laboratory ID	580-39358-1	580-39358-2	580-39358-3	580-39358-4	580-39358-5	580-39358-6	580-39358-7	580-39358-8	580-39358-9
		Location ID	13NCMOCSS001	13NCMOCSS002	13NCMOCSS003	13NCMOCSS004	13NCMOCSS005	13NCMOCSS006	13NCMOCSS007	13NCMOCSS008	13NCMOCSS009
		Collection Date	7/14/2013	7/14/2013	7/14/2013	7/14/2013	7/14/2013	7/14/2013	7/14/2013	7/14/2013	7/14/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	E Plume-Floor	E Plume-Floor	E Plume-Floor	E Plume-Floor	E Plume-Floor	E Plume-Floor	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall
AK102	DRO	mg/Kg	9200	57 B	1100	71 B	150	1300	56 B	190	**270000**	2500
AK103	RRO	mg/Kg	9200	310	1700	600	1500	1800	440	1600	**26000**	700

		Sample ID	13NCMOCSS010	13NCMOCSS013[D]	13NCMOCSS011	13NCMOCSS012	13NCMOCSS014	13NCMOCSS015	13NCMOCSS016	13NCMOCSS017	13NCMOCSS018
		Laboratory ID	580-39358-10	580-39358-13	580-39358-11	580-39358-12	580-39439-1	580-39439-2	580-39439-3	580-39439-4	580-39439-5
		Location ID	13NCMOCSS010	13NCMOCSS010	13NCMOCSS011	13NCMOCSS012	13NCMOCSS14	13NCMOCSS15	13NCMOCSS16	13NCMOCSS17	13NCMOCSS18
		Collection Date	7/14/2013	7/14/2013	7/14/2013	7/14/2013	7/18/2013	7/18/2013	7/18/2013	7/18/2013	7/18/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Floor
AK102	DRO	mg/Kg	9200	430	390	**68000**	34 B	6300	670	5700	**40000**	2700
AK103	RRO	mg/Kg	9200	1900	2400	4000	180 B	390	2600	5100	6700	92

		Sample ID	13NCMOCSS019[D]	13NCMOCSS020	13NCMOCSS021	13NCMOCSS035	13NCMOCSS036	13NCMOCSS037	13NCMOCSS042	13NCMOCSS043	13NCMOCSS068
		Laboratory ID	580-39439-6	580-39439-7	580-39439-8	580-39566-1	580-39566-2	580-39566-3	580-39566-8	580-39566-9	580-39754-9
		Location ID	13NCMOCSS18	13NCMOCSS20	13NCMOCSS21	13NCMOCSS35	13NCMOCSS36	13NCMOCSS37	13NCMOCSS42	13NCMOCSS43	13NCMOCSS68
		Collection Date	7/18/2013	7/18/2013	7/18/2013	7/28/2013	7/28/2013	7/28/2013	7/29/2013	7/29/2013	8/11/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	E Plume-Floor	E Plume-Floor	E Plume-Floor	E Plume-North Sidewall	E Plume-North Sidewall	E Plume-Sidewall	E Plume-Floor	E Plume-Floor	E Plume-Sidewall
AK102	DRO	mg/Kg	9200	4100	**11000**	440	**76000**	**17000**	**10000**	1800 J	690	5300
AK103	RRO	mg/Kg	9200	43 J	2900	1100	**14000**	**10000**	5300	640 J	920	4600

		Sample ID	13NCMOCSS069	13NCMOCSS070	13NCMOCSS071	13NCMOCSS072	13NCMOCSS073	13NCMOCSS074	13NCMOCSS075	13NCMOCSS076	13NCMOCSS077
		Laboratory ID	580-39754-10	580-39754-11	580-39754-12	580-39754-13	580-39754-14	580-39754-15	580-39754-16	580-39754-17	580-39754-18
		Location ID	13NCMOCSS69	13NCMOCSS70	13NCMOCSS71	13NCMOCSS72	13NCMOCSS73	13NCMOCSS74	13NCMOCSS75	13NCMOCSS76	13NCMOCSS77
		Collection Date	8/11/2013	8/11/2013	8/11/2013	8/11/2013	8/11/2013	8/11/2013	8/11/2013	8/11/2013	8/11/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall
AK102	DRO	mg/Kg	9200	**61000**	94	48 B	320	**17000**	800	720	1600	**29000**
AK103	RRO	mg/Kg	9200	2200	900	340	2500	**45000**	5800	2700	4400	6900

Notes:

*Cleanup level set in 2009 Decision Document

BOLD = indicates sample result is above cleanup level

[D]sample is a duplicate of the previous sample

DRO = diesel range organics

J = result is an estimate

B = analyte detected in the blank, result with potential high bias

mg/Kg = milligrams per kilogram

MOC = Main Operations Complex

POL = petroleum, oil and lubricants

QH = laboratory quality issue, result with potential high bias

RRO = residual range organics

Table H3 MOC POL E Plume Soil Sample Results (continued)

		Sample ID		13NCMOCSS085[b (77)]	13NCMOCSS078	13NCMOCSS079	13NCMOCSS080	13NCMOCSS100	13NCMOCSS110
		Laboratory ID		580-39754-26	580-39754-19	580-39754-20	580-39754-21	580-39794-15	580-39839-8
		Location ID		13NCMOCSS85	13NCMOCSS78	13NCMOCSS79	13NCMOCSS80	13NCMSS100	13NCMSS110
		Collection Date		8/11/2013	8/11/2013	8/11/2013	8/11/2013	8/13/2013	8/19/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Sidewall	E Plume-Floor	E Plume-Sidewall
AK102	DRO	mg/Kg	9200	**25000**	610	130	2500	1200 J	960
AK103	RRO	mg/Kg	9200	6300	6800	1300	1600	110	9100

Table H4 MOC POL G/F Plume Excavation A Soil Sample Results

		Sample ID	13NCMOCSS022	13NCMOCSS033[D]	13NCMOCSS023	13NCMOCSS024	13NCMOCSS025	13NCMOCSS026	13NCMOCSS027	13NCMOCSS034[D]
		Laboratory ID	580-39511-1	580-39511-12	580-39511-2	580-39511-3	580-39511-4	580-39511-5	580-39511-6	580-39511-13
		Location ID	13NCMOCSS22	13NCMOCSS22	13NCMOCSS23	13NCMOCSS24	13NCMOCSS25	13NCMOCSS26	13NCMOCSS27	13NCMOCSS27
		Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	G/F Excavation A - Sidewall	G/F Excavation A - Sidewall	G/F Excavation A - Sidewall	G/F Excavation A - Sidewall	G/F Excavation A - Sidewall	G/F Excavation A - Sidewall	G/F Excavation A - Sidewall	G/F Excavation A - Sidewall
AK102	DRO	mg/Kg	9200	**13000**	**12000**	2500	3300	950	5400	8300	7200
AK103	RRO	mg/Kg	9200	940	1100	1600	55	81	53	110	100

		Sample ID	13NCMOCSS028	13NCMOCSS029	13NCMOCSS038	13NCMOCSS039	13NCMOCSS040	13NCMOCSS044[D]	13NCMOCSS103
		Laboratory ID	580-39511-7	580-39511-8	580-39566-4	580-39566-5	580-39566-6	580-39566-10	580-39839-1
		Location ID	13NCMOCSS28	13NCMOCSS29	13NCMOCSS38	13NCMOCSS39	13NCMOCSS40	13NCMOCSS40	13NCMSS103
		Collection Date	7/25/2013	7/25/2013	7/29/2013	7/29/2013	7/29/2013	7/29/2013	8/15/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	G/F Excavation A - Sidewall	G/F Excavation A - Sidewall	G/F Excavation A - Floor	G/F Excavation A - Floor	G/F Excavation A - Floor	G/F Excavation A - Floor	G/F Excavation A Sidewall
AK102	DRO	mg/Kg	9200	2300	950	1800	4100	3100	3300	4600
AK103	RRO	mg/Kg	9200	470	1500	130 B	170 B	54 J B	46 J B	110

Notes:

*Regulatory Limit Set in 2009 Decision Document

BOLD = indicates sample concentration is above cleanup level

[D]sample is a duplicate of the previous sample

DRO = diesel range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

MOC = Main Operations Complex

POL = petroleum, oil and lubricants

RRO = residual range organics

B = analyte detected in the blank, result with potential high bias

Table H5 MOC POL G Plume Excavation B Soil Sample Results

			Sample ID	13NCMOCSS030	13NCMOCSS031	13NCMOCSS032	13NCMOCSS041
			Laboratory ID	580-39511-9	580-39511-10	580-39511-11	580-39566-7
			Location ID	13NCMOCSS30	13NCMOCSS31	13NCMOCSS32	13NCMOCSS41
			Collection Date	7/25/2013	7/25/2013	7/25/2013	7/29/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	G Plume-Sidewall	G Plume-Sidewall	G Plume-Sidewall	G Plume-Floor
AK102	DRO	mg/Kg	9200	13 J	8.8 J	3.4 J	1500
AK103	RRO	mg/Kg	9200	ND (31)	190	ND (29)	63 B

Notes:

*Cleanup level set in 2009 Decision Document

DRO = diesel range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

MOC = Main Operations Complex

ND = result is non-detect with limit of detection (LOD) in parentheses

POL = petroleum, oil and lubricants

RRO = residual range organics

B = analyte detected in the blank, result with potential high bias

Table H6 MOC POL B Plume Soil Sample Results

		Sample ID	13NCMOCSS045	13NCMOCSS046	13NCMOCSS047	13NCMOCSS059[D]	13NCMOCSS048	13NCMOCSS049	13NCMOCSS050	13NCMOCSS051
		Laboratory ID	580-39566-11	580-39566-12	580-39566-13	580-39566-25	580-39566-14	580-39566-15	580-39566-16	580-39566-17
		Location ID	13NCMOCSS45	13NCMOCSS46	13NCMOCSS47	13NCMOCSS47	13NCMOCSS48	13NCMOCSS49	13NCMOCSS50	13NCMOCSS51
		Collection Date	7/30/2013	7/30/2013	7/30/2013	7/30/2013	7/30/2013	7/30/2013	7/30/2013	7/30/2013
Analysis Method	Analyte	Unit	Cleanup Level *	B Plume-Sidewall	B Plume-Sidewall	B Plume-Sidewall	B Plume-Sidewall	B Plume-Sidewall	B Plume-Sidewall	B Plume-Sidewall	B Plume-Sidewall
AK102	DRO	mg/Kg	9200	2900	2500	4400	5400	4400	6700	3500	180
AK103	RRO	mg/Kg	9200	550	47 J B	71 B	71 B	58 B	77 B	1500	1000

		Sample ID	13NCMOCSS052	13NCMOCSS053	13NCMOCSS054	13NCMOCSS055	13NCMOCSS056	13NCMOCSS057	13NCMOCSS058
		Laboratory ID	580-39566-18	580-39566-19	580-39566-20	580-39566-21	580-39566-22	580-39566-23	580-39566-24
		Location ID	13NCMOCSS52	13NCMOCSS53	13NCMOCSS54	13NCMOCSS55	13NCMOCSS56	13NCMOCSS57	13NCMOCSS58
		Collection Date	7/30/2013	7/30/2013	7/30/2013	7/30/2013	7/30/2013	7/30/2013	7/30/2013
Analysis Method	Analyte	Unit	Cleanup Level *	B Plume-Floor	B Plume-Floor	B Plume-Floor	B Plume-Floor	B Plume-Floor	B Plume-Floor	B Plume-Floor
AK102	DRO	mg/Kg	9200	4800	5100	4900	1200	3300 J	2300	2600
AK103	RRO	mg/Kg	9200	24 J	150	690	27 J	33 J	66	150

		Sample ID	13NCMOCSS090	13NCMOCSS102[D]	13NCMOCSS091	13NCMOCSS092	13NCMOCSS093	13NCMOCSS094[E]	13NCMOCSS095	13NCMOCSS096
		Laboratory ID	580-39794-5	580-39794-17	580-39794-6	580-39794-7	580-39794-8	580-39794-9	580-39794-10	580-39794-11
		Location ID	13NCMSS090	13NCMSS102	13NCMSS091	13NCMSS092	13NCMSS093	13NCMSS094	13NCMSS095	13NCMSS096
		Collection Date	8/13/2013	8/13/2013	8/13/2013	8/13/2013	8/13/2013	8/13/2013	8/13/2013	8/13/2013
Analysis Method	Analyte	Unit	Cleanup Level *	B Plume-Sidewall	B Plume-Sidewall	B Plume-Sidewall	B Plume-Sidewall	B Plume-Sidewall	B Plume-Sidewall	B Plume-Sidewall	B Plume-Sidewall
AK102	DRO	mg/Kg	9200	6000	5900	4700	4200	1000	**9900**	2400	4900
AK103	RRO	mg/Kg	9200	57	51 J	120	250	150	140	93	58

		Sample ID	13NCMOCSS097	13NCMOCSS098	13NCMOCSS099	13NCMOCSS115	13NCMOCSS116	13NCMOCSS117
		Laboratory ID	580-39794-12	580-39794-13	580-39794-14	580-39925-5	580-39925-6	580-39925-7
		Location ID	13NCMSS097	13NCMSS098	13NCMSS099	13NCMSS115	13NCMSS116	13NCMSS117
		Collection Date	8/13/2013	8/13/2013	8/13/2013	8/21/2013	8/20/2013	8/22/2013
Analysis Method	Analyte	Unit	Cleanup Level *	B Plume-Sidewall	B Plume-Floor	B Plume-Floor	B Plume-Sidewall	B Plume-Sidewall	B Plume-Sidewall
AK102	DRO	mg/Kg	9200	4200	7200	9100	4200	4400	6000
AK103	RRO	mg/Kg	9200	59	200	150	270	94	1100

Notes:

*Cleanup level set in 2009 Decision Document

BOLD = indicates sample concentration is above cleanup level

[D]sample is a duplicate of the previous sample

[E]sample location was excavated in 2013.

DRO = diesel range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

MOC = Main Operations Complex

POL = petroleum, oil and lubricants

RRO = residual range organics

Table H7 MOC POL I Plume Soil Sample Results

		Sample ID		13NCMOCSS060	13NCMOCSS061	13NCMOCSS062	13NCMOCSS063	13NCMOCSS064	13NCMOCSS065	13NCMOCSS066	13NCMOCSS067	13NCMOCSS081
		Laboratory ID		580-39754-1	580-39754-2	580-39754-3	580-39754-4	580-39754-5	580-39754-6	580-39754-7	580-39754-8	580-39754-22
		Location ID		13NCMOCSS60	13NCMOCSS61	13NCMOCSS62	13NCMOCSS63	13NCMOCSS64	13NCMOCSS65	13NCMOCSS66	13NCMOCSS67	13NCMOCSS81
		Collection Date		8/5/2013	8/5/2013	8/5/2013	8/5/2013	8/5/2013	8/5/2013	8/5/2013	8/5/2013	8/11/2013
Analysis Method	Analyte	Unit	Cleanup Level *	I Plume-Sidewall	I Plume-Sidewall	I Plume-Sidewall	I Plume-Sidewall	I Plume-Sidewall	I Plume-Sidewall	I Plume-Floor	I Plume-Floor	I Plume-Sidewall
AK102	DRO	mg/Kg	9200	**10000**	4300	4400	5900	6200	310	370 QH	**9900**	130
AK103	RRO	mg/Kg	9200	480	41 J	37 J	26 J	380	3600	1400 QH	66	2600

		Sample ID		13NCMOCSS082	13NCMOCSS083	13NCMOCSS084	13NCMOCSS086	13NCMOCSS087	13NCMOCSS088	13NCMOCSS101[D]	13NCMOCSS089
		Laboratory ID		580-39754-23	580-39754-24	580-39754-25	580-39794-1	580-39794-2	580-39794-3	580-39794-16	580-39794-4
		Location ID		13NCMOCSS82	13NCMOCSS83	13NCMOCSS84	13NCMSS086	13NCMSS087	13NCMSS088	13NCMSS101	13NCMSS089
		Collection Date		8/11/2013	8/11/2013	8/11/2013	8/13/2013	8/13/2013	8/13/2013	8/13/2013	8/13/2013
Analysis Method	Analyte	Unit	Cleanup Level *	I Plume-Sidewall	I Plume-Sidewall	I Plume-Sidewall	I Plume-Sidewall	I Plume-Sidewall	I Plume-Sidewall	I Plume-Sidewall	I Plume-Sidewall
AK102	DRO	mg/Kg	9200	39	ND (6.9)	7000	120	95	160	110	**13000**
AK103	RRO	mg/Kg	9200	640	40 J	520	1300	480	110	180	200

Notes:

*Cleanup level set in 2009 Decision Document

BOLD = indicates sample concentration is above cleanup level

[D]sample is a duplicate of the previous sample

DRO = diesel range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

MOC = Main Operations Complex

POL = petroleum, oil and lubricants

QH = laboratory quality issue, result with potential high bias

RRO = residual range organics

Table H8 MOC POL A2 Plume Soil Sample Results

		Sample ID	13NCMOCSS104	13NCMOCSS105	13NCMOCSS106	13NCMOCSS107	13NCMOCSS108	13NCMOCSS109	13NCMOCSS110	13NCMOCSS111
		Laboratory ID	580-39839-2	580-39839-3	580-39839-4	580-39839-5	580-39839-6	580-39839-7	580-39839-8	580-39925-1
		Location ID	13NCMSS104	13NCMSS105	13NCMSS106	13NCMSS107	13NCMSS108	13NCMSS109	13NCMSS110	13NCMSS111
		Collection Date	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/19/2013	8/16/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	A2 Plume-Floor	A2 Plume-Floor	A2 Plume-Floor	A2 Plume-Floor	A2 Plume-Floor	A2 Plume-Floor	E Plume-Sidewall	A2 Plume-Sidwall
AK102	DRO	mg/Kg	9200	140	2300	6600	3500	64	49	960	580
AK103	RRO	mg/Kg	9200	51 J	70	59	200	390	180	9100	63

		Sample ID	13NCMOCSS112	13NCMOCSS114[D]	13NCMOCSS113	13NCMOCSS118	13NCMOCSS119	13NCMOCSS120	13NCMOCSS121	13NCMOCSS122	13NCMOCSS123
		Laboratory ID	580-39925-2	580-39925-4	580-39925-3	580-39959-28	580-39959-29	580-39959-30	580-39959-31	580-39959-32	580-39959-33
		Location ID	13NCMSS112	13NCMSS114	13NCMSS113	13CMSS118	13CMSS119	13CMSS120	13CMSS121	13CMSS122	13CMSS123
		Collection Date	8/16/2013	8/16/2013	8/21/2013	8/17/2013	8/21/2013	8/21/2013	8/22/2013	8/22/2013	8/22/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall
AK102	DRO	mg/Kg	9200	3000	3000	5700	3800	4800	64	1600	4700	2400
AK103	RRO	mg/Kg	9200	310	330	51 J	110	200	310	83	190	49 J

		Sample ID	13NCMOCSS124	13NCMOCSS126[D]	13NCMOCSS125	13NCMOCSS127	13NCMOCSS128	13NCMOCSS133[D]	13NCMOCSS129	13NCMOCSS130	13NCMOCSS131
		Laboratory ID	580-39959-34	580-39959-36	580-39959-35	580-40004-1	580-40004-2	580-40004-7	580-40004-3	580-40004-4	580-40004-5
		Location ID	13CMSS124	13CMSS124	13CMSS125	13NCMSS127	13NCMSS128	13NCMSS128	13NCMSS129	13NCMSS130	13NCMSS131
		Collection Date	8/22/2013	8/22/2013	8/22/2013	8/22/2013	8/24/2013	8/24/2013	8/26/2013	8/26/2013	8/26/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall
AK102	DRO	mg/Kg	9200	3800	3800	3400	200	1500	1400	1600	4800	3800
AK103	RRO	mg/Kg	9200	110	150	36 J	690	1000	910	150	220	130

		Sample ID	13NCMOCSS132	13NCMOCSS134	13NCMOCSS135	13NCMOCSS136	13NCMOCSS139[D]	13NCMOCSS137	13NCMOCSS138	13NCMOCSS140	13NCMOCSS141
		Laboratory ID	580-40004-6	580-40004-8	580-40004-9	580-40004-10	580-40004-13	580-40004-11	580-40004-12	580-40072-1	580-40072-2
		Location ID	13NCMSS132	13NCMSS134	13NCMSS135	13NCMSS136	13NCMSS136	13NCMSS137	13NCMSS138	13NCMSS140	13NCMSS141
		Collection Date	8/26/2013	8/26/2013	8/26/2013	8/26/2013	8/27/2013	8/26/2013	8/27/2013	9/1/2013	9/1/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Floor	A2 Plume-Floor
AK102	DRO	mg/Kg	9200	3400	2500	1400	3300	3700	1800	580	770	3600
AK103	RRO	mg/Kg	9200	53	70	2500	45 J	38 J	190	250	83	22 J

Notes:

*Cleanup level set in 2009 Decision Document

BOLD = indicates sample concentration is above cleanup level

[D]sample is a duplicate of the previous sample

DRO = diesel range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

MOC = Main Operations Complex

POL = petroleum, oil and lubricants

QH = laboratory quality issue, result with potential high bias

QL = laboratory quality issue, result with potential low bias

RRO = residual range organics

Table H8 MOC POL A2 Plume Soil Sample Results (continued)

		Sample ID		13NCMOCSS142	13NCMOCSS143	13NCMOCSS144	13NCMOCSS145	13NCMOCSS146	13NCMOCSS147	13NCMOCSS148	13NCMOCSS149	13NCMOCSS152[D]	13NCMOCSS150
		Laboratory ID		580-40072-3	580-40072-4	580-40072-5	580-40072-6	580-40072-7	580-40072-8	580-40072-9	580-40072-10	580-40072-13	580-40072-11
		Location ID		13NCMSS142	13NCMSS143	13NCMSS144	13NCMSS145	13NCMSS146	13NCMSS147	13NCMSS148	13NCMSS149	13NCMSS149	13NCMSS150
		Collection Date		9/1/2013	9/1/2013	9/1/2013	9/1/2013	9/1/2013	8/26/2013	9/1/2013	9/1/2013	9/1/2013	8/26/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	A2 Plume-Floor	A2 Plume-Floor	A2 Plume-Floor	A2 Plume-Floor	A2 Plume-Floor	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall	A2 Plume-Sidewall
AK102	DRO	mg/kg	9200	870	180	1100 QH	3000	4000	4600	210	120	130	2000
AK103	RRO	mg/kg	9200	12 J	55 J	540 QL	840	140	90	150	520	610	140

		Sample ID		13NCMOCSS151	13NCMOCSS153[D]
		Laboratory ID		580-40072-12	580-40072-14
		Location ID		13NCMSS151	13NCMSS151
		Collection Date		9/1/2013	9/1/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***	A2 Plume-Sidewall	A2 Plume-Sidewall
AK102	DRO	mg/kg	9200	2700	2400
AK103	RRO	mg/kg	9200	320	210

Table H9 MOC Surface Water Monitoring Sample Results

		Sample ID	13NCMOCWA001	13NCMOCWA004[D]	13NCMOCWA002	13NCMOCWA003	13NCMOCSWA005	13NCMOCSWA006	13NCMOCSWA007	13NC28MOCSW08	13NC28MOCSW09	13NC28MOCSW010
		Laboratory ID	580-39367-1	580-39367-4	580-39367-2	580-39367-3	580-39471-1	580-39471-2	580-39471-3	580-40323-3	580-40323-4	580-40323-5
		Location ID	MOCSW01	MOCSW01	MOCSW02	MOCSW03	MOCSW03	MOCSW02	MOCSW01	MOCSW01	MOCSW02	MOCSW03
		Collection Date	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/23/2013	7/23/2013	7/23/2013	9/15/2013	9/15/2013	9/15/2013
Analysis Method	**Analyte**	**Unit**	**Regulatory Level***	(Pre-Excavation)				Mid-Excavation			Post-Excavation		
8260B	Benzene	mg/L		ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.0002)	ND (0.0002)	ND (0.0002)
8260B	Ethylbenzene	mg/L		ND (0.00045)	ND (0.00045)	ND (0.00045)	0.00049 J	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.0002)	ND (0.0002)	0.00029 J
8260B	m-Xylene & p-Xylene	mg/L		ND (0.0009)	ND (0.0009)	ND (0.0009)	0.00063 J	ND (0.0009)	ND (0.0009)	ND (0.0009)	ND (0.0008)	ND (0.0008)	0.001 J
8260B	o-Xylene	mg/L		ND (0.00045)	ND (0.00045)	ND (0.00045)	0.0011	ND (0.00045)	ND (0.00045)	ND (0.00045)	ND (0.0004)	ND (0.0004)	0.0014
8260B	Xylenes (Total)	mg/L		ND (0.00135)	ND (0.00135)	ND (0.00135)	0.00173 J	ND (0.00135)	ND (0.00135)	ND (0.00135)	ND (0.0012)	ND (0.0012)	0.0024 J
8260B/DoD	Toluene	mg/L		0.00029 J QH	0.00029 J QH	ND (0.00045)	0.0013	ND (0.00045)	0.00041 J	ND (0.00045)	ND (0.0004)	ND (0.0004)	0.0025
Total Aromatic Hydrocarbons (TAH)		mg/L	0.01	0.00254	0.00254	0.0027	0.00397	0.0027	0.00266	0.0027	0.002	0.002	0.00539
8270C SIM	1-Methylnaphthalene	mg/L		0.00031	0.00026	0.000041	0.000055	0.00016 QN	0.0025 QN	0.00033 QN	0.00012 QL	0.000019 J	0.003
8270C SIM	2-Methylnaphthalene	mg/L		ND (0.000015)	0.00012	0.0068 J	0.000025 J	0.00015 QN	0.0025 QN	0.00016 QN	ND (0.000015) QL	ND (0.000021)	0.0014
8270C SIM	Acenaphthene	mg/L		0.000047	ND (0.000015)	ND (0.000015)	ND (0.000015)	0.000018 J QN	0.00011 QN	ND (0.000015)	ND (0.000015) QL	ND (0.000021)	0.00012
8270C SIM	Acenaphthylene	mg/L		0.000012 J	0.000019 J	ND (0.000015)	ND (0.000015)	ND (0.000015)	0.00005 QN	ND (0.000015)	ND (0.000015) QL	ND (0.000021)	0.000019 J
8270C SIM	Anthracene	mg/L		ND (0.000015)	ND (0.000015)	0.000014 J	0.0000067 J	ND (0.000015)	0.000014 J	0.000069	ND (0.000015) QL	ND (0.000021)	ND (0.000016)
8270C SIM	Benzo[a]anthracene	mg/L		ND (0.000015)	0.00011	0.0000096 J	ND (0.000015)	ND (0.000015)	0.000034	ND (0.000015)	ND (0.000015) QL	ND (0.000021)	ND (0.000016)
8270C SIM	Benzo[a]pyrene	mg/L		ND (0.000015)	ND (0.000015)	ND (0.000015)	ND (0.000015)	ND (0.000015)	0.00005	ND (0.000015)	ND (0.000015) QL	ND (0.000021)	ND (0.000016)
8270C SIM	Benzo[b]fluoranthene	mg/L		0.00001 J	0.000014 J	0.00001 J	ND (0.000015)	ND (0.000015)	0.000038	ND (0.000015)	ND (0.000015) QL	ND (0.000021)	ND (0.000016)
8270C SIM	Benzo[g,h,i]perylene	mg/L		ND (0.000015)	0.0000085 J	ND (0.000015)	ND (0.000015)	ND (0.000015)	0.000029	ND (0.000015)	ND (0.000015) QL	ND (0.000021)	ND (0.000016)
8270C SIM	Benzo[k]fluoranthene	mg/L		ND (0.000015)	ND (0.000015)	ND (0.000015)	ND (0.000015)	ND (0.000015)	0.000013 J	ND (0.000015)	ND (0.000015) QL	ND (0.000021)	ND (0.000016)
8270C SIM	Chrysene	mg/L		0.0000098 J	0.000016 J	0.000012 J	ND (0.000015)	ND (0.000015)	0.000036	ND (0.000015)	ND (0.000015) QL	ND (0.000021)	ND (0.000016)
8270C SIM	Dibenz(a,h)anthracene	mg/L		ND (0.000015)	ND (0.000015)	ND (0.000015)	ND (0.000015)	ND (0.000015)	0.0000075 J	ND (0.000015)	ND (0.000015) QL	ND (0.000021)	ND (0.000016)
8270C SIM	Fluoranthene	mg/L		ND (0.000015)	ND (0.000015)	0.000045	0.000011 J	0.0000072 J	0.0000069 J	0.000032	0.000015 J QL	ND (0.000021)	0.000014 J
8270C SIM	Fluorene	mg/L		0.000041 MN	0.000027 MN	ND (0.000015)	ND (0.000015)	0.00001 J	0.00048	0.000024	0.000058 QL	ND (0.000021)	0.0002
8270C SIM	Indeno[1,2,3-cd]pyrene	mg/L		ND (0.000015)	0.0000073 J	ND (0.000015)	ND (0.000015)	ND (0.000015)	0.00003	ND (0.000015)	ND (0.000015) QL	ND (0.000021)	ND (0.000016)
8270C SIM	Naphthalene	mg/L		0.00018	0.00015	0.000011 J	0.000021	0.000081 QN	0.0012 QN	0.000045 QN	0.000041 QL	ND (0.000021)	0.00029
8270C SIM	Phenanthrene	mg/L		ND (0.000015)	0.000057	0.000027	ND (0.000015)	0.0000074 J	0.000051	ND (0.000015)	0.000028 QL	0.0000092 J	0.000021
8270C SIM	Pyrene	mg/L		0.000015 J	0.00002	0.000035	0.0000095 J	0.000016 J	0.000016 J	0.000047	0.000038 B QL	0.000011 B	0.000022 B
Total PAHs		mg/L		0.0006128	0.0007638	0.0071246	0.0003137	0.0005996	0.0071554	0.000872	0.00048	0.0003542	0.00523
Total Aqueous Hydrocarbons (TAqH)		mg/L	0.015	0.0031528	0.0033038	0.0098246	0.0042837	0.0032996	0.0098154	0.003572	0.00248	0.0023542	0.01062
AK102	DRO (nC10-<nC25)	mg/L	NS	6.1	5.6	0.85 J ML	1.1	1.1	1.1	5.2	3.2	0.78	2.1
AK103	RRO (nC25-nC36)	mg/L	NS	2.6	2.4	0.83 J ML	0.49	0.40 B	1.1	2.4	1.3	0.15	0.39
	Petrogenic Sheen	NA	No sheen	No Sheen	No Sheen	No Sheen	No Sheen	No Sheen	No Sheen	No Sheen	No Sheen	No Sheen	No Sheen
EPA 180.1	Turbidity	NTU	NS	19.90	19.90	10.20	3.59	4.60	59.90	16.50	>1000	>1000	140

Notes:

BOLD = indicates sample result is above regulatory limit

*Regulatory level from Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances, Drinking Water Criteria, 18AAC70

B = analyte detected in the blank, result with potential high bias

[D]sample is a duplicate of the previous sample

J = result is an estimate

mg/L = milligrams per liter

ML = matrix interference suspected, result with potential low bias.

NA = not applicable

ND (LOQ) B = analyte was detected in the method blank at a concentration similar to the sample result; result was changed to ND with the limit of quantitation (LOQ) in parentheses

ND = result is non-detect with limit of detection (LOD) in parentheses

NS = not specified

NTU = nephelometric turbidity unit

POL = petroleum, oil and lubricants

QH = laboratory quality issue, result with potential high bias

QN = analyte result is considered an estimated value with uncertain bias due to a laboratory quality control failure such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits.

Table H10 Site 13 PCB Confirmation Soil Sample Results

			Sample ID	13NC13SS005	13NC13SS073[D]	13NC13SS006	13NC13SS007	13NC13SS008	13NC13SS009
			Laboratory ID	580-39510-1	580-39510-69	580-39510-2	580-39510-3	580-39510-4	580-39510-5
			Location ID	13-005	13-073	13-006	13-007	13-008	13-009
			Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	Analyte	Unit	Cleanup Level *						
8082	All other PCBs	mg/Kg	1	ND (0.0054)	ND (0.0053)	ND (0.0054)	ND (0.0053)	ND (0.0059)	ND (0.0054)
8082	PCB-1260	mg/Kg	1	0.0076 J	0.0074 J	ND (0.0054)	ND (0.0053)	ND (0.0059)	0.0061 J

			Sample ID	13NC13SS010	13NC13SS011	13NC13SS012	13NC13SS013	13NC13SS014	13NC13SS015
			Laboratory ID	580-39510-6	580-39510-7	580-39510-8	580-39510-9	580-39510-10	580-39510-11
			Location ID	13-010	13-011	13-012	13-013	13-014	13-015
			Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	Analyte	Unit	Cleanup Level *						
8082	All other PCBs	mg/Kg	1	ND (0.0070)	ND (0.0057)	ND (0.0062)	ND (0.0055)	ND (0.0055)	ND (0.0057)
8082	PCB-1260	mg/Kg	1	0.024	0.033	0.0068 J	0.034	ND (0.0055)	0.055

			Sample ID	13NC13SS016	13NC13SS017	13NC13SS018	13NC13SS019	13NC13SS020	13NC13SS021
			Laboratory ID	580-39510-12	580-39510-13	580-39510-14	580-39510-15	580-39510-16	580-39510-17
			Location ID	13-016	13-017	13-018	13-019	13-020	13-021
			Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	Analyte	Unit	Cleanup Level *						
8082	All other PCBs	mg/Kg	1	ND (0.0064)	ND (0.0054)	ND (0.0054)	ND (0.0056)	ND (0.0054)	ND (0.0057)
8082	PCB-1260	mg/Kg	1	0.087	0.27	0.025	0.014	0.0066 J	0.0041 J

Notes:
*Cleanup level set in 2009 Decision Document
[D]sample is a duplicate of the previous sample
J = result is an estimate
mg/Kg = milligrams per kilogram
ND = Result non-detect with limit of detection in parentheses.
PCB = polychlorinated biphenyl
QL-Quality issue with potential low bias

Table H10 Site 13 PCB Confirmation Soil Sample Results (continued)

		Sample ID	13NC13SS022	13NC13SS023	13NC13SS024	13NC13SS025	13NC13SS026	13NC13SS027
		Laboratory ID	580-39510-18	580-39510-19	580-39510-20	580-39510-21	580-39510-22	580-39510-23
		Location ID	13-022	13-023	13-024	13-025	13-026	13-027
		Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	Analyte	Unit	Cleanup Level *					
8082	All other PCBs	mg/Kg	1	ND (0.0055)	ND (0.0056)	ND (0.0057)	ND (0.0053)	ND (0.0054)	ND (0.0068)
8082	PCB-1260	mg/Kg	1	0.13	ND (0.0056)	ND (0.0057)	ND (0.0053)	ND (0.0054)	ND (0.0068)

		Sample ID	13NC13SS028	13NC13SS074[D]	13NC13SS029	13NC13SS030	13NC13SS075[D]	13NC13SS031
		Laboratory ID	580-39510-24	580-39510-70	580-39510-25	580-39510-26	580-39510-71	580-39510-27
		Location ID	13-028	13-074	13-029	13-030	13-075	13-031
		Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	Analyte	Unit	Cleanup Level *					
8082	All other PCBs	mg/Kg	1	ND (0.0067)	ND (0.0066)	ND (0.0054)	ND (0.0056)	ND (0.0051)	ND (0.0050)
8082	PCB-1260	mg/Kg	1	0.088	0.088	0.0047 J	0.035	0.025	0.019

		Sample ID	13NC13SS032	13NC13SS033	13NC13SS076[D]	13NC13SS034	13NC13SS035	13NC13SS036
		Laboratory ID	580-39510-28	580-39510-29	580-39510-72	580-39510-30	580-39510-31	580-39510-32
		Location ID	13-032	13-033	13-076	13-034	13-035	13-036
		Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	Analyte	Unit	Cleanup Level *					
8082	All other PCBs	mg/Kg	1	ND (0.0053)	ND (0.0052)	ND (0.0052)	ND (0.0056)	ND (0.0058)	ND (0.0063)
8082	PCB-1260	mg/Kg	1	0.046	ND (0.0052)	ND (0.0052)	ND (0.0056)	ND (0.0058)	0.026

Notes:
*Cleanup level set in 2009 Decision Document
[D]sample is a duplicate of the previous sample
J = result is an estimate
mg/Kg = milligrams per kilogram
ND = Result non-detect with limit of detection in parentheses.
PCB = polychlorinated biphenyl
QL-Quality issue with potential low bias

Table H10 Site 13 PCB Confirmation Soil Sample Results (continued)

		Sample ID	13NC13SS037	13NC13SS038	13NC13SS039	13NC13SS077[D]	13NC13SS040	13NC13SS041
		Laboratory ID	580-39510-33	580-39510-34	580-39510-35	580-39510-73	580-39510-36	580-39510-37
		Location ID	13-037	13-038	13-039	13-077	13-040	13-041
		Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	Analyte	Unit	Cleanup Level *					
8082	All other PCBs	mg/Kg	1	ND (0.0053)	ND (0.0048)	ND (0.0052)	ND (0.0055)	ND (0.0053)	ND (0.0052)
8082	PCB-1260	mg/Kg	1	ND (0.0053)	ND (0.0048)	ND (0.0052)	ND (0.0055)	ND (0.0053)	0.010

		Sample ID	13NC13SS042	13NC13SS043	13NC13SS044	13NC13SS045	13NC13SS046	13NC13SS078[D]
		Laboratory ID	580-39510-38	580-39510-39	580-39510-40	580-39510-41	580-39510-42	580-39510-74
		Location ID	13-042	13-043	13-044	13-045	13-046	13-078
		Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	Analyte	Unit	Cleanup Level *					
8082	All other PCBs	mg/Kg	1	ND (0.0055)	ND (0.0051)	ND (0.0052)	ND (0.0052)	ND (0.0050)	ND (0.0050)
8082	PCB-1260	mg/Kg	1	ND (0.0055)	0.011	0.11	0.082	ND (0.0050)	ND (0.0050)

		Sample ID	13NC13SS047	13NC13SS048	13NC13SS049	13NC13SS050	13NC13SS051	13NC13SS052
		Laboratory ID	580-39510-43	580-39510-44	580-39510-45	580-39510-46	580-39510-47	580-39510-48
		Location ID	13-047	13-048	13-049	13-050	13-051	13-052
		Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	Analyte	Unit	Cleanup Level *					
8082	All other PCBs	mg/Kg	1	ND (0.0053)	ND (0.0049)	ND (0.0049)	ND (0.0052)	ND (0.0051)	ND (0.0053)
8082	PCB-1260	mg/Kg	1	0.53	ND (0.0049)	0.020	0.18	0.16	0.026

Notes:
*Cleanup level set in 2009 Decision Document
[D]sample is a duplicate of the previous sample
J = result is an estimate
mg/Kg = milligrams per kilogram
ND = Result non-detect with limit of detection in parentheses.
PCB = polychlorinated biphenyl
QL-Quality issue with potential low bias

Table H10 Site 13 PCB Confirmation Soil Sample Results (continued)

		Sample ID	13NC13SS053	13NC13SS054	13NC13SS055	13NC13SS079[D]	13NC13SS056	13NC13SS057
		Laboratory ID	580-39510-49	580-39510-50	580-39510-51	580-39510-75	580-39510-52	580-39510-53
		Location ID	13-053	13-054	13-055	13-079	13-056	13-057
		Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	Analyte	Unit	Cleanup Level *					
8082	All other PCBs	mg/Kg	1	ND (0.0057)	ND (0.0056)	ND (0.0050)	ND (0.0050)	ND (0.0056)	ND (0.0055)
8082	PCB-1260	mg/Kg	1	0.019	0.012	ND (0.0050)	ND (0.0050)	0.014	ND (0.0055)

		Sample ID	13NC13SS058	13NC13SS059	13NC13SS060	13NC13SS061	13NC13SS062	13NC13SS063
		Laboratory ID	580-39510-54	580-39510-55	580-39510-56	580-39510-57	580-39510-58	580-39510-59
		Location ID	13-058	13-059	13-060	13-061	13-062	13-063
		Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	Analyte	Unit	Cleanup Level *					
8082	All other PCBs	mg/Kg	1	ND (0.0053)	ND (0.0055)	ND (0.0052)	ND (0.0053)	ND (0.0057)	ND (0.0053)
8082	PCB-1260	mg/Kg	1	0.091	0.15 QL	0.81	ND (0.0053)	0.093	0.21

		Sample ID	13NC13SS064	13NC13SS065	13NC13SS066	13NC13SS067	13NC13SS068	13NC13SS069
		Laboratory ID	580-39510-60	580-39510-61	580-39510-62	580-39510-63	580-39510-64	580-39510-65
		Location ID	13-064	13-065	13-066	13-067	13-068	13-069
		Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	Analyte	Unit	Cleanup Level *					
8082	All other PCBs	mg/Kg	1	ND (0.0053)	ND (0.0058)	ND (0.0053)	ND (0.0054)	ND (0.0055)	ND (0.0061)
8082	PCB-1260	mg/Kg	1	0.053	ND (0.0058)	ND (0.0053)	ND (0.0054)	0.11	0.024

Notes:
*Cleanup level set in 2009 Decision Document
[D]sample is a duplicate of the previous sample
J = result is an estimate
mg/Kg = milligrams per kilogram
ND = Result non-detect with limit of detection in parentheses.
PCB = polychlorinated biphenyl
QL-Quality issue with potential low bias

Table H10 Site 13 PCB Confirmation Soil Sample Results (continued)

			Sample ID	13NC13SS070	13NC13SS071	13NC13SS072
			Laboratory ID	580-39510-66	580-39510-67	580-39510-68
			Location ID	13-070	13-071	13-072
			Collection Date	7/25/2013	7/25/2013	7/25/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***			
8082	All other PCBs	mg/Kg	1	ND (0.0058)	ND (0.0064)	ND (0.0052)
8082	PCB-1260	mg/Kg	1	ND (0.0058)	0.0093 J	0.024

			Sample ID	13NC13SS001	13NC13SS002
			Laboratory ID	580-39361-1	580-39361-2
			Location ID	13-001	13-002
			Collection Date	7/15/2013	7/15/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***		
8082	All other PCBs	mg/Kg	1	ND (0.010)	ND (0.010)
8082	PCB-1260	mg/Kg	1	0.55 J	ND (0.0052)

			Sample ID	13NC13SS003	13NC13SS004D
			Laboratory ID	580-39361-3	580-39361-4
			Location ID	13-003	13-004
			Collection Date	7/15/2013	7/15/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level ***		
8082	All other PCBs	mg/Kg	1	ND (0.010)	ND (0.010)
8082	PCB-1260	mg/Kg	1	ND (0.0051)	ND (0.0050)

Notes:
*Cleanup level set in 2009 Decision Document
[D]sample is a duplicate of the previous sample
J = result is an estimate
mg/Kg = milligrams per kilogram
ND = Result non-detect with limit of detection in parentheses.
PCB = polychlorinated biphenyl
QL-Quality issue with potential low bias

Table H11 Site 31 Confirmation Soil Sample Results

			Sample ID	13NC31SS001	13NC31SS002[D]
			Laboratory ID	580-39359-1	580-39359-2
			Location ID	31-001	31-002
			Collection Date	7/13/2013	7/13/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level**		
8082	PCB-1016	mg/Kg	1	ND (0.0052)	ND (0.0052)
8082	PCB-1221	mg/Kg	1	ND (0.010)	ND (0.010)
8082	PCB-1232	mg/Kg	1	ND (0.010)	ND (0.010)
8082	PCB-1242	mg/Kg	1	ND (0.0052)	ND (0.0052)
8082	PCB-1248	mg/Kg	1	ND (0.0052)	ND (0.0052)
8082	PCB-1254	mg/Kg	1	ND (0.0052)	ND (0.0052)
8082	PCB-1260	mg/Kg	1	0.22 J MH	0.44

Notes:

[D]sample is a duplicate of the previous sample

J = Result is an estimate

MH = matrix interference is suspected, result with potential high bias.

mg/Kg = milligram per kilogram

ND = result is non-detect with the limit of detection (LOD) in parentheses

Table H12 Site 21 Surface Water Sample Results

			Sample ID	13NC21SWA01	13NC21SWA02	13NC21SWA03[D]	13NC21SW004	13NC21SW005
			Laboratory ID	580-39336-58	580-39336-59	580-39336-60	580-39926-1	580-39926-2
			Location ID	13NC21SW02 (21-SW02)	13NC21SW01 (21-SW01)	13NC21SW01 (21-SW01)	21-SW-01	21-SW-02
			Collection Date	7/10/2013	7/10/2013	7/10/2013	8/22/2013	8/23/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level***	Pre-Excavation Surface Water			Mid-Excavation Surface Water	
6020	Arsenic-Total	mg/L	0.01	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)
6020	Arsenic-Dissolved	mg/L	0.01	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)

			Sample ID	13NC21SWA06	13NC21SWA07	13NC21SW008	13NC21SW009
			Laboratory ID	280-46414-2	280-46414-3	580-40324-1	580-40324-2
			Location ID	13NC21SW01 (21-SW01)	13NC21SW02 (21-SW02)	21-SW-01	21-SW-02
			Collection Date	9/7/2013	9/7/2013	9/15/2013	9/15/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level***	Post-Excavation Surface Water		Post Backfill	
6020	Arsenic-Total	mg/L	0.01	ND (0.001)	0.00039 J	ND (0.004)	ND (0.004)
6020	Arsenic-Dissolved	mg/L	0.01	ND (0.001)	ND (0.001)	ND (0.004)	ND (0.004)

Notes:

*Cleanup level from Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances, Drinking Water Criteria, 18AAC70

[D]sample is duplicate of the previous sample

J = result is an estimate

mg/L = milligrams per liter

ND = result is non-detect with limit of detection (LOD) in parentheses

Table H13 Site 21 Soil Boring Sample Results

		Sample ID	13NC21SS01-0.5	13NC21SS01-2	13NC21SS01-3	13NC21SS02-0.5	13NC21SS02-2	13NC21SS02-3	13NC21SS03-0.5
		Laboratory ID	580-39336-1	580-39336-2	580-39336-3	580-39336-4	580-39336-5	580-39336-6	580-39336-7
		Location ID	13NC21SB01	13NC21SB01	13NC21SB01	13NC21SB02	13NC21SB02	13NC21SB02	13NC21SB03
		Collection Date	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013
Analysis Method	**Analyte**	**Unit**	SB01-0.5'	SB01-2.0'	SB01-3.0'	SB02-0.5'	SB02-2.0'	SB02-3.0'	SB03-0.5'
6020	Arsenic	mg/Kg	**27**	4.2	5.3	6.5	5.6	4.0	5.5
[a]Cleanup Level 11		mg/Kg							

		Sample ID	13NC21SS03-2	13NC21SS03-3	13NC21SS04-0.5	13NC21SS04-2	13NC21SS04-3	13NC21SS05-0.5
		Laboratory ID	580-39336-8	580-39336-9	580-39336-10	580-39336-11	580-39336-12	580-39336-13
		Location ID	13NC21SB03	13NC21SB03	13NC21SB04	13NC21SB04	13NC21SB04	13NC21SB05
		Collection Date	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013
Analysis Method	**Analyte**	**Unit**	SB03-2.0'	SB03-3.0'	SB04-0.5'	SB04-2.0'	SB04-3.0'	SB05-0.5'
6020	Arsenic	mg/Kg	3.1	4.0	4.6	5.8	8.1	**12**
[a]Cleanup Level 11		mg/Kg						

		Sample ID	13NC21SS05-2	13NC21SS05-2.5[D]	13NC21SS05-3	13NC21SS06-0.5	13NC21SS06-2	13NC21SS06-3	13NC21SS07-0.5
		Laboratory ID	580-39336-14	580-39336-53	580-39336-15	580-39336-16	580-39336-17	580-39336-18	580-39336-19
		Location ID	13NC21SB05	13NC21SB05	13NC21SB05	13NC21SB06	13NC21SB06	13NC21SB06	13NC21SB07
		Collection Date	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013
Analysis Method	**Analyte**	**Unit**	SB05-2.0'		SB05-3.0'	SB06-0.5'	SB06-2.0'	SB06-3.0'	SB07-0.5'
6020	Arsenic	mg/Kg	4.1	4.2	3.9	2.6	3.8	6.0	**210**
[a]Cleanup Level 11		mg/Kg							

		Sample ID	13NC21SS07-2	13NC21SS07-2.5[D]	13NC21SS07-3	13NC21SS08-0.5	13NC21SS08-2	13NC21SS08-3	13NC21SS09-0.5
		Laboratory ID	580-39336-20	580-39336-54	580-39336-21	580-39336-22	580-39336-23	580-39336-24	580-39336-25
		Location ID	13NC21SB07	13NC21SB07	13NC21SB07	13NC21SB08	13NC21SB08	13NC21SB08	13NC21SB09
		Collection Date	7/12/2013	7/12/2013	7/12/2013	7/11/2013	7/12/2013	7/11/2013	7/12/2013
Analysis Method	**Analyte**	**Unit**	SB07-2.0'		SB07-3.0'	SB08-0.5'	SB08-2.0'	SB08-3.0'	SB09-0.5'
6020	Arsenic	mg/Kg	6.6	6.5	4.2 J	**43**	3.5	2.2	**16**
[a]Cleanup Level 11		mg/Kg							

Notes:

BOLD = Indicates sample concentration above cleanup level.

[a]Site-specific cleanup level established in 2009 Decision Document

[D]sample is a duplicate of the previous sample

J = result is an estimate

mg/Kg = milligrams per kilogram

QN = Analyte result considered an estimated with uncertain bias. Field duplicates do not meet relative percent difference (RPD) limits but meet other acceptance criteria.

Table H13 Site 21 Soil Boring Sample Results (continued)

		Sample ID	13NC21SS09-2	13NC21SS09-3	13NC21SS10-0.5	13NC21SS10-2	13NC21SS10-2.5[b]	13NC21SS10-3	13NC21SS11-0.5
		Laboratory ID	58039336-26	58039336-27	58039336-28	58039336-29	58039336-55	58039336-30	58039336-31
		Location ID	13NC21SB09	13NC21SB09	13NC21SB10	13NC21SB10	13NC21SB10	13NC21SB10	13NC21SB11
		Collection Date	7/12/2013	7/12/2013	7/11/2013	7/12/2013	7/12/2013	7/12/2013	7/11/2013
Analysis Method	Analyte	Unit	SB09-2.0'	SB09-3.0'	SB09-0.5'	SB10-2.0'		SB10-3.0'	SB11-0.5'
6020	Arsenic	mg/Kg	6.9	5.4	**23**	4.2	4.1	**15**	**21**
[a]Cleanup Level 11		mg/Kg							

		Sample ID	13NC21SS11-2	13NC21SS11-2.5[b]	13NC21SS11-3	13NC21SS12-0.5	13NC21SS12-2	13NC21SS12-3	13NC21SS13-0.5
		Laboratory ID	58039336-32	58039336-56	58039336-33	58039336-34	58039336-35	58039336-36	58039336-37
		Location ID	13NC21SB11	13NC21SB11	13NC21SB11	13NC21SB12	13NC21SB12	13NC21SB12	13NC21SB13
		Collection Date	7/12/2013	7/12/2013	7/12/2013	7/11/2013	7/12/2013	7/12/2013	7/11/2013
Analysis Method	Analyte	Unit	SB11-2.0'		SB11-3.0'	SB12-0.5'	SB12-2.0'	SB12-3.0'	SB13-0.5'
6020	Arsenic	mg/Kg	**29**	**34**	**30**	**24**	**34**	**14**	**14**
[a]Cleanup Level 11		mg/Kg							

		Sample ID	13NC21SS13-2	13NC21SS13-3	13NC21SS14-0.5	13NC21SS14-2	13NC21SS14-3	13NC21SS15-0.5	13NC21SS15-1[b]
		Laboratory ID	58039336-38	58039336-39	58039336-40	58039336-41	58039336-42	58039336-43	58039336-57
		Location ID	13NC21SB13	13NC21SB13	13NC21SB14	13NC21SB14	13NC21SB14	13NC21SB15	13NC21SB15
		Collection Date	7/12/2013	7/12/2013	7/11/2013	7/11/2013	7/11/2013	7/12/2013	7/12/2013
Analysis Method	Analyte	Unit	SB13-2.0'	SB13-3.0'	SB14-0.5'	SB14-2.0'	SB14-3.0'	SB15-0.5'	
6020	Arsenic	mg/Kg	3.8	1.1	11	5.5	5.9	**88 QN**	**49 QN**
[a]Cleanup Level 11		mg/Kg							

Table H13 Site 21 Soil Boring Sample Results (continued)

		Sample ID	13NC21SS15-2	13NC21SS15-3	13NC21SS16-0.5	13NC21SS16-2	13NC21SS16-3	13NC21SS17-0.5	13NC21SS17-2
		Laboratory ID	58039336-44	58039336-45	58039336-46	58039336-47	58039336-48	58039336-49	58039336-50
		Location ID	13NC21SB15	13NC21SB15	13NC21SB16	13NC21SB16	13NC21SB16	13NC21SB17	13NC21SB17
		Collection Date	7/12/2013	7/12/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013
Analysis Method	**Analyte**	**Unit**	SB15-2.0'	SB15-3.0'	SB16-0.5'	SB16-2.0'	SB16-3.0'	SB17-0.5'	SB17-2.0'
6020	Arsenic	mg/Kg	9.0	**12**	5.3	5.6	3.8	**14**	7.4 MN
[a]Cleanup Level 11		mg/Kg							

		Sample ID	13NC21SS17-2.5	13NC21SS17-3[c]	13NC21SS18-0.5	13NC21SS18-2	13NC21SS18-3	13NC21SS19-0.5	13NC21SS19-2
		Laboratory ID	58039336-51	58039336-52	580-39511-14	580-39511-15	580-39511-16	580-39511-17	580-39511-18
		Location ID	13NC21SB17	13NC21SB17	13NC21SB18	13NC21SB18	13NC21SB18	13NC21SB19	13NC21SB19
		Collection Date	7/11/2013	7/11/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	**Analyte**	**Unit**	SB17-3.0'		SB18-0.5'	SB18-2.0'	SB18-3.0'	SB19-0.5'	SB19-2.0'
6020	Arsenic	mg/Kg	4.0	4.6	**33**	9.1	4.1	6.4	**23**
[a]Cleanup Level 11		mg/Kg							

		Sample ID	13NC21SS19-3	13NC21SS20-0.5	13NC21SS20-1[b]	13NC21SS20-2	13NC21SS20-3
		Laboratory ID	580-39511-19	580-39511-20	580-39511-21	580-39511-22	580-39511-23
		Location ID	13NC21SB19	13NC21SB20	13NC21SB20	13NC21SB20	13NC21SB20
		Collection Date	7/25/2013	7/25/2013	7/25/2013	7/25/2013	7/25/2013
Analysis Method	**Analyte**	**Unit**	SB19-3.0'	SB20-0.5'		SB20-2.0'	SB20-3.0'
6020	Arsenic	mg/Kg	4.4	10	7.6	4.8	8.9
[a]Cleanup Level 11		mg/Kg					

Table H14 Site 21 Confirmation Soil Sample Results

			Sample ID	13NC21SS021	13NC21SS022	13NC21SS023	13NC21SS024[E]	13NC21SS025	13NC21SS026
			Laboratory ID	580-39959-1	580-39959-2	580-39959-3	580-39959-4	580-39959-5	580-39959-6
			Location ID	21-021	21-022	21-023	21-024	21-025	21-026
			Collection Date	8/23/2013	8/23/2013	8/23/2013	8/23/2013	8/23/2013	8/23/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level***						
6020	Arsenic	mg/Kg	11	6.0	4.4	**25**	**26**	9.9	**79**

			Sample ID	13NC21SS027[E]	13NC21SS028[D,E]	13NC21SS029[E]	13NC21SS030[E]	13NC21SS031	13NC21SS032[E]
			Laboratory ID	580-39959-7	580-39959-8	580-39959-9	580-39959-10	580-39959-11	580-39959-12
			Location ID	21-027	21-027	21-028	21-029	21-030	21-031
			Collection Date	8/23/2013	8/23/2013	8/23/2013	8/23/2013	8/23/2013	8/23/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level***						
6020	Arsenic	mg/Kg	11	**33**	**23**	**34**	**17**	7.6	**25**

			Sample ID	13NC21SS033	13NC21SS034	13NC21SS035[E]	13NC21SS036[D,E]	13NC21SS037	13NC21SS038
			Laboratory ID	580-39959-13	580-39959-14	580-39959-15	580-39959-16	580-39959-17	580-39959-18
			Location ID	21-032	21-033	21-034	21-034	21-035	21-036
			Collection Date	8/24/2013	8/24/2013	8/24/2013	8/24/2013	8/24/2013	8/24/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level***						
6020	Arsenic	mg/Kg	11	5.8	4.4	**24 QN**	**12 QN**	5.7	4.4

			Sample ID	13NC21SS039	13NC21SS040[E]	13NC21SS041[E]	13NC21SS042	13NC21SS043	13NC21SS044
			Laboratory ID	580-39959-19	580-39959-20	580-39959-21	580-39959-22	580-40164-1	580-40164-2
			Location ID	21-037	21-038	21-039	21-040	21-SS043	21-SS044
			Collection Date	8/24/2013	8/24/2013	8/24/2013	8/24/2013	9/3/2013	9/3/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level***						
6020	Arsenic	mg/Kg	11	2.2	**340**	**140**	2.0	**17**	11

Notes:

*Site-specific cleanup levels established in 2009 Decision Document

BOLD = Indicates sample concentration above cleanup level

[D]sample is a duplicate of previous sample

[E]sample location was excavated in 2013.

mg/Kg = milligrams per kilogram

QN = Analyte result considered an estimated with uncertain bias. Field duplicates do not meet relative percent difference (RPD) limits but meet other acceptance criteria.

Table H14 Site 21 Confirmation Soil Sample Results (continued)

			Sample ID	13NC21SS045	13NC21SS046	13NC21SS047	13NC21SS048	13NC21SS049	13NC21SS050
			Laboratory ID	580-40164-3	580-40164-4	580-40164-5	580-40164-6	580-40164-7	580-40164-8
			Location ID	21-SS045	21-SS046	21-SS047	21-SS048	21-SS049	21-SS050
			Collection Date	9/3/2013	9/3/2013	9/3/2013	9/3/2013	9/3/2013	9/3/2013
Analysis Method	**Analyte**	**Unit**	**[a]Regulatory Limit**						
6020	Arsenic	mg/Kg	11	**19**	**21**	**29**	6.7	5.1	7

			Sample ID	13NC21SS051[D]
			Laboratory ID	580-40164-9
			Location ID	21-SS051
			Collection Date	9/3/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level***	
6020	Arsenic	mg/Kg	11	7.9

Table H15 Site 21 Soil Waste Characterization Sample Results

			Sample ID	BW-21-12	BW-21-13	BW-21-14	BW-21-15	BW-21-16	BW21-17-18
			Laboratory ID	580-39959-23	580-39959-24	580-39959-25	580-39959-26	580-39959-27	580-40164-10
			Location ID	BW-21-12	BW-21-13	BW-21-14	BW-21-15	BW-21-16	BW21-17-18
			Collection Date	8/24/2013	8/22/2013	8/23/2013	8/23/2013	8/23/2013	9/3/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level***	Waste Characterization					
6020	Arsenic	mg/Kg	11	**28**	11	**50**	**12**	8.8	**87**

			Sample ID	13NC21SS07-0.5	13NC21SS040	13NC21SS041
			Laboratory ID	580-39336-19	580-39959-20	580-39959-21
			Location ID	13NC21SB07	21-038	21-039
			Collection Date	7/11/2013	8/24/2013	8/24/2013
Analysis Method	**Analyte**	**Unit**	**Regulatory Limit[1]**	Waste Characterization		
TCLP 6020	Arsenic	mg/L	5.0	ND (0.008)	ND (0.008)	ND (0.008)

Notes:

*Site-specific cleanup levels established in 2009 Decision Document

[1]as decribed in Table 1, 40CFR section 261,21-30.

BOLD = indicates sample concentration above cleanup level

mg/Kg = milligram per kilogram

ND = result is non-detect with limit of detection (LOD) in parentheses

TCLP = Toxicity Characteristic Leaching Profile

Table H16 Site 10 Excavation A Soil Sample Results

			Sample ID	13NC10SS011	13NC10SS012	13NC10SS016[D]	13NC10SS014	13NC10SS015
			Laboratory ID	580-39382-1	580-39382-2	580-39382-6	580-39382-4	580-39382-5
			Location ID	13NC10SS011	13NC10SS012	13NC10SS012	13NC10SS014	13NC10SS015
			Collection Date	7/16/2013	7/16/2013	7/16/2013	7/17/2013	7/17/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**					
AK101	GRO C6-C10	mg/Kg	300[2]	0.55 J B	0.39 J B	0.58 J B	1.0 J B	0.23 J B
AK102	DRO (nC10-<nC25)	mg/Kg	9200[1]	180	30	15 J	5.2 J	ND (7.0)
AK103	RRO (nC25-nC36)	mg/Kg	9200[1]	180	42 J	23 J	21 J	ND (27)
8015C	Ethylene glycol	mg/Kg	190[2]	ND (5.9)	ND (5.9)	ND (6.0)	ND (5.8)	ND (5.7)
8015C	Propylene glycol	mg/Kg	NS	ND (3.5)	ND (3.6)	ND (3.6)	ND (3.5)	ND (3.4)
6020	Arsenic	mg/Kg	11[1]	10	10	10	7.3	3.5
6020	Barium	mg/Kg	1100[2]	42	77	81	62	86
6020	Cadmium	mg/Kg	5[2]	0.090 J	0.095 J	0.12 J	0.11 J	0.10 J
6020	Chromium	mg/Kg	25[2]	19 J QH	23	23	22	20
6020	Lead	mg/Kg	400[2]	22	23	24	19	15
6020	Nickel	mg/Kg	86[2]	10	17	17	15	16
6020	Selenium	mg/Kg	3.4[2]	2.1	1.6	1.6	1.3	0.97
6020	Silver	mg/Kg	11.2[2]	0.11 J	0.14 J	0.14 J	0.083 J	0.080 J
6020	Vanadium	mg/Kg	3400[2]	30	43	45	36	33
6020	Zinc	mg/Kg	4100[2]	57 J QH	84	87	52	57
7471A	Mercury	mg/Kg	1.4[2]	0.032	0.035	0.042	0.024	0.031
8082	PCB-1016	mg/Kg	1[1]	ND (0.0058)	ND (0.0060)	ND (0.0058)	ND (0.0058)	ND (0.0054)
8082	PCB-1221	mg/Kg	1[1]	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.011)
8082	PCB-1232	mg/Kg	1[1]	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.011)
8082	PCB-1242	mg/Kg	1[1]	ND (0.0058)	ND (0.0060)	ND (0.0058)	ND (0.0058)	ND (0.0054)
8082	PCB-1248	mg/Kg	1[1]	ND (0.0058)	ND (0.0060)	ND (0.0058)	ND (0.0058)	ND (0.0054)
8082	PCB-1254	mg/Kg	1[1]	ND (0.0058)	ND (0.0060)	ND (0.0058)	ND (0.0058)	ND (0.0054)
8082	PCB-1260	mg/Kg	1[1]	ND (0.0058)	ND (0.0060)	ND (0.0058)	ND (0.0058)	ND (0.0054)
8260B	1,1,1,2-Tetrachloroethane	mg/Kg	NS	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	1,1,1-Trichloroethane	mg/Kg	0.82[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	1,1,2,2-Tetrachloroethane	mg/Kg	0.017[2]	ND (0.0058)	ND (0.005)	ND (0.0046)	ND (0.008)	ND (0.0044)
8260B	1,1,2-Trichloroethane	mg/Kg	0.018[2]	ND (0.0058)	ND (0.005)	ND (0.0046)	ND (0.008)	ND (0.0044)
8260B	1,1-Dichloroethane	mg/Kg	25[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	1,1-Dichloroethene	mg/Kg	0.016[2]	ND (0.0066)	ND (0.0057)	ND (0.0053)	ND (0.0091)	ND (0.005)
8260B	1,1-Dichloropropene	mg/Kg	NS	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	1,2,3-Trichlorobenzene	mg/Kg	NS	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	1,2,3-Trichloropropane	mg/Kg	0.00053[2]	**ND (0.02)**	**ND (0.017)**	**ND (0.016)**	**ND (0.027)**	**ND (0.015)**
8260B	1,2,4-Trichlorobenzene	mg/Kg	0.85[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	1,2,4-Trimethylbenzene	mg/Kg	23[2]	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	1,2-Dibromo-3-Chloropropane	mg/Kg	1.1[2]	ND (0.098)	ND (0.085)	ND (0.079)	ND (0.14)	ND (0.075)
8260B	1,2-Dibromoethane	mg/Kg	0.00016[2]	**ND (0.0098)**	**ND (0.0085)**	**ND (0.0079)**	**ND (0.014)**	**ND (0.0075)**
8260B	1,2-Dichlorobenzene	mg/Kg	5.1[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	1,2-Dichloroethane	mg/Kg	0.016[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	1,2-Dichloropropane	mg/Kg	0.018[2]	ND (0.0066)	ND (0.0057)	ND (0.0053)	ND (0.0091)	ND (0.005)
8260B	1,3,5-Trimethylbenzene	mg/Kg	23[2]	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	1,3-Dichlorobenzene	mg/Kg	28[2]	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	1,3-Dichloropropane	mg/Kg	NS	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	1,4-Dichlorobenzene	mg/Kg	0.64[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	2,2-Dichloropropane	mg/Kg	NS	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	2-Butanone (MEK)	mg/Kg	59[2]	ND (0.2)	ND (0.17)	ND (0.16)	ND (0.27)	ND (0.15)
8260B	2-Chlorotoluene	mg/Kg	NS	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	2-Hexanone	mg/Kg	NS	ND (0.098)	ND (0.085)	ND (0.079)	ND (0.14)	ND (0.075)
8260B	4-Chlorotoluene	mg/Kg	NS	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	4-Methyl-2-pentanone (MIBK)	mg/Kg	8.1[2]	ND (0.098)	ND (0.085)	ND (0.079)	ND (0.14)	ND (0.075)
8260B	Acetone	mg/Kg	88[2]	ND (0.098)	ND (0.085)	ND (0.079)	ND (0.14)	0.053 J
8260B	Benzene	mg/Kg	2.0[1]	ND (0.0066)	ND (0.0057)	ND (0.0053)	ND (0.0091)	ND (0.005)
8260B	Bromobenzene	mg/Kg	NS	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	Bromochloromethane	mg/Kg	NS	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	Bromodichloromethane	mg/Kg	0.044[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	Bromoform	mg/Kg	0.34[2]	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	Bromomethane	mg/Kg	0.16[2]	ND (0.066)	ND (0.057)	ND (0.053)	ND (0.091)	ND (0.05)
8260B	Carbon disulfide	mg/Kg	12[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	Carbon tetrachloride	mg/Kg	0.023[2]	ND (0.0066)	ND (0.0057)	ND (0.0053)	ND (0.0091)	ND (0.005)
8260B	Chlorobenzene	mg/Kg	0.63[2]	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	Chlorodibromomethane	mg/Kg	0.032[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	Chloroethane	mg/Kg	580[2]	ND (0.2)	ND (0.17)	ND (0.16)	ND (0.27)	ND (0.15)
8260B	Chloroform	mg/Kg	0.46[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	Chloromethane	mg/Kg	0.21[2]	ND (0.2)	ND (0.17)	ND (0.16)	**ND (0.27)**	ND (0.15)
8260B	cis-1,2-Dichloroethene	mg/Kg	0.24[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	cis-1,3-Dichloropropene	mg/Kg	NS	ND (0.0066)	ND (0.0057)	ND (0.0053)	ND (0.0091)	ND (0.005)
8260B	Dibromomethane	mg/Kg	1.1[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	Dichlorodifluoromethane	mg/Kg	140[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	Ethylbenzene	mg/Kg	6.9[2]	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	Hexachlorobutadiene	mg/Kg	0.12[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	Isopropylbenzene	mg/Kg	51[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	Methyl tert-butyl ether	mg/Kg	1.3[2]	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	Methylene Chloride	mg/Kg	0.016[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	Naphthalene	mg/Kg	120[1]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	n-Butylbenzene	mg/Kg	15[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	N-Propylbenzene	mg/Kg	15[2]	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	m,p-Xylene	mg/Kg	NS	ND (0.013)	ND (0.011)	ND (0.011)	ND (0.018)	ND (0.01)
8260B	o-Xylene	mg/Kg	NS	ND (0.0228)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
	Xylenes (Total)	mg/Kg	63[2]	ND (0.0098)	ND (0.0195)	ND (0.0189)	ND (0.032)	ND (0.0175)
8260B	p-Isopropyltoluene	mg/Kg	NS	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	sec-Butylbenzene	mg/Kg	12[2]	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	Styrene	mg/Kg	0.96[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	tert-Butylbenzene	mg/Kg	12[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	Tetrachloroethene	mg/Kg	0.024[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	Toluene	mg/Kg	6.5[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)

Table H16 Site 10 Excavation A Soil Sample Results (continued)

			Sample ID	13NC10SS011	13NC10SS012	13NC10SS016[D]	13NC10SS014	13NC10SS015
			Laboratory ID	580-39382-1	580-39382-2	580-39382-6	580-39382-4	580-39382-5
			Location ID	13NC10SS011	13NC10SS012	13NC10SS012	13NC10SS014	13NC10SS015
			Collection Date	7/16/2013	7/16/2013	7/16/2013	7/17/2013	7/17/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**					
8260B	trans-1,2-Dichloroethene	mg/Kg	0.37[2]	ND (0.0098)	ND (0.0085)	ND (0.0079)	ND (0.014)	ND (0.0075)
8260B	trans-1,3-Dichloropropene	mg/Kg	NS	ND (0.0066)	ND (0.0057)	ND (0.0053)	ND (0.0091)	ND (0.005)
8260B	Trichloroethene	mg/Kg	0.02[2]	ND (0.0066)	ND (0.0057)	ND (0.0053)	ND (0.0091)	ND (0.005)
8260B	Trichlorofluoromethane	mg/Kg	86[2]	ND (0.02)	ND (0.017)	ND (0.016)	ND (0.027)	ND (0.015)
8260B	Vinyl chloride	mg/Kg	0.0085[2]	ND (0.0033)	ND (0.0028)	ND (0.0026)	ND (0.0046)	ND (0.0025)
8270C SIM/DoD	1-Methylnaphthalene	mg/Kg	6.2[2]	0.0021 J	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	2-Methylnaphthalene	mg/Kg	6.1[2]	0.0022 J	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Acenaphthene	mg/Kg	180[2]	ND (0.0028)	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Acenaphthylene	mg/Kg	180[2]	0.0022 J	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Anthracene	mg/Kg	3000[2]	ND (0.0028)	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Benzo[a]anthracene	mg/Kg	3.6[2]	0.0047 J	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Benzo[a]pyrene	mg/Kg	2.1[2]	ND (0.0028)	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Benzo[b]fluoranthene	mg/Kg	12[2]	0.0046 J	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Benzo[g,h,i]perylene	mg/Kg	38700[2]	ND (0.0028)	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Benzo[k]fluoranthene	mg/Kg	120[2]	ND (0.0028)	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Chrysene	mg/Kg	360[2]	0.009	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Dibenz(a,h)anthracene	mg/Kg	4.0[2]	ND (0.0028)	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Fluoranthene	mg/Kg	1400[2]	0.011	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Fluorene	mg/Kg	220[2]	ND (0.0028)	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	mg/Kg	41[2]	ND (0.0028)	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Naphthalene	mg/Kg	120[1]	ND (0.0028)	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Phenanthrene	mg/Kg	3000[2]	0.0041 J	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)
8270C SIM/DoD	Pyrene	mg/Kg	1000[2]	0.0095	ND (0.0029)	ND (0.0028)	ND (0.0028)	ND (0.0028)

Notes:
[1]Cleanup level set in 2009 Decision Document
[2]Cleanup level as stated in 18AAC75.341 Tables B1 and B2 (migration to groundwater).
B = analyte detected in the blank, result with potential high bias
DRO = diesel range organics
[D]sample is a duplicate of the previous sample
GRO = gasoline range organics
J = result is an estimate
mg/Kg = milligrams per kilogram

ND = Sample result is non-detect with limit of detection (LOD) in parentheses
PCB = polychlorinated biphenyl
QH = laboratory quality issue, result with potential high bias
RRO = residual range organics
SIM = selective ion monitoring
BOLD-Analytical result greater than cleanup level.

Table H17 Site 10 Excavation B Soil Sample Results

			Sample ID	13NC10SS013
			Laboratory ID	580-39382-3
			Location ID	13NC10SS013
			Collection Date	7/16/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**	
AK101	GRO C6-C10	mg/Kg	300[2]	0.49 J B
AK102	DRO (nC10-<nC25)	mg/Kg	9200[1]	ND (7.2)
AK103	RRO (nC25-nC36)	mg/Kg	9200[1]	31 J
8015C	Ethylene glycol	mg/Kg	190[2]	ND (5.8)
8015C	Propylene glycol	mg/Kg	NS	ND (3.5)
6020	Arsenic	mg/Kg	11[1]	7.2
6020	Barium	mg/Kg	1100[2]	80
6020	Cadmium	mg/Kg	5[2]	0.11 J
6020	Chromium	mg/Kg	25[2]	22
6020	Lead	mg/Kg	400[2]	24
6020	Nickel	mg/Kg	86[2]	14
6020	Selenium	mg/Kg	3.4[2]	1.3
6020	Silver	mg/Kg	11.2[2]	0.17 J
6020	Vanadium	mg/Kg	3400[2]	39
6020	Zinc	mg/Kg	4100[2]	57
7471A	Mercury	mg/Kg	1.4[2]	0.036
8082	PCB-1016	mg/Kg	1[1]	ND (0.0056)
8082	PCB-1221	mg/Kg	1[1]	ND (0.011)
8082	PCB-1232	mg/Kg	1[1]	ND (0.011)
8082	PCB-1242	mg/Kg	1[1]	ND (0.0056)
8082	PCB-1248	mg/Kg	1[1]	ND (0.0056)
8082	PCB-1254	mg/Kg	1[1]	ND (0.0056)
8082	PCB-1260	mg/Kg	1[1]	ND (0.0056)
8260B	1,1,1,2-Tetrachloroethane	mg/Kg	NS	ND (0.0082)
8260B	1,1,1-Trichloroethane	mg/Kg	0.82[2]	ND (0.0082)
8260B	1,1,2,2-Tetrachloroethane	mg/Kg	0.017[2]	ND (0.0048)
8260B	1,1,2-Trichloroethane	mg/Kg	0.018[2]	ND (0.0048)
8260B	1,1-Dichloroethane	mg/Kg	25[2]	ND (0.0082)
8260B	1,1-Dichloroethene	mg/Kg	0.016[2]	ND (0.0054)
8260B	1,1-Dichloropropene	mg/Kg	NS	ND (0.0082)
8260B	1,2,3-Trichlorobenzene	mg/Kg	NS	ND (0.016)
8260B	1,2,3-Trichloropropane	mg/Kg	0.00053[2]	ND (0.016)
8260B	1,2,4-Trichlorobenzene	mg/Kg	0.85[2]	ND (0.0082)
8260B	1,2,4-Trimethylbenzene	mg/Kg	23[2]	ND (0.016)
8260B	1,2-Dibromo-3-Chloropropane	mg/Kg	1.1[2]	ND (0.082)
8260B	1,2-Dibromoethane	mg/Kg	0.00016[2]	ND (0.0082)
8260B	1,2-Dichlorobenzene	mg/Kg	5.1[2]	ND (0.0082)
8260B	1,2-Dichloroethane	mg/Kg	0.016[2]	ND (0.0082)
8260B	1,2-Dichloropropane	mg/Kg	0.018[2]	ND (0.0054)
8260B	1,3,5-Trimethylbenzene	mg/Kg	23[2]	ND (0.016)
8260B	1,3-Dichlorobenzene	mg/Kg	28[2]	ND (0.016)

Table H17 Site 10 Excavation B Soil Sample Results (continued)

		Sample ID		13NC10SS013
		Laboratory ID		580-39382-3
		Location ID		13NC10SS013
		Collection Date		7/16/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**	
8260B	1,3-Dichloropropane	mg/Kg	NS	ND (0.0082)
8260B	1,4-Dichlorobenzene	mg/Kg	0.64[2]	ND (0.0082)
8260B	2,2-Dichloropropane	mg/Kg	NS	ND (0.016)
8260B	2-Butanone (MEK)	mg/Kg	59[2]	ND (0.16)
8260B	2-Chlorotoluene	mg/Kg	NS	ND (0.0082)
8260B	2-Hexanone	mg/Kg	NS	ND (0.082)
8260B	4-Chlorotoluene	mg/Kg	NS	ND (0.016)
8260B	4-Methyl-2-pentanone (MIBK)	mg/Kg	8.1[2]	ND (0.082)
8260B	Acetone	mg/Kg	88[2]	0.077 J
8260B	Benzene	mg/Kg	2.0[1]	ND (0.0054)
8260B	Bromobenzene	mg/Kg	NS	ND (0.0082)
8260B	Bromochloromethane	mg/Kg	NS	ND (0.016)
8260B	Bromodichloromethane	mg/Kg	0.044[2]	ND (0.0082)
8260B	Bromoform	mg/Kg	0.34[2]	ND (0.016)
8260B	Bromomethane	mg/Kg	0.16[2]	ND (0.054)
8260B	Carbon disulfide	mg/Kg	12[2]	ND (0.0082)
8260B	Carbon tetrachloride	mg/Kg	0.023[2]	ND (0.0054)
8260B	Chlorobenzene	mg/Kg	0.63[2]	ND (0.016)
8260B	Chlorodibromomethane	mg/Kg	0.032[2]	ND (0.0082)
8260B	Chloroethane	mg/Kg	580[2]	ND (0.16)
8260B	Chloroform	mg/Kg	0.46[2]	ND (0.0082)
8260B	Chloromethane	mg/Kg	0.21[2]	ND (0.16)
8260B	cis-1,2-Dichloroethene	mg/Kg	0.24[2]	ND (0.0082)
8260B	cis-1,3-Dichloropropene	mg/Kg	NS	ND (0.0054)
8260B	Dibromomethane	mg/Kg	1.1[2]	ND (0.0082)
8260B	Dichlorodifluoromethane	mg/Kg	140[2]	ND (0.0082)
8260B	Ethylbenzene	mg/Kg	6.9[2]	ND (0.016)
8260B	Hexachlorobutadiene	mg/Kg	0.12[2]	ND (0.0082)
8260B	Isopropylbenzene	mg/Kg	51[2]	ND (0.0082)
8260B	Methyl tert-butyl ether	mg/Kg	1.3[2]	ND (0.016)
8260B	Methylene Chloride	mg/Kg	0.016[2]	ND (0.0082)
8260B	Naphthalene	mg/Kg	120[1]	ND (0.0082)
8260B	n-Butylbenzene	mg/Kg	15[2]	ND (0.0082)
8260B	N-Propylbenzene	mg/Kg	15[2]	ND (0.016)
8260B	m,p-Xylene	mg/Kg	NS	ND (0.011)
8260B	o-Xylene	mg/Kg	NS	ND (0.0082)
	Xylenes (Total)	mg/Kg	63[2]	ND (0.0192)
8260B	p-Isopropyltoluene	mg/Kg	NS	ND (0.0082)
8260B	sec-Butylbenzene	mg/Kg	12[2]	ND (0.016)
8260B	Styrene	mg/Kg	0.96[2]	ND (0.0082)
8260B	tert-Butylbenzene	mg/Kg	12[2]	ND (0.0082)

Table H17 Site 10 Excavation B Soil Sample Results (continued)

			Sample ID	13NC10SS013
			Laboratory ID	580-39382-3
			Location ID	13NC10SS013
			Collection Date	7/16/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**	
8260B	Tetrachloroethene	mg/Kg	0.024[2]	ND (0.0082)
8260B	Toluene	mg/Kg	6.5[2]	ND (0.0082)
8260B	trans-1,2-Dichloroethene	mg/Kg	0.37[2]	ND (0.0082)
8260B	trans-1,3-Dichloropropene	mg/Kg	NS	ND (0.0054)
8260B	Trichloroethene	mg/Kg	0.02[2]	ND (0.0054)
8260B	Trichlorofluoromethane	mg/Kg	86[2]	ND (0.016)
8260B	Vinyl chloride	mg/Kg	0.0085[2]	ND (0.0027)
8270C SIM/DoD	1-Methylnaphthalene	mg/Kg	6.2[2]	ND (0.0028)
8270C SIM/DoD	2-Methylnaphthalene	mg/Kg	6.1[2]	ND (0.0028)
8270C SIM/DoD	Acenaphthene	mg/Kg	180[2]	ND (0.0028)
8270C SIM/DoD	Acenaphthylene	mg/Kg	180[2]	ND (0.0028)
8270C SIM/DoD	Anthracene	mg/Kg	3000[2]	ND (0.0028)
8270C SIM/DoD	Benzo[a]anthracene	mg/Kg	3.6[2]	ND (0.0028)
8270C SIM/DoD	Benzo[a]pyrene	mg/Kg	2.1[2]	ND (0.0028)
8270C SIM/DoD	Benzo[b]fluoranthene	mg/Kg	12[2]	ND (0.0028)
8270C SIM/DoD	Benzo[g,h,i]perylene	mg/Kg	38700[2]	ND (0.0028)
8270C SIM/DoD	Benzo[k]fluoranthene	mg/Kg	120[2]	ND (0.0028)
8270C SIM/DoD	Chrysene	mg/Kg	360[2]	ND (0.0028)
8270C SIM/DoD	Dibenz(a,h)anthracene	mg/Kg	4.0[2]	ND (0.0028)
8270C SIM/DoD	Fluoranthene	mg/Kg	1400[2]	ND (0.0028)
8270C SIM/DoD	Fluorene	mg/Kg	220[2]	ND (0.0028)
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	mg/Kg	41[2]	ND (0.0028)
8270C SIM/DoD	Naphthalene	mg/Kg	120[1]	ND (0.0028)
8270C SIM/DoD	Phenanthrene	mg/Kg	3000[2]	ND (0.0028)
8270C SIM/DoD	Pyrene	mg/Kg	1000[2]	ND (0.0028)

Notes:

[1]Cleanup level set in 2009 Decision Document

[2]Cleanup level as stated in 18AAC75.341 Tables B1 and B2 (migration to groundwater).

B = analyte detected in the blank, result with potential high bias

DRO = diesel range organics

GRO = gasoline range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

ND = Sample result is non-detect with limit of detection (LOD) in parentheses

PCB = polychlorinated biphenyl

RRO = residual range organics

SIM = selective ion monitoring

Table H18 Site 10 Excavation C Soil Sample Results

			Sample ID	13NC10SS003	13NC10SS004	13NC10SS005	13NC10SS006	13NC10SS007	13NC10SS001	13NC10SS002	13NC10SS008[D]	13NC10SS023	13NC10SS024	13NC10SS25[D]	13NC10SS26
			Laboratory ID	580-39362-3	580-39362-4	580-39362-5	580-39362-6	580-39362-7	580-39362-1	580-39362-2	580-39362-8	580-39544-2	580-39544-3	580-39544-4	580-39655-1
			Location ID	13NC10SS003	13NC10SS004	13NC10SS005	13NC10SS006	13NC10SS007	13NC10SS001	13NC10SS002	13NC10SS008	13NC10SS23	13NC10SS24	13NC10SS24	13NC10SS26
			Collection Date	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/21/2013	7/21/2013	7/21/2013	8/5/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**												Sidewall Sample
AK101	GRO C6-C10	mg/Kg	300[2]	ND (0.57)	2.4 J B	0.73 J B	0.51 J B	0.22 J B	ND (0.61)	ND (0.73)	ND (0.76)	–	–	–	–
AK102	DRO (nC10-<nC25)	mg/Kg	9200[1]	8.3 J B	1000	2800	4700	250	570	9.6 J B	11 J B	–	–	–	–
AK103	RRO (nC25-nC36)	mg/Kg	9200[1]	18 J B	190	4200	3000	2300	340	25 J B	16 J B	–	–	–	–
8015C	Ethylene glycol	mg/Kg	190[2]	2.1 J	ND (5.1)	ND (5.4)	ND (5.4)	ND (5.4)	**890**	**280**	**320**	**2200**	**1000**	**950**	34
8015C	Propylene glycol	mg/Kg	NS	ND (3.1)	ND (3.1)	ND (3.2)	ND (3.3)	ND (3.2)	140	25	29 J	21 QN	670	660	2.5 J
6020	Arsenic	mg/Kg	11[1]	5.4	4.4	5.6	6.2	5.0	5.5	6.3	5.2	–	–	–	–
6020	Barium	mg/Kg	1100[2]	42	33	39	37	38	36	22	24	–	–	–	–
6020	Cadmium	mg/Kg	5[2]	0.14 J	0.16 J MH	0.18	0.26	0.17	0.16 J	0.36	0.24	–	–	–	–
6020	Chromium	mg/Kg	25[2]	11	11	14	12	11	13	5.1	6.0	–	–	–	–
6020	Lead	mg/Kg	400[2]	43	34	42	50	38	36	58	56	–	–	–	–
6020	Nickel	mg/Kg	86[2]	5.9	6.3	8.1	8.3	6.6	7.2	4.6	5.1	–	–	–	–
6020	Selenium	mg/Kg	3.4[2]	1.2	1.0	1.2	1.3	1.2	1.1	1.6	1.4	–	–	–	–
6020	Silver	mg/Kg	11.2[2]	0.18	0.16 J	0.15 J	0.19	0.14 J	0.13 J	0.091 J	0.095 J	–	–	–	–
6020	Vanadium	mg/Kg	3400[2]	19	19	23	23	20	20	14	17	–	–	–	–
6020	Zinc	mg/Kg	4100[2]	66	59 ML	92	92	59	68	100	93	–	–	–	–
7471A	Mercury	mg/Kg	1.4[2]	0.013	0.013 J MN	0.020	0.016	0.018	0.018	0.0085 J	0.0064 J	–	–	–	–
8082	PCB-1016	mg/Kg	1[1]	ND (0.0051)	ND (0.0051)	ND (0.0054)	ND (0.0052)	ND (0.0052)	ND (0.0054)	ND (0.0051)	ND (0.0054)	–	–	–	–
8082	PCB-1221	mg/Kg	1[1]	ND (0.010)	ND (0.010)	ND (0.011)	ND (0.010)	ND (0.010)	ND (0.011)	ND (0.010)	ND (0.011)	–	–	–	–
8082	PCB-1232	mg/Kg	1[1]	ND (0.010)	ND (0.010)	ND (0.011)	ND (0.010)	ND (0.010)	ND (0.011)	ND (0.010)	ND (0.011)	–	–	–	–
8082	PCB-1242	mg/Kg	1[1]	ND (0.0051)	ND (0.0051)	ND (0.0054)	ND (0.0052)	ND (0.0052)	ND (0.0054)	ND (0.0051)	ND (0.0054)	–	–	–	–
8082	PCB-1248	mg/Kg	1[1]	ND (0.0051)	ND (0.0051)	ND (0.0054)	ND (0.0052)	ND (0.0052)	ND (0.0054)	ND (0.0051)	ND (0.0054)	–	–	–	–
8082	PCB-1254	mg/Kg	1[1]	ND (0.0051)	ND (0.0051)	ND (0.0054)	ND (0.0052)	ND (0.0052)	ND (0.0054)	ND (0.0051)	ND (0.0054)	–	–	–	–
8082	PCB-1260	mg/Kg	1[1]	ND (0.0051)	0.0063 J	ND (0.0054)	ND (0.0052)	ND (0.0052)	0.020	ND (0.0051)	ND (0.0054)	–	–	–	–
8260B	1,1,1,2-Tetrachloroethane	mg/Kg	NS	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	1,1,1-Trichloroethane	mg/Kg	0.82[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	1,1,2,2-Tetrachloroethane	mg/Kg	0.017[2]	ND (0.0045)	ND (0.0049)	ND (0.0055)	ND (0.0049)	ND (0.0043)	ND (0.0049)	ND (0.0059)	ND (0.0061)	–	–	–	–
8260B	1,1,2-Trichloroethane	mg/Kg	0.018[2]	ND (0.0045)	ND (0.0049)	ND (0.0055)	ND (0.0049)	ND (0.0043)	ND (0.0049)	ND (0.0059)	ND (0.0061)	–	–	–	–
8260B	1,1-Dichloroethane	mg/Kg	25[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	1,1-Dichloroethene	mg/Kg	0.016[2]	ND (0.0052)	ND (0.0056)	ND (0.0062)	ND (0.0055)	ND (0.0049)	ND (0.0056)	ND (0.0067)	ND (0.0069)	–	–	–	–
8260B	1,1-Dichloropropene	mg/Kg	NS	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	1,2,3-Trichlorobenzene	mg/Kg	NS	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.017)	ND (0.02)	ND (0.021)	–	–	–	–
8260B	1,2,3-Trichloropropane	mg/Kg	0.00053[2]	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.017)	ND (0.02)	ND (0.021)	–	–	–	–
8260B	1,2,4-Trichlorobenzene	mg/Kg	0.85[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	1,2,4-Trimethylbenzene	mg/Kg	23[2]	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.017)	ND (0.02)	ND (0.021)	–	–	–	–
8260B	1,2-Dibromo-3-Chloropropane	mg/Kg	1.1[2]	ND (0.077)	ND (0.084)	ND (0.093)	ND (0.083)	ND (0.073)	ND (0.083)	ND (0.1)	ND (0.1)	–	–	–	–
8260B	1,2-Dibromoethane	mg/Kg	0.00016[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	1,2-Dichlorobenzene	mg/Kg	5.1[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	1,2-Dichloroethane	mg/Kg	0.016[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	1,2-Dichloropropane	mg/Kg	0.018[2]	ND (0.0052)	ND (0.0056)	ND (0.0062)	ND (0.0055)	ND (0.0049)	ND (0.0056)	ND (0.0067)	ND (0.0069)	–	–	–	–
8260B	1,3,5-Trimethylbenzene	mg/Kg	23[2]	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.017)	ND (0.02)	ND (0.021)	–	–	–	–
8260B	1,3-Dichlorobenzene	mg/Kg	28[2]	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.017)	ND (0.02)	ND (0.021)	–	–	–	–
8260B	1,3-Dichloropropane	mg/Kg	NS	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	1,4-Dichlorobenzene	mg/Kg	0.64[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	2,2-Dichloropropane	mg/Kg	NS	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.017)	ND (0.02)	ND (0.021)	–	–	–	–
8260B	2-Butanone (MEK)	mg/Kg	59[2]	ND (0.15)	ND (0.17)	ND (0.19)	ND (0.17)	ND (0.15)	ND (0.17)	ND (0.2)	ND (0.21)	–	–	–	–
8260B	2-Chlorotoluene	mg/Kg	NS	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	2-Hexanone	mg/Kg	NS	ND (0.077)	ND (0.084)	ND (0.093)	ND (0.083)	ND (0.073)	ND (0.083)	ND (0.1)	ND (0.1)	–	–	–	–
8260B	4-Chlorotoluene	mg/Kg	NS	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.017)	ND (0.02)	ND (0.021)	–	–	–	–

Table H18 Site 10 Excavation C Soil Sample Results (continued)

		Sample ID	13NC10SS003	13NC10SS004	13NC10SS005	13NC10SS006	13NC10SS007	13NC10SS001	13NC10SS002	13NC10SS008[D]	13NC10SS023	13NC10SS024	13NC10SS25[D]	13NC10SS26
		Laboratory ID	580-39362-3	580-39362-4	580-39362-5	580-39362-6	580-39362-7	580-39362-1	580-39362-2	580-39362-8	580-39544-2	580-39544-3	580-39544-4	580-39655-1
		Location ID	13NC10SS003	13NC10SS004	13NC10SS005	13NC10SS006	13NC10SS007	13NC10SS001	13NC10SS002	13NC10SS008	13NC10SS23	13NC10SS24	13NC10SS24	13NC10SS26
		Collection Date	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/21/2013	7/21/2013	7/21/2013	8/5/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**											Sidewall Sample
8260B	4-Methyl-2-pentanone (MIBK)	mg/Kg	8.1[2]	ND (0.077)	ND (0.084)	ND (0.093)	ND (0.083)	ND (0.073)	ND (0.083)	ND (0.1)	ND (0.1)	–	–	–	–
8260B	Acetone	mg/Kg	88[2]	ND (0.077)	ND (0.084)	ND (0.093)	ND (0.083)	0.062 J	6.1	0.92	1.1	–	–	–	–
8260B	Benzene	mg/Kg	2.0[1]	ND (0.0052)	ND (0.0056)	ND (0.0062)	ND (0.0055)	ND (0.0049)	ND (0.0056)	ND (0.0067)	ND (0.0069)	–	–	–	–
8260B	Bromobenzene	mg/Kg	NS	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	Bromochloromethane	mg/Kg	NS	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.017)	ND (0.02)	ND (0.021)	–	–	–	–
8260B	Bromodichloromethane	mg/Kg	0.044[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	Bromoform	mg/Kg	0.34[2]	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.017)	ND (0.02)	ND (0.021)	–	–	–	–
8260B	Bromomethane	mg/Kg	0.16[2]	ND (0.052)	ND (0.056)	ND (0.062)	ND (0.055)	ND (0.049)	ND (0.056)	ND (0.067)	ND (0.069)	–	–	–	–
8260B	Carbon disulfide	mg/Kg	12[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	Carbon tetrachloride	mg/Kg	0.023[2]	ND (0.0052)	ND (0.0056)	ND (0.0062)	ND (0.0055)	ND (0.0049)	ND (0.0056)	ND (0.0067)	ND (0.0069)	–	–	–	–
8260B	Chlorobenzene	mg/Kg	0.63[2]	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.017)	ND (0.02)	ND (0.021)	–	–	–	–
8260B	Chlorodibromomethane	mg/Kg	0.032[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	Chloroethane	mg/Kg	580[2]	ND (0.15)	ND (0.17)	ND (0.19)	ND (0.17)	ND (0.15)	ND (0.17)	ND (0.2)	ND (0.21)	–	–	–	–
8260B	Chloroform	mg/Kg	0.46[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	Chloromethane	mg/Kg	0.21[2]	ND (0.15)	ND (0.17)	ND (0.19)	ND (0.17)	ND (0.15)	ND (0.17)	ND (0.2)	ND (0.21)	–	–	–	–
8260B	cis-1,2-Dichloroethene	mg/Kg	0.24[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	cis-1,3-Dichloropropene	mg/Kg	NS	ND (0.0052)	ND (0.0056)	ND (0.0062)	ND (0.0055)	ND (0.0049)	ND (0.0056)	ND (0.0067)	ND (0.0069)	–	–	–	–
8260B	Dibromomethane	mg/Kg	1.1[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	Dichlorodifluoromethane	mg/Kg	140[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	Ethylbenzene	mg/Kg	6.9[2]	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.017)	ND (0.02)	ND (0.021)	–	–	–	–
8260B	Hexachlorobutadiene	mg/Kg	0.12[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	Isopropylbenzene	mg/Kg	51[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	Methyl tert-butyl ether	mg/Kg	1.3[2]	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.011)	ND (0.013)	ND (0.021)	–	–	–	–
8260B	Methylene Chloride	mg/Kg	0.016[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.017)	ND (0.02)	ND (0.01)	–	–	–	–
8260B	Naphthalene	mg/Kg	120[1]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	n-Butylbenzene	mg/Kg	15[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	N-Propylbenzene	mg/Kg	15[2]	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.0083)	ND (0.01)	ND (0.021)	–	–	–	–
8260B	m,p-Xylene	mg/Kg	NS	ND (0.01)	ND (0.011)	ND (0.012)	ND (0.011)	ND (0.0097)	ND (0.017)	ND (0.02)	ND (0.014)	–	–	–	–
8260B	o-Xylene	mg/Kg	NS	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
	Xylenes (Total)	mg/Kg	63[2]	ND (0.0177)	ND (0.0194)	ND (0.0213)	ND (0.0193)	ND (0.019)	ND (0.0253)	ND (0.03)	ND (0.024)	–	–	–	–
8260B	p-Isopropyltoluene	mg/Kg	NS	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–

Table H18 Site 10 Excavation C Soil Sample Results (continued)

			Sample ID	13NC10SS003	13NC10SS004	13NC10SS005	13NC10SS006	13NC10SS007	13NC10SS001	13NC10SS002	13NC10SS008[D]	13NC10SS023	13NC10SS024	13NC10SS25[D]	13NC10SS26
			Laboratory ID	580-39362-3	580-39362-4	580-39362-5	580-39362-6	580-39362-7	580-39362-1	580-39362-2	580-39362-8	580-39544-2	580-39544-3	580-39544-4	580-39655-1
			Location ID	13NC10SS003	13NC10SS004	13NC10SS005	13NC10SS006	13NC10SS007	13NC10SS001	13NC10SS002	13NC10SS008	13NC10SS23	13NC10SS24	13NC10SS24	13NC10SS26
			Collection Date	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/13/2013	7/21/2013	7/21/2013	7/21/2013	8/5/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**												Sidewall Sample
8260B	sec-Butylbenzene	mg/Kg	12[2]	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.017)	ND (0.02)	ND (0.021)	–	–	–	–
8260B	Styrene	mg/Kg	0.96[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	tert-Butylbenzene	mg/Kg	12[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	Tetrachloroethene	mg/Kg	0.024[2]	ND (0.0077)	ND (0.0084) QN	ND (0.0093) QN	ND (0.0083) QN	ND (0.0073)	ND (0.0083) QN	ND (0.01) QN	ND (0.01) QN	–	–	–	–
8260B	Toluene	mg/Kg	6.5[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	trans-1,2-Dichloroethene	mg/Kg	0.37[2]	ND (0.0077)	ND (0.0084)	ND (0.0093)	ND (0.0083)	ND (0.0073)	ND (0.0083)	ND (0.01)	ND (0.01)	–	–	–	–
8260B	trans-1,3-Dichloropropene	mg/Kg	NS	ND (0.0052)	ND (0.0056)	ND (0.0062)	ND (0.0055)	ND (0.0049)	ND (0.0056)	ND (0.0067)	ND (0.0069)	–	–	–	–
8260B	Trichloroethene	mg/Kg	0.02[2]	ND (0.0052)	ND (0.0056)	ND (0.0062)	ND (0.0055)	ND (0.0049)	ND (0.0056)	ND (0.0067)	ND (0.0069)	–	–	–	–
8260B	Trichlorofluoromethane	mg/Kg	86[2]	ND (0.015)	ND (0.017)	ND (0.019)	ND (0.017)	ND (0.015)	ND (0.017)	ND (0.02)	ND (0.021)	–	–	–	–
8260B	Vinyl chloride	mg/Kg	0.0085[2]	ND (0.0026)	ND (0.0028)	ND (0.0031)	ND (0.0028)	ND (0.0024)	ND (0.0028)	ND (0.0033)	ND (0.0035)	–	–	–	–
8270C SIM/DoD	1-Methylnaphthalene	mg/Kg	6.2[2]	ND (0.0025)	0.037	0.013	0.0051 J	0.0026 J	0.014	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	2-Methylnaphthalene	mg/Kg	6.1[2]	ND (0.0025)	0.074	0.017	0.014	0.0024 J	0.017	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Acenaphthene	mg/Kg	180[2]	ND (0.0025)	ND (0.0025)	ND (0.0026)	ND (0.0027)	ND (0.0027)	ND (0.0027)	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Acenaphthylene	mg/Kg	180[2]	ND (0.0025)	0.011	0.016	0.043	ND (0.0027)	ND (0.0027)	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Anthracene	mg/Kg	3000[2]	ND (0.0025)	ND (0.0025)	ND (0.0026)	ND (0.0027)	ND (0.0027)	ND (0.0027)	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Benzo[a]anthracene	mg/Kg	3.6[2]	ND (0.0025)	ND (0.0025)	ND (0.0026)	ND (0.0027)	ND (0.0027)	0.0019 J	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Benzo[a]pyrene	mg/Kg	2.1[2]	ND (0.0025)	ND (0.0025)	ND (0.0026)	ND (0.0027)	ND (0.0027)	0.0018 J	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Benzo[b]fluoranthene	mg/Kg	12[2]	ND (0.0025)	ND (0.0025)	ND (0.0026)	ND (0.0027)	ND (0.0027)	0.0018 J	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Benzo[g,h,i]perylene	mg/Kg	38700[2]	ND (0.0025)	ND (0.0025)	ND (0.0026)	ND (0.0027)	ND (0.0027)	ND (0.0027)	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Benzo[k]fluoranthene	mg/Kg	120[2]	ND (0.0025)	ND (0.0025)	ND (0.0026)	ND (0.0027)	0.0064	ND (0.0027)	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Chrysene	mg/Kg	360[2]	ND (0.0025)	ND (0.0025)	ND (0.0026)	ND (0.0027)	ND (0.0027)	0.022	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Dibenz(a,h)anthracene	mg/Kg	4.0[2]	ND (0.0025)	ND (0.0025)	ND (0.0026)	ND (0.0027)	ND (0.0027)	ND (0.0027)	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Fluoranthene	mg/Kg	1400[2]	ND (0.0025)	0.0047 J	ND (0.0026)	ND (0.0027)	ND (0.0027)	0.0096	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Fluorene	mg/Kg	220[2]	ND (0.0025)	ND (0.0025)	ND (0.0026)	ND (0.0027)	ND (0.0027)	0.0019 J	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	mg/Kg	41[2]	ND (0.0025)	ND (0.0025)	ND (0.0026)	ND (0.0027)	ND (0.0027)	ND (0.0027)	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Naphthalene	mg/Kg	120[1]	ND (0.0025)	0.007	0.011	0.017	ND (0.0027)	0.0036 J	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Phenanthrene	mg/Kg	3000[2]	ND (0.0025)	0.0073	0.03	0.078	0.0024 J	0.018	ND (0.0026)	ND (0.0026)	–	–	–	–
8270C SIM/DoD	Pyrene	mg/Kg	1000[2]	ND (0.0025)	0.004 J	0.0056	ND (0.0027)	ND (0.0027)	0.016	ND (0.0026)	ND (0.0026)	–	–	–	–

Notes:

[1]Cleanup level set in 2009 Decision Document

[2]Cleanup level as stated in 18AAC75.341 Tables B1 and B2 (migration to groundwater).

– = analyte was not sampled for

BOLD = indicates sample concentration above cleanup level

[D]sample is a duplicate of the previous sample

B = analyte detected in the blank, result with potential high bias

DRO = diesel range organics

GRO = gasoline range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

ML = matrix interference is suspected, result with potential low bias

MH = matrix interference is suspected, result with potential high bias

ND = Sample result is non-detect with limit of detection (LOD) in parentheses

ND (LOQ) B = analyte was detected in the blank at similar concentrations to samples, results changed to ND with the limit of quantitation (LOQ) in parentheses.

PCB = polychlorinated biphenyl

QN = analyte result is considered an estimated value with uncertain bias due to a laboratory quality control failure such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits, and/or the field duplicates not meet relative percent difference (RPD) limits but meet other acceptance criteria

RRO = residual range organics

SIM = selective ion monitoring

Table H18 Site 10 Excavation C Soil Sample Results (continued)

			Sample ID	13NC10SS27	13NC10SS28	13NC10SS29	13NC10SS30	13NC10SS031	13NC10SS032	13NC10SS034[D]	13NC10SS033	13NC10SS045
			Laboratory ID	580-39655-2	580-39655-3	580-39655-4	580-39655-5	580-39796-1	580-39796-2	580-39796-4	580-39796-3	580-39839-19
			Location ID	13NC10SS27	13NC10SS28	13NC10SS29	13NC10SS30	13NC10SS31	13NC10SS32	13NC10SS34	13NC10SS33	13NC10SS45
			Collection Date	8/5/2013	8/5/2013	8/5/2013	8/5/2013	8/14/2013	8/14/2013	8/14/2013	8/14/2013	8/18/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**		Sidewall Sample	Sidewall Sample		Sidewall Sample				
AK101	GRO C6-C10	mg/Kg	300[2]	–	–	–	–		–	–		–
AK102	DRO (nC10-<nC25)	mg/Kg	9200[1]	–	–	–	–		–	–		–
AK103	RRO (nC25-nC36)	mg/Kg	9200[1]	–	–	–	–		–	–		–
8015C	Ethylene glycol	mg/Kg	190[2]	**2700 J**	13	130	**1600 J**	140	**1700**	**1600**	ND (5.5)	**810**
8015C	Propylene glycol	mg/Kg	NS	150 J	ND (3.2)	ND (3.2)	20	4.9 J	14	14	ND (3.3)	110
6020	Arsenic	mg/Kg	11[1]	–	–	–	–		–	–		–
6020	Barium	mg/Kg	1100[2]	–	–	–	–		–	–		–
6020	Cadmium	mg/Kg	5[2]	–	–	–	–		–	–		–
6020	Chromium	mg/Kg	25[2]	–	–	–	–		–	–		–
6020	Lead	mg/Kg	400[2]	–	–	–	–		–	–		–
6020	Nickel	mg/Kg	86[2]	–	–	–	–		–	–		–
6020	Selenium	mg/Kg	3.4[2]	–	–	–	–		–	–		–
6020	Silver	mg/Kg	11.2[2]	–	–	–	–		–	–		–
6020	Vanadium	mg/Kg	3400[2]	–	–	–	–		–	–		–
6020	Zinc	mg/Kg	4100[2]	–	–	–	–		–	–		–
7471A	Mercury	mg/Kg	1.4[2]	–	–	–	–		–	–		–
8082	PCB-1016	mg/Kg	1[1]	–	–	–	–		–	–		–
8082	PCB-1221	mg/Kg	1[1]	–	–	–	–		–	–		–
8082	PCB-1232	mg/Kg	1[1]	–	–	–	–		–	–		–
8082	PCB-1242	mg/Kg	1[1]	–	–	–	–		–	–		–
8082	PCB-1248	mg/Kg	1[1]	–	–	–	–		–	–		–
8082	PCB-1254	mg/Kg	1[1]	–	–	–	–		–	–		–
8082	PCB-1260	mg/Kg	1[1]	–	–	–	–		–	–		–
8260B	1,1,1,2-Tetrachloroethane	mg/Kg	NS	–	–	–	–		–	–		–
8260B	1,1,1-Trichloroethane	mg/Kg	0.82[2]	–	–	–	–		–	–		–
8260B	1,1,2,2-Tetrachloroethane	mg/Kg	0.017[2]	–	–	–	–		–	–		–
8260B	1,1,2-Trichloroethane	mg/Kg	0.018[2]	–	–	–	–		–	–		–
8260B	1,1-Dichloroethane	mg/Kg	25[2]	–	–	–	–		–	–		–
8260B	1,1-Dichloroethene	mg/Kg	0.016[2]	–	–	–	–		–	–		–
8260B	1,1-Dichloropropene	mg/Kg	NS	–	–	–	–		–	–		–
8260B	1,2,3-Trichlorobenzene	mg/Kg	NS	–	–	–	–		–	–		–
8260B	1,2,3-Trichloropropane	mg/Kg	0.00053[2]	–	–	–	–		–	–		–
8260B	1,2,4-Trichlorobenzene	mg/Kg	0.85[2]	–	–	–	–		–	–		–
8260B	1,2,4-Trimethylbenzene	mg/Kg	23[2]	–	–	–	–		–	–		–
8260B	1,2-Dibromo-3-Chloropropane	mg/Kg	1.1[2]	–	–	–	–		–	–		–
8260B	1,2-Dibromoethane	mg/Kg	0.00016[2]	–	–	–	–		–	–		–
8260B	1,2-Dichlorobenzene	mg/Kg	5.1[2]	–	–	–	–		–	–		–
8260B	1,2-Dichloroethane	mg/Kg	0.016[2]	–	–	–	–		–	–		–
8260B	1,2-Dichloropropane	mg/Kg	0.018[2]	–	–	–	–		–	–		–
8260B	1,3,5-Trimethylbenzene	mg/Kg	23[2]	–	–	–	–		–	–		–
8260B	1,3-Dichlorobenzene	mg/Kg	28[2]	–	–	–	–		–	–		–
8260B	1,3-Dichloropropane	mg/Kg	NS	–	–	–	–		–	–		–
8260B	1,4-Dichlorobenzene	mg/Kg	0.64[2]	–	–	–	–		–	–		–
8260B	2,2-Dichloropropane	mg/Kg	NS	–	–	–	–		–	–		–
8260B	2-Butanone (MEK)	mg/Kg	59[2]	–	–	–	–		–	–		–
8260B	2-Chlorotoluene	mg/Kg	NS	–	–	–	–		–	–		–
8260B	2-Hexanone	mg/Kg	NS	–	–	–	–		–	–		–
8260B	4-Chlorotoluene	mg/Kg	NS	–	–	–	–		–	–		–

Table H18 Site 10 Excavation C Soil Sample Results (continued)

			Sample ID	13NC10SS27	13NC10SS28	13NC10SS29	13NC10SS30	13NC10SS031	13NC10SS032	13NC10SS034[D]	13NC10SS033	13NC10SS045
			Laboratory ID	580-39655-2	580-39655-3	580-39655-4	580-39655-5	580-39796-1	580-39796-2	580-39796-4	580-39796-3	580-39839-19
			Location ID	13NC10SS27	13NC10SS28	13NC10SS29	13NC10SS30	13NC10SS31	13NC10SS32	13NC10SS34	13NC10SS33	13NC10SS45
			Collection Date	8/5/2013	8/5/2013	8/5/2013	8/5/2013	8/14/2013	8/14/2013	8/14/2013	8/14/2013	8/18/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**		Sidewall Sample	Sidewall Sample		Sidewall Sample				
8260B	4-Methyl-2-pentanone (MIBK)	mg/Kg	8.1[2]	–	–	–	–		–	–		–
8260B	Acetone	mg/Kg	88[2]	–	–	–	–		–	–		–
8260B	Benzene	mg/Kg	2.0[1]	–	–	–	–		–	–		–
8260B	Bromobenzene	mg/Kg	NS	–	–	–	–		–	–		–
8260B	Bromochloromethane	mg/Kg	NS	–	–	–	–		–	–		–
8260B	Bromodichloromethane	mg/Kg	0.044[2]	–	–	–	–		–	–		–
8260B	Bromoform	mg/Kg	0.34[2]	–	–	–	–		–	–		–
8260B	Bromomethane	mg/Kg	0.16[2]	–	–	–	–		–	–		–
8260B	Carbon disulfide	mg/Kg	12[2]	–	–	–	–		–	–		–
8260B	Carbon tetrachloride	mg/Kg	0.023[2]	–	–	–	–		–	–		–
8260B	Chlorobenzene	mg/Kg	0.63[2]	–	–	–	–		–	–		–
8260B	Chlorodibromomethane	mg/Kg	0.032[2]	–	–	–	–		–	–		–
8260B	Chloroethane	mg/Kg	580[2]	–	–	–	–		–	–		–
8260B	Chloroform	mg/Kg	0.46[2]	–	–	–	–		–	–		–
8260B	Chloromethane	mg/Kg	0.21[2]	–	–	–	–		–	–		–
8260B	cis-1,2-Dichloroethene	mg/Kg	0.24[2]	–	–	–	–		–	–		–
8260B	cis-1,3-Dichloropropene	mg/Kg	NS	–	–	–	–		–	–		–
8260B	Dibromomethane	mg/Kg	1.1[2]	–	–	–	–		–	–		–
8260B	Dichlorodifluoromethane	mg/Kg	140[2]	–	–	–	–		–	–		–
8260B	Ethylbenzene	mg/Kg	6.9[2]	–	–	–	–		–	–		–
8260B	Hexachlorobutadiene	mg/Kg	0.12[2]	–	–	–	–		–	–		–
8260B	Isopropylbenzene	mg/Kg	51[2]	–	–	–	–		–	–		–
8260B	Methyl tert-butyl ether	mg/Kg	1.3[2]	–	–	–	–		–	–		–
8260B	Methylene Chloride	mg/Kg	0.016[2]	–	–	–	–		–	–		–
8260B	Naphthalene	mg/Kg	120[1]	–	–	–	–		–	–		–
8260B	n-Butylbenzene	mg/Kg	15[2]	–	–	–	–		–	–		–
8260B	N-Propylbenzene	mg/Kg	15[2]	–	–	–	–		–	–		–
8260B	m,p-Xylene	mg/Kg	NS	–	–	–	–		–	–		–
8260B	o-Xylene	mg/Kg	NS	–	–	–	–		–	–		–
	Xylenes (Total)	mg/Kg	63[2]	–	–	–	–		–	–		–
8260B	p-Isopropyltoluene	mg/Kg	NS	–	–	–	–		–	–		–

Table H18 Site 10 Excavation C Soil Sample Results (continued)

			Sample ID	13NC10SS27	13NC10SS28	13NC10SS29	13NC10SS30	13NC10SS031	13NC10SS032	13NC10SS034[D]	13NC10SS033	13NC10SS045
			Laboratory ID	580-39655-2	580-39655-3	580-39655-4	580-39655-5	580-39796-1	580-39796-2	580-39796-4	580-39796-3	580-39839-19
			Location ID	13NC10SS27	13NC10SS28	13NC10SS29	13NC10SS30	13NC10SS31	13NC10SS32	13NC10SS34	13NC10SS33	13NC10SS45
			Collection Date	8/5/2013	8/5/2013	8/5/2013	8/5/2013	8/14/2013	8/14/2013	8/14/2013	8/14/2013	8/18/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**		Sidewall Sample	Sidewall Sample		Sidewall Sample				
8260B	sec-Butylbenzene	mg/Kg	12[2]	–	–	–	–		–	–		–
8260B	Styrene	mg/Kg	0.96[2]	–	–	–	–		–	–		–
8260B	tert-Butylbenzene	mg/Kg	12[2]	–	–	–	–		–	–		–
8260B	Tetrachloroethene	mg/Kg	0.024[2]	–	–	–	–		–	–		–
8260B	Toluene	mg/Kg	6.5[2]	–	–	–	–		–	–		–
8260B	trans-1,2-Dichloroethene	mg/Kg	0.37[2]	–	–	–	–		–	–		–
8260B	trans-1,3-Dichloropropene	mg/Kg	NS	–	–	–	–		–	–		–
8260B	Trichloroethene	mg/Kg	0.02[2]	–	–	–	–		–	–		–
8260B	Trichlorofluoromethane	mg/Kg	86[2]	–	–	–	–		–	–		–
8260B	Vinyl chloride	mg/Kg	0.0085[2]	–	–	–	–		–	–		–
8270C SIM/DoD	1-Methylnaphthalene	mg/Kg	6.2[2]	–	–	–	–		–	–		–
8270C SIM/DoD	2-Methylnaphthalene	mg/Kg	6.1[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Acenaphthene	mg/Kg	180[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Acenaphthylene	mg/Kg	180[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Anthracene	mg/Kg	3000[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Benzo[a]anthracene	mg/Kg	3.6[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Benzo[a]pyrene	mg/Kg	2.1[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Benzo[b]fluoranthene	mg/Kg	12[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Benzo[g,h,i]perylene	mg/Kg	38700[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Benzo[k]fluoranthene	mg/Kg	120[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Chrysene	mg/Kg	360[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Dibenz(a,h)anthracene	mg/Kg	4.0[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Fluoranthene	mg/Kg	1400[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Fluorene	mg/Kg	220[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	mg/Kg	41[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Naphthalene	mg/Kg	120[1]	–	–	–	–		–	–		–
8270C SIM/DoD	Phenanthrene	mg/Kg	3000[2]	–	–	–	–		–	–		–
8270C SIM/DoD	Pyrene	mg/Kg	1000[2]	–	–	–	–		–	–		–

Notes:

[1]Cleanup level set in 2009 Decision Document

[2]Cleanup level as stated in 18AAC75.341 Tables B1 and B2 (migration to groundwater).

– = analyte was not sampled for

BOLD = indicates sample concentration above cleanup level

[D]sample is a duplicate of the previous sample

B = analyte detected in the blank, result with potential high bias

DRO = diesel range organics

GRO = gasoline range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

ML = matrix interference is suspected, result with potential low bias

MH = matrix interference is suspected, result with potential high bias

ND = Sample result is non-detect with limit of detection (LOD) in parentheses

ND (LOQ) B = analyte was detected in the blank at similar concentrations to samples, re

PCB = polychlorinated biphenyl

QN = analyte result is considered an estimated value with uncertain bias due to a labora of acceptance limits, and/or the field duplicates not meet relative percent difference (RPI

RRO = residual range organics

SIM = selective ion monitoring

Table H19 Site 10 Excavation D Soil Sample Results

	Sample ID	13NC10SS017	13NC10SS018	13NC10SS021	13NC10SS022[D]	13NC10SS035	13NC10SS036	13NC10SS037	13NC10SS038	13NC10SS044[D]	13NC10SS039	13NC10SS040	13NC10SS041	13NC10SS042
	Laboratory ID	580-39443-1	580-39443-2	580-39443-3	580-39443-4	580-39839-9	580-39839-10	580-39839-11	580-39839-12	580-39839-18	580-39839-13	580-39839-14	580-39839-15	580-39839-16
	Location ID	131NC10SS17	131NC10SS18	131NC10SS21	131NC10SS21	13NC10SS35	13NC10SS36	13NC10SS37	13NC10SS38	13NC10SS38	13NC10SS39	13NC10SS40	13NC10SS41	13NC10SS42
	Collection Date	7/20/2013	7/21/2013	7/21/2013	7/21/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**											
AK101	GRO C6-C10	mg/Kg	300[2]	0.81 B	1.0 B	0.58 B	0.59 B	–	–	–	–	–	–	–	–
AK102	DRO (nC10-<nC25)	mg/Kg	9200[1]	1300 QH	8700	2100	1600	130	8500	460	2200	2200	660	7.7 J B	3000	2600
AK103	RRO (nC25-nC36)	mg/Kg	9200[1]	4800	**15000**	5100	4500	1400	5100	3500	5100	5200	4500	150	4100	6100
8015C	Ethylene glycol	mg/Kg	190[2]	ND (5.4) *	44 *	ND (5.5) *	ND (5.4) *	–	–	–	–	–	–	–	–	–
8015C	Propylene glycol	mg/Kg	NS	ND (3.3) *	ND (3.9) *	ND (3.3) *	ND (3.2) *	–	–	–	–	–	–	–	–	–
6020	Arsenic	mg/Kg	11[1]	6.5	6.7	5.8	5.9	–	–	–	–	–	–	–	–	–
6020	Barium	mg/Kg	1100[2]	44 QH	57	44	48	–	–	–	–	–	–	–	–	–
6020	Cadmium	mg/Kg	5[2]	0.19 QH	0.88	0.34	0.29	–	–	–	–	–	–	–	–	–
6020	Chromium	mg/Kg	25[2]	17 QH	23	19	17	–	–	–	–	–	–	–	–	–
6020	Lead	mg/Kg	400[2]	52	370	130	100	–	–	–	–	–	–	–	–	–
6020	Nickel	mg/Kg	86[2]	13 QH	23	15	13	–	–	–	–	–	–	–	–	–
6020	Selenium	mg/Kg	3.4[2]	1.0	1.1	1.1	1.0	–	–	–	–	–	–	–	–	–
6020	Silver	mg/Kg	11.2[2]	0.098 J	0.10 J	0.078 J	0.075 J	–	–	–	–	–	–	–	–	–
6020	Vanadium	mg/Kg	3400[2]	30 QH	25	26	27	–	–	–	–	–	–	–	–	–
6020	Zinc	mg/Kg	4100[2]	57	270	91	84	–	–	–	–	–	–	–	–	–
7471A	Mercury	mg/Kg	1.4[2]	0.018	0.043	0.030	0.029	–	–	–	–	–	–	–	–	–
8082	PCB-1016	mg/Kg	1[1]	ND (0.0054)	ND (0.0058)	ND (0.0055)	ND (0.0054)	–	–	–	–	–	–	–	–	–
8082	PCB-1221	mg/Kg	1[1]	ND (0.011)	ND (0.012)	ND (0.011)	ND (0.011)	–	–	–	–	–	–	–	–	–
8082	PCB-1232	mg/Kg	1[1]	ND (0.011)	ND (0.012)	ND (0.011)	ND (0.011)	–	–	–	–	–	–	–	–	–
8082	PCB-1242	mg/Kg	1[1]	ND (0.0054)	ND (0.0058)	ND (0.0055)	ND (0.0054)	–	–	–	–	–	–	–	–	–
8082	PCB-1248	mg/Kg	1[1]	ND (0.0054)	ND (0.0058)	ND (0.0055)	ND (0.0054)	–	–	–	–	–	–	–	–	–
8082	PCB-1254	mg/Kg	1[1]	0.018 QN	0.042 QH	ND (0.0055)	ND (0.0054)	–	–	–	–	–	–	–	–	–
8082	PCB-1260	mg/Kg	1[1]	ND (0.0054)	0.045 QH	ND (0.0055)	ND (0.0054)	–	–	–	–	–	–	–	–	–
8260B	1,1,1,2-Tetrachloroethane	mg/Kg	NS	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	1,1,1-Trichloroethane	mg/Kg	0.82[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	1,1,2,2-Tetrachloroethane	mg/Kg	0.017[2]	ND (0.0055)	ND (0.0066)	ND (0.0058)	ND (0.0057)	–	–	–	–	–	–	–	–	–
8260B	1,1,2-Trichloroethane	mg/Kg	0.018[2]	ND (0.0055)	ND (0.0066)	ND (0.0058)	ND (0.0057)	–	–	–	–	–	–	–	–	–
8260B	1,1-Dichloroethane	mg/Kg	25[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	1,1-Dichloroethene	mg/Kg	0.016[2]	ND (0.0062)	ND (0.0075)	ND (0.0066)	ND (0.0065)	–	–	–	–	–	–	–	–	–
8260B	1,1-Dichloropropene	mg/Kg	NS	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	1,2,3-Trichlorobenzene	mg/Kg	NS	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–
8260B	1,2,3-Trichloropropane	mg/Kg	0.00053[2]	**ND (0.019)**	**ND (0.022)**	**ND (0.02)**	**ND (0.019)**	–	–	–	–	–	–	–	–	–
8260B	1,2,4-Trichlorobenzene	mg/Kg	0.85[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	1,2,4-Trimethylbenzene	mg/Kg	23[2]	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–
8260B	1,2-Dibromo-3-Chloropropane	mg/Kg	1.1[2]	ND (0.093)	ND (0.11)	ND (0.099)	ND (0.097)	–	–	–	–	–	–	–	–	–
8260B	1,2-Dibromoethane	mg/Kg	0.00016[2]	**ND (0.0093)**	**ND (0.011)**	**ND (0.0099)**	**ND (0.0097)**	–	–	–	–	–	–	–	–	–
8260B	1,2-Dichlorobenzene	mg/Kg	5.1[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	1,2-Dichloroethane	mg/Kg	0.016[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	1,2-Dichloropropane	mg/Kg	0.018[2]	ND (0.0062)	ND (0.0075)	ND (0.0066)	ND (0.0065)	–	–	–	–	–	–	–	–	–
8260B	1,3,5-Trimethylbenzene	mg/Kg	23[2]	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–
8260B	1,3-Dichlorobenzene	mg/Kg	28[2]	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–
8260B	1,3-Dichloropropane	mg/Kg	NS	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	1,4-Dichlorobenzene	mg/Kg	0.64[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	2,2-Dichloropropane	mg/Kg	NS	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–

Table H19 Site 10 Excavation D Soil Sample Results (continued)

	Sample ID	13NC10SS017	13NC10SS018	13NC10SS021	13NC10SS022[D]	13NC10SS035	13NC10SS036	13NC10SS037	13NC10SS038	13NC10SS044[D]	13NC10SS039	13NC10SS040	13NC10SS041	13NC10SS042
	Laboratory ID	580-39443-1	580-39443-2	580-39443-3	580-39443-4	580-39839-9	580-39839-10	580-39839-11	580-39839-12	580-39839-18	580-39839-13	580-39839-14	580-39839-15	580-39839-16
	Location ID	131NC10SS17	131NC10SS18	131NC10SS21	131NC10SS21	13NC10SS35	13NC10SS36	13NC10SS37	13NC10SS38	13NC10SS38	13NC10SS39	13NC10SS40	13NC10SS41	13NC10SS42
	Collection Date	7/20/2013	7/21/2013	7/21/2013	7/21/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**											
8260B	2-Butanone (MEK)	mg/Kg	59[2]	ND (0.19)	ND (0.22)	ND (0.2)	ND (0.19)	–	–	–	–	–	–	–	–	–
8260B	2-Chlorotoluene	mg/Kg	NS	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	2-Hexanone	mg/Kg	NS	ND (0.093)	0.039 J	ND (0.099)	ND (0.097)	–	–	–	–	–	–	–	–	–
8260B	4-Chlorotoluene	mg/Kg	NS	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–
8260B	4-Methyl-2-pentanone (MIBK)	mg/Kg	8.1[2]	ND (0.093)	ND (0.11)	ND (0.099)	ND (0.097)	–	–	–	–	–	–	–	–	–
8260B	Acetone	mg/Kg	88[2]	ND (0.093)	0.26 B	ND (0.099)	ND (0.097)	–	–	–	–	–	–	–	–	–
8260B	Benzene	mg/Kg	2.0[1]	ND (0.0062)	ND (0.0075)	ND (0.0066)	ND (0.0065)	–	–	–	–	–	–	–	–	–
8260B	Bromobenzene	mg/Kg	NS	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	Bromochloromethane	mg/Kg	NS	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–
8260B	Bromodichloromethane	mg/Kg	0.044[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	Bromoform	mg/Kg	0.34[2]	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–
8260B	Bromomethane	mg/Kg	0.16[2]	ND (0.062)	ND (0.075)	ND (0.066)	ND (0.065)	–	–	–	–	–	–	–	–	–
8260B	Carbon disulfide	mg/Kg	12[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	Carbon tetrachloride	mg/Kg	0.023[2]	ND (0.0062)	ND (0.0075)	ND (0.0066)	ND (0.0065)	–	–	–	–	–	–	–	–	–
8260B	Chlorobenzene	mg/Kg	0.63[2]	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–
8260B	Chlorodibromomethane	mg/Kg	0.032[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	Chloroethane	mg/Kg	580[2]	ND (0.19)	ND (0.22)	ND (0.2)	ND (0.19)	–	–	–	–	–	–	–	–	–
8260B	Chloroform	mg/Kg	0.46[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	Chloromethane	mg/Kg	0.21[2]	ND (0.19)	**ND (0.22)**	ND (0.2)	ND (0.19)	–	–	–	–	–	–	–	–	–
8260B	cis-1,2-Dichloroethene	mg/Kg	0.24[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	cis-1,3-Dichloropropene	mg/Kg	NS	ND (0.0062)	ND (0.0075)	ND (0.0066)	ND (0.0065)	–	–	–	–	–	–	–	–	–
8260B	Dibromomethane	mg/Kg	1.1[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	Dichlorodifluoromethane	mg/Kg	140[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	Ethylbenzene	mg/Kg	6.9[2]	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–
8260B	Hexachlorobutadiene	mg/Kg	0.12[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	Isopropylbenzene	mg/Kg	51[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	Methyl tert-butyl ether	mg/Kg	1.3[2]	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–
8260B	Methylene Chloride	mg/Kg	0.016[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	Naphthalene	mg/Kg	120[1]	ND (0.0093)	0.021 J	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	n-Butylbenzene	mg/Kg	15[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	N-Propylbenzene	mg/Kg	15[2]	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–
8260B	m,p-Xylene	mg/Kg	NS	ND (0.012)	0.0087 J	ND (0.013)	ND (0.013)	–	–	–	–	–	–	–	–	–
8260B	o-Xylene	mg/Kg	NS	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
	Xylenes (Total)	mg/Kg	63[2]	ND (0.0213)	0.0087 J	ND (0.0229)	ND (0.021)	–	–	–	–	–	–	–	–	–
8260B	p-Isopropyltoluene	mg/Kg	NS	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–

Table H19 Site 10 Excavation D Soil Sample Results (continued)

			Sample ID	13NC10SS017	13NC10SS018	13NC10SS021	13NC10SS022[D]	13NC10SS035	13NC10SS036	13NC10SS037	13NC10SS038	13NC10SS044[D]	13NC10SS039	13NC10SS040	13NC10SS041	13NC10SS042
			Laboratory ID	580-39443-1	580-39443-2	580-39443-3	580-39443-4	580-39839-9	580-39839-10	580-39839-11	580-39839-12	580-39839-18	580-39839-13	580-39839-14	580-39839-15	580-39839-16
			Location ID	131NC10SS17	131NC10SS18	131NC10SS21	131NC10SS21	13NC10SS35	13NC10SS36	13NC10SS37	13NC10SS38	13NC10SS38	13NC10SS39	13NC10SS40	13NC10SS41	13NC10SS42
			Collection Date	7/20/2013	7/21/2013	7/21/2013	7/21/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013
Analysis Method	**Analyte**	**Unit**	**Soil Cleanup Level**													
8260B	sec-Butylbenzene	mg/Kg	12[2]	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–
8260B	Styrene	mg/Kg	0.96[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	tert-Butylbenzene	mg/Kg	12[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	Tetrachloroethene	mg/Kg	0.024[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	Toluene	mg/Kg	6.5[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	trans-1,2-Dichloroethene	mg/Kg	0.37[2]	ND (0.0093)	ND (0.011)	ND (0.0099)	ND (0.0097)	–	–	–	–	–	–	–	–	–
8260B	trans-1,3-Dichloropropene	mg/Kg	NS	ND (0.0062)	ND (0.0075)	ND (0.0066)	ND (0.0065)	–	–	–	–	–	–	–	–	–
8260B	Trichloroethene	mg/Kg	0.02[2]	ND (0.0062)	ND (0.0075)	ND (0.0066)	ND (0.0065)	–	–	–	–	–	–	–	–	–
8260B	Trichlorofluoromethane	mg/Kg	86[2]	ND (0.019)	ND (0.022)	ND (0.02)	ND (0.019)	–	–	–	–	–	–	–	–	–
8260B	Vinyl chloride	mg/Kg	0.0085[2]	ND (0.0031)	ND (0.0037)	ND (0.0033)	ND (0.0032)	–	–	–	–	–	–	–	–	–
8270C SIM	1-Methylnaphthalene	mg/Kg	6.2[2]	ND (0.0026)	ND (0.006)	0.024 QN	0.012 QN	–	–	–	–	–	–	–	–	–
8270C SIM	2-Methylnaphthalene	mg/Kg	6.1[2]	0.0035 J	0.1	0.044 QN	0.0075 QN	–	–	–	–	–	–	–	–	–
8270C SIM	Acenaphthene	mg/Kg	180[2]	ND (0.0026)	ND (0.006)	ND (0.0055)	ND (0.0028)	–	–	–	–	–	–	–	–	–
8270C SIM	Acenaphthylene	mg/Kg	180[2]	ND (0.0026)	0.091	0.023	0.014	–	–	–	–	–	–	–	–	–
8270C SIM	Anthracene	mg/Kg	3000[2]	ND (0.0026)	ND (0.006)	ND (0.0055)	ND (0.0028)	–	–	–	–	–	–	–	–	–
8270C SIM	Benzo[a]anthracene	mg/Kg	3.6[2]	ND (0.0026)	ND (0.006)	ND (0.0055)	ND (0.0028)	–	–	–	–	–	–	–	–	–
8270C SIM	Benzo[a]pyrene	mg/Kg	2.1[2]	0.014	0.1	0.057 QN	0.021 QN	–	–	–	–	–	–	–	–	–
8270C SIM	Benzo[b]fluoranthene	mg/Kg	12[2]	0.021 QH	ND (0.006)	0.034	ND (0.0028)	–	–	–	–	–	–	–	–	–
8270C SIM	Benzo[g,h,i]perylene	mg/Kg	38700[2]	0.0099	0.045	0.014	0.01	–	–	–	–	–	–	–	–	–
8270C SIM	Benzo[k]fluoranthene	mg/Kg	120[2]	0.018	0.084	0.027	0.023	–	–	–	–	–	–	–	–	–
8270C SIM	Chrysene	mg/Kg	360[2]	ND (0.0026)	0.12	0.073	0.049	–	–	–	–	–	–	–	–	–
8270C SIM	Dibenz(a,h)anthracene	mg/Kg	4.0[2]	ND (0.0026)	ND (0.006)	ND (0.0055)	ND (0.0028)	–	–	–	–	–	–	–	–	–
8270C SIM	Fluoranthene	mg/Kg	1400[2]	ND (0.0026)	0.057	ND (0.0055)	0.012	–	–	–	–	–	–	–	–	–
8270C SIM	Fluorene	mg/Kg	220[2]	ND (0.0026)	ND (0.006)	ND (0.0055)	ND (0.0028)	–	–	–	–	–	–	–	–	–
8270C SIM	Indeno[1,2,3-cd]pyrene	mg/Kg	41[2]	0.0057	0.025	0.0094 J	0.0071	–	–	–	–	–	–	–	–	–
8270C SIM	Naphthalene	mg/Kg	120[1]	0.0022 J	0.046	0.023 QN	0.0057 QN	–	–	–	–	–	–	–	–	–
8270C SIM	Phenanthrene	mg/Kg	3000[2]	0.013	0.075	0.025	0.021	–	–	–	–	–	–	–	–	–
8270C SIM	Pyrene	mg/Kg	1000[2]	0.033	0.35	0.091	0.066	–	–	–	–	–	–	–	–	–

Notes:

[1]Cleanup level set in 2009 Decision Document

[2]Cleanup level as stated in 18AAC75.341 Tables B1 and B2 (migration to groundwater).

– = analyte was not sampled for

*Glycol portion of analyses reported under work order 580-39441

BOLD = indicates sample concentration above cleanup level

[D]sample is a duplicate of the previous sample

B = analyte detected in the blank, result with potential high bias

DRO = diesel range organics

GRO = gasoline range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

ND = Sample result is non-detect with limit of detection (LOD) in parentheses

PCB = polychlorinated biphenyl

QH = laboratory quality issue, result with potential high bias

QN = analyte result is considered an estimated value with uncertain bias due to a laboratory quality control failure such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits, and/or the field duplicates not meet relative percent difference (RPD) limits but meet other acceptance criteria

RRO = residual range organics

SIM = selective ion monitoring

Table H20 Site 10 Soil Waste Characterization Sample Results

			Sample ID	13NC10WS001	13NC10WS002[b]	13NC10WS003	13NC10WS004	13NC10WS05	13NC10WS06
			Laboratory ID	580-39360-1	580-39360-2	580-39360-3	580-39360-4	580-39440-1	580-39544-1
			Location ID	10WS001	10WS002	10WS003	10WS004		13-10-2A
			Collection Date	7/13/2013	7/13/2013	7/14/2013	7/15/2013	7/20/2013	7/21/2013
Analysis Method	**Analyte**	**Unit**	**Regulatory Limit[1]**						
6020 (TCLP)	Arsenic	mg/L	5	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	
6020 (TCLP)	Barium	mg/L	100	0.23	0.23	0.46	0.14	0.19	
6020 (TCLP)	Cadmium	mg/L	1	0.0021 J	0.0020 J	0.00062 J	0.049	0.0017 J	
6020 (TCLP)	Chromium	mg/L	5	0.0027 J	ND (0.0030)	0.0027 J	0.015	ND (0.0030)	
6020 (TCLP)	Lead	mg/L	5	0.025	0.026	0.0094	0.019	0.23	
6020 (TCLP)	Selenium	mg/L	1	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	ND (0.0080)	
6020 (TCLP)	Silver	mg/L	5	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	
7470A (TCLP)	Mercury	mg/L	0.2	0.00048 J B	0.00051 J B	0.00054 J B	0.00055 J B	0.00052 J B	
8015C	Ethylene glycol	mg/Kg	NS	230 J	220	6.6 J	ND (6.0)	ND (5.7) *	490
8015C	Propylene glycol	mg/Kg	NS	7.8 J	7.7 J	ND (3.5)	ND (3.6)	ND (3.4) *	150
8082 (TCLP)	PCB-1016	mg/L	NS	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
8082 (TCLP)	PCB-1221	mg/L	NS	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	
8082 (TCLP)	PCB-1232	mg/L	NS	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
8082 (TCLP)	PCB-1242	mg/L	NS	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
8082 (TCLP)	PCB-1248	mg/L	NS	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	
8082 (TCLP)	PCB-1254	mg/L	NS	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
8082 (TCLP)	PCB-1260	mg/L	NS	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
8260B	1,1,1,2-Tetrachloroethane	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	1,1,1-Trichloroethane	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	1,1,2,2-Tetrachloroethane	mg/Kg	NS	ND (0.0083)	ND (0.0064)	ND (0.0053)	ND (0.0046)	ND (0.0057)	
8260B	1,1,2-Trichloroethane	mg/Kg	NS	ND (0.0083)	ND (0.0064)	ND (0.0053)	ND (0.0046)	ND (0.0057)	
8260B	1,1-Dichloroethane	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	1,1-Dichloroethene	mg/Kg	14.0[a]	ND (0.0094)	ND (0.0073)	ND (0.006)	ND (0.0052)	ND (0.0065)	
8260B	1,1-Dichloropropene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	1,2,3-Trichlorobenzene	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	1,2,3-Trichloropropane	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	1,2,4-Trichlorobenzene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	1,2,4-Trimethylbenzene	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	1,2-Dibromo-3-Chloropropane	mg/Kg	NS	ND (0.14)	ND (0.11)	ND (0.091)	ND (0.078)	ND (0.098)	
8260B	1,2-Dibromoethane	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	1,2-Dichlorobenzene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	1,2-Dichloroethane	mg/Kg	10.0[a]	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	1,2-Dichloropropane	mg/Kg	NS	ND (0.0094)	ND (0.0073)	ND (0.006)	ND (0.0052)	ND (0.0065)	
8260B	1,3,5-Trimethylbenzene	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	1,3-Dichlorobenzene	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	1,3-Dichloropropane	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	1,4-Dichlorobenzene	mg/Kg	150[a]	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	2,2-Dichloropropane	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	2-Butanone (MEK)	mg/Kg	4,000[a]	ND (0.28)	ND (0.22)	ND (0.18)	ND (0.16)	ND (0.2)	

Table H20 Site 10 Soil Waste Characterization Sample Results (continued)

			Sample ID	13NC10WS001	13NC10WS002[D]	13NC10WS003	13NC10WS004	13NC10WS05	13NC10WS06
			Laboratory ID	580-39360-1	580-39360-2	580-39360-3	580-39360-4	580-39440-1	580-39544-1
			Location ID	10WS001	10WS002	10WS003	10WS004		13-10-2A
			Collection Date	7/13/2013	7/13/2013	7/14/2013	7/15/2013	7/20/2013	7/21/2013
Analysis Method	Analyte	Unit	Regulatory Limit[1]						
8260B	2-Chlorotoluene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	2-Hexanone	mg/Kg	NS	ND (0.14)	ND (0.11)	ND (0.091)	ND (0.078)	ND (0.098)	
8260B	4-Chlorotoluene	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	4-Methyl-2-pentanone (MIBK)	mg/Kg	NS	ND (0.14)	ND (0.11)	ND (0.091)	ND (0.078)	ND (0.098)	
8260B	Acetone	mg/Kg	NS	0.096 J B	0.11 J B	ND (0.091)	ND (0.078)	0.098 B	
8260B	Benzene	mg/Kg	10[a]	ND (0.0094)	ND (0.0073)	ND (0.006)	ND (0.0052)	ND (0.0065)	
8260B	Bromobenzene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	Bromochloromethane	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	Bromodichloromethane	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	Bromoform	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	Bromomethane	mg/Kg	NS	ND (0.094)	ND (0.073)	ND (0.06)	ND (0.052)	ND (0.065)	
8260B	Carbon disulfide	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	Carbon tetrachloride	mg/Kg	10.0[a]	ND (0.0094)	ND (0.0073)	ND (0.006)	ND (0.0052)	ND (0.0065)	
8260B	Chlorobenzene	mg/Kg	2,000[a]	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	Chlorodibromomethane	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	Chloroethane	mg/Kg	NS	ND (0.28)	ND (0.22)	ND (0.18)	ND (0.16)	ND (0.2)	
8260B	Chloroform	mg/Kg	120[a]	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	Chloromethane	mg/Kg	NS	ND (0.28)	ND (0.22)	ND (0.18)	ND (0.16)	ND (0.2)	
8260B	cis-1,2-Dichloroethene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	cis-1,3-Dichloropropene	mg/Kg	NS	ND (0.0094)	ND (0.0073)	ND (0.006)	ND (0.0052)	ND (0.0065)	
8260B	Dibromomethane	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	Dichlorodifluoromethane	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	Ethylbenzene	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	Hexachlorobutadiene	mg/Kg	10.0[a]	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	Isopropylbenzene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	m,p-Xylene	mg/Kg	NS	ND (0.019)	ND (0.015)	ND (0.012)	ND (0.01)	ND (0.013)	
8260B	Methyl tert-butyl ether	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	Methylene Chloride	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	Naphthalene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	n-Butylbenzene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	N-Propylbenzene	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	o-Xylene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	p-Isopropyltoluene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	sec-Butylbenzene	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	Styrene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	tert-Butylbenzene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	Tetrachloroethene	mg/Kg	14[a]	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	Toluene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	
8260B	trans-1,2-Dichloroethene	mg/Kg	NS	ND (0.014)	ND (0.011)	ND (0.0091)	ND (0.0078)	ND (0.0098)	

Table H20 Site 10 Soil Waste Characterization Sample Results (continued)

			Sample ID	13NC10WS001	13NC10WS002[D]	13NC10WS003	13NC10WS004	13NC10WS05	13NC10WS06
			Laboratory ID	580-39360-1	580-39360-2	580-39360-3	580-39360-4	580-39440-1	580-39544-1
			Location ID	10WS001	10WS002	10WS003	10WS004		13-10-2A
			Collection Date	7/13/2013	7/13/2013	7/14/2013	7/15/2013	7/20/2013	7/21/2013
Analysis Method	**Analyte**	**Unit**	**Regulatory Limit[1]**						
8260B	trans-1,3-Dichloropropene	mg/Kg	NS	ND (0.0094)	ND (0.0073)	ND (0.006)	ND (0.0052)	ND (0.0065)	
8260B	Trichloroethene	mg/Kg	10.0[a]	ND (0.0094)	ND (0.0073)	ND (0.006)	ND (0.0052)	ND (0.0065)	
8260B	Trichlorofluoromethane	mg/Kg	NS	ND (0.028)	ND (0.022)	ND (0.018)	ND (0.016)	ND (0.02)	
8260B	Vinyl chloride	mg/Kg	4.0[a]	ND (0.0047)	ND (0.0037)	ND (0.003)	ND (0.0026)	ND (0.0033)	
8270C SIM	1-Methylnaphthalene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	0.00003 J	0.000087 J	0.000037 J	
8270C SIM	2-Methylnaphthalene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	0.00006 J	0.000056 J	
8270C SIM	Acenaphthene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	
8270C SIM	Acenaphthylene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	
8270C SIM	Anthracene	mg/Kg	NS	ND (0.000075) QL	ND (0.000075) QL	ND (0.000075) QL	ND (0.000075) QL	ND (0.000075)	
8270C SIM	Benzo[a]anthracene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	
8270C SIM	Benzo[a]pyrene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	
8270C SIM	Benzo[b]fluoranthene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	
8270C SIM	Benzo[g,h,i]perylene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	
8270C SIM	Benzo[k]fluoranthene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	
8270C SIM	Chrysene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	
8270C SIM	Dibenz(a,h)anthracene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	
8270C SIM	Fluoranthene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	
8270C SIM	Fluorene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	
8270C SIM	Indeno[1,2,3-cd]pyrene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	
8270C SIM	Naphthalene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	0.00004 J	0.000039 J	0.00023 B	
8270C SIM	Phenanthrene	mg/Kg	NS	0.000036 J	0.000047 J	ND (0.000075)	0.000046 J	0.000044 J	
8270C SIM	Pyrene	mg/Kg	NS	ND (0.000075)	ND (0.000075)	ND (0.000075)	ND (0.000075)	0.000048 J	
AK101	GRO C6-C10	mg/Kg	NS	0.83 J B	0.6 J B	1.0 J B	0.6 J B	0.71 J B	
AK102	DRO (nC10-<nC25)	mg/Kg	NS	120	86	10000	9100	3300	
AK103	RRO (nC25-nC36)	mg/Kg	NS	200	200	5400	2900	4800	

Notes:

*Glycol portion of analyses reported under work order 580-39441

[1] Criteria specified in Table 1, 40CFR section 261,21-30.

[a]20 times rule applied as samples were not extracted and analyzed by TCLP protocol due to matrix solubility issues.

B = analyte detected in the blank, result with potential high bias

[D]sample is a duplicate of the previous sample

J = Result is an estimate

mg/Kg = milligrams per kilogram

mg/L = milligrams per liter

NS = not specified in 40CFRSection 261.24 Table 1 (toxicity characteristic table).

ND = sample result is non-detect with the limit of detection (LOD) in parentheses

QL = laboratory quality issue, result with potential low bias

TCLP = samples extracted using the toxicity characteristic leaching procedure

Table H21 Site 10 Drum Waste Characterization Sample Results

		Sample ID	13NC10DS01	13NC10DS02			13NC10DS03
		Laboratory ID	280-46355-1	280-46355-2			280-46355-3
		Location ID	13NC10D01	13NC10D02			13NC10D03
		Collection Date	9/5/2013	9/5/2013			9/5/2013
Specific Method	**Analyte**	**Units**	**Regulatory Limit[1]**		**Units**	**Regulatory Limit[a]**	
1010A	Flashpoint	Degrees F	<140				>160
6010B	Arsenic	mg/L	5	ND (0.013)	ND (0.013)	mg/kg	100	ND (1.00)
6010B	Barium	mg/L	100	0.049 J	0.094 J	mg/kg	2000	2.6
6010B	Cadmium	mg/L	1	0.00091 J	ND (0.0014)	mg/kg	20	0.4 J
6010B	Chromium	mg/L	5	0.0022 J	0.0008 J	mg/kg	100	ND (0.31)
6010B	Lead	mg/L	5	0.02 J	0.015 J	mg/kg	100	7.9
6010B	Nickel	mg/L	NS	0.0079 J	0.0061 J	mg/kg	NS	ND (2.1)
6010B	Selenium	mg/L	5	ND (0.015)	ND (0.015)	mg/kg	100	2.3
6010B	Silver	mg/L	0.2	ND (0.003)	ND (0.003)	mg/kg	4	ND (0.21)
6010B	Vanadium	mg/L	NS	ND (0.0012)	ND (0.0012)	mg/kg	NS	ND (0.21)
6010B	Zinc	mg/L	NS	0.19 J	0.1 J	mg/kg	NS	440
7470A	Mercury	mg/L	0.2	ND (8e-005)	ND (8e-005)	mg/kg	4	ND (0.022)
7471A	Mercury	mg/Kg	4.0[a]					ND (0.022)
8082	PCB-1016	mg/Kg	50					ND (0.6) QL
8082	PCB-1221	mg/Kg	50					ND (1.2) QL
8082	PCB-1232	mg/Kg	50					ND (0.6) QL
8082	PCB-1242	mg/Kg	50					ND (0.6) QL
8082	PCB-1248	mg/Kg	50					ND (0.6) QL
8082	PCB-1254	mg/Kg	50					ND (0.6) QL
8082	PCB-1260	mg/Kg	50					ND (0.6) QL
8260B	1,1-Dichloroethene	mg/Kg	14.0[a]					ND (5.3)
8260B	1,1-Dichloroethene	mg/L	0.7	ND (0.004)	ND (0.004)			
8260B	1,2-Dichloroethane	mg/Kg	10[a]					ND (4.2)
8260B	1,2-Dichloroethane	mg/L	0.5	ND (0.004)	ND (0.004)			
8260B	2-Butanone (MEK)	mg/Kg	4,000[a]					ND (11)
8260B	2-Butanone (MEK)	mg/L	200	ND (0.032)	ND (0.032)			
8260B	Benzene	mg/Kg	10[a]					ND (5.3)
8260B	Benzene	mg/L	0.5	ND (0.002)	ND (0.002)			
8260B	Carbon tetrachloride	mg/Kg	10.0[a]					ND (5.3)
8260B	Carbon tetrachloride	mg/L	0.5	ND (0.004)	ND (0.004)			
8260B	Chlorobenzene	mg/Kg	2,000[a]					ND (5.3)
8260B	Chlorobenzene	mg/L	100	ND (0.002)QL	ND (0.002)			
8260B	Chloroform	mg/Kg	120[a]					ND (5.3)
8260B	Chloroform	mg/L	6	ND (0.002)	ND (0.002)			
8260B	Tetrachloroethene	mg/Kg	14[a]					ND (5.3)
8260B	Tetrachloroethene	mg/L	0.7	ND (0.004)	ND (0.004)			
8260B	Trichloroethene	mg/Kg	10[a]					ND (5.3)
8260B	Trichloroethene	mg/L	0.5	0.017	ND (0.002)			
8260B	Vinyl chloride	mg/Kg	4.0[a]					ND (5.3)
8260B	Vinyl chloride	mg/L	0.2	ND (0.008)	ND (0.008)			
8270 SIM DoD	1-Methylnaphthalene	mg/L	NS	0.0001 J	0.0019			
8270 SIM DoD	2-Methylnaphthalene	mg/L	NS	0.00012 J	0.0017			
8270 SIM DoD	Acenaphthene	mg/L	NS	ND (0.00005)	0.000094 J			
8270 SIM DoD	Acenaphthylene	mg/L	NS	ND (0.000059)	ND (0.000059)			
8270 SIM DoD	Anthracene	mg/L	NS	ND (0.00005)	0.12 J			
8270 SIM DoD	Benzo[a]anthracene	mg/L	NS	ND (0.00005)	ND (0.049)			
8270 SIM DoD	Benzo[a]pyrene	mg/L	NS	ND (0.00005)	ND (0.049)			
8270 SIM DoD	Benzo[b]fluoranthene	mg/L	NS	ND (0.00005)	ND (0.049)			
8270 SIM DoD	Benzo[g,h,i]perylene	mg/L	NS	ND (0.00005)	ND (0.049)			
8270 SIM DoD	Benzo[k]fluoranthene	mg/L	NS	ND (0.00005)	ND (0.049)			
8270 SIM DoD	Chrysene	mg/L	NS	ND (0.00005)	ND (0.049)			
8270 SIM DoD	Dibenz(a,h)anthracene	mg/L	NS	ND (0.00005)	ND (0.049)			
8270 SIM DoD	Fluoranthene	mg/L	NS	ND (0.00005)	0.000052 J			
8270 SIM DoD	Fluorene	mg/L	NS	ND (0.00005)	0.00058			
8270 SIM DoD	Indeno[1,2,3-cd]pyrene	mg/L	NS	ND (0.00005)	ND (0.049)			
8270 SIM DoD	Naphthalene	mg/L	NS	0.0022	0.0016			
8270 SIM DoD	Phenanthrene	mg/L	NS	0.0002 J	0.0015			
8270 SIM DoD	Pyrene	mg/L	NS	ND (0.00005)	0.000042 J			
8270C	1-Methylnaphthalene	mg/Kg	NS					700 J
8270C	2-Methylnaphthalene	mg/Kg	NS					1200
8270C	Acenaphthene	mg/Kg	NS					ND (51)
8270C	Acenaphthylene	mg/Kg	NS					ND (98)
8270C	Anthracene	mg/Kg	NS					ND (98)
8270C	Benzo[a]anthracene	mg/Kg	NS					ND (98)
8270C	Benzo[a]pyrene	mg/Kg	NS					ND (98)
8270C	Benzo[b]fluoranthene	mg/Kg	NS					ND (98)
8270C	Benzo[g,h,i]perylene	mg/Kg	NS					ND (98)
8270C	Benzo[k]fluoranthene	mg/Kg	NS					ND (200)
8270C	Chrysene	mg/Kg	NS					ND (98)
8270C	Dibenz(a,h)anthracene	mg/Kg	NS					ND (98)
8270C	Fluoranthene	mg/Kg	NS					ND (200)
8270C	Fluorene	mg/Kg	NS					ND (98)
8270C	Indeno[1,2,3-cd]pyrene	mg/Kg	NS					ND (98)
8270C	Naphthalene	mg/Kg	NS					570 J
8270C	Phenanthrene	mg/Kg	NS					ND (98)
8270C	Pyrene	mg/Kg	NS					ND (98)

Notes:

< = less than

> = greater than

[1]Criteria specified in Table 1, 40CFR section 261,21-30.

[a]20 times rule applied as samples were not extracted and analyzed by TCLP protocol due to matrix solubility issues.

J = result is an estimate

mg/Kg = milligrams per kilogram

mg/L = milligrams per liter

ND = result is non-detect with the limit of detection (LOD) in parentheses

NS = not specified in 40CFRSection 261.24 Table 1 (toxicity characteristic table).

QL = laboratory quality issue, result with potential low bias

Table H22 Pipeline Break Soil Sample Results

			Sample ID	13NCPBSS01	13NCPBSS02	13NCPBSS03	13NCPBSS04[D]	13NCPBSS05	13NCPBSS06	13NCPBSS07	13NCPBSS08	13NCPBSS09
			Sample Depth (feet bgs)	1	2	1	1	2	1	2	1	2
			Laboratory ID	580-39757-1	580-39757-2	580-39757-3	580-39757-4	580-39757-5	580-39757-6	580-39757-7	580-39757-8	580-39757-9
			Location ID	PBR-01-1	PBR-01-2	PBR-02-1	PBR-02-1	PBR-02-2	PBR-03-1	PBR-03-2	PBR-04-1	PBR-04-2
			Collection Date	8/10/2013	8/10/2013	8/10/2013	8/10/2013	8/10/2013	8/10/2013	8/10/2013	8/10/2013	8/10/2013
Analysis Method	**Analyte**	**Units**	**Cleanup Level**									
8260B	Benzene	mg/Kg	2.0[1]	ND (0.0032)	ND (0.0041)	ND (0.0043)	ND (0.004)	ND (0.0078)	ND (0.0058)	ND (0.018)	ND (0.023)	ND (0.03)
8260B	Ethylbenzene	mg/Kg	6.9[2]	ND (0.0097)	ND (0.012)	ND (0.013)	ND (0.012)	ND (0.023)	ND (0.017)	ND (0.053)	ND (0.069)	ND (0.089)
8260B	m,p-Xylene	mg/Kg	NS	ND (0.0065)	ND (0.0083)	ND (0.0087)	ND (0.008)	ND (0.016)	ND (0.012)	ND (0.035)	ND (0.046)	ND (0.059)
8260B	o-Xylene	mg/Kg	NS	ND (0.0048)	ND (0.0062)	ND (0.0065)	ND (0.006)	ND (0.012)	ND (0.0087)	ND (0.027)	ND (0.035)	ND (0.044)
8260B	Xylenes (Total)	mg/Kg	63[2]	ND (0.0113)	ND (0.0145)	ND (0.0152)	ND (0.014)	ND (0.028)	ND (0.0207)	ND (0.062)	ND (0.081)	ND (0.103)
8260B	Toluene	mg/Kg	6.5[2]	ND (0.0048)	ND (0.0062)	ND (0.0065)	ND (0.006)	ND (0.012)	ND (0.0087)	ND (0.027)	ND (0.035)	ND (0.044)
AK101	GRO	mg/Kg	300[2]	ND (0.35)	0.51 J	0.25 J	0.23 J	ND (0.86)	0.4 J	1.2 B	1.5 QL	2.2 QL
AK102	DRO	mg/Kg	9200[1]	29 B	30 B	43 B	27 B	140	110	640	300	330 QL
AK103	RRO	mg/Kg	9200[1]	190	97 B	190	110 B	1000	840	5700	2200	2300 QN

Notes:

[1]Cleanup levels established in 2009 Decision Document

[2]Cleanup level as stated in 18AAC75.341 Tables B1 and B2 (migration to groundwater).

B = analyte detected in the blank, result with potential high bias

DRO = diesel range organics

[D]sample is a duplicate of the previous sample

GRO = gasoline range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

ND = result is non-detect with limit of detection (LOD) in parentheses

QL = laboratory quality issue, result with potential low bias

QN = analyte result is considered an estimated value with uncertain bias due to a laboratory quality control failure such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits.

RRO = residual range organics

Table H23 Roadway Soil Sample Results

			Sample ID	13NCRWSS01	13NCRWSS02	13NCRWSS03	13NCRWSS04	13NCRWSS05	13NCRWSS06[D]	13NCRWSS07	13NCRWSS08	13NCRWSS09
			Sample Depth (feet bgs)	1	2	1	2	1	1	2	1	2
			Laboratory ID	580-39839-20	580-39839-21	580-39839-22	580-39839-23	580-39839-24	580-39839-25	580-39839-26	580-39839-27	580-39839-28
			Location ID	RWS-01-1	RWS-01-2	RWS-02-1	RWS-02-2	RWS-03-1	RWS-03-1	RWS-03-2	RWS-04-1	RWS-04-2
			Collection Date	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013	8/18/2013
Analytical Method	**Analyte**	**Units**	**Cleanup Level**									
6020	Arsenic	mg/Kg	11[1]	5.4	3.4	4.1	4.1	7.8	6.9	4.4	4	3.2
6020	Barium	mg/Kg	1100[2]	30	39	90	54	60	49	100	56 QH	110
6020	Cadmium	mg/Kg	5.0[2]	0.12 J	0.14 J	0.24	0.41	0.24	0.18 J	0.71	0.18 J	0.39
6020	Chromium	mg/Kg	25[2]	11	11	23	34	42	26	40	21 QH	38
6020	Lead	mg/Kg	400[2]	19	15	19	32	25	21	69	25	43
6020	Selenium	mg/Kg	3.4[2]	0.77	0.64 J	0.53 J	0.7	1.4	1.2	0.8	1.4	1.2
6020	Silver	mg/Kg	11.2[2]	0.045 J	0.039 J	0.084 J	0.15 J	0.2 J	0.12 J	0.25	0.18 J	0.18 J
6020	Zinc	mg/Kg	4100[2]	37	32	68	97	82	58	180	47 QH	110
7471A	Mercury	mg/Kg	1.4[2]	0.017	ND (0.0076)	ND (0.0074)	0.016	0.019	0.017	ND (0.0072)	0.017	0.016
8082	PCB-1016	mg/Kg	1.0[1]	ND (0.005)	ND (0.0051)	ND (0.0052)	ND (0.0053)	ND (0.0054)	ND (0.0055)	ND (0.0053)	ND (0.0053)	ND (0.0053)
8082	PCB-1221	mg/Kg	1.0[1]	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)
8082	PCB-1232	mg/Kg	1.0[1]	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)
8082	PCB-1242	mg/Kg	1.0[1]	ND (0.005)	ND (0.0051)	ND (0.0052)	ND (0.0053)	ND (0.0054)	ND (0.0055)	ND (0.0053)	ND (0.0053)	ND (0.0053)
8082	PCB-1248	mg/Kg	1.0[1]	ND (0.005)	ND (0.0051)	ND (0.0052)	ND (0.0053)	ND (0.0054)	ND (0.0055)	ND (0.0053)	ND (0.0053)	ND (0.0053)
8082	PCB-1254	mg/Kg	1.0[1]	ND (0.005)	ND (0.0051)	ND (0.0052)	ND (0.0053)	ND (0.0054)	ND (0.0055)	ND (0.0053)	ND (0.0053)	ND (0.0053)
8082	PCB-1260	mg/Kg	1.0[1]	ND (0.005)	ND (0.0051)	0.013	ND (0.0053)	ND (0.0054)	ND (0.0055)	ND (0.0053)	ND (0.0053)	ND (0.0053)
8260B	Benzene	mg/Kg	2.0[1]	ND (0.0057)	ND (0.0047)	ND (0.0062)	ND (0.0049)	ND (0.0064)	ND (0.0056)	ND (0.0054)	ND (0.00053)	ND (0.0067)
8260B	Ethylbenzene	mg/Kg	6.9[2]	ND (0.017)	ND (0.014)	ND (0.019)	ND (0.015)	ND (0.019)	ND (0.017)	ND (0.016)	ND (0.016)	ND (0.02)
8260B	m,p-Xylene	mg/Kg	NS	ND (0.011)	ND (0.0095)	ND (0.012)	ND (0.0098)	ND (0.013)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.013)
8260B	o-Xylene	mg/Kg	NS	ND (0.0086)	ND (0.0071)	ND (0.0093)	ND (0.0073)	ND (0.0096)	ND (0.0085)	ND (0.0081)	ND (0.0079)	ND (0.001)
8260B	Xylenes(Total-m	mg/Kg	63[2]	ND (0.0196)	ND (0.0166)	ND (0.0213)	ND (0.0171)	ND (0.0226)	ND (0.0195)	ND (0.0191)	ND (0.0189)	ND (0.023)
8260B	Toluene	mg/Kg	6.5[2]	ND (0.0086)	ND (0.0071)	ND (0.0093)	ND (0.0073)	ND (0.0096)	ND (0.0085)	ND (0.0081)	ND (0.0079)	ND (0.01)
8270 SIM	1-Methylnaphth	mg/Kg	6.2[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	2-Methylnaphth	mg/Kg	6.1[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Acenaphthene	mg/Kg	180[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Acenaphthylene	mg/Kg	180[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Anthracene	mg/Kg	3000[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Benzo[a]anthra	mg/Kg	3.6[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Benzo[a]pyrene	mg/Kg	2.1[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Benzo[b]fluoran	mg/Kg	12[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Benzo[g,h,i]per	mg/Kg	38700[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Benzo[k]fluoran	mg/Kg	120[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Chrysene	mg/Kg	360[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Dibenz(a,h)anth	mg/Kg	4.0[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Fluoranthene	mg/Kg	1400[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Fluorene	mg/Kg	220[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Indeno[1,2,3-cd	mg/Kg	41[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Naphthalene	mg/Kg	120[1]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Phenanthrene	mg/Kg	3000[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
8270 SIM	Pyrene	mg/Kg	1000[2]	ND (0.0026)	ND (0.0025)	ND (0.0024)	ND (0.0026)	ND (0.0026)	ND (0.0028)	ND (0.0025)	ND (0.0026)	ND (0.0027)
AK101	GRO-C6-C10	mg/Kg	300[2]	0.31 B	ND (0.52)	ND (0.68)	0.24 B	ND (0.7)	ND (0.62)	ND (0.59)	ND (0.58) QL	ND (0.73)
AK102	DRO (nC10-<nC	mg/Kg	9200[1]	21 B	8.9 B	8 B	11 B	20 B QN	45 QN	9.1 B	29	13 B
AK103	RRO (nC25-nC3	mg/Kg	9200[1]	110	29 J	35 J	43 J	210 QN	530 QN	45 J	350	110

Notes:

[1] Cleanup level set in 2009 Decision Document

[2]Cleanup level as stated in 18AAC75.341 Tables B1 and B2 (migration to groundwater).

BOLD = indicates sample concentration above cleanup level

B = analyte detected in the blank, result with potential high bias

bgs = below ground surface

DRO = diesel range organics

[D]sample is a duplicate of the previous sample

GRO = gasoline range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

ND = Sample result is non-detect with limit of detection (LOD) in parentheses

PCB = polychlorinated biphenyl

QH = laboratory quality issue, result with potential high bias

QN = Analyte result is considered an estimated value with uncertain bias since the field duplicates not meet relative percent difference (RPD) limits but meet other acceptance criteria.

RRO = residual range organics

SIM = selective ion monitoring

Table H24 Site 28 Treated Water Sample Results

			Sample ID	13NC28TWA01	13NC28TWA02	13NC28TWA03[D]	13NC28TWA04	13NC28TWA05[D]	13NC28TWA06	13NC28TWA07	13NC28TWA08
			Laboratory ID	580-39293-1	580-39293-2	580-39293-3	580-39641-2	580-39641-3	580-39723-2	580-39839-30	580-40062-3
			Collection Date	7/9/2013	7/9/2013	7/9/2013	8/4/2013	8/4/2013	8/8/2013	8/19/2013	8/29/2013
			Location ID	CWA028-1	CWA028-2	CWA028-3	28-TWA-04	28-TWA-05	28-TWA-06	28-TWA-07	28-TWA-08
Analysis Method	**Analyte**	**Unit**	**Discharge Permit Limit [1]**								
8260B/DoD	Benzene	µg/L		ND (0.45)	ND (0.45)	ND (0.45)	0.23 J	0.23 J	ND (0.45)	ND (0.45)	ND (0.45)
8260B/DoD	Ethylbenzene	µg/L		ND (0.45)	ND (0.45)	ND (0.45)	1.3	1.2	ND (0.45)	ND (0.45)	ND (0.45)
8260B/DoD	m & p-Xylene	µg/L		ND (0.90)	ND (0.90)	ND (0.90)	4.3	4.3	3	ND (0.90)	ND (0.9)
8260B/DoD	o-Xylene	µg/L		ND (0.45)	ND (0.45)	ND (0.45)	3	3	2.6	ND (0.45)	ND (0.45)
8260B/DoD	Toluene	µg/L		ND (0.45)	ND (0.45)	ND (0.45)	0.28 J	0.28 J	0.15 J	ND (0.45)	ND (0.45)
Total Aromatic Hydrocarbons (TAH) Sum of BTEX			**10 µg/L**	2.7	2.7	2.7	9.1	9.0	6.7	2.7	2.7
8270C SIM/DoD	1-Methylnaphthalene	µg/L		ND (0.015)	0.014 J	0.012 J	1.6	1.6	0.73	ND (0.015)	ND (0.015)
8270C SIM/DoD	2-Methylnaphthalene	µg/L		ND (0.015)	0.010 J	0.026 J	2.4	2.3	0.17	ND (0.015)	ND (0.015)
8270C SIM/DoD	Acenaphthene	µg/L		ND (0.015)	ND (0.015)	0.013 J	0.082 QN	0.045 QN	ND (0.015)	0.014 J	0.012 J
8270C SIM/DoD	Acenaphthylene	µg/L		ND (0.015)	ND (0.015)	0.016 J	0.041	0.035	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Anthracene	µg/L		ND (0.015) QL	ND (0.015)	ND (0.015)	0.0092 J	0.0085 J	0.01 J	ND (0.015)	ND (0.015)
8270C SIM/DoD	Benzo[a]anthracene	µg/L		0.0072 J	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Benzo[a]pyrene	µg/L		ND (0.015) QL	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Benzo[b]fluoranthene	µg/L		0.019 J	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Benzo[g,h,i]perylene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Benzo[k]fluoranthene	µg/L		0.013 J	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Chrysene	µg/L		0.019 J	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Dibenz(a,h)anthracene	µg/L		0.012 J B	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Fluoranthene	µg/L		ND (0.015)	ND (0.015)	0.0080 J	0.011 J	0.0096 J	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Fluorene	µg/L		ND (0.015)	0.0070 J	0.010 J	0.13	0.093	0.077	ND (0.015)	ND (0.015)
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	µg/L		0.016 J B	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Naphthalene	µg/L		0.011 J	0.020 QN	0.042 QN	2.7	2.7	0.078	ND (0.015)	0.012 J
8270C SIM/DoD	Phenanthrene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	0.051	0.05	0.016 J	ND (0.015)	ND (0.015)
8270C SIM/DoD	Pyrene	µg/L		0.0075 J B	ND (0.015)	0.0085 J B	ND (0.016)	0.011 J	0.012 J	ND (0.015)	ND (0.015)
Total Aqueous Hydrocarbons (TAqH) Sum of BTEX + PAHs			**15 µg/L**	3.0	3.0	3.0	**16.3**	**16.0**	7.9	3.0	3.0
			Evaluation Critiera [2]								

Table H24 Site 28 Treated Water Sample Results (continued)

		Sample ID		13NC28TWA01	13NC28TWA02	13NC28TWA03[D]	13NC28TWA04	13NC28TWA05[D]	13NC28TWA06	13NC28TWA07	13NC28TWA08
		Laboratory ID		580-39293-1	580-39293-2	580-39293-3	580-39641-2	580-39641-3	580-39723-2	580-39839-30	580-40062-3
		Collection Date		7/9/2013	7/9/2013	7/9/2013	8/4/2013	8/4/2013	8/8/2013	8/19/2013	8/29/2013
		Location ID		CWA028-1	CWA028-2	CWA028-3	28-TWA-04	28-TWA-05	28-TWA-06	28-TWA-07	28-TWA-08
Analysis Method	**Analyte**	**Unit**	**Discharge Permit Limit [1]**								
6020	Arsenic	mg/L	0.01	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.004)	ND (0.004)	ND (0.004)	0.0054	ND (0.004)
6020	Barium	mg/L	2	0.0028 J	0.0065	0.0061	0.022	0.023	0.023	0.040	0.018
6020	Cadmium	mg/L	0.005	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	0.00039 J	0.00078 J
6020	Chromium	mg/L	0.1	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)
6020	Lead	mg/L	0.015	ND (0.00025)	ND (0.00025)	ND (0.00025)	0.001 J	0.001 J	0.0004 J	0.0023	0.009
6020	Nickel	mg/L	0.1	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	0.0045 J	ND (0.0025)
6020	Selenium	mg/L	0.05	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.0040)	ND (0.004)
6020	Silver	mg/L	0.1	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Vanadium	mg/L	0.26	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.0050)	ND (0.005)
6020	Zinc	mg/L	5	ND (0.0050)	ND (0.0050)	ND (0.0050)	0.022	0.02	0.012	0.099	0.7
7470A	Mercury	mg/L	0.002	ND (0.002) B	ND (0.002) B	ND (0.002) B	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.00010) QL	ND (0.0001)
8082	PCB-1016	µg/L	0.5	ND (0.051)	ND (0.051)	ND (0.050)	ND (0.049)	ND (0.05)	ND (0.048)	ND (0.048)	ND (0.05)
8082	PCB-1221	µg/L	0.5	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.098)	ND (0.1)	ND (0.096)	ND (0.096)	ND (0.1)
8082	PCB-1232	µg/L	0.5	ND (0.051)	ND (0.051)	ND (0.050)	ND (0.049)	ND (0.05)	ND (0.048)	ND (0.048)	ND (0.05)
8082	PCB-1242	µg/L	0.5	ND (0.051)	ND (0.051)	ND (0.050)	ND (0.049)	ND (0.05)	ND (0.048)	ND (0.048)	ND (0.05)
8082	PCB-1248	µg/L	0.5	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.098)	ND (0.1)	ND (0.096)	ND (0.096)	ND (0.1)
8082	PCB-1254	µg/L	0.5	ND (0.051)	ND (0.051)	ND (0.050)	ND (0.049)	ND (0.05)	ND (0.048)	ND (0.048)	ND (0.05)
8082	PCB-1260	µg/L	0.5	ND (0.051)	ND (0.051)	ND (0.050)	ND (0.049)	ND (0.05)	ND (0.048)	ND (0.048)	ND (0.05)
AK102 & 103	DRO (nC10-<nC25)	mg/L	1.5	0.24 J	0.12	0.12	**3.7**	**4.4**	**2.7**	0.18	0.13
AK102 & 103	RRO (nC25-nC36)	mg/L	1.1	0.16	0.11	0.11	1	**1.2**	**1.2**	ND (0.2)	ND (0.049)

Notes:

[1]Treated water discharge criteria specified in ADEC Discharge Permit 2009DB0004-0216 for Site 28 and General Discharge Permit 2009DB0004 for the MOC

2-Evaluation criteria from 18AAC75 Table C.

[D]sample is a duplicate of the previous sample

BOLD = indicates sample concentration above regulatory limit

B = analyte detected in the blank, result with potential high bias

µg/L = micrograms per liter

mg/L = milligrams per liter

DRO = diesel range organics

J = result is an estimate

ND = result is non-detect with limit of detection (LOD) in parentheses

ND (LOQ) B = analyte was detected in the method blank at a concentration similar to the sample result; result was changed to ND with the limit of quantitation (LOQ) in parentheses

NS = not specified

QN = Analyte result is considered an estimated value with uncertain bias since the field duplicates not meet relative percent difference (RPD) limits but meet other acceptance criteria.

RRO = residual range organics

SIM = selective ion monitoring

Table H24 Site 28 Treated Water Sample Results (continued)

			Sample ID	13NC28TWA09	13NC28TWA10	13NC28TWA11	13NC28TWA12	13NC28TWA13	13NC28TWA14	13NC28TWA15	13NC28TWA16
			Laboratory ID	580-40062-6	580-40062-7	580-40073-4	580-40073-5	280-46550-2	280-46550-3	280-46550-8	280-46550-9
			Collection Date	8/30/2013	8/30/2013	9/1/2013	9/1/2013	9/7/2013	9/8/2013	9/9/2013	9/10/2013
			Location ID	28-TWA-09	28-TWA-10	28-TWA-11	28-TWA-12	TWA-13	TWA-14	TWA-15	TWA-16
Analysis Method	**Analyte**	**Unit**	**Discharge Permit Limit [1]**								
8260B/DoD	Benzene	µg/L		ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
8260B/DoD	Ethylbenzene	µg/L		ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
8260B/DoD	m & p-Xylene	µg/L		ND (0.9)	ND (0.9)	ND (0.9)	ND (0.9)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)
8260B/DoD	o-Xylene	µg/L		ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)
8260B/DoD	Toluene	µg/L		ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.4)	ND (0.4)	0.17 J	ND (0.4)
Total Aromatic Hydrocarbons (TAH) Sum of BTEX			**10 µg/L**	2.7	2.7	2.7	2.7	2	2	1.77	2
8270C SIM/DoD	1-Methylnaphthalene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	0.0073 J	ND (0.011)	ND (0.01)	ND (0.0098)
8270C SIM/DoD	2-Methylnaphthalene	µg/L		ND (0.015)	ND (0.015)	0.0065 J	ND (0.015)	0.0055 J	ND (0.011)	ND (0.01)	ND (0.0098)
8270C SIM/DoD	Acenaphthene	µg/L		0.015 J	0.01 J	ND (0.015)	ND (0.015)	0.014 J	0.013 J	0.012 J	0.012 J
8270C SIM/DoD	Acenaphthylene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	0.013 J	0.012 J	0.01 J	0.011 J
8270C SIM/DoD	Anthracene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.022)	ND (0.023)	ND (0.02)	ND (0.02)
8270C SIM/DoD	Benzo[a]anthracene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.011)	ND (0.011)	ND (0.01)	ND (0.0098)
8270C SIM/DoD	Benzo[a]pyrene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.011)	ND (0.011)	ND (0.01)	ND (0.0098)
8270C SIM/DoD	Benzo[b]fluoranthene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.011)	ND (0.011)	ND (0.01)	ND (0.0098)
8270C SIM/DoD	Benzo[g,h,i]perylene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.011)	ND (0.011)	ND (0.01)	ND (0.0098)
8270C SIM/DoD	Benzo[k]fluoranthene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.011)	ND (0.011)	ND (0.01)	ND (0.0098)
8270C SIM/DoD	Chrysene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.011)	ND (0.011)	ND (0.01)	ND (0.0098)
8270C SIM/DoD	Dibenz(a,h)anthracene	µg/L		ND (0.015)	ND (0.015)	0.006 J M	ND (0.015)	ND (0.011)	ND (0.011)	ND (0.01)	ND (0.0098)
8270C SIM/DoD	Fluoranthene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.011)	ND (0.011)	ND (0.01)	ND (0.0098)
8270C SIM/DoD	Fluorene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.022)	ND (0.023)	ND (0.02)	ND (0.02)
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.022)	ND (0.023)	ND (0.02)	ND (0.02)
8270C SIM/DoD	Naphthalene	µg/L		0.017 J	0.013 J	ND (0.015)	0.008 J	ND (0.011)	ND (0.011)	ND (0.01)	0.013 J
8270C SIM/DoD	Phenanthrene	µg/L		0.0062 J	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.013)	ND (0.014)	ND (0.012)	ND (0.012)
8270C SIM/DoD	Pyrene	µg/L		ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.011)	ND (0.011)	ND (0.01)	ND (0.0098)
Total Aqueous Hydrocarbons (TAqH) Sum of BTEX + PAHs			**15 µg/L**	3.0	3.0	2.9	3.0	2.2	2.2	2.0	2.2
			Evaluation Critiera [2]								

Table H24 Site 28 Treated Water Sample Results (continued)

		Sample ID	13NC28TWA09	13NC28TWA10	13NC28TWA11	13NC28TWA12	13NC28TWA13	13NC28TWA14	13NC28TWA15	13NC28TWA16
		Laboratory ID	580-40062-6	580-40062-7	580-40073-4	580-40073-5	280-46550-2	280-46550-3	280-46550-8	280-46550-9
		Collection Date	8/30/2013	8/30/2013	9/1/2013	9/1/2013	9/7/2013	9/8/2013	9/9/2013	9/10/2013
		Location ID	28-TWA-09	28-TWA-10	28-TWA-11	28-TWA-12	TWA-13	TWA-14	TWA-15	TWA-16
Analysis Method	**Analyte**	**Unit**	**Discharge Permit Limit [1]**							
6020	Arsenic	mg/L	0.01	ND (0.004)	ND (0.004)	0.0042 J	ND (0.004)	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.012)
6020	Barium	mg/L	2	0.021	0.017	0.029	0.024	0.017	0.022	0.023	0.023
6020	Cadmium	mg/L	0.005	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.0008)	ND (0.0008)	ND (0.0008)	ND (0.0008)
6020	Chromium	mg/L	0.1	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)
6020	Lead	mg/L	0.015	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
6020	Nickel	mg/L	0.1	ND (0.0025)	ND (0.0025)	0.0022 J	ND (0.0025)	0.0018 J	0.0016 J	0.0021 J	0.0016 J
6020	Selenium	mg/L	0.05	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.012)
6020	Silver	mg/L	0.1	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)
6020	Vanadium	mg/L	0.26	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	0.0012 J Q	ND (0.0025)	ND (0.0025)	ND (0.0025)
6020	Zinc	mg/L	5	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	0.0053 J	0.0063 J	ND (0.013)	ND (0.013)
7470A	Mercury	mg/L	0.002	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (8e-005)	ND (8e-005)	ND (8e-005)	ND (8e-005)
8082	PCB-1016	µg/L	0.5	ND (0.05)	ND (0.05)	ND (0.049)	ND (0.05)	ND (0.32)	ND (0.33)	ND (0.29)	ND (0.31)
8082	PCB-1221	µg/L	0.5	ND (0.1)	ND (0.1)	ND (0.098)	ND (0.099)	ND (0.32)	ND (0.33)	ND (0.29)	ND (0.31)
8082	PCB-1232	µg/L	0.5	ND (0.05)	ND (0.05)	ND (0.049)	ND (0.05)	ND (0.43)	ND (0.44)	ND (0.39)	ND (0.41)
8082	PCB-1242	µg/L	0.5	ND (0.05)	ND (0.05)	ND (0.049)	ND (0.05)	ND (0.32)	ND (0.33)	ND (0.29)	ND (0.31)
8082	PCB-1248	µg/L	0.5	ND (0.1)	ND (0.1)	ND (0.098)	ND (0.099)	ND (0.22)	ND (0.22)	ND (0.2)	ND (0.21)
8082	PCB-1254	µg/L	0.5	ND (0.05)	ND (0.05)	ND (0.049)	ND (0.05)	ND (0.32)	ND (0.33)	ND (0.29)	ND (0.31)
8082	PCB-1260	µg/L	0.5	ND (0.05)	ND (0.05)	ND (0.049)	ND (0.05)	ND (0.32)	ND (0.33)	ND (0.29)	ND (0.31)
AK102 & 103	DRO (nC10-<nC25)	mg/L	1.5	0.13	0.13	0.17	0.18	0.19 J	0.22 J	0.2 J	0.2 J
AK102 & 103	RRO (nC25-nC36)	mg/L	1.1	0.033 J	0.03 J	0.043 J	0.043 J	ND (0.1)	ND (0.11)	ND (0.096)	ND (0.1)

Notes:

[1]Treated water discharge criteria specified in ADEC Discharge Permit 2009DB0004-2-Evaluation criteria from 18AAC75 Table C.

[D]sample is a duplicate of the previous sample

BOLD = indicates sample concentration above regulatory limit

B = analyte detected in the blank, result with potential high bias

µg/L = micrograms per liter

mg/L = milligrams per liter

DRO = diesel range organics

J = result is an estimate

ND = result is non-detect with limit of detection (LOD) in parentheses

ND (LOQ) B = analyte was detected in the method blank at a concentration similar

NS = not specified

QN = Analyte result is considered an estimated value with uncertain bias since the

RRO = residual range organics

SIM = selective ion monitoring

Table H24 Site 28 Treated Water Sample Results (continued)

			Sample ID	13NC28TWA17	13NC28TWA18	13NC28TWA19	13NC28TWA020	13NC28TWA021	13NC28TWA22	13NC28TWA23	13NC28TWA24[D]
			Laboratory ID	580-40280-2	580-40280-4	580-40280-5	580-40323-2	580-40408-1	580-40408-5	580-40408-6	580-40408-7
			Collection Date	9/11/2013	9/12/2013	9/13/2013	9/14/2013	9/16/2013	9/17/2013	9/18/2013	9/18/2013
			Location ID	TWA17	TWA18	TWA19	TWA20	TWA-21	TWA-22	TWA-23	TWA-24
Analysis Method	**Analyte**	**Unit**	**Discharge Permit Limit [1]**								
8260B/DoD	Benzene	µg/L		ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45) H	ND (0.45) H	ND (0.45) H	ND (0.45) H
8260B/DoD	Ethylbenzene	µg/L		ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45) H	ND (0.45) H	ND (0.45) H	ND (0.45) H
8260B/DoD	m & p-Xylene	µg/L		ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90) H	ND (0.90) H	ND (0.90) H	ND (0.90) H
8260B/DoD	o-Xylene	µg/L		ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45) H	ND (0.45) H	ND (0.45) H	ND (0.45) H
8260B/DoD	Toluene	µg/L		ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45) H	ND (0.45) H	ND (0.45) H	ND (0.45) H
Total Aromatic Hydrocarbons (TAH) Sum of BTEX			**10 µg/L**	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
8270C SIM/DoD	1-Methylnaphthalene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	ND (0.016)	0.016 J	ND (0.016)
8270C SIM/DoD	2-Methylnaphthalene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Acenaphthene	µg/L		ND (0.015)	0.0084 J M	0.0079 J M	0.0095 J	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Acenaphthylene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Anthracene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Benzo[a]anthracene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Benzo[a]pyrene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Benzo[b]fluoranthene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Benzo[g,h,i]perylene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Benzo[k]fluoranthene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	0.0064 J B	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Chrysene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Dibenz(a,h)anthracene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	0.0064 J B	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Fluoranthene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Fluorene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Naphthalene	µg/L		0.0090 J	0.0087 J	0.0093 J	ND (0.016)	ND (0.016)	0.010 J M	0.0078 J	ND (0.016)
8270C SIM/DoD	Phenanthrene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.016)
8270C SIM/DoD	Pyrene	µg/L		ND (0.015)	ND (0.016)	ND (0.015)	ND (0.016)	ND (0.016)	0.0069 J	ND (0.016)	ND (0.016)
Total Aqueous Hydrocarbons (TAqH) Sum of BTEX + PAHs			**15 µg/L**	3.0	3.0	2.9	3.0	3.0	3.0	3.0	3.0
			Evaluation Critiera[2]								

Table H24 Site 28 Treated Water Sample Results (continued)

		Sample ID		13NC28TWA17	13NC28TWA18	13NC28TWA19	13NC28TWA020	13NC28TWA021	13NC28TWA22	13NC28TWA23	13NC28TWA24[D]
		Laboratory ID		580-40280-2	580-40280-4	580-40280-5	580-40323-2	580-40408-1	580-40408-5	580-40408-6	580-40408-7
		Collection Date		9/11/2013	9/12/2013	9/13/2013	9/14/2013	9/16/2013	9/17/2013	9/18/2013	9/18/2013
		Location ID		TWA17	TWA18	TWA19	TWA20	TWA-21	TWA-22	TWA-23	TWA-24
Analysis Method	**Analyte**	**Unit**	**Discharge Permit Limit [1]**								
6020	Arsenic	mg/L	0.01	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)
6020	Barium	mg/L	2	0.026	0.025	0.024	0.023	0.025	0.022	0.041	0.041
6020	Cadmium	mg/L	0.005	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Chromium	mg/L	0.1	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)
6020	Lead	mg/L	0.015	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	0.0081	0.00091 J
6020	Nickel	mg/L	0.1	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	0.0023 J	0.0028 J
6020	Selenium	mg/L	0.05	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)
6020	Silver	mg/L	0.1	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Vanadium	mg/L	0.26	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
6020	Zinc	mg/L	5	ND (0.0050)	ND (0.0050)	ND (0.0050)	0.0053 J	ND (0.0050)	ND (0.0050)	0.13	0.084
7470A	Mercury	mg/L	0.002	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.000045 J B	0.000082 B	0.000081 B	0.000084 B	0.000084 B
8082	PCB-1016	µg/L	0.5	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.052)	ND (0.050)	ND (0.056)	ND (0.055)
8082	PCB-1221	µg/L	0.5	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.11)	ND (0.11)
8082	PCB-1232	µg/L	0.5	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.052)	ND (0.050)	ND (0.056)	ND (0.055)
8082	PCB-1242	µg/L	0.5	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.052)	ND (0.050)	ND (0.056)	ND (0.055)
8082	PCB-1248	µg/L	0.5	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.11)	ND (0.11)
8082	PCB-1254	µg/L	0.5	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.052)	ND (0.050)	ND (0.056)	ND (0.055)
8082	PCB-1260	µg/L	0.5	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.052)	ND (0.050)	ND (0.056)	ND (0.055)
AK102 & 103	DRO (nC10-<nC25)	mg/L	1.5	1.1	0.69	0.14	0.15	0.14 QL	0.15	0.21	0.20
AK102 & 103	RRO (nC25-nC36)	mg/L	1.1	0.69	0.19	0.034 J	0.036 J	ND (0.051)	0.035 J	0.11	0.11

Notes:

[1]Treated water discharge criteria specified in ADEC Discharge Permit 2009DB0004-2-Evaluation criteria from 18AAC75 Table C.

[D]sample is a duplicate of the previous sample

BOLD = indicates sample concentration above regulatory limit

B = analyte detected in the blank, result with potential high bias

µg/L = micrograms per liter

mg/L = milligrams per liter

DRO = diesel range organics

J = result is an estimate

ND = result is non-detect with limit of detection (LOD) in parentheses

ND (LOQ) B = analyte was detected in the method blank at a concentration similar

NS = not specified

QN = Analyte result is considered an estimated value with uncertain bias since the

RRO = residual range organics

SIM = selective ion monitoring

Table H25 Site 28 Pre-, Mid-, Post-Removal Surface Water Sample Results

			Sample ID	13NC28PRWA01	13NC28PRWA02[D]	13NC28PRWA03	13NC28PRWA04	13NC28DSW01	13NC28DSW02	13NC28DSW03	13NC28PSW01	13NC28PSW02	13NC28PSW03
			Laboratory ID	580-39470-1	580-39470-2	580-39470-3	580-39470-4	580-39724-2	580-39724-3	580-39724-4	580-40408-4	580-40408-3	580-40408-2
			Location ID	28-SW-01	28-SW-01	28-SW-02	28-SW-03	28-SW-01	28-SW-02	28-SW-03	28-SW-01	28-SW-02	28-SW-03
			Collection Date	7/23/2013	7/23/2013	7/23/2013	7/23/2013	8/7/20132	8/7/20132	8/7/20132	9/17/2013	9/17/2013	9/17/2013
				Pre-Removal				During Removal			Post-Removal		
Specific Method	**Analyte**	**Units**	**Evaluation Criteria***										
8260 DoD	Benzene	µg/L	5	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45) H	ND (0.45) H	ND (0.45) H
8260 DoD	Ethylbenzene	µg/L	700	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	0.16 J	ND (0.45)	ND (0.45)	0.31 J H	0.18 J H	ND (0.45) H
8260 DoD	m-Xylene & p-Xylene	µg/L	NS	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	0.48 J H	ND (0.90) H	ND (0.90) H
8260 DoD	o-Xylene	µg/L	NS	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	0.15 J	ND (0.45)	ND (0.45)	0.21 J H	ND (0.45) H	ND (0.45) H
8260 DoD	Toluene	µg/L	1,000	ND (0.45)	0.16 J	ND (0.45)	ND (0.45)	0.24 J	ND (0.45)	ND (0.45)	0.28 J H	0.15 J H	ND (0.45) H
Total Aromatic Hydrocarbons (TAH) Sum of BTEX			**TAH 10 µg/L**	1.89	1.44	1.89	1.89	1.09	1.89	1.89	1.73	1.32	1.89
8270 SIM DoD	1-Methylnaphthalene	µg/L	NS	0.20 QN	0.22 QN	0.021 J QN	0.021 QN	0.071	0.013 J	0.011 J	0.12	0.062	ND (0.015)
8270 SIM DoD	2-Methylnaphthalene	µg/L	NS	0.13 QN	0.14 QN	0.014 J QN	0.012 J QN	0.012 J	0.0074 J	0.0070 J	ND (0.015)	ND (0.016)	ND (0.015)
8270 SIM DoD	Acenaphthene	µg/L	NS	0.035 QN	0.038 QN	0.0074 J QN	ND (0.016)	0.042	ND (0.016)	ND (0.015)	0.056	0.051	ND (0.015)
8270 SIM DoD	Acenaphthylene	µg/L	NS	ND (0.015)	ND (0.015)	ND (0.014)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.015)	0.0085 J QH	0.0064 J QH	ND (0.015)
8270 SIM DoD	Anthracene	µg/L	NS	0.0068 J	0.0071 J	ND (0.014)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.015)	0.0072 J	ND (0.016)	ND (0.015)
8270 SIM DoD	Benzo[a]anthracene	µg/L	NS	ND (0.015)	ND (0.015)	ND (0.014)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)
8270 SIM DoD	Benzo[a]pyrene	µg/L	0.2	ND (0.015)	ND (0.015)	ND (0.014)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)
8270 SIM DoD	Benzo[b]fluoranthene	µg/L	NS	ND (0.015)	ND (0.015)	ND (0.014)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)
8270 SIM DoD	Benzo[g,h,i]perylene	µg/L	NS	ND (0.015)	ND (0.015)	ND (0.014)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)
8270 SIM DoD	Benzo[k]fluoranthene	µg/L	NS	ND (0.015)	ND (0.015)	ND (0.014)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)
8270 SIM DoD	Chrysene	µg/L	NS	ND (0.015)	ND (0.015)	ND (0.014)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)
8270 SIM DoD	Dibenz(a,h)anthracene	µg/L	NS	ND (0.015)	ND (0.015)	ND (0.014)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)
8270 SIM DoD	Fluoranthene	µg/L	NS	0.0099 J	0.010 J	ND (0.014)	ND (0.016)	0.013 J	ND (0.016)	ND (0.015)	0.021	0.017 J	ND (0.015)
8270 SIM DoD	Fluorene	µg/L	NS	0.068	0.071	0.0088 J	ND (0.016)	0.059	ND (0.016)	ND (0.015)	0.1	0.06	ND (0.015)
8270 SIM DoD	Indeno[1,2,3-cd]pyrene	µg/L	NS	ND (0.015)	ND (0.015)	ND (0.014)	ND (0.016)	ND (0.016)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.016)	ND (0.015)
8270 SIM DoD	Naphthalene	µg/L	NS	0.27 QN	0.28 QN	0.019 J QN	0.012 J QN	0.085	0.014 J	ND (0.015)	0.063	0.051	0.017 J
8270 SIM DoD	Phenanthrene	µg/L	NS	0.012 J	0.012 J	ND (0.014)	ND (0.016)	0.0078 J	ND (0.016)	ND (0.015)	0.011 J	ND (0.016)	ND (0.015)
8270 SIM DoD	Pyrene	µg/L	NS	0.012 J	0.011 J	0.0064 J	ND (0.016)	0.0086 J	ND (0.016)	ND (0.015)	0.017 J	0.013 J	0.0072 J
Total Aqueous Hydrocarbons (TAqH) Sum of BTEX + PAHs			**TAqH 15 µg/L**	2.77	2.36	2.13	2.18	1.55	2.17	2.15	2.27	1.76	2.15
			Evaluation Criteria*										
6020	Arsenic	mg/L	0.01	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	0.0042 J	ND (0.0040)	ND (0.0040)
6020	Barium	mg/L	2	0.016	0.015	0.010	0.011	0.013	0.014	0.0088	0.023	0.014	0.025
6020	Cadmium	mg/L	0.005	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Chromium	mg/L	0.1	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	0.0015 J	ND (0.0015)	0.0020
6020	Lead	mg/L	0.015	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	0.00036 J
6020	Nickel	mg/L	0.1	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)
6020	Selenium	mg/L	0.05	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)
6020	Silver	mg/L	0.1	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Vanadium	mg/L	0.26	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	0.0060 J	ND (0.0050)	0.0066 J
6020	Zinc	mg/L	5	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	0.0071	ND (0.0050)	0.0076
7470A	Mercury	mg/L	0.002	0.000052 B	0.000056 B	0.000054 B	0.000053 B	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.0001 B	0.000088 B	0.0000951 B
8082 DoD	PCB-1016	µg/L	0.5	ND (0.047)	ND (0.047)	ND (0.047)	ND (0.047)	ND (0.050)	ND (0.049)	ND (0.048)	ND (0.056)	ND (0.054)	ND (0.055)
8082 DoD	PCB-1221	µg/L	0.5	ND (0.094)	ND (0.095)	ND (0.094)	ND (0.095)	ND (0.099)	ND (0.097)	ND (0.097)	ND (0.11)	ND (0.11)	ND (0.11)
8082 DoD	PCB-1232	µg/L	0.5	ND (0.047)	ND (0.047)	ND (0.047)	ND (0.047)	ND (0.050)	ND (0.049)	ND (0.048)	ND (0.056)	ND (0.054)	ND (0.055)
8082 DoD	PCB-1242	µg/L	0.5	ND (0.047)	ND (0.047)	ND (0.047)	ND (0.047)	ND (0.050)	ND (0.049)	ND (0.048)	ND (0.056)	ND (0.054)	ND (0.055)
8082 DoD	PCB-1248	µg/L	0.5	ND (0.094)	ND (0.095)	ND (0.094)	ND (0.095)	ND (0.099)	ND (0.097)	ND (0.097)	ND (0.11)	ND (0.11)	ND (0.11)
8082 DoD	PCB-1254	µg/L	0.5	ND (0.047)	ND (0.047)	ND (0.047)	ND (0.047)	ND (0.050)	ND (0.049)	ND (0.048)	ND (0.056)	ND (0.054)	ND (0.055)
8082 DoD	PCB-1260	µg/L	0.5	ND (0.047)	ND (0.047)	ND (0.047)	ND (0.047)	ND (0.050)	ND (0.049)	ND (0.048)	ND (0.056)	ND (0.054)	ND (0.055)
AK102 103	DRO (nC10-<nC25)	mg/L	1.5	0.38	0.38	0.24 B	0.27 B	0.38 H	0.28 H	0.28 H	0.60	0.62	0.39
AK102 103	RRO (nC25-nC36)	mg/L	1.1	0.13	0.11	0.087 J	0.13	0.13 H	0.12 H	0.11 H	0.14	0.17	0.17
EPA 180.1	Turbidity	NTU	NS	20.4	20.4	10.2	12.5	17.8	28.2	13.3	25.9	35.5	42.4
Visual Observation	Petrogenic Sheen	NA	Sheen	No Sheen	No Sheen	No Sheen	No Sheen	No Sheen	No Sheen	No Sheen	No Sheen	No Sheen	No Sheen

Notes:

*Regulatory level from Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances, Drinking Water Criteria, 18AAC70

B = analyte detected in the blank, result with potential high bias

[D]sample is a duplicate of the previous sample

µg/L = micrograms per liter

mg/L = milligrams per liter

DRO = diesel range organics

H = hold time exceed, result with potential low bias

J = result is an estimate

ND = result is non-detect with limit of detection (LOD) in parentheses

ND (LOQ) B = analyte was detected in the method blank at a concentration similar to the sample result; result was changed to ND with the limit of quantitation (LOQ) in parentheses

NS = not specified

QN = result is considered an estimated with uncertain bias due to a laboratory quality control failure such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits, and/or the field duplicates not meet relative percent difference (RPD) limits but meet other acceptance criteria

RRO = residual range organics

SIM = selective ion monitoring

Table H26 Downstream Monitoring Surface Water Sample Results

			Sample ID	13NC28STW01	13NC28STW02	13NC28STW03	13NC28DSW01	13NC28STW04	13NC28STW05[D]	13NC28STW06	13NC28STW07	13NC28STW08	13NC28STW09	13NC28STW10	13NC28STW11	13NC28STW12	13NC28STW13
			Laboratory ID	580-39641-5	580-39641-6	580-39724-1	580-39724-2	580-39724-5	580-39724-6	580-40062-1	580-40062-2	580-40062-4	580-40062-5	580-40073-1	580-40073-2	580-40073-3	580-40073-6
			Location ID	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01
			Collection Date	8/2/2013	8/3/2013	8/6/2013	8/7/20132	8/8/2013	8/8/2013	8/27/2013	8/28/2013	8/29/2013	8/29/2013	8/30/2013	8/31/2013	8/31/2013	9/1/2013
Analysis Method	Analyte	Unit	Regulatory Level*														
6020	Arsenic	mg/L	0.01	ND (0.004)	ND (0.004)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	0.0069	ND (0.004)
6020	Barium	mg/L	2	0.013	0.012	0.018	0.013	0.015	0.015	0.018	0.021	0.016	0.02	0.015	0.013	0.024	0.017
6020	Cadmium	mg/L	5	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Chromium	mg/L	0.1	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	0.0014 J	ND (0.0015)
6020	Lead	mg/L	0.015	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	0.00055 J	0.00034 J	ND (0.00025)	ND (0.00025)	ND (0.00025)	0.00034 J	0.00039 J	0.00081 J	0.00029 J
6020	Nickel	mg/L	0.1	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)
6020	Selenium	mg/L	0.05	ND (0.004)	ND (0.004)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)	ND (0.004)
6020	Silver	mg/L	0.1	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Vanadium	mg/L	0.26	ND (0.005)	ND (0.005)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
6020	Zinc	mg/L	5	ND (0.005)	ND (0.005)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	0.0078	ND (0.005)	0.0049 J	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
7470A	Mercury	mg/L	0.002	ND (0.0001)	ND (0.0001)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.0001)
8082	PCB-1016	µg/L	0.5	ND (0.05)	ND (0.05)	ND (0.048)	ND (0.050)	ND (0.047)	ND (0.047)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.054)	ND (0.05)	ND (0.052)	ND (0.05)
8082	PCB-1221	µg/L	0.5	ND (0.099)	ND (0.1)	ND (0.096)	ND (0.099)	ND (0.095)	ND (0.095)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.099)	ND (0.1)	ND (0.1)
8082	PCB-1232	µg/L	0.5	ND (0.05)	ND (0.05)	ND (0.048)	ND (0.050)	ND (0.047)	ND (0.047)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.054)	ND (0.05)	ND (0.052)	ND (0.05)
8082	PCB-1242	µg/L	0.5	ND (0.05)	ND (0.05)	ND (0.048)	ND (0.050)	ND (0.047)	ND (0.047)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.054)	ND (0.05)	ND (0.052)	ND (0.05)
8082	PCB-1248	µg/L	0.5	ND (0.099)	ND (0.1)	ND (0.096)	ND (0.099)	ND (0.095)	ND (0.095)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.099)	ND (0.1)	ND (0.1)
8082	PCB-1254	µg/L	0.5	ND (0.05)	ND (0.05)	ND (0.048)	ND (0.050)	ND (0.047)	ND (0.047)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.054)	ND (0.05)	ND (0.052)	ND (0.05)
8082	PCB-1260	µg/L	0.5	ND (0.05)	ND (0.05)	ND (0.048)	ND (0.050)	ND (0.047)	ND (0.047)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.054)	ND (0.05)	ND (0.052)	ND (0.05)
8260B/DoD	Benzene	µg/L	5	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)
8260B/DoD	Ethylbenzene	µg/L	700	0.31 J	0.39 J	0.66 J	0.16 J	ND (0.45)	ND (0.45)	0.26 J	0.26 J	0.36 J	0.42 J	0.4 J	0.24 J	0.32 J	0.25 J
8260B/DoD	m- & p-Xylene	µg/L	NS	0.48 J	0.62 J	1.7 J	ND (0.90)	ND (0.90)	ND (0.90)	0.34 J	0.39 J	0.58 J	0.7 J	0.55 J	0.31 J	0.51 J	0.34 J
8260B/DoD	o-Xylene	µg/L	NS	0.26 J	0.27 J	1.0	0.15 J	ND (0.45)	ND (0.45)	ND (0.45)	0.18 J	0.23 J	0.29 J	0.18 J	ND (0.45)	0.24 J	ND (0.45)
	Total Xylenes		10,000	0.74 J	0.95 J	2.7 J	0.15 J	ND (1.35)	ND (1.35)	0.34 J	0.57 J	0.81 J	0.99 J	0.73 J	0.31 J	0.75 J	0.34 J
8260B/DoD	Toluene	µg/L	1,000	0.23 J	0.21 J	1.1	0.24 J	ND (0.45)	ND (0.45)	ND (0.45)	0.17 J	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	0.16 J	ND (0.45)
8270C SIM/DoD	1-Methylnaphthalene	µg/L	NS	0.019 J	0.021 J	0.4	0.071	0.26	0.25	0.028	0.04	0.2	0.38	0.14	0.15	0.28	0.24
8270C SIM/DoD	2-Methylnaphthalene	µg/L	NS	0.013 J	0.011 J	0.083	0.012 J	0.098	0.1	0.01 J	0.011 J	0.012 J	0.033	0.021 J	0.019 J	ND (0.015)	0.03 QN
8270C SIM/DoD	Acenaphthene	µg/L	NS	ND (0.016)	0.013 J	0.093	0.042	0.056	0.055	0.017 J	0.048	0.084	0.11	0.052	0.047	0.075	0.2
8270C SIM/DoD	Acenaphthylene	µg/L	NS	ND (0.016)	ND (0.017)	0.015 J	ND (0.016)	0.0074 J	0.0069 J	ND (0.015)	ND (0.015)	ND (0.015)	0.011 J	ND (0.015)	0.0085 J	ND (0.015)	ND (0.015)
8270C SIM/DoD	Anthracene	µg/L	NS	ND (0.016)	ND (0.017)	0.0079 J	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	0.015 J
8270C SIM/DoD	Benzo[a]anthracene	µg/L	NS	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	0.0072 J
8270C SIM/DoD	Benzo[a]pyrene	µg/L	0.2	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Benzo[b]fluoranthene	µg/L	NS	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Benzo[g,h,i]perylene	µg/L	NS	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Benzo[k]fluoranthene	µg/L	NS	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Chrysene	µg/L	NS	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	0.006 J
8270C SIM/DoD	Dibenz(a,h)anthracene	µg/L	NS	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Fluoranthene	µg/L	NS	ND (0.016)	ND (0.017)	0.013 J	0.013 J	0.010 J	0.0098 J	0.0092 J	0.011 J	0.013 J	0.019 J	0.0066 J	ND (0.015)	0.014 J	0.11
8270C SIM/DoD	Fluorene	µg/L	NS	ND (0.016)	0.017 J	0.13	0.059	0.11	0.11	0.014 J	0.066	0.14	0.16	0.1	0.1	0.12	0.25
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	µg/L	NS	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.016)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
8270C SIM/DoD	Naphthalene	µg/L	NS	0.027	0.054	0.15	0.085	0.18	0.18	0.081	0.12	0.17	0.21	0.22	0.18	0.16	0.19
8270C SIM/DoD	Phenanthrene	µg/L	NS	ND (0.016)	ND (0.017)	0.028	0.0078 J	0.020 J	0.019 J	0.0089 J	0.0093 J	0.011 J	0.026	ND (0.015)	0.0061 J	0.0092 J	0.051
8270C SIM/DoD	Pyrene	µg/L	NS	ND (0.016)	ND (0.017)	0.0089 J	0.0086 J	0.0071 J	ND (0.016)	0.0068 J	0.0083 J	0.0082 J	0.011 J	ND (0.015)	ND (0.015)	0.0095 J	0.072
AK102 & 103	DRO (nC10-<nC25)	mg/L	No Sheen	0.37	0.42	0.36 H	0.38 H	0.41 H	0.39 H	0.25 H	0.27 H	0.33	0.3	0.53	0.51	0.61	0.56
AK102 & 103	RRO (nC25-nC36)	mg/L	No Sheen	0.1	0.11	0.11 H	0.13 H	0.14 H	0.10 H	0.13	0.12	0.12	0.14	0.13	0.14	0.21	0.18
EPA 180.1	Turbidity	NTU	NS	18.2	8.43	16.6	17.8	13.0	13.0	22.4	47.4	24.1	46.9	22.3	16.2	91.9	22.1
Visual Observation	Petrogenic Sheen	NA	Sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen

Notes:

*Regulatory level from Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances, Drinking Water Criteria, 18AAC70

B = analyte detected in the blank, result with potential high bias

[D]sample is a duplicate of previous sample

H = holding time exceeded, result with potential low bias

J = result is an estimate

µg/L = micrograms per liter

mg/L = milligrams per liter

ND = result is non-detect with limit of detection (LOD) in parentheses

NS = not specified

QH = laboratory quality issue, result with potential high bias

Table H26 Downstream Monitoring Surface Water Sample Results (continued)

			Sample ID	13NC28STW14[b]	13NC28STW15	13NC28STW16	13NC28STW17	13NC28STW18	13NC28STW19[b]	13NC28STW20	13NC28STW21	13NC28STW22	13NC28STW023
			Laboratory ID	580-40073-7	280-46550-11	280-46550-4	280-46550-5	280-46550-6	280-46550-7	280-46550-10	580-40280-1	580-40280-3	580-40323-1
			Location ID	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01	28-SW-01B	28-SW-01B	28-SW-03
			Collection Date	9/1/2013	9/7/2013	9/8/2013	9/9/2013	9/9/2013	9/9/2013	9/10/2013	9/11/2013	9/12/2013	9/13/2013
Analysis Method	**Analyte**	**Unit**	**Regulatory Level***										
6020	Arsenic	mg/L	0.01	ND (0.004)	0.0057 J	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.012)	0.0038 J	0.0047 J	ND (0.0040)
6020	Barium	mg/L	2	0.015	0.017	0.01	0.015	0.02	0.02	0.012	0.023	0.030	0.028
6020	Cadmium	mg/L	5	ND (0.00025)	ND (0.0008)	ND (0.0008)	ND (0.0008)	ND (0.0008)	ND (0.0008)	ND (0.0008)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Chromium	mg/L	0.1	ND (0.0015)	0.00069 J	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	0.0026
6020	Lead	mg/L	0.015	0.00026 J	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	0.00042 J	0.00066 J	0.0022
6020	Nickel	mg/L	0.1	ND (0.0025)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.0025)	ND (0.0025)	ND (0.0025)
6020	Selenium	mg/L	0.05	ND (0.004)	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.0040)	ND (0.0040)	ND (0.0040)
6020	Silver	mg/L	0.1	ND (0.00025)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Vanadium	mg/L	0.26	ND (0.005)	0.0019 J	ND (0.0025)	0.0013 B	0.0018 B	0.0019 B	ND (0.0025)	ND (0.0050)	ND (0.0050)	ND (0.0050)
6020	Zinc	mg/L	5	ND (0.005)	0.0046 J	ND (0.013)	0.0052 J	0.0053 J	0.0075 J	ND (0.013)	0.0056 J	0.0058 J	0.012
7470A	Mercury	mg/L	0.002	ND (0.0001)	ND (8e-005)	ND (8e-005)	ND (8e-005)	ND (8e-005)	ND (8e-005)	ND (8e-005)	0.000053 J	0.000042 J	0.000061 J
8082	PCB-1016	µg/L	0.5	ND (0.051)	ND (0.31)	ND (0.32)	ND (0.3)	ND (0.29)	ND (0.32)	ND (0.31)	ND (0.050)	ND (0.056)	ND (0.053)
8082	PCB-1221	µg/L	0.5	ND (0.1)	ND (0.31)	ND (0.32)	ND (0.3)	ND (0.29)	ND (0.32)	ND (0.31)	ND (0.10)	ND (0.11)	ND (0.11)
8082	PCB-1232	µg/L	0.5	ND (0.051)	ND (0.41)	ND (0.42)	ND (0.4)	ND (0.38)	ND (0.43)	ND (0.41)	ND (0.050)	ND (0.056)	ND (0.053)
8082	PCB-1242	µg/L	0.5	ND (0.051)	ND (0.31)	ND (0.32)	ND (0.3)	ND (0.29)	ND (0.32)	ND (0.31)	ND (0.050)	ND (0.056)	ND (0.053)
8082	PCB-1248	µg/L	0.5	ND (0.1)	ND (0.21)	ND (0.21)	ND (0.2)	ND (0.19)	ND (0.21)	ND (0.21)	ND (0.10)	ND (0.11)	ND (0.11)
8082	PCB-1254	µg/L	0.5	ND (0.051)	ND (0.31)	ND (0.32)	ND (0.3)	ND (0.29)	ND (0.32)	ND (0.31)	ND (0.050)	ND (0.056)	ND (0.053)
8082	PCB-1260	µg/L	0.5	ND (0.051)	ND (0.31)	ND (0.32)	ND (0.3)	ND (0.29)	ND (0.32)	ND (0.31)	ND (0.050)	ND (0.056)	ND (0.053)
8260B/DoD	Benzene	µg/L	5	ND (0.45)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.45)	ND (0.45)	ND (0.20)
8260B/DoD	Ethylbenzene	µg/L	700	0.25 J	0.31 J	0.32 J	0.35 J	0.58 J	0.57 J	0.31 J	0.32 J	0.38 J	ND (0.20)
8260B/DoD	m- & p-Xylene	µg/L	NS	0.34 J	0.42 J	0.54 J	0.52 J	1.2 J	1.2 J	0.43 J	0.56 J	0.94 J	ND (0.80)
8260B/DoD	o-Xylene	µg/L	NS	ND (0.45)	0.56 J	0.69 J	0.63 J	1.2	1.4	0.52 J	0.32 J	0.59 J	ND (0.40)
	Total Xylenes		10,000	0.34 J	0.98 J	1.23 J	1.15J	2.4 J	2.6 J	0.95 J	0.88 J	1.53 J	ND (1.2)
8260B/DoD	Toluene	µg/L	1,000	ND (0.45)	0.34 J	0.4 J	0.28 J	0.4 J	0.38 J	0.23 J	0.21 J	0.36 J	ND (0.40)
8270C SIM/DoD	1-Methylnaphthalene	µg/L	NS	0.32	ND (0.01) H	0.12	0.44 QH	2.1	2 QH	0.65	0.14	0.81	ND (0.015)
8270C SIM/DoD	2-Methylnaphthalene	µg/L	NS	0.049 QN	ND (0.01) H	ND (0.01)	0.056 J QH	0.29	0.31 QH	0.16	0.027	0.49	ND (0.015)
8270C SIM/DoD	Acenaphthene	µg/L	NS	0.24	ND (0.02) H	0.2	0.14	0.28	0.26	0.13	0.035	0.069	ND (0.015)
8270C SIM/DoD	Acenaphthylene	µg/L	NS	ND (0.015)	ND (0.02) H	ND (0.013)	ND (0.012)	ND (0.011)	ND (0.012)	ND (0.013)	ND (0.015)	0.012 J QH	ND (0.015)
8270C SIM/DoD	Anthracene	µg/L	NS	0.019 J	ND (0.012) H	0.016 J B	ND (0.02)	0.048 J B	0.049 J B	ND (0.021)	ND (0.015)	ND (0.016)	ND (0.015)
8270C SIM/DoD	Benzo[a]anthracene	µg/L	NS	0.0087 J	ND (0.01) H	0.0071 J B	0.0046 J B	0.0086 J B	0.0086 J B	ND (0.011)	ND (0.015)	ND (0.016)	ND (0.015)
8270C SIM/DoD	Benzo[a]pyrene	µg/L	0.2	ND (0.015)	ND (0.01) H	ND (0.01)	ND (0.01)	ND (0.0095)	ND (0.01)	ND (0.011)	ND (0.015)	ND (0.016)	ND (0.015)
8270C SIM/DoD	Benzo[b]fluoranthene	µg/L	NS	ND (0.015)	ND (0.01) H	ND (0.01)	ND (0.01)	0.0046 J	0.0053 J	ND (0.011)	ND (0.015)	ND (0.016)	ND (0.015)
8270C SIM/DoD	Benzo[g,h,i]perylene	µg/L	NS	ND (0.015)	ND (0.01) H	ND (0.01)	ND (0.01)	ND (0.0095)	ND (0.01)	ND (0.011)	ND (0.015)	ND (0.016)	ND (0.015)
8270C SIM/DoD	Benzo[k]fluoranthene	µg/L	NS	ND (0.015)	ND (0.01) H	ND (0.01)	ND (0.01)	ND (0.0095)	ND (0.01)	ND (0.011)	ND (0.015)	ND (0.016)	ND (0.015)
8270C SIM/DoD	Chrysene	µg/L	NS	0.0075 J	ND (0.01) H	0.0075 J B	0.0051 J B	0.012 J B	0.012 J B	ND (0.011)	ND (0.015)	ND (0.016)	ND (0.015)
8270C SIM/DoD	Dibenz(a,h)anthracene	µg/L	NS	ND (0.015)	ND (0.01) H	ND (0.01)	ND (0.01)	ND (0.0095)	ND (0.01)	ND (0.011)	ND (0.015)	ND (0.016)	ND (0.015)
8270C SIM/DoD	Fluoranthene	µg/L	NS	0.13	0.012 J H	0.09 J B	0.036 J B	0.082 J B	0.087 J B	0.011 J B	0.0085 J	0.014 J	ND (0.015)
8270C SIM/DoD	Fluorene	µg/L	NS	0.31	ND (0.02) H	0.17	0.17	0.37	0.36	0.18	0.046	0.12	ND (0.015)
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	µg/L	NS	ND (0.015)	ND (0.021)	ND (0.021)	ND (0.02)	ND (0.019)	ND (0.02)	ND (0.021)	ND (0.015)	ND (0.016)	ND (0.015)
8270C SIM/DoD	Naphthalene	µg/L	NS	0.26	0.059 J H	ND (0.01)	ND (0.01)	ND (0.0095)	ND (0.01)	0.49	0.076	0.46	ND (0.015)
8270C SIM/DoD	Phenanthrene	µg/L	NS	0.077	ND (0.012) H	0.023 J B	0.022 J B	0.15 B	0.16 B	0.021 J B	0.0079 J	0.025	ND (0.015)
8270C SIM/DoD	Pyrene	µg/L	NS	0.083	0.065 J H	0.075 J B	0.028 J B	0.06 J B	0.062 J B	ND (0.011)	0.012 J	0.014 J	ND (0.015)
AK102 & 103	DRO (nC10-<nC25)	mg/L	No Sheen	0.55	0.68	0.8	0.75	1.4	1.5	0.71	5.6	0.16	0.042 J
AK102 & 103	RRO (nC25-nC36)	mg/L	No Sheen	0.17	0.083 J	0.16 J	0.08 J	0.24 J	0.28 J	0.067 J	0.20 QL	0.043 J	0.046 J
EPA 180.1	Turbidity	NTU	NS	22.1	20.7	37.1	49.3	38	38	13.3	51.7	61.2	34.6
Visual Observation	Petrogenic Sheen	NA	Sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen	No sheen

Notes:

*Regulatory level from Alaska Water Quality Criteria Manual for Toxic and Other Deleteriou

B = analyte detected in the blank, result with potential high bias

[D]sample is a duplicate of previous sample

H = holding time exceeded, result with potential low bias

J = result is an estimate

µg/L = micrograms per liter

mg/L = milligrams per liter

ND = result is non-detect with limit of detection (LOD) in parentheses

NS = not specified

QH = laboratory quality issue, result with potential high bias

Table H27 Site 28 Pre-Treated Surface Water Sample Results

			Sample ID	13NC28WA01	13NC28WA02
			Laboratory ID	580-39641-1	580-39723-1
			Collection Date	8/4/2013	8/8/2013
			Location ID	28-PWA-01	28-PWA-02
Analysis Method	**Analyte**	**Unit**	**Discharge Permit Limit [1]**		
8260B/DoD	Benzene	µg/L		0.57 J	0.37 J
8260B/DoD	Ethylbenzene	µg/L		4.3	3.9
8260B/DoD	m & p-Xylene	µg/L		**16**	**17**
8260B/DoD	o-Xylene	µg/L		**11**	**12**
8260B/DoD	Toluene	µg/L		0.42 J	0.46 J
Total Aromatic Hydrocarbons (TAH) Sum of BTEX			**TAH 10 µTAg/L**	**32.3**	**33.7**
8270C SIM/DoD	1-Methylnaphthalene	µg/L		6.2	3.1
8270C SIM/DoD	2-Methylnaphthalene	µg/L		9.8	0.22
8270C SIM/DoD	Acenaphthene	µg/L		0.12	0.084
8270C SIM/DoD	Acenaphthylene	µg/L		0.13 QL	0.018 J
8270C SIM/DoD	Anthracene	µg/L		0.012 J	ND (0.015)
8270C SIM/DoD	Benzo[a]anthracene	µg/L		ND (0.016)	ND (0.015)
8270C SIM/DoD	Benzo[a]pyrene	µg/L		ND (0.016)	ND (0.015)
8270C SIM/DoD	Benzo[b]fluoranthene	µg/L		ND (0.016)	ND (0.015)
8270C SIM/DoD	Benzo[g,h,i]perylene	µg/L		ND (0.016)	ND (0.015)
8270C SIM/DoD	Benzo[k]fluoranthene	µg/L		ND (0.016)	ND (0.015)
8270C SIM/DoD	Chrysene	µg/L		0.0091 J	ND (0.015)
8270C SIM/DoD	Dibenz(a,h)anthracene	µg/L		ND (0.016)	ND (0.015)
8270C SIM/DoD	Fluoranthene	µg/L		0.029	0.0063 J
8270C SIM/DoD	Fluorene	µg/L		0.37	0.18
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	µg/L		ND (0.016)	ND (0.015)
8270C SIM/DoD	Naphthalene	µg/L		15	0.29
8270C SIM/DoD	Phenanthrene	µg/L		0.17	0.026
8270C SIM/DoD	Pyrene	µg/L		0.022	0.0063 J
Total Aqueous Hydrocarbons (TAqH) Sum of BTEX + PAHs			**TAqH 15 µg/L**	**64.3**	**38.8**

Table H27 Site 28 Pre-Treated Surface Water Sample Results (continued)

			Sample ID	13NC28WA01	13NC28WA02
			Laboratory ID	580-39641-1	580-39723-1
			Collection Date	8/4/2013	8/8/2013
			Location ID	28-PWA-01	28-PWA-02
Analysis Method	**Analyte**	**Unit**	**Discharge Permit Limit [1]**		
6020	Arsenic	mg/L	0.01	ND (0.004)	ND (0.004)
6020	Barium	mg/L	2	0.024	0.018
6020	Cadmium	mg/L	0.005	ND (0.00025)	ND (0.00025)
6020	Chromium	mg/L	0.1	0.0014 J	ND (0.0015)
6020	Lead	mg/L	0.015	0.0023	ND (0.00025)
6020	Nickel	mg/L	0.1	ND (0.0025)	ND (0.0025)
6020	Selenium	mg/L	0.05	ND (0.004)	ND (0.004)
6020	Silver	mg/L	0.1	ND (0.00025)	ND (0.00025)
6020	Vanadium	mg/L	0.26	ND (0.005)	ND (0.005)
6020	Zinc	mg/L	5	0.011	0.0053 J
7470A	Mercury	mg/L	0.002	ND (0.0001)	ND (0.0001)
8082	PCB-1016	µg/L	0.5	ND (0.05) QL	ND (0.05)
8082	PCB-1221	µg/L	0.5	ND (0.099) QL	ND (0.099)
8082	PCB-1232	µg/L	0.5	ND (0.05) QL	ND (0.05)
8082	PCB-1242	µg/L	0.5	ND (0.05) QL	ND (0.05)
8082	PCB-1248	µg/L	0.5	ND (0.099) QL	ND (0.099)
8082	PCB-1254	µg/L	0.5	ND (0.05) QL	ND (0.05)
8082	PCB-1260	µg/L	0.5	ND (0.05) QL	ND (0.05)
AK102	DRO (nC10-<nC25)	mg/L	No Sheen	17	2.2
AK103	RRO (nC25-nC36)	mg/L		1.9	0.78 QL

Notes:

[1]Treated water discharge criteria specified in ADEC Discharge Permit 2009DB0004-0216 for Site 28 and General Discharge Permit 2009DB0004 for the MOC

BOLD = indicates sample concentration above regulatory limit

B = analyte detected in the blank, result with potential high bias

DRO = diesel range organics

J = result is an estimate

µg/L = micrograms per liter

mg/L = milligrams per liter

ND = result is non-detect with limit of detection (LOD) in parentheses

NS = not specified

QL= laboratory quality issue, result with potential low bias

RRO = residual range organics

SIM = selective ion monitoring

Table H28 Site 28 Confirmation Sediment Sample Results

		Sample ID			13NC28SS001	13NC28SS002	13NC28SS003[D]	13NC28SS004	13NC28SS005	13NC28SS006	13NC28SS007	13NC28SS008	13NC28SS009	13NC28SS010	13NC28SS011	13NC28SS012	13NC28SS013	13NC28SS014
		Lab ID			580-39755-1	580-39755-2	580-39755-3	580-39755-4	580-39755-5	580-39755-6	580-39755-7	580-39755-8	580-39755-9	580-39755-10	580-39755-11	580-39755-12	580-39755-13	580-40214-1
		Location ID			028-001	028-002	028-002	028-003	028-004	028-005	028-006	028-007	028-008	028-009	028-010	028-011	028-012	028-013
		Collection Date			8/5/2013	8/5/2013	8/5/2013	8/5/2013	8/5/2013	8/5/2013	8/5/2013	8/11/2013	8/11/2013	8/11/2013	8/11/2013	8/11/2013	8/11/2013	8/30/2013
Analysis Method	**Analyte**	**Unit**	**[1]Cleanup Levels from 2009 Decision Document**	**[2]Evaluation Criteria from NOAA SQuiRT Tables**														
6020	Arsenic	mg/Kg	93	NA	6.0	6.7	8.2	6.9	6.3	15	7.4	38	19	5.1	14	14	9.2	14
6020	Barium	mg/Kg	NS	NS	150 J	140	160	110	120	140	98	130	96	27	84	50	110	120
6020	Cadmium	mg/Kg	NS	3.53	0.40	0.43 J	0.62	0.29 J	0.31 J	0.77 J	0.42 J	0.33 J	0.49 J	0.041 J	0.39 J	0.23 J	0.75	0.44 J
6020	Chromium	mg/Kg	270	NA	31 MH	24	29	28	22	32	18	9.6	19	4.2	15	7.7	22	11
6020	Lead	mg/Kg	530	NA	21	21	33	27	19	64	20	13	17	6.4	14	7.4	37	17
6020	Nickel	mg/Kg	NS	36	24	16	19	13	13	22	11	6.0	11	2.0	9.7	6.4	13	13
6020	Selenium	mg/Kg	NS	NS	2.0	2.7	2.6	2.7	2.2	3.2	1.9	1.6 J	1.6 J	0.41 J	1.6 J	1.9 J	1.9 J	2.2 J
6020	Silver	mg/Kg	NS	NS	0.14 J	0.12 J	0.16 J	0.19 J	0.14 J	0.28 J	0.13 J	0.087 J	0.14 J	ND (0.033)	0.11 J	0.077 J	0.14 J	0.14 J
6020	Vanadium	mg/Kg	NS	NS	46 J	42	48	49	39	49	34	23	32	10	32	22	32	45
6020	Zinc	mg/Kg	960	NA	94	69	93	56	52	190	80	150	180	17	100	43	160	72
7471A	Mercury	mg/Kg	NS	0.486	0.048 J	0.14	0.21	0.080	0.080	0.24	0.092	0.21	0.14	0.019 J	0.078	0.12	0.14	0.19
8082	PCB-1016	mg/Kg	0.7	NA	ND (0.0074)	ND (0.014)	ND (0.014)	ND (0.0097)	ND (0.0093)	ND (0.023)	ND (0.013)	ND (0.032)	ND (0.039)	ND (0.0082)	ND (0.016)	ND (0.023)	ND (0.016)	ND (0.037)
8082	PCB-1221	mg/Kg	0.7	NA	ND (0.015)	ND (0.027)	ND (0.029)	ND (0.019)	ND (0.019)	ND (0.046)	ND (0.026)	ND (0.064)	ND (0.077)	ND (0.016)	ND (0.032)	ND (0.047)	ND (0.032)	ND (0.075)
8082	PCB-1232	mg/Kg	0.7	NA	ND (0.015)	ND (0.027)	ND (0.029)	ND (0.019)	ND (0.019)	ND (0.046)	ND (0.026)	ND (0.064)	ND (0.077)	ND (0.016)	ND (0.032)	ND (0.047)	ND (0.032)	ND (0.075)
8082	PCB-1242	mg/Kg	0.7	NA	ND (0.0074)	ND (0.014)	ND (0.014)	ND (0.0097)	ND (0.0093)	ND (0.023)	ND (0.013)	ND (0.032)	ND (0.039)	ND (0.0082)	ND (0.016)	ND (0.023)	ND (0.016)	ND (0.037)
8082	PCB-1248	mg/Kg	0.7	NA	ND (0.0074)	ND (0.014)	ND (0.014)	ND (0.0097)	ND (0.0093)	ND (0.023)	ND (0.013)	ND (0.032)	ND (0.039)	ND (0.0082)	ND (0.016)	ND (0.023)	ND (0.016)	ND (0.037)
8082	PCB-1254	mg/Kg	0.7	NA	ND (0.0074)	ND (0.014)	ND (0.014)	ND (0.0097)	ND (0.0093)	ND (0.023)	ND (0.013)	ND (0.032)	ND (0.039)	ND (0.0082)	ND (0.016)	ND (0.023)	ND (0.016)	ND (0.037)
8082	PCB-1260	mg/Kg	0.7	NA	ND (0.0074)	0.32	0.32	ND (0.0097)	ND (0.0093)	0.15	0.019 J	ND (0.032)	ND (0.039)	ND (0.0082)	0.061	ND (0.023)	0.24	ND (0.037)
8260B/DoD	Benzene	mg/Kg	NS	NS	ND (0.0069)	0.032 J	0.031 J	0.011 J	ND (0.01)	ND (0.028)	0.0066 J	ND (0.045)	ND (0.051)	ND (0.0059)	ND (0.018)	ND (0.028)	ND (0.016)	ND (0.067)
8260B/DoD	Ethylbenzene	mg/Kg	NS	NS	ND (0.021)	1.3	1.0	0.25	ND (0.031)	0.28	0.22	ND (0.14)	ND (0.15)	0.018 J	0.23	ND (0.085)	ND (0.047)	0.2 J
8260B/DoD	m,p-Xylene	mg/Kg	NS	NS	ND (0.014)	5.2	4	0.38	ND (0.021)	1.1	0.9	ND (0.09)	ND (0.1)	0.028	0.29	ND (0.057)	ND (0.031)	0.38 QN
8260B/DoD	o-Xylene	mg/Kg	NS	NS	ND (0.01)	2.7	2.4	0.065 J	ND (0.016)	0.6	0.5	ND (0.068)	ND (0.077)	ND (0.0088)	0.16	ND (0.043)	ND (0.023)	ND (0.1)
	Total xylenes	mg/Kg	NS	NS	ND (0.054)	7.9	6.4	0.44	ND (0.037)	1.7	1.4	ND (0.158)	ND (0.177)	0.029	0.45	ND (0.100)	ND (0.054)	0.48
8260B/DoD	Toluene	mg/Kg	NS	NS	ND (0.01)	ND (0.043)	ND (0.04)	ND (0.026)	ND (0.016)	ND (0.042)	ND (0.021)	ND (0.068)	ND (0.077)	ND (0.0088)	ND (0.028)	ND (0.043)	ND (0.023)	ND (0.1)
8270C SIM/DoD	1-Methylnaphthalene	mg/Kg	NS	NS	ND (0.004)	41 J	28 J	0.26	0.082	57	18	1.8	9.2	2.1	5.2	3.5	66	50 QN
8270C SIM/DoD	2-Methylnaphthalene	mg/Kg	0.6	NA	ND (0.004)	**66 J**	**46 J**	0.39	0.063	**81**	**30**	**1.9**	**4.1**	**2.4**	**4.3**	**3.4**	**33**	**53 QN**
8270C SIM/DoD	Acenaphthene	mg/Kg	0.5	NA	ND (0.004)	**1.6 MN**	**0.92 MN**	0.014	0.011	**3.6**	**0.57**	0.36	**1.6**	0.13	**0.52**	0.37	**5.2**	**2.3**
8270C SIM/DoD	Acenaphthylene	mg/Kg	NS	0.128	ND (0.004)	*1.6 MN*	*0.61 MN*	0.0093 J	0.0033 J	*2.1*	*0.27*	*0.18*	*1.1*	0.11	*0.41*	*0.22*	*2.4*	*2.2 QN*
8270C SIM/DoD	Anthracene	mg/Kg	NS	0.245	ND (0.004)	ND (0.0072)	ND (0.0067)	ND (0.0049)	ND (0.0047)	*4.4*	0.073	0.018 J	ND (0.018)	ND (0.0041)	ND (0.0085)	0.046	ND (0.0078)	*0.36 QN*
8270C SIM/DoD	Benzo[a]anthracene	mg/Kg	NS	0.385	ND (0.004)	0.023	0.022	ND (0.0049)	ND (0.0047)	0.26	0.045	ND (0.016)	0.018 J B	ND (0.0041)	0.0092 J B	ND (0.011)	0.074 B	0.034 J
8270C SIM/DoD	Benzo[a]pyrene	mg/Kg	NS	0.782	ND (0.004)	0.011 J B	0.0085 J B	ND (0.0049)	ND (0.0047)	0.18	0.016 B	ND (0.016)	ND (0.018)	ND (0.0041)	ND (0.0085)	ND (0.011)	ND (0.0078)	0.017 J
8270C SIM/DoD	Benzo[b]fluoranthene	mg/Kg	NS	NS	ND (0.004)	0.033	0.033	ND (0.0049)	ND (0.0047)	0.33	0.038	ND (0.016)	0.021 J	ND (0.0041)	0.013 J B	ND (0.011)	0.084	0.052
8270C SIM/DoD	Benzo[g,h,i]perylene	mg/Kg	1.7	NA	ND (0.004)	0.01 J	0.0069 J	ND (0.0049)	ND (0.0047)	0.066	0.0071 J	ND (0.016)	ND (0.018)	ND (0.0041)	ND (0.0085)	ND (0.011)	ND (0.0078)	0.013 J
8270C SIM/DoD	Benzo[k]fluoranthene	mg/Kg	NS	NS	ND (0.004)	0.017 B	0.01 J B	ND (0.0049)	ND (0.0047)	0.12	0.013 B	ND (0.016)	ND (0.018)	ND (0.0041)	ND (0.0085)	ND (0.011)	0.03	0.023 J B
8270C SIM/DoD	Chrysene	mg/Kg	NS	0.862	ND (0.004)	0.084 B	0.063 B	0.0036 J B	ND (0.0047)	0.43	0.06	0.022 J	0.06	0.0057 J	0.044	0.019 J B	0.2	0.084 QN
8270C SIM/DoD	Dibenz(a,h)anthracene	mg/Kg	NS	0.135	ND (0.004)	0.0082 J	0.0059 J	0.0039 J	ND (0.0047)	0.029	0.051	ND (0.016)	0.012 J	ND (0.0041)	ND (0.0085)	ND (0.011)	0.017	ND (0.019)
8270C SIM/DoD	Fluoranthene	mg/Kg	2.0	NA	ND (0.004)	0.2 MN	0.12 MN	ND (0.0049)	0.0038 J B	0.75	0.26	0.023 J B	0.064	0.013 B	0.059	0.031	0.27	ND (0.019)
8270C SIM/DoD	Fluorene	mg/Kg	0.8	NA	ND (0.004)	**3.4 MN**	**2 MN**	0.032	0.028	**9**	**1.4**	0.61	**3.5**	0.23	**1.2**	**0.89**	**11**	**7.9 QN**
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	mg/Kg	3.2	NA	ND (0.004)	0.0092 J	0.0076 J	ND (0.0049)	ND (0.0047)	0.084	0.0096 J	ND (0.016)	ND (0.018)	ND (0.0041)	ND (0.0085)	ND (0.011)	ND (0.0078)	0.014 J
8270C SIM/DoD	Naphthalene	mg/Kg	1.7	NA	ND (0.004)	**32 J**	**33**	0.27	0.14	**25**	**10**	1.6	**7.7**	1.4	**4.2**	1	**12**	**13 QN**
8270C SIM/DoD	Phenanthrene	mg/Kg	4.8	NA	0.0053 J	**5 MN**	2.9 MN	0.024	0.01	3.7	1.1	0.24	2.5	0.19	1.2	0.29	4	3.7 QN
8270C SIM/DoD	Pyrene	mg/Kg	NS	0.875	ND (0.004)	0.16 B	0.093 B	ND (0.0049)	ND (0.0047)	*0.89 B*	0.19 B	0.02 J B	0.11 B	0.0098 B	0.061 B	0.035 B	0.24 B	0.22
Total Low Molecular Weight PAHs[a]		mg/Kg	7.8	NS	0.0053	**43.6**	**39.43**	0.3493	0.1923	**47.8**	**13.413**	3.008	**16.4**	2.06	7.52	2.816	**34.6**	**29.46**
Total High Molecular Weight PAHs[b]		mg/Kg	9.6	NS	ND (0.004)	0.5554	0.3699	0.0075	0.0038	3.139	0.6897	0.065	0.285	0.0285	0.1862	0.085	0.915	0.457
9060	Total Organic Carbon - Quad	mg/Kg	NS	NS	29000	230000	240000	120000	65000	250000	190000	280000	290000	52000	170000	250000	270000	320000
AK102	DRO (nC10-<nC25)	mg/Kg	3500[1]	NS	42	**23000**	**24000**	380	230	**29000**	**11000**	**4200 J**	**66000**	**11000**	**46000**	**13000**	**85000**	**54000**
AK102-SG	DRO (nC10-<nC25)-SG	mg/Kg	3500[1]	NS	14 J	**18000**	**18000**	210	87	**15000**	**8000**	3300 QN J	**61000 QN**	**9200**	**39000**	**9500**	**75000**	**47000**
AK103	RRO (nC25-nC36)	mg/Kg	3500[1]	NS	500 MH	**9900**	**12000**	3200	2400	**10000**	**9600**	**7300**	**8500**	1800	**9700**	**15000**	**19000**	**14000**
AK103-SG	RRO (nC25-nC36)-SG	mg/Kg	3500[1]	NS	150	**4600**	**5900**	1100	860	3000	**3700**	3200 QN	**4100 QN**	630	**4600**	**5300**	**14000**	**7800**

Notes:

[1]Regulatory Limit Set in 2009 Decision Document

[2] Screening values from NOAA SQuiRT tables, Probable effect level (PEL), Freshwater Sediment 2009

BOLD = indicates sample concentration above cleanup level

[D]sample is a duplicate of the previous sample

B = analyte detected in the blank, result with potential high bias

DRO = diesel range organics

GRO = gasoline range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

MN = matrix interference suspected, result with no directional bias

ND = Sample result is non-detect with limit of detection (LOD) in parentheses

ND (LOQ) B = analyte was detected in the blank at similar concentrations to samples, results changed to ND with the limit of quantitation (LOQ) in parentheses.

PCB = polychlorinated biphenyl

QH = laboratory quality issue, result with potential high bias

QN = analyte result is considered an estimated value with uncertain bias due to a laboratory quality control failure such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits, and/or the field duplicates not meet relative percent difference (RPD) limits but meet other acceptance criteria

RRO = residual range organics

SG = silica gel cleanup

SIM = selective ion monitoring

QL-Quality issue with potential low bias

[a]Low Molecular Weight PAHs are: Acenaphtene, Acenaphthylene, Anthracene, Fluorene, Naphthalene and Phenanthrene

[b]High Molecular Weight PAHs are: Benzo[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Chrysene, Deibenz[a,h]anthracene, Fluoranthene, and Pyrene

Table H28 Site 28 Confirmation Sediment Sample Results (continued)

			Sample ID	13NC28SS015[1]	13NC28SS016	13NC28SS017	13NC28SS018	13NC28SS019	13NC28SS020	13NC28SS021	13NC28SS022	13NC28SS023	13NC28SS024	13NC28SS025	13NC28SS026
			Lab ID	580-40214-2	580-40214-3	580-40214-4	580-40214-5	580-40214-6	580-40214-7	580-40214-8	580-40214-9	580-40214-10	580-40214-11	580-40328-1	580-40328-2
			Location ID	028-013	028-013	028-013	028-013	028-013	028-013	028-013	028-013	028-013	028-013	028-025	028-026
			Collection Dat	8/30/2013	8/30/2013	8/30/2013	8/30/2013	8/30/2013	8/30/2013	8/30/2013	8/30/2013	8/30/2013	8/30/2013	9/12/2013	9/12/2013
Analysis Method	**Analyte**	**Unit**	**[1]Cleanup Levels from 2009 Decision Document**												
6020	Arsenic	mg/Kg	93	11	13	43	6.6	6.7	12	14	51	20	10	10	48
6020	Barium	mg/Kg	NS	81	86	150	81	91	100	110	97	110	92	110	100
6020	Cadmium	mg/Kg	NS	0.37 J	0.32 J	0.63 J	0.19 J	0.24 J	0.22 J	0.31 J	0.036 J	0.46 J	0.24 J	0.26 J	0.1
6020	Chromium	mg/Kg	270	8.3	18	22	17	10 QH	15	21	4.8	18	13	15	10
6020	Lead	mg/Kg	530	18	19	24	12	12	15	27	3.4	38	11	11	7.3
6020	Nickel	mg/Kg	NS	11	12	16	10	8.8	10	16	2.3	15	8.1	10	4.9
6020	Selenium	mg/Kg	NS	1.4 J	0.92 J	1.6 J	0.88 J	1.6 J	1.7 J	1.2 J	ND (1.1)	1.8 J	1.4 J	1.5 J	0.83 J
6020	Silver	mg/Kg	NS	0.11 J	0.11 J	0.17 J	0.073 J	0.098 J	0.064 J	0.094 J	ND (0.054)	0.12 J	ND (0.084)	0.072 J	0.039 J
6020	Vanadium	mg/Kg	NS	35	34	43	29	20	35	45	11	50	33	27	21
6020	Zinc	mg/Kg	960	68	110	220	66	60 QH	63	78	21	120	57	52	40
7471A	Mercury	mg/Kg	NS	0.12	0.077	0.17	0.062	0.10 J QL	0.12	0.082 J	ND (0.021)	0.077 J	0.057 J	0.081	0.024 J
8082	PCB-1016	mg/Kg	0.7	ND (0.028)	ND (0.016)	ND (0.035)	ND (0.013)	ND (0.024)	ND (0.028)	ND (0.033)	ND (0.013)	ND (0.033)	ND (0.023)	ND (0.021)	ND (0.014)
8082	PCB-1221	mg/Kg	0.7	ND (0.056)	ND (0.031)	ND (0.070)	ND (0.026)	ND (0.049)	ND (0.055)	ND (0.065)	ND (0.026)	ND (0.066)	ND (0.046)	ND (0.041)	ND (0.027)
8082	PCB-1232	mg/Kg	0.7	ND (0.056)	ND (0.031)	ND (0.070)	ND (0.026)	ND (0.049)	ND (0.055)	ND (0.065)	ND (0.026)	ND (0.066)	ND (0.046)	ND (0.041)	ND (0.027)
8082	PCB-1242	mg/Kg	0.7	ND (0.028)	ND (0.016)	ND (0.035)	ND (0.013)	ND (0.024)	ND (0.028)	ND (0.033)	ND (0.013)	ND (0.033)	ND (0.023)	ND (0.021)	ND (0.014)
8082	PCB-1248	mg/Kg	0.7	ND (0.028)	ND (0.016)	ND (0.035)	ND (0.013)	ND (0.024)	ND (0.028)	ND (0.033)	ND (0.013)	ND (0.033)	ND (0.023)	ND (0.021)	ND (0.014)
8082	PCB-1254	mg/Kg	0.7	ND (0.028)	ND (0.016)	ND (0.035)	ND (0.013)	ND (0.024)	ND (0.028)	ND (0.033)	ND (0.013)	ND (0.033)	ND (0.023)	ND (0.021)	ND (0.014)
8082	PCB-1260	mg/Kg	0.7	0.057	0.097	ND (0.035)	ND (0.013)	0.080	0.031 J	0.099	ND (0.013)	ND (0.033)	ND (0.023)	ND (0.021)	0.0086 J
8260B/DoD	Benzene	mg/Kg	NS	ND (0.041)	ND (0.014)	ND (0.048)	ND (0.011)	ND (0.03)	ND (0.029)	ND (0.04)	ND (0.0093)	ND (0.043)	ND (0.026)	ND (0.05)	ND (0.027)
8260B/DoD	Ethylbenzene	mg/Kg	NS	0.091 B	ND (0.042)	ND (0.14)	ND (0.034)	ND (0.09)	ND (0.086)	ND (0.12)	0.015 B	0.26	0.059 B	0.2 J	ND (0.067)
8260B/DoD	m,p-Xylene	mg/Kg	NS	0.17 QN	0.016 B	ND (0.096)	ND (0.023)	0.036 B	ND (0.058)	0.12 J	0.025 B	0.82	0.14	0.2 J	ND (0.13)
8260B/DoD	o-Xylene	mg/Kg	NS	ND (0.061)	ND (0.021)	ND (0.072)	ND (0.017)	ND (0.045)	ND (0.043)	0.067 J	0.0099 J	0.3	ND (0.039)	0.076 J	ND (0.067)
	Total xylenes	mg/Kg	NS	0.23	0.037	ND (0.168)	ND (0.040)	0.081	ND (0.101)	0.187	0.034	1.12	0.179	0.276	0.197
8260B/DoD	Toluene	mg/Kg	NS	ND (0.061)	ND (0.021)	ND (0.072)	ND (0.017)	ND (0.045)	ND (0.043)	ND (0.059)	ND (0.014)	ND (0.064)	ND (0.039)	ND (0.13)	ND (0.067)
8270C SIM/DoD	1-Methylnaphthalene	mg/Kg	NS	21 QN	7.6	14	2.2	8.1 QL	3.9	1.5	1.6	56	18	0.11	0.42
8270C SIM/DoD	2-Methylnaphthalene	mg/Kg	0.6	**24 QN**	**11**	**20**	**2**	**9.6 QL**	**3.9**	**2**	**1.9**	**86**	**29**	0.15	0.41
8270C SIM/DoD	Acenaphthene	mg/Kg	0.5	**1.7**	0.34	**0.57**	0.26	0.31	ND (0.014)	**0.62**	0.054	**0.59**	0.47	0.021	ND (0.0067)
8270C SIM/DoD	Acenaphthylene	mg/Kg	NS	*0.36 QN*	*0.21*	*0.57*	*0.23*	*0.17*	ND (0.014)	*0.5*	0.079	*0.38*	*0.25*	0.017 J	ND (0.0067)
8270C SIM/DoD	Anthracene	mg/Kg	NS	0.2 QN	0.036	0.025 J	0.036	0.021 J	ND (0.014)	0.053	ND (0.0067)	0.097	0.031	0.021 QH	ND (0.0067)
8270C SIM/DoD	Benzo[a]anthracene	mg/Kg	NS	0.016 J	0.0073 J	ND (0.017)	0.0051 J	ND (0.013)	0.017 J	ND (0.016)	ND (0.0067)	0.015 J	ND (0.012)	0.013 J	ND (0.0067)
8270C SIM/DoD	Benzo[a]pyrene	mg/Kg	NS	0.01 J	ND (0.0079)	ND (0.017)	0.004 J	ND (0.013)	ND (0.014)	ND (0.016)	ND (0.0067)	ND (0.016)	ND (0.012)	0.0063 J	ND (0.0067)
8270C SIM/DoD	Benzo[b]fluoranthene	mg/Kg	NS	0.023 J	0.012 J	ND (0.017)	0.0067 J	0.009 J	0.016 J	0.028 J	ND (0.0067)	0.069	0.015 J	0.026	ND (0.0067)
8270C SIM/DoD	Benzo[g,h,i]perylene	mg/Kg	1.7	ND (0.014)	ND (0.0079)	ND (0.017)	ND (0.0063)	ND (0.013)	ND (0.014)	ND (0.016)	ND (0.0067)	ND (0.016)	ND (0.012)	ND (0.01)	ND (0.0067)
8270C SIM/DoD	Benzo[k]fluoranthene	mg/Kg	NS	0.016 J B	0.0081 J B	0.014 J B	0.006 J B	ND (0.013)	0.013 J B	0.019 J B	ND (0.0067)	0.025 J B	0.0099 J B	0.0082 J	ND (0.0067)
8270C SIM/DoD	Chrysene	mg/Kg	NS	0.04 QN	0.038	0.015 J	0.018	ND (0.013)	0.089	0.11	ND (0.0067)	0.22	0.053	0.024	ND (0.0067)
8270C SIM/DoD	Dibenz(a,h)anthracene	mg/Kg	NS	0.014 J B	0.0071 J B	0.017 J B	0.0057 J B	ND (0.013)	0.017 J B	ND (0.016)	ND (0.0067)	ND (0.016)	ND (0.012)	ND (0.01)	ND (0.0067)
8270C SIM/DoD	Fluoranthene	mg/Kg	2.0	ND (0.014)	ND (0.0079)	0.055	0.023	0.016 J	0.15	ND (0.016)	0.008 J	0.052	0.056	0.093	ND (0.0067)
8270C SIM/DoD	Fluorene	mg/Kg	0.8	**4.1 QN**	**0.92**	**1**	0.75	0.53	ND (0.014)	ND (0.016)	0.041	0.45	**0.87**	0.041	0.057
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	mg/Kg	3.2	ND (0.014)	ND (0.0079)	ND (0.017)	ND (0.0063)	ND (0.013)	ND (0.014)	ND (0.016)	ND (0.0067)	ND (0.016)	ND (0.012)	0.01 J	0.0041 J
8270C SIM/DoD	Naphthalene	mg/Kg	1.7	**5.5 QN**	**2**	1.1	0.27	1.4	**2.3**	1.2	1.2	**40 J**	**6.4**	0.075	0.22
8270C SIM/DoD	Phenanthrene	mg/Kg	4.8	2.2 QN	0.4	0.37	0.49	0.22	0.29	0.35	0.023	0.56	0.29	0.09	0.056
8270C SIM/DoD	Pyrene	mg/Kg	NS	0.15	0.049	0.051	0.041	0.03	0.19	0.15	0.0078 J	0.24	0.079	0.075	0.014
Total Low Molecular Weight PAHs[a]		mg/Kg	7.8	**14.06**	3.906	3.635	2.036	2.651	2.59	2.723	1.397	**42.077**	**8.311**	0.265	0.333
Total High Molecular Weight PAHs[b]		mg/Kg	9.6	0.269	0.1215	0.152	0.1095	0.055	0.492	0.307	0.0158	0.621	0.2129	0.2555	0.0181
9060	Total Organic Carbon - Quad	mg/Kg	NS	350000	88000	220000	76000	340000	270000	220000	66000	330000	220000	210000	64000
AK102	DRO (nC10-<nC25)	mg/Kg	3500[1]	**67000**	**12000**	**21000**	**8200**	**8800 QL**	**53000**	**41000**	2600	**17000**	**3600**	1600	**8900**
AK102-SG	DRO (nC10-<nC25)-SG	mg/Kg	3500[1]	**54000**	**9100**	**15000**	**6600**	**7200 QL**	**40000**	**33000**	2000	**14000**	2900	950	**8700**
AK103	RRO (nC25-nC36)	mg/Kg	3500[1]	**10000**	**6800**	**10000**	**4000**	**11000**	**8500**	**20000**	1000	**26000**	2500	**6000**	2200
AK103-SG	RRO (nC25-nC36)-SG	mg/Kg	3500[1]	**6400**	**3600**	**4800**	1900	**5100 QH**	3400	**13000**	400	**18000**	1000	2200	730

Notes:

[1]Regulatory Limit Set in 2009 Decision Document

[2] Screening values from NOAA SQuiRT tables, Probable effect level (PEL), Freshwater Sediment 2009

BOLD = indicates sample concentration above cleanup level

[b]sample is a duplicate of the previous sample

B = analyte detected in the blank, result with potential high bias

DRO = diesel range organics

GRO = gasoline range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

MN = matrix interference suspected, result with no directional bias

ND = Sample result is non-detect with limit of detection (LOD) in parentheses

ND (LOQ) B = analyte was detected in the blank at similar concentrations to samples, results changed to ND with the limit of quantitation (LOQ) in parentheses.

PCB = polychlorinated biphenyl

QH = laboratory quality issue, result with potential high bias

QN = analyte result is considered an estimated value with uncertain bias due to a laboratory quality control failure such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits, and/or the field duplicates not meet relative percent difference (RPD) limits but meet other acceptance criteria

RRO = residual range organics

SG = silica gel cleanup

SIM = selective ion monitoring

QL-Quality issue with potential low bias

[a]Low Molecular Weight PAHs are: Acenaphtene, Acenaphthylene, Anthracene, Fluorene, Naphthalene and Phenanthrene

[b]High Molecular Weight PAHs are: Benzo[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Ben:

Table H28 Site 28 Confirmation Sediment Sample Results (continued)

			Sample ID	13NC28SS027	13NC28SS028	13NC28SS029	13NC28SS030	13NC28SS031[D]	13NC28SS032	13NC28SS033	13NC28SS034	13NC28SS035	13NC28SS036	13NC28SS037	13NC28SS038	13NC28SS039
			Lab ID	580-40328-3	580-40328-4	580-40328-5	580-40328-6	580-40328-7	580-40328-8	580-40328-9	580-40328-10	580-40328-11	580-40328-12	580-40328-13	580-40328-14	580-40328-15
			Location ID	028-027	028-028	028-029	028-030	028-031	028-032	028-033	028-034	028-035	028-036	028-037	028-038	028-039
			Collection Dat	9/12/2013	9/12/2013	9/12/2013	9/12/2013	9/12/2013	9/12/2013	9/12/2013	9/12/2013	9/12/2013	9/14/2013	9/14/2013	9/14/2013	9/14/2013
Analysis Method	**Analyte**	**Unit**	**[1]Cleanup Levels from 2009 Decision Document**													
6020	Arsenic	mg/Kg	93	7.7	17	4.7	7.8	8.4	7.3	5.3	6.4	88	13	70	11	4.2
6020	Barium	mg/Kg	NS	57	110	94	110	110	110	97	88	160	140	150	120	38
6020	Cadmium	mg/Kg	NS	0.11 J	0.17 J	0.23	0.21 J	0.23 J	0.20 J	0.22 J	0.23 J	0.069 J	0.67	0.28 J	0.45	0.098 J
6020	Chromium	mg/Kg	270	11	16	19 QH	15	16	16	21	17	7.7	27	14	22	7.2
6020	Lead	mg/Kg	530	7.1	9.6	14	9.4	10	9.7	15	14	6.5	36	18	25	6.9
6020	Nickel	mg/Kg	NS	5.1	10	11	9.6	10	11	12	10	4.0	17	8.0	14	7.0
6020	Selenium	mg/Kg	NS	ND (1.5)	1.3 J	0.88 J	1.2 J	1.2 J	1.2 J	0.96 J	0.91 J	ND (1.7)	1.4 J	1.4 J	1.1 J	0.58 J
6020	Silver	mg/Kg	NS	0.055 J	0.072 J	0.076 J	0.073 J	0.076 J	0.075 J	0.077 J	0.079 J	ND (0.084)	0.17 J	0.097 J	0.12 J	0.033 J
6020	Vanadium	mg/Kg	NS	17	31	31 QH	28	30	30	33	27	18	41	27	33	12
6020	Zinc	mg/Kg	960	55	46	53 QH	42	49	44	59	67	47	150	88	120	23
7471A	Mercury	mg/Kg	NS	0.042 J	0.047	0.064	0.049	0.058	0.045	0.049	0.077	0.030 J	0.12	0.065 J	0.089	0.015 J
8082	PCB-1016	mg/Kg	0.7	ND (0.021)	ND (0.016)	ND (0.0096)	ND (0.014)	ND (0.013)	ND (0.012)	ND (0.010)	ND (0.010)	ND (0.023)	ND (0.017)	ND (0.028)	ND (0.013)	ND (0.0075)
8082	PCB-1221	mg/Kg	0.7	ND (0.042)	ND (0.032)	ND (0.019)	ND (0.028)	ND (0.027)	ND (0.025)	ND (0.020)	ND (0.020)	ND (0.047)	ND (0.034)	ND (0.056)	ND (0.025)	ND (0.015)
8082	PCB-1232	mg/Kg	0.7	ND (0.042)	ND (0.032)	ND (0.019)	ND (0.028)	ND (0.027)	ND (0.025)	ND (0.020)	ND (0.020)	ND (0.047)	ND (0.034)	ND (0.056)	ND (0.025)	ND (0.015)
8082	PCB-1242	mg/Kg	0.7	ND (0.021)	ND (0.016)	ND (0.0096)	ND (0.014)	ND (0.013)	ND (0.012)	ND (0.010)	ND (0.010)	ND (0.023)	ND (0.017)	ND (0.028)	ND (0.013)	ND (0.0075)
8082	PCB-1248	mg/Kg	0.7	ND (0.021)	ND (0.016)	ND (0.0096)	ND (0.014)	ND (0.013)	ND (0.012)	ND (0.010)	ND (0.010)	ND (0.023)	ND (0.017)	ND (0.028)	ND (0.013)	ND (0.0075)
8082	PCB-1254	mg/Kg	0.7	ND (0.021)	ND (0.016)	ND (0.0096)	ND (0.014)	ND (0.013)	ND (0.012)	ND (0.010)	ND (0.010)	ND (0.023)	ND (0.017)	ND (0.028)	ND (0.013)	ND (0.0075)
8082	PCB-1260	mg/Kg	0.7	ND (0.021)	ND (0.016)	0.095	0.018 J	0.021 J	0.025	0.17	0.18	ND (0.023)	0.61	0.085	0.29	ND (0.0075)
8260B/DoD	Benzene	mg/Kg	NS	ND (0.05)	ND (0.032)	ND (0.063)	ND (0.063)	ND (0.16)	ND (0.12)	ND (0.086)	ND (0.018)	ND (0.073)	ND (0.58)	ND (0.58)	ND (0.12)	ND (0.016)
8260B/DoD	Ethylbenzene	mg/Kg	NS	ND (0.12)	ND (0.081)	0.38 QH	0.12 J	0.17 J	0.69	1.5	0.027 J	0.15 J	4.7	ND (1.5)	0.24 J	ND (0.039)
8260B/DoD	m,p-Xylene	mg/Kg	NS	ND (0.25)	ND (0.16)	1.4 JQH	0.32 J	0.37 J	2.1	6	0.11 J	0.58 J	17	ND (2.9)	0.83 J	ND (0.079)
8260B/DoD	o-Xylene	mg/Kg	NS	0.046 J	ND (0.081)	1.1 QH	0.31 J	0.42 J	1.7	4.2	0.11 J	0.4	11	ND (1.5)	0.61 J	ND (0.039)
	Total xylenes	mg/Kg	NS	ND (0.31)	ND (0.241)	2.5	0.63	0.79	3.8	10.2	0.22	0.98	28	ND (4.4)	1.44	ND (0.108)
8260B/DoD	Toluene	mg/Kg	NS	ND (0.12)	ND (0.081)	ND (0.16)	ND (0.16)	ND (0.39)	ND (0.3)	ND (0.22)	ND (0.045)	ND (0.18)	ND (1.5)	ND (1.5)	ND (0.31)	ND (0.039)
8270C SIM/DoD	1-Methylnaphthalene	mg/Kg	NS	0.3	2.4	24	12	11	11	35	24	0.46	78	5.4	19	0.044 QN
8270C SIM/DoD	2-Methylnaphthalene	mg/Kg	0.6	0.41	**3.4**	**27**	**18**	**17**	**17**	**43**	**29**	0.56	**81**	**5.1**	**20**	0.051 QN
8270C SIM/DoD	Acenaphthene	mg/Kg	0.5	0.096	**0.8**	**1.8 J QL**	**0.66**	**0.63**	**0.64**	**0.81**	**0.97**	0.042	**3.9**	**0.78**	**1**	0.006 J
8270C SIM/DoD	Acenaphthylene	mg/Kg	NS	0.064	ND (0.0081)	*0.74*	*0.3*	*0.28*	*0.26*	*0.68*	*0.92*	0.029	*2.9*	*0.4*	*0.85*	0.0074 J QH
8270C SIM/DoD	Anthracene	mg/Kg	NS	0.037 QH	*0.34 QH*	*0.25 QH*	0.056 QH	0.081 QH	0.054 QH	*0.25 QH*	0.23 QH	0.012 J QH	*0.56 QH*	0.12 QH	0.24	ND (0.0038)
8270C SIM/DoD	Benzo[a]anthracene	mg/Kg	NS	0.024	0.18	0.12	0.053	0.061	0.054	0.091	0.17	0.0088 J	0.29	0.045	0.077	ND (0.0038)
8270C SIM/DoD	Benzo[a]pyrene	mg/Kg	NS	0.0087 J	0.033	0.028	0.013 J	0.014	0.014	0.027	0.047	ND (0.011)	0.12	0.021 J	0.04	ND (0.0038)
8270C SIM/DoD	Benzo[b]fluoranthene	mg/Kg	NS	0.027	0.061	0.057	0.031	0.032	0.029	0.061	0.13	0.0092 J	0.29	0.047	0.12	ND (0.0038)
8270C SIM/DoD	Benzo[g,h,i]perylene	mg/Kg	1.7	ND (0.01)	ND (0.0081)	ND (0.005)	0.0041 J	ND (0.0071)	ND (0.0063)	0.013	0.018	ND (0.011)	0.073	0.0096 J	0.023	ND (0.0038)
8270C SIM/DoD	Benzo[k]fluoranthene	mg/Kg	NS	0.0092 J	0.021	0.026	0.01 J	0.01 J	0.012 J	0.018	0.052	ND (0.011)	0.077	0.019 J	0.037	ND (0.0038)
8270C SIM/DoD	Chrysene	mg/Kg	NS	0.057	0.16	0.17	0.067	0.076	0.063	0.2	0.25	0.0072 J	0.76	0.059	0.21	ND (0.0038)
8270C SIM/DoD	Dibenz(a,h)anthracene	mg/Kg	NS	ND (0.01)	ND (0.0081)	ND (0.005)	0.0041 J	ND (0.0071)	ND (0.0063)	ND (0.0051)	ND (0.0054)	ND (0.011)	0.026	ND (0.014)	0.0079 J	ND (0.0038)
8270C SIM/DoD	Fluoranthene	mg/Kg	2.0	0.35	**2.3**	1	0.46	0.48	0.4	0.93	1.3	0.043	1.6	0.27	0.54	0.0051 J
8270C SIM/DoD	Fluorene	mg/Kg	0.8	0.23	**0.97**	**2.6**	0.71	0.8	0.7	**2**	**2.4**	0.059	**11**	**1.2**	**2.5**	0.016 QN
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	mg/Kg	3.2	0.01 J	0.015 J	0.016	0.0083 J	ND (0.0071)	0.007 J	0.017	0.025	ND (0.011)	0.059	0.018 J	0.031	ND (0.0038)
8270C SIM/DoD	Naphthalene	mg/Kg	1.7	0.64	1.3	**9.7**	**4.2**	**3.3**	**5.5**	**24**	**12**	0.34	**24**	1.5	**7.2**	0.0099 QN
8270C SIM/DoD	Phenanthrene	mg/Kg	4.8	0.88	4.2	3.5	0.96	0.98	0.95	3.9	2.2	0.052	**6.3**	0.72	1.4	0.012
8270C SIM/DoD	Pyrene	mg/Kg	NS	0.27	*1.5*	0.69	0.29	0.33	0.29	0.69	*1*	0.049	*1.3*	0.23	0.52	0.0054 J
Total Low Molecular Weight PAHs[a]		mg/Kg	7.8	1.947	7.61	**18.59**	6.886	6.071	**8.104**	**31.64**	**18.72**	0.534	**48.66**	4.72	**13.19**	0.0513
Total High Molecular Weight PAHs[b]		mg/Kg	9.6	0.7559	4.2565	2.107	0.9405	1.003	0.869	2.047	2.992	0.172	4.595	0.7186	1.6059	0.01505
9060	Total Organic Carbon - Quad	mg/Kg	NS	140000	100000	140000	140000	140000	110000	81000	100000	120000	230000	150000	130000	34000
AK102	DRO (nC10-<nC25)	mg/Kg	3500[1]	1100	**4200**	**21000**	**8500**	**7100**	**4800**	**26000**	**26000**	1000	**64000**	**16000**	**31000**	260
AK102-SG	DRO (nC10-<nC25)-SG	mg/Kg	3500[1]	980	**3700**	**23000**	**8000**	**6500**	**5300**	**27000**	**27000**	850	**64000**	**14000**	**27000**	170
AK103	RRO (nC25-nC36)	mg/Kg	3500[1]	1300	3300	**6900**	**4000**	**4500**	3400	**7400**	**9800**	830	**22000**	**6400**	**11000**	810
AK103-SG	RRO (nC25-nC36)-SG	mg/Kg	3500[1]	540	930	**4500**	1700	1600	1700	**4900**	**7500**	400	**17000**	**4600**	**6800**	220

Notes:

[1]Regulatory Limit Set in 2009 Decision Document

[2] Screening values from NOAA SQuiRT tables, Probable effect level (PEL), Freshwater Sediment 2009

BOLD = indicates sample concentration above cleanup level

[D]sample is a duplicate of the previous sample

B = analyte detected in the blank, result with potential high bias

DRO = diesel range organics

GRO = gasoline range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

MN = matrix interference suspected, result with no directional bias

ND = Sample result is non-detect with limit of detection (LOD) in parentheses

ND (LOQ) B = analyte was detected in the blank at similar concentrations to samples, results changed to ND with the limit of quantitation (LOQ) in parentheses.

PCB = polychlorinated biphenyl

QH = laboratory quality issue, result with potential high bias

QN = analyte result is considered an estimated value with uncertain bias due to a laboratory quality control failure such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits, and/or the field duplicates not meet relative percent difference (RPD) limits but meet other acceptance criteria

RRO = residual range organics

SG = silica gel cleanup

SIM = selective ion monitoring

QL-Quality issue with potential low bias

[a]Low Molecular Weight PAHs are: Acenaphtene, Acenaphthylene, Anthracene, Fluorene, Naphthalene and Phenanthrene

[b]High Molecular Weight PAHs are: Benzo[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Ben

Table H28 Site 28 Confirmation Sediment Sample Results (continued)

			Sample ID	13NC28SS040[1]	13NC28SS041	13NC28SS042	13NC28SS043[D]	13NC28SS044	13NC28SS045	13NC28SS046
			Lab ID	580-40328-16	580-40328-17	580-40328-18	580-40328-19	580-40328-20	580-40328-21	580-40328-22
			Location ID	028-040	028-041	028-042	028-043	028-044	028-045	028-046
			Collection Dat	9/14/2013	9/14/2013	9/14/2013	9/14/2013	9/14/2013	9/15/2013	9/15/2013
Analysis Method	**Analyte**	**Unit**	**[1]Cleanup Levels from 2009 Decision Document**							
6020	Arsenic	mg/Kg	93	6.5	35	20 QN	11 QN	4.6	27	7.2
6020	Barium	mg/Kg	NS	47	120	82	74	53	130	48
6020	Cadmium	mg/Kg	NS	0.10 J	ND (0.091)	0.15 J	0.051 J	ND (0.069)	0.078 J	0.025 J
6020	Chromium	mg/Kg	270	8.0	11 QH	15	13	9.1	14	8.1
6020	Lead	mg/Kg	530	7.2	9.5	11	10	8.3	9.7	9.2
6020	Nickel	mg/Kg	NS	7.3	6.8	10	8.6	5.4	8.4	5.2
6020	Selenium	mg/Kg	NS	0.81 J	1.2 QH	0.93 J	1.1 J	0.97 J	1.4 J	0.82 J
6020	Silver	mg/Kg	NS	0.041 J	0.064 J	0.069 J	0.064 J	0.052 J	0.073 J	0.053 J
6020	Vanadium	mg/Kg	NS	14	21 J	27	21	16	26	19
6020	Zinc	mg/Kg	960	26	47	53	46	35	53	42
7471A	Mercury	mg/Kg	NS	0.023 J	0.040 J	0.036 J	0.039 J	0.047 J	0.041 J	0.047
8082	PCB-1016	mg/Kg	0.7	ND (0.010)	ND (0.026)	ND (0.012)	ND (0.012)	ND (0.019)	ND (0.016)	ND (0.010)
8082	PCB-1221	mg/Kg	0.7	ND (0.021)	ND (0.053)	ND (0.025)	ND (0.023)	ND (0.038)	ND (0.033)	ND (0.021)
8082	PCB-1232	mg/Kg	0.7	ND (0.021)	ND (0.053)	ND (0.025)	ND (0.023)	ND (0.038)	ND (0.033)	ND (0.021)
8082	PCB-1242	mg/Kg	0.7	ND (0.010)	ND (0.026)	ND (0.012)	ND (0.012)	ND (0.019)	ND (0.016)	ND (0.010)
8082	PCB-1248	mg/Kg	0.7	ND (0.010)	ND (0.026)	ND (0.012)	ND (0.012)	ND (0.019)	ND (0.016)	ND (0.010)
8082	PCB-1254	mg/Kg	0.7	ND (0.010)	ND (0.026)	ND (0.012)	ND (0.012)	ND (0.019)	ND (0.016)	ND (0.010)
8082	PCB-1260	mg/Kg	0.7	ND (0.010)	0.032 J	ND (0.012)	ND (0.012)	0.24	ND (0.016)	ND (0.010)
8260B/DoD	Benzene	mg/Kg	NS	ND (0.021)	ND (0.1)	ND (0.032)	ND (0.032)	ND (0.051)	ND (0.046)	ND (0.022)
8260B/DoD	Ethylbenzene	mg/Kg	NS	ND (0.053)	ND (0.25)	ND (0.08)	ND (0.081)	ND (0.13)	ND (0.12)	ND (0.055)
8260B/DoD	m,p-Xylene	mg/Kg	NS	ND (0.11)	ND (0.5)	ND (0.16)	ND (0.16)	ND (0.26)	ND (0.23)	ND (0.11)
8260B/DoD	o-Xylene	mg/Kg	NS	ND (0.053)	ND (0.25)	ND (0.08)	ND (0.081)	ND (0.13)	ND (0.12)	ND (0.055)
	Total xylenes	mg/kg	NS	ND (0.163)	ND (0.75)	ND (0.24)	ND (0.241)	ND (0.39)	ND (0.35)	ND (0.165)
8260B/DoD	Toluene	mg/Kg	NS	ND (0.053)	ND (0.25)	ND (0.08)	ND (0.081)	ND (0.13)	ND (0.12)	ND (0.055)
8270C SIM/DoD	1-Methylnaphthalene	mg/Kg	NS	0.078 QN	0.088	0.035	0.028	0.073 J	0.081 J	0.021 J
8270C SIM/DoD	2-Methylnaphthalene	mg/Kg	0.6	0.093 QN	0.094	0.04	0.032	0.052 J	0.066 J	ND (0.027)
8270C SIM/DoD	Acenaphthene	mg/Kg	0.5	0.015	0.013 J	0.026	0.023	0.029 J	ND (0.043)	ND (0.027)
8270C SIM/DoD	Acenaphthylene	mg/Kg	NS	0.012 QH	0.0098 J QH	0.03 QH	0.028 QH	0.069 J QH	ND (0.043)	0.069 QH
8270C SIM/DoD	Anthracene	mg/Kg	NS	0.0033 J	ND (0.013)	0.14	0.09	ND (0.049)	ND (0.043)	ND (0.027)
8270C SIM/DoD	Benzo[a]anthracene	mg/Kg	NS	0.0048 J	ND (0.013)	0.1	0.097	ND (0.049)	ND (0.043)	ND (0.027)
8270C SIM/DoD	Benzo[a]pyrene	mg/Kg	NS	ND (0.0052)	ND (0.013)	0.045	0.039	ND (0.049)	ND (0.043)	ND (0.027)
8270C SIM/DoD	Benzo[b]fluoranthene	mg/Kg	NS	ND (0.0052)	ND (0.013)	0.095	0.085	0.032 J	ND (0.043)	ND (0.027)
8270C SIM/DoD	Benzo[g,h,i]perylene	mg/Kg	1.7	ND (0.0052)	ND (0.013)	0.011 J	0.011 J	ND (0.049)	ND (0.043)	ND (0.027)
8270C SIM/DoD	Benzo[k]fluoranthene	mg/Kg	NS	ND (0.0052)	ND (0.013)	0.035	0.033	ND (0.049)	ND (0.043)	ND (0.027)
8270C SIM/DoD	Chrysene	mg/Kg	NS	0.0055 J	0.018 J	0.16	0.15	ND (0.049)	ND (0.043)	ND (0.027)
8270C SIM/DoD	Dibenz(a,h)anthracene	mg/Kg	NS	ND (0.0052)	ND (0.013)	0.0058 J	0.0057 J	ND (0.049)	ND (0.043)	ND (0.027)
8270C SIM/DoD	Fluoranthene	mg/Kg	2.0	0.022	0.013 J	0.56	0.47	0.054 J	0.03 J	ND (0.027)
8270C SIM/DoD	Fluorene	mg/Kg	0.8	0.029 QN	0.028	0.064	0.047	ND (0.049)	0.031 J	ND (0.027)
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	mg/Kg	3.2	ND (0.0052)	ND (0.013)	0.019	0.018	ND (0.049)	ND (0.043)	ND (0.027)
8270C SIM/DoD	Naphthalene	mg/Kg	1.7	0.029 QN	0.057	0.054	0.042	0.078 J	0.047 J	ND (0.027)
8270C SIM/DoD	Phenanthrene	mg/Kg	4.8	0.02	0.043	0.38	0.3	0.12	0.03 J	0.033 J
8270C SIM/DoD	Pyrene	mg/Kg	NS	0.017	0.019 J	0.56	0.41	0.12	0.03 J	0.021 J
Total Low Molecular Weight PAHs[a]		mg/Kg	7.8	0.1083	0.1508	0.694	0.53	0.296	0.108	0.102
Total High Molecular Weight PAHs[b]		mg/Kg	9.6	0.0493	0.05	1.5908	1.3187	0.206	0.06	0.021
9060	Total Organic Carbon - Quad	mg/Kg	NS	23000	120000	74000	73000	200000	110000	43000
AK102	DRO (nC10-<nC25)	mg/Kg	3500[1]	340	540 QH	390	420	2900	780	2100
AK102-SG	DRO (nC10-<nC25)-SG	mg/Kg	3500[1]	270	410 QL	290	310	2500	590	1700
AK103	RRO (nC25-nC36)	mg/Kg	3500[1]	960	1400 QH	1800	2200	**6800**	3200	2800
AK103-SG	RRO (nC25-nC36)-SG	mg/Kg	3500[1]	320	580 QL	600	820	**3600**	1100	1500

Notes:

[1]Regulatory Limit Set in 2009 Decision Document

[2] Screening values from NOAA SQuiRT tables, Probable effect level (PEL), Freshwater Sediment 2009

BOLD = indicates sample concentration above cleanup level

[D]sample is a duplicate of the previous sample

B = analyte detected in the blank, result with potential high bias

DRO = diesel range organics

GRO = gasoline range organics

J = result is an estimate

mg/Kg = milligrams per kilogram

MN = matrix interference suspected, result with no directional bias

ND = Sample result is non-detect with limit of detection (LOD) in parentheses

ND (LOQ) B = analyte was detected in the blank at similar concentrations to samples, results changed to ND with the limit of quantitation (LOQ) in parentheses.

PCB = polychlorinated biphenyl

QH = laboratory quality issue, result with potential high bias

QN = analyte result is considered an estimated value with uncertain bias due to a laboratory quality control failure such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits, and/or the field duplicates not meet relative percent difference (RPD) limits but meet other acceptance criteria

RRO = residual range organics

SG = silica gel cleanup

SIM = selective ion monitoring

QL-Quality issue with potential low bias

[a]Low Molecular Weight PAHs are: Acenaphtene, Acenaphthylene, Anthracene, Fluorene, Naphthalene and Phenanthrene

[b]High Molecular Weight PAHs are: Benzo[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Ben:

Table H29 Site 28 MI Soil Sample Results and Discharge Area Soil Sample Result

			Sample ID	13NC28MI01	13NC28MI02[R]	13NC28MI03[R]	13NC28MI04[R]	13NC28WDA01	13NC28WDA02[D]
			Laboratory ID	580-40427-13	580-40427-14	580-40427-15	580-40427-16	580-40427-17	580-40427-18
			Location ID	028-01	028-02	028-03	028-04	028WDA-01	028WDA-02
			Collection Date	9/16/2013	9/17/2013	9/18/2013	9/19/2013	9/19/2013	9/19/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level**	Lower Sump (Sump #1)	Upper Sump (Sump #2)	Upper Sump (Sump #2)	Upper Sump (Sump #2)	Treated Surface Water Discharge Area	
6020	Arsenic	mg/Kg	11[1]	11	9.1	**12**	11	2.0 QN	1.1 QN
6020	Barium	mg/Kg	1100[2]	270	210	280	240	87 QN	44 QN
6020	Cadmium	mg/Kg	5.0[2]	0.37	0.35	0.39	0.39	0.040 J	0.022 J
6020	Chromium	mg/Kg	25[2]	**37**	**29**	**38**	**33**	8.3 QN	4.1 QN
6020	Lead	mg/Kg	400[2]	19	16	19	16	6.9	7.2
6020	Nickel	mg/Kg	86[2]	32	24	33	32	4.8 QN	1.9 QN
6020	Selenium	mg/Kg	3.4[2]	1.9	1.8	2.1	1.9	1.0 J	0.29 J
6020	Silver	mg/Kg	11.2[2]	0.17 J	0.14 J	0.17 J	0.15 J	0.051 J	0.031 J
6020	Vanadium	mg/Kg	3400[2]	58 QH	48	58	52	9.5	6.1
6020	Zinc	mg/Kg	4100[2]	93	85	100	94	48 QN	18 QN
7471A	Mercury	mg/Kg	1.4[2]	0.11	0.070	0.13	0.10	0.13 QN	0.048 QN
8082	PCB-1016	mg/Kg	1[1]	ND (0.0029) QL	ND (0.0027)	ND (0.0033)	ND (0.0028)	ND (0.014)	ND (0.0071)
8082	PCB-1221	mg/Kg	1[1]	ND (0.0057) QL	ND (0.0055)	ND (0.0066)	ND (0.0055)	ND (0.028)	ND (0.014)
8082	PCB-1232	mg/Kg	1[1]	ND (0.0057) QL	ND (0.0055)	ND (0.0066)	ND (0.0055)	ND (0.028)	ND (0.014)
8082	PCB-1242	mg/Kg	1[1]	ND (0.0029) QL	ND (0.0027)	ND (0.0033)	ND (0.0028)	ND (0.014)	ND (0.0071)
8082	PCB-1248	mg/Kg	1[1]	ND (0.0029) QL	ND (0.0027)	ND (0.0033)	ND (0.0028)	ND (0.014)	ND (0.0071)
8082	PCB-1254	mg/Kg	1[1]	ND (0.0029) QL	ND (0.0027)	ND (0.0033)	ND (0.0028)	ND (0.014)	ND (0.0071)
8082	PCB-1260	mg/Kg	1[1]	ND (0.0029) QL	0.0080	ND (0.0033)	ND (0.0028)	ND (0.014)	ND (0.0071)
8260B	Benzene	mg/Kg	2[1]	ND (0.023)	ND (0.021)	ND (0.026)	ND (0.022)	ND (0.1)	ND (0.14)
8260B	Ethylbenzene	mg/Kg	6.9[2]	ND (0.069)	ND (0.064)	ND (0.078)	ND (0.065)	ND (0.31)	ND (0.43)
8260B	m,p-Xylene	mg/Kg	NS	ND (0.046)	ND (0.043)	ND (0.052)	ND (0.043)	ND (0.21)	ND (0.28)
8260B	o-Xylene	mg/Kg	NS	ND (0.034)	ND (0.032)	ND (0.039)	ND (0.032)	ND (0.16)	ND (0.21)
	Total xylenes	mg/kg	63[2]	ND (0.080)	ND (0.075)	ND (0.091)	ND (0.075)	ND (0.37)	ND (0.49)
8260B	Toluene	mg/Kg	6.5[2]	ND (0.034)	ND (0.032)	ND (0.039)	ND (0.032)	ND (0.16)	ND (0.21)
8270C SIM/DoD	1-Methylnaphthalene	mg/Kg	6.2[2]	0.047 QN	0.077	0.01 J	0.029	0.0053 J	0.0023 J
8270C SIM/DoD	2-Methylnaphthalene	mg/Kg	6.1[2]	0.062 QN	0.081 QN	0.019 QN	0.04 QN	ND (0.0067)	ND (0.0035)
8270C SIM/DoD	Acenaphthene	mg/Kg	180[2]	ND (0.0073)	0.013 J	ND (0.0082)	ND (0.007)	0.0066 J	0.0023 J
8270C SIM/DoD	Acenaphthylene	mg/Kg	180[2]	ND (0.0073)	0.011 J QH	ND (0.0082)	ND (0.007)	0.011 J	0.0034 J
8270C SIM/DoD	Anthracene	mg/Kg	3000[2]	ND (0.0073)	0.011 J	0.0058 J	0.007 J	0.015	0.0043 J
8270C SIM/DoD	Benzo[a]anthracene	mg/Kg	3.6[2]	0.0063 J	0.01 J	0.0077 J	0.0078 J	0.013	0.005 J
8270C SIM/DoD	Benzo[a]pyrene	mg/Kg	2.1[2]	ND (0.0073)	0.0056 J	ND (0.0082)	0.011 J	0.01 J	0.0036 J
8270C SIM/DoD	Benzo[b]fluoranthene	mg/Kg	12[2]	0.0061 J	0.0091 J	0.012 J	0.011 J	0.015	0.0044 J
8270C SIM/DoD	Benzo[g,h,i]perylene	mg/Kg	38700[2]	ND (0.0073)	ND (0.0068)	ND (0.0082)	ND (0.007)	0.0088 J	0.0024 J

Table H29 Site 28 MI Soil Sample Results and Discharge Area Soil Sample Result (continued)

			Sample ID	13NC28MI01	13NC28MI02[R]	13NC28MI03[R]	13NC28MI04[R]	13NC28WDA01	13NC28WDA02[D]
			Laboratory ID	580-40427-13	580-40427-14	580-40427-15	580-40427-16	580-40427-17	580-40427-18
			Location ID	028-01	028-02	028-03	028-04	028WDA-01	028WDA-02
			Collection Date	9/16/2013	9/17/2013	9/18/2013	9/19/2013	9/19/2013	9/19/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level**	Lower Sump (Sump #1)	Upper Sump (Sump #2)	Upper Sump (Sump #2)	Upper Sump (Sump #2)	Treated Surface Water Discharge Area	
8270C SIM/DoD	Benzo[k]fluoranthene	mg/Kg	120[2]	0.0052 QN	0.0058 J	0.006 J	0.0059 J	0.012 J	0.0045 J
8270C SIM/DoD	Chrysene	mg/Kg	360[2]	0.0083 J	0.017	0.011 J	0.013 J	0.019	0.0051 J
8270C SIM/DoD	Dibenz(a,h)anthracene	mg/Kg	4.0[2]	0.0066 QN	0.0059 J	ND (0.0082)	ND (0.007)	0.012 J	0.0047 J
8270C SIM/DoD	Fluoranthene	mg/Kg	1400[2]	0.012 J	0.059 QN	0.02 QN	0.016 QN	0.037	0.0077
8270C SIM/DoD	Fluorene	mg/Kg	220[2]	0.013 J	0.037 QN	0.023 QN	0.02 QN	0.014	0.0045 J
8270C SIM/DoD	Indeno[1,2,3-cd]pyrene	mg/Kg	41[2]	0.0056 QN	0.0054 J	0.0056 J	0.0052 J	0.0091 J	0.0033 J
8270C SIM/DoD	Naphthalene	mg/Kg	120[1]	0.012 J	0.011 J	0.0069 J	0.01 J	ND (0.0067)	ND (0.0035)
8270C SIM/DoD	Phenanthrene	mg/Kg	3000[2]	0.018	0.073 QN	0.025 QN	0.025 QN	0.021	0.0061 J
8270C SIM/DoD	Pyrene	mg/Kg	1000[2]	0.022	0.043	0.016	0.013 J	0.029	0.0069
AK102 & 103	DRO (nC10-<nC25)	mg/Kg	9200[1]	780 H QL	790	970	650	71	46
AK102 & 103	RRO (nC25-nC36)	mg/Kg	9200[1]	5000 H	3500	5800	3900	430	290

Notes:

[1]Cleanup level set in 2009 Decision Document

[2]Cleanup level as stated in 18AAC75.341 Table B1 (migration to groundwater).

BOLD = indicates sample concentration above cleanup level

[D]sample is a duplicate of the previous sample

[R]field replicate

DRO = diesel range organics

GRO = gasoline range organics

H = hold time exceeded, result with potential low bias

J = result is an estimate

mg/Kg = milligrams per kilogram

MI = multi-incremental

MN = matrix interference suspected, result with no directional bias

ND = Sample result is non-detect with limit of detection (LOD) in parentheses

ND (LOQ) B = analyte was detected in the blank at similar concentrations to samples, results changed to ND with the limit of quantitation (LOQ) in parentheses.

PCB = polychlorinated biphenyl

QH = laboratory quality issue, result with potential high bias

QL = laboratory quality issue, result with potential low bias

QN = analyte result is considered an estimated value with uncertain bias due to a laboratory quality control failure such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits, and/or the field duplicates not meet relative percent difference (RPD) limits but meet other acceptance criteria

RRO = residual range organics

SIM = selective ion monitoring

Table H30 MI Soil Sample Results from Bulk Bag Staging Areas

			Sample ID	13NCBGSS01	13NCBGSS02	13NCBGSS03	13NCBGSS04[R]	13NCBGSS05[R]	13NCBGSS06[R]	13NCBGSS07	13NCBGSS08	13NCBGSS09	13NCBGSS10
			Laboratory ID	580-39513-1	580-40427-1	580-40427-2	580-40427-3	580-40427-4	580-40427-5	580-40427-6	580-40427-7	580-40427-8	580-40427-9
			Location ID	13MOCBG-001	13MOCBG-02	13MOCBG-03	13MOCBG-04	13MOCBG-05	13MOCBG-06	S6-01	S6-02	S6-03	S6-04
			Collection Date	7/18/2013	9/9/2013	9/9/2013	9/10/2013	9/10/2013	9/10/2013	9/10/2013	9/10/2013	9/12/2013	9/12/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level***										
8082	PCB-1016	mg/Kg	1	ND (0.0016)	ND (0.0015)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1221	mg/Kg	1	ND (0.0032)	ND (0.0031)	ND (0.0032)	ND (0.0033)	ND (0.0033)	ND (0.0032)	ND (0.0032)	ND (0.0032)	ND (0.0032)	ND (0.0032)
8082	PCB-1232	mg/Kg	1	ND (0.0032)	ND (0.0031)	ND (0.0032)	ND (0.0033)	ND (0.0033)	ND (0.0032)	ND (0.0032)	ND (0.0032)	ND (0.0032)	ND (0.0032)
8082	PCB-1242	mg/Kg	1	ND (0.0016)	ND (0.0015)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1248	mg/Kg	1	ND (0.0016)	ND (0.0015)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1254	mg/Kg	1	ND (0.0016)	0.2	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1260	mg/Kg	1	0.19	0.16	0.036	0.11	0.073	0.093	0.034	0.014	0.013	0.0097
AK102	DRO	mg/Kg	9200	87	51 H	98 H	110 H	91 H	100 H	14 H	25 H	34 H	13 H
AK103	RRO	mg/Kg	9200	800	430 H	140 H	800 H	700 H	780 H	160 H	210 H	250 H	140 H

Notes:

*Cleanup level set in 2009 Decision Document

H = holding time exceeded, result with potential low bias

J = result is an estimate

mg/Kg = milligrams per kilogram

MI = multi-incremental

ND = result is non-detect with limit of detection (LOD) in parentheses

PCB = polychlorinated biphenyl

[R]field replicate

Table H31 MI Soil Sample Results from the Fuel Containment Area

		Sample ID	13NCISO01[R]	13NCISO02[R]	13NCISO03[R]
		Laboratory ID	580-40427-10	580-40427-11	580-40427-12
		Location ID	ISO-01	ISO-02	ISO-03
		Collection Date	9/11/2013	9/11/2013	9/11/2013
Analysis Method	**Analyte**	**Unit**	**Cleanup Level**		
8260B	Benzene	mg/Kg	2.0[1]	ND (0.013) H	ND (0.013) H	ND (0.013) H
8260B	Ethylbenzene	mg/Kg	6.9[2]	ND (0.039) H	ND (0.039) H	ND (0.039) H
8260B	m,p-Xylene	mg/Kg	NS	ND (0.026) H	ND (0.026) H	ND (0.026) H
8260B	o-Xylene	mg/Kg	NS	ND (0.019) H	ND (0.019) H	ND (0.019) H
Total Xylenes		mg/Kg	63[2]	ND (0.045) H	ND (0.045) H	ND (0.045) H
8260B	Toluene	mg/Kg	6.5[2]	ND (0.019) H	ND (0.019) H	ND (0.019) H
AK101	GRO	mg/Kg	300[2]	ND (1.4)	ND (1.4)	ND (1.4)
AK102	DRO	mg/Kg	9200[1]	8.4 H	6.7 H	6.9 H
AK103	RRO	mg/Kg	9200[1]	60 H	54 H	57 H

Notes:

[1]Cleanup level set in 2009 Decision Document

[2]Cleanup level as stated in 18AAC75.341 Tables B1 and B2 (migration to groundwater).

H = holding time exceeded, result with potential low bias

mg/kg = milligrams per kilogram

MI = multi-incremental

ND = result is non-detect with liimit of detection (LOD) in parentheses

NS = not specified

[R] = field replicate

APPENDIX I

Survey Drawings

NORTHEAST CAPE 2013 -- SITE MOC
RECONSTRUCTION AS-BUILT SURVEY

ECO-LAND, LLC

SURVEYING AND MAPPING
P.O. BOX 1444
NOME, ALASKA 99762
(907) 443-6068

DRAWN BY: JLA	DATE: 09/16/2013
APPROVED BY: RSM	SURVEY DATES: 9/08-9/12/2013

GRAPHIC SCALE
50 0 50 100 150
Scale 1" = 50 ft



BOUNDARY COURSES

D#	BEARING	DIST.
L1	S10°01'26"W	45.46'
L2	S28°24'52"W	5.90'
L3	S45°13'33"W	53.33'
L4	N89°15'15"W	80.41'
L5	S65°22'37"W	28.32'
L6	N84°41'48"W	41.57'
L7	S40°28'59"W	46.18'
L8	N68°01'58"W	37.50'
L9	N06°16'11"E	35.64'
L10	N72°29'03"W	120.20'
L11	N49°22'41"W	42.75'
L12	S58°30'54"W	74.76'
L13	S62°50'31"W	38.51'
L14	S76°10'47"W	40.38'
L15	N82°31'12"W	60.74'
L16	S40°41'25"W	59.66'
L17	S80°38'26"W	89.73'
L18	S55°38'09"W	59.37'
L19	N84°30'30"W	121.68'
L20	S06°26'55"W	140.22'
L21	S32°04'13"W	37.04'
L22	S89°22'52"W	28.78'
L23	N32°37'24"W	57.05'
L24	S87°04'25"W	118.50'
L25	N03°34'00"W	247.62'
L26	N74°03'13"E	55.49'
L27	N02°40'07"E	28.48'
L28	N76°39'57"E	83.36'
L29	N06°45'08"W	108.72'
L30	N74°02'53"E	12.82'
L31	N50°37'04"E	86.05'
L32	N85°29'42"E	130.08'
L33	S66°32'31"E	63.67'
L34	S82°48'35"E	31.71'
L35	N71°54'35"E	20.92'
L36	N39°25'48"E	35.58'
L37	N51°00'51"E	33.17'
L38	N36°48'27"E	25.40'
L39	N09°49'11"E	10.56'
L40	N50°12'40"E	20.10'
L41	S80°59'38"E	13.81'
L42	S22°20'43"E	15.02'
L43	S73°31'18"E	56.69'
L44	N41°13'39"E	22.75'
L45	S83°38'50"E	25.45'
L46	S51°13'12"E	42.62'
L47	N78°29'29"E	40.76'
L48	S76°28'59"E	62.26'
L49	S16°47'05"E	20.83'
L50	S14°06'44"E	19.56'
L51	S54°20'08"E	24.03'
L52	S05°05'44"W	47.52'
L53	S66°55'51"E	85.27'
L54	S87°30'45"E	36.84'
L55	N65°58'27"E	39.73'
L56	S74°53'06"E	30.81'
L57	S01°05'10"E	23.45'
L58	S51°19'46"E	16.03'
L59	S63°47'06"E	43.57'
L60	N75°43'15"E	15.33'
L61	S66°00'23"E	30.22'
L62	S86°19'27"E	20.36'
L63	S48°29'22"E	20.17'
L64	S56°19'25"E	30.63'
AREA=313783.68 sq.ft.		
OR +/- 7.2 ACRES		

C:\Users\Jamie\Documents\Alaska Jobs\13 JOBS\AK13-001\2013\SURVEY DATA\SITE MOC\AS-BUILT

NORTHEAST CAPE 2013 -- SITE 31
RECONSTRUCTION AS-BUILT SURVEY

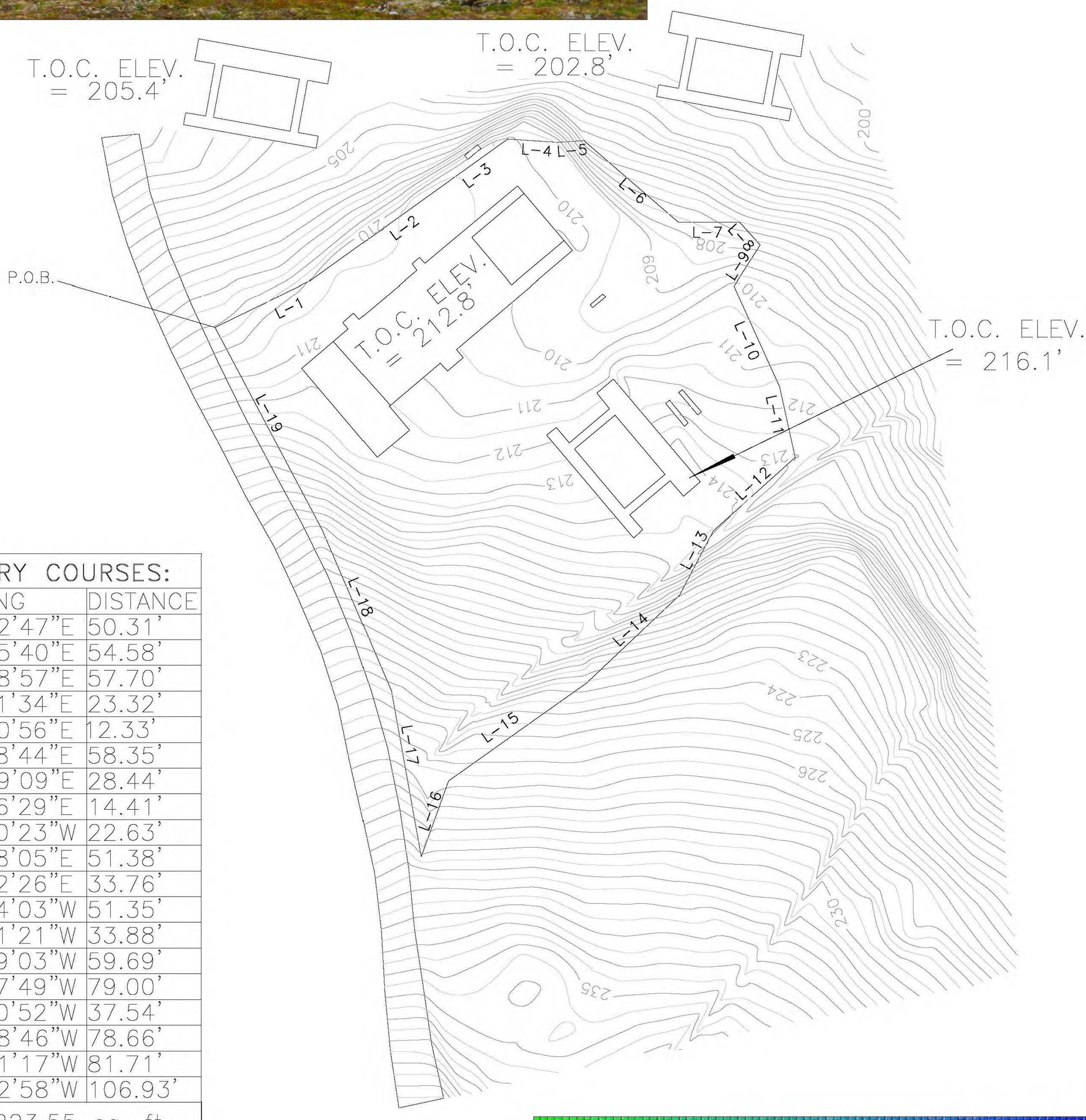




GRAPHIC SCALE

30 0 30 60 90

Scale 1" = 30 ft



BOUNDARY COURSES:		
ID #	BEARING	DISTANCE
L-1	N64°02'47"E	50.31'
L-2	N54°15'40"E	54.58'
L-3	N54°18'57"E	57.70'
L-4	S86°11'34"E	23.32'
L-5	N86°20'56"E	12.33'
L-6	S49°08'44"E	58.35'
L-7	N89°39'09"E	28.44'
L-8	S42°06'29"E	14.41'
L-9	S32°30'23"W	22.63'
L-10	S24°28'05"E	51.38'
L-11	S12°22'26"E	33.76'
L-12	S48°04'03"W	51.35'
L-13	S27°41'21"W	33.88'
L-14	S46°39'03"W	59.69'
L-15	S54°37'49"W	79.00'
L-16	S19°50'52"W	37.54'
L-17	N10°08'46"W	78.66'
L-18	N23°11'17"W	81.71'
L-19	N27°52'58"W	106.93'
AREA=48223.55 sq. ft.		
or 1.11 acres +/-		

ECO-LAND, LLC

SURVEYING AND MAPPING
P.O. BOX 1444
NOME, ALASKA 99762
(907) 443-6068

DRAWN BY: JLA	DATE: 08/10/2013
APPROVED BY: RSM	SURVEY DATE: 7/31/2013

REF: C:\Jamie\Documents\Alaska Jobs\13 JOBS\AK13-001\2013\SURVEY DATA\SITE 31\AS-BUILT EXHIBIT

ECO-LAND, LLC
SURVEYING AND MAPPING
P.O. BOX 1444
NOME,ALASKA 99762
(907) 443-6068

DRAWN BY: JLA	DATE: 09/16/2013
APPROVED BY: RSM	SURVEY DATE:09/15/2013

NORTHEAST CAPE 2013
SITE 21 AS-BUILT SURVEY EXHIBIT



BOUNDARY COURSES		
ID#	BEARING	DIST.
L1	N76°59'40"W	22.50'
L2	S81°30'39"W	47.95'
L3	S72°08'36"W	33.75'
L4	S11°03'11"W	11.82'
L5	S89°00'37"W	15.69'
L6	S09°00'04"E	8.81'
L7	S88°30'21"E	21.10'
L8	S21°40'34"E	13.28'
L9	S81°31'31"E	17.53'
L10	S30°58'57"E	13.02'
L11	N73°24'56"E	13.59'
L12	N54°38'18"E	17.45'
L13	N38°54'03"E	7.31'
L14	S86°11'59"E	23.91'
L15	N58°47'43"E	21.67'
L16	N11°37'48"W	30.90'
AREA = 4799.93 sq. ft.		
OR +/- 0.1 ACRE		

GRAPHIC SCALE
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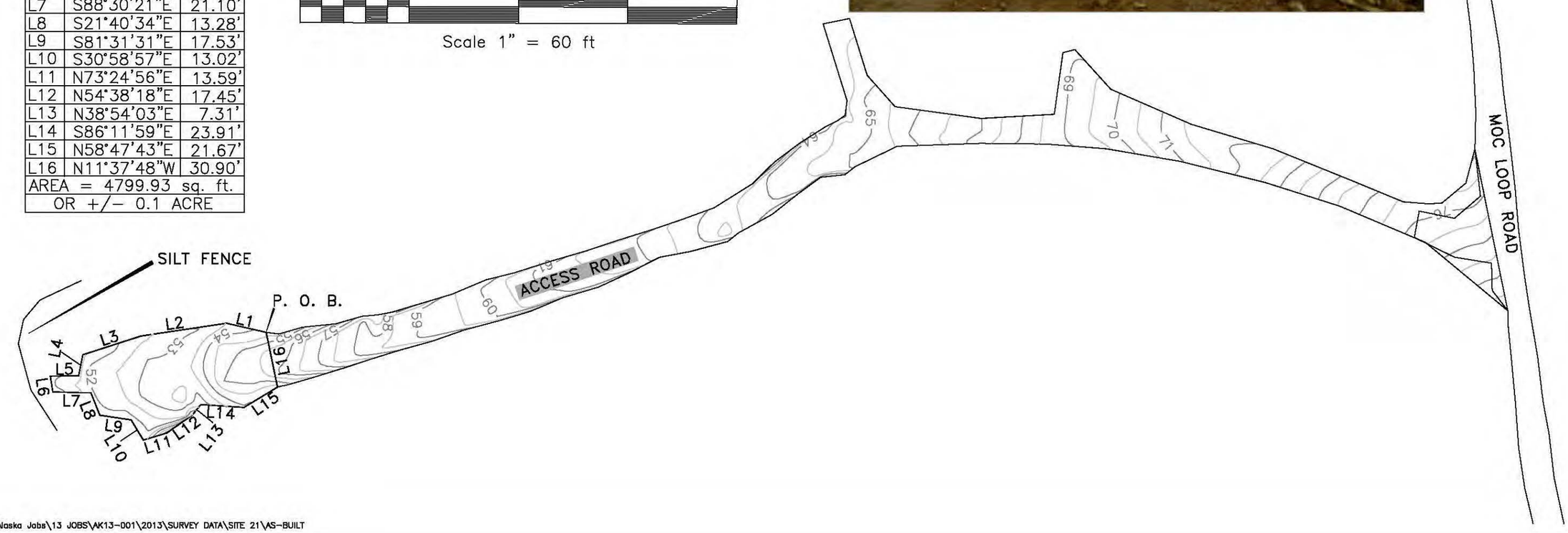
Scale 1" = 60 ft



REF: C:\Jamie\Documents\Alaska Jobs\13 JOBS\AK13-001\2013\SURVEY DATA\SITE 21\AS-BUILT

NORTHEAST CAPE 2013
PIPE BREAK NEAR SITE 7 TOPO

GRAPHIC SCALE
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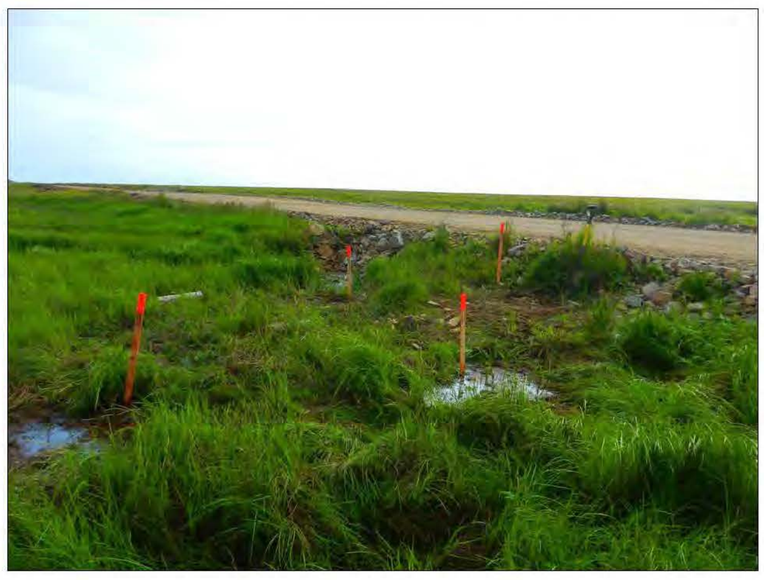
Scale 1" = 30 ft

SAMPLE LOCATIONS



UPSTREAM VIEW



SAMPLE LOCATIONS



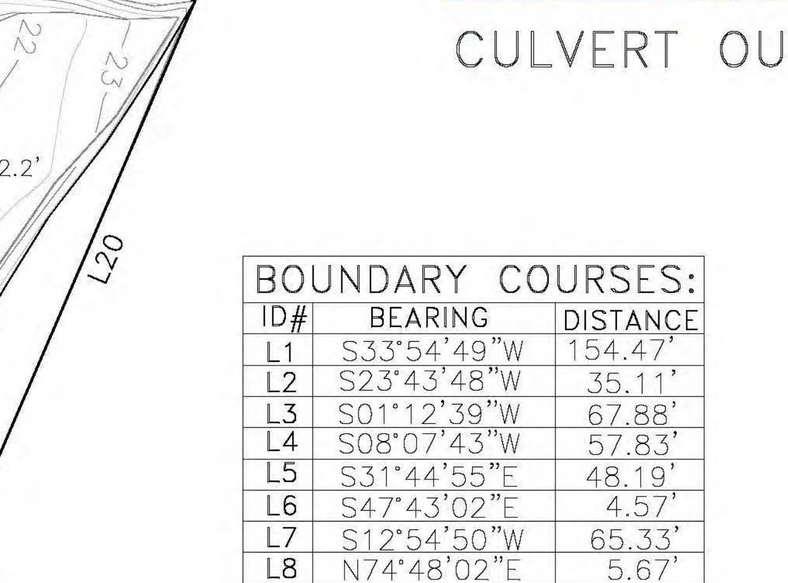
UPSTREAM VIEW



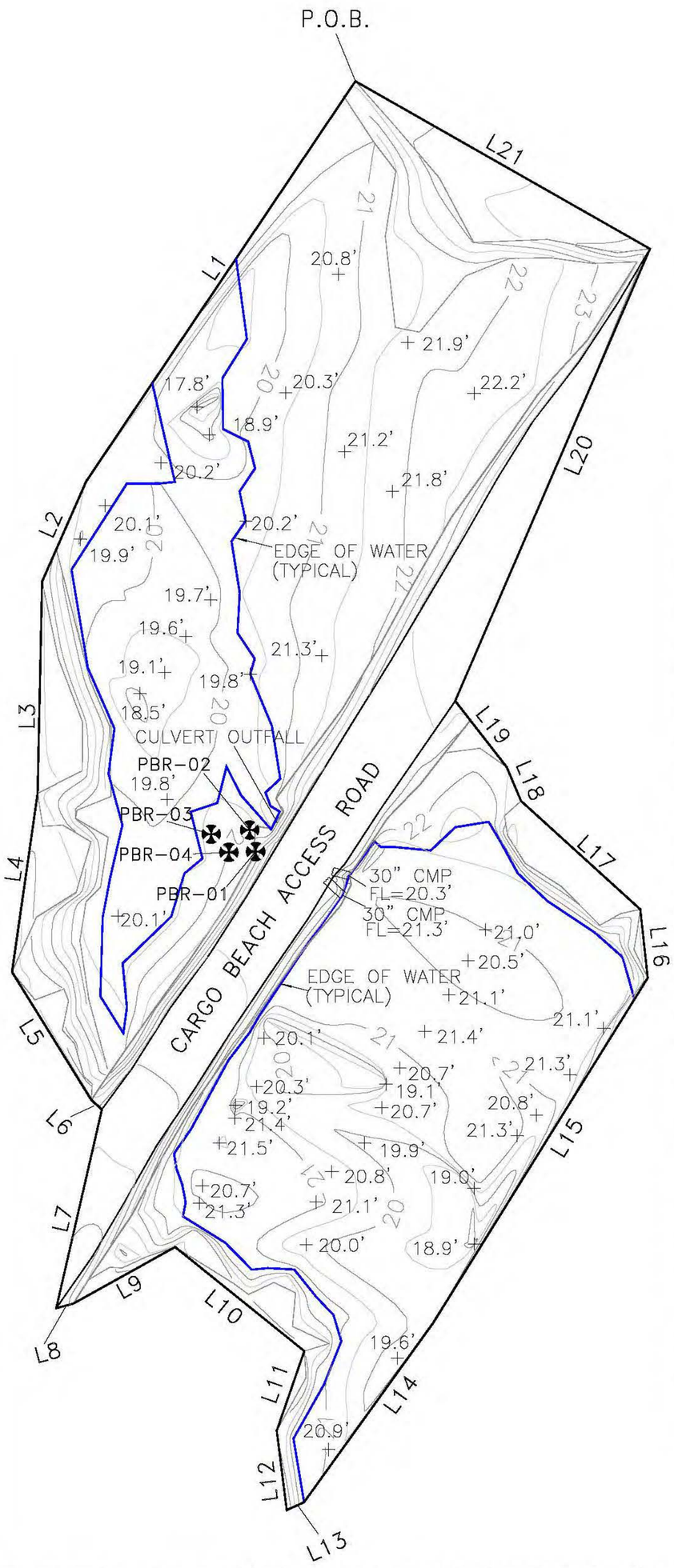
DOWNSTREAM VIEW



CULVERT INLET



CULVERT OUTFALL



BOUNDARY COURSES:		
ID#	BEARING	DISTANCE
L1	S33°54'49"W	154.47'
L2	S23°43'48"W	35.11'
L3	S01°12'39"W	67.88'
L4	S08°07'43"W	57.83'
L5	S31°44'55"E	48.19'
L6	S47°43'02"E	4.57'
L7	S12°54'50"W	65.33'
L8	N74°48'02"E	5.67'
L9	N60°55'48"E	37.31'
L10	S51°07'23"E	53.11'
L11	S19°03'23"W	27.05'
L12	S07°09'13"E	25.59'
L13	N65°37'09"E	6.11'
L14	N35°43'55"E	70.70'
L15	N31°51'44"E	130.22'
L16	N06°11'54"W	22.12'
L17	N47°42'48"W	51.61'
L18	N22°54'55"W	11.73'
L19	N37°51'14"W	26.89'
L20	N23°16'45"E	157.72'
L21	N60°20'02"W	108.51'
AREA = 56,552.83 sq. ft.		
or 1.30 acres +/-		

SOIL SAMPLES TAKEN		
PBR	SAMPLE ID#	ELEVATION
01	13NCPBSS01	+/-20.8'
	13NCPBSS02	+/-19.8
02	13NCPBSS03	+/-20.1'
	13NCPBSS04	+/-20.1'
	13NCPBSS05	+/-19.1'
03	13NCPBSS06	+/-19.7'
	13NCPBSS07	+/-18.7'
04	13NCPBSS08	+/-20.0'
	13NCPBSS09	+/-19.0'

FIELD SURVEYORS NOTES:

1. IT SHOULD BE NOTED THAT THE APPEARANCE OF "PONDING" IN THE UPSTREAM (SOUTHERLY) PORTION OF THE DRAINAGE AREA IS DUE TO VOIDS IN THE SUSPENDED VEGETATIVE MAT AND NOT ACTUAL PONDING AS THE ENTIRE PLAIN IS FLOODED.

2. AS SHOWN IN THE "CULVERT OUTFALL" PHOTO THE DOWNSTREAM ENDS OF THE TWO 30" CORRUGATED METAL PIPE CULVERTS TERMINATE BENEATH THE ROAD SURFACE, AND THE OUTFALL VOLUME OF WATER SEEPS FROM THE BASE OF THE ROAD PRISM.

3. ELEVATIONS SHOWN IN THE SOIL SAMPLE TABLE ARE APPROXIMATE ELEVATIONS, AS THE DEPTHS AT WHICH THE SAMPLES WERE TAKEN WERE NOT DIRECTLY SURVEYED, BUT PROVIDED BY THE FIELD PERSONNEL COLLECTING THE SAMPLES.

REF: C:\Users\Jamie\Documents\Alaska Jobs\13 JOBS\AK13-001\2013\SURVEY DATA\PIPE BREAK NEAR SITE 7

ECO-LAND, LLC
SURVEYING AND MAPPING
P.O. BOX 1444
NOME, ALASKA 99762
(907) 443-6068

DRAWN BY: JLA	DATE: 08/24/2013
APPROVED BY: RSM	SURVEY DATES: 8/12-17/2013

APPENDIX J

Monitoring Well Information

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	6-1	1 OF 1

PROJECT NE Cape SITE 6 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-14-94 WEATHER Sunny, Windy LOCATION COORDINATES (Northing) 10107 8.3376 / (Easting) 9971 2.6878 ELEVATION DATUM MSL (MSL/Other)

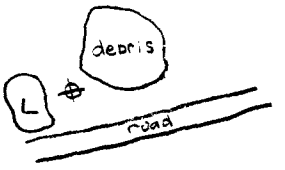
DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 4 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 9.5 DEPTH TO SWL (FT) 5.5 TOP OF HOLE ELVEVATION 46.96

WELL COMPLETED? ☒ YES ☐ NO

DEPTH (FEET)	BLOWS (6 IN.)	GRAIN SIZE % GRAVEL	% SAND	% FINES	MAX SIZE (in)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Grasses - Boulders
		15	5	80	2	ML		2000 7-14		SILT WITH GRAVEL: brown, moist, firm, fine to coarse subangular gravel, fine-grained sand, no apparent staining from 0-4, anticipated green silts for geotech sample at 2-4 (off auger) not present, screen only
1										
2										
								2015 7-14		
3										
4										
	6	35	50	15	.5	SM		2025 7-14		SILTY SAND WITH GRAVEL: olive brown, slightly moist, dense, cobbles, fine to coarse subangular
5	8							1000		
	10						▽	7-15		gravel, fine to coarse grained sand, mostly fine to med. grained sand
6										
7		10	15	75	1	ML				SILT WITH SAND: brown, very moist, firm, fine to coarse subangular gravel, fine to medium grained sand, 10% clay
								2045 7-14		
8										
9										cobbles causing auger refusal
10										Boring terminated at 9.5 fbg
11										Groundwater encountered at approx. 5.5 fbg
										Installed 2" groundwater monitoring well
12										
13										
14										
15										
16										
17										Allowed augers to remain in hole overnight, check water level in morning, at 5.5 fbg
18										
19										Moved boring 1 feet north to collect 4-6' sample. 7-15-94, after well completion on first hole. Backfilled with bentonite
20										
21										

LOCATION SKETCH



06032 SB +QA/QC

06152 SB

1033 S3

JOB No. 0000.000C time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

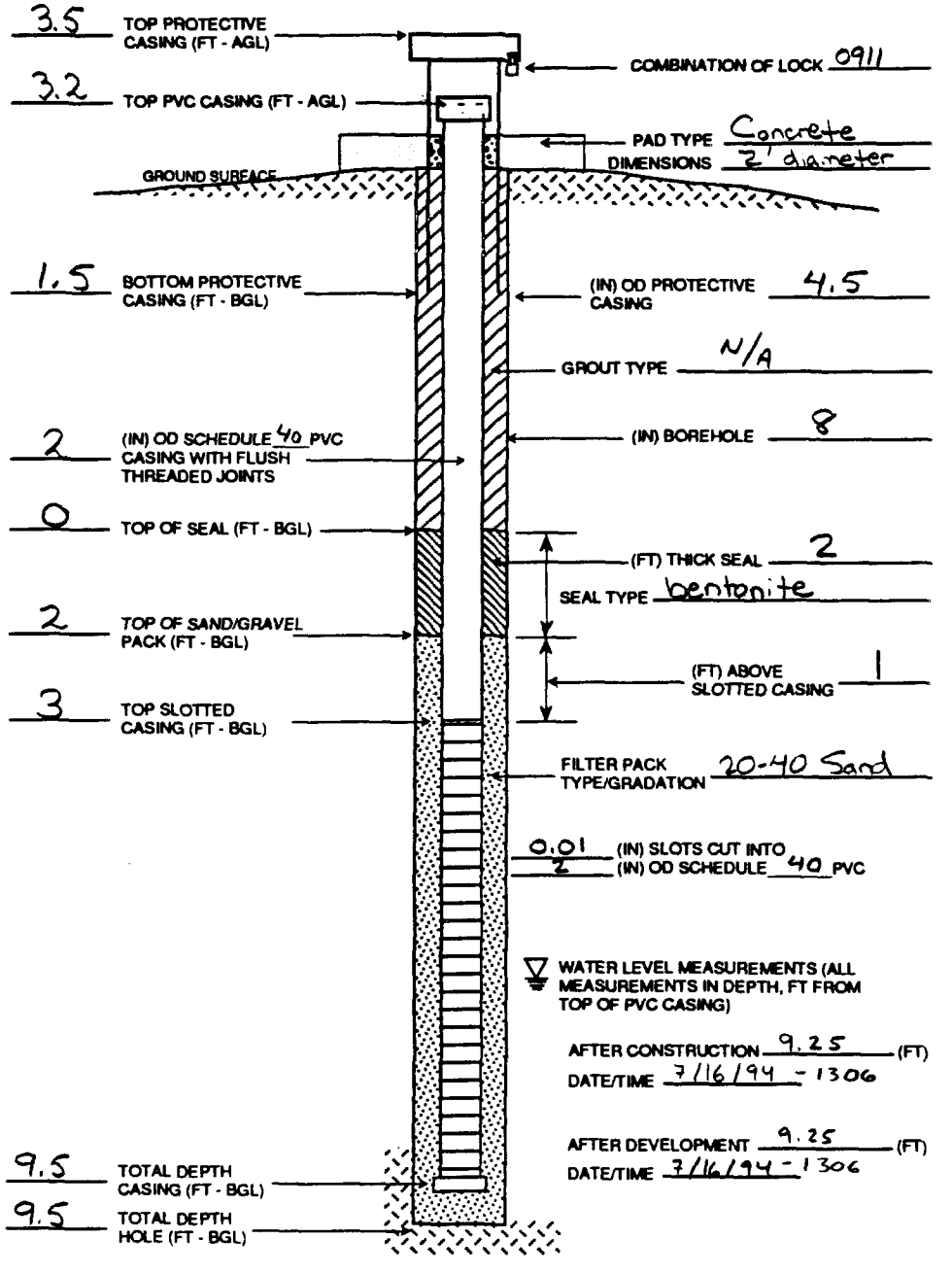
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	G-1	1 OF 1

PROJECT NE Cape SITE G CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-15-94 WEATHER Foggy LOCATION COORDINATES 10078.3376 (Northing) / 9712.6878 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 3.2 (AGL) GROUND SURFACE 46.96 TOP OF PROTECTIVE CASING 50.46 TOP OF PVC CASING 50.1600



WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

- Bentonite (lbs) ____
- Sand (lbs) ____
- Grout (lbs) ____
- Screen (ft) ____
- Blank Casing (ft) ____
- Bottom Cap (ea) ____
- Top Cap (ea) ____
- Flush Mount ____
- Protective Casing (ft) ____
- Lock ____
- MISC.: ____

NOTES

Time: 00-XXX-00 00:00 File: user name/project/File Name

JOB No. 0000.00

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 6-2 | SHEET 1 OF 1

PROJECT NE Cape SITE 6 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

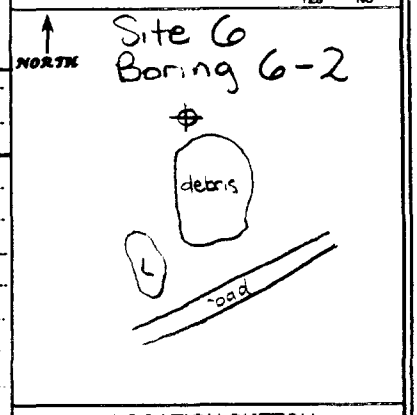
DATE 7-15-94 WEATHER Sunny, clear LOCATION COORDINATES 101219.4170 (Northing) / 99613.6931 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 2 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 5.5 DEPTH TO SWL (FT) 3.0 TOP OF HOLE ELVEVATION 47.57

WELL COMPLETED? ☒ YES ☐ NO

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Grasses - Boulders
		0	0	100	-	OL		1500		ORGANIC SOIL: dk br, very moist, soft, rootlets
1		5	5	90	1	ML				SILT: brown, moist, firm, fine to coarse subangular gravel, fine-grained sand no apparent staining, 5% clay
2								1515		
3							▽			
4										
5										boulders
6										Boring terminated at 5.5 fbg Groundwater encountered at approx. 3 fbg Installed 2" groundwater monitoring well
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										Could not drill through first hole beyond 2 fbg. Moved hole 4 feet east.
20										
21										



LOCATION SKETCH

06153
253
353
58

JOB No. 0000.000C Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

PROJECT NO.:	WELL NO.:	SHEET
2198.0230	6-2	1 OF 1

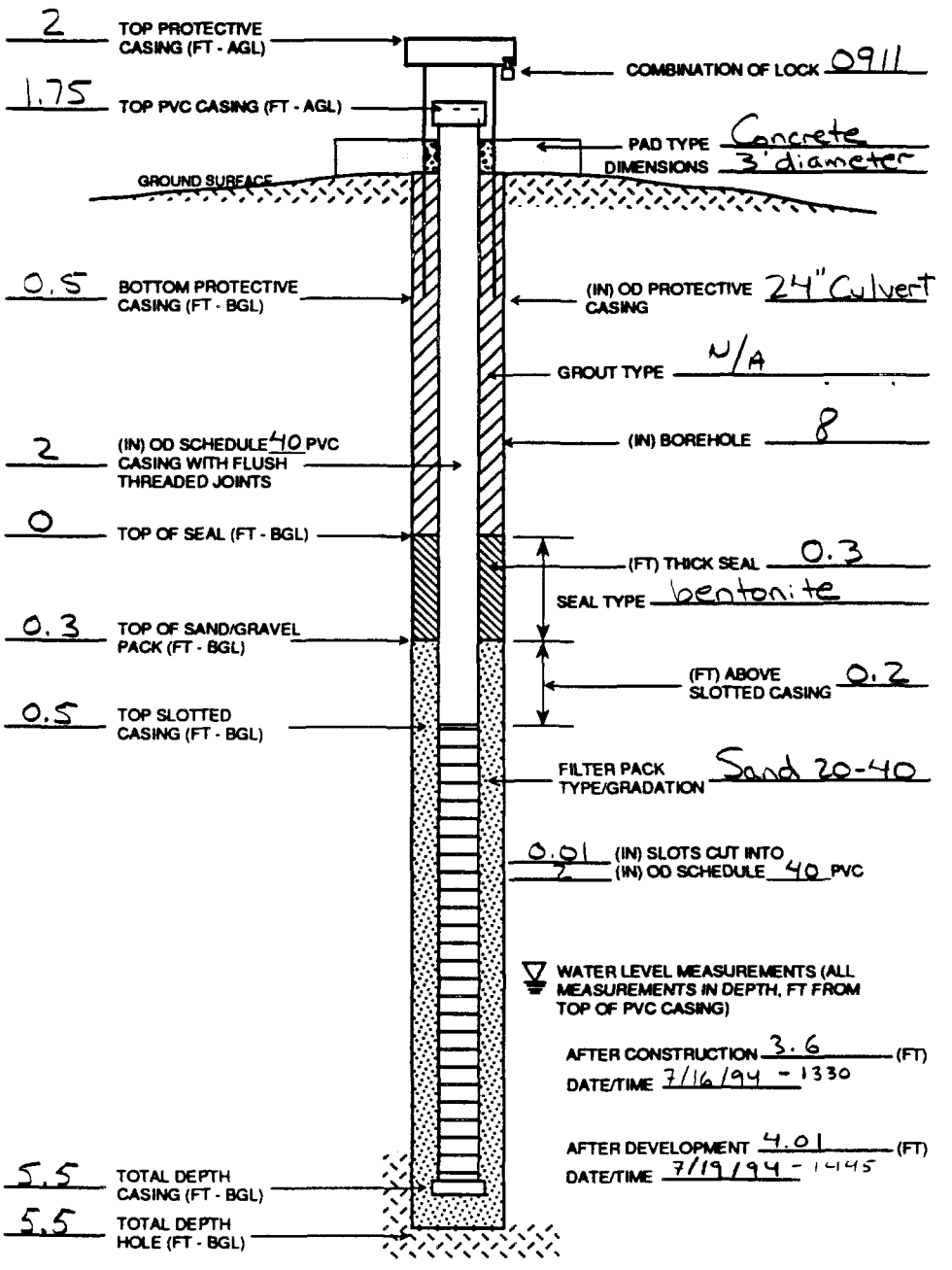
PROJECT NE Cape SITE 6 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-15-94 WEATHER Cloudy, calm LOCATION COORDINATES 101219.4170 (Northing) / 99613.6931 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 1.75 (AGL) GROUND SURFACE 47.57 TOP OF PROTECTIVE CASING 49.57 TOP OF PVC CASING 49.3200

WELL SAMPLED? ☒ YES ☐ NO



QUANTITY MATERIALS USED:

- Bentonite (lbs) _____
- Sand (lbs) _____
- Grout (lbs) _____
- Screen (ft) _____
- Blank Casing (ft) _____
- Bottom Cap (ea) _____
- Top Cap (ea) _____
- Flush Mount _____
- Protective Casing (ft) _____
- Lock _____
- MISC.: _____

NOTES

File: user name/project/File Name

Time: 00-XXX-00 00:00

JOB No. 0000.00

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	7-4	1 OF 1

PROJECT NE Cape SITE 7 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-12-94 WEATHER Sunny, calm LOCATION COORDINATES 100382.6301 (Northing) / 99565.8237 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD 7-14-94 / 7-15 HSA-94 BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

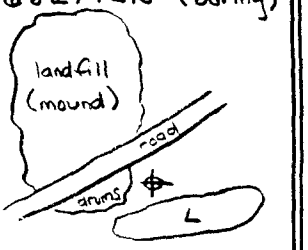
SAMPLES 5 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 15.0 DEPTH TO SWL (FT) NA TOP OF HOLE ELVEVATION 51.34

WELL COMPLETED? YES ☐ NO ☒

DEPTH (FEET)	BLOWS (6 IN.)	GRAIN SIZE % GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Grasses - 3" of topsoil - Organic
		5	15	80	.75	ML		1030 7-12		SILT WITH SAND: gr., m., f, fine subangular gravel, fine to coarse grained sand, mostly fine grained sand, occassional lenses
2	4							1045 7-12		not exceeding 3" of increased
07031 SB QA/QC	4						▽			sand fraction (40%), rootlets
3	4									from 0-4, iron staining from
4	4							1055 7-12		2-4, no other apparent staining,
	6									100% recovery from 0-6, 5% clay
5	10									occassional color change to
6										brown not exceeding 6", with increased organic debris &
										less moisture
7										
8										
9										
07151 SB Geo/a Geotech 10	5							1115 7-12		100% recovery, moisture change to very moist
	8									no surface infiltration, may be freeze-thaw zone (liquified
11	12							1130 7-15 Geo. Geotech		pore water previously frozen) not drill bit, warm day, about
										1' thick? does not appear saturated
12		35	50	15	4	SM				SILTY SAND WITH GRAVEL: green, moist, dense,
13										cobbles, fine to coarse subangular gravel, fine to coarse
14										grained sand, mostly fine-grained sand, no apparent stains,
										transmission out on rig - hole blown through transmission casing
15	60							1620 7-14		new transmission flown out, resume drilling 7-14-94
	17									0% recovery, attempt to drill through without progress
	21									
16										Boring terminated at 15 f bg due to auger refusal
										Backfilled with Volclay and given a bentonite plug
17										and cap.
18										
										Reconsidered moisture encountered in boring and
19										returned to location 7-15-94 (1100-1300) and
										installed a 2" groundwater monitoring well adjacent
20										(see grid coordinates) to boring. Collected geotech
										sample of typical silt "the blues" during drilling 7-15,
21										plus TOX, TOC, BTU and dup./split.

NORTH

Site 7
Boring 7-4
Grid 65E, 14N (well)
68E, 12N (boring)



LOCATION SKETCH

JOB No. 0000.000C ims: 00-XXX-00 00:00 File: user name/project/File Name

WELL CONSTRUCTION LOG

MONTGOMERY WATSON

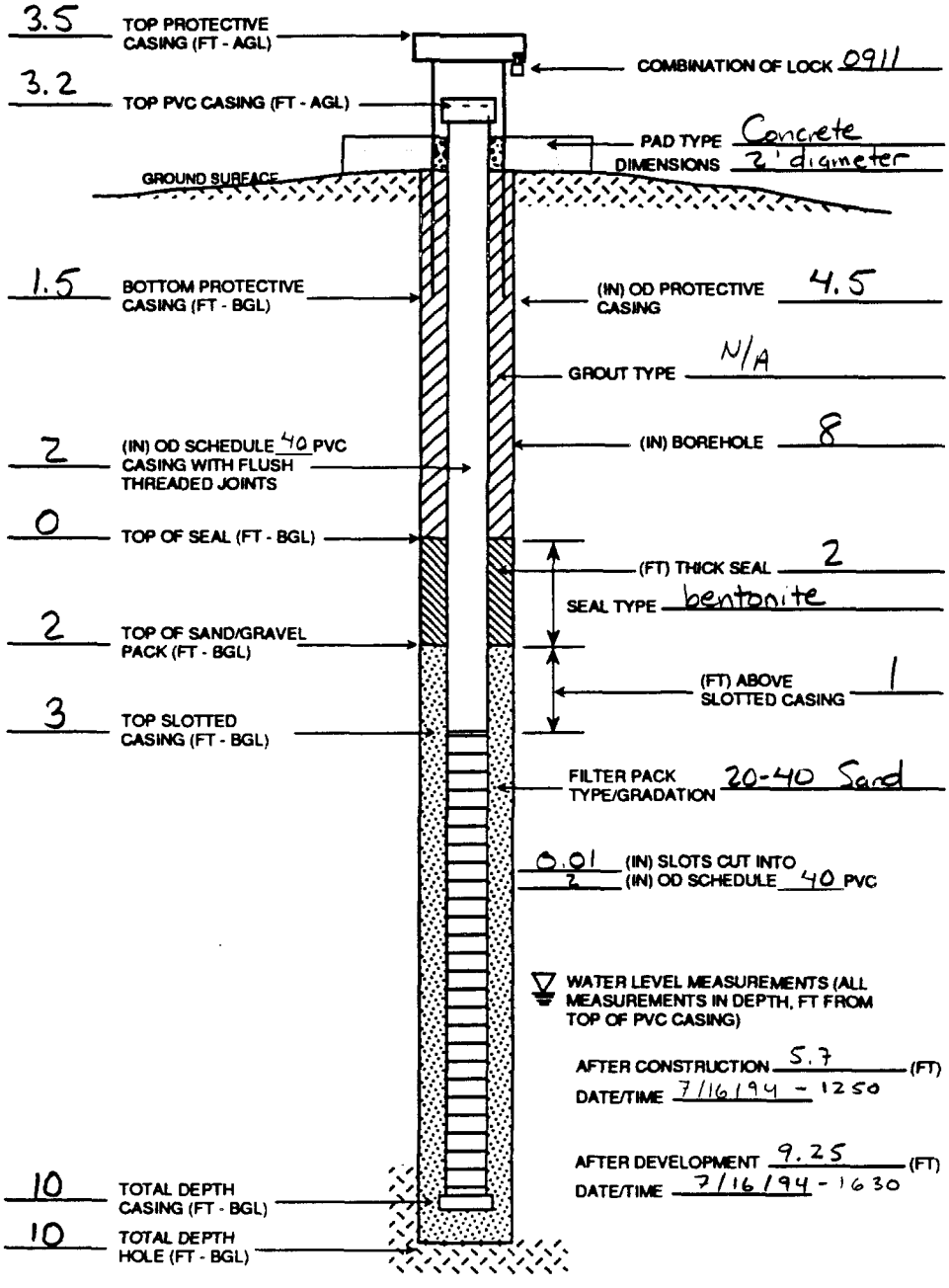
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	7-4	1 OF 1

PROJECT NE Cape SITE 7 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-15-94 WEATHER Sunny, breezy LOCATION COORDINATES 100382.6301 (Northing) / 99565.8237 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 3.2 (AGL) GROUND SURFACE 51.34 TOP OF PROTECTIVE CASING 54.84 TOP OF PVC CASING 54.100



WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

- Bentonite (lbs) _____
- Sand (lbs) _____
- Grout (lbs) _____
- Screen (ft) _____
- Blank Casing (ft) _____
- Bottom Cap (ea) _____
- Top Cap (ea) _____
- Flush Mount _____
- Protective Casing (ft) _____
- Lock _____
- MISC.: _____

NOTES

Time: 00-XXX-00 00:00 File: user name/project/File Name

JOB No. 0000.00

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	9-2	1 OF 1

PROJECT NE Cape SITE 9 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

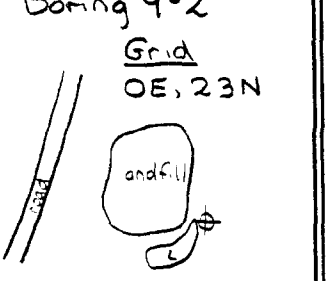
DATE 7-16-94 WEATHER Sunny, breezy LOCATION COORDINATES 98221.5475 (Northing) / 97599.6948 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 3 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 9.5 DEPTH TO SWL (FT) 3.0 TOP OF HOLE ELVEVATION 72.87

DEPTH (FEET)	BLOWS (6 IN.)	GRAIN SIZE % GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0		0	0	100	-	OL		2015		Tundra-mat ORGANIC SOIL: dk brown, very moist, soft, rootlets
1		5	5	90	1	ML				SILT: brown, moist, firm, fine to coarse subangular gravel, fine grained sand, no apparent stains
2								2040		
3		0	30	70	-	ML	▽			SANDY SILT: brown, saturated, soft, fine to medium grained sand, no apparent staining
4								2050		
5										
6										
7		0	20	80	-	ML				SILT WITH SAND: (aqua) green, saturated, firm, fine to medium grained sand, 20% clay frozen - ice crystals in matrix = permafrost?
8										
9										
10										Boring terminated at 9.5 fbg Groundwater encountered at approx. 3 fbg Installed 2" groundwater monitoring well
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										

WELL COMPLETED? ☒ YES ☐ NO



LOCATION SKETCH

09156 SB

09034 SB

JOB No. 0000.000X time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

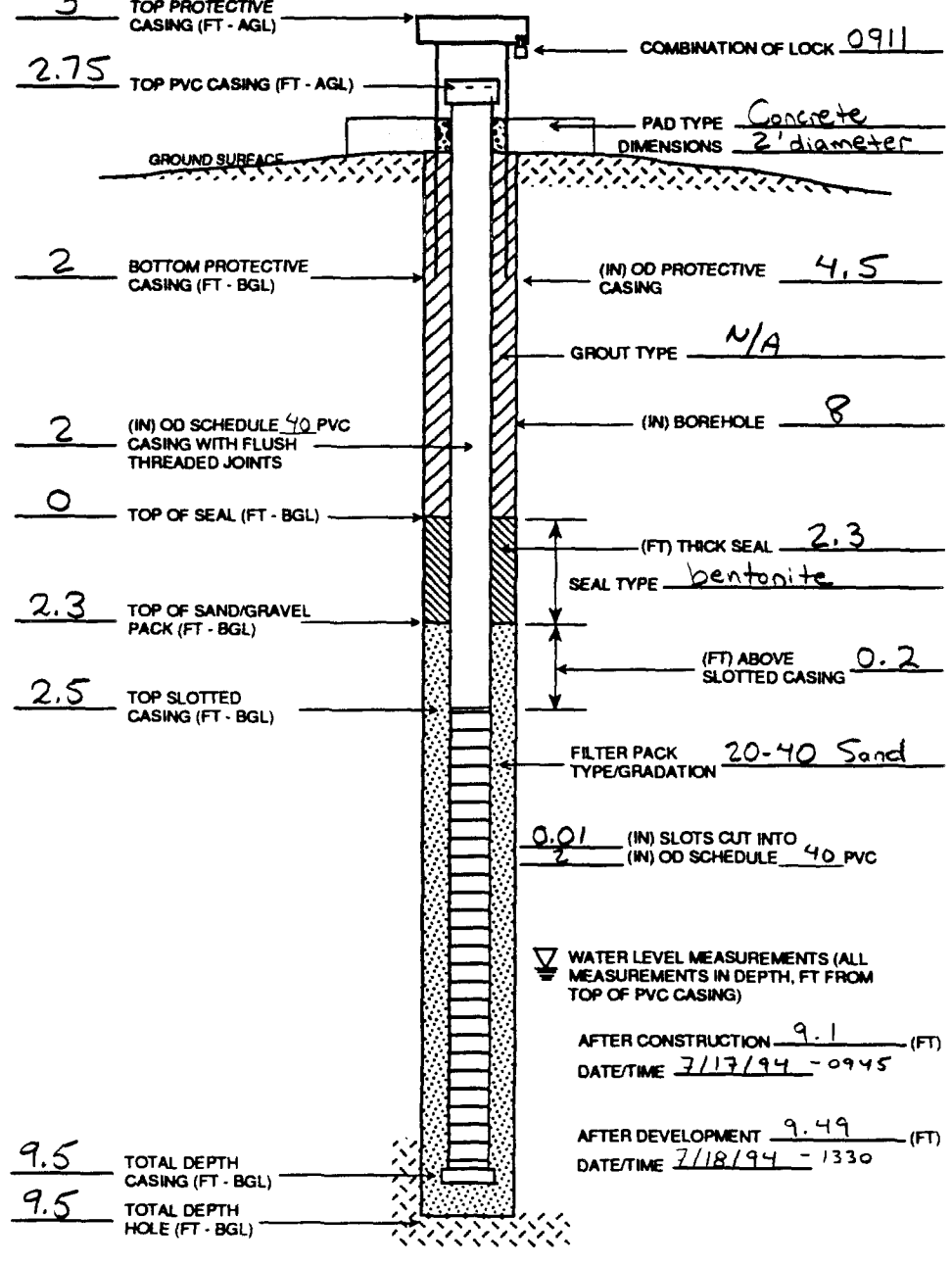
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	9-2	1 OF 1

PROJECT NE Cape SITE 9 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-16-94 WEATHER Cloudy - breezy LOCATION COORDINATES 98221.5475 (Northing) / 97599.6948 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 72.8700 TOP OF PROTECTIVE CASING 75.87 TOP OF PVC CASING 75.6200



WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

- Bentonite (lbs)
- Sand (lbs)
- Grout (lbs)
- Screen (ft)
- Blank Casing (ft)
- Bottom Cap (ea)
- Top Cap (ea)
- Flush Mount
- Protective Casing (ft)
- Lock
- MISC.:

NOTES

Time: 00-XXX-00 00:00 File: user name/project/File Name

JOB No. 0000.00

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	B-10-1	1 OF 1

PROJECT NE Cape SITE 10 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-25-94 WEATHER Cloudy LOCATION COORDINATES 98219.0993 (Northing) / 96794.1917 (Easting) ELEVATION DATUM MSL (MSL/Other)

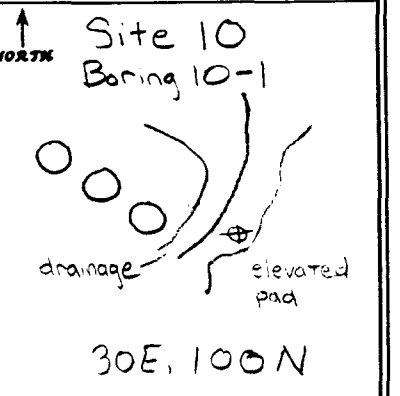
DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 6 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 20.0 DEPTH TO SWL (FT) 3.5 TOP OF HOLE ELVEVATION 69.49

WELL COMPLETED? ☒ YES ☐ NO

DEPTH (FEET)	BLOWS/(6 IN.)	GRAIN SIZE % GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										
1		30	50	20	3	SM		1630		SILTY SAND WITH GRAVEL: orange-brown, moist, medium dense, fine to coarse angular gravel, fine-grained sand, rootlets to 3' bg, stained black on surface, 50% recovery at 2-4', no apparent staining
2										
3	5 7 9						▽	1648		
4										
5	8 7 7	30	20	50	3	ML		1707		GRAVELLY SILT WITH SAND: orange-brown, moist, firm, fine to coarse angular gravel, fine grained sand, 5% clay, natural iron staining?, 75% recovery
6										
7										
8										
9		5	60	35	.75	SM				SILTY SAND: dark green, moist, medium dense, fine subangular gravel, very fine to fine grained sand, 5% clay,
10	6 8 12							1745		no apparent staining, 100% recovery
11										occassional layers of SANDY SILT, dark green, moist, firm, fine subangular gravel, very fine to fine grained sand, 5% clay
12										
13		15	35	50	3	ML				SANDY SILT WITH GRAVEL: dark green, moist, stiff, fine to coarse subangular gravel, very fine to fine grained sand, 5% clay
14										
15	50							1810		no apparent staining, 10% recovery
16										
17										
18										
19										
20								1830		no apparent staining, 100% recovery
21										Boring terminated at 20 f bg. Backfilled with Veldlay Grout to 10 f bg. Installed 2" groundwater monitoring well.

LOCATION SKETCH



10100 SB

10101 SB

10102 SB

File: user name/project/File Name

Time: 00-XXX-00 00:00

JOB No. 0000.0000

WELL CONSTRUCTION LOG

MONTGOMERY WATSON

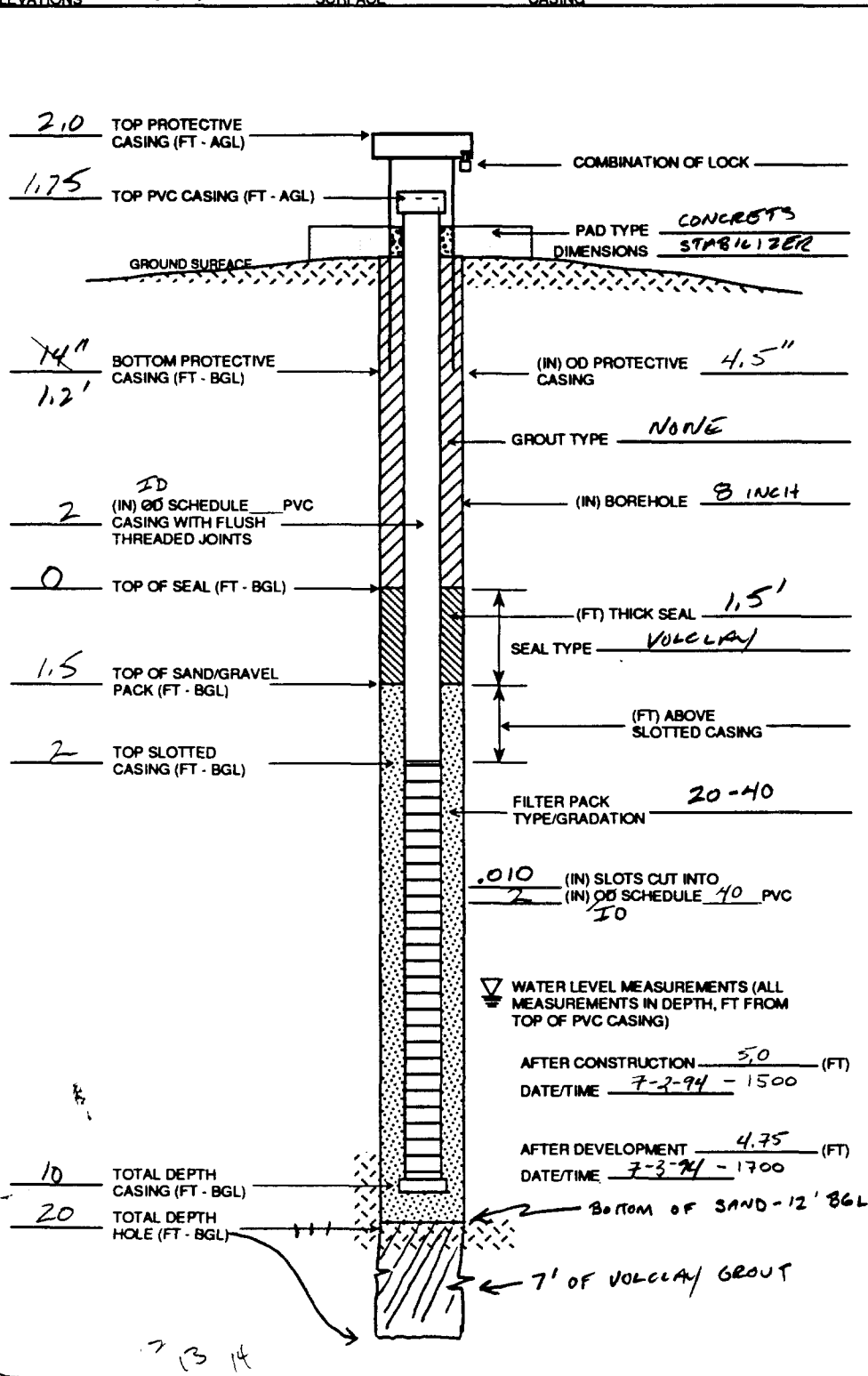
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	10-1	1 OF 1

PROJECT NE CAPE SITE 10 CLIENT USACOE (AK) GEOLOGIST Victor Harris

DATE 6-26-94 WEATHER HI CLDS, 10 MPH WIND, 40°F LOCATION COORDINATES 98219.0993 (Northing) / 96794.1917 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8 INCH RIG TYPE CME-55/NODWELL DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 1.75 (AGL) GROUND SURFACE 69.49 TOP OF PROTECTIVE CASING 71.49 TOP OF PVC CASING 71.24



WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	50
Sand (lbs)	450 300
Grout (lbs)	40
Screen (ft)	8
Blank Casing (ft)	5
Bottom Cap (ea)	1
Top Cap (ea)	1
Flush Mount	N/A
Protective Casing (ft)	1
Lock	1
MISC.:	CASING MANUF BY TIMCO

NOTES

SAND TYPE: COLORADO SILICA SAND

GROUT: CETCO VOLCLAY

SEAL: PERMA PLUG GRANULAR BENTONITE 3/8"

NOTE: HOLE WAS DRILLED TO 20' (EXPLORATORY), AND ALLOWED TO STABILIZE OVERNIGHT. SWL MEAS AM 6/26 @ 3.5' BGL. HOLE SEALED WITH BENTONITE FROM 13' BGL TO 20' BGL (TD) TO PREVENT DOWNHOLE MIGRATION OF CONTAMINANTS.

Time: 00-XXX-00 00:00 File: user name/project/File Name

JOB No. 0000.000

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	B-10-4	1 OF 1

PROJECT NE Cape SITE 10 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

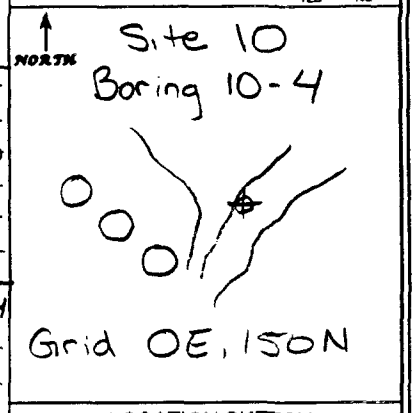
DATE 6-27-94 WEATHER Cloudy, calm LOCATION COORDINATES 98265.6203 (Northing) / 96767.7053 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 2 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 6.5 DEPTH TO SWL (FT) 0.5 TOP OF HOLE ELVEVATION 68.33

WELL COMPLETED? ☒ YES ☐ NO

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Stressed grasses
10105 SB		-	15	85	-	OL	▽	1000		ORGANIC SOIL WITH SAND: red brown, very moist to wet, soft, fine to medium grained sand, rootlets, apparent staining, 100% recovery
2										
3								1020		cobbles at 2 fbg
0106 SB Geotech		35	15	50	6	MH				COBBLEY ELASTIC SILT WITH SAND: olive green, saturated, firm, cobbles causing drilling resistance, very fine and medium to coarse grained sand, ~20% clay, no apparent staining, 100% rec.
4										
5										
6										
7										Boring terminated at 6.5 fbg
8										Groundwater encountered at approx. 0.5 fbg
9										Installed 2" groundwater monitoring well
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										



LOCATION SKETCH

JOB No. 0000.000C Time: 00-XXX-00 00:00 File: user name/project/File Name

WELL CONSTRUCTION LOG

MONTGOMERY WATSON

PROJECT NO.:	WELL NO.:	SHEET
2198.0230	10-4	1 OF 1

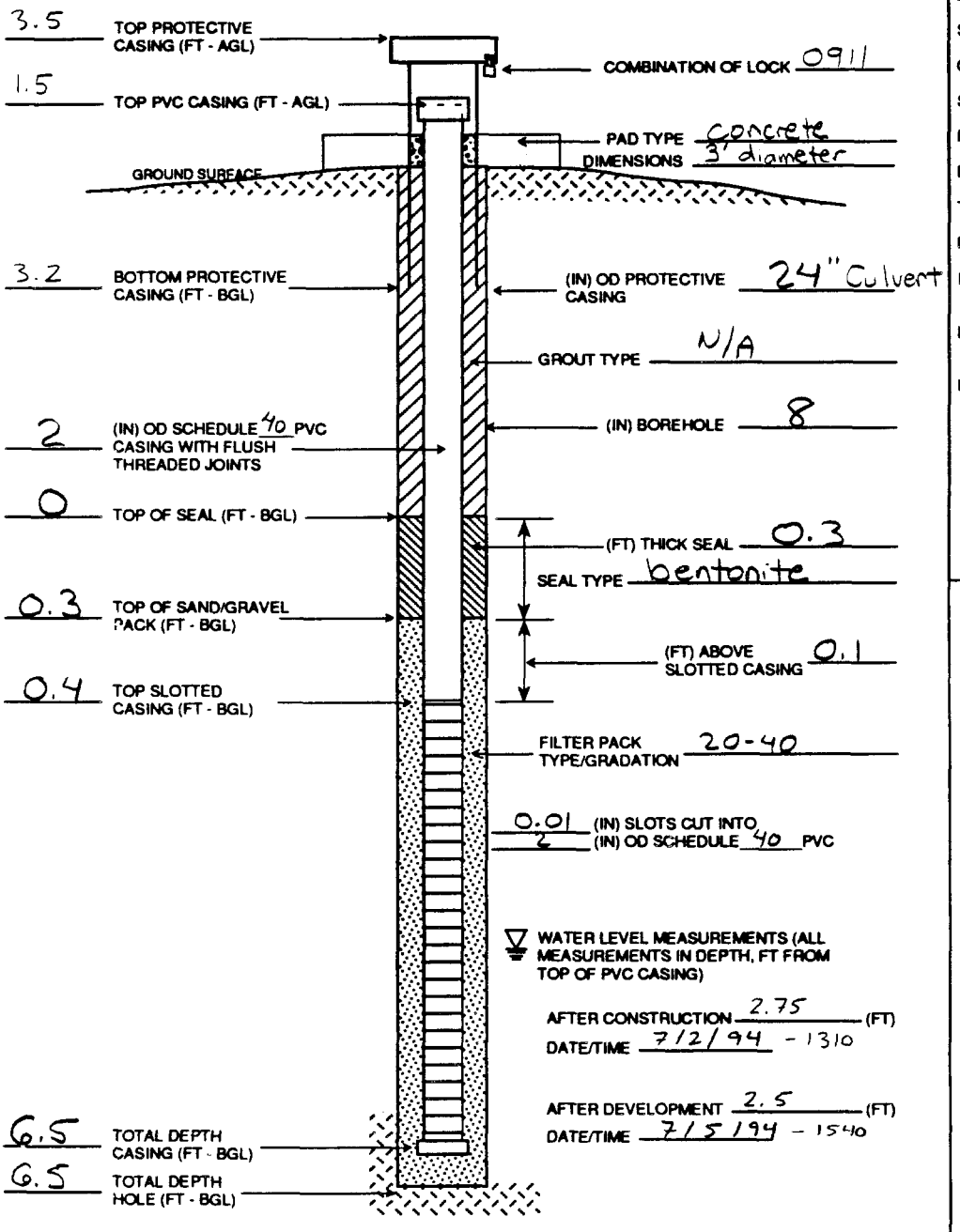
PROJECT NE Cape SITE 10 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-27-94 WEATHER Cloudy LOCATION COORDINATES 98265.6203 (Northing) / 96767.7053 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Venali Drilling

SURVEYED ELEVATIONS 1.5 (AGL) GROUND SURFACE 68.33 TOP OF PROTECTIVE CASING 71.83 TOP OF PVC CASING 69.8300

WELL SAMPLED? ☒ YES ☐ NO



QUANTITY MATERIALS USED:

- Bentonite (lbs)
- Sand (lbs)
- Grout (lbs)
- Screen (ft)
- Blank Casing (ft)
- Bottom Cap (ea)
- Top Cap (ea)
- Flush Mount
- Protective Casing (ft)
- Lock
- MISC.:

NOTES

Time: 00-XXX-00 00:00 File: user name/project/File Name

JOB No. 0000.00

5.11 Site 16: Paint and Dope Storage Building

Groundwater samples from three existing monitoring wells were to be collected and analyzed at Site 16. No samples were collected however, due to insufficient water in these wells.

5.11.1 Site Description

Site 16 is located along the north edge of the Main Operations Complex, as shown on Figure 5-9. A building, fuel storage tank, miscellaneous debris, and contaminated soil were removed from the site during prior interim removal actions. Three monitoring wells with above ground monuments were present in an area capped with mixed soil types and sparse vegetation in 2004.

5.11.2 Data Collection Objectives

The Site 16 monitoring wells (MW 16-1, MW 16-2, and MW 16-3) are located in a general down-gradient direction from former Monitoring Well MW 88-7, which showed elevated levels of diesel in 2002. To characterize groundwater conditions, the three existing Site 16 monitoring wells were to be sampled and analyzed for DRO, RRO, GRO, BTEX, chromium, lead, zinc, and mercury. An assessment of the biogenic influence on DRO and RRO results was to be performed, and one sample was to be analyzed for PAHs and natural attenuation indicators.

5.11.3 Work Plan Variances

The three existing monitoring wells at Site 16 were observed to contain between 0.8 and 1.1 feet of water on September 9, and slightly less on September 12, 2004. The volume of water in the wells was found to be approximately the same as the volume of the tubing available to pump the wells. Bailing resulted in little recovery and turbid water. The insufficient water column precluded collecting samples that would be representative of the groundwater formation. The USACE Project Manager was consulted and a decision was made to not sample the wells. Groundwater levels were observed to drop across NE Cape during our field effort.

5.11.4 Field Activities

No petroleum odors or sheens were noted in the minimal volume of water recovered from the Site 16 wells. Water levels were measured in the Site 16 monitoring wells on September 13, 2004, along with the other wells in the MOC area. Table 5.11a summarizes the groundwater elevation data.

TABLE 5-11a GROUNDWATER SAMPLING LOG
SITE 16: PAINT AND DOPE STORAGE BUILDING

MONITORING WELL INSTALLATION DATA

WELL ID	MW 16-1	MW 16-2	MW 16-3
DATE WELL INSTALLED	unknown	unknown	unknown
GROUND SURFACE ELEVATION (ft)	-	-	-
WELL MP ELEVATION (ft)	75.11	74.87	75.28
TOP OF SCREENED SECTION, BELOW MP (ft)	-	-	-
TOTAL DEPTH OF WELL BELOW MP (ft)	16.7	16.65	16.61
DIAMETER OF WELL CASING (inches)	2	2	2

WATER LEVEL MEASUREMENT DATA

DATE WATER LEVEL MEASURED	9/13/2004	9/13/2004	9/13/2004
TIME WATER LEVEL MEASURED	15:55	15:58	16:01
WATER LEVEL ELEVATION (ft)	59.23	59.24	59.31
DEPTH TO WATER BELOW MP (ft)	15.88	15.63	15.97
WATER COLUMN IN WELL (ft)	0.82	1.02	0.64
GALLONS PER FOOT	0.16	0.16	0.16
GALLONS IN WELL	0.13	0.16	0.10

KEY	DESCRIPTION
-	Not developed or not measured
ft	Feet
MP	Measuring Point is Top of Well Casing

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	16-1	1 OF 1

PROJECT NE Cape SITE 16 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-2-94 WEATHER Cloudy, calm LOCATION COORDINATES 98341.4238 (Northing) / 95893.3928 (Easting) ELEVATION DATUM MSL (MLLW Datum)

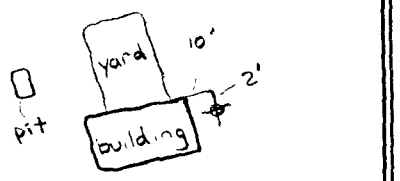
DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 4 SAMPLE TYPE 2' screen SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 14.5 DEPTH TO SWL (FT) 9.5 TOP OF HOLE ELEVATION 72.81

WELL COMPLETED? ☒ YES ☐ NO

DEPTH (FEET)	BLOWS (6 IN.)	GRAIN SIZE % GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										
		30	60	10	3	SP/SM		1615	16131 16231 16331 SB	POORLY GRADED SAND WITH SILT and GRAVEL: brown, slightly moist, dense, fine to coarse subangular gravel, fine to coarse grained sand, mostly fine grained sand, 50% recovery at 2-4', 0% recovery at 4-6', cobbles up to 6" seen in cuttings beginning at 4 fbg, no apparent stained soil from 0-6'
1										
2										
	21							1635	16020 SB	
3	50									
4										
	50							1640		
5										
6										
7										
8										
9							▽			
	30							1710	16021 SB	moisture change to saturated, mostly fine to medium grained sand, no apparent discoloration, 15% recovery
10	50									
11										
12										
13										
14										
15										Boring terminated at 14.5 fbg
16										Groundwater encountered at approx. 9.5 fbg
17										Installed 2" groundwater monitoring well
18										
19										
20										
21										

LOCATION SKETCH



JOB No. 0000.000C ime: 00-XXX-00 00:00 File: user name/project/File Name

WELL CONSTRUCTION LOG

MONTGOMERY WATSON

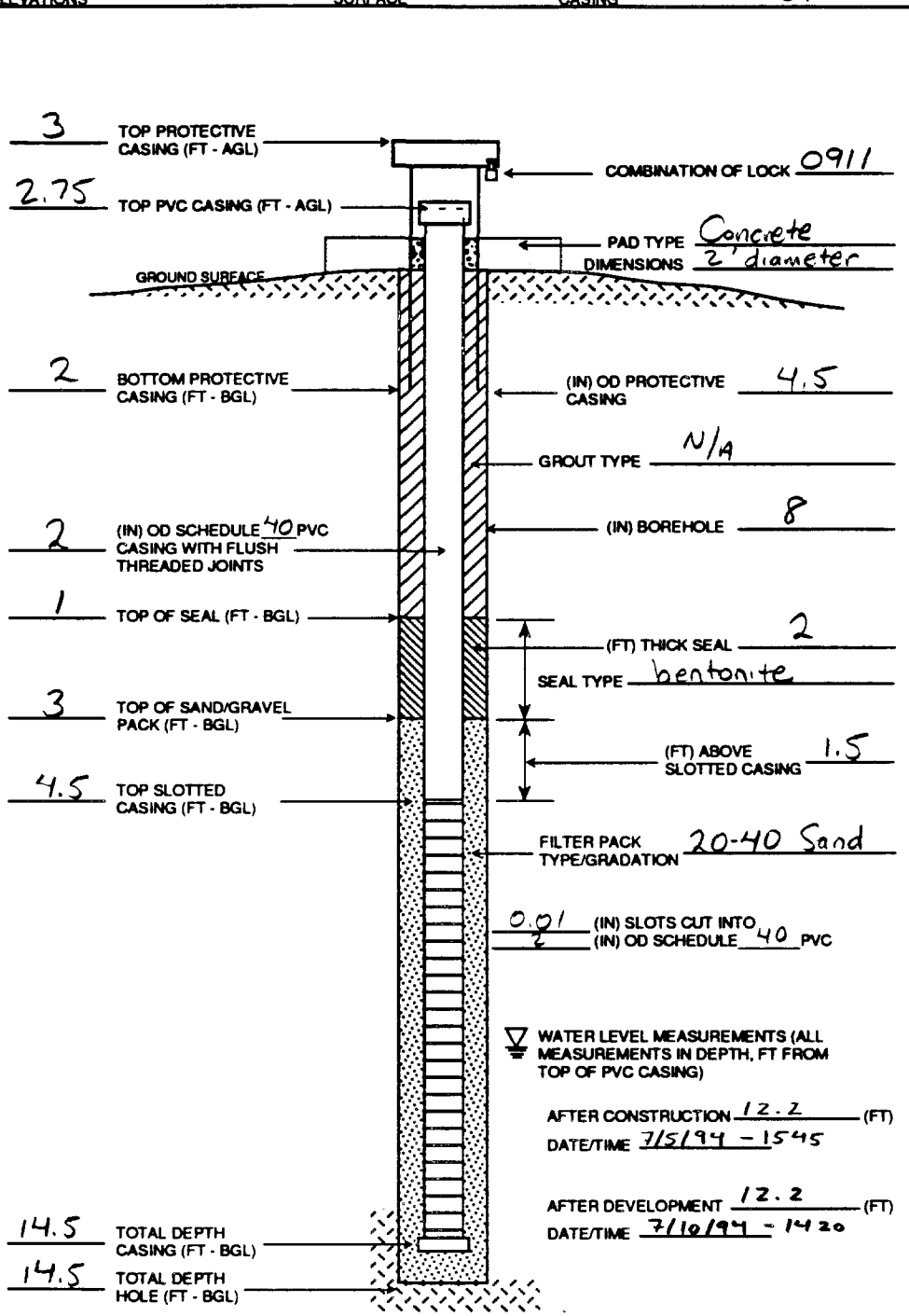
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	16-1	1 OF 1

PROJECT NE Cape SITE 16 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-2-94 WEATHER Cloudy, windy LOCATION COORDINATES 9834142.78 (Northing) / 958933.928 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 72.8100 TOP OF PROTECTIVE CASING 75.81 TOP OF PVC CASING 75.5600



WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 12.2 (FT)
DATE/TIME 7/5/94 - 1545

AFTER DEVELOPMENT 12.2 (FT)
DATE/TIME 7/10/94 - 1420

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

- Bentonite (lbs)
- Sand (lbs)
- Grout (lbs)
- Screen (ft)
- Blank Casing (ft)
- Bottom Cap (ea)
- Top Cap (ea)
- Flush Mount
- Protective Casing (ft)
- Lock
- MISC.:

NOTES

File: user name/project/File Name
Time: 00-XXX-00 00:00
JOB No. 0000.00

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	16-2	1 OF 1

PROJECT NE Cape SITE 16 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-3-94 WEATHER Cloudy, breezy LOCATION COORDINATES 98389.5754 (Northing) / 95816.9231 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 4 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 14.0 DEPTH TO SWL (FT) 8.5 TOP OF HOLE ELVEVATION 72.16

WELL COMPLETED? ☒ YES ☐ NO

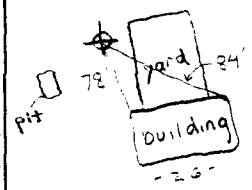
DEPTH (FEET)	BLOWS (6 IN.)	GRAIN SIZE % GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0		10	15	75	2	ML		1045		SILT WITH SAND: brown, moist, stiff, fine to coarse subangular gravel, fine grained sand, no apparent staining from 0-2', some olive mottling from 2-6, 100% recovery at 2-4', 75% recovery at 4-6'
1										
2	6							1100		
3	17									
4	26									
5	8							1120		
6	10									
7	22									
8	34							1135		
9	25									
10	16						▽			POORLY GRADED GRAVEL WITH SILT AND SAND: brown, saturated, medium dense, fine to coarse subangular gravel, fine to coarse grained sand, mostly medium grained sand, no apparent staining, 50% recovery
11	3	50	40	10	3	GP/GM				
12	2									
13										
14										
15										Boring terminated at 14.0 fbg. Groundwater encountered at approx. 8.5 fbg. Installed 2" groundwater monitoring well
16										
17										
18										
19										
20										
21										

16022 SB

16132 SB Geo

16023 16133 SB geotech

NORTH



LOCATION SKETCH

File: user name/project/File Name

Time: 00-XXX-00 00:00

JOB No. 0000.000X

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

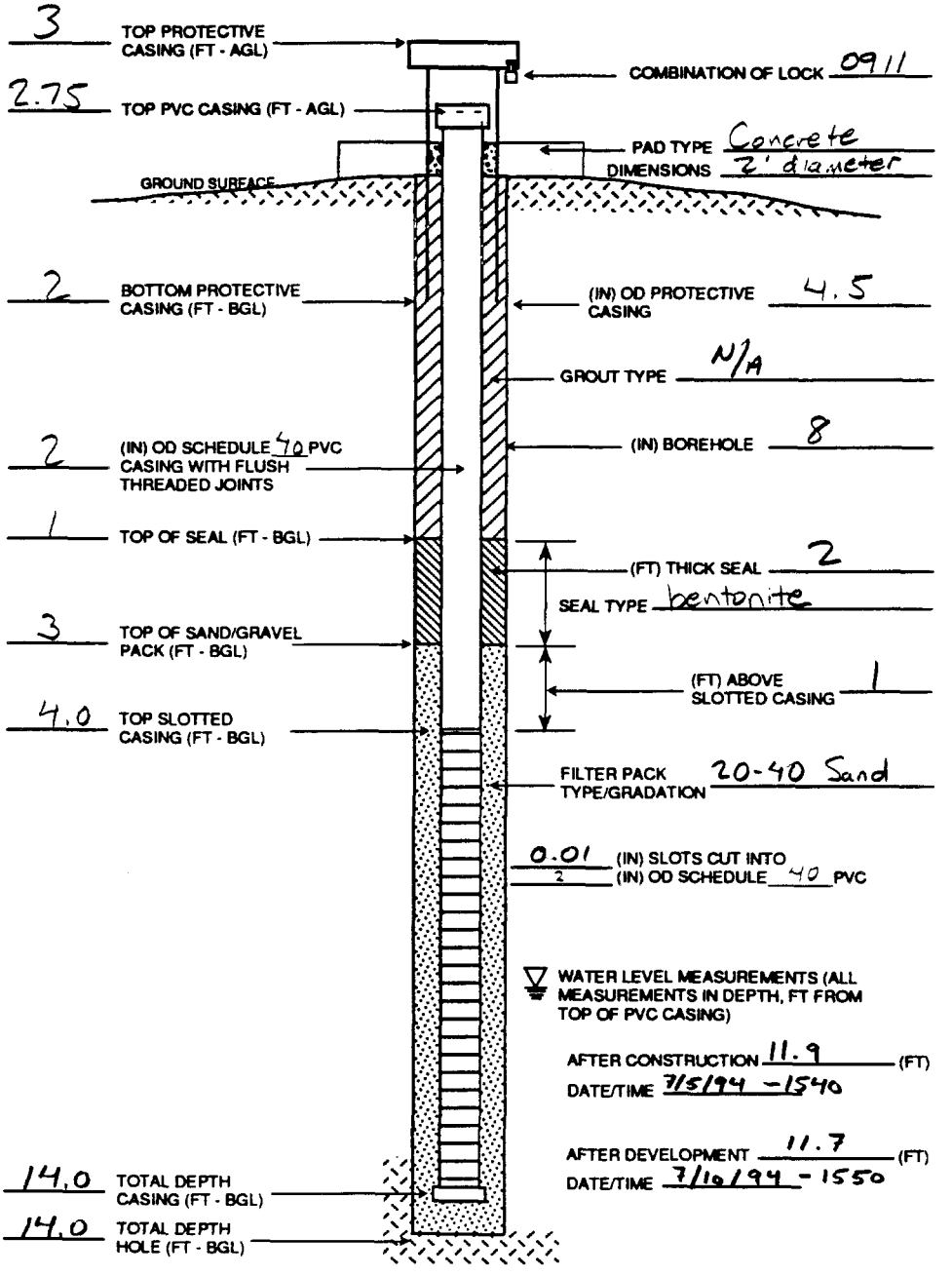
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	16-2	1 OF 1

PROJECT NE Cape SITE 16 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-3-94 WEATHER Cloudy, breezy LOCATION COORDINATES 98389.5354 (Northing) / 95816.9231 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 72.1600 TOP OF PROTECTIVE CASING 75.1600 TOP OF PVC CASING 74.9100



COMBINATION OF LOCK 0911

PAD TYPE Concrete

DIMENSIONS 2' diameter

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

(IN) BOREHOLE 8

(FT) THICK SEAL 2

SEAL TYPE bentonite

(FT) ABOVE SLOTTED CASING 1

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 / 2 (IN) SLOTS CUT INTO (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 11.9 (FT)
DATE/TIME 7/5/94 - 1540

AFTER DEVELOPMENT 11.7 (FT)
DATE/TIME 7/10/94 - 1550

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

- Bentonite (lbs)
- Sand (lbs)
- Grout (lbs)
- Screen (ft)
- Blank Casing (ft)
- Bottom Cap (ea)
- Top Cap (ea)
- Flush Mount
- Protective Casing (ft)
- Lock
- MISC.:

NOTES

Time: 00-XXX-00 00:00 File: user name/project/File Name

JOB No. 0000.00

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	16-3	1 OF 1

PROJECT NE Cape SITE 16 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-3-94 WEATHER Cloudy, breezy LOCATION COORDINATES 98314.9116 (Northing) / 95857.1580 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 4 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 14.5 DEPTH TO SWL (FT) 10.0 TOP OF HOLE ELVEVATION 73.03

DEPTH (FEET)	BLOWS (6 IN.)	GRAIN SIZE % GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										
		35	55	10	4	SP/SM		1500		POORLY GRADED SAND WITH SILT AND GRAVEL; brown, slightly moist, dense, cobbles, fine to coarse subangular
1										
2	11							1515		gravel, fine to coarse-grained
3	27									sand, mostly fine grained sand,
	50									no apparent staining from 0-6',
4										40% recovery from 2-4, 20%
	22							1530		recovery from 4-6
5	50									
6										
7										
8										
	10							1600		30% recovery, no apparent staining
9	11									
	15									
10							▽			moisture change to saturated, mostly fine to medium
11										grained sand
12										
13										
14										
15										Boring terminated at 14.5 fbg
16										Groundwater encountered at approx. 10 fbg
17										Installed 2" groundwater monitoring well
18										
19										
20										
21										

16134 SB

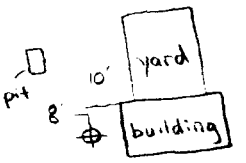
16024 SB

16135 SB

WELL COMPLETED? ☒ YES ☐ NO

NORTH

Site 16
Boring 16-3



LOCATION SKETCH

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MONTGOMERY WATSON

WELL CONSTRUCTION LOG

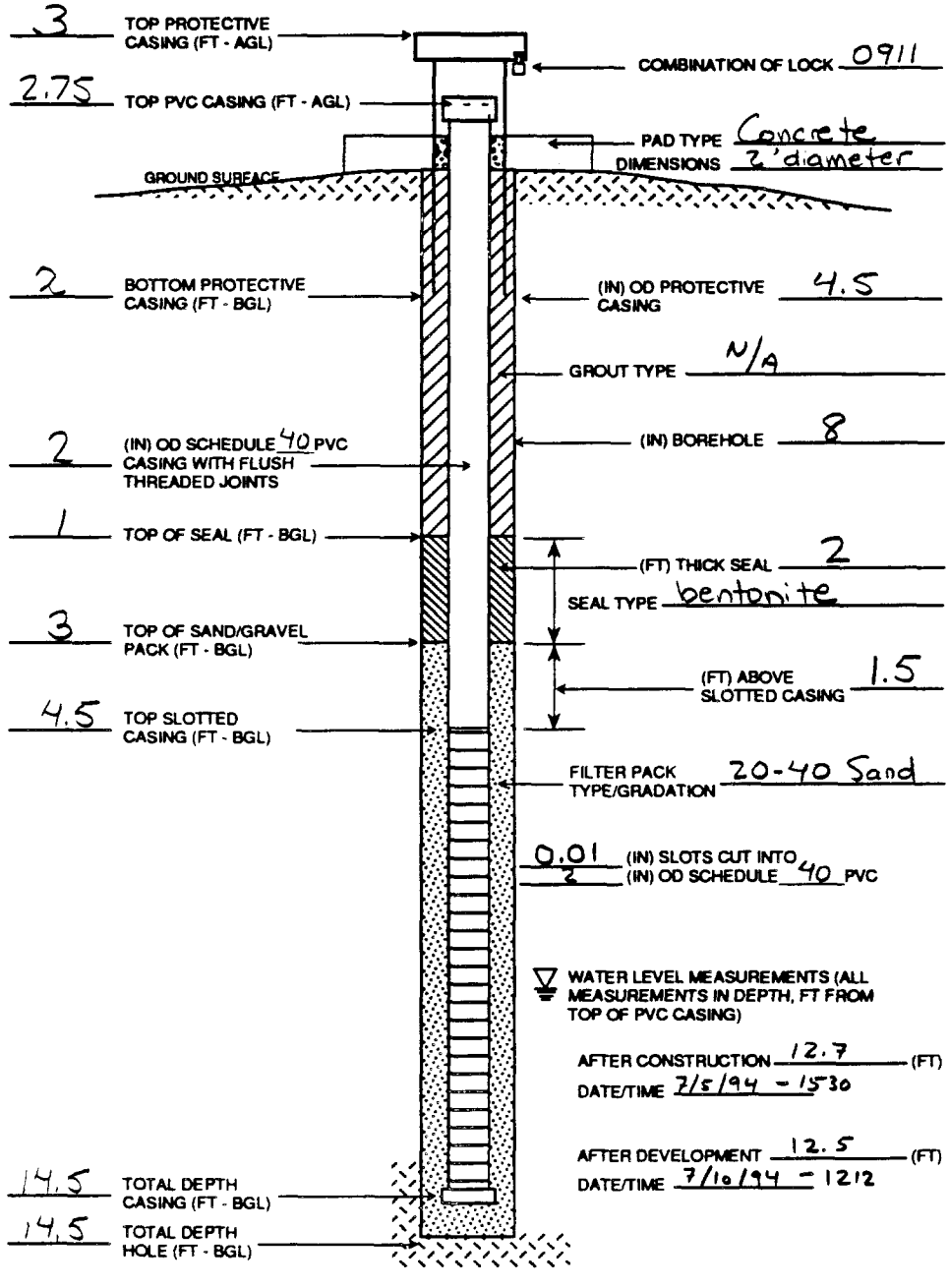
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	16-3	1 OF 1

PROJECT NE Cape SITE 16 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-3-94 WEATHER Cloudy, breezy LOCATION COORDINATES 9831 4.9116 (Northing) / 9585 7.1580 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 73.03 TOP OF PROTECTIVE CASING 76.03 TOP OF PVC CASING 75.78



WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 12.7 (FT)
DATE/TIME 7/5/94 - 1530

AFTER DEVELOPMENT 12.5 (FT)
DATE/TIME 7/10/94 - 1212

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

- Bentonite (lbs)
- Sand (lbs)
- Grout (lbs)
- Screen (ft)
- Blank Casing (ft)
- Bottom Cap (ea)
- Top Cap (ea)
- Flush Mount
- Protective Casing (ft)
- Lock
- MISC.:

NOTES

Time: 00-XXX-00 00:00 File: user name/project/File Name

JOB No. 0000.00

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	21-1	1 OF 1

PROJECT NE Cape SITE 21 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

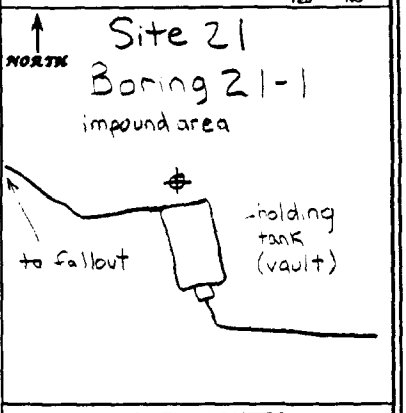
DATE 7-4-94 WEATHER Cloudy, Windy LOCATION COORDINATES 9803a.9957 (Northing) / 95326.5984 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 3 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 7.0 DEPTH TO SWL (FT) 1.5 TOP OF HOLE ELVEVATION 62.84

DEPTH (FEET)	BLOWS (6 IN.)	GRAIN SIZE % GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0	-	-	-	100	-	OL		0930		Stressed Grasses ORGANIC SOIL: dark brown, very moist, soft, mossy, grass roots
1							▽			
2	2							1000		
3	2	-	-	100	-	ML				SILT: green (native color?), saturated, firm, 1" lens of frozen pore water at 3', 80% recovery
4	1							1010		
5	2									cobbles up to 4" at 4 fbg
	3									
6		40	50	10	3	SP/SM				POORLY GRADED SAND WITH SILT AND GRAVEL: olive green, saturated, medium dense, fine to coarse subangular gravel, medium grained sand, 25% recovery
7										Boring terminated at 7 fbg Groundwater encountered at approx 1.5 fbg Installed 2" groundwater monitoring well
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										

WELL COMPLETED? ☒ YES ☐ NO



LOCATION SKETCH

21136 SB

21025 SB

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MONTGOMERY WATSON

WELL CONSTRUCTION LOG

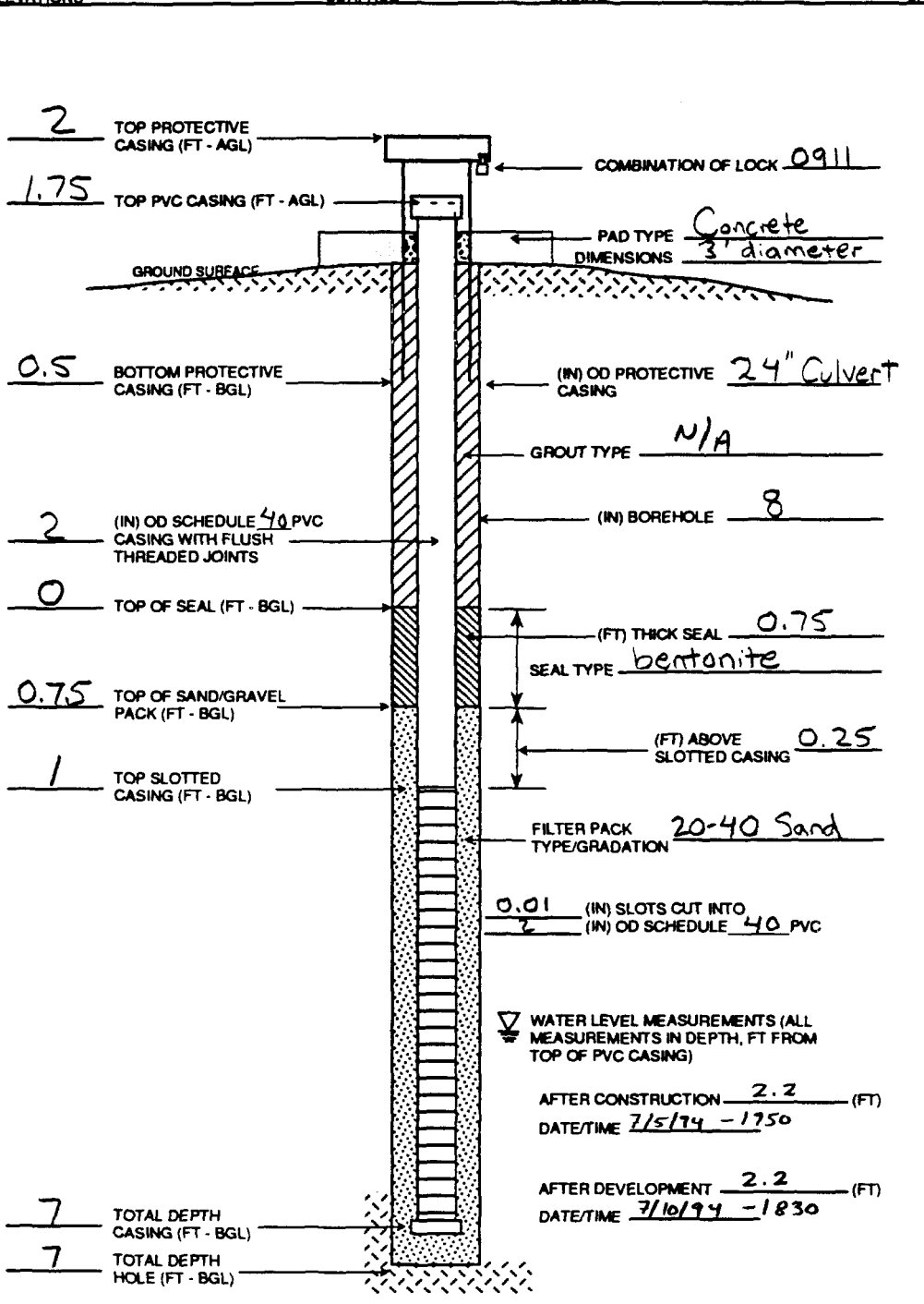
PROJECT NO.: 2198.0230 | WELL NO.: 21-1 | SHEET 1 OF 1

PROJECT NE Cape SITE 22 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-4-94 WEATHER Cloudy, breezy LOCATION COORDINATES 98036.9957 (Northing) / 95326.5984 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 1.75 (AGL) GROUND SURFACE 62.8400 TOP OF PROTECTIVE CASING 64.8400 TOP OF PVC CASING 64.5900



WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

- Bentonite (lbs)
- Sand (lbs)
- Grout (lbs)
- Screen (ft)
- Blank Casing (ft)
- Bottom Cap (ea)
- Top Cap (ea)
- Flush Mount
- Protective Casing (ft)
- Lock
- MISC.:

NOTES

Time: 00-XXX-00 00:00 File: user name/project/File Name

JOB No. 0000.00

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 21-3 | SHEET 1 OF 1

PROJECT NE Cape SITE 21 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

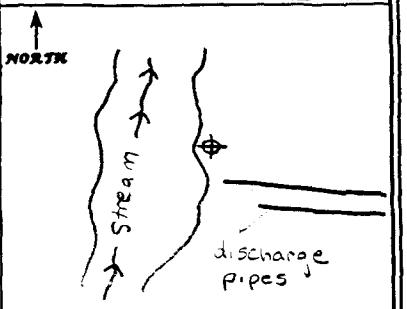
DATE 7-4-94 WEATHER Cloudy, Windy LOCATION COORDINATES 97825.3100 (Northing) / 94885.9710 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 1 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 7.0 DEPTH TO SWL (FT) 0.5 TOP OF HOLE ELVEVATION 49.68

WELL COMPLETED? ☒ YES ☐ NO

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Stressed Grasses
		-	-	100	-	OL	▽	1800		ORGANIC SOIL: red brown, saturated, soft, putrid odor, mottled black in places, grass roots, 2" lens of frozen pore water at 1 fbg
1										
2										
3										
4										
5										cobbles
6										
7										
8										Boring terminated at 7 fbg Groundwater encountered at approx. 0.5 fbg Installed 2" groundwater monitoring well
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										



Site 21
Boring 21-3

LOCATION SKETCH

21139 SB

JOB No. 0000.000C Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

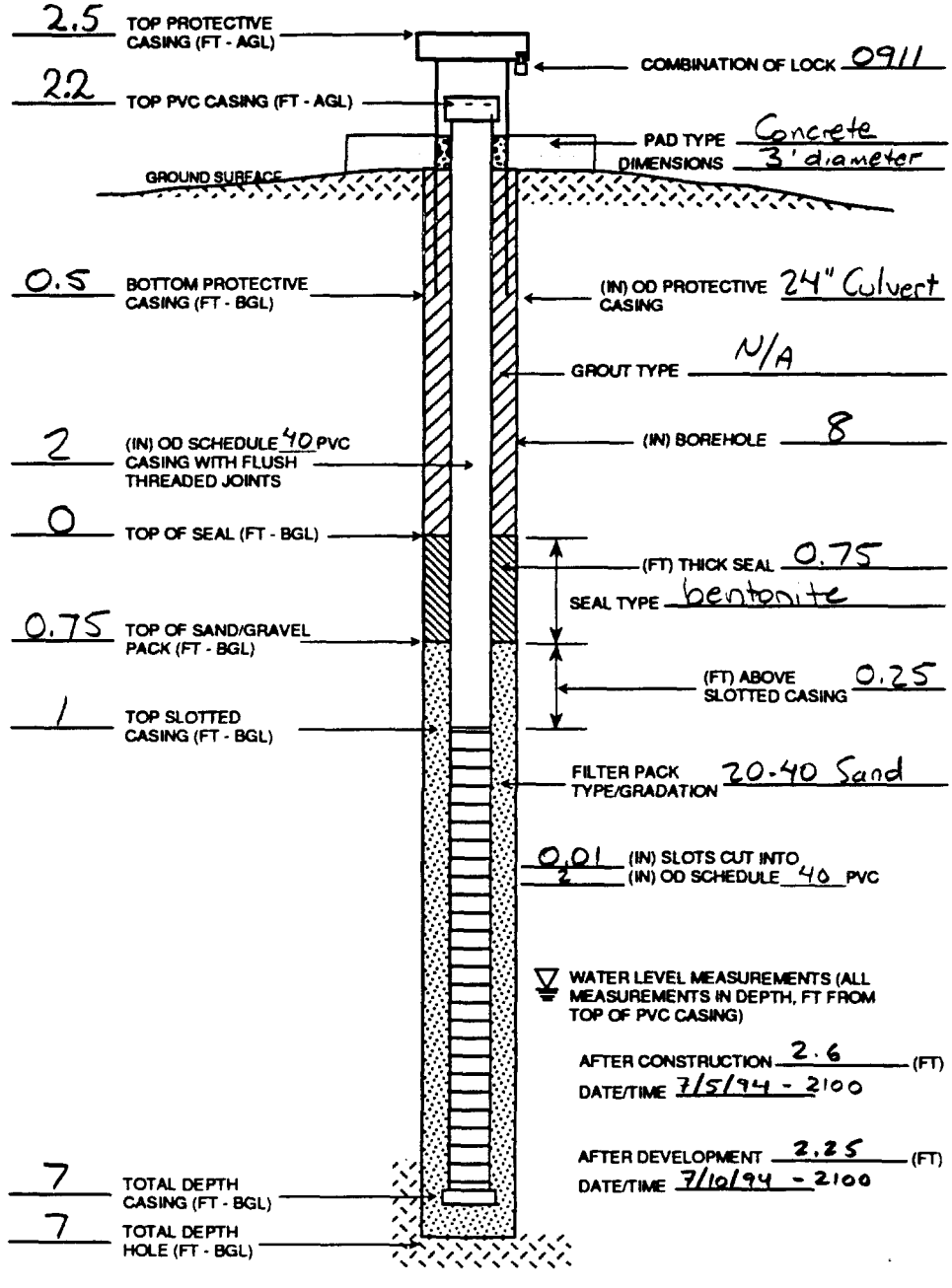
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	21-3	1 OF 1

PROJECT NE Cape SITE 21 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-4-94 WEATHER Cloudy, Windy LOCATION COORDINATES 97825.3100 (Northing) / 94885.9710 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.2 (AGL) GROUND SURFACE 49.68 TOP OF PROTECTIVE CASING 52.1800 TOP OF PVC CASING 51.88



WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

- Bentonite (lbs) _____
- Sand (lbs) _____
- Grout (lbs) _____
- Screen (ft) _____
- Blank Casing (ft) _____
- Bottom Cap (ea) _____
- Top Cap (ea) _____
- Flush Mount _____
- Protective Casing (ft) _____
- Lock _____
- MISC.: _____

NOTES

Time: 00-XXX-00 00:00 File: user name/project/File Name

JOB No. 0000.00

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	B-10-1	1 OF 1

PROJECT NE Cape SITE 10 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-25-94 WEATHER Cloudy LOCATION COORDINATES 98219.0993 (Northing) / 96794.1917 (Easting) ELEVATION DATUM MSL (MSL/Other)

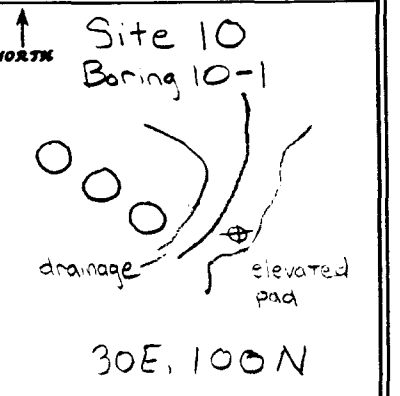
DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 6 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 20.0 DEPTH TO SWL (FT) 3.5 TOP OF HOLE ELVEVATION 69.49

WELL COMPLETED? ☒ YES ☐ NO

DEPTH (FEET)	BLOWS/(6 IN.)	GRAIN SIZE % GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										
1		30	50	20	3	SM		1630		SILTY SAND WITH GRAVEL: orange-brown, moist, medium dense, fine to coarse angular gravel, fine-grained sand, rootlets to 3' bg, stained black on surface, 50% recovery at 2-4', no apparent staining
2										
3	5 7 9						▽	1648		
4										
5	8 7 7	30	20	50	3	ML		1707		GRAVELLY SILT WITH SAND: orange-brown, moist, firm, fine to coarse angular gravel, fine grained sand, 5% clay, natural iron staining?, 75% recovery
6										
7										
8										
9		5	60	35	.75	SM				SILTY SAND: dark green, moist, medium dense, fine subangular gravel, very fine to fine grained sand, 5% clay,
10	6 8 12							1745		no apparent staining, 100% recovery
11										occassional layers of SANDY SILT, dark green, moist, firm, fine subangular gravel, very fine to fine grained sand, 5% clay
12										
13		15	35	50	3	ML				SANDY SILT WITH GRAVEL: dark green, moist, stiff, fine to coarse subangular gravel, very fine to fine grained sand, 5% clay
14										
15	50							1810		no apparent staining, 10% recovery
16										
17										
18										
19										
20								1830		no apparent staining, 100% recovery
21										Boring terminated at 20 f bg. Backfilled with Veldlay Grout to 10 f bg. Installed 2" groundwater monitoring well.

LOCATION SKETCH



10100 SB

10101 SB

10102 SB

File: user name/project/File Name

Time: 00-XXX-00 00:00

JOB No. 0000.0000

WELL CONSTRUCTION LOG

MONTGOMERY WATSON

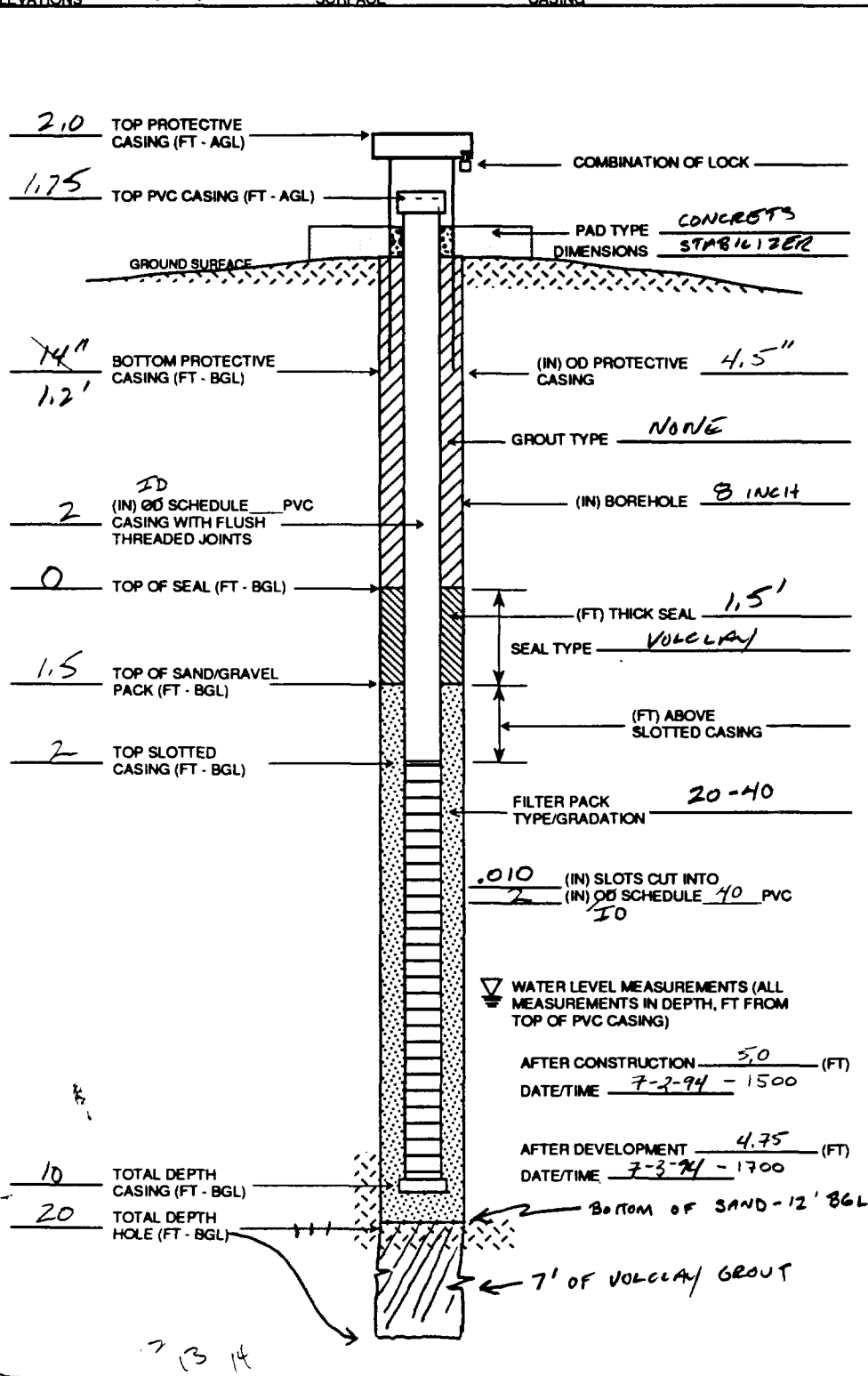
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	10-1	1 OF 1

PROJECT NE CAPE SITE 10 CLIENT USACOE (AK) GEOLOGIST Victor Harris

DATE 6-26-94 WEATHER HI CLDS, 10 MPH WIND, 40°F LOCATION COORDINATES 98219.0993 (Northing) / 96794.1917 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8 INCH RIG TYPE CME-55/NODWELL DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 1.75 (AGL) GROUND SURFACE 69.49 TOP OF PROTECTIVE CASING 71.49 TOP OF PVC CASING 71.24



WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	50
Sand (lbs)	450 300
Grout (lbs)	40
Screen (ft)	8
Blank Casing (ft)	5
Bottom Cap (ea)	1
Top Cap (ea)	1
Flush Mount	N/A
Protective Casing (ft)	1
Lock	1
MISC.:	CASING MANUF BY TIMCO

NOTES

SAND TYPE: COLORADO SILICA SAND

GROUT: CETCO VOLCLAY

SEAL: PERMA PLUG GRANULAR BENTONITE 3/8"

NOTE: HOLE WAS DRILLED TO 20' (EXPLORATORY), AND ALLOWED TO STABILIZE OVERNIGHT. SWL MEAS AM 6/26 @ 3.5' BGL. HOLE SEALED WITH BENTONITE FROM 13' BGL TO 20' BGL (TD) TO PREVENT DOWNHOLE MIGRATION OF CONTAMINANTS.

Time: 00-XXX-00 00:00 File: user name/project/File Name

JOB No. 0000.000

Boring # - MW 88-1 | Project- NEC Phase III RI | Client- USACE | Date- 8/14/02

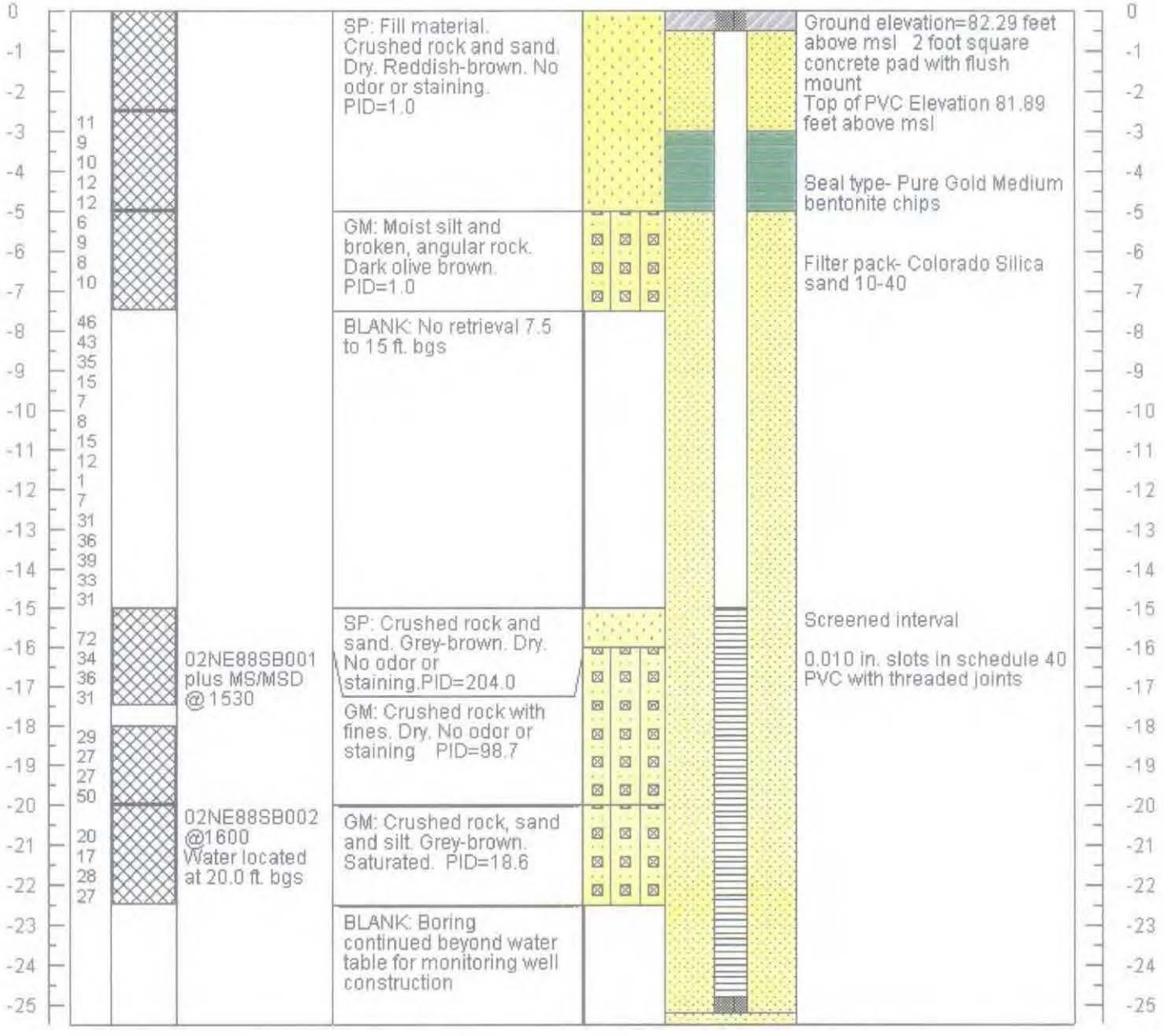
Boring Size- 8.25 in | AK State Plane Coordinates- 96392.8914 / 98080.4492 Northing / Easting

Drilling Method- Hollow Stem Augur

Rig Type- 45-C

Hammer Drop- 30 in / 360 lbs | Total Depth- 22.5 ft | Elevation Datum- MSL

Sample Type- Grab | Sampler Type- 2.5 in SS | Geologist- O'Connell | Top of Hole Elev.- 82.29 ft



Boring # - MW 88-3 | Project- NEC Phase III RI | Client- USACE | Date- 8/15/02

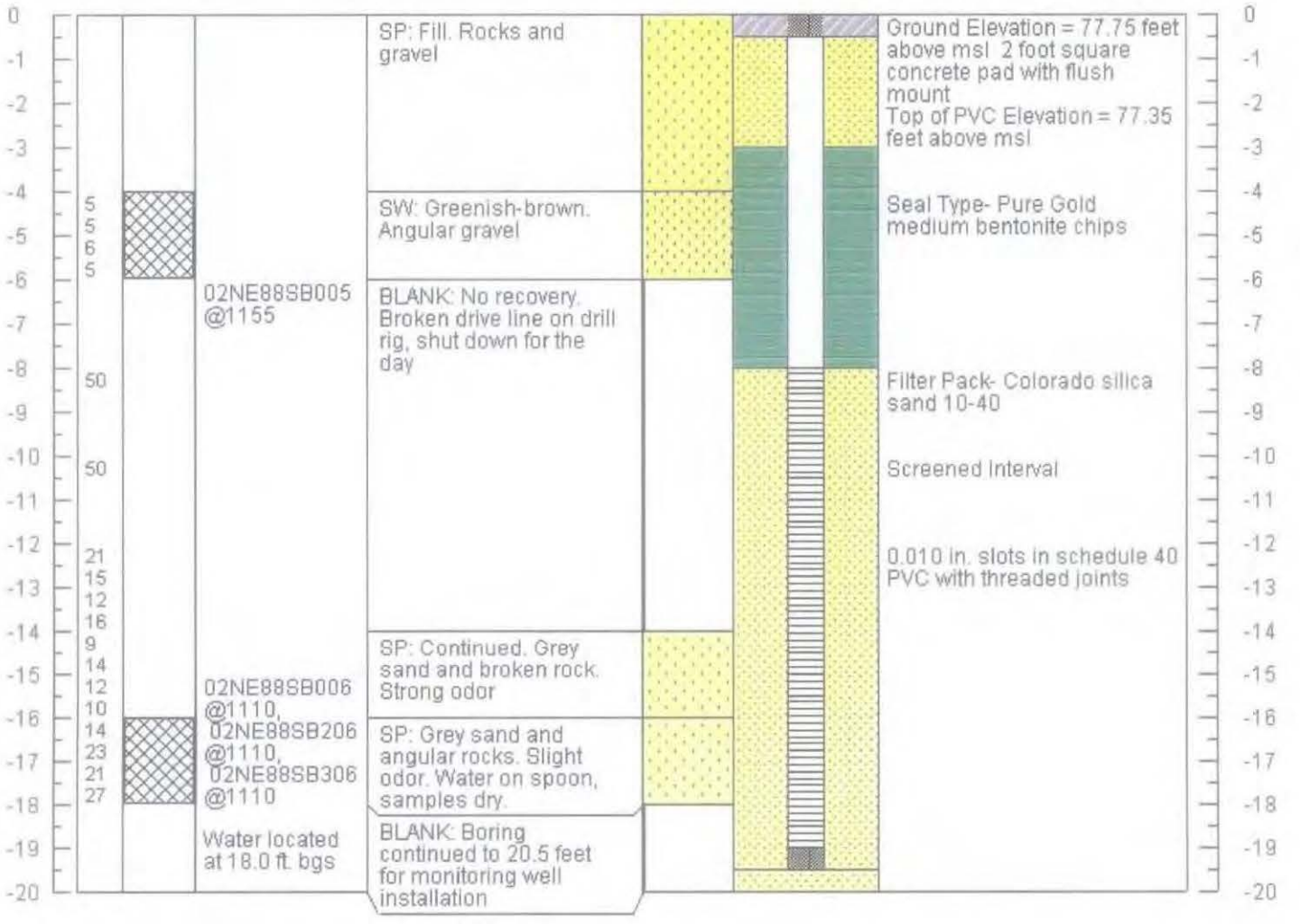
Boring Size- 8.25 in | AK State Plane Coordinates- 96458.3585 / 98169.9401 Northing / Easting

Drilling Method- Hollow Stem Augur

Rig Type- 45-C

Hammer Drop- 30 in / 360 lbs | Total Depth- 20 ft. | Elevation Datum- MSL

Sample Type- Grab | Sampler Type- 2.5 in SS | Geologist- O'Connell | Top of Hole Elev.- 77.75 ft.



Boring # - MW 88-4 | Project- NEC Phase III RI | Client- USACE | Date- 8/14/02

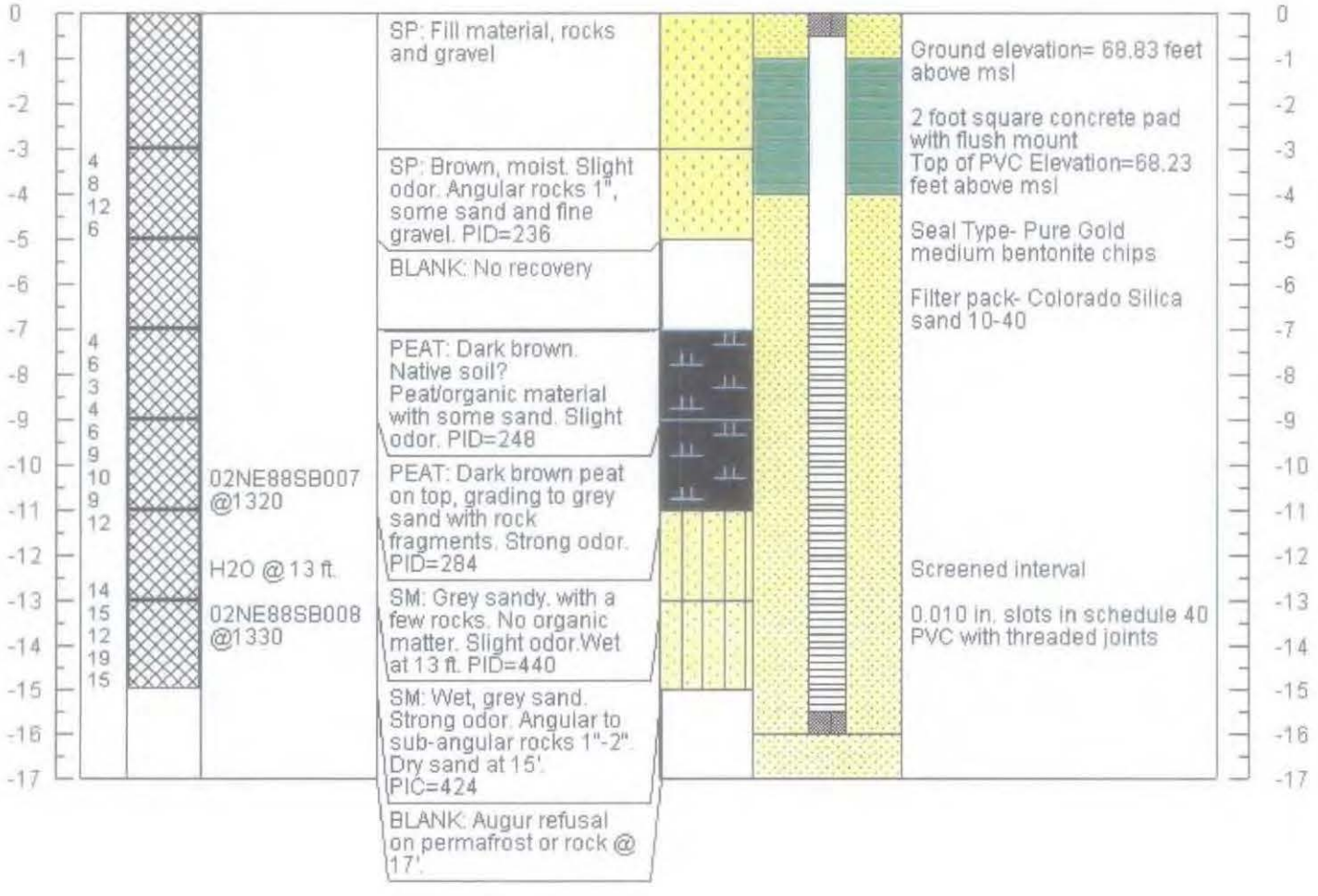
Boring Size- 8.25 in | AK State Plane Coordinates- 96331.1320 / 98365.8078 Northing / Easting

Drilling Method- Hollow Stem Augur

Rig Type- 45-C

Hammer Drop- 30 in / 360 lbs | Total Depth- 17 ft. | Elevation Datum- MSL

Sample Type- Grab | Sampler Type- 2.5 in SS | Geologist- O'Connell | Top of Hole Elev.- 68.63 ft.



Boring # - MW 88-5 | Project- NEC Phase III RI | Client- USACE | Date- 8/17/02

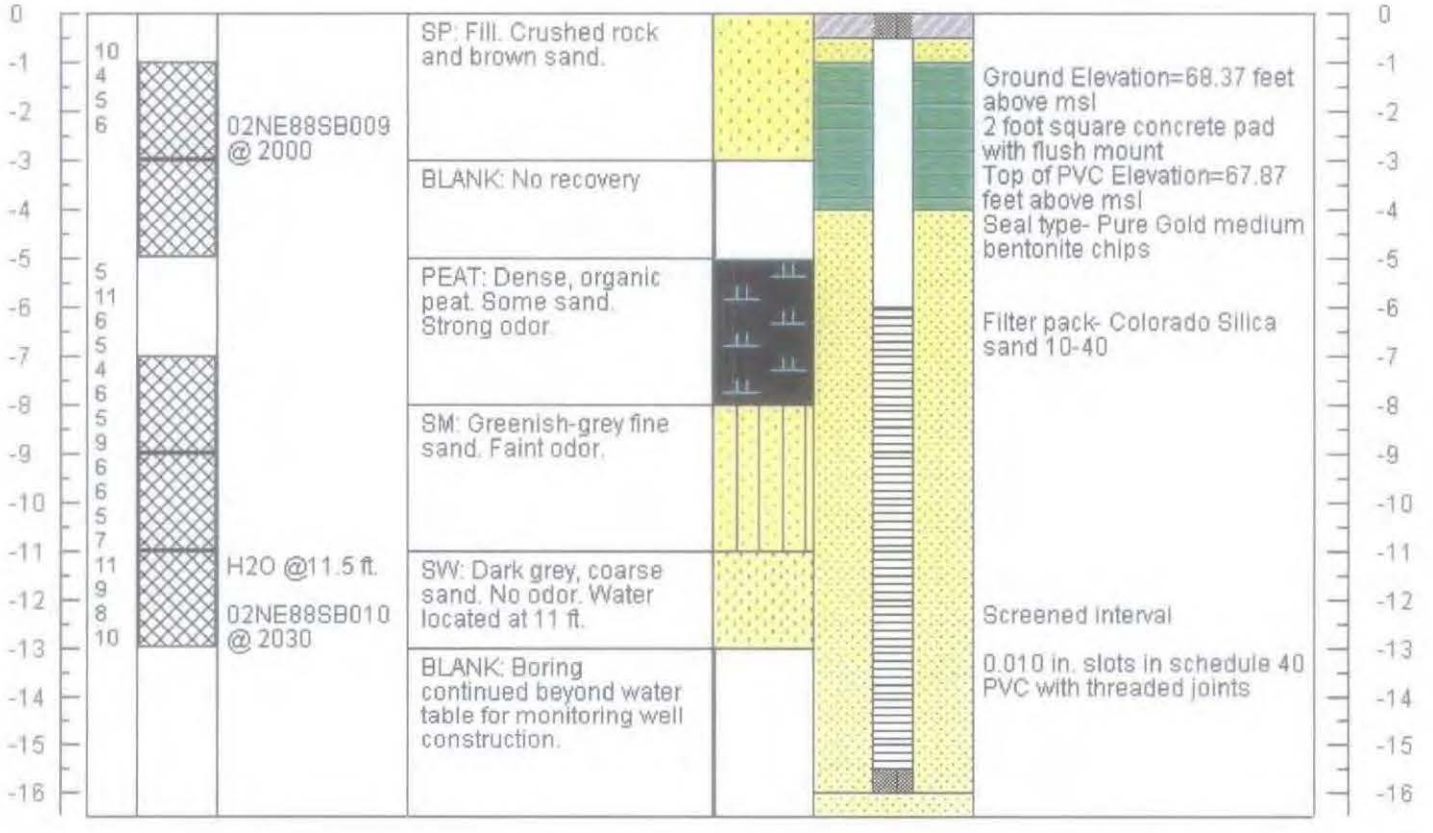
Boring Size- 8.25 in | AK State Plane Coordinates- 96216.7210 / 98292.1088 Northing / Easting

Drilling Method- Hollow Stem Augur

Rig Type- 45-C

Hammer Drop- 30 in / 360 lbs | Total Depth- 16.5 ft. | Elevation Datum- MSL

Sample Type- Grab | Sampler Type- 2.5 in SS | Geologist- O'Connell | Top of Hole Elev.- 68.37 ft.



Boring # - MW 88-10 | Project- NEC Phase III RI | Client- USACE | Date- 8/19/02

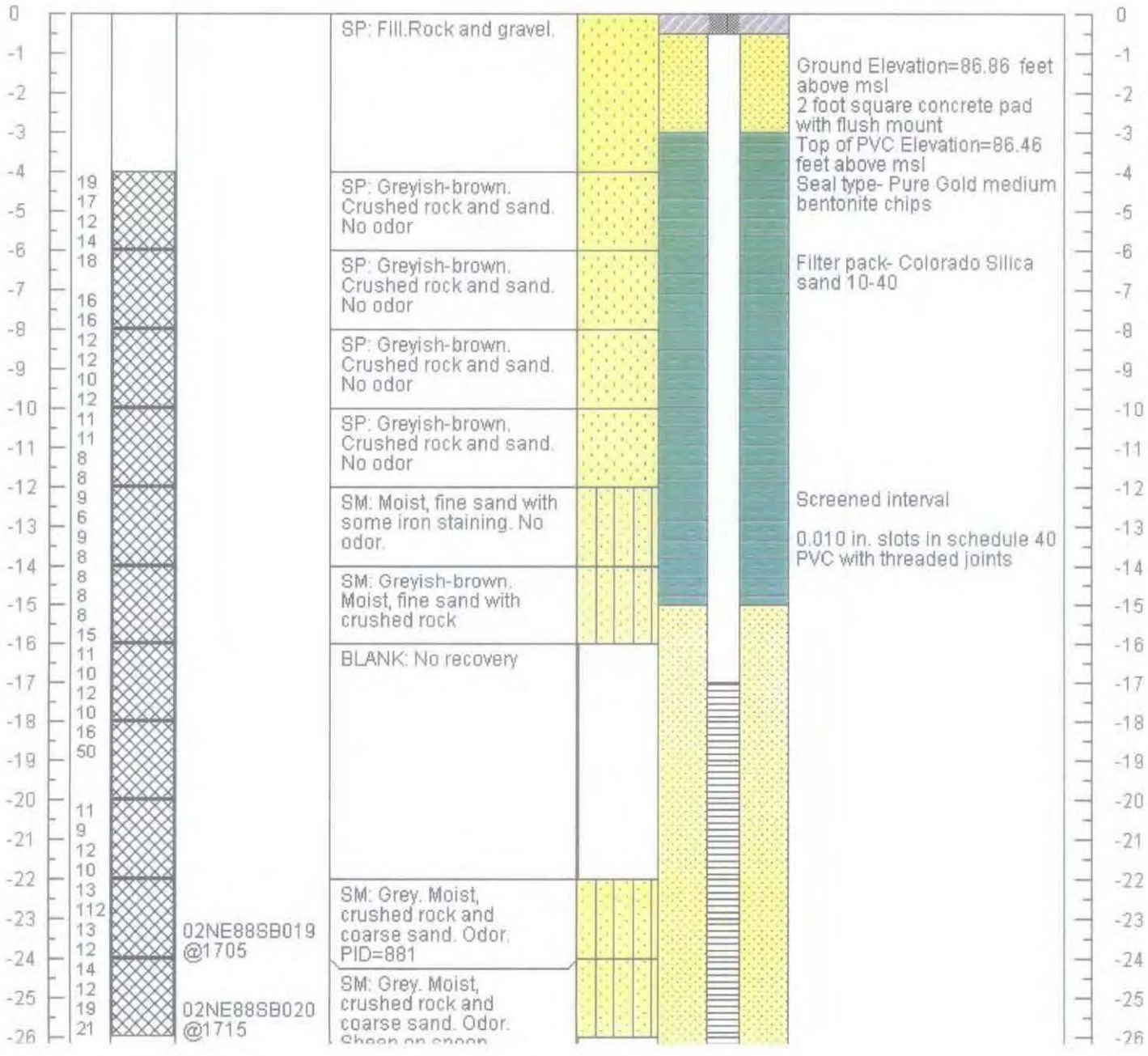
Boring Size- 8.25 in | AK State Plane Coordinates- 96293.0099 / 97970.2989 Northing / Easting

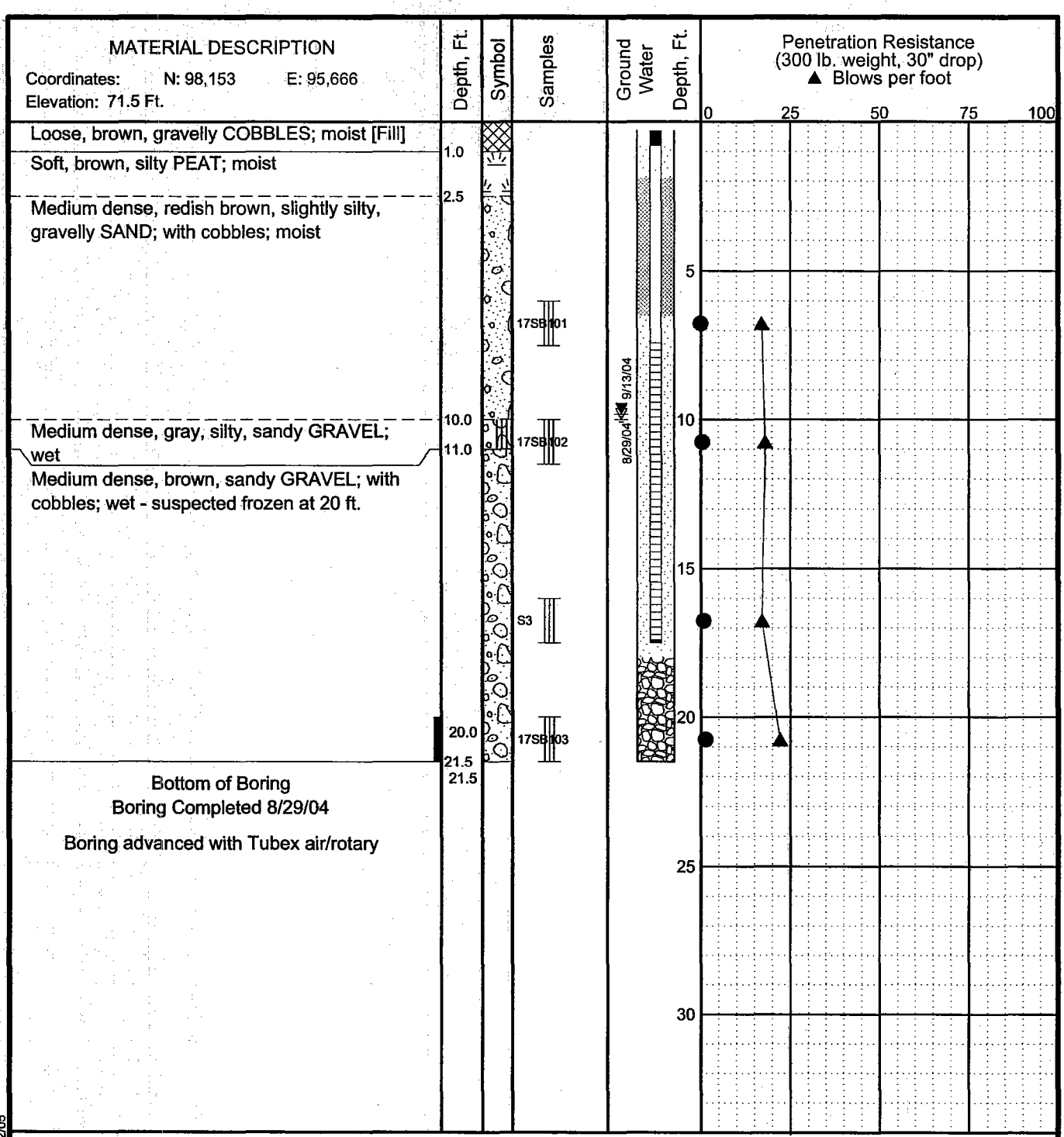
Drilling Method- Hollow Stem Augur

Rig Type- 45-C

Hammer Drop- 30 in / 360 lbs | Total Depth- 27.5 ft. | Elevation Datum- MSL

Sample Type- Grab | Sampler Type- 2.5 in SS | Geologist- O'Connell | Top of Hole Elev.- 86.86 ft.





LEGEND

- * Sample Not Recovered
- 3" O.D. Split Spoon Sample
- B Auger Cuttings
- Frozen
- Surface Seal
- Solid Casing and Annular Seal
- Well Casing and Filter Sand
- Cuttings Backfill
- Ground Water Level At Time Of Drilling
- Static Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 17MW1

June 2005 32-1-16821

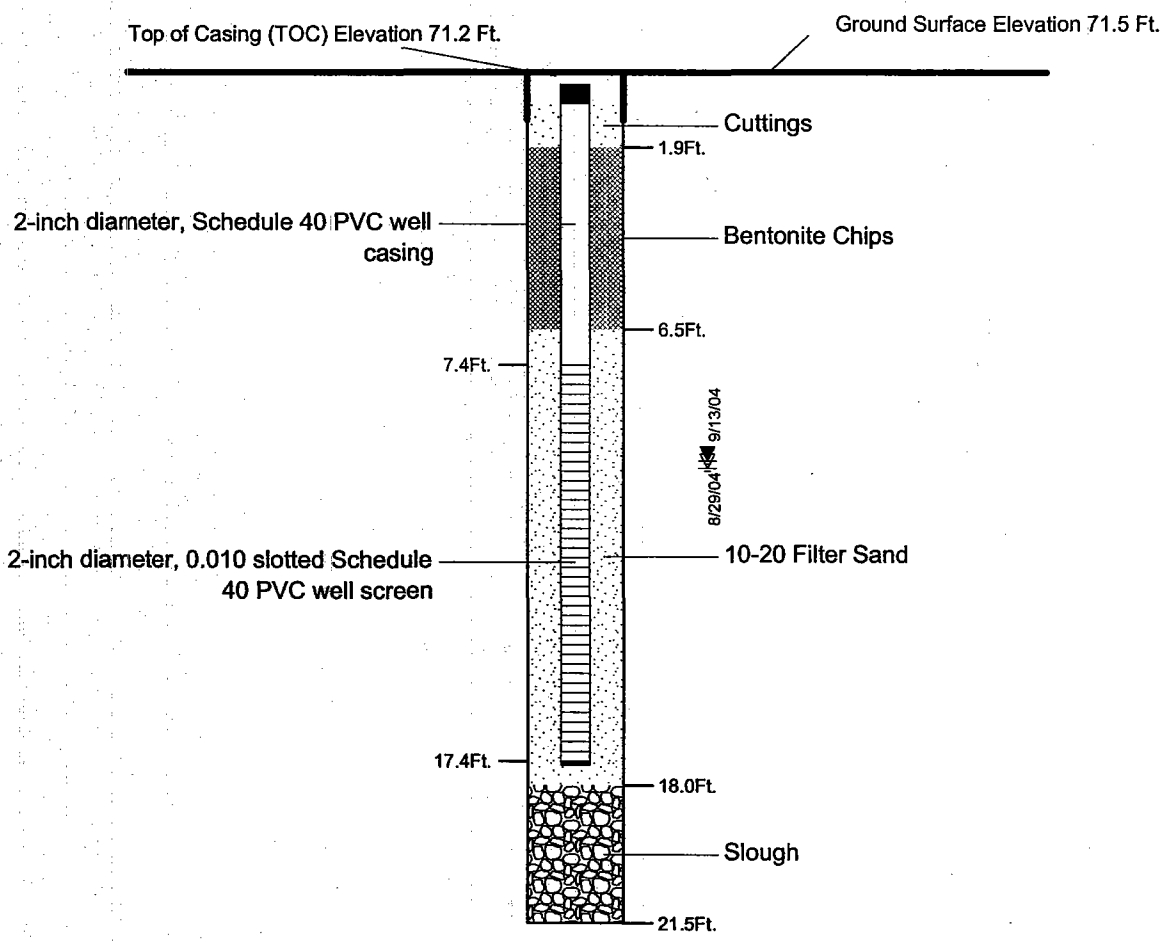
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-13a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 98,153 E: 95,666

Casing Description **Backfill Description**



LEGEND

- ▽ Ground Water Level ATD
- ▼ Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

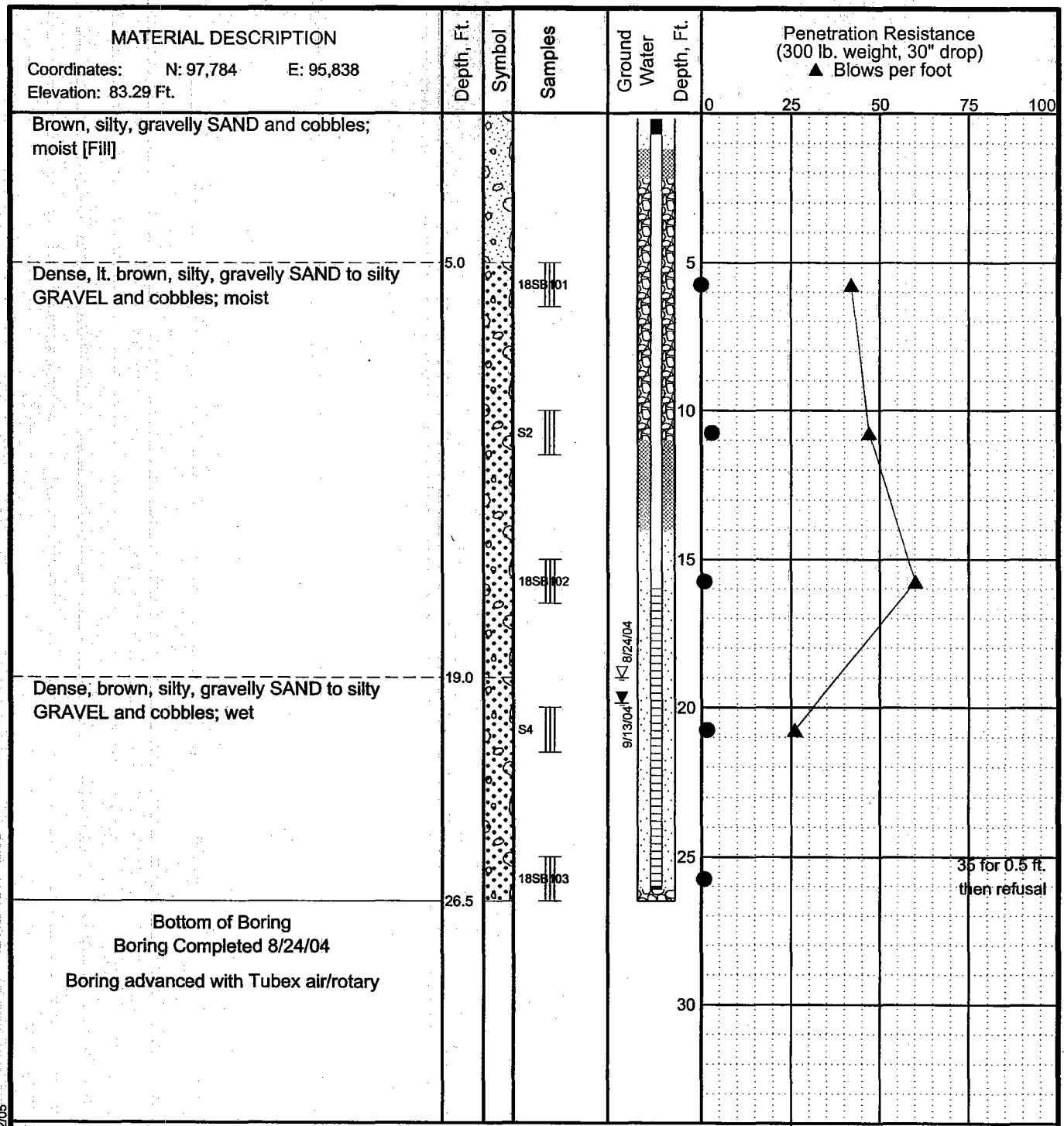
Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

MONITORING WELL 17MW1
CONSTRUCTION DETAIL

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-13b



LEGEND

- * Sample Not Recovered
- 3" O.D. Split Spoon Sample
- B Auger Cuttings
- Surface Seal
- Solid Casing and Annular Seal
- Well Casing and Filter Sand
- Cuttings Backfill
- Ground Water Level At Time Of Drilling
- Static Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 18MW1

June 2005 32-1-16821

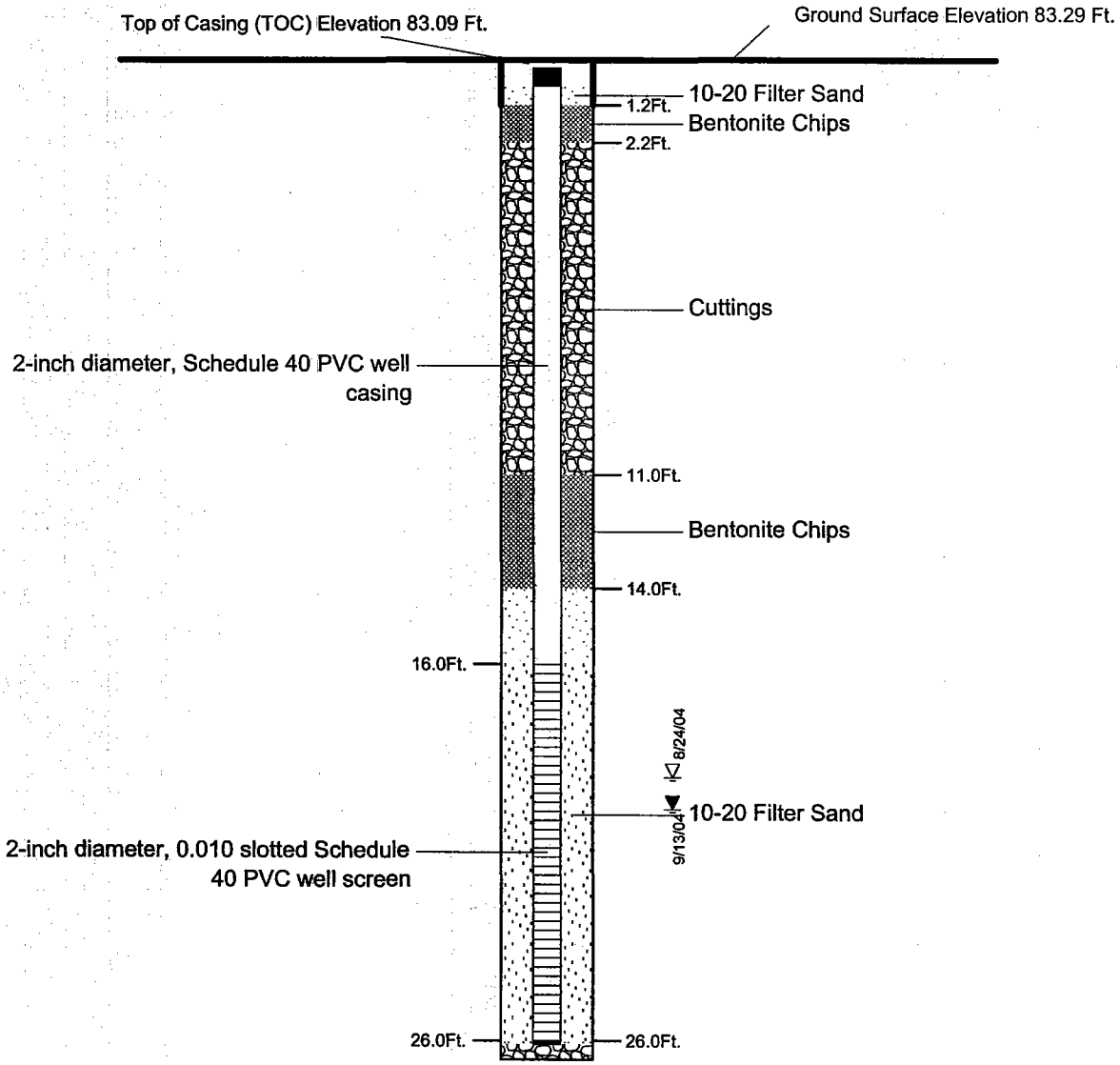
SHANNON & WILSON, INC. Geotechnical and Environmental Consultants

Fig. B-14a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 97,784 E: 95,838

Casing Description **Backfill Description**



LEGEND

- ▽ Ground Water Level ATD
- ▼ Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

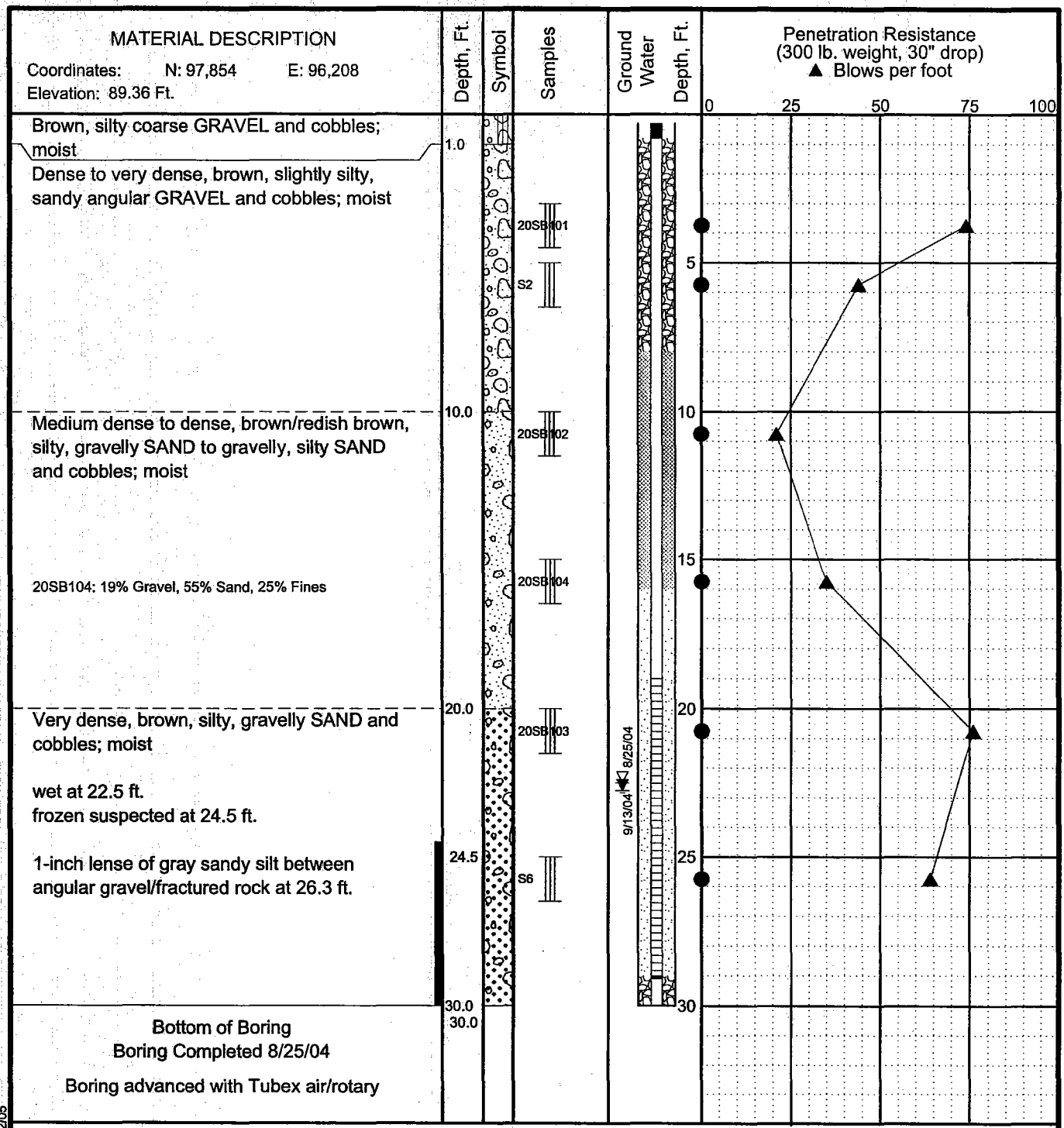
Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

MONITORING WELL 18MW1
CONSTRUCTION DETAIL

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-14b



LEGEND

- * Sample Not Recovered
- 3" O.D. Split Spoon Sample
- B Auger Cuttings
- Frozen
- Surface Seal
- Solid Casing and Annular Seal
- Well Casing and Filter Sand
- Cuttings Backfill
- Ground Water Level At Time Of Drilling
- Static Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 20MW1

June 2005 32-1-16821

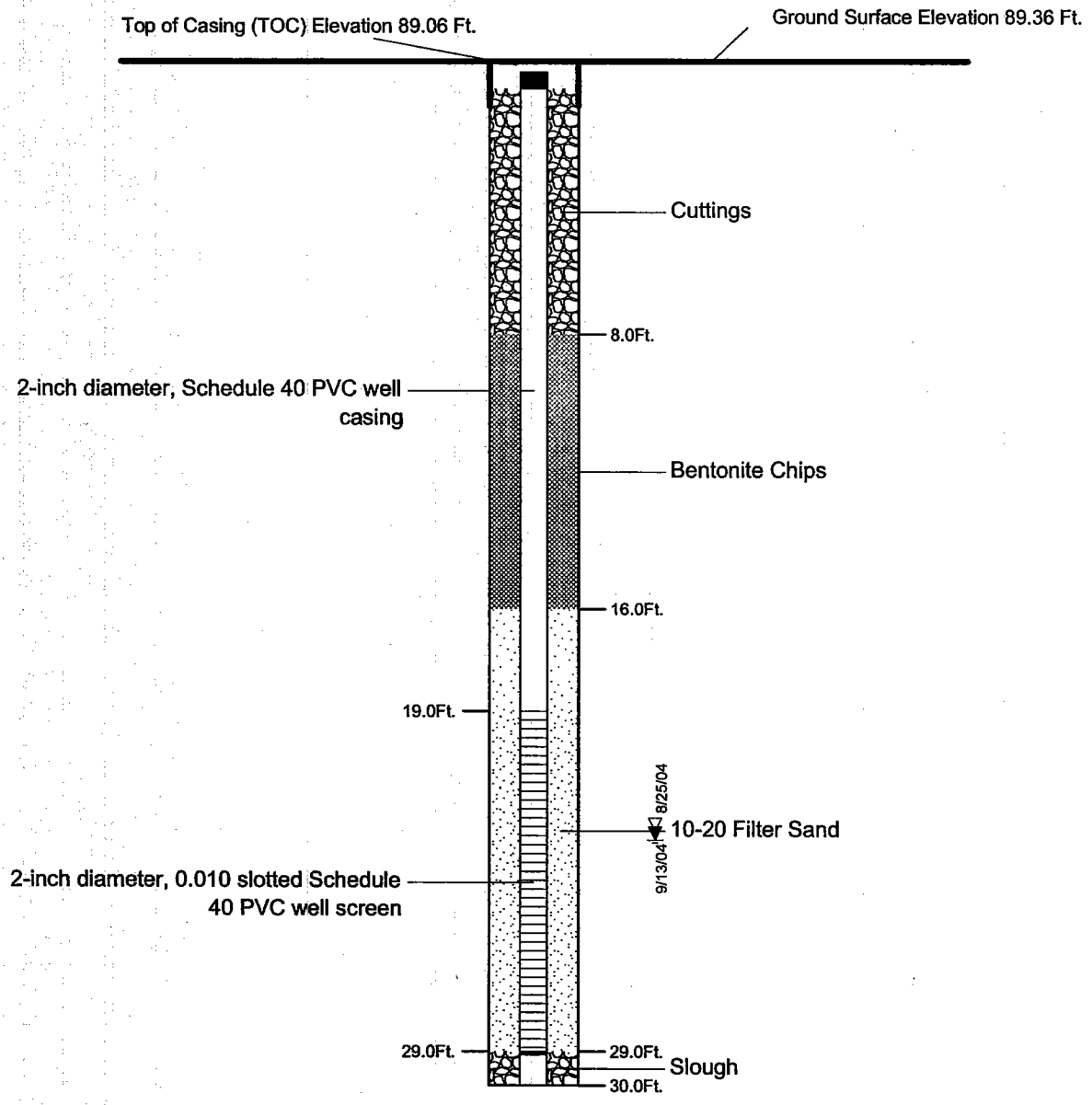
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-16a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 97,854 E: 96,208

Casing Description **Backfill Description**



LEGEND

- ▽ Ground Water Level ATD
- ▼ Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

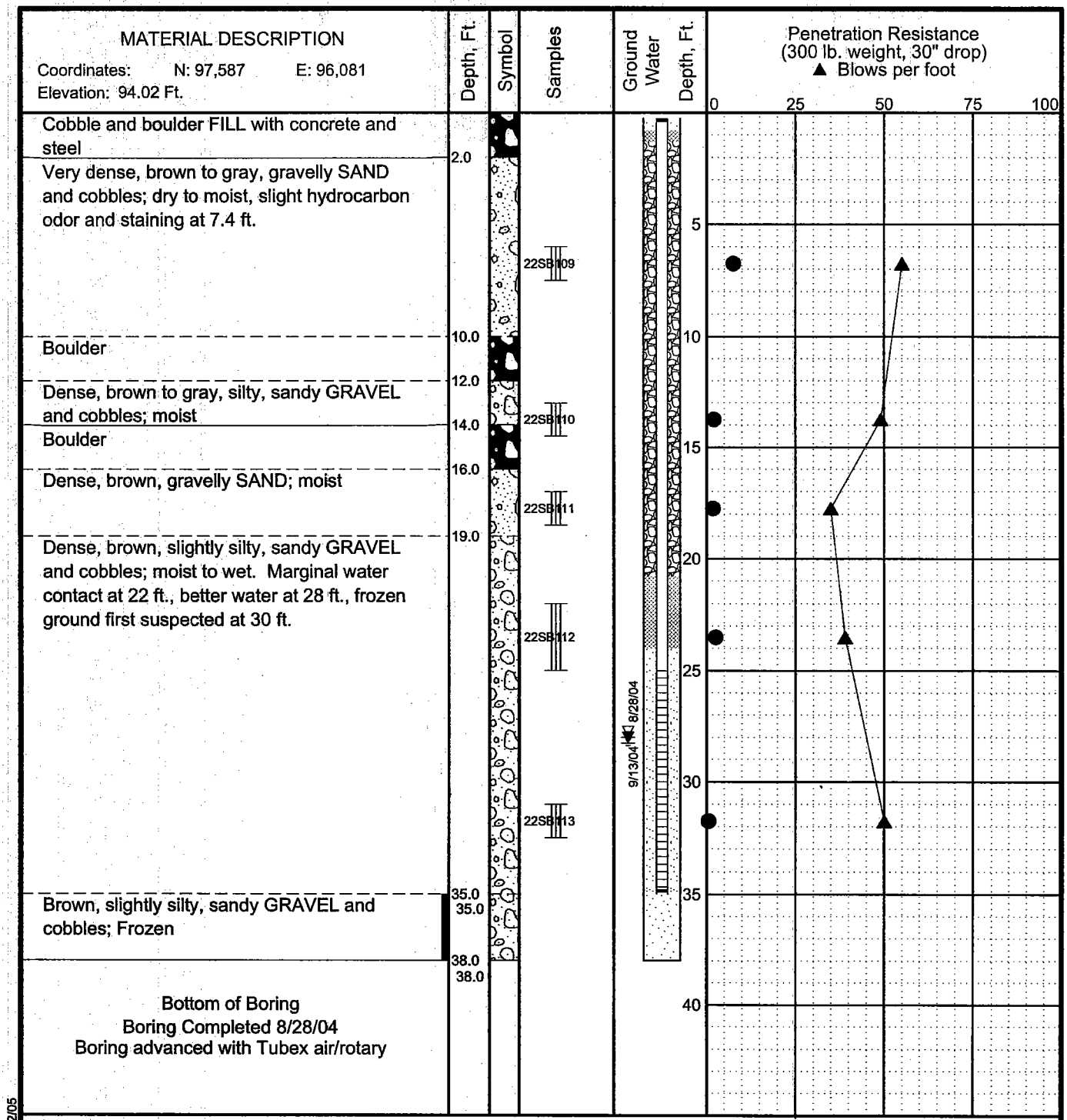
Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

MONITORING WELL 20MW1
CONSTRUCTION DETAIL

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-16b



LEGEND

- * Sample Not Recovered
- 3" O.D. Split Spoon Sample
- B Auger Cuttings
- Frozen
- Surface Seal
- Solid Casing and Annular Seal
- Well Casing and Filter Sand
- Cuttings Backfill
- Ground Water Level At Time Of Drilling
- Static Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 22MW2

June 2005 32-1-16821

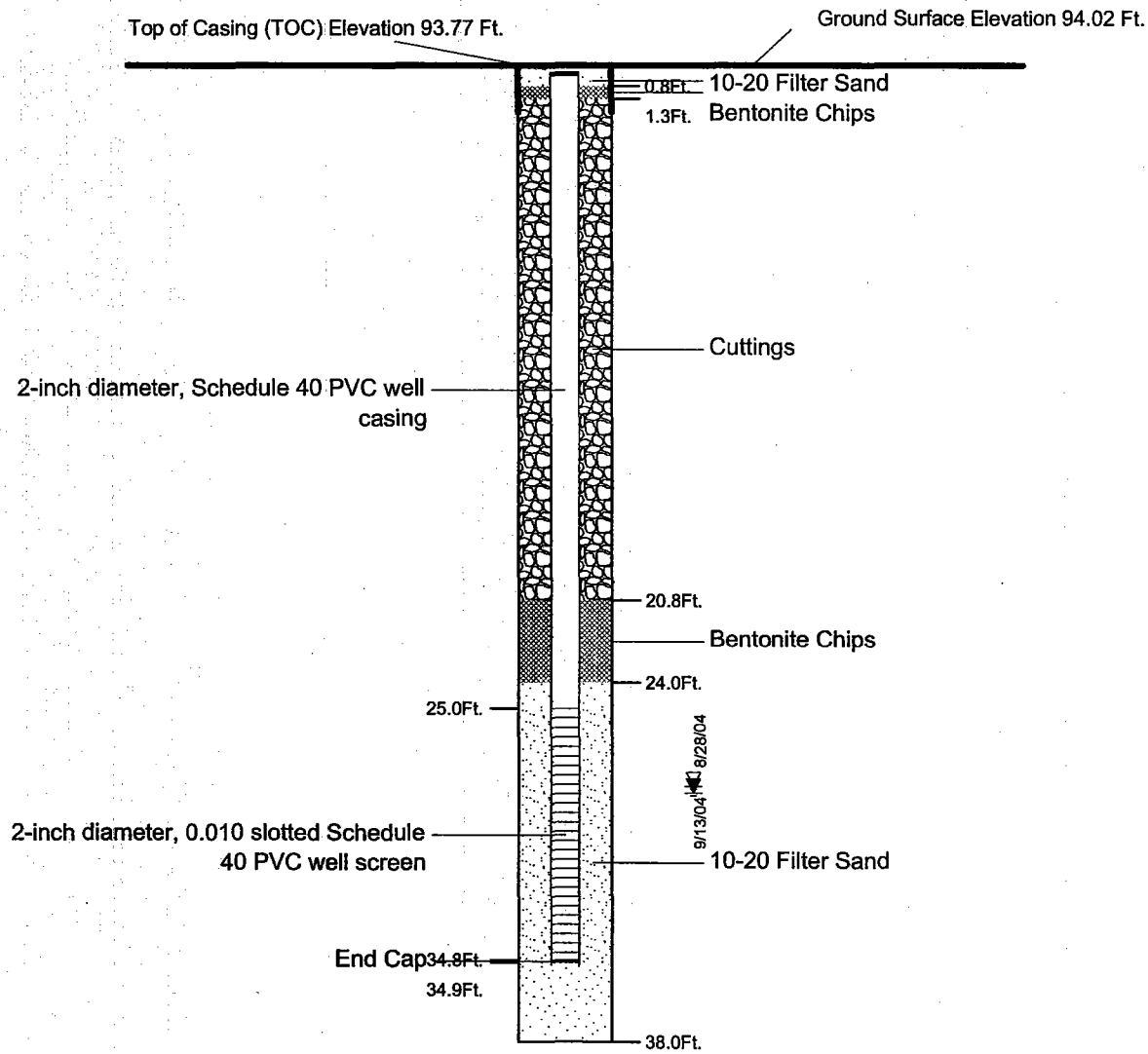
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-18a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 97,587 E: 96,081

Casing Description **Backfill Description**



LEGEND

- ▽ Ground Water Level ATD
- ▼ Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

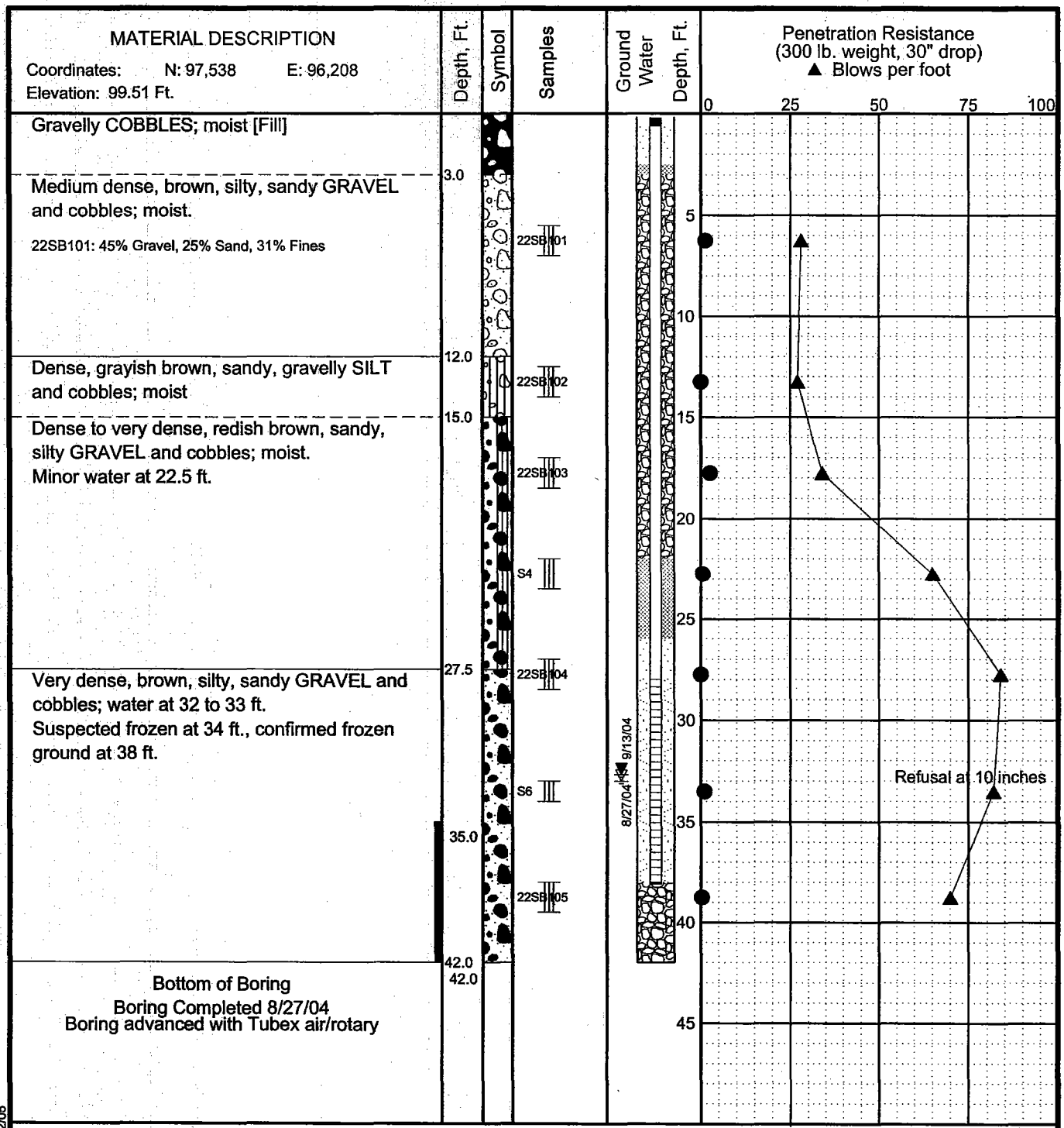
Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

MONITORING WELL 22MW2
CONSTRUCTION DETAIL

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-18b



LEGEND

- * Sample Not Recovered
- 3" O.D. Split Spoon Sample
- B Auger Cuttings
- Frozen
- Surface Seal
- Solid Casing and Annular Seal
- Well Casing and Filter Sand
- Cuttings Backfill
- Ground Water Level At Time Of Drilling
- Static Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 22MW3

June 2005 32-1-16821

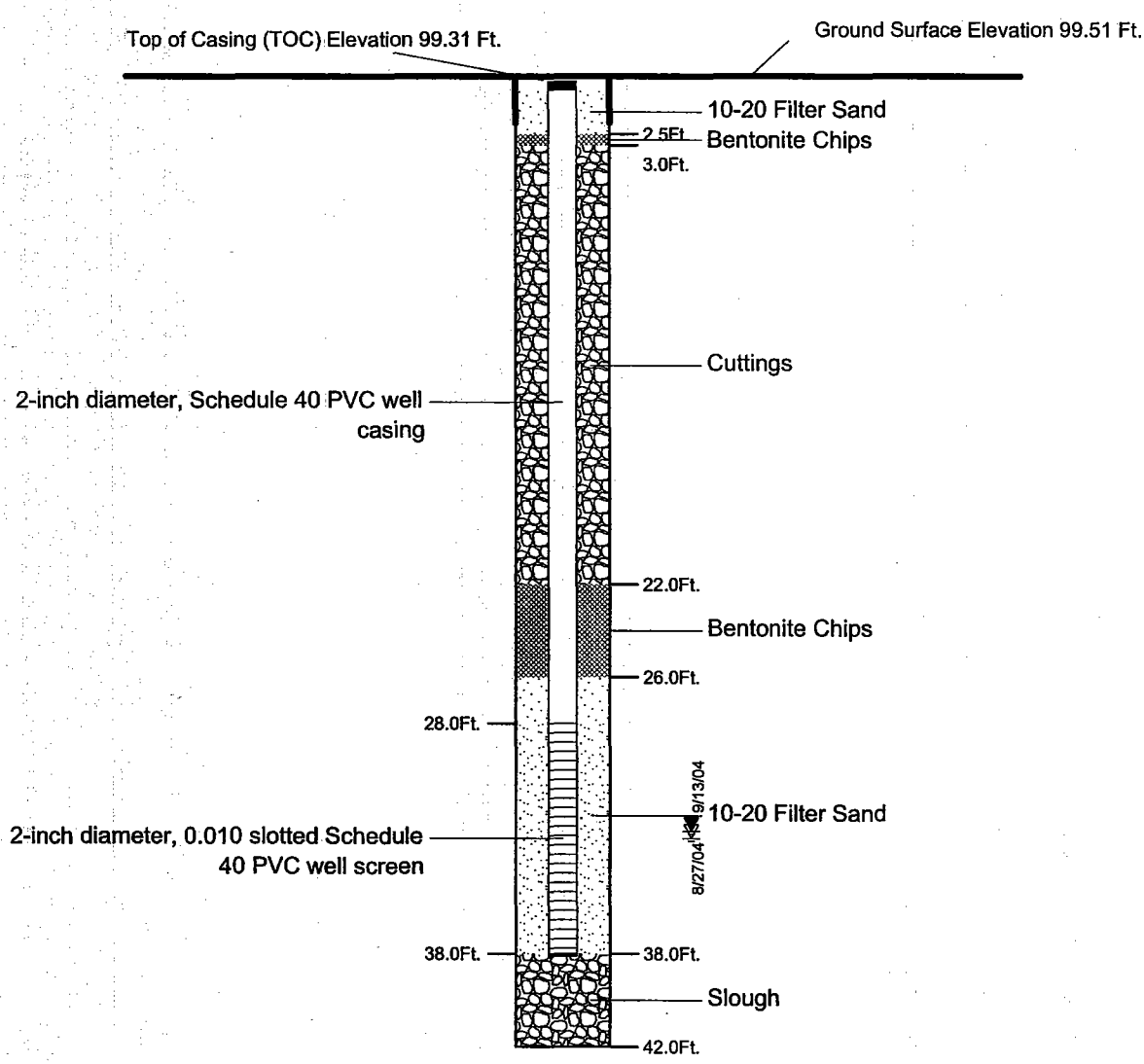
SHANNON & WILSON, INC. Geotechnical and Environmental Consultants

Fig. B-19a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 97,538 E: 96,208

Casing Description **Backfill Description**



LEGEND

- ▽ Ground Water Level ATD
- ▼ Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

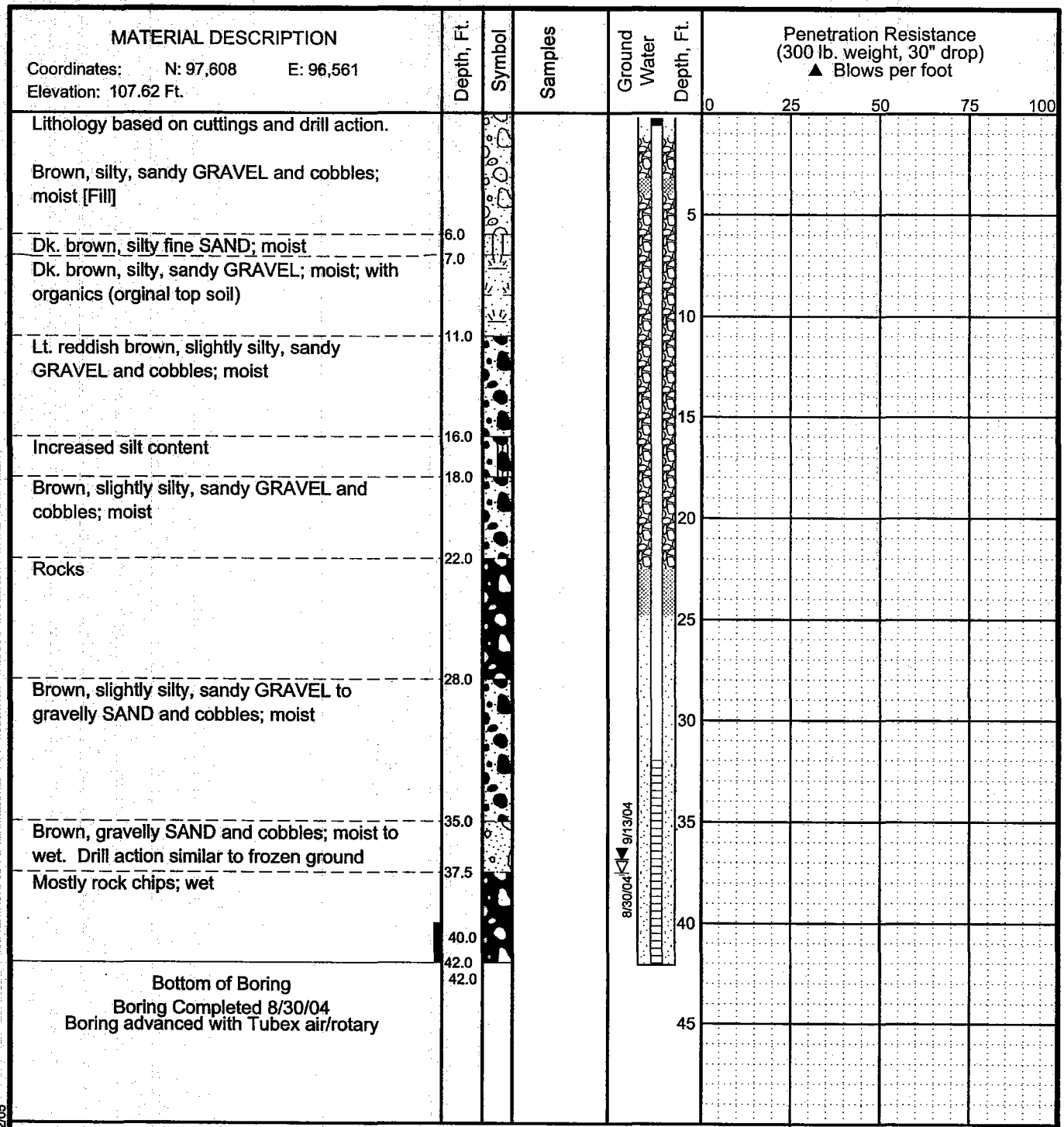
Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

MONITORING WELL 22MW3
CONSTRUCTION DETAIL

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-19b



LEGEND

- * Sample Not Recovered
- 3" O.D. Split Spoon Sample
- B Auger Cuttings
- Frozen
- Surface Seal
- Solid Casing and Annular Seal
- Well Casing and Filter Sand
- Cuttings Backfill
- Ground Water Level At Time Of Drilling
- Static Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 26MW1

June 2005 32-1-16821

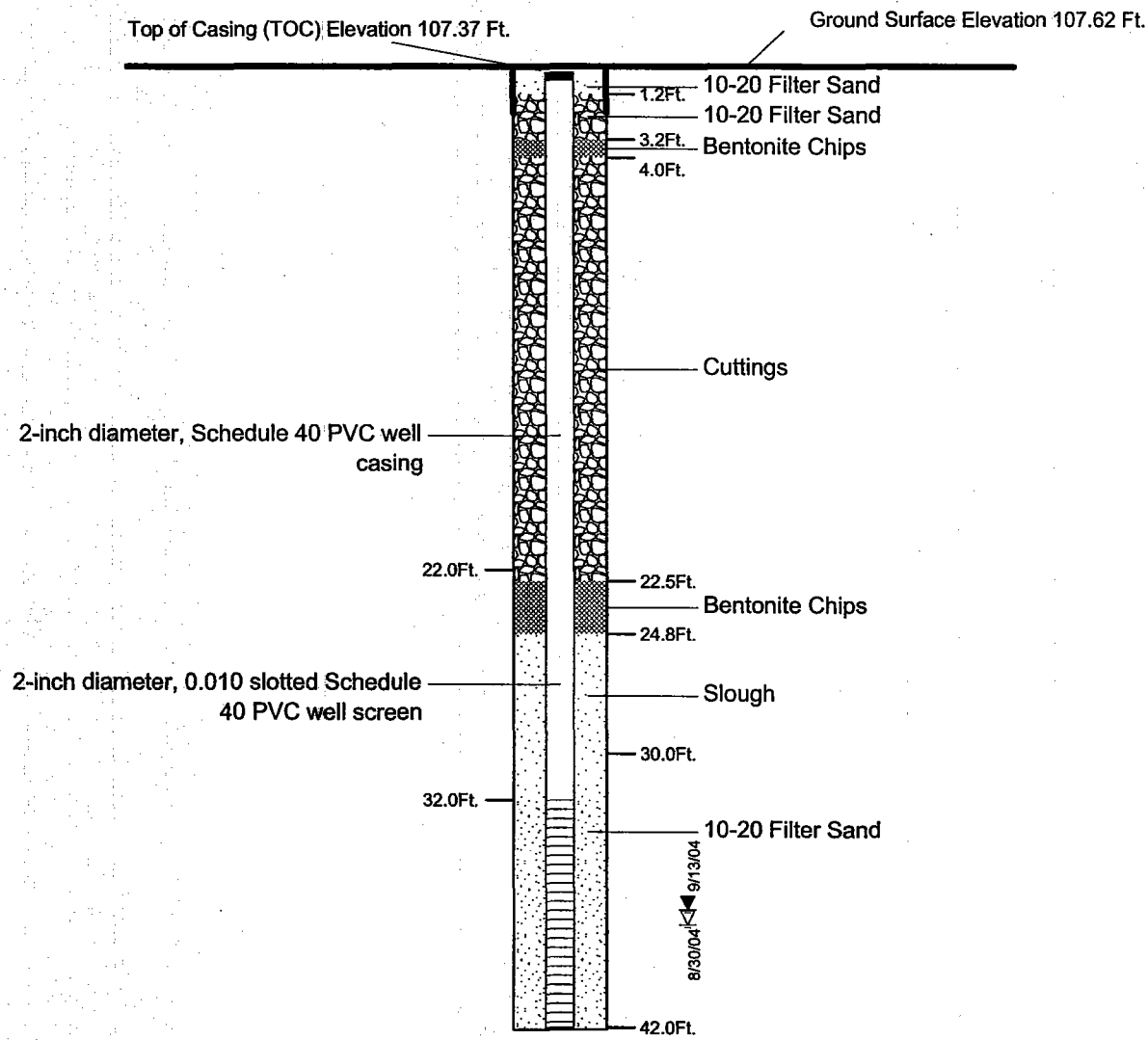
SHANNON & WILSON, INC. Geotechnical and Environmental Consultants

Fig. B-20a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 97,608 E: 96,561

Casing Description **Backfill Description**



LEGEND

- Ground Water Level ATD
- Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

MONITORING WELL 26MW1
CONSTRUCTION DETAIL

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-20b

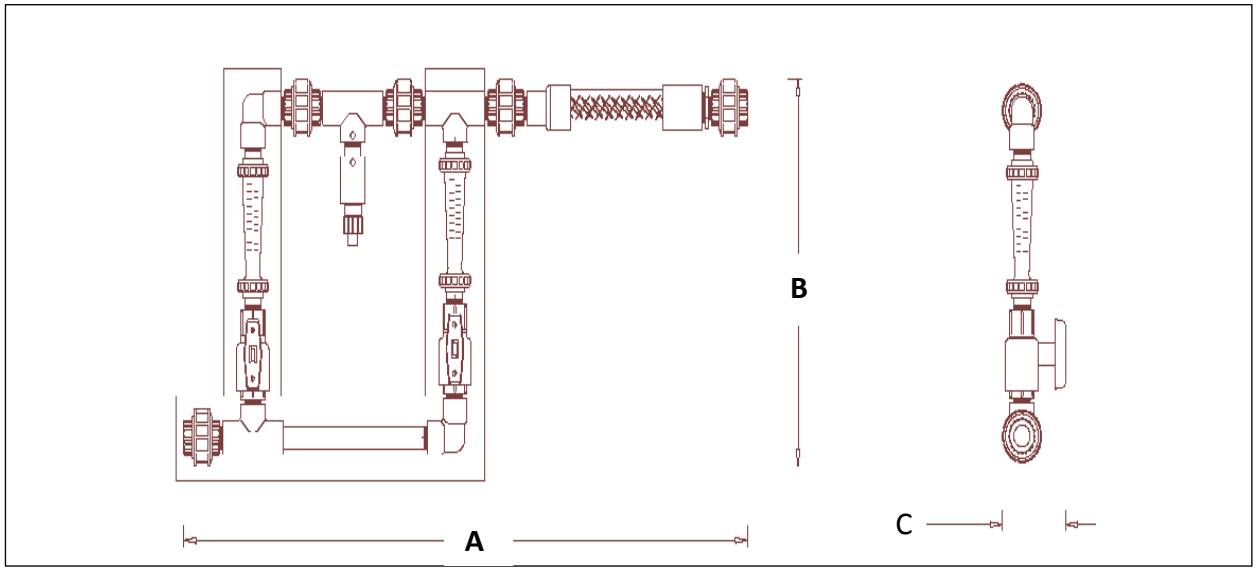
APPENDIX K

Specification Sheets

SPINPRO HydroMizer *1/4" to 2" Models - Water Flow 5 -100 GPM (20 – 375 L/M)*

SPINPRO DEWATERING PRODUCTS & SERVICES

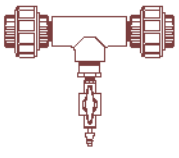
The HydroMizer Polymer Feed System was designed to apply any polymer to a water supply for clarification purposes. We have designed the system so that it is simple to use, easy to clean, and flexible enough to adapt to a wide range of polymer choices and flow requirements. In general, the HydroMizer works well with solution or emulsion polymers of all types, and is unique in its ability to serve low flow applications.



Element Size	A_1 One Element	A_2 Two Elements	B	C
1/4"	26 1/4"	27 1/2"	13 1/4"	3 1/4"
3/8"	27 1/4"	29 1/4"	13 1/4"	3 1/4"
3/4"	27 1/2"	31"	13 1/2"	3 1/4"
1"	29"	33"	16 1/4"	4"
2"	43 1/2"	51 1/2"	27"	5 1/2"

HydroMizer Options are adaptable to individual customer requirements. Most customers find the Sample Valve Assembly to be a convenient way to test their made down polymer. Also, it is possible to use pressure measurements to calculate actual flow velocities through the nozzle and mixer assemblies, to determine system efficiency and whether or not any field changes need to be made to improve performance. The formula needed to calculate flow velocity is given below.

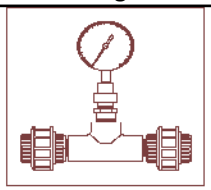
Sample Valve Assembly



Nozzle Flow Velocity

$$\frac{\sqrt{2.31 \times P}}{0.13}$$

Pressure Gauge Assembly



CANADA
46774 Woodspring Place
Chilliwack, BC V2R 3W6

CAN: 604.847.3019
US: 206.497.1469
Fax: 866.347.6752
sales@spinpro-us.com
www-spinpro-us.com

US
4152 Meridian Street
Suite 105-112
Bellingham, WA 98226

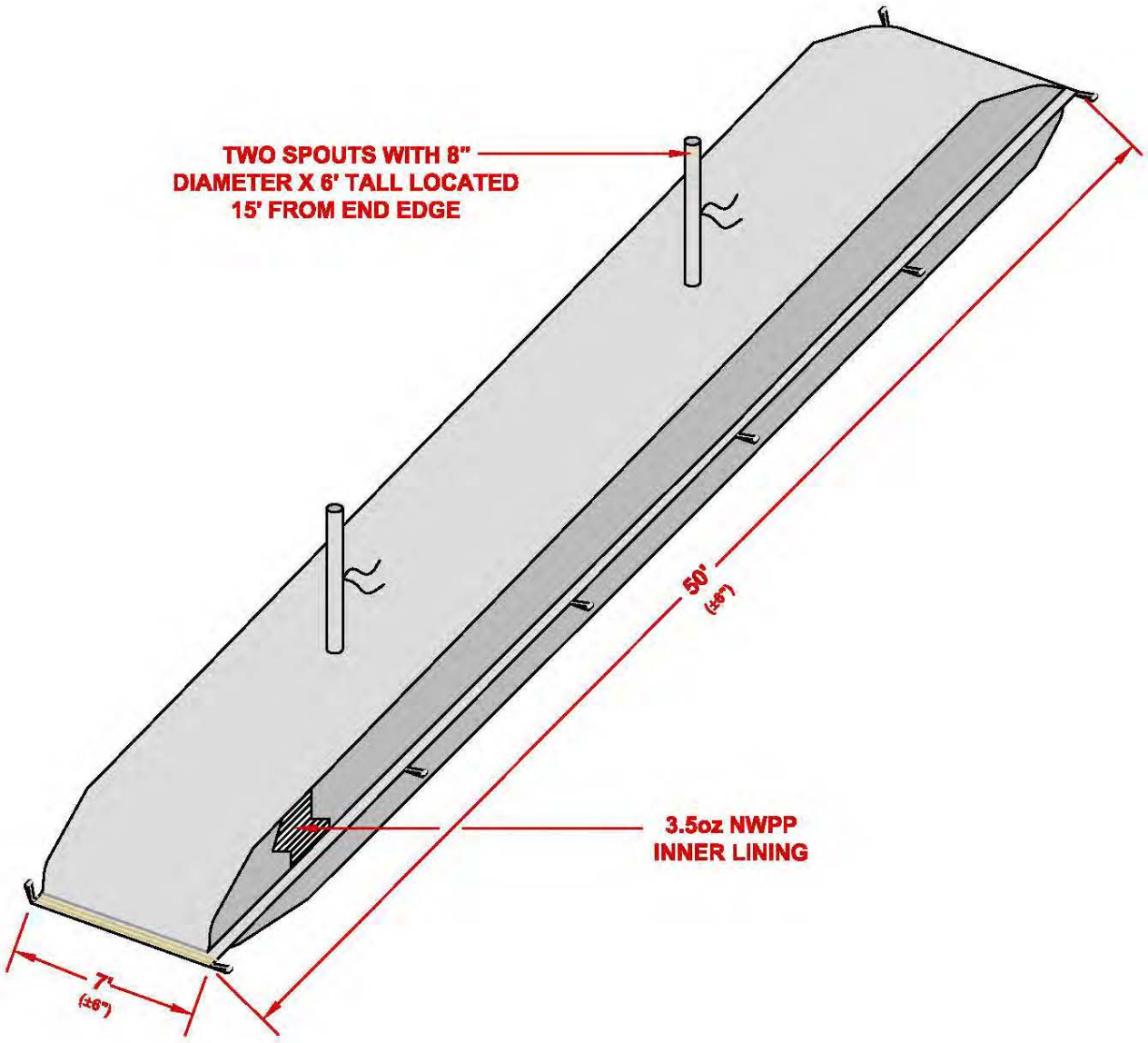
GP1550-46TS2(SP)

MTL'S:

- 4X6 TAN
- 3.5oz NWPP - INNER LINING
- 9000 DENIER THREAD
- 2" SEATBELT WEBBING
- ½" NYLON WEBBING - TIE STRINGS
-(12) 6" LOOPS

THIS DOCUMENT CONTAINS PROPRIETARY DATA OF PACTEC, INC. NO DISCLOSURE, REPRODUCTION, OR USE OF ANY PART THEREOF MAY BE MADE WITHOUT WRITTEN PERMISSION MANUFACTURED UNDER ONE OR MORE USA & WORLDWIDE PATENTS, TRADEMARKS REG'D: 5,776,567-5,110,005-5,098,264-7,073,676-6,086,758-6,306,293-6,554,997-6,562,233

BRITISH PATENT # GB2453305



FINISHED

PacTec, Inc. 1-(800)-272-2832	CUSTOMER NAME BRISTOL ENVIRONMENTAL				
CUSTOMER APPROVAL SIGNATURE _____ DATE _____	PACTEC ITEM CODE– GP1550-46TS2(SP)				
CONTACT INFORMATION NAME _____ PHONE # _____	DESCRIPTION Geo Tube 15' Circumference x 50' Long – 3.5oz NWPP Inner lining				
	SIZE A	SCALE N/A	DWG NO. GP1550-46TS2(SP)		
Proprietary & Confidential ©Copyright 2008. All Rights Reserved.	DRAWN BY DWF	DATE DRAWN 11/16/12	REVISION 0.0	SHEET 1	OF 1

PACTEC

P.O. Box 8069 Clinton, LA 70722 (800) 272-2832 www.pactecinc.com

3.5 oz Non-Woven Polypropylene

Specifications	3.5 oz Non-Woven Polypropylene
Weight	3 oz/yd^2 (101.7 g/m^2)
Puncture Strength	175 lbs (778 N)
Tensile Strength (Warp)	80 lbs (355 N)
Tensile Strength (Weft)	80 lbs (355 N)
Tear Strength (Warp)	30 lbs (133 N)
Tear Strength (Weft)	30 lbs (133 N)
Micron Rating	132
Flow Rate	155 gpm/ft^2 (6,315 lpm/m^2)

The information contained herein is typical and to the best of our knowledge accurate and indicative of the results that can be obtained by testing in an accredited laboratory. The buyer or user of these products is solely responsible for determining whether these products are suitable for any intended use and for its proper installation and use.

P.O. Box 8069 Clinton, LA 70722 (800) 272-2832 www.pactecinc.com

4x6 High Flow Tan/White

Specifications	4 x 6 High Flow Tan/White
Weight	16 oz/yd^2 (542.4 g/m^2)
Pore Size Distribution	O_{60} = 59 microns O_{95} = 350 microns
Water Flow Rate	27.0 gpm/ft^2 (1,100 lpm/m^2)
UV Resistance	80% @ 1200 hrs

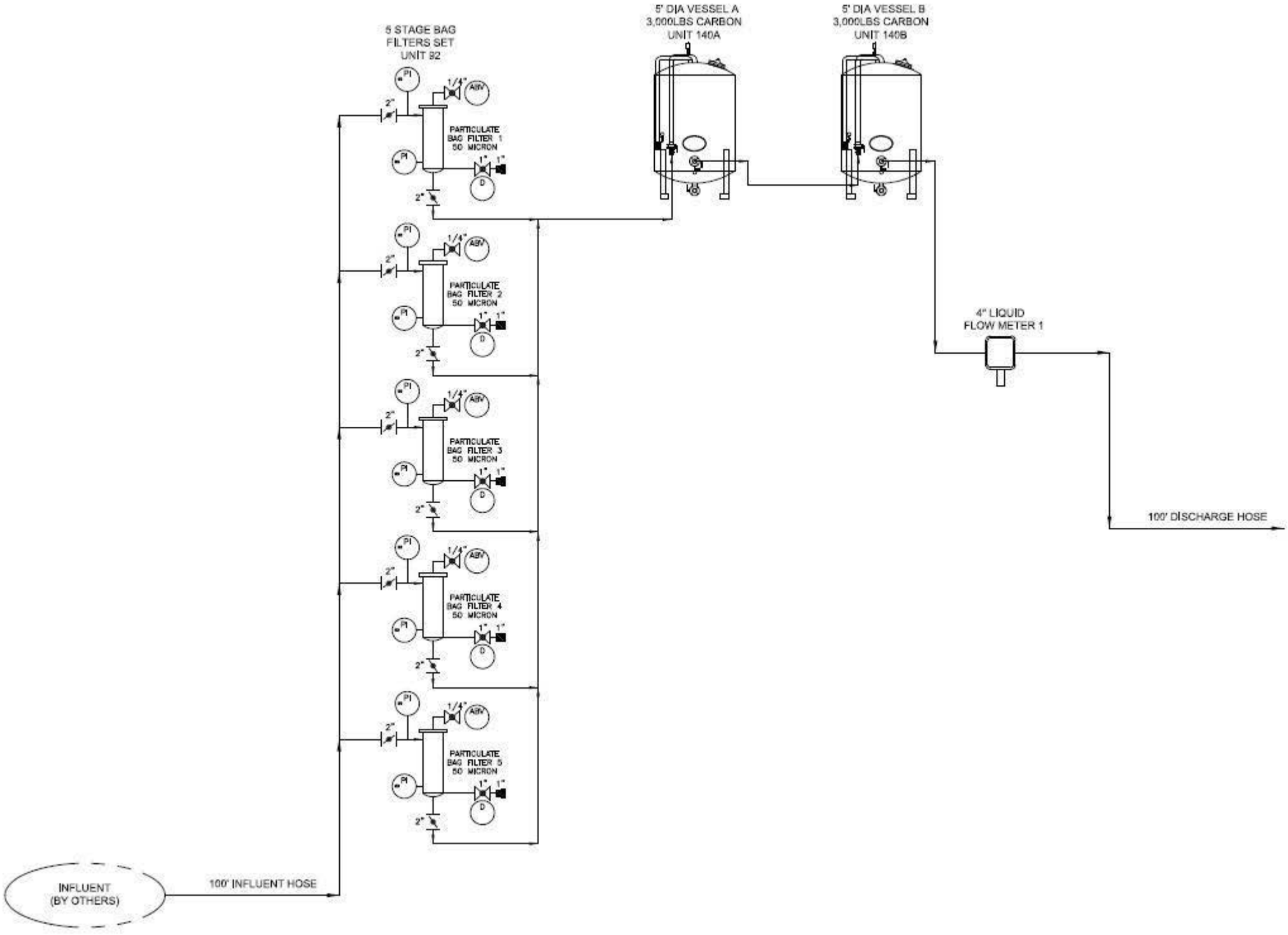
The information contained herein is typical and to the best of our knowledge accurate and indicative of the results that can be obtained by testing in an accredited laboratory. The buyer or user of these products is solely responsible for determining whether these products are suitable for any intended use and for its proper installation and use.



Tech Specs | Additional Information | Compliance & Restrictions | MSDS | Required Accessories | Optional Accessories | Alternate Products | Repair Parts

Item	Bag Filter Housing
Outlet	Bottom
Housing Material	Carbon Steel
Basket	Stainless Steel
Max. Flow GPM	200
Size	2"
Connection	(F)NPT
Dia. (In.)	8-5/8
Max. Pressure (PSI)	150
Max. Water Temp. (F)	300
Filter Bag Size	2
Leg Type	Eye Bolt
Overall Height (In.)	37.41
Height	22"

General Specifications:	Flow ranges from 0 – 300 GPM
Main Equipment:	2 – 3,000 lb media vessels 54" diameter x 8.5' high
Equipment Features:	Stainless Steel slotted screen for water collection & backwash distribution Standard Absorption System Piping including: Air Eliminators to remove air from headspace Schedule 40 carbon steel process piping Cast Iron butterfly valves for process piping 3" Butterfly valves for GAC discharge
Internal Lining:	Macropoxy 646 epoxy where GAC contacts steel for portable water & most liquid applications
External Coating:	High solids epoxy paint
Pressure rating:	75 psig & 14 psig vacuum
Water Hose Connection:	Male camlocks 2" inlet fitting
Air Hose Connection:	¾" Chicago hose connection
Process Pipe Connection:	3" Camlock
Maintenance Access:	2- 14" x 18" manway on top and side
Weight:	2300 lbs. empty / 8300 lbs. Operating weight
Options:	Manifold for between vessels
Power Requirements:	None


5 STAGE BAG
FILTERS SET
UNIT 92
PARTICULATE
BAG FILTER 1
50 MICRON
PARTICULATE
BAG FILTER 2
50 MICRON
PARTICULATE
BAG FILTER 3
50 MICRON
PARTICULATE
BAG FILTER 4
50 MICRON
PARTICULATE
BAG FILTER 5
50 MICRON
5' DIA VESSEL A
3,000LBS CARBON
UNIT 140A
5' DIA VESSEL B
3,000LBS CARBON
UNIT 140B
4" LIQUID
FLOW METER 1
100' DISCHARGE HOSE
INFLUENT
(BY OTHERS)
100' INFLUENT HOSE

APPENDIX L

Site 28 Technical Memorandum Addendum

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ACRONYMS AND ABBREVIATIONS

AST	aboveground storage tank
ASTM	American Society for Testing and Materials
Bristol	Bristol Environmental Remediation Services, LLC
DRO	diesel range organics
DU	decision unit
GRO	gasoline range organics
LPAH	low molecular weight polynuclear aromatic hydrocarbons
MI	*MULTI INCREMENT*
MOC	Main Operations Complex
NE Cape	Northeast Cape
PAHs	polynuclear aromatic hydrocarbons
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
RRO	residual range organics
TCLP	Toxicity Characteristic Leaching Procedure
USACE	US Army Corps of Engineers
VOC	volatile organic compounds

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1.0 INTRODUCTION

The Site 28 Technical Memorandum is an addendum to the *2013 Northeast Cape Hazardous, Toxic, and Radioactive Waste Remedial Action Report* (Bristol, 2014); it describes site deconstruction, and sediment containerization, and waste transportation to offsite disposal facilities. In the following pages Bristol Environmental Remediation Services, LLC (Bristol) discuses geotechnical sampling, *MULTI INCREMENT*[1] (MI) soil sampling, waste characterization sampling procedures, and analytical results. Bristol performed all Site 28 work for the US Army Corps of Engineers Alaska District (USACE) under Contract No. W911KB-13-C-0004.

1.1 SITE HISTORY

Saint Lawrence Island is located in the Bering Sea, near the territorial waters of Russia, approximately 135 air miles southwest of Nome, Alaska, at 63 degrees and 20 minutes north latitude and 168 degrees and 59 minutes west longitude (Figure 1). The project site, which originally encompassed 4,800 acres located near Northeast Cape (NE Cape), falls between Kitnagak Bay to the northeast, Kangighsak Point to the northwest, and the Kinipaghulghat Mountains to the south (Figure 2). A U.S. Air Force aircraft control and warning station was constructed at the site during 1950 and 1951 and was activated in 1952. In 1954, the U.S. Air Force constructed a White Alice Communications System station, composed of four large parabolic antennas and a building housing the electronic equipment. The facility functioned as a surveillance station, providing radar coverage for the Alaskan Air Command and, later, for the North American Air Defense Command. It was part of an Alaska-wide early warning system constructed to reduce potential vulnerability to bomber attacks across the polar region.

[1] *MULTI INCREMENT*® is a registered trademark of EnviroStat, Inc.

The White Alice and aircraft control station operations were terminated in 1969 and 1972, respectively. The majority of the military personnel were removed from the North East Cape (NE Cape) site by the end of 1969. The NE Cape buildings and the majority of furnishings and equipment were abandoned in place due to the high cost of off-island transport. In 2000, the White Alice Station was reclassified as a formerly used defense site-eligible property, and the USACE included the area in the ongoing cleanup program for NE Cape.

1.2 SITE 28 DESCRIPTION AND BACKGROUND

The Site 28 drainage basin is north of the Main Operations Complex (MOC) and drains north into the Suqitughneq River (Figure 3). This site contains variable surface features consisting of wetlands, rolling tundra, ponds, and flowing streams. Bulk storage tanks from the MOC released fuel into the site; surface water runoff and groundwater seeps from the MOC gravel pad drain into the tundra and wetland area. The general area contains subsurface, discontinuous permafrost, which significantly impacts the appearance of surface topography.

Site 28 was impacted by historical MOC fuel releases in addition to smaller spills and releases from other sources such as electrical transformers, 55-gallon drums and miscellaneous military activities (USACE, 2009). Soil staining has been observed near the head of the eastern drainage and at the former aboveground storage tank (AST) locations at Site 11. Sediments in the upper portion of the Site 28 drainage basin will produce sheen when disturbed. Sampling activities have been conducted periodically at the drainage basin between 1994 and 2013. The primary contaminants of potential concern in sediment are chromium; lead; zinc; polychlorinated biphenyls (PCBs); polynuclear aromatic hydrocarbons (PAHs), including 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluoranthene, fluorene, naphthalene phenanthrene, pyrene, and total low

molecular weight PAHs (LPAHs); Diesel Range Organics (DRO), and residual range organics (RRO).

Contaminants of concern that exceed site-specific cleanup levels for sediment in the drainage area following 2013 sediment removal activities include 2-methylnaphthalene, acenaphthene, fluorene, naphthalene, phenanthrene, total LPAHs, DRO and RRO.

Surface water samples were collected from the drainage basin in 1994, 1996, and 2001. According to the Decision Document (USACE, 2009), concentrations of DRO, total recoverable petroleum hydrocarbons, PCBs, and lead were elevated in 1994. Surface water samples collected in 2001 were analyzed for DRO, RRO, and PCBs (the samples were not analyzed for lead). DRO was detected at concentrations ranging from 0.39 to 2.3 milligrams per liter; PCBs and RRO were not detected. The most heavily contaminated areas of the drainage basin were found immediately below the former locations of two culverts, located in the western and middle drainages. These culverts drained from the MOC into the southern extent of Site 28.

In 2011, Bristol sampled sediment and soil from 11 transects placed between the southern end of Site 28 (near the MOC) and the Suqitughneq River to delineate the extent and magnitude of Site 28 contamination. Transect lines were placed to include areas of historical contamination and were analyzed to gain a general understanding of the potential contaminants in soil and sediment throughout the drainage. This sampling event was not a full characterization of the drainage system, but meant to fill data gaps and increase understanding of potential contaminants in the drainage. Results from the 2011 sampling event showed DRO, RRO, toluene, ethylbenzene, total xylenes, PAHs, PCBs, arsenic, cadmium, chromium, lead, and selenium present in the sediment and soil. The Site 28 Technical Memorandum (Bristol Engineering Services Corporation, 2012) presents detailed information from the 2011 Site 28 investigation.

Bristol performed a sediment mapping and sampling effort within Site 28 in July, 2012 to fill data gaps and further delineate the extent and magnitude of contaminated sediment at the site. Sediment was defined as all loose material (mineral and organic) except for that which is actively growing vegetation or is part of the vegetative mat. The Site 28 Technical Memorandum (Bristol Engineering Services Corporation, 2013) presents detailed information from the 2012 Site 28 investigation.

Bristol removed approximately 244 bank cubic yards of sediment from Site 28 in 2013. Confirmation sediment samples indicate that 2-methylnaphthalene, acenaphthene, fluorene, naphthalene, phenanthrene, total LPAHs, DRO and RRO remain at concentrations that exceed cleanup levels. Field personnel containerized sediment in geotextile collection tubes to allow for water to leach out. Eleven tubes were placed in three 30- by 60-foot 20,000-gallon water containment units and left over winter for further dewatering. The tubes were left in place to take advantage of the extra dewatering which results from the fall, winter, and spring freeze and thaw cycles. The freeze-thaw cycle forces additional water out of the sediment contained within the tubes.

2.0 2014 FIELD PROCEDURES

Bristol returned to the site in 2014 to sample the sediment within the tubes, containerize the tubes and sediment, and ship it off site for disposal. The soil from the work pad at Site 28, upon which the containments and sediment tubes were placed, was MI sampled following site deconstruction to assess if sediment removal activities impacted the site. Photographs from the Site 28 sediment removal effort and overwintering are presented in Attachment 1.

2.1 GEOTECHNICAL AND WASTE CHARACTERIZATION SAMPLING PROCEDURES

Bristol first mobilized to the site on June 10, 2014 to conduct a 5-day sampling exercise at Site 21. During this time, Bristol inspected Site 28 and collected waste characterization and geotechnical samples. Field personnel collected Geotechnical soil samples from two of the tubes in accordance with American Society for Testing and Materials (ASTM) D2216 (moisture content), ASTM D7263 (density) and ASTM D422 (sieve test). A waste characterization sample was also collected from one of the tubes for analysis of DRO, RRO, gasoline range organics (GRO), Toxicity Characteristic Leaching Procedure (TCLP) PAHs, TCLP PCBs, TCLP volatile organic compound (VOCs), Resource Conservation and Recovery Act (RCRA) metals, nickel, vanadium and zinc. Geotechnical samples were sent to Alaska Testlab in Anchorage, Alaska for analysis; waste characterization samples were submitted to TestAmerica Laboratories, Inc., in Tacoma, Washington. Results are presented in Section 3.2.

Field personnel used brass sleeves to collect bulk density and moisture content samples. Two tubes were selected for sample collection and cut open to expose the sediment inside. Each brass sleeve was hammered into the upper 12 inches of exposed sediment using a wood block and hammer. Once the brass sleeve was fully inserted into the sediment, it was removed and both ends secured with a plastic cap, a plastic bag, and duct tape.

Bristol used a disposable scoop to collect sediment and containerized it in a Ziploc bag.

One waste characterization sample was collected into one 4-ounce preserved jar and two 8-ounce unpreserved jars using a disposable spoon. The sediment samples were analyzed for DRO, RRO, PAHs, TCLP PCBs, TCLP VOCs, RCRA metals, nickel, vanadium and zinc. Bristol submitted the waste characterization samples to TestAmerica Laboratories, Inc., in Tacoma, Washington. Results are discussed in Section 3.2.

2.2 GEOTEXTILE TUBE CONTAINERIZATION AND SITE DECONSTRUCTION

The geotextile tubes remained on the Site 28 pad until Bristol returned to Northeast Cape in July, 2014. When the crew returned to remove and containerize the tubes, the sides of the water containments were down and there was very little water remaining inside. The crew used an excavator to place the tubes in open-top shipping containers. Minor amounts of sediment and soil that remained in the containment were also loaded into the shipping containers. Personnel swept the material into the bucket of a John Deere 544 loader, which transferred the material into the open-top containers. After all the material had been swept off, the water containments were folded up and stored in shipping containers.

After removing the tubes and containments, Bristol collected MI soil samples from the entire Site 28 work pad area to investigate whether or not Site 28 activities had impacted the soil. Sample results show no contamination above or approaching cleanup levels (results are discussed in Section 3.5).

Two open-top shipping containers containing 40.2 tons of sediment were shipped to Columbia Ridge Landfill in Arlington, Oregon for disposal.

2.3 MI SOIL SAMPLING AT THE SITE 28 WORK PAD

Bristol collected MI soil samples at the Site 28 work pad in 2012, before sediment removal work began, and again in 2014, once all work was complete. The area of the work pad

(and subsequent MI decision unit [DU]) was increased during sediment removal activities to accommodate additional water containments that were added as work progressed. The DU originally established and sampled in 2012 was contained completely within the larger DU that was sampled in 2014.

The DU sampled in 2014 measured 58 feet wide by 170 feet long comprising an area 9,860 square feet. Thirty-four incremental cells within the DU each measured 10 feet wide by 29 feet long. The DU was sampled in triplicate and the soil was shipped to TestAmerica in Tacoma to be analyzed for PAHs, BTEX, DRO, RRO, DRO and RRO with silica gel extraction, PCBs, RCRA 8 metals, nickel, vanadium and zinc. Bristol collected nonvolatile samples by gathering one measured aliquot of soil from each incremental unit, as described in *MULTIINCREMENT Sampling Standard Operating Procedures BERS-14* (Appendix G of the *2013 Remedial Action Report*).

Volatile samples were collected differently. Individual aliquots consisting of 2 grams of soil were collected from each cell and placed into a measured amount of methanol in order to achieve a 1:1 ratio of soil to methanol. After all collected aliquots were placed into methanol, a volume of no more than 30 milliliters of the methanol was transferred, by syringe, from the jar with the soil and methanol to a 40-millititer vial, which was then shipped to TestAmerica for GRO and BTEX analysis. A conditional approval with sampling technique description for MI volatile sampling can be found in Appendix C of the *2013 Remedial Action Report* (Bristol, 2014). The locations of the DUs and an overview of the Site 28 work pad are shown on Figure 4.

2.4 WASTE DISPOSAL

Two open-top shipping containers containing a total of 38 tons of sediment were shipped to Columbia Ridge Landfill in Arlington, Oregon for disposal. Certificates of Disposal and copies of the manifests are included in Attachment 2.

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3.0 SITE 28 SAMPLING RESULTS

3.1 GEOTECHNICAL SAMPLE RESULTS

Two samples, 12NC28WCSD02 and 12NC28WCSD03, were collected for geotechnical analysis and submitted to Alaska Testlab in Anchorage, Alaska to be tested for density, moisture content, and sieve analysis. The results of the geotechnical testing on the sediment contained within the geotextile tubes are available in Attachment 3. Moisture content ranged from 52 to 59 percent on the two samples. Sieve analysis revealed that 50 percent of the material was able to pass through the #100 sieve (0.150 millimeter particle size). The smallest sieve tested was the #200 sieve (0.090 millimeter or 90 microns). A total of 41.6 percent of particles tested from sample 12NC28WCSD02 passed through the #200 sieve. All material tested passed through the #4 sieve, which corresponds to a particle size of 4.75 millimeter.

3.2 WASTE CHARACTERIZATION RESULTS

Bristol collected one waste characterization sample, 13NC28WCSD01, from the sediment in the geotextile sediment collection tubes located at the Site 28 pad. The sample was analyzed for DRO, RRO, PAHs, PCBs, GRO, TCLP VOCs and RCRA 8 metals plus nickel, vanadium and zinc. None of the analytical results were above regulatory limits.

Waste characterization results are presented in Table 1, available in Attachment 4.

3.3 MI SAMPLING RESULTS

MULTI INCREMENT soil samples were collected from the Site 28 work pad in triplicate and analyzed for PAHs, BTEX, DRO, RRO, DRO and RRO with silica gel extraction, PCBs, RCRA 8 metals, nickel, vanadium and zinc. None of the analytical results were above cleanup levels or evaluation criteria. The MI sampling results are presented on Table 2, available in Attachment 4.

3.4 CHEMICAL DATA VERIFICATION

The analytical results for the samples collected from the Site 28 pad and sediment collection tubes were reviewed by Bristol personnel for completeness and accuracy. The Alaska Department of Environmental Conservation checklist and the *Chemical Data Verification Report* are provided in Attachment 5.

4.0 CONCLUSIONS

Bristol collected and analyzed waste characterization sample results and properly disposed Site 28 waste at the Columbia Ridge Landfill in Arlington, Oregon. The MI soil sample results indicate that sediment removal activities, including water containment and treatment and the overwintering of geotextile sediment dewatering tubes did not have any significant impacts on the soil located at the Site 28 work pad. Bristol has deconstructed the site and completed all sediment removal activities at Site 28.

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5.0 REFERENCES

Bristol Engineering Services Corporation. (2013). *Site 28 Technical Memorandum: Northeast Cape HTRW Remedial Actions* (revision 1). Contract No. W911KB-06-D-0007. F10AK096903_03.10_0021_a.

Bristol Engineering Services Corporation. (2012). *Northeast Cape HTRW Remedial Actions* (revision 1). Contract No. W911KB-06-D-0007 abd Contract No. W911KB-12-C-003. F10AK096903_07.08_0505_a 200-1e.

US Army Corps of Engineers Alaska District. (2009). Decision Document. Hazardous, Toxic, and Radioactive Waste (HTRW) Project #F10AK096903 Northeast Cape Formerly Used Defense Site St. Lawrence Island, Alaska.

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FIGURES

Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-1-RP.DWG - Layout: 8.5 X 11
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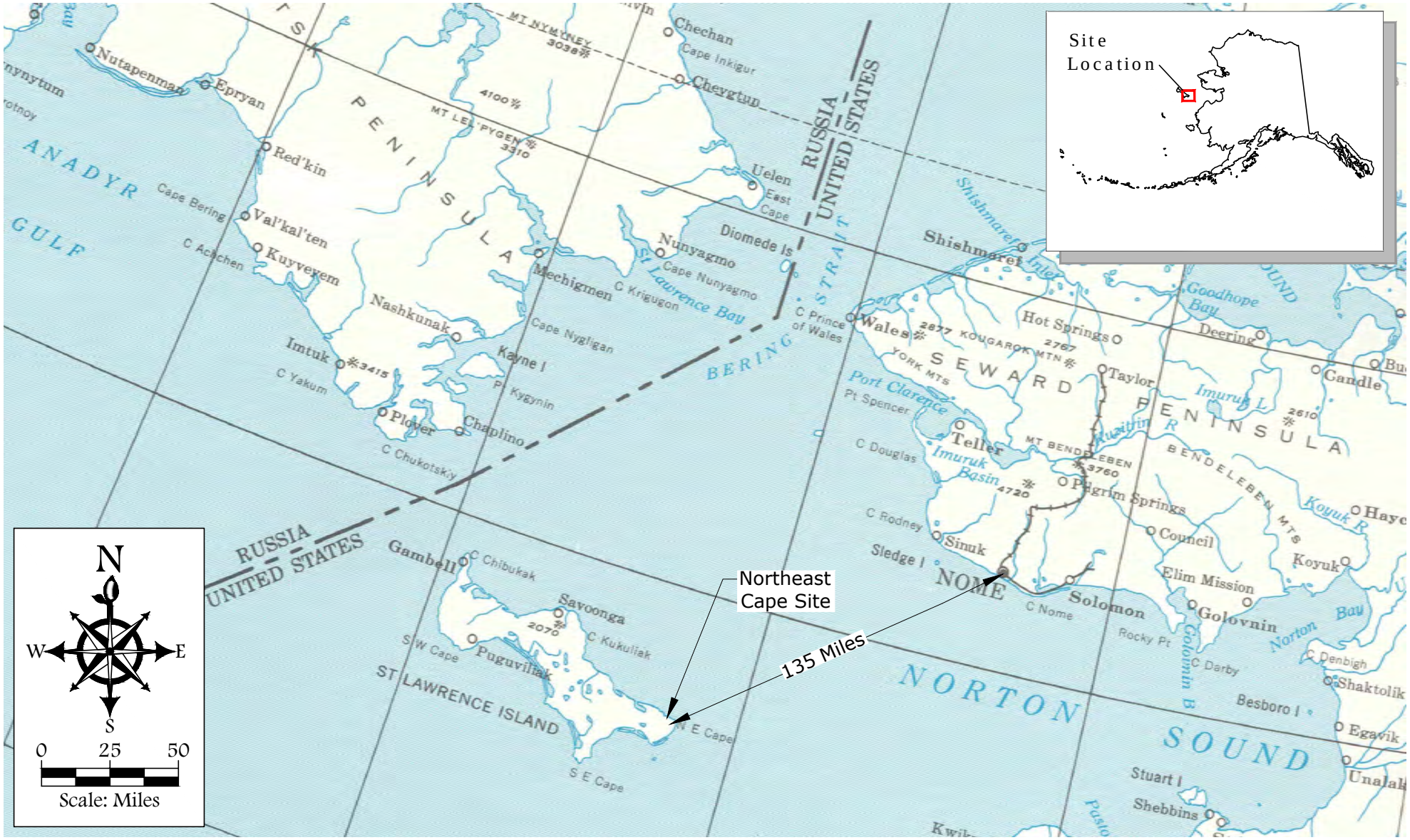


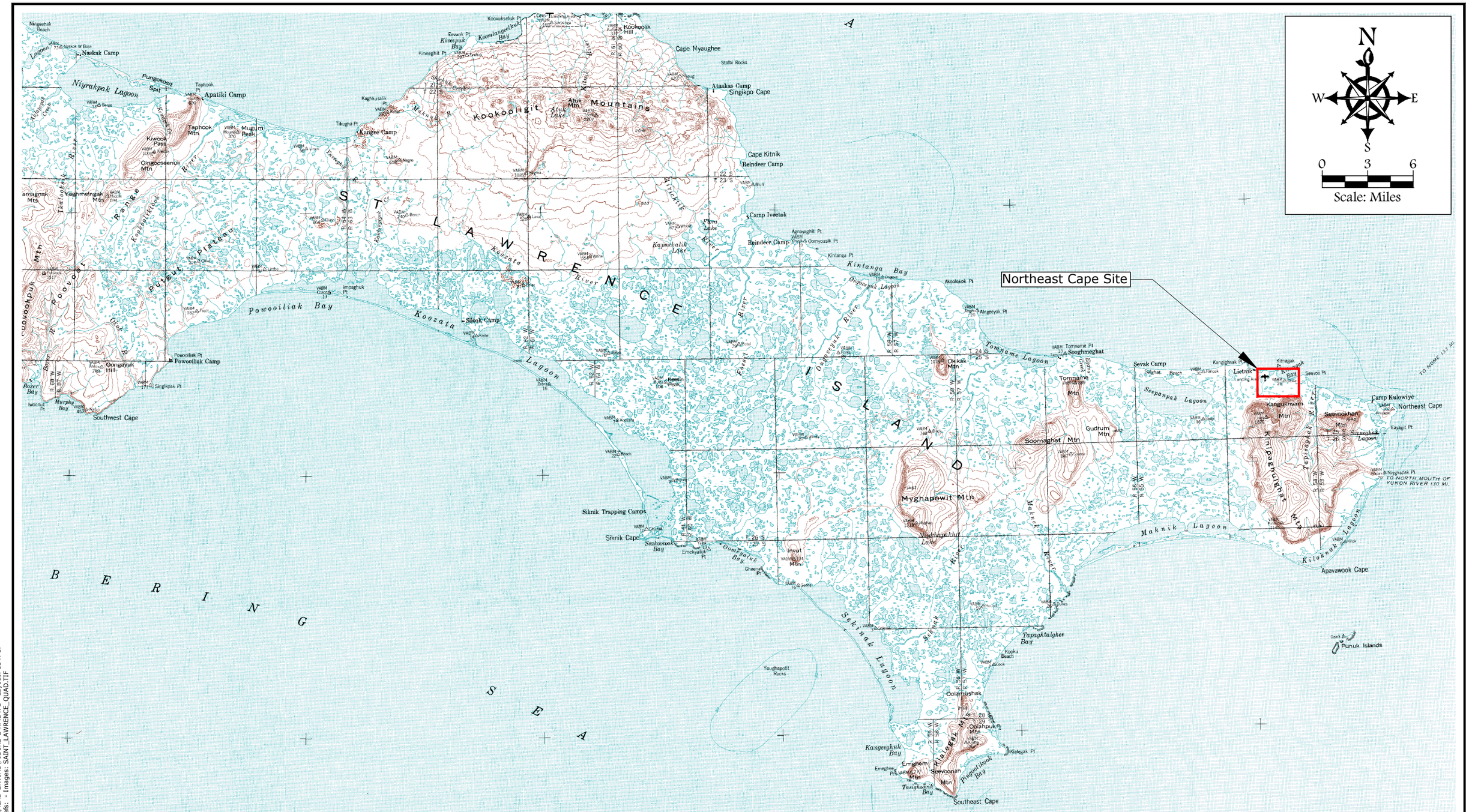
Note:
HTRW hazardous, toxic, and radioactive waste

Source:
USGS National Atlas Sheet Number 42-43

FIGURE 1
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
VICINITY MAP

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM:	N/A
PROJECTION:	N/A
Project No.	34130068
DATE	11/22/2013
DWN.	NAP
SCALE	1" = 50 mi
APPRVD.	RJ



Note:
HTRW hazardous, toxic, and radioactive waste

FIGURE 2
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
LOCATION MAP

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 27
PROJECTION: UTM 2N M
Project No. 34130068

DATE 12/31/2013
DWN. NAP
SCALE 1" = 6 mi
APPRVD. RJ

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N
W E
S
0 600 1200
Scale: Feet

Barge Landing Area
Medical Facility
Temporary Construction Camp
Cargo Beach Staging Area
Over Winter Equipment Staging Area
Bulk Bag Staging Area at Site 6
Sugitughneq River
Site 28-Drainage Basin
Site 7 Cargo Beach Landfill
Site 8-POL Spill
Water Withdrawal Area
Hazardous Waste Accumulation Point
Site 13-Power and Heat Building
Site 9 Housing and Operations Landfill
Site 21-Wastewater Treatment Tank
Fuel Storage/Containment Area
Former Building 98 Foundation
MOC
Bulk Bag Staging Area
Mechanic Shop/Container Storage Area
Site 31-White Alice Site
Over Winter Equipment Staging Area
Roofing Tar Area
Borrow Source

LEGEND

HTRW	Hazardous, Toxic, and Radioactive Waste
MOC	Main Operations Complex
POL	Petroleum, Oil, and Lubricants

NOTE

1. Drawing Adapted From Montgomery Watson File Titled NECAPE.DWG, Date 05 June 2001. Based on Resurvey Performed by ECO-LAND, LLC, July 2009

FIGURE 3
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
PROJECT WORK SITES

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NA
PROJECTION: NA
Project No. 34130068

DATE 11/27/12
DWN. MTG
SCALE SHOWN
APPRVD. GJ

Drawing: O:\JOBS\34140087 NE CAPE 2014\ACAD-ENVIRO\DWGS\FIGURE-3-XX.DWG - Layout: FIG3-NOV12
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Drawing: O:\JOBS\34130068 NE CAPE 2013\ACAD-ENVIRO\FIGURE-4-XX.DWG - Layout: JOB#-FIG#-DATE
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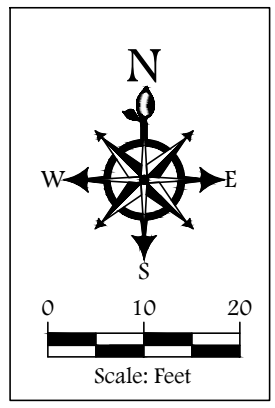
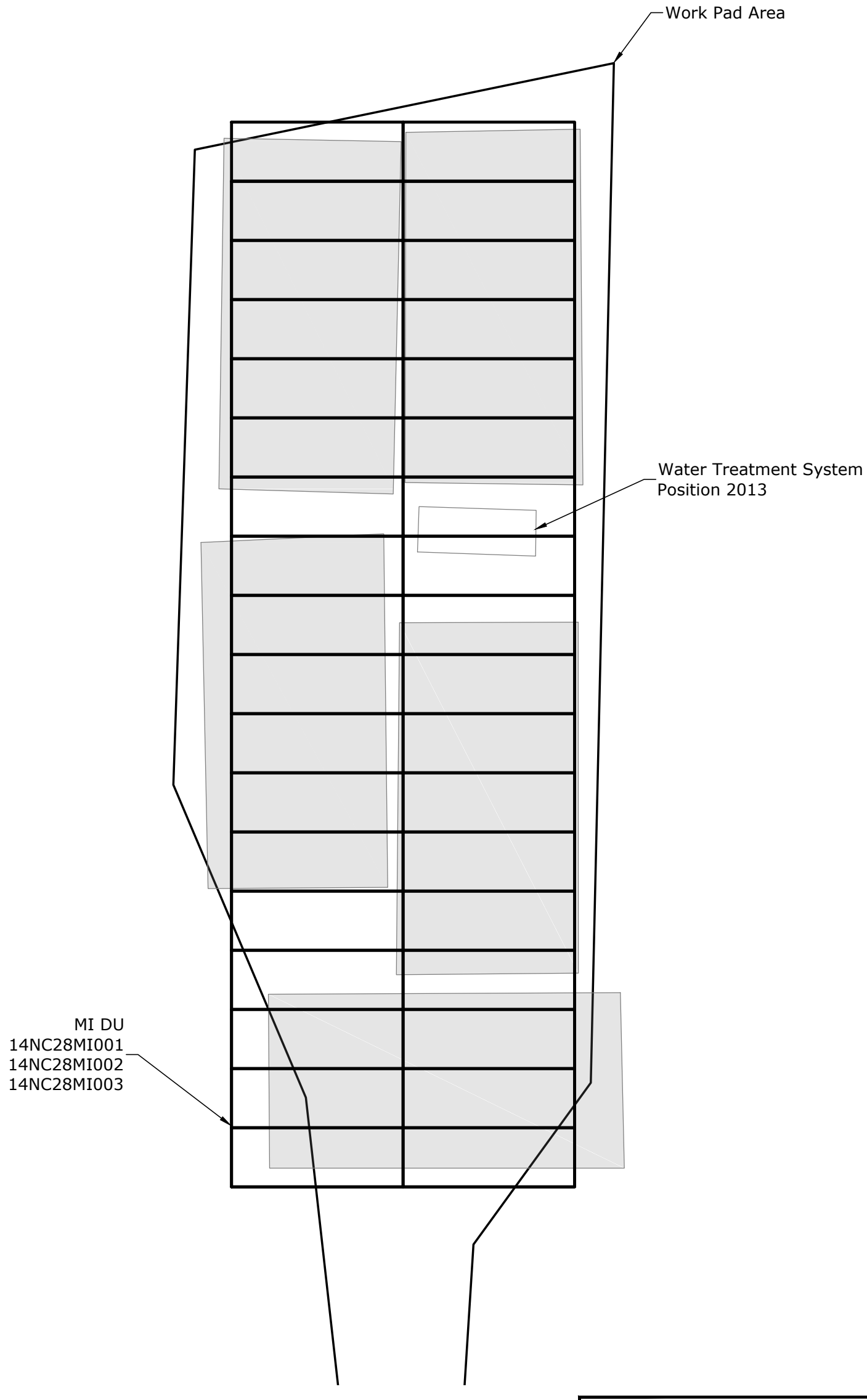




Legend

MULTI INCREMENT® Decision Unit (MI DU)

Water Containment Position 2013

FIGURE 4
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NE CAPE HTRW REMEDIAL ACTIONS
WORK PAD MI DU

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NA
PROJECTION: NA
PROJECT NO. 34130068

DATE 12/15/2014
DWN. NAP
SCALE 1" = 20'
APPRVD. EB

ATTACHMENT 1

Photographic Log

SITE 28 PAD PHOTOGRAPH LOG



Photograph 1: Site 28 pad with geotextile tubes and downed containments.
Date: June 13, 2014

Direction: North

Photographer: R. James



Photograph 2: Site 28 dredged sediment in geotextile tube.
Date: June 14, 2014

Direction: Close-up

Photographer: R. James



Photograph 3: Site 28 dredged sediment in geotextile tube.
Date: June 14, 2014

Direction: Close-up

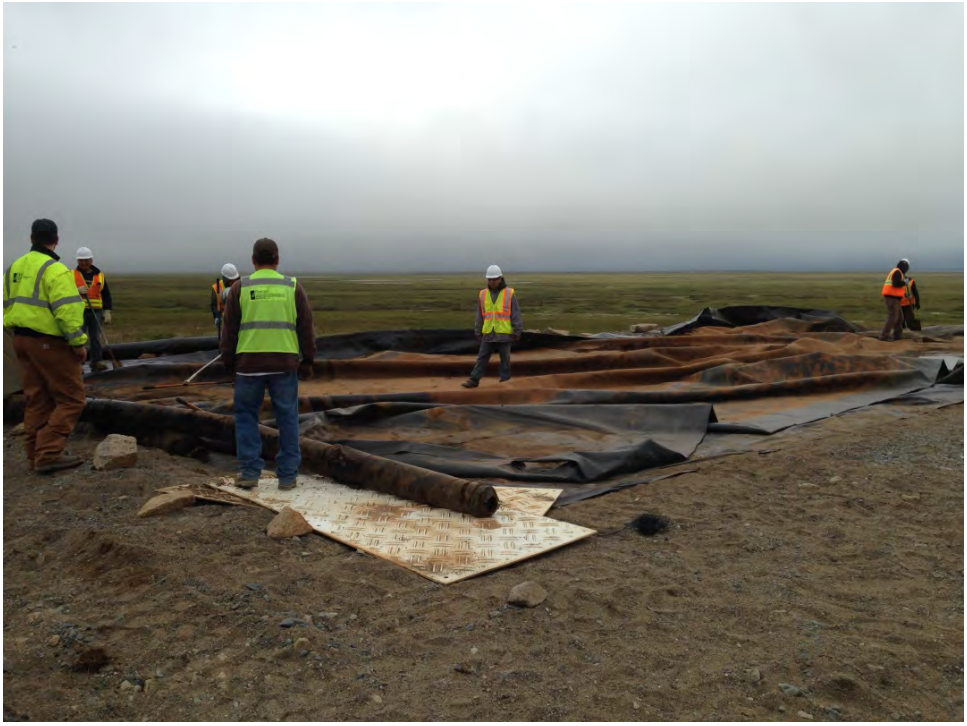
Photographer: R. James



Photograph 4: Site 28 geotextile tubes in open top shipping container.
Date: July 21, 2014

Direction: Close-up

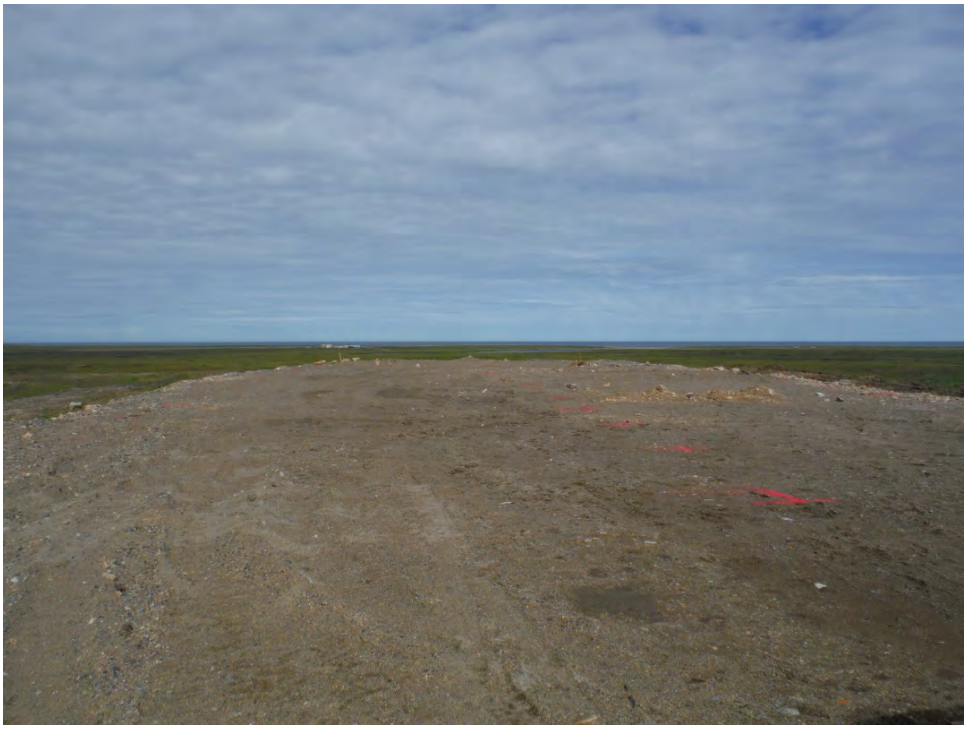
Photographer: R. James



Photograph 5: Site 28 pad containment clean up.
Date: July 21, 2014

Direction:

Photographer: R. James



Photograph 6: Site 28 pad multi increment grid. Direction:
Date: August 9, 2014 Photographer: R. James

ATTACHMENT 2

Waste Documentation

230160

Columbia Ridge
18177 Cedar Springs Lane
Arlington, OR, 97812
Ph: (541) 454-2030

Web Tckt Reprint
Ticket# 242444

Customer Name BRISTOL CONSTRUCTION BRISTOL
Ticket Date 12/14/2014
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Destination
Profile 110831ORL (PCS)
Generator OR-US ARMY ENGINEER DISTRICT US ARMY ENGINEER DISTRICT AK

Carrier NONE No Carrier
Vehicle# NONE
Container
Billing # 0001102
Manifest
PO

Volume

	Time	Scale	Operator	Inbound	Gross
In	12/01/2014 11:43:00	MANUAL WT	vmckinne		Tare
Out	12/14/2014 11:43:00	MANUAL WT	vmckinne		Net
					Tons

Comments ONE CERTIFICATE OF DISPOSAL PER BILLLING PERIOD.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1 CD RGC $35-Cert of 100		1	Each				

WASTE MANAGEMENT

COLUMBIA RIDGE LANDFILL & RECYCLING CENTER
18177 Cedar Springs Lane
Arlington, OR 97812
541 454 2030
541 454 3312 Fax

December 16, 2014

Bristol Environmental
111 W. 16th Ave. STE 301
Anchorage, AK 99501-6206

CERTIFICATE OF DISPOSAL

Waste Management, Inc. dba Columbia Ridge Landfill has received NON HAZARDOUS Waste material via LaFarge Facility from Bristol Environmental.

Generator:	USACE, AK District, NE Cape
Site Address:	St Lawrence NEC Facility-Wide, NE Cape St Lawrence Island Savoonga, AK 99769
Receiving Date:	December 9, 2014
Total Loads Received:	2
Total Tons:	38.0
Manifest #:	NC527 & NC526
Profile #:	110831ORL
Waste Type:	Petroleum Contaminated Soil

I certify, on behalf of the above listed facility, that the above-described non hazardous waste was managed in compliance with all applicable laws.

Victoria McKinney

Victoria McKinney
Special Waste Billing Department

Columbia Ridge
18177 Cedar Springs Lane
Arlington, OR, 97812
Ph: (541) 454-2030

Original
Ticket# 242423

Customer Name BRISTOL CONSTRUCTION BRISTOL
Ticket Date 12/09/2014
Payment Type Credit Account
Manual Ticket# 814524
Hauling Ticket#
Destination UP/R TRANSPORT
Profile 110831ORL (PCS)
Generator OR-US ARMY ENGINEER DISTRICT US ARMY ENGINEER DISTRICT AK

Carrier 6000
Vehicle# 6089
Container 6089
Billing # 0001102
Manifest NCS27
PO 34120057

Volume

	Time	Scale	Operator	Inbound		
In	11/20/2014 09:08:41	Front Scale	SMastrio		Gross	42500 lb*
Out	12/09/2014 09:08:41		SMastrio		Tare	5600 lb*
			* Manual Weight		Net	36900 lb
					Tons	18.45

Comments Rental 4/28-11/20 = 206 days
Dropped 4/20/14 w/8146

	Product	LDX	Qty	UOM	Rate	Tax	Amount	Origin
1	Daily Cover-PCS-To	100	18.45	Tons				AK-SAVOOSN
2	FEA T RGC-FUEL, EN	100	18.45	Tons				AK-SAVOOSN
3	LOC U RGC-LOCAL TR	100	1	Load				AK-SAVOOSN
4	RAIL U RGC-RAIL UN	100	1	Load				AK-SAVOOSN
5	RENT RGC DAILY-CAN	100	206	Each				AK-SAVOOSN
6	MAN FEE RGC-MANIFE	100	1	Each				AK-SAVOOSN
7	DEL U RGC-DELIVERY	100	1	Each				AK-SAVOOSN

WASTE MANAGEMENT

Oregon Waste Systems
A Waste Management Company

18177 Cedar Springs Lane
Arlington, Oregon 97812
(541) 454-2030

Nº 814524

2014 DEZ 9 PM2:36:44

DATE:/TIME:

LOAD DATE:

CUSTOMER: Bristol Const / US Army

PROFILE NUMBER: 110831ORL

TRUCK NUMBER:

TRAILER/CONTAINER NUMBER: 6089

SEAL NUMBER:

CUSTOMER INVOICE NO.: NC527

GROSS WEIGHT: 42,500

TARE WEIGHT-TRACTOR:

TARE WGT.-TRAILER/CONTAINER: 5,600

NET WEIGHT: 36,900

GATEHOUSE: VKS

DRIVER: Josh

TRAIN ID: Usegl 19 ORIGIN:

WASTE TYPE: PCS

DISPOSAL: CM (DC) BU GRID SEGREGATE

REMARKS:

Rental 4/28 - 11/20 = 206 days

Dropped 4/28 w/6146

HAULER: RT

902-ARLINGTON

NON-HAZARDOUS MANIFEST

WASTE MANAGEMENT

NON-HAZARDOUS MANIFEST	1. Generator's US EPA ID No. AK0000228395	Manifest Doc No.	2. Page 1 of 1	

3. Generator's Mailing Address:
USACE, AK DISTRICT, NE CAPE
PO BOX 6898, CEPOA-EN-EE-ER
JBER, AK 9506-6898

4. Generator's Phone 907-753-2689

Generator's Site Address (If different than mailing):
USACE, ALASKA DISTRICT
ST LAWRENCE NEC FACILITY-WIDE, NE CAPE
ST LAWRENCE ISLAND SAVOONGA AK 99769

A. Manifest Number: 2766293

B. State Generator's ID: AK00000228395

5. Transporter 1 Company Name	6. US EPA ID Number	C. State Transporter's ID / D. Transporter's Phone
NORTHLAND SERVICES	WAH000011486	
7. Transporter 2 Company Name	**8. US EPA ID Number**	**E. State Transporter's ID / F. Transporter's Phone**
R TRANSPORT, INC	WAH000028338	
9. Designated Facility Name and Site Address	**10. US EPA ID Number**	**G. State Facility ID / H. State Facility Phone**
COLUMBIA RIDGE LANDFILL 18177 CEDAR SPRINGS LANE ARLINGTON, OR 97812	ORD987173457	

GENERATOR

11. Description of Waste Materials	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.	I. Misc. Comments
a. MATERIAL NOT REGULATED BY DOT WM Profile # 110831OR	001	BA	4K20	P	
b. WM Profile #					
c. WM Profile #					
d. WM Profile #					

J. Additional Descriptions for Materials Listed Above

K. Disposal Location: Cell / Level / Grid

15. Special Handling Instructions and Additional Information
PLEASE MAIL ORIGINAL SCALE TICKETS AND CD TO: BRISTOL ENVIRONMENTAL REMEDIATION SERVICES
ATTN: Russell James; 111 W 16TH AVE., 3RD FLOOR, ANCHORAGE, AK 99501

Purchase Order # / EMERGENCY CONTACT / PHONE NO.:

16. GENERATOR'S CERTIFICATE:
I hereby certify that the above-described materials are not hazardous wastes as defined by CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Printed Name	Signature "On behalf of"	Month	Day	Year
				17

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed Name	Signature	Month	Day	Year
			17	17

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed Name	Signature	Month	Day	Year
		1	2	17

FACILITY

19. Certificate of Final Treatment/Disposal
I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the dates listed above.

20. Facility Owner or Operator: Certification of receipt of non-hazardous materials covered by this manifest.

Printed Name	Signature	Month	Day	Year
		12	07	17

White- TREATMENT, STORAGE, DISPOSAL FACILITY COPY
Blue- GENERATOR #2 COPY
Yellow- GENERATOR #1 COPY
Pink- FACILITY USE ONLY
Gold- TRANSPORTER #1 COPY

Columbia Ridge
18177 Cedar Springs Lane
Arlington, OR, 97812
Ph: (541) 454-2030

Original
Ticket# 242427

Customer Name BRISTOL CONSTRUCTION BRISTOL
Ticket Date 12/09/2014
Payment Type Credit Account
Manual Ticket# 814525
Hauling Ticket#
Destination UP/R TRANSPORT
Profile 110831ORL (PCS)
Generator DR-US ARMY ENGINEER DISTRICT US ARMY ENGINEER DISTRICT AK

Carrier 6000
Vehicle# 6146
Container 6146
Billing # 0001102
Manifest NC526
PO 34120057

Volume

	Time	Scale	Operator	Inbound		
In	11/19/2014 09:11:33	Front Scale	SMastrio		Gross	44700 lb*
Out	12/09/2014 09:11:33		SMastrio		Tare	5600 lb*
			* Manual Weight		Net	39100 lb
					Tons	19.55

Comments Rental 4/28-11/19 = 205 days
Dropped 4/20/14 w/6089

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Daily Cover-PCS-To	100	19.55	Tons				AK-SAVOOGN
2	FEA T RGC-FUEL, EN	100	19.55	Tons				AK-SAVOOGN
3	LOC U RGC-LOCAL TR	100	1	Load				AK-SAVOOGN
4	RAIL U RGC-RAIL UN	100	1	Load				AK-SAVOOGN
5	RENT RGC DAILY-CAN	100	205	Each				AK-SAVOOGN
6	MAN FEE RGC-MANIFE	100	1	Each				AK-SAVOOGN

Oregon Waste Systems
A Waste Management Company
18177 Cedar Springs Lane
Arlington, Oregon 97812
(541) 454-2030

Nº 814525

2014 DEC 9 PM 2:31:35

DATE:/TIME:
LOAD DATE:
CUSTOMER: Bristol Const / USArmy
PROFILE NUMBER: 110831 ORL
TRUCK NUMBER:
TRAILER/CONTAINER NUMBER: 6146
SEAL NUMBER:
CUSTOMER INVOICE NO.: NC 526

GROSS WEIGHT: 44,700
TARE WEIGHT-TRACTOR:
TARE WGT.-TRAILER/CONTAINER: 5,600
NET WEIGHT: 39,100

GATEHOUSE: VKS
DRIVER: Andrew
TRAIN ID: Wagon 18 ORIGIN:
WASTE TYPE: PCS
DISPOSAL: CM (DC) BU GRID SEGREGATE
REMARKS: Rental 4/28 - 11/19 = 205 days

Dropped 4/28 w/ 6089
HAULER: RT

902-ARLINGTON

NON-HAZARDOUS MANIFEST

WASTE MANAGEMENT

NON-HAZARDOUS MANIFEST	1. Generator's US EPA ID No. AK0000228395 Manifest Doc No.	2. Page 1 of 1	

3. Generator's Mailing Address:
USACE, AK DISTRICT, NE CAPE
PO BOX 6898, CEPOA-EN-EE-ER
JBER, AK 9506-6898

4. Generator's Phone 907-753-2689

Generator's Site Address (If different than mailing):
USACE, ALASKA DISTRICT
ST LAWRENCE NEC FACILITY-WIDE, NE CAPE
ST LAWRENCE ISLAND SAVOONGA AK 99769

A. Manifest Number 2766292

B. State Generator's ID AK00000228395

5. Transporter 1 Company Name NORTHLAND SERVICES

6. US EPA ID Number WAH000011486

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name R TRANSPORT, INC

8. US EPA ID Number WAH000028338

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
COLUMBIA RIDGE LANDFILL
18177 CEDAR SPRINGS LANE
ARLINGTON, OR 97812

10. US EPA ID Number ORD987173457

G. State Facility ID

H. State Facility Phone

GENERATOR

11. Description of Waste Materials	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.	I. Misc. Comments
a. MATERIAL NOT REGULATED BY DOT WM Profile # 110831OR	001	BA	40 CY	P	
b. WM Profile #					
c. WM Profile #					
d. WM Profile #					

J. Additional Descriptions for Materials Listed Above

K. Disposal Location

Cell | Level

Grid

15. Special Handling Instructions and Additional Information

PLEASE MAIL ORIGINAL SCALE TICKETS AND CD TO: BRISTOL ENVIRONMENTAL REMEDIATION SERVICES
ATTN: Russell James; 111 W 16TH AVE., 3RD FLOOR, ANCHORAGE, AK 99501

Purchase Order # EMERGENCY CONTACT / PHONE NO.:

16. GENERATOR'S CERTIFICATE:

I hereby certify that the above-described materials are not hazardous wastes as defined by CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Printed Name	Signature "On behalf of"	Month	Day	Year
				14

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed Name	Signature	Month	Day	Year
		11	12	14

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed Name	Signature	Month	Day	Year

FACILITY

19. Certificate of Final Treatment/Disposal

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the dates listed above.

20. Facility Owner or Operator: Certification of receipt of non-hazardous materials covered by this manifest.

Printed Name	Signature	Month	Day	Year
		12	17	14

White- TREATMENT, STORAGE, DISPOSAL FACILITY COPY Blue- GENERATOR #2 COPY Yellow- GENERATOR #1 COPY

Pink- FACILITY USE ONLY Gold- TRANSPORTER #1 COPY

ATTACHMENT 3

Geotechnical Results

DOWL HKM

Testing Report Summary

		Date Sample Recv'd	6/17/2014
Client	Bristol Environmental	W.O. #	A34061
Project	NE Cape HTRW 2014	Lab #	722-724
Location	Varies		

All results will be posted to the website for your access and convenience. Samples will be kept for 30 days before being disposed. Please contact us if you would like the remaining material returned.

Sample ID	Test Performed	Test Method	Moisture
722 12NC28WCSD03	Moisture Content	ASTM D2216	52%
723 12NC28WCSD02			59%

Sample ID	Test Performed	Test Method	Results (pcf)	
723 12NC28WCSD02	Unit Weight Determination for Brass Liner Sample	In House	Wet Density	152.4
			Dry Density	96.0
722 12NC28WCSD03			Wet Density	147.0
			Dry Density	96.8

If you have questions regarding this summary report or the test procedures, please contact us.

Maria
Maria E. Kampsen, P.E.
Laboratory Supervisor

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DOWL HKM

Client: Bristol Environmental & Engineering Services
Project: NE Cape HTRW 2014
Work Order: A34061

Particle Size Distribution

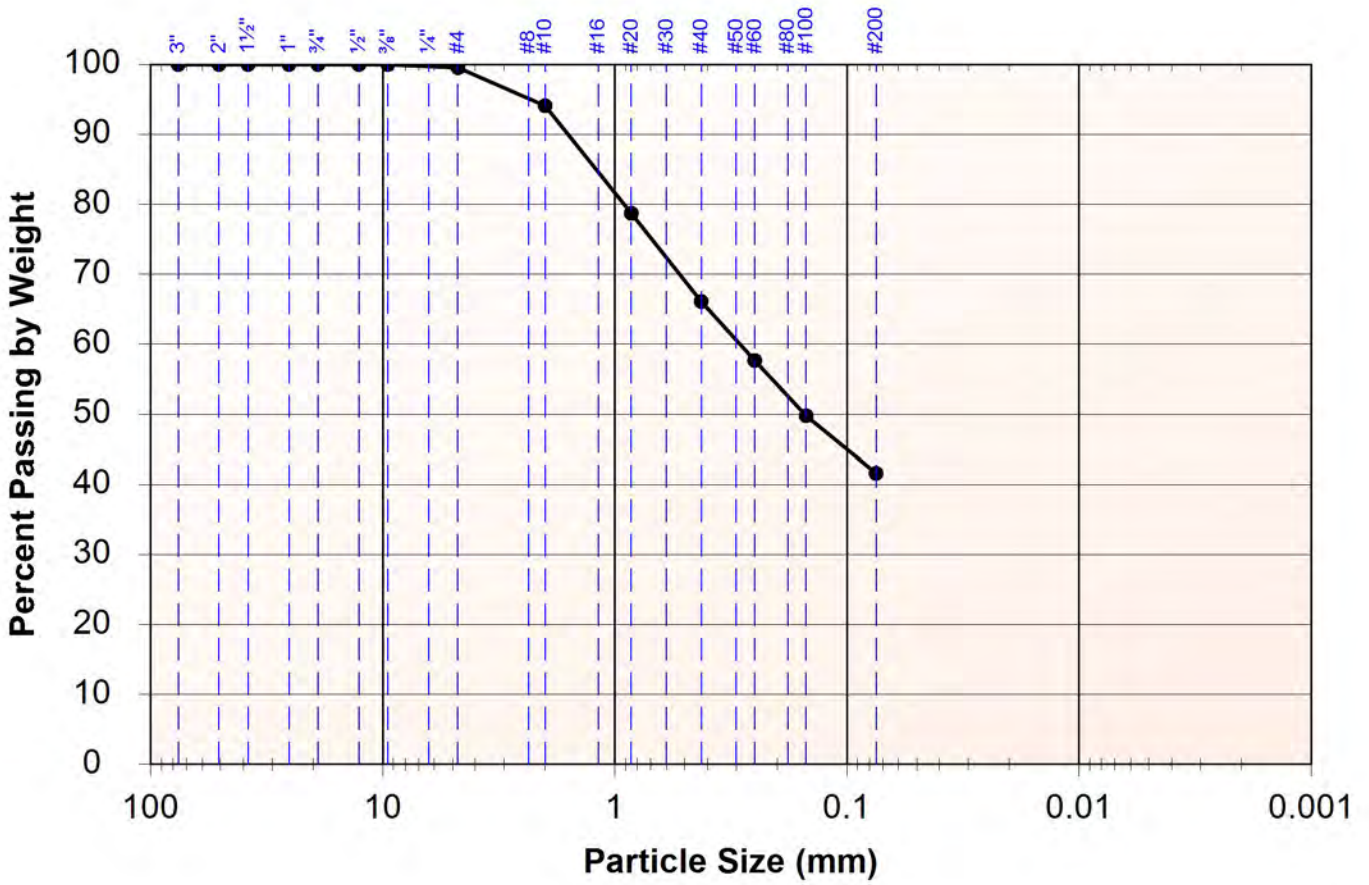
ASTM D422

Location: 12NC28WCSD02

Lab Number	2014-724
Received	6/17/2014
Reported	6/21/2014

Engineering Classification: **Silty Sand, SM**

Frost Classification: **Not Measured**



Size	Passing	Specification
3"	100%	
2"	100%	
1½"	100%	
1"	100%	
¾"	100%	
½"	100%	
⅜"	100%	
#4	100%	
Total Weight of Sample 1000.6g		
#10	94%	
#20	79%	
#40	66%	
#60	58%	
#100	50%	
#200	41.6%	
Total Weight of Fine Fraction 310.5g		

Maria E. Kampsen, P.E • 4041 B Street • Anchorage • Alaska • 99503 • 907/562-2000 • Fax 907/563-3953

ATTACHMENT 4

Analytical Sample Results Tables

Table 1 - Site 28 Sediment Waste Characterization Results

		Sample ID		13NC28WCSD01
		Laboratory ID		580-44016-1
		Collection Date		6/14/2014
Analysis Method	**Analyte**	**Unit**	**Regulatory Limit**	
6020	Arsenic	mg/Kg	100*	44
6020	Barium	mg/Kg	2000*	140
6020	Cadmium	mg/Kg	20*	0.22 J
6020	Chromium	mg/Kg	100*	13
6020	Lead	mg/Kg	100*	11
6020	Nickel	mg/Kg	NS	7.7
6020	Selenium	mg/Kg	20*	0.88 J
6020	Silver	mg/Kg	100*	0.069 J
6020	Vanadium	mg/Kg	NS	26
6020	Zinc	mg/Kg	NS	260
7471A	Mercury	mg/Kg	10*	0.039
8082	PCB-1016	ug/L	NS	ND (0.50)
8082	PCB-1221	ug/L	NS	ND (1.0)
8082	PCB-1232	ug/L	NS	ND (0.50)
8082	PCB-1242	ug/L	NS	ND (0.50)
8082	PCB-1248	ug/L	NS	ND (1.0)
8082	PCB-1254	ug/L	NS	ND (0.50)
8082	PCB-1260	ug/L	NS	ND (0.50)
8260B	1,1-Dichloroethene	ug/L	700	ND (40)
8260B	1,2-Dichloroethane	ug/L	500	ND (40)
8260B	2-Butanone	ug/L	200,000	ND (400)
8260B	Benzene	ug/L	5,000	ND (40)
8260B	Carbon tetrachloride	ug/L	500	ND (40)
8260B	Chlorobenzene	ug/L	100,000	ND (40)
8260B	Chloroform	ug/L	5,000	ND (40)
8260B	Tetrachloroethene	ug/L	700	ND (40)
8260B	Trichloroethene	ug/L	500	ND (40)
8260B	Vinyl chloride	ug/L	200	ND (40)
8270C SIM	1-Methylnaphthalene	ug/L	NS	2.1 QL
8270C SIM	2-Methylnaphthalene	ug/L	NS	2.0
8270C SIM	Acenaphthene	ug/L	NS	0.3
8270C SIM	Acenaphthylene	ug/L	NS	0.076 J
8270C SIM	Anthracene	ug/L	NS	0.11 J
8270C SIM	Benzo[a]anthracene	ug/L	NS	ND (0.16)
8270C SIM	Benzo[a]pyrene	ug/L	NS	ND (0.16)
8270C SIM	Benzo[b]fluoranthene	ug/L	NS	ND (0.16)
8270C SIM	Benzo[g,h,i]perylene	ug/L	NS	ND (0.16)
8270C SIM	Benzo[k]fluoranthene	ug/L	NS	ND (0.16)
8270C SIM	Chrysene	ug/L	NS	ND (0.16)
8270C SIM	Dibenz(a,h)anthracene	ug/L	NS	ND (0.16)
8270C SIM	Fluoranthene	ug/L	NS	0.16 J
8270C SIM	Fluorene	ug/L	NS	0.42
8270C SIM	Indeno[1,2,3-cd]pyrene	ug/L	NS	ND (0.16)
8270C SIM	Naphthalene	ug/L	NS	0.93 QL
8270C SIM	Phenanthrene	ug/L	NS	0.4
8270C SIM	Pyrene	ug/L	NS	0.13 J
AK101	GRO (C6-C10)	mg/Kg	NS	ND (3.1)
AK102 & 103	DRO (nC10-<nC25)	mg/Kg	NS	12000
AK102 & 103	RRO (nC25-nC36)	mg/Kg	NS	4000

Notes:

*Rule of 20 applied to regulatory limit.

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

NA = not analyzed

NS = not stated

Table 2 - Site 28 Work Pad MI Soil Sample Results

		Sample ID		14NC28MI001	14NC28MI002	14NC28MI003
		Laboratory ID		580-45009-1	580-45009-2	580-45009-3
		Location ID		MI28-001	MI28-002	MI28-003
		Collection Date		8/9/2014	8/9/2014	8/9/2014
Analysis Method	**Analyte**	**Unit**	**Evaluation Criteria**			
6020	Arsenic	mg/Kg	11[1]	4.4	4.5	4.5
6020	Barium	mg/Kg	1100[2]	13	12	18
6020	Cadmium	mg/Kg	5[2]	0.027 J	0.026 J	0.047 J
6020	Chromium	mg/Kg	25[2]	4.0	4.0	4.7
6020	Lead	mg/Kg	400[2]	4.3	4.4	6.0
6020	Nickel	mg/Kg	86[2]	3.9	4.3	4.2
6020	Selenium	mg/Kg	3.4[2]	0.25 J	0.25 J	0.28 J
6020	Silver	mg/Kg	11.2[2]	0.014 J	0.014 J	0.023 J
6020	Vanadium	mg/Kg	3400[2]	8.7 J	8.6	10
6020	Zinc	mg/Kg	4100[2]	14	14	20
7471A	Mercury	mg/Kg	1.4[2]	ND (0.0048)	ND (0.0048)	ND (0.0047)
8082	PCB-1016	mg/Kg	1[1]	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1221	mg/Kg	1[1]	ND (0.0033)	ND (0.0032)	ND (0.0033)
8082	PCB-1232	mg/Kg	1[1]	ND (0.0033)	ND (0.0032)	ND (0.0033)
8082	PCB-1242	mg/Kg	1[1]	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1248	mg/Kg	1[1]	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1254	mg/Kg	1[1]	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1260	mg/Kg	1[1]	0.0028 J	0.0015 J	0.0084
8260B	Benzene	mg/Kg	2[1]	ND (0.012)	ND (0.011)	ND (0.0094)
8260B	Ethylbenzene	mg/Kg	6.9[2]	ND (0.012)	ND (0.011)	ND (0.0094)
8260B	m,p-Xylene	mg/Kg	NS	0.0046 J B	ND (0.011)	ND (0.0094)
8260B	o-Xylene	mg/Kg	NS	ND (0.012)	ND (0.011)	ND (0.0094)
8260B	Toluene	mg/Kg	6.5[2]	ND (0.012)	0.0047 J B	0.0038 J B
8270D SIM	1-Methylnaphthalene	mg/Kg	6.2[2]	0.0054 J	0.00054 J	0.00085 J
8270D SIM	2-Methylnaphthalene	mg/Kg	6.1[2]	ND (0.00081)	0.00066 J	0.00091 J
8270D SIM	Acenaphthene	mg/Kg	180[2]	ND (0.00081)	ND (0.00082)	ND (0.00083)
8270D SIM	Acenaphthylene	mg/Kg	180[2]	ND (0.00081)	ND (0.00082)	ND (0.00083)
8270D SIM	Anthracene	mg/Kg	3000[2]	ND (0.00081)	0.00075 J	ND (0.00083)
8270D SIM	Benzo[a]anthracene	mg/Kg	3.6[2]	ND (0.00081)	0.00083 J	0.00068 J
8270D SIM	Benzo[a]pyrene	mg/Kg	2.1[2]	ND (0.00081)	0.00068 J	ND (0.00083)
8270D SIM	Benzo[b]fluoranthene	mg/Kg	12[2]	ND (0.00081)	0.00071 J	ND (0.00083)
8270D SIM	Benzo[g,h,i]perylene	mg/Kg	38700[2]	ND (0.00081)	0.00054 J	ND (0.00083)
8270D SIM	Benzo[k]fluoranthene	mg/Kg	120[2]	ND (0.00081)	0.00080 J	ND (0.00083)
8270D SIM	Chrysene	mg/Kg	360[2]	0.00056 J	0.00098 J	0.00084 J
8270D SIM	Dibenz(a,h)anthracene	mg/Kg	4.0[2]	ND (0.00081)	0.00063 J	ND (0.00083)
8270D SIM	Fluoranthene	mg/Kg	1400[2]	0.00073 J	0.00094 J	0.0016 J
8270D SIM	Fluorene	mg/Kg	220[2]	ND (0.00081)	ND (0.00082)	ND (0.00083)
8270D SIM	Indeno[1,2,3-cd]pyrene	mg/Kg	41[2]	ND (0.00081)	0.00066 J	ND (0.00083)
8270D SIM	Naphthalene	mg/Kg	120[1]	ND (0.00081)	ND (0.00082)	ND (0.00083)
8270D SIM	Phenanthrene	mg/Kg	3000[2]	0.00059 J	0.00077 J	0.0012 J
8270D SIM	Pyrene	mg/Kg	1000[2]	0.00071 J	0.00087 J	0.0015 J
AK102 & 103	DRO (nC10-<nC25)	mg/Kg	9200[1]	5.5 J	3.2 J	5.1 J
AK102 & 103	RRO (nC25-nC36)	mg/Kg	9200[1]	12 J	9.9 J	18
AK102/103	DRO (nC10-<nC25)	mg/Kg	9200[1]	4.1 J	1.8 J	3.7 J
AK102/103	RRO (nC25-nC36)	mg/Kg	9200[1]	8.9 J	6.2 J	12 J

Notes:

[1]Cleanup level set in 2009 Decision Document

[2]Evaluation criteria as stated in 18AAC75.341 Tables B1 and B2 (migration to groundwater).

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

NA = not analyzed

NS = not stated

ATTACHMENT 5

Alaska Department of Environmental Conservation
Checklists and Chemical Data Verification Report

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2.0 DATA VERIFICATION RESULTS 5
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2.2 BTEX Analyses 5
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2.4 PAH Analyses 6
2.5 DRO/RRO Analyses 6
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SUPPLEMENTS

Supplement 1 Sample Summary Table
Supplement 2 ADEC Checklists

ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
ADEC	Alaska Department of Environmental Conservation
BFB	4-Bromofluorobenzene
Bristol	Bristol Environmental Remediation Services, LLC
BTEX	benzene, toluene, ethylbenzene, and xylenes
CCV	continuing calibration verification
COC	chain-of-custody
DCB	decachlorobiphenyl
DL	detection limit
DoD	Department of Defense
DQO	data quality objective
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency
GRO	gasoline-range organics
HTRW	hazardous, toxic, and radioactive waste
IB	instrument blanks
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LOD	limit of detection
LOQ	limit of quantitation
MBs	method blanks
MEK	methyl ethyl ketone
MI	*MULTI INCREMENT*®
MS	matrix spike
MSD	matrix spike duplicate
ND	non detect
NE Cape	Northeast Cape, St. Lawrence Island, Alaska
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
QAPP	Quality Assurance Project Plan
QC	quality control

ACRONYMS AND ABBREVIATIONS (continued)

Report	Data Verification Report
RL	reporting limit
RPD	relative percent difference
RRO	residual-range organics
RSD	relative standard deviation
SGC	silica gel cleanup
SIM	selected ion mode
SVOCs	semivolatile organic compounds
SW-846	EPA publication *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*
TA-Denver	TestAmerica Laboratories, Inc., Denver, Colorado
TA-Tacoma	TestAmerica Laboratories, Inc., Tacoma, Washington
TCLP	toxicity characteristic leaching procedure
TCMX	tetrachloro-m-xylene
TFT	Trifluorotoluene
TOC	total organic carbon
USACE	US Army Corps of Engineers
VOA	volatile organic analysis
VOC	volatile organic compound

DATA QUALIFIERS

- B – Analyte result is considered a high estimated value due to contamination present in the method blank, instrument blank, or trip blank. Results less than 10 times the reported method blank concentration will be B flagged to indicate bias.
- J – Positive result is less than the LOQ and is considered an estimate.
- ND (LOD) – Analyte result is less than the detection limit (DL). The non-detected result (ND) has the limit of detection (LOD) in parentheses.
- QH, QL, QN – Analyte result is considered an estimated value biased (high [H], low [L], uncertain [N]) due to a laboratory quality control failure (Q) such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits. Field duplicates that do not meet relative percent difference (RPD) limits but meet other acceptance criteria are also flagged QN.
- H-Sample extracted or analyzed outside of holding time. Results have potential low bias.

1.0 DATA VERIFICATION

Bristol Environmental Remediation Services, LLC (Bristol) composed this Data Verification Report (Report), in accordance with the US Army Corps of Engineers (USACE), Alaska District requirements. All laboratory results relate to remedial actions executed at Northeast Cape (NE Cape), St. Lawrence Island, Alaska. Bristol performed this work under USACE Contract Nos. W911KB-13-C-0004 and W911KB-12-C-0003.

The verification process evaluates data completeness, correctness, consistency, and compliance with method procedures and quality control (QC) requirements; it also identifies anomalous data. The reported project sample values, as well as any method laboratory control samples extracted or prepared with the project samples were reviewed. Data verification considers potentially influential conditions and procedures:

- Sample receipt conditions
  - Sample preservation
  - Cooler temperatures upon receipt
  - Chain-of-custody (CoC) condition/correspondence to submitted sample set
  - Presence/absence of custody seals
- Extraction and analytical procedures
  - Holding times
  - Method blanks (MBs)
  - Laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs)
  - Matrix spike (MS) and matrix spike duplicate (MSD),
  - Duplicate samples
  - Surrogate recoveries

- Sampling procedures
  - Trip blanks
  - Field replicate samples
- Correspondence to method criteria and project data quality objectives (DQOs)

This Report does not include internal standards, calibrations, instrument tunes, chromatograms, quantitation reports, spectra, summaries identifying any analytical irregularities (and the subsequent corrective action taken by the laboratories), or anything not listed above. Laboratory report case narratives were examined and any documented calibration or other QC outliers were included when appropriate.

Control limits are specified in the NE Cape HTRW Remedial Actions Quality Assurance Project Plan Addendum, Revision 1 (QAPP) dated June 2013. Unless otherwise stated, data fell within control limits. If control limits were not specified in the QAPP, in-house laboratory control limits were used for review. In some instances, quality control information beyond QAPP specifications was reported (e.g., additional surrogates). This information was also used for data review unless specifically noted.

Data verification satisfied standards established in the NE Cape HTRW Remedial Actions Northeast Cape, St. Lawrence Island, Alaska Quality Assurance Project Plan (QAPP), Revision 1 (June, 2013); the Department of Defense (DoD) Quality Systems Manual, Version 4.2 (2010); and the Alaska Department of Environmental Conservation (ADEC) Technical Memorandum: Environmental Laboratory and Quality Assurance Requirements (Updated March 2009).

The data verifier assessed precision and accuracy by comparing surrogate, MS/MSD and LCS/LCSD recoveries and relative percent differences (RPDs) to the QAPP-specified control limits. Control limits for waste samples were not included in the QAPP. This matrix uses laboratory-specified limits. The frequency of QC samples was compared to the

frequency specified in the QAPP. The MS/MSDs performed on non-project samples are not applicable, and were not evaluated.

The reviewed data sets include sample data collected at Site 28 for the NE Cape remedial actions, June through July 2014. TestAmerica Laboratories, Inc., Tacoma, Washington (TA-Tacoma) and TestAmerica Laboratories, Inc. analyzed the samples and reported the results.

Test America used several methods for sample analysis:

- U.S. Environmental Protection Agency (EPA) methods 5030B/8260B for Benzene, toluene, ethylbenzene, and xylenes (BTEX), as defined in US publication *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846)
- Gasoline-range organics (GRO) by ADEC method AK101
- Volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (USEPA) Solid Waste (SW-846) Methods 5035/8260B
- Diesel-range organics (DRO) and residual-range organics (RRO) by ADEC method AK102/103
- DRO and RRO by ADEC method AK102/103 with silica gel clean-up
- Polynuclear aromatic hydrocarbons (PAHs) by SW-846 method 3510C (or 3520C)/8270C (waters), 3550B/8270C (soils) or SW-846 method 3580A/8270C in selected ion mode (SIM)
- Polychlorinated biphenyls (PCBs) by SW-846 method 3510C/8082 (waters) and either 3550B or 3550C/8082 or 8082A (soils)
- Metals by SW-846 methods 3005A/6020 (waters) or 3050B/6020 (soils)
- Mercury by SW-846 methods 7470A (waters) or 7471A (soils)
- Incremental sample preparation (soil) in conjunction with the preparation and analytical methods listed above for BTEX, metals, PAHs, DRO/RRO and PCBs

Analytical results tables are presented in Attachment 4 of the Site 28 Tech Memo. The tables include sample identification (ID), which reference the year (13), the project (NC) for NE Cape, the site (e.g. -28 for site 28), the matrix (SS for subsurface soil, WA for water) and the sample location (referred to in Appendix H as LocID) as well as the

laboratory ID along with the sample collection date. The LocID indicates the specific site at NE Cape, as well as a specific location within the sites.

Data qualifiers assigned during the data review are included on the analytical results tables in Appendix H. The following data qualifiers may be used to identify data points when data verification determines that results should be qualified because of a potential bias in the result, or a deviation from method or QAPP QC procedures.

Data verification was performed for samples collected at Site 28 as follows:

- One *MULTI INCREMENT*®[1] (MI) soil sample along with two field replicates (work order 580-45009-1) and two waste samples collected from Geotubes (work order 580-44016-1). The MI samples were collected from under the liner where the geotubes were over-wintered. The geotubes were allowed to drain over winter and sampled in June of 2014.

Field sample identification, corresponding laboratory identification, and analytical results are presented in the analytical results tables in Attachment 4 of the Site 28 Tech Memo.

The sample summary sheet which lists all project samples and their respective analyses is presented in Supplement 1. ADEC Laboratory Data Review Checklists are presented in Supplement 2.

[1] *MULTI INCREMENT*® is a registered trademark of EnviroStat, Inc.

2.0 DATA VERIFICATION RESULTS

2.1 SAMPLE RECEIPT CONDITIONS

Samples were shipped from NE Cape via Bering Air, who forwarded samples to the laboratory via Alaska Airlines Goldstreak, with custody seals intact from NE Cape until receipt by the laboratory. Samples arrived at the lab within 4 (+/-2) degrees Celsius (°C) and in good condition.

2.2 BTEX ANALYSES

TestAmerica analyzed samples for BTEX by SW-846 method 8260B. For soils, all QAPP specified surrogates were analyzed as well as additional surrogates. The data review was performed using all surrogates. QAPP specified QC for an analytical batch of up to 20 samples requires an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD, and project MS/MSD pair were analyzed with each batch and met all quality control criteria with exceptions noted for the following work orders:

580-45009-1 The 8260 method blank in batch 580-167475 had a reported toluene concentration of 3.31 µg/Kg. Sample 14NC28MI002 was the only sample in this work order with detectable concentration of toluene and it is B flagged.

2.3 GRO ANALYSES

TestAmerica tested for GRO by ADEC method AK101. Required QC for an analytical batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD pair and project MS/MSD pair were performed with each QC batch.

Holding times, MBs, LCS/LCSD recoveries and RPDs, and MS/MSD recoveries and RPDs were reviewed and met QAPP criteria, except as noted:

580-44016-1 - The GRO analysis had low field surrogate recovery in the single submitted sample, the GRO result is flagged QL for low surrogate recovery; the GRO result is non-detect (ND). It should be noted that sample 14NC28WCSD01 had a reported percent solids of 43%, which may explain the low surrogate recovery (matrix

interference). The sample was collected from a geo-tube after over-winter dewatering yet still had greater than 50% moisture content when a sample was collected and analyzed. The GRO MS also had low recovery, however, the MS was not performed on a non-project sample so no flags were assigned. The GRO/MS/MSD also failed to meet RPD limits, again no flags were assigned as it was not a project sample.

2.4 PAH ANALYSES

TestAmerica analyzed samples by SW-846 method 8270C selected ion mode (SIM) for PAHs. Required QC for an analytical batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD, and project MS/MSD pair were performed with each QC batch and met criteria with some exceptions:

580-44016-1 -The PAH method blank has reportable concentrations of 2-methylnaphthalene, fluorene and phenanthrene; sample results were greater than 10 times the reported MB concentrations so no flags were assigned. The PAH LCS had low recovery of 1-methylnaphthalene and naphthalene; sample results for these analytes on sample14NC28WCSD01 were flagged QL for quality issues with potential low bias.

2.5 DRO/RRO ANALYSES

TestAmerica analyzed samples for DRO/RRO following ADEC methods AK102/103.

Required QC for a batch of up to 20 samples includes an MB, LCS /LCSD, and MS/MSD pair. A MB, LCS/LCSD, and project MS/MSD pair were performed with each QC batch and met acceptance criteria, with some exceptions:

580-44016-1 The RRO surrogate on sample 14NC28WCSD01 exceeded the upper control limit and the DRO result is flagged QH for quality issue with potential high bias. The RRO method blank had reportable concentrations; however, the sample result was greater than 10 times the blank concentration so no flags were assigned.

580-45009-1 The DRO method blank had a reported concentration of 1.3 mg/Kg in the untreated method blank. All untreated DRO sample results in this work order were B flagged for blank contamination.

2.6 TOC ANALYSES

TestAmerica analyzed samples for TOC by SW-846 method 9060. A MB, LCS/LCSD, MS/MSD, and laboratory duplicate were analyzed with each batch. Holding time, MB, LCS/LCSD percent recoveries, and RPD percent recoveries, MS/MSD percent recoveries, RPD, and laboratory duplicate RPDs met QAPP criteria at review.

2.7 METALS ANALYSES

TestAmerica analyzed soil samples by SW-846 method 6020. Geotube samples in work order 580-44016-1 were analyzed for TCLP Metals by SW-846 methods 1311/6010B. .

Required QC for a batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. An MB, LCS/LCSD, and project MS/MSD were analyzed per batch and met acceptance criteria, except as noted below. In addition, laboratory duplicates were reported.

Metals were detected in the method blanks as shown below. Associated detected results were less than 10 times the blank concentrations and were qualified B to indicate the potential for a false positive or high bias.

580-44016-1 The 6020 metals MS/MSD exceeded the upper control limits for barium and vanadium, likely due to non-homogeneity as cited in the case narrative. The MS/MSD was not a project sample so no results were flagged for low 6020 metals recoveries.

-45009-1 The metals method blank had lead detected at 0.0688 mg/Kg. All sample results were greater than 10 times the blank concentration so no flags were assigned.

2.8 MERCURY ANALYSES

TestAmerica analyzed mercury in soil samples by SW-846 method 7471A and total and dissolved mercury in water samples by SW-846 method 7470A. The drum waste samples were analyzed for TCLP Metals by SW-846 methods 1311/7470A. Required QC for a batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD and project MS/MSD were analyzed per batch. In addition, a laboratory duplicate was reported. Hold time, MB, LCS/LCSD recoveries and RPDs, and MS/MSD RPDs were reviewed and met QAPP criteria, except as noted below:

580-44016-1 . The mercury MS/MSD on the single project sample failed to meet lower recovery limits, the lab duplicate on the same sample also exceeded RPD limits. The mercury result for sample 14NC28WCSD01 is flagged QL for low MS/MSD recoveries as the primary qualifier flag.

2.9 FIELD QA/QC

Field QC samples included field duplicate/replicate sets, MS/MSD pairs, and trip blanks. Field QC samples were analyzed in the same manner and in the same extraction and analytical batches as primary field samples. Field duplicate/replicate samples were submitted "blind" to the lab with similar sample IDs as primary field samples so the lab could not identify which samples were duplicates/replicates.

2.9.1 Field Sample Replicates

For MI samples, one primary and two field replicate samples were collected; therefore, the calculation is percent relative standard deviation (%RSD), not RPD. The field precision assessment criteria was <30% RSD.

Field Replicate Frequencies

Field sample replicate pairs are specified the QAPP at a minimum rate of 10 percent. Field replicates were collected at each site at the following frequencies per method and matrix:

Site 28: One primary MI soil sample and two field replicates were collected for RCRA 8 metals plus nickel, vanadium and zinc; PCBs, BTEX, PAHs, DRO, and RRO; replicate rate is 66%.

Field duplicates were typically not collected for waste samples, since these results were used for disposal purposes only.

Field Replicate RSDs

The field replicate RSDs were within control limits. No duplicate or replicate results were flagged if one or both results were reported at less than the LOQ.

2.9.2 Trip Blanks

Aqueous and soil trip blanks are included in shipments containing samples which are submitted to the laboratory for VOC, BTEX, GRO, and methane analyses. Trip blanks are collected to assess the potential for VOC, BTEX, GRO or methane cross-contamination introduced by sample bottles handled during field operations, shipping, or storage at the laboratory.

Trip blanks were included with shipments containing samples for VOC, BTEX, GRO, and methane analyses; trip blanks were free of target analytes with some exceptions:

580-45009-1 Samples submitted with trip blank 080914 with reportable concentrations of ethylbenzene, m,p-xylenes, o-xylene and toluene at concentrations less than 10 times the amount detected in the trip blank are B flagged to indicate blank contamination with potential high bias. Three project samples were B flagged for toluene and m,p-xylene concentrations less than 10 times the blank concentration, no results were flagged for ethylbenzene in the method blank, all sample results were ND for benzene and o-xylene.

Associated results less than 10 times the trip blank concentration were B qualified and have the potential for a high bias. The majority of detected results associated with the trip blank detections had been B qualified due to method blank contamination and further qualifiers were not required.

3.0 SENSITIVITY AND QUANTITATION LIMITS

Sensitivity is the capability of a test method or instrument to discriminate between measurement responses that represent different levels (e.g., concentrations) of a variable of interest. Examples of QC measures for determining sensitivity include laboratory-fortified blanks, DL, LOD, limit of quantitation (LOQ) studies, and the lowest calibration standards at or below the LOQ. In order to meet the needs of the data users, the project data must meet the measurement performance criteria for sensitivity and project LOQs. Analytical factors, such as dilutions, may elevate the reporting limits for all target constituents when the sample extract is diluted in order to raise the analyte concentration to within the instrument calibration range. Other factors, such as high moisture content, may also elevate reporting limits above their empirical concentrations.

Overall sensitivity and reporting for the project was acceptable with minor exceptions.

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4.0 SUMMARY

This Report evaluates analytical data generated July through September 2013, during the NE Cape Remedial Actions. This assessment evaluated whether program objectives and data quality goals were met. The assessment reviewed sample receipt conditions, extraction and analytical procedures, sampling procedures, and correspondence to method criteria and project DQOs.

The overall data quality and completeness was met for the project.
Site 28 samples were acceptable with minor QC issues noted in the previous sections. Overall, the project met its data quality objectives. No results were rejected based on data review and all data was complete and reportable. Some results are estimates due to minor QC issues during analyses. All samples collected for analysis had reportable results that were usable for project purposes.

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SUPPLEMENT 1

Sample Summary Report

Lab Sample ID	Client Sample ID	Matrix	Sample Type	Collection Date	Analysis Method	Lab Job ID	Sample Type Desc	Analysis Lab	Loc_ID	sampler_initials	field_preservation	cooler_name	TAT	container_type_volume
580-45009-1	14NC28MI001	Solid	N1	8/9/2014 14:55	6020	580-45009-1	MS/MSD	TestAmerica Seattle	MI28-001	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-2	14NC28MI002	Solid	N1	8/9/2014 15:10	6020	580-45009-1	Field Rep	TestAmerica Seattle	MI28-002	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-3	14NC28MI003	Solid	N1	8/9/2014 15:35	6020	580-45009-1	Field Rep	TestAmerica Seattle	MI28-003	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-1	14NC28MI001	Solid	N1	8/9/2014 14:55	7471A	580-45009-1	MS/MSD	TestAmerica Seattle	MI28-001	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-2	14NC28MI002	Solid	N1	8/9/2014 15:10	7471A	580-45009-1	Field Rep	TestAmerica Seattle	MI28-002	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-3	14NC28MI003	Solid	N1	8/9/2014 15:35	7471A	580-45009-1	Field Rep	TestAmerica Seattle	MI28-003	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-1	14NC28MI001	Solid	N1	8/9/2014 14:55	8082	580-45009-1	MS/MSD	TestAmerica Seattle	MI28-001	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-2	14NC28MI002	Solid	N1	8/9/2014 15:10	8082	580-45009-1	Field Rep	TestAmerica Seattle	MI28-002	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-3	14NC28MI003	Solid	N1	8/9/2014 15:35	8082	580-45009-1	Field Rep	TestAmerica Seattle	MI28-003	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-1	14NC28MI001	Solid	N1	8/9/2014 14:55	8260B	580-45009-1	MS/MSD	TestAmerica Seattle	MI28-001	EB	Methanol	lg b/w	15_Days	Voa Vial 40ml - 10mL MeOH
580-45009-2	14NC28MI002	Solid	N1	8/9/2014 15:10	8260B	580-45009-1	Field Rep	TestAmerica Seattle	MI28-002	EB	Methanol	lg b/w	15_Days	Voa Vial 40ml - 10mL MeOH
580-45009-3	14NC28MI003	Solid	N1	8/9/2014 15:35	8260B	580-45009-1	Field Rep	TestAmerica Seattle	MI28-003	EB	Methanol	lg b/w	15_Days	Voa Vial 40ml - 10mL MeOH
580-45009-4	Trip Blank 080914-1	Solid	N1	8/9/2014 0:01	8260B	580-45009-1	Trip Blank	TestAmerica Seattle	Trip Blank	EB	Methanol	lg b/w	15_Days	Soil jar 4oz - with Methanol
580-45009-1	14NC28MI001	Solid	N1	8/9/2014 14:55	8270D SIM	580-45009-1	MS/MSD	TestAmerica Seattle	MI28-001	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-2	14NC28MI002	Solid	N1	8/9/2014 15:10	8270D SIM	580-45009-1	Field Rep	TestAmerica Seattle	MI28-002	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-3	14NC28MI003	Solid	N1	8/9/2014 15:35	8270D SIM	580-45009-1	Field Rep	TestAmerica Seattle	MI28-003	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-1	14NC28MI001	Solid	N1	8/9/2014 14:55	D 2216	580-45009-1		TestAmerica Seattle	MI28-001	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-2	14NC28MI002	Solid	N1	8/9/2014 15:10	D 2216	580-45009-1	Field Rep	TestAmerica Seattle	MI28-002	EB	Cool	lg b/w	15_Days	Plastic Bag
580-45009-3	14NC28MI003	Solid	N1	8/9/2014 15:35	D 2216	580-45009-1	Field Rep	TestAmerica Seattle	MI28-003	EB	Cool	lg b/w	15_Days	Plastic Bag
580-44016-1	13NC28WCSD01	Solid	N1	6/14/2014 9:37	6020	580-44016-1		TestAmerica Seattle	WCSD01	EB	Cool	614-03	15_Days	Soil jar 8oz
580-44016-1	13NC28WCSD01	Solid	N1	6/14/2014 9:37	7471A	580-44016-1	MS/MSD	TestAmerica Seattle	WCSD01	EB	Cool	614-03	15_Days	Soil jar 8oz
580-44016-1	13NC28WCSD01	Solid	N1	6/14/2014 9:37	8082	580-44016-1	MS/MSD	TestAmerica Seattle	WCSD01	EB	Cool	614-03	15_Days	Soil jar 8oz
580-44016-1	13NC28WCSD01	Solid	N1	6/14/2014 9:37	8260B	580-44016-1		TestAmerica Seattle	WCSD01	EB	Cool	614-03	15_Days	Soil jar 8oz
580-44016-1	13NC28WCSD01	Solid	N1	6/14/2014 9:37	8270C SIM	580-44016-1		TestAmerica Seattle	WCSD01	EB	Cool	614-03	15_Days	Soil jar 8oz
580-44016-1	13NC28WCSD01	Solid	N1	6/14/2014 9:37	AK101	580-44016-1		TestAmerica Seattle	WCSD01	EB	Methanol	614-03	15_Days	Soil jar 4oz - with Methanol
580-44016-2	13NC28WCTB01	Solid	N1	6/14/2014 9:37	AK101	580-44016-1	Trip Blank	TestAmerica Seattle	WCTB01	EB	Methanol	614-03	15_Days	Soil jar 4oz - with Methanol
580-44016-1	13NC28WCSD01	Solid	N1	6/14/2014 9:37	AK102 & 103	580-44016-1		TestAmerica Seattle	WCSD01	EB	Cool	614-03	15_Days	Soil jar 8oz
580-44016-1	13NC28WCSD01	Solid	N1	6/14/2014 9:37	D 2216	580-44016-1		TestAmerica Seattle	WCSD01	EB	Cool	614-03	15_Days	Soil jar 8oz

SUPPLEMENT 2

ADEC Checklists

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Project Chemist Date: 11/7/14

CS Report Name: 2014 NE Cape HTRW RA Report Report Date: December 2014

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-44016-1

ADEC File Number: ADEC RecKey Number:

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X□Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      Samples were shipped to and analyzed by TA-Tacoma.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      □Yes X□ No□NA (Please explain.) Comments:

      The collection time and dates were not on the CoC. The lab entered times from the sample containers. Only one sample and a trip blank were submitted.

   b. Correct analyses requested?
      x□Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      x□Yes □ No □NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

x□Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
x□Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes □X No □NA (Please explain.) Comments:

No discrepancies were noted.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes (waste characterization and disposal) without qualitification with respect to sample documentation and sample conditions.

4. Case Narrative
a. Present and understandable?
x□Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
x□Yes □ No □NA (Please explain.) Comments:

The PAH method blank has reportable concentrations of 2-methylnaphthalene, fluorene and phenanthrene. The PAH LCS had low recovery of 1-methylnaphthalene and naphthalene. The GRO analysis had low field surrogate recovery in the single submitted sample. The GRO MS/MSD had low recoveries, the result is already flagged QL for low surrogate. The RRO surrogate exceeded the upper control limit and is flagged QH. The RRO method blank had reportable concentrations, however, the sample result was greater than 10 times the blank concentration so no flags were assigned. The metals MS/MSD on the non-project sample were outside of control limits, likely due to non-homogeneity as cited in the case narrative. The mercury MS/MSD on the single project sample failed to meet lower recovery limits, the mercury lab duplicate on the same sample also exceeded RPD limits.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

While there was no corrective action, the PAH narrative noted that insufficient sample remained after TCLP extraction to re-extract for PAHs.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

While some results are potentially impacted by out of control QC, sample results are still usable for project purposes, which is waste characterization and disposal.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      x□Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      x□Yes □ No □NA (Please explain.) Comments:

      The trip blank was flagged for holding time exceedance for GRO, however, there is no true holding time for trip blanks as they were prepared by the laboratory prior to sample container shipment to the site. The trip blank is not collected on site.

   c. All soils reported on a dry weight basis?
      x□Yes □ No □NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      x□Yes □ No □NA (Please explain.) Comments:

   e. Data quality or usability affected?
      Comments:

      Sample results are usable for project purposes without qualification with respect to sample documentation and reporting limits.

6. QC Samples
   a. Method Blank
      i. xOne method blank reported per matrix, analysis and 20 samples?
      □Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      x□Yes □ No □NA (Please explain.) Comments:

      The PAH method blank has reportable concentrations at less than half the LOW of 2-methylnaphthalene, fluorene and phenanthrene. The RRO method blank had reportable concentrations, however, the sample result was greater than 10 times the blank concentration so no flags were assigned.

iv. If above PQL, what samples are affected?

Comments:

Only sample 14NC28WCSD01 was submitted and analyzed in this SDG.

v. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

□Yes □X No□NA (Please explain.) Comments:

Sample results were greater than 10 times the reported MB concentrations for PAHs and RRO so no flags were assigned.

vi. Data quality or usability affected? (Please explain.)

Comments:

While the method blanks had reportable concentrations, the sample results are greater than 10 times the method blank concentrations so data results are not affected. The results are usable for project purposes, which is waste characterization for disposal, without qualification.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

x□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

x□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes x□ No □NA (Please explain.) Comments:

The PAH LCS had low recovery of 1-methylnaphthalene and naphthalene. The GRO MS had low recoveries on a non-project sample. The metals MS/MSD on the non-project sample exceeded the upper control limits for vanadium and the MSD exceeded the upper control limit for barium, likely due to non-homogeneity as cited in the case narrative. The mercury lab duplicate exceeded RPD limits.

v. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

□Yes x□ No □NA (Please explain.) Comments:

The metals laboratory duplicate on a non-project sample exceeded RPD limits for cadmium, the project sample result is not flagged as it is not from the site.

vi. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Only sample 14NC28WCSD01 and a trip blank were submitted in this SDG.

vii. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X□Yes □ No □NA (Please explain.) Comments:

The 1-methylnaphthalene and naphthalene results are flagged QL for the low LCS recovery, the GRO result is flagged QL for low MS recovery.

viii. Data quality or usability affected? (Use comment box to explain.)

Comments:

While there are several quality issues

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

x□Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

□Yes x No □NA (Please explain.) Comments:

Sample 14NC29WCSD01 had low field surrogate recovery, likely due to high moisture in the sample. The sample was collected from a geo-tube after over-winter dewatering yet still had greater than 50% moisture content when a sample was collected and analyzed.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

x□Yes □ No □NA (Please explain.) Comments:

The GRO result is flagged QL for low surrogate recovery.

v. Data quality or usability affected? (Use the comment box to explain.)

Comments:

While matrix interference (high moisture) may have contributed to the low GRO surrogate recovery, the results are still usable for project purposes, which is waste characterization for disposal of the geo-tube contents.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

□X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X□Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?

x□Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analyses and reporting. The trip blank did have reportable GRO at a concentration less than the LOQ, the single sample submitted in this SDG was non-detect so results are usable without qualification with respect to trip blank analyses and reporting.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

x□Yes □ No □NA (Please explain.) Comments:

No field duplicate was submitted with this single sample, however, the overall 10% frequency was met for the project.

iii. Submitted blind to lab?

□Yes □ No x□NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□Yes □ No x□NA (Please explain.) Comments:

No duplicate submitted with this SDG.

v. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No field duplicate was submitted with this single sample, however, the overall 10% frequency was met for the project

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □x No □NA (Please explain.) Comments:

Sample was collected with disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

8. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
    a. Defined and appropriate?
        X Yes No NA (Please explain.) Comments:

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Project Chemist Date: 12/2/14

CS Report Name: 2014 NE Cape HTRW Remedial Action Report Report Date: December 2014

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-45009-1

ADEC File Number: ADEC RecKey Number:

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      x□Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No x□NA (Please explain.) Comments:

      All samples were received and analyzed by TestAmerica-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      x□Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      x□Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      x□Yes □ No □NA (Please explain.) Comments:

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
x□Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
x□Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes x□ No □NA (Please explain.) Comments:

No discrepancies were noted or documented.

f. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample receipt conditions.

4. Case Narrative
a. Present and understandable?
x□Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
x□Yes □ No □NA (Please explain.) Comments:

The BTEX method blank had a reportable concentration of toluene. The DRO method blank had a reportable concentration of DRO. The metals method blank had a reportable detection of lead. The PCB MS/MSD failed recovery of both Aroclor 1016 and Aroclor 1260. The metals MS had the vanadium recovery exceed the upper control limit.

c. Were all corrective actions documented?
□Yes □ No x□NA (Please explain.) Comments:

No corrective actions were required. The MB concentrations were all less than one-half the LOQ.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes.

6. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      □xYes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      x□Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      xx□Yes □ No □NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      x□Yes □ No □NA (Please explain.) Comments:

   e. Data quality or usability affected?
      Comments:

      Sample results are usable for project purposes with respect to sample documentation, holding times and reporting limits.

7. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      x□Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      x□Yes □ No □NA (Please explain.) Comments:

      Toluene was detected in the BTEX method blank, DRO in the DRO MB and lead was detected in the metals method blank.

      iii. If above PQL, what samples are affected?
      Comments:

      All DRO (non-silica gel) results were B flagged. MI002 and 003 B flagged for toluene. All lead results were greater than 10 times the MB concentration.

v. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
x□Yes □ No □NA (Please explain.) Comments:

B flagged using 10X rule.

vi. Data quality or usability affected? (Please explain.)
Comments:

While the blank contamination may bias sample results, all B flagged results are well below site-specific cleanup levels and can be used for project purposes.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
x□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
x□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□Yes □x No □NA (Please explain.) Comments:

The metals matrix spike recovery exceeded the upper control limit for vanadium.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
x□Yes □ No □NA (Please explain.) Comments:

The case narrative notes that the PCB MS/MSD failed RPD for both Aroclor 1016 and Aroclor 1260. However, when RPD is calculated based on percent recoveries and not raw recoveries it meets RPD limts with 22% and 28 % RPD respectively.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Sample 14NC28MI001 vanadium result is flagged QH for quality issue with potential high bias.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
x□Yes □ No □NA (Please explain.) Comments:

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

While there were minor QC exccedences (vanadium) sample results are still usable for project purposes. All results for all samples were below site-specific cleanup levels.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
x□Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
x□Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No □xNA (Please explain.) Comments:

All surrogates were within control limits.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
x□Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
x□Yes □ No □NA (Please explain.) Comments:

iii. xAll results less than PQL?
□Yes □ No □NA (Please explain.) Comments:

Ethylbenzene, toluene and xylenes were detected in the trip blank. Toluene was the only BTEX analyte detected in any sample and it is already B flagged for the BTEX method blank, which also had detectable concentrations of toluene.

iv. If above PQL, what samples are affected?

Comments:

NO samples were affected by the blank contamination as noted above.

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analyses and reporting.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
x□Yes □ No □NA (Please explain.) Comments:

The three samples collected were a primary and 2 replicates, they were MI samples.

ii. Submitted blind to lab?
x□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

x□Yes □ No □NA (Please explain.) Comments:

All results met precision limits specified in the QAPP, which had a 30% RSD limit for results greater than the LOQ.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes without qualification with respect to

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No x□NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment.

i. All results less than PQL?

□Yes □ No x□NA (Please explain.) Comments:

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

8. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

x□Yes □ No □NA (Please explain.) Comments:

APPENDIX M

Chemical Data Quality Review

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ATTACHMENTS

Attachment 1 Sample Summary Report
Attachment 2 ADEC Checklists
Attachment 3 ADEC Variances

ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
ADEC	Alaska Department of Environmental Conservation
BFB	4-Bromofluorobenzene
Bristol	Bristol Environmental Remediation Services, LLC
BTEX	benzene, toluene, ethylbenzene, and xylenes
CCV	continuing calibration verification
COC	chain-of-custody
DCB	decachlorobiphenyl
DL	detection limit
DoD	Department of Defense
DQO	data quality objective
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency
GRO	gasoline-range organics
HTRW	hazardous, toxic, and radioactive waste
IB	instrument blanks
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LOD	limit of detection
LOQ	limit of quantitation
MBs	method blanks
MEK	methyl ethyl ketone
MI	*MULTI INCREMENT*®
MOC	Main Operations Complex
MS	matrix spike
MSD	matrix spike duplicate
ND	non detect
NE Cape	Northeast Cape, St. Lawrence Island, Alaska
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
QAPP	Quality Assurance Project Plan
QC	quality control

ACRONYMS AND ABBREVIATIONS (continued)

Report	Data Verification Report
RL	reporting limit
RPD	relative percent difference
RRO	residual-range organics
SGC	silica gel cleanup
SIM	selected ion mode
SVOCs	semivolatile organic compounds
SW-846	EPA publication *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*
TA-Denver	TestAmerica Laboratories, Inc., Denver, Colorado
TA-Tacoma	TestAmerica Laboratories, Inc., Tacoma, Washington
TCLP	toxicity characteristic leaching procedure
TCMX	tetrachloro-m-xylene
TFT	Trifluorotoluene
TOC	total organic carbon
USACE	US Army Corps of Engineers
VOA	volatile organic analysis
VOC	volatile organic compound

DATA QUALIFIERS

- B – Analyte result is considered a high estimated value due to contamination present in the method blank, instrument blank, or trip blank. Results less than 10 times the reported method blank concentration will be B flagged to indicate bias.
- J – Positive result is less than the LOQ and is considered an estimate.
- MH, ML, MN – Analyte result is considered an estimated value biased (high [H], low [L], uncertain [N]) due to matrix (M) effects.
- ND (LOD) – Analyte result is less than the detection limit (DL). The non-detected result (ND) has the limit of detection (LOD) in parentheses.
- QH, QL, QN – Analyte result is considered an estimated value biased (high, low, uncertain) due to a laboratory quality control failure (Q) such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits. Field duplicates that do not meet relative percent difference (RPD) limits but meet other acceptance criteria are also flagged QN.
- H-Sample extracted or analyzed outside of holding time. Results have potential low bias.

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1.0 DATA VERIFICATION

Bristol Environmental Remediation Services, LLC (Bristol) composed this Data Verification Report (Report), in accordance with the US Army Corps of Engineers (USACE), Alaska District requirements. All laboratory results relate to remedial actions executed at Northeast Cape (NE Cape), St. Lawrence Island, Alaska. Bristol performed this work under USACE Contract Nos. W911KB-13-C-0004 and W911KB-12-C-0003.

Bristol verified sample data collected from Sites 10, 13, 21, 28, 31, the Main Operations Complex (MOC), the Bulk Bag Staging Areas (BG), and the fuel storage (ISO Tank) area. The verification process evaluates data completeness, correctness, consistency, and compliance with method procedures and quality control (QC) requirements; it also identifies anomalous data. The reported project sample values, as well as any method laboratory control samples extracted or prepared with the project samples were reviewed. Data verification considers potentially influential conditions and procedures:

- Sample receipt conditions
  - Sample preservation
  - Cooler temperatures upon receipt
  - Chain-of-custody (CoC) condition/correspondence to submitted sample set
  - Presence/absence of custody seals
- Extraction and analytical procedures
  - Holding times
  - Method blanks (MBs)
  - Laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs)
  - Matrix spike (MS) and matrix spike duplicate (MSD),
  - Duplicate samples
  - Surrogate recoveries

- Sampling procedures
  - Field blanks
  - Trip blanks
  - Field duplicate samples
- Correspondence to method criteria and project data quality objectives (DQOs)

This Report does not include internal standards, calibrations, instrument tunes, chromatograms, quantitation reports, spectra, summaries identifying any analytical irregularities (and the subsequent corrective action taken by the laboratories), or anything not listed above. Laboratory report case narratives were examined and any documented calibration or other QC outliers were included when appropriate.

Control limits are specified in the NE Cape HTRW Remedial Actions Quality Assurance Project Plan Addendum, Revision 1 (QAPP) dated June 2013. Unless otherwise stated, data fell within control limits. If control limits were not specified in the QAPP, in-house laboratory control limits were used for review. In some instances, quality control information beyond QAPP specifications was reported (e.g., additional surrogates). This information was also used for data review unless specifically noted.

Data verification satisfied standards established in the NE Cape HTRW Remedial Actions Northeast Cape, St. Lawrence Island, Alaska Quality Assurance Project Plan (QAPP), Revision 1 (June, 2013); the Department of Defense (DoD) Quality Systems Manual, Version 4.2 (2010); and the Alaska Department of Environmental Conservation (ADEC) Technical Memorandum: Environmental Laboratory and Quality Assurance Requirements (Updated March 2009).

The data verifier assessed precision and accuracy by comparing surrogate, MS/MSD and LCS/LCSD recoveries and relative percent differences (RPDs) to the QAPP-specified control limits. Control limits for waste samples were not included in the QAPP. This

matrix uses laboratory-specified limits. The frequency of QC samples was compared to the frequency specified in the QAPP. The MS/MSDs performed on non-project samples are not applicable, and were not evaluated.

The reviewed data sets include sample data collected for the NE Cape remedial actions, July through September 2013. TestAmerica Laboratories, Inc., Tacoma, Washington (TA-Tacoma) and TestAmerica Laboratories, Inc., Denver, Colorado (TA-Denver) analyzed the data. TA-Denver was specified as a backup for overflow samples as well as methane analyses in the QAPP.

Test America used several methods for sample analysis:

- U.S. Environmental Protection Agency (EPA) methods 5030B/8260B for Benzene, toluene, ethylbenzene, and xylenes (BTEX), as defined in US publication *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846)
- Volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (USEPA) Solid Waste (SW-846) Methods 5035/8260B
- Gasoline-range organics (GRO) by ADEC method AK101
- Diesel-range organics (DRO) and residual-range organics (RRO) by ADEC method AK102/103
- DRO and RRO by ADEC method AK102/103 with silica gel clean-up
- Methane by RSK 175
- Glycols by SW-846 method SW846 method 8015B (or 8015C); with direct aqueous injection
- Polynuclear aromatic hydrocarbons (PAHs) by SW-846 method 3510C (or 3520C)/8270C (waters), 3550B/8270C (soils) or SW-846 method 3580A/8270C in selected ion mode (SIM)
- Polychlorinated biphenyls (PCBs) by SW-846 method 3510C/8082 (waters) and either 3550B or 3550C/8082 or 8082A (soils)
- Total organic carbon (TOC)-Quad by SW-846 9060
- Metals by SW-846 methods 3005A/6020 (waters) or 3050B/6020 (soils)
- Mercury by SW-846 methods 7470A (waters) or 7471A (soils)

- Toxicity Characteristic Leaking Procedure (TCLP) Metals by SW-846 methods 1311/3010A/6010B/7470A
- Ignitability by SW846 method 1020A
- Incremental sample preparation (soil) in conjunction with the preparation and analytical methods listed above for GRO/BTEX, metals, PAHs, DRO/RRO and PCBs

Analytical results tables are presented in Appendix H. The tables include sample identification (ID), which reference the year (13), the project (NC) for NE Cape, the site (e.g. -28 for site 28), the matrix (SS for subsurface soil, WA for water) and the sample location (referred to in Appendix H as LocID) as well as the laboratory ID along with the sample collection date. The LocID indicates the specific site at NE Cape, as well as a specific location within the sites.

Data qualifiers assigned during the data review are included on the analytical results tables in Appendix H. The following data qualifiers may be used to identify data points when data verification determines that results should be qualified because of a potential bias in the result, or a deviation from method or QAPP QC procedures:

- J – Positive result is less than the LOQ and is considered an estimate.
- ND (LOD) – Analyte result is less than the detection limit (DL). The non-detected result (ND) has the limit of detection (LOD) in parentheses.

- B – Analyte result is considered a high estimated value due to contamination present in the method blank, instrument blank, or trip blank. Results less than 10 times the reported method blank concentration will be B flagged to indicate bias.
- MH, ML, MN – Analyte result is considered an estimated value biased (high [H], low [L], uncertain [N]) due to matrix (M) effects.
- QH, QL, QN – Analyte result is considered an estimated value biased (high, low, uncertain) due to a laboratory quality control failure (Q) such as LCS/LCSD, MS/MSD or surrogate recoveries outside of acceptance limits. Field duplicates that do not meet relative percent difference (RPD) limits but meet other acceptance criteria are also flagged QN.

When both a Q and M qualifier apply to a single result, the reviewer used the qualifier that most impacted the data.

Data verification was performed for samples collected from each site as follows:

- Site 10: Five bulk waste soil samples and one QC duplicate, and 34 soil samples and 6 soil field duplicates;
- Site 13: Seventy-two soil samples and 8 field duplicates
- Site 21: Eight water samples and 1 water-field duplicate, 60 primary soil samples and seven field duplicates from soil borings, 17 soil confirmation samples and two field duplicates, and nine soil waste samples
- Site 28: Two *MULTI INCREMENT*®[1] (MI) soil samples, two field replicates and one field duplicate, 41 soil samples and five field duplicates, 85 water samples and 10 field duplicates, and one waste sample
- Site 31: One soil sample and one field duplicate
- MOC: Seven groundwater samples and one field duplicate, nine surface water samples and one field duplicate, and 139 soil samples and 15 field duplicates
- Bulk Bag Staging and ISO Areas: Eight MI soil samples and four replicates
- Roadway: Eight soil samples and one field duplicate
- Pipeline Break: eight soil samples and one field duplicate

Field sample identification, corresponding laboratory identification, and analytical results are presented in the analytical results tables of Appendix H.

The sample summary sheet which lists all project samples and their respective analyses is presented as Attachment 1. ADEC Laboratory Data Review Checklists are presented in Attachment 2. Bristol-to-USACE Variance-Request correspondence is presented in Attachment 3.

Table 2.0 lists all laboratory work orders along with identifying the matrix and sites at NE Cape where the samples were collected.

[1] *MULTI INCREMENT*® is a registered trademark of EnviroStat, Inc.

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Table 1.0 Laboratory Work Orders

Laboratory Work Order	Matrix	Site(s)
580-39293-1	Water	Site 28
580-39336-1	Soil and Water	Site 21
580-39336-2	TCLP Soil	Site 21
580-39358-1	Soil	Main Operations Complex (MOC)
580-39359-1	Soil	Site 31
580-39360-1	Soil	Site 10
580-39361-1	Soil	Site 13
580-39362-1	Soil	Site 10
580-39367-1	Water	MOC
580-39382-1	Soil	Site 10
580-39439-1	Soil	MOC
580-39440-1	Soil	Site 10
580-39441-1	Soil	Site 10
580-39443-1	Soil	Site 10
580-39444-1	Water	MOC
580-39470-1	Water	Site 28
580-39471-1	Water	MOC
580-39510-1	Soil	Site 13
580-39511-1	Soil	MOC and Site 21
580-39513-1	Soil	Bag Staging Areas
580-39544-1	Soil	Site 10
580-39566-1	Soil	MOC
580-39641-1	Water	Site 28
580-39641-2	Water	Site 28
580-39655	Soil	Site 10
580-39723-1	Water	Site 28
580-39723-2	Water	Site 28
580-39724-1	Water	Site 28
580-39754-1	Soil	MOC

Table 1.0 Laboratory Work Orders (continued)

Laboratory Work Order	Matrix	Site(s)
580-39755-1	Soil	Site 28
580-39757-1	Soil	Pipeline Break
580-39794-1	Soil	MOC
580-39796-1	Soil	Site 10
580-39839-1	Soil	Roadway
580-39839-2	Soil	MOC, Site 28, Site 10
580-39925-1	Soil	MOC
580-39926-1	Water	Site 21
580-39959-1	Soil	Site 21 and MOC
580-39959-2	Water	Site 21
580-40004-1	Soil	MOC
580-40062-1	Water	Site 28
580-40072-1	Soil	MOC
580-40073-1	Water	Site 28
580-40073-2	Water	Site 28
580-40158-1	Water/Lab Waste	Mobile Lab
580-40164-1	Soil	Site 21
580-40214-1	Soil	Site 28
280-46355-1	Soil/Drum Contents	Site 10
280-46414-1	Soil	MOC
280-46414-2	Water	Site 21
280-46550-1	GAC /Solid	Site 28 Water Treatment System
280-46550-2	Water	Site 28
580-40280-1	Water	Site 28
580-40323-1	Water	MOC and Site 28
580-40324-1	Water	Site 21
580-40328-1	Soil	Site 28
580-40408-1	Water	Site 28
580-40427-1	Soil	Site 28, ISO Tanks and bag staging areas

2.0 DATA VERIFICATION RESULTS

2.1 SAMPLE RECEIPT CONDITIONS

Samples were shipped from NE Cape via Bering Air, who forwarded samples to the laboratory via Alaska Airlines Goldstreak or Northern Air Cargo, with custody seals intact from NE Cape until receipt by the laboratory. Most samples arrived at the lab within 4 (+/-2) degrees Celsius (˚C) and in good condition. Exceptions are noted here:

Work Order 580-39336-1: The label for 13NC21SS07-3, 13NC21SS07-3 MSD, 13NC21SS09-2, 13NC21SS09-3, 13NC21SS15-0.5, 13NC21SS15-2, and 13NC21SS15-3 showed a sample date of 07/11/2013. The CoC lists 07/12/2013 as the date. The label for 13NC21SS10-2 showed a time of 1032. The CoC lists time of 0832. The label for 13NC21SS10-2.5 showed a time of 1036. The CoC lists time of 0836. These discrepancies were all logged in according to the CoC and the Sample Summary table matches the CoC and the data deliverables.

Work Order 580-39360-1: The labels on samples 13NC10WS001, -WS002, -WS003 and –WS004 did not match the sample labels, which were 13NC1WS01, -WS02, -WS03 and –WS04, the extra "0" was omitted from the sample labels. The samples were logged in per the CoC and the discrepancy had no effect on sample analyses or reporting.

Work Order 580-39367-1: Sample 13NCMOCWA003 had a collection time of 1315 listed on the container and 1140 on the CoC. Samples were logged in with the CoC time.

Work Order 580-39382-1: One cooler was shipped to TA-Tacoma and was received in good condition with a cooler temperature of 1.6°C. The trip blank (TB 071713) was received without a time or label, it was logged in per the CoC. Glycol samples were sub-contracted to TA-Denver and were shipped via Fed Ex from TA-Tacoma. The

glycol sample cooler was temporarily lost by Fed Ex and was delivered two days later at a temperature of 20.8°C. The USACE was notified immediately and a variance was granted for the analysis to proceed as glycol is relatively non-volatile (Attachment 3). Glycol results are reported without flagging in regards to the cooler being well above temperature upon receipt.

580-39440-1 A single project sample and trip blank were submitted for waste characterization analysis. The trip blank submitted with the single sample leaked methanol and smeared the label on the methanol preserved container for sample 13NC10WS05. The laboratory determined it was the correct sample after identifying the trip blank. Due to the trip blank leakage, EPA method 8260 VOC analysis was cancelled as noted in the lab report case narrative but GRO analysis proceeded and was reported with the leakage noted. The sample was also submitted for analysis in a methanol preserved container, therefore Toxicity Characteristic Leaking Procedure (TCLP)/zero-headspace extraction (ZHE) could not be performed as requested on the CoC. The project sample was analyzed using standard methods, not TCLP/ZHE. The full 8260 VOC list was reported for the project sample.

580-39443-1 One of the methanol-preserved samples, 13NC10SS017, was received with a slightly smeared label. The ID was confirmed based on writing on the cap and by confirming all other samples were present as stated on the CoC.

580-39544-1 One cooler of samples shipped to TA-Denver for glycol analysis only was received at 8.3°C; the temperature was slightly above the acceptable range, but that does not adversely affect sample results, which were reported without qualification.

580-39641-1 Seven coolers were shipped. Three of the coolers had temperatures less than 2°C. The slightly depressed temperatures had no impact on sample results. Two

unpreserved, 1-liter amber bottles were received broken at TA-Tacoma. Additional volumes were available, and the analysis was performed.

580-39724-1 Six coolers were shipped with this work order. Three of the coolers were received at temperatures below criteria at 0.0, 0.7, and 1.3°C. All water samples arrived intact; analysis and reporting proceeded with no impact to the sample results. Three VOA vials were submitted for sample 13NC28DSW01 and one of three VOA vials for 13NC28STW04 contained headspace. Two vials remained for each sample without headspace so those samples were analyzed and reported without qualification.

580-39839-1 and 580-39839-2 The lab received four coolers, one with a temperature of 1.8°C; this did not impact soil sample results. The sample times listed on the jars did not match the CoC for samples 13NC10SS035 through 13NC10SS044. Samples were logged per the CoC, which matched the times recorded in field notes.

580-40004-1 One sample cooler, containing soil samples for DRO/RRO analysis only, arrived with a temperature of -0.2°C. Samples were in good condition and analysis proceeded and low temperature did not impact sample integrity or results. Sample 13NCMOCSS133 arrived with a time label of 1305 on the sample jar and 1310 on the CoC. Samples were logged in per the CoC, and the time discrepancy did not impact extraction or analytical holding times.

580-40062-1 Five coolers were received. One cooler arrived with a 1.6°C temperature that had no impact on sample results. The receipt portion of the narrative notes that samples arrived with less than 50% of the holding time available for the PAH extraction and analysis.

580-40072-1 This work order generated a single cooler of samples, which arrived with a cooler temperature of 6.2°C; the temperature blank was 4.3°C. The sample cooler temperature was acceptable based on the temperature blank being within acceptance

limits. Sample labels for 13NCMOCSS147 and 13NCMOCSS150 showed a collection date of 9/1/13, while the CoC date was 8/26/13. Field notes, and samples 13NCMOCSS148 through 13NCMOCSS153, showed a collection date of 9/2/13. All samples in this work order were extracted on 9/4/2013 for DRO/RRO analysis only so the holding time was not exceeded. Sample 13NCMOCSS144 arrived with three containers, only one was listed on the CoC. No MS/MSD was specified on the CoC so the lab assumed that sample would be used for the MS/MSD and it was.

580-40073-1 and 580-40073-2 Seven coolers were shipped with this work order. The cooler temperatures at the time of receipt were -0.6, 1.1, 1.9, 3.4, 4.0, 4.2, and 5.6°C. The temperature blank temperatures were within 1-2° of the cooler temperatures. Water sample containers were undamaged, despite slightly depressed temperatures in three of the seven coolers. The depressed temperatures had no impact on sample analysis or results, and required no qualifications. Although these samples were submitted as a single shipment, they were broken up into two work orders to facilitate rush analyses and reporting of Site 28 treated-water samples. The lab analyzed downstream monitoring samples on a standard turn-around.

580-40214-1 The lab recorded a cooler temperature of 7.3°C upon receipt. Sample containers were measured with an IR thermometer and recorded 4.5°C. The temperature blank was 4.5°C; samples were not impacted. The trip blank submitted for BTEX analyses arrived with no date or time on the sample label. The trip blank was logged with the earliest dated samples collected for this work order: 8/30/2013 at 0000 hours. The lack of a collection date does not impact results as trip blanks are filled at the laboratory and travel with sample containers after leaving the lab and also when samples are shipped to the lab for analyses.

280-46414-1 The case narrative noted that an MS/MSD could not be performed due to insufficient sample volume. The *Sample Receipt Checklist* noted that collection times on the sample label and CoC do not match but offer no further explanation. The sample was extracted and analyzed well within holding times with no apparent issues.

580-46414-2 The sample container for 13NC21WA06 had a collection time of 1330, the CoC listed 1630 as the collection time; the samples were logged in per the CoC. The container label for 13NC21WA07 listed a collection time of 1340 on the sample container and 1645 on the CoC. Samples were logged per the CoC. The narrative noted that additional analyses requested on the CoC were logged in under work order 280-46414-1 because rush analyses were requested for some samples. Bristol requested standard turnaround time (TAT) for the two water samples.

280-46355-1 The case narrative notes that samples collected from drums, 13NC10DS01 and 13NC10DS02, arrived at the lab with headspace in the sample containers. Soil samples were submitted for TCLP VOCs for waste determination. Headspace had no impact on sample results. Sample results can be used for project purposes, which are waste characterization and disposal, without qualification. Anti-foam was added to samples 13NC10DS01, 13NC10DS02 and the method blank due to excessive foaminess in the samples during TCLP/ZHE and 8260 waste analysis. The anti-foam was added to the method blank to show it did not contribute to or bias the sample results.

280-46550-2 One HCL-preserved and one unpreserved 1-liter amber arrived broken for sample 13NC28TWA15, and one unpreserved 1-liter amber arrived broken for sample 13NC28TW15; the narrative noted sufficient sample volumes remained for all analyses. Sample 13NC28STW15 was received but not listed on the CoC. Once notified, Bristol requested analyses be performed as specified.

580-40280-1 Four coolers were shipped with this work order and the cooler temperatures were noted at 1.0, 1.0, 2.9 and 4.0°C. According to receipt forms, the temperature blanks were all within acceptance range with the cooler or blanks. The temperatures had no impact on analyses.

580-40427-1 The sample labels did not match the CoC for the ISO MULTI INCREMENT® (MI) samples, the CoC omitted MI from the sample ID but MI was on the bag labels and the sample type was noted as MI; samples were logged in per CoC. The samples times on VOA vials collected at Site 28 and the ISO tanks also did not match the CoC due to MI volatile and semi-volatile samples being logged in with the same time on the CoC while they were actually collected sequentially at the site with differing collection times. Volatile and semi-volatile MI samples should have been recorded separately on the CoC with the correct samples times. Incorrect sample times did not affect sample analyses and reporting. Holding times were exceeded for the DRO and RRO analyses, as noted on the data tables. The CoC listed a trip blank that was accidentally omitted during packing and shipment. Samples 13NCISO001-002 and 13NCISO 003 were H-flagged with potential low bias because they exceeded BTEX and DRO/RRO holding times by one to six days. This was due to the time it takes to dry and prepare MI samples. Samples 13NCBGSS02 through 13NCBGSS10 were received by the laboratory and prepared for MI drying within holding time but required time to air dry and prepare for analysis. The sample holding times expired by one to seven days due to the time required for air drying. Results are H flagged.

2.2 BTEX ANALYSES

TestAmerica analyzed samples for BTEX by SW-846 method 8260B. For soils, all QAPP specified surrogates were analyzed as well as additional surrogates. The data review was performed using all surrogates. QAPP specified QC for an analytical batch of up to 20 samples requires an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD, and project

MS/MSD pair were analyzed with each batch and met all quality control criteria with exceptions noted for the following work orders:

580-39470-1 The 8260 method blank in batch 580-141210 was not spiked with trifluorotoluene and did not meet recoveries. All other surrogates added to QC and project samples met acceptance limits. Trifluorotoluene was added to the preserving methanol as a field surrogate for GRO by AK101 analysis. No flags were assigned based on the MB TFT surrogate omission.

580-39367-1 Trifluorotoluene (TFT), an AK101-GRO field surrogate, had recoveries exceed the upper control limit for method 8260 BTEX analysis. Since BTEX by 8260 does not use field surrogate, the high TFT recoveries do not impact results. No flagging was assigned based on TFT recoveries in BTEX results, and GRO was not analyzed in any samples.

580-40214-1 TFT recoveries' exceeded the upper control limit for 8260 BTEX analysis. Since BTEX by 8260 does not require a field surrogate, the high TFT recoveries do not impact results. No flagging was assigned based on TFT recoveries in BTEX results, and GRO was not analyzed in any samples.

580-40328-1 Sample 13NC28SS026 had 4-bromofluorobenzene (BFB) surrogate recovery greater than the upper control limit, sample results were ND for BTEX and flagging was unnecessary. The BTEX MS/MSD in prep batch 280-192173 on sample 13NC28SS029 had high recoveries for all analytes; the MS/MSD relative percent difference (RPD) was within limits. Sample results for 13NC28SS029 are flagged QH for high MS/MSD recoveries, which take precedence over RPD criteria.

The BTEX MS in prep batch 280-192207 on sample 13NC28SS041 had high recoveries for all analytes in the MS, no target analytes were detected in sample 13NC28SS041 so no flags were applied to results. The LCS/LCSD met criteria.

580-40408-1 The 8260 BFB tunes of analytical batches 146256 and 146261 failed relative abundance m/z by 0.05% and cited due to rounding errors in the calculation, analyses proceeded without issue. The 8260 BFB tune for analytical batch 146515 had m/z=175 failing the 5-9% method criteria, with a 9.23% relative abundance due to rounding errors in the calculation. Analyses proceeded without issue.

580-40427-1 The BTEX continuing calibration verification (CCV) in analysis batch 580-146092 recovered above the upper acceptance limit for benzene. Project samples were non-detect for all BTEX analytes. Sample results are not affected as the instrument demonstrated ability to detect analytes. TFT surrogate failed to meet lower recovery limits for BTEX analyses in 13NC28MI001, 13NC28MI001MS, 13NC28MI001MSD and 13NC28MI002. TFT is an AK101-GRO field surrogate and BTEX does not use a field surrogate. Samples had greater than 40% moisture which may explain the low recoveries.

2.3 VOC ANALYSES

TestAmerica analyzed samples for VOCs by SW-846 method 8260B. QAPP specified QC for an analytical batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. An MB, LCS/LCSD and project MS/MSD were analyzed and within control limits with each batch with exceptions noted below.

For soil analysis, the QAPP listed only surrogates 4-BFB and toluene-d8. The laboratory reported three extra surrogates (fluorobenzene, TFT, and ethylbenzene-d10) for soil samples which were also evaluated. It should be noted that TFT is a field surrogate provided with the methanol preservative specifically for AK101 (GRO) analysis. TFT is a reported BTEX/VOC surrogate and its recoveries were evaluated. No results were flagged solely on the recovery of the TFT, but the recoveries were used to evaluate reported

results. The QAPP surrogates were within limits and results were not qualified, with exceptions noted below:

580-39360-1 The VOC method blank reported acetone at 104 µg/kg in the method blank of analytical batch 580-40137, no acetone was detected in any project samples so results were not qualified.

The VOC LCS exceeded the upper control limit for 1,2-dichloropropane recovery in analysis batch 580-140137. This batch of samples was non-detect and a variance request was granted by the USACE project chemist. Sample results were not flagged as the analysis was sufficient in detecting the analytes of interest.

580-39382-1 Methylene chloride was detected in all samples submitted in this work order along with the method blank in analytical batch 580-140312. All samples were reanalyzed for methylene chloride on the same day in analytical batch 580-140374 and results were reported as non-detect for methylene chloride, which is a common lab contaminant.

580-39440-1 Acetone was detected in method blank 580-140694-1 and was the only VOC analyte detected in the only project sample for this work order at a slightly lesser concentration. The acetone result for sample 13NC10WS05 was B flagged.

The case narrative for 580-39440-1 indicated that RPD was exceeded for "several" target anlytes in the MS/MSD. In the report, 35 analytes were flagged in the MS/MSD section for not meeting RPDs, based on soil weight and concentration. Further review of the MS/MSD results and a comparison of percent recoveries, reveals that no results exceeded RPD limits when percent recoveries were used to calculate the RPD. As example, both the MS and MSD on sample 13NC10WS05 showed 100% recovery for benzene but the RPD was reported at 31%; A calculation based on the differing soil weights in both the MS and MSD sample containers caused this, not percent recovery.

This is allowed under EPA methods but, as in this example, can provide erroneous results. Vinyl chloride, bromomethane, chloroethane, and hexachlorobutadiene exceeded upper control limits in both the MS and MSD; none of these analytes were detected in the sample so no flagging was necessary. The 8260 LCS/LCSD in analysis batch 580-140693 exceeded RPD limits for chloroethane, trichlorotrifluoromethane, carbon disulfide, acetone, methylene chloride, 2,2-dichloropropane, 2-butanone (methyl ethyl ketone [MEK]), and tetrachloroethene. All analytes were within method control limits in both the LCS and LCSD; only the RPD limits failed. None of the analytes were detected in the sample except acetone, which is noted earlier in this section. Even with the multiple QC failures for RPD or recoveries, no results were flagged as the instrument demonstrated adequate sensitivity to detect target analytes.

580-39443-1 The 8260 ICAL ICV was misspiked with TFT due to analyst oversight. Because TFT is also used as an AK101 field surrogate and is not spiked into samples for 8260 analyses, analysis was allowed without qualification.

Acetone was detected in method blank 580-140694/1 at 0.137 mg/kg and also detected in project sample 13NC10SS018 at 0.26 mg/kg. Upon review the acetone result for sample 13NC10SS018 the result was B flagged.

Samples were analyzed for VOCs in the same analytical batch as work order 580-39440-1 and the case narrative for 580-39443-1 also indicated that RPD was exceeded for “several” target anlytes in the MS/MSD when there were 13 analytes flagged in the MS/MSD section of the report for not meeting RPDs, based on soil weight and concentration. Sample 13NC10SS017 was used for the MS/MSD for this work order. Dichlorodifluoromethane, chloromethane, vinyl chloride, bromomethane, chloroethane, trichlorofluoromethane, carbon disulfide, 2-butanone (MEK), 1,2-dichloroethane, trichloroethene, 1,2-dichloropropane, 4-methyl-2-pentanone (MIBK)

and hexachlorobutadiene exceeded upper control limits in either the MS and/or MSD, none of these analytes were detected in the sample so no flagging was necessary. The 8260 LCS/LCSD in analysis batch 580-140693 exceeded RPD limits for chloroethane, trichlorotrifluoromethane, carbon disulfide, acetone, methylene chloride, 2,2-dichloropropane, 2-butanone (MEK), and tetrachloroethene. All analytes were within method control limits in both the LCS and LCSD, only the RPD limits failed except 1,2-dichloropropane, which exceeded the control limits but was not detected in any samples. USACE project chemists granted a reporting variance for the 1,2-dichloropropane. None of the analytes were detected in the MS/MSD sample. Even with the multiple QC failures for RPD or recoveries, no results were flagged as the instrument demonstrated adequate sensitivity to detect target analytes.

580-39755-1 The AK101-GRO field surrogate TFT's recoveries exceeded the upper control limit for 8260 VOC analysis. Since VOCs by 8260 do not use field surrogates, the high TFT recoveries did not impact results and no flagging was assigned based on TFT recoveries.

580-38889-1, 580-39367, 580-39382-1 580-39641-1, 580-39724-1 and 580-39755-1, 580-39839-2 The laboratory indicated in the case narratives for these work orders that ion 50 results for the BFB tunes were slightly less than the 15 to 40% criteria at roughly 14.8%. Since the values round to the acceptable tune criteria, the results are acceptable and do not require qualification. This gas chromatograph/mass spectrometer instrument is used for reporting both full VOCs and BTEX only by 8260B.

280-46355-1 BFB surrogate recovered high in samples 13NC10DS01 and –DS02 for 8260-VOC analysis. All results were ND so data was not impacted. Sample 13NC10DS01 was used for the 8260-VOC MS/MSD and had high recovery for

chloroethene. Chloroethene was not detected in the sample so no flagging was necessary.

The 8260 LCS/LCSD recoveries exceeded the upper control limit in prep batch 280-190771 for 1,2-dichloroethane, benzene, carbon tetrachloride, chloroform, and tetrachloroethene. No variance was requested or granted for the high recoveries in the LCS/LCSD. No analytes were detected in the sample, and the instrument showed ability to detect the analytes. Flagging was unnecessary. The 8260 MSD in leach batch 280-190775 recovered 2% below the lower acceptance limit for chlorobenzene in sample 13NC10DS01; the parent sample result was ND and was flagged QL.

2.4 METHANE ANALYSES

TestAmerica-Denver analyzed all samples for methane using method RSK 175.

Required QC for an analytical batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD and project MS/MSD pair were analyzed with each batch.

The following items were reviewed and met QAPP criteria: holding times, MB, LCS and LCSD recoveries, and MS/MSD recoveries and RPDs.

2.5 GLYCOL ANALYSES

TestAmerica analyzed samples for glycols by SW-846 method 8015B. For each analytical batch of up to 20 samples, an MB, and LCS/LCSD and MS/MSD pairs were analyzed. Surrogates, LCS/LCSD recoveries and RPDs, and MS/MSD recoveries and RPD were reviewed and met QAPP criteria, except as noted:

580-39360-1 Ethylene glycol recovery in the MSD was 41% with a 50% lower control limit, however, the initial sample concentration was greater than four times the spike amount so no results were qualified.

580-39544-1 The RPD between the two differing columns exceeded 40% for propylene glycol in in sample 13NC10SS23. The results are flagged QN for quality issues with no directional bias. The MS/MSD failed to meet recovery criteria for ethylene glycol due to the parent sample concentration being greater than 40 times the spike concentration. No qualification was necessary.

580-39655-1 The glycol MS/MSD failed recovery and RPD criteria due to the presence of glycol in the parent sample at a concentration more than 50 times the spike concentration; no data flags were assigned based on the high concentration in the parent sample.

580-39839-2 Sample 13NC10SS045 had high 1,4-butanediol surrogate recovery in the diluted sample. The undiluted sample met surrogate recovery criteria so no flags were assigned. Sample 13NC10SS045 was also used for the glycol MS/MSD and failed high for ethylene glycol due to the parent sample being more than four times the spike concentration; no flags were assigned.

2.6 GRO ANALYSES

TestAmerica tested for GRO by ADEC method AK101. Required QC for an analytical batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD pair and project MS/MSD pair were performed with each QC batch.

Holding times, MBs, LCS/LCSD recoveries and RPDs, and MS/MSD recoveries and RPDs were reviewed and met QAPP criteria, except as noted:

580-39360-1-The trip blank 071513, associated with sample delivery group 580-39362-1, was reported under sample delivery group 580-36360-1 and contained GRO below the LOQ at 3.8 mg/kg. The method blank for analytical batch 580-140243 reported a GRO concentration of 1.35 mg/kg with only the trip blank reporting a concentration greater than the method blank. The four associated samples

(13NC10WS001 through 13NC10WS004) and the trip blank were B flagged to indicate blank contamination with potential high bias.

580-39444-1 The instrument blank had a positive GRO detection at 0.0152 mg/L in analytical batch 580-141312. Samples 13NCMOCGW06 and 13NCMOCGWGW07 had reportable results roughly twice the concentration reported in the instrument blank. GRO results for 13NCMOCGW06 and 13NCMOC GW07 were B flagged to indicate blank contamination with potential high bias. All other samples in this work order were non-detect or analyzed in a different batch.

580-39382-1 The instrument continuing calibration blank and method blank both had positive detections at 0.81 mg/kg in the method blank analytical batch 580-140309, as well as the trip blank submitted with these project samples. Samples 13NC10SS011 through 13NC10SS016 from work order 580-39440-1 had reportable results near the concentration reported in the method blank. GRO results for 13NC10SS011 through 13NC10SS016 were B flagged to indicate blank contamination with potential high bias. The sample results were well below cleanup level and the lab contamination did not impact the usability of results.

580-39440-1 The method blank had positive detections of GRO at 0.872 mg/kg in analytical batch 580-140697 as well as the trip blank submitted with the project sample. The GRO result for 13NC10WS05 was B flagged to indicate blank contamination with potential high bias. The sample results were well below cleanup level and the contamination did not impact the usability of results. Sample results were used to characterize and dispose of bulk waste.

580-39443-1 The method blank had positive detections of GRO at 0.872 mg/kg in analytical batch 580-140697 as well as the trip blank submitted with the project samples. The GRO results for 13NC10SS017, 13NC10SS 018, 13NC10SS 021 and

13NC10SS 022 were B flagged to indicate blank contamination with potential high bias. The sample results were well below cleanup level and the contamination did not impact the usability of results. Sample results were used to evaluate excavation floor samples to determine if site cleanup levels were met. The GRO results could still demonstrate that the floor samples met site-specific cleanup levels.

580-39757-1 The GRO method blank 580-142629 had reportable GRO at 0.725 mg/kg. All GRO project sample results were greater than 10 times the blank concentration, so no flagging was necessary. Sample 13NCPBSS07 was already B flagged due to detections in the trip blank. Samples 13NCPBSS08, 13NCPBSS 09, and 13NCPBSS 09 MS/MSD had surrogate recoveries less than the lower acceptance limits; results are flagged QL. The previous J flag for results less than the LOQ was removed and QL was substituted. 13NCPBSS08 and 13NCPBSS09 had 77% and 78% moisture reported; matrix interference from water is highly suspected. The results could still demonstrate that the area is well below cleanup levels for GRO.

580-39839-1 Sample 13NCRWSS08 had low GRO surrogate (TFT) recovery. The sample result was ND and a QL flag was applied for low surrogate recovery.

2.7 SVOC ANALYSES

TestAmerica analyzed SVOC samples by method SW-846 8270C. Required QC for an analytical batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. An MB, and LCS/LCSD and MS/MSD pairs were performed with each QC batch.

MBs, surrogate recoveries, and LCS/LCSD, MS/MSD recoveries and RPDs were reviewed and met QAPP criteria.

2.8 PCB ANALYSES

TestAmerica analyzed samples for PCB by method SW-846 8082. Required QC for an analytical batch of up to 20 samples includes an MB, LCS, and MS/MSD pair. The

following items were reviewed and met QAPP criteria: holding times, MBs and LCS/LCSD recoveries. A MB, LCS/LCSD, and project MS/MSD pair were performed with each QC batch and met acceptance criteria with noted exceptions:

580-39443-1 Decachlorobiphenyl (DCB, surrogate) recoveries in sample 13NC10SS018 exceeded upper recovery criteria. The sample also had multiple Aroclors (1254 and 1260) reported, and matrix interference is suspected. The 1254 and 1260 results are flagged QH for quality issue with potential high bias. The sample results were well below cleanup criteria and results are usable as qualified. The RPD on the PCB MS/MSD (13NC10SS017) exceeded 30% criteria; only Aroclor 1254 was reported in this sample and its result was flagged QN for quality issue with no directional bias. Both the MS and MSD met acceptance criteria. The laboratory indicated that some samples required sulfuric acid cleanup to reduce matrix interferences. Mercury cleanup by method 3660A was also used, but to a lesser extent.

580-39510-1 The PCB LCS was accidentally double spiked in extraction batch 580-141196. When the spike concentration was corrected the LCS met acceptance limits. The MS/MSD in extraction batch 580-141196 failed to meet lower recovery criteria (40%) for Aroclor 1260 on sample 13NC13SS059. Because the LCS/LCSD met criteria, the Aroclor 1260 result for 13NC113SS059 was flagged QL and is considered an estimate with low bias.

580-39513-1 The surrogate tetrachloro-meta-xylene (TCMX) failed to meet acceptance limits for PCB analysis on the primary column, with a 246% recovery (upper limit 155%) for sample 13NCBGSS01. TCMX met method criteria on the secondary column, and surrogate DCB was within acceptance criteria on both columns. No flags were applied based on surrogate recoveries. The PCB MS/MSD on sample 13NCBGSS01 exceeded spike recovery criteria for Aroclor 1016, which was not detected in the sample. The same MS/MSD failed to meet RPD control limits for Aroclor 1016 with an

RPD of 54%. The MS/MSD also failed to meet lower recovery criteria for Aroclor 1260 because the parent sample concentration of Aroclor 1260 was greater than six times the spike concentration. No PCB results were qualified for surrogate or MS/MSD recoveries outside of acceptance limits.

580-39641-1 and 39641-2 The PCB MS/MSD and parent sample surrogate recoveries failed low in sample 13NC28WA01 in analysis batch 580-141860; the parent result is flagged QL for quality issues with potential low bias. All results were non-detect. The case narrative noted an emulsion formed during extraction in sample 13NC28WA01. The PCB CCV for analytical batch 580-141860 was out of control for the surrogate DCB on the primary column; the secondary column was in control and both sets of data were reported with client approval and a USACE variance granted.

580-39723-1, 39723-2 The PCB CCV for analytical batch 580-141860 was out of control for the surrogate DCB on the primary column; in the secondary column, it was in control and both sets of data were reported with client approval and a USACE variance granted.

580-39724-1 The PCB CCV for analytical batch 580-142437 was out of control for the surrogate DCB on the primary column but was in control the secondary column; both sets of data were reported with client approval and a USACE variance granted.

580-39755-1 The PCB MS/MSD for 13NC28SS001 greatly exceeded recovery limits for Aroclor 1016; the parent sample was ND for PCBs, so no flags were assigned.

280-46355-1 The PCB MS/MSD in prep batch 280-190849, sample 13NC10DS03 had low recoveries of Aroclor 1260 and DCB. Results were ND for that sample and PCB results for that sample flagged QL. The surrogate in sample 13NC10DS03 was also recovered slightly below the lower acceptance limit. Sample results were already flagged QL based on MS/MSD recoveries so no additional flagging was necessary.

580-40408-1 The laboratory case narrative noted that the PCB MS/MSD in prep batch 580-145578 was accidentally misspiked with 8081 pesticide analytes. The LCS/LCSD and an MS/MSD from another project were spiked correctly and met acceptance criteria.

580-40214-1 Decachlorobiphenyl did not meet lower surrogate recovery limit on the confirmation column for sample 13NC28SS016. DCB met recovery limits on the primary column. Sample results were ND so no flags were assigned..

580-40427-1 The PCB CCV in analysis batch 580-146123 had secondary column recoveries for Aroclor 1016 and 1260 exceed the upper control limit and surrogate TCMX recovered above control limits on both columns, surrogate DCB passed on both columns. Sample results were non-detect and a USACE variance was granted for results without qualification, as they were non-detect and surrogates were well within control limits. The case narrative also noted that PCB holding times were exceeded on several MI samples; there is no holding time for PCBs in soil per the method and *ADEC Field Sampling Guidance,* so no flags were assigned to any PCB results due to holding time. The PCB MS on sample 13NC28MI01 had recoveries less than the lower recovery limits for Arcolor 1260; both surrogates TCMX and DCB and also failed RPD limits for Aroclor 1260. The parent sample failed to meet surrogate recovery limits for DCB. The parent result is non-detect and all PCB results for 13NC28MI01 are flagged QL for the multiple QC failures with potential low bias.

2.9 PAH ANALYSES

TestAmerica analyzed samples by SW-846 method 8270C selected ion mode (SIM) for PAHs. Required QC for an analytical batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD, and project MS/MSD pair were performed with each QC batch and met criteria with some exceptions:

580-39293-1 The PAH MSD in prep batch 580-139750 failed to meet lower acceptance criteria for anthracene and both the MS and MSD failed to meet lower recovery and precision criteria for benzo(a)pyrene. The LCS/LCSD met criteria for accuracy and precision for all PAH analytes so only the anthracene and benzo(a)pyrene results for sample 13NC28TWA01 were flagged QL for quality issues with potential low bias.

580-39360-1 The LCSD in extraction batch 580-140347 had a low recovery of anthracene at 50% (lower limit 51%). Anthracene results for samples 13NC10WS001 through 13NC10WS004 were reported with QL qualification. All anthracene sample results were non-detect.

580-39440-1 Naphthalene was also detected in method blank 580-140660/1 at a concentration less than the LOQ but greater than the sample. The 8270 SIM naphthalene result for sample 13NC10WS05 was B flagged with a potential high bias. The 8260 naphthalene result was non-detect so lab contamination is suspected.

580-39443-1 Fluoranthene and pyrene were detected in the method blank in extraction batch 580-140650 but sample concentrations were greater than 10 times the concentrations in the method blank so no flagging was necessary.
Benzo[b]fluoranthene exceeded the upper control limit for the MSD on sample 13NC10SS017 in extraction batch 580-140733. The LCS/LCSD was within control limits so only the parent sample result was flagged QH for quality issue with potential high bias. All sample results were well below cleanup levels for benzo[b]fluoranthene.

580-39470-1 The 8270-SIM PAH LCS/LCSD in batch 580-141497 exceeded 30% RPD control limits for naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, and acenaphthylene. USACE project chemists granted a reporting variance, as both the LCS and LCSD were within spike acceptance criteria. Positive results for sample 13NC28PRWA01 through 13NC28PRWA04 were flagged QN and

considered estimates. Benzo[a]anthracene recovery in matrix spike sample 13NC28PRWA01 exceeded recovery limits by 2% at 112%, limit 110%. The case narrative noted the MS spike concentration was twice the normal limit and percent recoveries met RPD limits. Benzo[a]anthracene was not detected in the parent MS sample so no flagging was required.

580-39471-1 The 8270-SIM PAH LCS/LCSD in batch 580-141497 exceeded 30 % RPD control limits for naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, and acenaphthylene. A USACE project chemist granted a reporting variance, as both the LCS and LCSD were within spike acceptance criteria. Results for samples 13NCMOCSWA005 through 13NCMOCSWA007 are flagged QN and are considered estimates. Benzo[a]anthracene recoveries in MS/MSD sample 13NCMOCSWA005 exceeded recovery limits by 2% and 5% respectively (upper limit is 110%). Chrysene exceeded the upper limit in the MS by 1% (upper limit is 110%). Benzo[a]anthracene and chrysene were not detected in the parent MS sample. No flagging was required as the LCS and LCSD were within control limits.

580-39641-2 In analysis batch 580-141948, acenaphthene, anthracene, and benzo[a]pyrene recovered low in the LCS/LCSD; samples were re-extracted within holding time and the re-extracted results are acceptable without qualification.

580-39723-1 and 39723-2 Recoveries exceeded the upper control limit for benzo[k]fluoranthene and dibenz[a,h]anthracene for the 8270 SIM PAH CCV in analysis batch 580-142226; LCSD/LCSD recoveries met control limits. Samples were ND so a variance was granted by USACE to report. The PAH MSD in analysis batch 580-142226 exceeded the upper control limits for acenaphthylene; results were ND so no flagging was necessary.

580-39755-1 The PAH method blank 580-142612 had concentrations of fluoranthene (2.19 µg/kg), pyrene, (2.53 µg/kg), benzo[a]anthracene (1.92 µg/kg), chrysene (1.97 µg/kg), benzo[b]fluoranthene (1.75 µg/kg), benzo[k]fluoranthene(2.09 µ g/kg), and benzo[a]pyrene 1.84 (µg/kg) detected in the sample at concentrations less than half the LOQ, with the exception of pyrene, which slightly exceeded ½ the LOQ. Sample results with analyte concentrations less than 10 times the method blank concentration were B flagged and are considered estimates with potential high bias.

580-40214-1 The PAH method blank 580-144688 had reportable concentrations of benzo[k]fluoranthene and dibenz[a,h]anthracene in the method blank, at less than ½ the LOQ. Results with less than 10 times the blank concentration have been B flagged for samples 13NC28SS014 through 13NC28SS024. The PAH MS/MSD in the same extraction batch failed low for 1- and 2-methylnaphthalene; the LCS/LCSD met recovery and RPD criteria so only the 1- and 2-methylnaphthalene results for sample 13NC28SS019 were flagged QL for quality issue with low potential bias.

280-46550-2 Twelve target analytes were detected in 8270-PAH MB 280-191299 at concentrations similar to sample results. Results for samples 13NC28TWA13 through 13NC28STWA20 were B flagged. Nearly all samples had a reportable concentration of at least four analytes detected in the method blank at similar concentrations. All results are less than regulatory limits and have no impact to the usability of results treated water discharge or downstream monitoring during Site 28 sediment removal activities. The LCS/LCSD had low 8270-SIM PAH recoveries in batch 280-191499 and sample 13NC28STW15 was re-extracted out of hold time; both sets of data were reported. The out-of-hold extraction batch met QC criteria and results are reported for sample 13NC28STW15. Those results are qualified with an H and are considered estimates with potential low bias. Samples 13NC28STW17 and 13NC28STW19 in extraction batch 280-191299 had high surrogate recoveries for nitrobenzene-d5;

naphthalene, 1-methylnaphthalene and 2-methylnaphthalene are associated with this surrogate. The samples were ND for naphthalene, so only 1- and 2-methylnaphthalene were flagged QH on samples 13NC28STW17 and 13NC28STW19.

580-20280-1 Benzo[a]anthracene was recovered above the upper acceptance limit in the 8270-SIM LCS and acenaphthylene was recovered above the acceptance limit in the LCSD. A variance was granted by USACE for reporting results with proper qualifiers (QH). Sample 13NC28STW22 had a reportable concentration of acenaphthylene and it was flagged QH.

580-40323-1 Benzo[k]fluoranthene, dibenz[a,h]anthracene and pyrene were detected in the 8270-SIM method blank 580-145281 at less than ½ the LOQ. Sample 13NC28TWA020 had benzo[k]fluoranthene and dibenz[a,h]anthracene near the concentration reported in the method blank. These results were B flagged. Samples 13NCMOCSW08, 13NCMOCSW09 and 13NCMOCSW10 had reportable pyrene concentrations. Results for 13NCMOCSW08, 13NCMOCSW09 and 13NCMOCSW10 were B flagged. Sample 13NCMOCSW08 failed to meet lower surrogate recovery criteria for terphenyl-d14. The lab case narrative noted non-target analyte interferences. PAH results for 13NCMOCSW08 were all flagged QL, the surrogate recovery was 32% with a 50% lower acceptance limit.

580-40328-1 Acenaphthylene recovered 3% above the upper acceptance criteria in the LCS in prep batch 580-145371 and anthracene recovered 2% above the upper acceptance in the LCS in prep batch 580-145473. Both sets of LCS/LCSD met RPD criteria. Positive results for samples 13NC28SS025 through 13NC28SS046 associated with the batch LCS's are flagged QH for their respective analytes that exceeded the upper control limits in the LCS. The MS/MSD on sample 13NC28SS029, prep batch 580-145473 failed to meet lower recovery criteria for acenaphthene; the parent result

is flagged QL. The MS/MSD on sample 13NCSS029 also failed upper recovery criteria for naphthalene, and 1- and 2-methylnaphthalene. The parent sample concentrations for these analytes were greater than four times the spike concentration and were analyzed at a 10X dilution to bring the analytes into calibration range; no flags were assigned to these three analytes.

580-40408-1 The PAH LCS 580-145563 had acenaphthylene recovery above the 105% upper acceptance limit, at 108%. Only sample 13NC28STW22 had acenaphthylene detected and the result was flagged QH.

580-40427-1 Acenaphthylene recovery in the LCS/LCSD from extraction batch 580-146198 failed high by 4 and 8% respectively; only sample 13NC28MI002 had a reportable concentration of acenaphthylene and the result is flagged QH. Sample 13NC28MI01 MSD in MI prep batch 580-146198 had 1-methylnaphthalene recovery 1% below criteria. The MS/MSD also failed RPD criteria for 1- and 2-methylnaphthalene, acenaphthylene, benzo[a]pyrene, indeno[1,2,3-cd]pyrene, dibenz[a,h]anthracene, and benzo[g,h,i]perylene; positive sample results these sample 13NC28MI01 analytes are flagged QN for RPD exceedences, which replaced several J flags issued in the lab report.

2.10 DRO/RRO ANALYSES

TestAmerica analyzed samples for DRO/RRO following ADEC methods AK102/103.

Required QC for a batch of up to 20 samples includes an MB, LCS /LCSD, and MS/MSD pair. A MB, LCS/LCSD, and project MS/MSD pair were performed with each QC batch and met acceptance criteria, with some exceptions:

580-39358 Two instrument blanks (IB) contained DRO and RRO at detectable concentrations less than ½ the LOQ in analytical batches 580-140237 (8.06 and 19.4 mg/L, respectively) and 580-140299 (7.82 and 18.3 mg/L, respectively). Detected

results less than 10 times the blank concentrations for samples 13NCMOCSS001 through 13NCMOCSS013 were qualified B to indicate the potential for a false positive or high bias.

580-39360-1 The method blank was reported with a DRO concentration of 2.49 mg/kg. All sample results were greater than 10 times the reported DRO method blank concentration so no qualification was necessary.

580-39362-1 Two IBs contained DRO and RRO between the LOQ and ½ the LOQ. The IB for analytical batch 580-140240 contained 8.0 and 22.4 mg/L DRO and RRO, respectively. Only one associated result, not already B flagged due to MB contamination, will be qualified on the basis of this IB. An IB for analytical batch 580-140237 contained 9.1 and 21.6 mg/L DRO and RRO, respectively. The other IB run with that analytical batch contained 8.06 and 19.4 mg/L DRO and RRO, respectively. Two DRO and two RRO results are B flagged on the basis of these two IBs.

580-39367-1 DRO and RRO were detected in the method blank in extraction batch 580-140293 at concentrations less than 10 times the lowest sample concentration no B flags were assigned based on the 10X rule.

580-39367-1 Sample 580-39367-2 (13NCMOCWA002) failed low in the MS/MSD for both DRO and RRO; results are flagged ML to indicate matrix interference with potential low bias on that sample. The LCS/LCSD had acceptable results.

580-39439-1 Sample 13NCMOCSS016 was specified on the CoC for MS/MSD analysis for DRO/RRO and had recoveries exceed method acceptance limits. The LCS/LCSD were within limits, the DRO parent sample concentration was greater than four times the spike amount so no flagging was necessary.

580-39440-1 DRO was detected in the method blank, and the MS/MSD on the project sample 13NC10WS05 failed recoveries high. Because the sample concentration was so

much greater than the method blank concentration, and greater than four times the spike concentration, no flagging was required.

580-39443-1 Sample 13NC10SS017 had a very high RRO recovery in the MSD sample and was not flagged as the parent sample concentration was greater than four times the spike concentration.

580-39470-1 DRO was detected in the method blank in extraction batch 580-140910 at a concentration greater than ½ the LOQ and near reported sample concentrations. The entire batch was re-extracted within hold time and the method blank result for extraction batch 580-141199 was again positive but less than ½ the LOQ. Results for samples 13NC28PRWA01 and 13NC28PRWA02 were greater than 10x the blank concentration. Sample results for 13NC28PRWA03 and 13NC28PRWA04 were slightly less than 10X the blank concentration and were reported with a B flag.

580-39471-1 The DRO/RRO method blank from extraction batch 580-140910 had both DRO and RRO detected at concentrations less than the LOQ. All sample results except the RRO result for 13NCMOCSWA005 were greater than 10 times the method blank concentration so only the RRO result for 13NCMOCSWA005 was B flagged. The RRO method blank in prep batch 580-140910 failed to meet the lower the recovery limit for the surrogate n-Triacontane-d62, all samples met surrogate recovery limits so sample results were not impacted.

580-39513-1 The DRO method blank from extraction batch 580-141317 reported a positive result of 0.839 mg/kg. The sample result was 87 mg/kg so no flagging was necessary.

580-39566-1 The DRO/RRO method blank in extraction batch 580-141507 had DRO reported at 8.45 mg/kg and RRO reported at 18.1 mg/kg. No DRO results were flagged as all DRO sample results from this extraction batch were greater than 10 times the blank concentration.

Samples 13NCMOCSS03, -039, -040, -041, -044, -046, -047, -048 and -049 had their RRO results B flagged for blank contamination and are considered estimates with potential high bias. The DRO MSD recovery on sample 13NCMOCSS042 in extraction batch 580-141560 exceeded the upper control limit due to the parent sample concentrations being greater than 4 times the spike concentration so no sample results were flagged.

580-39641-1 and 39641-2 The DRO/RRO MS/MSD failed low for recoveries in sample 13NC28WA01, analysis batch 580-142044; the parent result was greater than 30 times the spike concentration so no flags were assigned.

580-39723-1 and 39723-2 The DRO/RRO MS/MSD failed low for recoveries in sample 13NC28WA02 in analysis batch 580-142459; the DRO parent result was greater than 5 times the spike concentration so no flags were assigned. The RRO MS had low recovery; results for 13NC28WA02 were flagged QL for quality issue with potential low bias. The DRO and RRO were detected in method blank 580-142421 at less than ½ the LOQ (0.0492 and .00517 mg/L respectively); sample results were greater than 10 times the concentration in the method blank so no flagging was necessary.

580-39724-1 DRO/RRO LCS/LCSD in extraction batch 580-142472 failed low for DRO recoveries. Samples were re-extracted outside of holding time. Results outside of holding time were reported for samples 13NC28STW03, 13NC28DSW01, 13NC28DSW02, 13NC28DSW03, 13NC28DSW04, and 13NC28DSW05 have been H flagged. The lab reported both sets of results and they were comparable.

580-39754-1 DRO was reported in the method blank associated with prep batch 580-142386 at 6.9 mg/kg. Only one sample (13NCMOCSS071) had results less than 10 times the concentration in the method blank. The MS/MSD on sample 13NCMOC066 failed recovery high for both DRO and RRO in extraction batch 580-142386, but the

LCS and LCSD were within limits. The parent MS/MSD sample was flagged QH for high MS/MSD recoveries. Results are usable for demonstrating the excavated areas are below cleanup levels.

580-39755-1 The DRO/RRO MS/MSDs on samples 13NC28SS001 and 13NC28SS008 failed to meet recovery criteria for both untreated and silica gel treated results. Because the DRO and RRO concentrations in the parent samples were greater than four times the spike concentration, no flags were assigned to these samples. The LCS/LCSDs in both batches met recovery and RPD criteria. The LCS/LCSD for silica gel treated DRO/RRO in extraction batch 580-142833 failed to meet RPD criteria, but the LCS and LCSD met recovery criteria, so no flags were assigned.

580-39757-1 DRO and RRO were detected in method blank 580-143065 at 7.65 and 16.7 mg/kg respectively. Samples 13NCPBSS01, 13NCPBSS02, 13NCPBSS03 and 13NCPBSS04 had DRO concentrations less than 10 times the blank concentration. 13NCPBSS02 and 13NCPBSS04 were B flagged for RRO in the method blank. All results were well below cleanup levels. Sample 13NCPBSS09 was used for the batch MS/MSD for DRO/RRO and had low DRO recovery in the MSD (53%) and also failed 30% RPD limits at 50%. The RRO MS recovery was 121% (upper limit 120%) and the MSD had 62% recovery (lower limit 60%). The RRO MS/MSD failed RPD limits at 33%. While the MS/MSDs are out of control in several different directions, the DRO parent sample result was flagged QL, mainly due to the low MSD recovery. The RRO parent result was flagged QN due mainly to the high RPD values. Sample 13NCPBSS09 also had low surrogate recoveries. The percent moisture result for 13NCPBSS09 was 78% and was mostly saturated tundra. Matrix interference is suspected. It should be noted that the parent sample and MS/MSD for 13NCPBSS09 were re-extracted two days past holding time and had acceptable MS/MSD and surrogate recoveries. It was the reviewer's decision to report the in-holding-time results, even with acceptable

surrogate and MS/MSD results from the re-extract outside of holding time, in order to have a comparable data set. All results can still demonstrate that the suspected pipeline break area is below site-specific cleanup levels.

580-39794-1 The method blank in extraction batch 580-142846 had detectable concentrations of DRO at less than ½ the LOQ at 4.09 mg/kg. All samples extracted in the batch had DRO results greater than 10 times the blank concentration so no flagging was required. The DRO MS/MSD on sample 13NCMOCSS100 in extraction batch 580-142864 had an MS recovery of 127% (limit 125%). The LCS/LCSD were in control so only the parent result was flagged QH for quality issue with potential high bias. The results for all samples in this work order were below cleanup levels so there is no impact on the usability of sample results.

580-39839-1 The method blank from extraction batch and 580-143436 had a positive DRO result at 2.54 mg/kg, samples 13NCRWSS01, 13NCRWSS03, 13NCRWSS04, 13NCRWSS05, 13NCRWSS07, 13NCRWSS08 and 13NCRWSS10 were B flagged for DRO results less than 10 times the blank concentration.

580-39839-2 The DRO/RRO MS/MSD on sample 13NC10SS036 in extraction batch 580-143160 exceeded upper control limits due to the parent concentration being more than four times the spike concentration; no flags were assigned. DRO was also detected in method blank 580-143160 at 9.86 mg/kg; only sample 13NC10S040 was affected. The DRO result for 13NC10SS040 was less than the concentration reported in the method blank and was B flagged to indicate blank contamination.

580-39925-1 The DRO method blank 580-143436 had DRO reported at 2.54 mg/kg; all sample result were greater than 10 times the reported method blank concentration so no flagging was necessary. The DRO/RRO MS/MSD in extraction batch 580-143436 failed DRO recovery limits; the parent sample concentration was greater than four

times the spike concentration so no flagging was necessary and the batch LCS/LCSD met control limits.

580-39959-1 DRO method blank 580-143354 had a detectable concentration of DRO at 3.88 mg/kg. All project samples extracted with that method blank had DRO concentrations more than 10 times the blank concentration so no flagging was necessary. Sample 13NCMOCSS125 was used for the MS/MSD in the same extraction batch (580-143354) and failed recovery criteria low for DRO in the MS sample. The initial parent sample concentration was greater than four times the spike concentration, making flagging unnecessary.

580-40004-1 Sample 13NCMOCSS131 was designated on the CoC for DRO/RRO MS/MSD analyses. The MS/MSD results for sample 13NCMOCSS131 in extraction batch 580-143759 failed to meet lower recovery criteria for DRO recovery. The initial parent sample concentration was greater than four times the spike concentration so no flagging was necessary.

580-40062-1 Project water samples were initially prepared in extraction batch 580-144589 within holding time. The method blank had reportable DRO at 0.0224 mg/L and the batch LCSD/LCSD and MS/MSD failed to meet lower recovery criteria. The USACE project chemist requested re-extraction even with some of the seven samples outside of hold time. Sample 13NC28STW06 was re-extracted two days past hold time. Sample 13NC28STW07 was re-extracted one day outside of hold time. All other samples were re-extracted within hold time even though they are H flagged (hold time) in the laboratory report. The CoC was reviewed against the re-extraction time and it was determined that five of the seven samples were within hold time. Sample results from the re-extraction were reported based on acceptable method blank, LCS/LCSD, and MS/MSD results, all of which met acceptance criteria. Sample

results from the initial and re-extracted samples were compared and the concentrations were in general agreement. All re-extracted DRO results were reported on the data tables; the RRO results from the initial extraction and analysis were reported as all QC met criteria on the initial extraction and analysis.

580-40072-1 The DRO/RRO MS/MSD on sample 13NCMOCSS144 exceeded the upper control limit for DRO in the MSD. The results failed to meet RPD criteria, so the DRO result was flagged QH for quality issue with potential high bias. The RRO MS and MSD results failed to meet lower acceptance criteria, so the RRO result for 13NCMOCSS144 was flagged QL for quality issue with low potential bias. The LCS/LCSD in extraction batch 580-144161 met acceptance criteria so only the DRO and RRO results for 13NCMOCSS144 were flagged for failure to meet acceptance criteria.

580-40214-1 The DRO method blank 580-144696 had a reportable DRO concentration at less than ½ the LOQ. All DRO sample results exceeded the blank concentration by more than 10 times so no flagging was required. The DRO MS/MSD in the same extraction batch failed to meet recovery limits with the DRO MS/MSD in both the untreated and silica-gel treated sample (13NC28SS019). Those results are flagged QL. The untreated RRO MS failed the upper control limit of 120% with a 121% recovery; the unspiked parent sample result was greater than four times the spike concentration so no results were flagged. The silica gel treated MS/MSD also failed to meet the upper recovery limit with a recovery of 122%. The silica gel treated RRO result was less than four times the spike concentration and was flagged QH for quality issue with potential high bias.

280-46414-1 The lab report indicated that both the DRO and RRO surrogates exceeded the upper control limits. The control limits in the report were incorrect for

DRO but were correct for RRO. The RRO surrogate result greatly exceeded the upper control limit of 120% with a 744% recovery. The chromatogram indicated likely non-target analyte interference, due to co-elution with extracted analyte. Results can still be used to demonstrate that the post-stockpile results are below cleanup levels where lined stockpiles had been placed. The RRO results are flagged QH to indicate quality issue with potential high bias.

580-40280-1 In extraction batch 580-145358, DRO and RRO recoveries failed to meet lower recovery limits for DRO in both the MS and MSD in sample 13NC28STW21 due to the parent sample concentration being greater than 10 times the spike concentration. The MS failed lower recovery criteria for RRO, and the parent result was flagged QL for quality issue with potential low bias. The RRO MS/MSD in extraction batch 580-145358 also failed to meet RPD limits due to the low recovery in the MS.

580-40328-1 Silica gel treated RRO was detected in method blank 580-145385 at 12.4 mg/kg; all sample results were greater than 10 times the blank concentration so no flagging was necessary. DRO was detected in method blank 580-145393 at 2.64 mg/kg; all sample results were greater than 10 times the blank concentration so no flagging was necessary. The DRO/RRO MS/MSD on sample 13NC28SS041 in extraction batch 580-145385 exceeded upper recovery limits for DRO and RRO in the MSD; it also failed to meet RPD criteria, so the parent sample results are flagged QH for the high recoveries in the MSD; surrogates were in control. The silica gel treated DRO/RRO MS/MSD on sample 13NC28SS041 in extraction batch 580-145385 failed to meet lower recovery limits for DRO and RRO in the MS and also failed to meet RPD criteria; parent sample results are flagged QL for the low recoveries in the MS as well as the MS having surrogates fail to meet lower acceptance criteria. It should be noted

that sample 13NC28SS041 had 80% moisture content and 12% organic carbon, which suggest matrix interference and non-homogeneity of the sample.

DRO was detected at 2.3 mg/kg and RRO was detected at 11.5 mg/kg in the silica gel treated method blank 580-145393; all sample results were greater than 10 times the reported concentrations in the silica gel treated method blank so no flagging was necessary. The silica gel treated DRO/RRO MS/MSD on sample 13NC28SS029 in extraction batch 580-145393 exceeded the upper recovery limits for DRO and RRO in both the MS and MSD and also failed to meet RPD criteria; the parent sample result was greater than four times the spike concentration so no flagging was necessary.

580-40427-1 The DRO/RRO MS/MSD on sample 13NC28MI01 in extraction batch 580-146270 failed to meet DRO and RRO lower recovery criteria in the MSD; the RRO parent result is greater than four times the spike concentration so the parent result is flagged QL for DRO only.

2.11 TOC ANALYSES

TestAmerica analyzed samples for TOC by SW-846 method 9060. A MB, LCS/LCSD, MS/MSD, and laboratory duplicate were analyzed with each batch. Holding time, MB, LCS/LCSD percent recoveries, and RPD percent recoveries, MS/MSD percent recoveries, RPD, and laboratory duplicate RPDs met QAPP criteria at review.

2.12 METALS ANALYSES

TestAmerica analyzed water and soil samples by SW-846 method 6020. Drum waste samples in work order 280-46355 were analyzed for TCLP Metals by SW-846 methods 1311/6010B. Water samples were analyzed for both total and dissolved (field filtered) metals.

Required QC for a batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. An MB, LCS/LCSD, and project MS/MSD were analyzed per batch and met acceptance criteria, except as noted below. In addition, laboratory duplicates were reported.

Metals were detected in the method blanks as shown below. Associated detected results were less than 10 times the blank concentrations and were qualified B to indicate the potential for a false positive or high bias.

580-39444-1 Lead was detected in the method blank (580-140774/22-A) at a concentration less than half the LOQ (0.023 mg/kg), as were total or dissolved results for project samples 13NCMOCGW01, 13NCMOCGW04, 13NCMOCGW06, and 13NCMOCGW07. Positive sample results were B-flagged to indicate blank contamination. The affected non-detect results were at the groundwater cleanup level when the sample result was raised to the LOQ.

580-39382-1 Lead was detected in method blank 580-140357/18-A at a concentration less than half the LOQ (0.000218 mg/L). All project sample results were at least 50 times higher than the lead concentration reported in the method blank so no flagging was necessary.

580-39440-1 Barium, lead, and silver were detected in the method blank at concentrations greater than 10 times less than any samples; silver was ND in the sample.

580-39443-1 Lead was detected in method blank 580-140662 but at a concentration less than 10 times any project sample result so no flagging was required. EPA method 6020 metals MS and/or MSD recoveries on sample 1NC10SS017 (extraction batch 580-140662) exceeded recovery criteria for barium, cadmium, chromium, nickel, and vanadium. Cadmium also exceed RPD criteria (20%), with an RPD of 32%; however,

based on review only, the QH flags were assigned to metals analytes that exceeded the recovery criteria.

580-39444-1 Lead was detected in the method blank (580-140774/22-A) at a concentration less than half the LOQ (0.000218 mg/L, DL 0.00017), as were total or dissolved results for project samples 13NCMOCGW01,-GW04, -GW06, and-GW07. Positive sample results were B flagged to indicate blank contamination with potential high bias.

580-39755-1 Barium and lead were detected in the 6020 method blank at concentrations less than ½ the LOQ. All samples results were greater than 10 times the blank concentration so no flagging is necessary. The MS/MSD recoveries of sample 13NC28SS001 for barium, chromium and vanadium were outside of acceptance criteria, but the LCS/LCSD were both in control. Results for sample 13NC28SS001 were flagged QH for barium, chromium, and vanadium.

580-39839-1 Barium was detected in MB 580-143197 at 0.035 mg/kg. All sample results had reportable concentrations greater than 10 times the blank concentration so no barium results were qualified. The MS/MSD in sample 13NCRWSS08 of the same extraction batch exceeded recovery criteria on sample for barium, chromium, and zinc. The LCS/LCSD met criteria. Barium, chromium, and zinc results for 13NCRWSS08 were flagged QH and are considered estimates with potential high bias.

580-40214-1 Chromium and zinc failed to meet upper recovery limits in sample 13NC28SS019 in the MS, the LCS/LCSD met control limits so only chromium and zinc results for 13NC28SS019 were flagged QH for quality issues with potential high bias.

280-46355-1 The lab noted that the 6010B metals MS/MSD on sample 13CN1DS03 had zinc concentrations greater than 4 times the spike concentration and still met accuracy

and RPD limits. However, recoveries met accuracy and RPD limits for zinc, so it met criteria, even with the high parent zinc concentration.

580-40328-1 Sample 13NC28SS029 chromium and vanadium levels exceeded the upper control limits in both the MS and MSD. Zinc recovery exceeded the upper control limit in the MSD; sample results are flagged QH. The case narrative noted that arsenic, cadmium, lead, nickel, selenium, and silver exceeded RPD limits; when percent recoveries were calculated for RPD criteria, all analytes met RPD criteria because the EPA calculates spike recoveries based on sample weight and recovery, not solely on percent recovery. The J flag remained on selenium as it was reported at a concentration less than the LOQ. Sample 13NC28SS041 had chromium and vanadium exceed the upper control limits in the MSD; the parent results for those analytes are flagged QH.

580-40427-1 Vanadium, chromium, and zinc recoveries in MS/MSD sample 13NC28MI01 (extraction batch 580-146485) exceeded the upper control limits in both the MS and MSD. Chromium and zinc concentrations in the parent samples are greater than four times the spike concentration so no flagging is necessary. The vanadium result for sample 13NC28MI01 is flagged QH with high potential bias.

2.13 MERCURY ANALYSES

TestAmerica analyzed mercury in soil samples by SW-846 method 7471A and total and dissolved mercury in water samples by SW-846 method 7470A. The drum waste samples were analyzed for TCLP Metals by SW-846 methods 1311/7470A. Required QC for a batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD and project MS/MSD were analyzed per batch. In addition, a laboratory duplicate was reported. Hold time, MB, LCS/LCSD recoveries and RPDs, and MS/MSD RPDs were reviewed and met QAPP criteria, except as noted below:

580-39293-1 Mercury was detected in the method blank in extraction batch 580-139761 at a concentration greater than all sample concentrations reported in this work order; sample results were changed to ND at the LOQ with a B flag.

580-39360-1 In the method blank in TCLP leach batch 580-1400971, mercury was detected at a concentration greater than all sample concentrations reported in this work order; sample results were B flagged to indicate blank contamination with potential high bias. Results are used for waste characterization and disposal; the results are still usable for waste disposal purposes.

580-39362-1 The laboratory duplicate mercury RPD for sample 13NC10SS004 was 53%, and above the QAPP limit of 20%; therefore, this result will be flagged MN.

580-39440-1 Mercury was detected in the method blank in extraction batch 580-140663 at a concentration greater than the sample concentration in the single sample submitted in this work order; sample results were B flagged.

580-39444-1 Mercury was detected in method blank 580-140787 at a concentration less than half the LOQ. All samples in this work order had concentrations comparable to the MB concentration and all total and dissolved mercury results are B flagged. Lab contamination is highly suspected.

580-39470-1 Mercury was detected in method blank 580-141104 at a concentration less than ½ the LOQ at 0.0000542 mg/L, which is within 1-2% of sample results. Sample results were B flagged to indicate blank contamination. The results are nearly two orders of magnitude less than regulatory limits and demonstrate mercury is not present above regulatory limits.

580-39755-1 The mercury MSD slightly exceeded recovery limits on sample 13NC28SS001; the parent result was flagged QH for quality issues with potential high bias

580-39839-2 Sample 13NC28TWA07 was used for the mercury MS/MSD in extraction batch 580-143209 and had recoveries slightly less than the 80% lower acceptance limit, the sample mercury result was ND and QL was assigned for quality issue with potential low bias.

580-40158-1 The mercury MS/MSD failed to meet recovery criteria for sample Hach001, the LCS met criteria. The mercury sample result for Hach001 was flagged QL and is considered an estimate. The unspiked parent result for mercury was non-detect.

580-40214-1 The mercury matrix spike on sample 13NC28SS019 in prep batch 580-144703failed to meet lower recovery limits, the matrix spike duplicate met recovery limits. The parent mercury result is flagged QL for quality issue with potential low bias. The same sample failed to meet 20% RPD limit for the mercury MS/MSD with an RPD of 50.5%. The parent sample result is already flagged QL for low spike recovery.

580-40323-1 Mercury was detected in method blank 580-145370 at less than ½ the LOQ. Sample 13NCTWA020 was the only project sample with reportable mercury levels similar to those in the method blank; its results were B flagged.

580-40408-1 Mercury was detected in method blank 580-145791 at 0.0000712 mg/L, which is comparable to or greater than reported sample concentrations. Mercury results from all project samples in this work order were B flagged to indicate blank contamination with potential high bias.

2.14 IGNITABILITY

TestAmerica analyzed samples for ignitability, by SW-846 method 1020A.

An LCS/LCSD and laboratory duplicate were analyzed for ignitability with each batch. These parameters were not included in the QAPP and were reviewed using laboratory

control limits. Holding time, MB, LCS percent recoveries, and laboratory duplicate RPDs were reviewed and met laboratory criteria, if applicable to the method.

2.15 FIELD QA/QC

Field QC samples included field duplicate pairs, MS/MSD pairs, and trip blanks. Field QC samples were analyzed in the same manner and in the same extraction and analytical batches as primary field samples. Field duplicate samples were submitted "blind" to the lab with similar sample IDs as primary field samples so the lab could not identify which samples were duplicates.

2.15.1 Field Sample Duplicates

The comparison of field sample duplicate results to the associated parent sample results provides precise information for the overall sample collection and analytical process, including possible variability related to sample collection, handling, shipping, storage, preparation, and analysis. The RPD between the primary (parent) sample and field duplicate sample also accounts for the variation of target analyte concentrations within a matrix. The RPD assessment criteria in the QAPP was used to evaluate the field duplicates: ≤30% for water matrices and ≤50% for soils. This variability is assessed by evaluating the calculated RPDs between the field duplicates and the associated parent samples. If target analytes were detected in one sample greater than the LOQ and not detected in the duplicate, both detected and non-detected results should be flagged to indicate imprecision. Data which is J flagged was detected between the LOQ and the DL and an RPD was calculated but analytical results were not flagged as specified in the NE Cape QAPP.

For MI samples, one primary and two field replicate samples were collected; therefore, the calculation is percent relative standard deviation (%RSD), not RPD. The RSD assessment criteria was <30% RSD.

Field Duplicate Frequencies

Field sample duplicate pairs are specified the QAPP at a minimum rate of 10 percent. Field duplicates were collected at each site at the following frequencies per method and matrix:

Site 10: Thirty four soil confirmation samples from excavations along with six field duplicates were analyzed for glycols, PCBs, VOCs, PAHs, GRO, DRO, RRO, and RCRA 8 metals (plus nickel, vanadium, and zinc); duplicate rate is 18%.

Four bulk waste soil samples and one QC duplicate were analyzed for RCRA-8 metals, PCBs, VOCs, PAHs, GRO, DRO and RRO (duplicate rate 25%). A bulk waste sample (13NC10WS06) was analyzed for glycols only along with the four bulk waste samples and field duplicate previously noted (duplicate rate 20% for glycols).

Site 13: Seventy-two soil samples and eight field duplicates for PCBs; duplicate rate is 11%

Site 21: Eight water samples and one water field duplicate were analyzed for total and dissolved arsenic; duplicate rate is 12.5%. Sixty soil samples and seven field duplicates from soil borings for arsenic; duplicate rate is 12%. Twenty-two soil confirmation samples and two field duplicates for arsenic; duplicate rate is 9%. Nine bulk waste samples were analyzed for arsenic; three of the samples were prepared and analyzed by TCLP due to high arsenic concentrations to determine if they were hazardous.

Site 28: Two MI soil samples, two field replicates, and one field duplicate for RCRA 8 metals plus nickel, vanadium and zinc; PCBs, BTEX, PAHs, DRO, and RRO; replicate rate is 50%, duplicate rate is 100%. Forty-one soil samples and five field duplicates for RCRA 8 metals plus nickel, vanadium and zinc; PCBs, BTEX, PAHs, DRO and RRO, DRO and RRO with silica gel cleanup, and total organic carbon; duplicate rate is 12%. Eighty-five water samples and 10 field duplicates for RCRA 8 metals plus nickel,

vanadium and zinc; PCBs, BTEX, PAHs, DRO and RRO. One GAC waste sample for BTEX only.

Site 31: one soil sample and one field duplicate for PCBs; duplicate rate is 50%.

MOC: Seven groundwater samples and one field duplicate for total and dissolved RCRA 8 metals plus nickel, vanadium and zinc; duplicate rate is 14%. Nine surface water samples and one field duplicate for BTEX, PAHs, DRO and RRO; duplicate rate is 11%. One hundred and thirty-nine soil samples and 15 field duplicates for DRO and RRO; duplicate rate is 10%;

Bulk Bag Staging and ISO Areas: Eight MI soil samples and two MI replicates from the bag staging area for PCBs, DRO and RRO; replicate rate is 12.5%. One MI soil sample and two replicates for BTEX, GRO, DRO, and RRO; replicate rate is 100%.

Roadway: Eight soil samples and one field duplicate for RCRA 8 metals plus zinc, PCBs, BTEX, PAHs, GRO, DRO, and RRO; duplicate rate is 12.5%.

Pipeline Break: eight soil samples and one field duplicate for BTEX, GRO, DRO and RRO; duplicate rate is 12.5%.

Field duplicates were typically not collected for waste samples, since these results were used for disposal purposes.

Field Duplicate RPDs

Table 2-16.1 lists the calculated RPDs between the field duplicate and parent sample results for target analytes that were outside of the 50% RPD for soil and 30% RPD for water samples. RPDs out of control and detected above the LOQ in both the parent and field duplicate sample were flagged QN. Analytes with one or both results below the LOQ had the RPDs calculated but neither result was flagged due to the inherent imprecision of the methods below the LOQ and are not discussed.

Table 2-15.2 lists the %RSD calculated between the primary sample and two replicate samples for target analytes that were outside of the 30% RSD for those target analytes that were detected above the LOQ.

Table 2-15.1 Field Sample Duplicate Pair Results

Parent Sample ID / Laboratory Sample ID	Field duplicate Sample ID / Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
13NCMOCWA001	13NCMOCWA004	Fluorene	mg/L	0.000041	0.000027	**41.2**
13NC10SS021	13NC10SS022	1-methylnaphthalene	mg/kg	0.024	0.012	**67**
		2-methylnaphthalene		0.044	0.0075	**52**
		Benzo[a]pyrene		0.057	0.021	**92**
		naphthalene		0.023	0.0057	**120**
13NC28TWA02	13NC28TWA03	Nphthalene	µg/L	0.02	0.042	**71**
13NC28TWA04	13NC28TWA05	Anthracene	µg/L	0.082	0.045	**59**
13NCMOCGW06 (Lab WO# 580-39444-6)	13NCMOCGW07 (Lab WO# 580-39444-7)	Zinc-total	mg/L	0.045	0.16	**112**
		1-methylnaphthalene	µg/L	0.42	0.6	**35.3**
		Acenaphthene	µg/L	0.63	0.22	**96.5**
		Fluorene	µg/L	1.3	0.45	**97.1**
13NCPBSS03	13NCPBSS04	RRO	mg/kg	190	110 B	**53**
13NC28SS002	13NC28SS003	Acenaphthene	mg/kg	1.6	0.92	**54**
		Acenaphthylene		1.6	0.61	**90**
		Fluoranthene		0.2	0.12	**50**
		Fluorene		3.4	2.0	**52**
		phenanthrene		5	2.9	**53**

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID/ Laboratory Sample ID	Field duplicate Sample ID/ Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
13NCRWSS05	13NCRWSS06	DRO	mg/kg	20	45	**77**
		RRO		210	530	**86**
13NC21SS035	13NC21SS036	Arsenic	mg/kg	24	12	**67**
13NC28STW13	13NC28STW14	1-methylnaphthalene	mg/L	.03	.049	**48**
13NC28SS014	13NC28SS015	1-methylnaphthalene	mg/kg	50	21	**82**
		2-methylnaphthalene		53	24	**75**
		Acenaphthylene		2.2	0.36	**144**
		Anthracene		0.36	0.2	**57**
		Chrysene		0.084	0.04	**71**
		Fluorene		7.9	4.1	**63**
		Naphthalene		13	5.5	**81**
		Phenanthrene		3.7	2.2	**51**
		M,p-Xylene		0.38	0.17	**76**
		1-Methylnaphthalene	mg/kg	0.044	0.078	**56**
		2-Methylnaphthalene		0.051	0.093	**58**
13NC28SS039	13NC28SS040	Fluorene		0.016	0.029	**58**
13NC28SS042	13NC28SS043	Arsenic	mg/kg	20	11	**58**
13NC28WDA01	13NC28WDA02	Arsenic	mg/kg	2.0	1.1	**58**
		Barium		87	44	**66**
		Chromium		8.3	4.1	**68**
		Nickel		4.8	1.9	**87**
		Zinc		48	18	**91**
		Mercury		0.13	0.048	**92**
		Fluoranthene		0.037	0.0077	**131**
		Pyrene		0.029	0.0069	**132**

Notes:

BOLD = Exceeds acceptance criteria

µg/L = micrograms per liter
DRO = diesel range organics
field dup = field duplicate
ID = identifier
LOQ = limit of quantitation
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
RPD = relative percent difference
RRO = residual range organics

Table 2-15.2 Field Sample Triplicate Results

Sample ID	Target Analytes	Units	Parent Result	First Replicate Result	Second Replicate Result	RSD (%)
13NC28MI001	Fluoranthene	mg/kg	0.059	0.02	0.016	**75**
13NC28MI002	2-Methylnaphthalene		0.081	0.019	0.04	**68**
13NC28MI003	Fluorene		0.059	0.023	0.02	**34**
	Phenanathrene		0.073	0.025	0.025	**68**

Notes:
BOLD = Exceeds acceptance criteria
% = percent
ID = identifier
mg/kg = milligrams per kilogram
RSD = relative standard deviation

The field duplicate RPDs and field triplicate RSDs were within control limits with the exceptions shown in bold on Tables 2-15.1 and 2-15.2. A total of 41 out of 1300 duplicate results (3%) did not meet RPD criteria. For these results, the parent, duplicate and triplicate sample results were QN qualified to indicate estimated results with an unknown bias. In addition, if one of the pair had a detection above the LOQ and one or more results were less than the LOQ, the RPD and RSD were calculated but not flagged for results outside of RPD or RSD acceptance limits, as there is a lower degree of analytical accuracy at concentrations less than the LOQ. No duplicate or replicate results were flagged if one or both results were reported at less than the LOQ.

2.15.2 Trip Blanks

Aqueous and soil trip blanks are included in shipments containing samples which are submitted to the laboratory for VOC, BTEX, GRO, and methane analyses. Trip blanks are collected to assess the potential for VOC, BTEX, GRO or methane cross-contamination introduced by sample bottles handled during field operations, shipping, or storage at the laboratory.

Trip blanks were included with shipments containing samples for VOC, BTEX, GRO, and methane analyses; trip blanks were free of target analytes with some exceptions:

580-39440-1 and 580-39443-1 A trip blank was submitted with samples for work orders 580-39440-1 and 580-39443-1 inside a single cooler with two CoCs and the trip blank leaked methanol and smeared the label on the methanol preserved container for sample 13NC10WS05. The laboratory determined it was the correct sample. Due to the trip blank leakage, the 8260 VOC analysis was cancelled for the trip blank, as noted in the lab report case narrative; GRO analysis proceeded and was reported with the leakage noted.

580-39757-1 The trip blank 081213 submitted with samples from the pipeline break area had positive detections for GRO at 1.4 mg/kg and toluene at 13 µg/kg; both results were less than the LOQ. All project samples were ND for toluene and all had GRO concentrations greater than 10 times the concentration in the trip blank with the exception of 13NCPBSS07, which had GRO at nine times the trip blank concentration. 13NCPBSS07 results were B flagged. No samples exceeded or had any results close to clean up levels.

580-39839-1 The trip blank 081913 submitted with samples from the roadway had positive detections for GRO at 8 mg/kg. Samples 13NCRWSS01 and -04 had GRO concentrations less than 10 times the concentration in the trip blank and were B flagged. No samples exceeded or had any results close to GRO clean up levels.

580-40214-1 Samples submitted with trip blank 090813 with reportable concentrations of ethylbenzene, m,p-xylenes and toluene at concentrations less than 10 times the amount detected in the trip blank are B flagged to indicate blank contamination with potential high bias. Three project samples were B flagged for ethylbenzene and m,p-xylene concentrations less than 10 times the blank concentration, no results were flagged for toluene in the method blank, all sample results were ND for toluene.

Associated results less than 10 times the trip blank concentration were B qualified and have the potential for a high bias. The majority of detected results associated with the trip blank detections had been B qualified due to method blank contamination and further qualifiers were not required.

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3.0 SENSITIVITY AND QUANTITATION LIMITS

Sensitivity is the capability of a test method or instrument to discriminate between measurement responses that represent different levels (e.g., concentrations) of a variable of interest. Examples of QC measures for determining sensitivity include laboratory-fortified blanks, DL, LOD, limit of quantitation (LOQ) studies, and the lowest calibration standards at or below the LOQ. In order to meet the needs of the data users, the project data must meet the measurement performance criteria for sensitivity and project LOQs. Analytical factors, such as dilutions, may elevate the reporting limits for all target constituents when the sample extract is diluted in order to raise the anlyte concentration to within the instrument calibration range. Other factors, such as high moisture content, may also elevate reporting limits above their empirical concentrations.

Overall sensitivity and reporting for the project was acceptable with minor exceptions.

Site 10 confirmation soil samples and drum contents were analyzed for full list VOCs and, as stated in the QAPP, chloromethane, 1,3 dibromoethene (EDB), , as well as 1,2-dibromoethane and 1,2,3-trichloropropane had the limit of quantitation greater than the soil cleanup level. All Site 10 results were non-detect for all four analytes and none were detected in the drum liquid contents, which is considered the point source of contamination at Site 10. Only Site 10 soils were analyzed for full list VOCs.

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4.0 SUMMARY

This Report evaluates analytical data generated July through September 2013, during the NE Cape Remedial Actions. This assessment evaluated whether program objectives and data quality goals were met. The assessment reviewed sample receipt conditions, extraction and analytical procedures, sampling procedures, and correspondence to method criteria and project DQOs.

The overall data quality and completeness was met for the project.

- Sample results from Sites 13 and 31 were acceptable, with only minor QC issues such as surrogates and several MS/MSDs outside of acceptance limits.
- Site 10 results had some QC issues, mostly related to matrix interference and high concentrations of target analytes which interfered with other analyses.
- MOC soil and water results were acceptable with minor QC issues, mostly related to high concentrations of target analytes (DRO) and the inaccuracies of MS/MSDs with high parent sample concentrations.
- Site 21 sample results had only minor QC issues in both soil and water matrices, however, the results were very usable in determining areas where arsenic levels were either above or below cleanup levels.
- Site 28 water samples were acceptable with minor QC issues. Site 28 soil results had moderate to major QC issues which is mostly attributed to high water content in the samples and high concentrations of target analytes. All Site 28 soil samples except those collected under liners or in the water discharge area were collected from under the water surface in the Site 28 drainage.

Overall, the project met its data quality objectives. No results were rejected based on data review and all data was complete and reportable. Some results are estimates due to minor QC issues during analyses. All samples collected for analysis had reportable results that were usable for project purposes.

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ATTACHMENT 1

Sample Summary Report

Sample Summary Sheet

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39293-1 Site 28 Treated Water													
580-39293-1	13NC28TWA01	Water	7/9/2013 17:00	Surface	6020	TestAmerica Seattle	MS/MSD	13NC28TWA01	JC	Nitric Acid	070913-01	2_Days	Plastic 250ml - with Nitric Acid
580-39293-2	13NC28TWA02	Water	7/9/2013 17:15	Surface	6020	TestAmerica Seattle		13NC28TWA02	JC	Nitric Acid	070913-02	2_Days	Plastic 250ml - with Nitric Acid
580-39293-3	13NC28TWA03	Water	7/9/2013 17:30	Surface	6020	TestAmerica Seattle	Field Duplicate of 13NC28TWA02	13NC28TWA03	JC	Nitric Acid	070913-03	2_Days	Plastic 250ml - with Nitric Acid
580-39293-1	13NC28TWA01	Water	7/9/2013 17:00	Surface	7470A	TestAmerica Seattle		13NC28TWA01	JC	Nitric Acid	070913-01	2_Days	Plastic 250ml - with Nitric Acid
580-39293-2	13NC28TWA02	Water	7/9/2013 17:15	Surface	7470A	TestAmerica Seattle		13NC28TWA02	JC	Nitric Acid	070913-02	2_Days	Plastic 250ml - with Nitric Acid
580-39293-3	13NC28TWA03	Water	7/9/2013 17:30	Surface	7470A	TestAmerica Seattle	Field Duplicate of 13NC28TWA02	13NC28TWA03	JC	Nitric Acid	070913-03	2_Days	Plastic 250ml - with Nitric Acid
580-39293-1	13NC28TWA01	Water	7/9/2013 17:00	Surface	8082	TestAmerica Seattle		13NC28TWA01	JC	None	070913-02	2_Days	Amber Glass 1 liter - unpreserved
580-39293-2	13NC28TWA02	Water	7/9/2013 17:15	Surface	8082	TestAmerica Seattle		13NC28TWA02	JC	None	070913-03	2_Days	Amber Glass 1 liter - unpreserved
580-39293-3	13NC28TWA03	Water	7/9/2013 17:30	Surface	8082	TestAmerica Seattle	Field Duplicate of 13NC28TWA02	13NC28TWA03	JC	None	070913-03	2_Days	Amber Glass 1 liter - unpreserved
580-39293-1	13NC28TWA01	Water	7/9/2013 17:00	Surface	8260B/DoD	TestAmerica Seattle		13NC28TWA01	JC	Hydrochloric Acid	070913-03	2_Days	Voa Vial 40ml - Hydrochloric Acid
580-39293-2	13NC28TWA02	Water	7/9/2013 17:15	Surface	8260B/DoD	TestAmerica Seattle		13NC28TWA02	JC	Hydrochloric Acid	070913-03	2_Days	Voa Vial 40ml - Hydrochloric Acid
580-39293-3	13NC28TWA03	Water	7/9/2013 17:30	Surface	8260B/DoD	TestAmerica Seattle	Field Duplicate of 13NC28TWA02	13NC28TWA03	JC	Hydrochloric Acid	070913-03	2_Days	Voa Vial 40ml - Hydrochloric Acid
580-39293-1	13NC28TWA01	Water	7/9/2013 17:00	Surface	8270C SIM/DoD	TestAmerica Seattle		13NC28TWA01	JC	None	070913-03	2_Days	Voa Vial 40ml - Hydrochloric Acid
580-39293-2	13NC28TWA02	Water	7/9/2013 17:15	Surface	8270C SIM/DoD	TestAmerica Seattle		13NC28TWA02	JC	None	070913-03	2_Days	Voa Vial 40ml - Hydrochloric Acid
580-39293-3	13NC28TWA03	Water	7/9/2013 17:30	Surface	8270C SIM/DoD	TestAmerica Seattle	Field Duplicate of 13NC28TWA02	13NC28TWA03	JC	None	070913-03	2_Days	Voa Vial 40ml - Hydrochloric Acid
580-39293-1	13NC28TWA01	Water	7/9/2013 17:00	Surface	AK102 & 103	TestAmerica Seattle		13NC28TWA01	JC	Hydrochloric Acid	070913-01	2_Days	Amber Glass 1 liter - Hydrochloric
580-39293-2	13NC28TWA02	Water	7/9/2013 17:15	Surface	AK102 & 103	TestAmerica Seattle		13NC28TWA02	JC	Hydrochloric Acid	070913-03	2_Days	Amber Glass 1 liter - Hydrochloric
580-39293-3	13NC28TWA03	Water	7/9/2013 17:30	Surface	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NC28TWA02	13NC28TWA03	JC	Hydrochloric Acid	070913-03	2_Days	Amber Glass 1 liter - Hydrochloric
580-39293-4	13NC071013TripBlank01	Water	7/9/2013 0:00	NA	8260B/DoD	TestAmerica Seattle		NA	JC	Hydrochloric Acid	070913-03	2_Days	Voa Vial 40ml - Hydrochloric Acid
580-39336-1 Site 21													
580-39336-1	13NC21SS01-0.5	Solid	7/11/2013 10:30	0.5 ft	6020	TestAmerica Tacoma		13NC21SS01-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-10	13NC21SS04-0.5	Solid	7/11/2013 11:21	0.5 ft	6020	TestAmerica Tacoma		13NC21SS04-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-11	13NC21SS04-2	Solid	7/11/2013 11:27	2 ft	6020	TestAmerica Tacoma		13NC21SS04-2	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-12	13NC21SS04-3	Solid	7/11/2013 11:32	3 ft	6020	TestAmerica Tacoma		13NC21SS04-3	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-13	13NC21SS05-0.5	Solid	7/11/2013 11:38	0.5 ft	6020	TestAmerica Tacoma		13NC21SS05-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-14	13NC21SS05-2	Solid	7/11/2013 11:40	2 ft	6020	TestAmerica Tacoma		13NC21SS05-2	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-15	13NC21SS05-3	Solid	7/11/2013 11:48	3 ft	6020	TestAmerica Tacoma		13NC21SS05-3	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-16	13NC21SS06-0.5	Solid	7/11/2013 13:08	0.5 ft	6020	TestAmerica Tacoma		13NC21SS06-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-17	13NC21SS06-2	Solid	7/11/2013 13:10	2 ft	6020	TestAmerica Tacoma		13NC21SS06-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-18	13NC21SS06-3	Solid	7/11/2013 13:15	3 ft	6020	TestAmerica Tacoma		13NC21SS06-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-19	13NC21SS07-0.5	Solid	7/11/2013 13:30	0.5 ft	6020	TestAmerica Tacoma		13NC21SS07-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-2	13NC21SS01-2	Solid	7/11/2013 10:40	2 ft	6020	TestAmerica Tacoma		13NC21SS01-2	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-20	13NC21SS07-2	Solid	7/12/2013 9:04	2 ft	6020	TestAmerica Tacoma		13NC21SS07-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-21	13NC21SS07-3	Solid	7/12/2013 9:15	3 ft	6020	TestAmerica Tacoma	MS/MSD	13NC21SS07-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-22	13NC21SS08-0.5	Solid	7/12/2013 13:35	0.5 ft	6020	TestAmerica Tacoma		13NC21SS08-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-23	13NC21SS08-2	Solid	7/12/2013 9:24	2 ft	6020	TestAmerica Tacoma		13NC21SS08-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-24	13NC21SS08-3	Solid	7/12/2013 9:26	3 ft	6020	TestAmerica Tacoma		13NC21SS08-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-25	13NC21SS09-0.5	Solid	7/11/2013 13:45	0.5 ft	6020	TestAmerica Tacoma		13NC21SS09-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-26	13NC21SS09-2	Solid	7/12/2013 9:31	2 ft	6020	TestAmerica Tacoma		13NC21SS09-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-27	13NC21SS09-3	Solid	7/12/2013 9:33	3 ft	6020	TestAmerica Tacoma		13NC21SS09-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-28	13NC21SS10-0.5	Solid	7/11/2013 13:47	0.5 ft	6020	TestAmerica Tacoma		13NC21SS10-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-29	13NC21SS10-2	Solid	7/12/2013 8:32	2 ft	6020	TestAmerica Tacoma		13NC21SS10-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-3	13NC21SS01-3	Solid	7/11/2013 10:45	3 ft	6020	TestAmerica Tacoma		13NC21SS01-3	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-30	13NC21SS10-3	Solid	7/12/2013 10:44	3 fet	6020	TestAmerica Tacoma	MS/MSD	13NC21SS10-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-31	13NC21SS11-0.5	Solid	7/11/2013 13:52	0.5 ft	6020	TestAmerica Tacoma		13NC21SS11-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-32	13NC21SS11-2	Solid	7/12/2013 8:15	2 ft	6020	TestAmerica Tacoma		13NC21SS11-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-33	13NC21SS11-3	Solid	7/12/2013 8:22	3 ft	6020	TestAmerica Tacoma		13NC21SS11-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-34	13NC21SS12-0.5	Solid	7/11/2013 13:55	0.5 ft	6020	TestAmerica Tacoma		13NC21SS12-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-35	13NC21SS12-2	Solid	7/12/2013 8:28	2 ft	6020	TestAmerica Tacoma		13NC21SS12-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-36	13NC21SS12-3	Solid	7/12/2013 8:30	3 ft	6020	TestAmerica Tacoma		13NC21SS12-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-37	13NC21SS13-0.5	Solid	7/11/2013 16:09	0.5 ft	6020	TestAmerica Tacoma		13NC21SS13-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-38	13NC21SS13-2	Solid	7/12/2013 8:55	2 ft	6020	TestAmerica Tacoma		13NC21SS13-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-39	13NC21SS13-3	Solid	7/12/2013 9:00	3 ft	6020	TestAmerica Tacoma		13NC21SS13-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-4	13NC21SS02-0.5	Solid	7/11/2013 10:50	0.5 ft	6020	TestAmerica Tacoma		13NC21SS02-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-40	13NC21SS14-0.5	Solid	7/11/2013 14:12	0.5 ft	6020	TestAmerica Tacoma		13NC21SS14-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-41	13NC21SS14-2	Solid	7/11/2013 14:18	2 ft	6020	TestAmerica Tacoma		13NC21SS14-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-42	13NC21SS14-3	Solid	7/11/2013 14:25	3 ft	6020	TestAmerica Tacoma		13NC21SS14-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-43	13NC21SS15-0.5	Solid	7/12/2013 9:35	0.5 ft	6020	TestAmerica Tacoma		13NC21SS15-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-44	13NC21SS15-2	Solid	7/12/2013 9:45	2 ft	6020	TestAmerica Tacoma		13NC21SS15-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-45	13NC21SS15-3	Solid	7/12/2013 9:48	3 ft	6020	TestAmerica Tacoma		13NC21SS15-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-46	13NC21SS16-0.5	Solid	7/11/2013 13:58	0.5 ft	6020	TestAmerica Tacoma		13NC21SS16-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-47	13NC21SS16-2	Solid	7/11/2013 14:02	2 ft	6020	TestAmerica Tacoma		13NC21SS16-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-48	13NC21SS16-3	Solid	7/11/2013 14:06	3 ft	6020	TestAmerica Tacoma		13NC21SS16-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-49	13NC21SS17-0.5	Solid	7/11/2013 14:40	0.5 ft	6020	TestAmerica Tacoma		13NC21SS17-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-5	13NC21SS02-2	Solid	7/11/2013 11:00	2 ft	6020	TestAmerica Tacoma		13NC21SS02-2	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-50	13NC21SS17-2	Solid	7/11/2013 14:45	2 ft	6020	TestAmerica Tacoma	MS/MSD	13NC21SS17-2	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-51	13NC21SS17-2.5	Solid	7/11/2013 14:50	2.5 ft	6020	TestAmerica Tacoma		13NC21SS17-2.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-52	13NC21SS17-3	Solid	7/11/2013 14:55	3 ft	6020	TestAmerica Tacoma		13NC21SS17-3	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-53	13NC21SS05-2.5	Solid	7/11/2013 11:42	2.5 ft	6020	TestAmerica Tacoma	Field Duplicate of 13NC21SS05-2	13NC21SS05-2.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-54	13NC21SS07-2.5	Solid	7/12/2013 9:08	2.5 ft	6020	TestAmerica Tacoma	Field Duplicate of 13NC21SS07-2	13NC21SS07-2.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-55	13NC21SS10-2.5	Solid	7/12/2013 8:36	2.5 ft	6020	TestAmerica Tacoma	Field Duplicate of 13NC21SS10-2	13NC21SS10-2.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-56	13NC21SS11-2.5	Solid	7/12/2013 8:18	2.5 ft	6020	TestAmerica Tacoma	Field Duplicate of 13NC21SS11-2	13NC21SS11-2.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-57	13NC21SS15-1	Solid	7/12/2013 9:40	1 ft	6020	TestAmerica Tacoma	Field Duplicate of 13NC21SS15-0.5	13NC21SS15-1	EB/JC	None	071213-2	3_Days	Soil jar 4oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39336-6	13NC21SS02-3	Solid	7/11/2013 11:05	3 ft	6020	TestAmerica Tacoma		13NC21SS02-3	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-7	13NC21SS03-0.5	Solid	7/11/2013 11:09	0.5 ft	6020	TestAmerica Tacoma		13NC21SS03-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-8	13NC21SS03-2	Solid	7/11/2013 11:12	2 ft	6020	TestAmerica Tacoma		13NC21SS03-2	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-9	13NC21SS03-3	Solid	7/11/2013 11:15	3 ft	6020	TestAmerica Tacoma		13NC21SS03-3	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-1	13NC21SS01-0.5	Solid	7/11/2013 10:30	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS01-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-10	13NC21SS04-0.5	Solid	7/11/2013 11:21	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS04-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-11	13NC21SS04-2	Solid	7/11/2013 11:27	2 ft	D 2216	TestAmerica Tacoma		13NC21SS04-2	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-12	13NC21SS04-3	Solid	7/11/2013 11:32	3 ft	D 2216	TestAmerica Tacoma		13NC21SS04-3	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-13	13NC21SS05-0.5	Solid	7/11/2013 11:38	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS05-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-14	13NC21SS05-2	Solid	7/11/2013 11:40	2 ft	D 2216	TestAmerica Tacoma		13NC21SS05-2	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-15	13NC21SS05-3	Solid	7/11/2013 11:48	3 ft	D 2216	TestAmerica Tacoma		13NC21SS05-3	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-16	13NC21SS06-0.5	Solid	7/11/2013 13:08	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS06-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-17	13NC21SS06-2	Solid	7/11/2013 13:10	2 ft	D 2216	TestAmerica Tacoma		13NC21SS06-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-18	13NC21SS06-3	Solid	7/11/2013 13:15	3 ft	D 2216	TestAmerica Tacoma		13NC21SS06-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-19	13NC21SS07-0.5	Solid	7/11/2013 13:30	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS07-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-2	13NC21SS01-2	Solid	7/11/2013 10:40	2 ft	D 2216	TestAmerica Tacoma		13NC21SS01-2	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-20	13NC21SS07-2	Solid	7/12/2013 9:04	2 ft	D 2216	TestAmerica Tacoma		13NC21SS07-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-21	13NC21SS07-3	Solid	7/12/2013 9:15	3 ft	D 2216	TestAmerica Tacoma		13NC21SS07-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-22	13NC21SS08-0.5	Solid	7/12/2013 13:35	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS08-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-23	13NC21SS08-2	Solid	7/12/2013 9:24	2 ft	D 2216	TestAmerica Tacoma		13NC21SS08-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-24	13NC21SS08-3	Solid	7/12/2013 9:26	3 ft	D 2216	TestAmerica Tacoma		13NC21SS08-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-25	13NC21SS09-0.5	Solid	7/11/2013 13:45	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS09-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-26	13NC21SS09-2	Solid	7/12/2013 9:31	2 ft	D 2216	TestAmerica Tacoma		13NC21SS09-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-27	13NC21SS09-3	Solid	7/12/2013 9:33	3 ft	D 2216	TestAmerica Tacoma		13NC21SS09-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-28	13NC21SS10-0.5	Solid	7/11/2013 13:47	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS10-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-29	13NC21SS10-2	Solid	7/12/2013 8:32	2 ft	D 2216	TestAmerica Tacoma		13NC21SS10-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-3	13NC21SS01-3	Solid	7/11/2013 10:45	3 ft	D 2216	TestAmerica Tacoma		13NC21SS01-3	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-30	13NC21SS10-3	Solid	7/12/2013 10:44	3 ft	D 2216	TestAmerica Tacoma		13NC21SS10-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-31	13NC21SS11-0.5	Solid	7/11/2013 13:52	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS11-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-32	13NC21SS11-2	Solid	7/12/2013 8:15	2 ft	D 2216	TestAmerica Tacoma		13NC21SS11-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-33	13NC21SS11-3	Solid	7/12/2013 8:22	3 ft	D 2216	TestAmerica Tacoma		13NC21SS11-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-34	13NC21SS12-0.5	Solid	7/11/2013 13:55	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS12-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-35	13NC21SS12-2	Solid	7/12/2013 8:28	2 ft	D 2216	TestAmerica Tacoma		13NC21SS12-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-36	13NC21SS12-3	Solid	7/12/2013 8:30	3 ft	D 2216	TestAmerica Tacoma		13NC21SS12-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-37	13NC21SS13-0.5	Solid	7/11/2013 16:09	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS13-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-38	13NC21SS13-2	Solid	7/12/2013 8:55	2 ft	D 2216	TestAmerica Tacoma		13NC21SS13-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-39	13NC21SS13-3	Solid	7/12/2013 9:00	3 ft	D 2216	TestAmerica Tacoma		13NC21SS13-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-4	13NC21SS02-0.5	Solid	7/11/2013 10:50	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS02-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-40	13NC21SS14-0.5	Solid	7/11/2013 14:12	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS14-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-41	13NC21SS14-2	Solid	7/11/2013 14:18	2 ft	D 2216	TestAmerica Tacoma		13NC21SS14-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-42	13NC21SS14-3	Solid	7/11/2013 14:25	3 ft	D 2216	TestAmerica Tacoma		13NC21SS14-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-43	13NC21SS15-0.5	Solid	7/12/2013 9:35	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS15-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-44	13NC21SS15-2	Solid	7/12/2013 9:45	2 ft	D 2216	TestAmerica Tacoma		13NC21SS15-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-45	13NC21SS15-3	Solid	7/12/2013 9:48	3 ft	D 2216	TestAmerica Tacoma		13NC21SS15-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-46	13NC21SS16-0.5	Solid	7/11/2013 13:58	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS16-0.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-47	13NC21SS16-2	Solid	7/11/2013 14:02	2 ft	D 2216	TestAmerica Tacoma		13NC21SS16-2	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-48	13NC21SS16-3	Solid	7/11/2013 14:06	3 ft	D 2216	TestAmerica Tacoma		13NC21SS16-3	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-49	13NC21SS17-0.5	Solid	7/11/2013 14:40	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS17-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-5	13NC21SS02-2	Solid	7/11/2013 11:00	2 ft	D 2216	TestAmerica Tacoma		13NC21SS02-2	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-50	13NC21SS17-2	Solid	7/11/2013 14:45	2 ft	D 2216	TestAmerica Tacoma		13NC21SS17-2	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-51	13NC21SS17-2.5	Solid	7/11/2013 14:50	2.5 ft	D 2216	TestAmerica Tacoma		13NC21SS17-2.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-52	13NC21SS17-3	Solid	7/11/2013 14:55	3 ft	D 2216	TestAmerica Tacoma		13NC21SS17-3	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-53	13NC21SS05-2.5	Solid	7/11/2013 11:42	2.5 ft	D 2216	TestAmerica Tacoma	Field Duplicate of 13NC21SS05-2	13NC21SS05-2.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-54	13NC21SS07-2.5	Solid	7/12/2013 9:08	2.5 ft	D 2216	TestAmerica Tacoma	Field Duplicate of 13NC21SS07-2	13NC21SS07-2.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-55	13NC21SS10-2.5	Solid	7/12/2013 8:36	2.5 ft	D 2216	TestAmerica Tacoma	Field Duplicate of 13NC21SS10-2	13NC21SS10-2.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-56	13NC21SS11-2.5	Solid	7/12/2013 8:18	2.5 ft	D 2216	TestAmerica Tacoma	Field Duplicate of 13NC21SS11-2	13NC21SS11-2.5	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-57	13NC21SS15-1	Solid	7/12/2013 9:40	1 ft	D 2216	TestAmerica Tacoma	Field Duplicate of 13NC21SS15-0.5	13NC21SS15-1	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39336-6	13NC21SS02-3	Solid	7/11/2013 11:05	3 ft	D 2216	TestAmerica Tacoma		13NC21SS02-3	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-7	13NC21SS03-0.5	Solid	7/11/2013 11:09	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SS03-0.5	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-8	13NC21SS03-2	Solid	7/11/2013 11:12	2 ft	D 2216	TestAmerica Tacoma		13NC21SS03-2	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-9	13NC21SS03-3	Solid	7/11/2013 11:15	3 ft	D 2216	TestAmerica Tacoma		13NC21SS03-3	EB/JC	None	071213-1	3_Days	Soil jar 4oz
580-39336-58	13NC21SWA01	Water	7/10/2013 16:30	Surface	6019	TestAmerica Tacoma		13NC21SW02	EB	Nitric Acid	071213-1	3_Days	Plastic 250ml - with Nitric Acid
580-39336-59	13NC21SWA02	Water	7/10/2013 16:45	Surface	6020	TestAmerica Tacoma		13NC21SW01	EB	Nitric Acid	071213-1	3_Days	Plastic 250ml - with Nitric Acid
580-39336-60	13NC21SWA03	Water	7/10/2013 17:00	Surface	6020	TestAmerica Tacoma	Field Duplicate of 13NC21SWA02	13NC21SW01	EB	Nitric Acid	071213-1	3_Days	Plastic 250ml - with Nitric Acid
580-39358 MOC DRO													
580-39358-1	13NCMOCSS001	Solid	7/14/2013 13:00	61.7 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS0	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-10	13NCMOCSS010	Solid	7/14/2013 13:45	66 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS010	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-11	13NCMOCSS011	Solid	7/14/2013 13:50	65.5 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS011	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-12	13NCMOCSS012	Solid	7/14/2013 13:55	64.5 ft amsl	AK102 & 103	TestAmerica Tacoma	MS/MSD	13NCMOCSS012	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-13	13NCMOCSS013	Solid	7/14/2013 14:00	66 ft amsl	AK102 & 103	TestAmerica Tacoma	Field Duplicate of 13NCMOCSS010	13NCMOCSS013	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-2	13NCMOCSS002	Solid	7/14/2013 13:05	63.3 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS002	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-3	13NCMOCSS003	Solid	7/14/2013 13:07	63.3 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS003	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-4	13NCMOCSS004	Solid	7/14/2013 13:09	63.3 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS004	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-5	13NCMOCSS005	Solid	7/14/2013 13:10	64 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS005	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39358-6	13NCMOCSS006	Solid	7/14/2013 13:15	64 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS006	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-7	13NCMOCSS007	Solid	7/14/2013 13:30	68 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS007	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-8	13NCMOCSS008	Solid	7/14/2013 13:35	67.3 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS008	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-9	13NCMOCSS009	Solid	7/14/2013 13:40	66.8 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS009	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-1	13NCMOCSS001	Solid	7/14/2013 13:00	61.7 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS0	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-10	13NCMOCSS010	Solid	7/14/2013 13:45	66 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS010	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-11	13NCMOCSS011	Solid	7/14/2013 13:50	65.5 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS011	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-12	13NCMOCSS012	Solid	7/14/2013 13:55	64.5 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS012	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-13	13NCMOCSS013	Solid	7/14/2013 14:00	66 ft amsl	D 2216	TestAmerica Tacoma	Field Duplicate of 13NCMOCSS010	13NCMOCSS013	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-2	13NCMOCSS002	Solid	7/14/2013 13:05	63.3 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS002	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-3	13NCMOCSS003	Solid	7/14/2013 13:07	63.3 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS003	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-4	13NCMOCSS004	Solid	7/14/2013 13:09	63.3 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS004	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-5	13NCMOCSS005	Solid	7/14/2013 13:10	64 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS005	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-6	13NCMOCSS006	Solid	7/14/2013 13:15	64 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS006	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-7	13NCMOCSS007	Solid	7/14/2013 13:30	68 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS007	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-8	13NCMOCSS008	Solid	7/14/2013 13:35	67.3 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS008	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39358-9	13NCMOCSS009	Solid	7/14/2013 13:40	66.8 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS009	LK	None	071513-05	2_Day_RUSH	Soil Jar 4oz Amber
580-39360-Site 10 Bulk Bags													
580-39360-1	13NC10WS001	Solid	7/13/2013 9:30	N/A	6020	TestAmerica Tacoma	MS/MSD	13NC10WS001	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-2	13NC10WS002	Solid	7/13/2013 9:40	N/A	6020	TestAmerica Tacoma	Field Duplicate of 13NC10WS001	13NC10WS002	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-3	13NC10WS003	Solid	7/14/2013 8:50	N/A	6020	TestAmerica Tacoma		13NC10WS003	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-4	13NC10WS004	Solid	7/15/2013 8:50	N/A	6020	TestAmerica Tacoma		13NC10WS004	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-1	13NC10WS001	Solid	7/13/2013 9:30	N/A	7470A	TestAmerica Tacoma		13NC10WS001	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-2	13NC10WS002	Solid	7/13/2013 9:40	N/A	7470A	TestAmerica Tacoma	Field Duplicate of 13NC10WS001	13NC10WS002	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-3	13NC10WS003	Solid	7/14/2013 8:50	N/A	7470A	TestAmerica Tacoma		13NC10WS003	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-4	13NC10WS004	Solid	7/15/2013 8:50	N/A	7470A	TestAmerica Tacoma		13NC10WS004	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-1	13NC10WS001	Solid	7/13/2013 9:30	N/A	8015C	TestAmerica Tacoma		13NC10WS001	EB/LK	None		3_Day_RUSH	Soil jar 2oz
580-39360-2	13NC10WS002	Solid	7/13/2013 9:40	N/A	8015C	TestAmerica Tacoma	Field Duplicate of 13NC10WS001	13NC10WS002	EB/LK	None		3_Day_RUSH	Soil jar 2oz
580-39360-3	13NC10WS003	Solid	7/14/2013 8:50	N/A	8015C	TestAmerica Tacoma		13NC10WS003	EB/LK	None		3_Day_RUSH	Soil jar 2oz
580-39360-4	13NC10WS004	Solid	7/15/2013 8:50	N/A	8015C	TestAmerica Tacoma		13NC10WS004	EB/LK	None		3_Day_RUSH	Soil jar 2oz
580-39360-1	13NC10WS001	Solid	7/13/2013 9:30	N/A	8082	TestAmerica Tacoma		13NC10WS001	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-2	13NC10WS002	Solid	7/13/2013 9:40	N/A	8082	TestAmerica Tacoma	Field Duplicate of 13NC10WS001	13NC10WS002	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-3	13NC10WS003	Solid	7/14/2013 8:50	N/A	8082	TestAmerica Tacoma		13NC10WS003	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-4	13NC10WS004	Solid	7/15/2013 8:50	N/A	8082	TestAmerica Tacoma		13NC10WS004	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-1	13NC10WS001	Solid	7/13/2013 9:30	N/A	8260B	TestAmerica Tacoma		13NC10WS001	EB/LK	Methanol	071513-04	3_Day_RUSH	Soil jar 4oz - with Methanol
580-39360-2	13NC10WS002	Solid	7/13/2013 9:40	N/A	8260B	TestAmerica Tacoma	Field Duplicate of 13NC10WS001	13NC10WS002	EB/LK	Methanol	071513-04	3_Day_RUSH	Soil jar 4oz - with Methanol
580-39360-3	13NC10WS003	Solid	7/14/2013 8:50	N/A	8260B	TestAmerica Tacoma		13NC10WS003	EB/LK	Methanol	071513-04	3_Day_RUSH	Soil jar 4oz - with Methanol
580-39360-4	13NC10WS004	Solid	7/15/2013 8:50	N/A	8260B	TestAmerica Tacoma		13NC10WS004	EB/LK	Methanol	071513-04	3_Day_RUSH	Soil jar 4oz - with Methanol
580-39360-1	13NC10WS001	Solid	7/13/2013 9:30	N/A	8270C SIM	TestAmerica Tacoma		13NC10WS001	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-2	13NC10WS002	Solid	7/13/2013 9:40	N/A	8270C SIM	TestAmerica Tacoma	Field Duplicate of 13NC10WS001	13NC10WS002	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-3	13NC10WS003	Solid	7/14/2013 8:50	N/A	8270C SIM	TestAmerica Tacoma		13NC10WS003	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-4	13NC10WS004	Solid	7/15/2013 8:50	N/A	8270C SIM	TestAmerica Tacoma		13NC10WS004	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-1	13NC10WS001	Solid	7/13/2013 9:30	N/A	AK101	TestAmerica Tacoma		13NC10WS001	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-2	13NC10WS002	Solid	7/13/2013 9:40	N/A	AK101	TestAmerica Tacoma	Field Duplicate of 13NC10WS001	13NC10WS002	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-3	13NC10WS003	Solid	7/14/2013 8:50	N/A	AK101	TestAmerica Tacoma		13NC10WS003	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-4	13NC10WS004	Solid	7/15/2013 8:50	N/A	AK101	TestAmerica Tacoma		13NC10WS004	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-1	13NC10WS001	Solid	7/13/2013 9:30	N/A	AK102 & 103	TestAmerica Tacoma		13NC10WS001	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-2	13NC10WS002	Solid	7/13/2013 9:40	N/A	AK102 & 103	TestAmerica Tacoma	Field Duplicate of 13NC10WS001	13NC10WS002	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-3	13NC10WS003	Solid	7/14/2013 8:50	N/A	AK102 & 103	TestAmerica Tacoma		13NC10WS003	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-4	13NC10WS004	Solid	7/15/2013 8:50	N/A	AK102 & 103	TestAmerica Tacoma		13NC10WS004	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-1	13NC10WS001	Solid	7/13/2013 9:30	N/A	D 2216	TestAmerica Tacoma		13NC10WS001	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-2	13NC10WS002	Solid	7/13/2013 9:40	N/A	D 2216	TestAmerica Tacoma	Field Duplicate of 13NC10WS001	13NC10WS002	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-3	13NC10WS003	Solid	7/14/2013 8:50	N/A	D 2216	TestAmerica Tacoma		13NC10WS003	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39360-4	13NC10WS004	Solid	7/15/2013 8:50	N/A	D 2216	TestAmerica Tacoma		13NC10WS004	EB/LK	None	071513-05	3_Day_RUSH	Soil jar 16oz
580-39361-Site 13													
580-39361-1	13NC13SS001	Solid	7/15/2013 8:00	0-1 ft	8082	TestAmerica Tacoma	MS/MSD	13-001	EB	None	071513-03	2_Day_RUSH	Soil Jar 4oz Amber
580-39361-2	13NC13SS002	Solid	7/15/2013 8:05	0-1 ft	8082	TestAmerica Tacoma		13-002	EB	None	071513-03	2_Day_RUSH	Soil Jar 4oz Amber
580-39361-3	13NC13SS003	Solid	7/15/2013 8:10	0-1 ft	8082	TestAmerica Tacoma		13-003	EB	None	071513-03	2_Day_RUSH	Soil Jar 4oz Amber
580-39361-4	13NC13SS004	Solid	7/15/2013 8:15	0-1 ft	8082	TestAmerica Tacoma		13-004	EB	None	071513-03	2_Day_RUSH	Soil Jar 4oz Amber
580-39361-1	13NC13SS001	Solid	7/15/2013 8:00	0-1 ft	D 2216	TestAmerica Tacoma		13-001	EB	None	071513-03	2_Day_RUSH	Soil Jar 4oz Amber
580-39361-2	13NC13SS002	Solid	7/15/2013 8:05	0-1 ft	D 2216	TestAmerica Tacoma		13-002	EB	None	071513-03	2_Day_RUSH	Soil Jar 4oz Amber
580-39361-3	13NC13SS003	Solid	7/15/2013 8:10	0-1 ft	D 2216	TestAmerica Tacoma		13-003	EB	None	071513-03	2_Day_RUSH	Soil Jar 4oz Amber
580-39361-4	13NC13SS004	Solid	7/15/2013 8:15	0-1 ft	D 2216	TestAmerica Tacoma		13-004	EB	None	071513-03	2_Day_RUSH	Soil Jar 4oz Amber
580-39362-Site 10 Soil													
580-39362-1	13NC10SS001	Solid	7/13/2013 10:40	76.8 ft amsl	6020	TestAmerica Tacoma		13NC10SS00	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-10	13NC10SS010	Solid	7/13/2013 16:00	76.8 ft amsl	6020	TestAmerica Tacoma		13NC10SS010	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-2	13NC10SS002	Solid	7/13/2013 10:50	76.9 ft amsl	6020	TestAmerica Tacoma		13NC10SS002	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-3	13NC10SS003	Solid	7/13/2013 11:05	78.9 ft amsl	6020	TestAmerica Tacoma		13NC10SS003	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-4	13NC10SS004	Solid	7/13/2013 11:15	78.8 ft amsl	6020	TestAmerica Tacoma	MS/MSD	13NC10SS004	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-5	13NC10SS005	Solid	7/13/2013 11:00	79.4 ft amsl	6020	TestAmerica Tacoma		13NC10SS005	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-6	13NC10SS006	Solid	7/13/2013 11:20	76.3 ft amsl	6020	TestAmerica Tacoma		13NC10SS006	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-7	13NC10SS007	Solid	7/13/2013 11:25	78.1 ft amsl	6020	TestAmerica Tacoma		13NC10SS007	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-8	13NC10SS008	Solid	7/13/2013 10:55	78.1 ft amsl	6020	TestAmerica Tacoma	Field Duplicate of 13NC10SS002	13NC10SS008	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-9	13NC10SS009	Solid	7/13/2013 15:50	76.8 ft amsl	6020	TestAmerica Tacoma		13NC10SS009	EB/LK	None	071513-05	2_Days	Soil jar 16oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39362-1	13NC10SS001	Solid	7/13/2013 10:40	76.8 ft amsl	7471A	TestAmerica Tacoma		13NC10SS00	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-10	13NC10SS010	Solid	7/13/2013 16:00	76.8 ft amsl	7471A	TestAmerica Tacoma		13NC10SS010	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-2	13NC10SS002	Solid	7/13/2013 10:50	76.9 ft amsl	7471A	TestAmerica Tacoma		13NC10SS002	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-3	13NC10SS003	Solid	7/13/2013 11:05	78.9 ft amsl	7471A	TestAmerica Tacoma		13NC10SS003	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-4	13NC10SS004	Solid	7/13/2013 11:15	78.8 ft amsl	7471A	TestAmerica Tacoma		13NC10SS004	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-5	13NC10SS005	Solid	7/13/2013 11:00	79.4 ft amsl	7471A	TestAmerica Tacoma		13NC10SS005	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-6	13NC10SS006	Solid	7/13/2013 11:20	76.3 ft amsl	7471A	TestAmerica Tacoma		13NC10SS006	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-7	13NC10SS007	Solid	7/13/2013 11:25	78.1 ft amsl	7471A	TestAmerica Tacoma		13NC10SS007	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-8	13NC10SS008	Solid	7/13/2013 10:55	78.1 ft amsl	7471A	TestAmerica Tacoma	Field Duplicate of 13NC10SS002	13NC10SS008	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-9	13NC10SS009	Solid	7/13/2013 15:50	76.8 ft amsl	7471A	TestAmerica Tacoma		13NC10SS009	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-1	13NC10SS001	Solid	7/13/2013 10:40	76.8 ft amsl	8082	TestAmerica Tacoma		13NC10SS00	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-10	13NC10SS010	Solid	7/13/2013 16:00	76.8 ft amsl	8082	TestAmerica Tacoma		13NC10SS010	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-2	13NC10SS002	Solid	7/13/2013 10:50	76.9 ft amsl	8082	TestAmerica Tacoma		13NC10SS002	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-3	13NC10SS003	Solid	7/13/2013 11:05	78.9 ft amsl	8082	TestAmerica Tacoma		13NC10SS003	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-4	13NC10SS004	Solid	7/13/2013 11:15	78.8 ft amsl	8082	TestAmerica Tacoma		13NC10SS004	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-5	13NC10SS005	Solid	7/13/2013 11:00	79.4 ft amsl	8082	TestAmerica Tacoma		13NC10SS005	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-6	13NC10SS006	Solid	7/13/2013 11:20	76.3 ft amsl	8082	TestAmerica Tacoma		13NC10SS006	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-7	13NC10SS007	Solid	7/13/2013 11:25	78.1 ft amsl	8082	TestAmerica Tacoma		13NC10SS007	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-8	13NC10SS008	Solid	7/13/2013 10:55	78.1 ft amsl	8082	TestAmerica Tacoma	Field Duplicate of 13NC10SS002	13NC10SS008	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-9	13NC10SS009	Solid	7/13/2013 15:50	76.8 ft amsl	8082	TestAmerica Tacoma		13NC10SS009	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-1	13NC10SS001	Solid	7/13/2013 10:40	76.8 ft amsl	AK101	TestAmerica Tacoma		13NC10SS00	EB/LK	Methanol	071513-04	2_Days	Soil jar 4oz - with Methanol
580-39362-10	13NC10SS010	Solid	7/13/2013 16:00	76.8 ft amsl	AK101	TestAmerica Tacoma		13NC10SS010	EB/LK	Methanol	071513-04	2_Days	Soil jar 4oz - with Methanol
580-39362-2	13NC10SS002	Solid	7/13/2013 10:50	76.9 ft amsl	AK101	TestAmerica Tacoma		13NC10SS002	EB/LK	Methanol	071513-04	2_Days	Soil jar 4oz - with Methanol
580-39362-3	13NC10SS003	Solid	7/13/2013 11:05	78.9 ft amsl	AK101	TestAmerica Tacoma		13NC10SS003	EB/LK	Methanol	071513-04	2_Days	Soil jar 4oz - with Methanol
580-39362-4	13NC10SS004	Solid	7/13/2013 11:15	78.8 ft amsl	AK101	TestAmerica Tacoma		13NC10SS004	EB/LK	Methanol	071513-04	2_Days	Soil jar 4oz - with Methanol
580-39362-5	13NC10SS005	Solid	7/13/2013 11:00	79.4 ft amsl	AK101	TestAmerica Tacoma		13NC10SS005	EB/LK	Methanol	071513-04	2_Days	Soil jar 4oz - with Methanol
580-39362-6	13NC10SS006	Solid	7/13/2013 11:20	76.3 ft amsl	AK101	TestAmerica Tacoma		13NC10SS006	EB/LK	Methanol	071513-04	2_Days	Soil jar 4oz - with Methanol
580-39362-7	13NC10SS007	Solid	7/13/2013 11:25	78.1 ft amsl	AK101	TestAmerica Tacoma		13NC10SS007	EB/LK	Methanol	071513-04	2_Days	Soil jar 4oz - with Methanol
580-39362-8	13NC10SS008	Solid	7/13/2013 10:55	78.1 ft amsl	AK101	TestAmerica Tacoma	Field Duplicate of 13NC10SS002	13NC10SS008	EB/LK	Methanol	071513-04	2_Days	Soil jar 4oz - with Methanol
580-39362-9	13NC10SS009	Solid	7/13/2013 15:50	76.8 ft amsl	AK101	TestAmerica Tacoma		13NC10SS009	EB/LK	Methanol	071513-04	2_Days	Soil jar 4oz - with Methanol
580-39362-1	13NC10SS001	Solid	7/13/2013 10:40	76.8 ft amsl	D 2216	TestAmerica Tacoma		13NC10SS00	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-10	13NC10SS010	Solid	7/13/2013 16:00	76.8 ft amsl	D 2216	TestAmerica Tacoma		13NC10SS010	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-2	13NC10SS002	Solid	7/13/2013 10:50	76.9 ft amsl	D 2216	TestAmerica Tacoma		13NC10SS002	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-3	13NC10SS003	Solid	7/13/2013 11:05	78.9 ft amsl	D 2216	TestAmerica Tacoma		13NC10SS003	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-4	13NC10SS004	Solid	7/13/2013 11:15	78.8 ft amsl	D 2216	TestAmerica Tacoma		13NC10SS004	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-5	13NC10SS005	Solid	7/13/2013 11:00	79.4 ft amsl	D 2216	TestAmerica Tacoma		13NC10SS005	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-6	13NC10SS006	Solid	7/13/2013 11:20	76.3 ft amsl	D 2216	TestAmerica Tacoma		13NC10SS006	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-7	13NC10SS007	Solid	7/13/2013 11:25	78.1 ft amsl	D 2216	TestAmerica Tacoma		13NC10SS007	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-8	13NC10SS008	Solid	7/13/2013 10:55	78.1 ft amsl	D 2216	TestAmerica Tacoma	Field Duplicate of 13NC10SS002	13NC10SS008	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39362-9	13NC10SS009	Solid	7/13/2013 15:50	76.8 ft amsl	D 2216	TestAmerica Tacoma		13NC10SS009	EB/LK	None	071513-05	2_Days	Soil jar 16oz
580-39382-Site 10 Soil													
580-39382-1	13NC10SS011	Solid	7/16/2013 16:30	2-3 ft	6020	TestAmerica Seattle	MS/MSD	13NC10SS011	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-2	13NC10SS012	Solid	7/16/2013 16:45	65.0 ft amsl	6020	TestAmerica Seattle		13NC10SS012	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-3	13NC10SS013	Solid	7/16/2013 17:00	3-4 ft	6020	TestAmerica Seattle		13NC10SS013	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-4	13NC10SS014	Solid	7/17/2013 8:00	68.2 ft amsl	6020	TestAmerica Seattle		13NC10SS014	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-5	13NC10SS015	Solid	7/17/2013 8:10	65.0 ft amsl	6020	TestAmerica Seattle		13NC10SS015	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-6	13NC10SS016	Solid	7/16/2013 17:15	65.0 ft amsl	6020	TestAmerica Seattle	Field Duplicate of 13NC10SS012	13NC10SS016	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-1	13NC10SS011	Solid	7/16/2013 16:30	2-3 ft	7471A	TestAmerica Seattle	MS/MSD	13NC10SS011	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-2	13NC10SS012	Solid	7/16/2013 16:45	65.0 ft amsl	7471A	TestAmerica Seattle		13NC10SS012	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-3	13NC10SS013	Solid	7/16/2013 17:00	3-4 ft	7471A	TestAmerica Seattle		13NC10SS013	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-4	13NC10SS014	Solid	7/17/2013 8:00	68.2 ft amsl	7471A	TestAmerica Seattle		13NC10SS014	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-5	13NC10SS015	Solid	7/17/2013 8:10	68.2 ft amsl	7471A	TestAmerica Seattle		13NC10SS015	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-6	13NC10SS016	Solid	7/16/2013 17:15	65.0 ft amsl	7471A	TestAmerica Seattle	Field Duplicate of 13NC10SS012	13NC10SS016	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-1	13NC10SS011	Solid	7/16/2013 16:30	2-3 ft	8015C	TestAmerica Denver	MS/MSD	13NC10SS011	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 4oz
580-39382-2	13NC10SS012	Solid	7/16/2013 16:45	65.0 ft amsl	8015C	TestAmerica Denver		13NC10SS012	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 4oz
580-39382-3	13NC10SS013	Solid	7/16/2013 17:00	3-4 ft	8015C	TestAmerica Denver		13NC10SS013	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 4oz
580-39382-4	13NC10SS014	Solid	7/17/2013 8:00	68.2 ft amsl	8015C	TestAmerica Denver		13NC10SS014	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 4oz
580-39382-5	13NC10SS015	Solid	7/17/2013 8:10	68.2 ft amsl	8015C	TestAmerica Denver		13NC10SS015	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 4oz
580-39382-6	13NC10SS016	Solid	7/16/2013 17:15	65.0 ft amsl	8015C	TestAmerica Denver	Field Duplicate of 13NC10SS012	13NC10SS016	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 4oz
580-39382-1	13NC10SS011	Solid	7/16/2013 16:30	2-3 ft	8082	TestAmerica Seattle	MS/MSD	13NC10SS011	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-2	13NC10SS012	Solid	7/16/2013 16:45	65.0 ft amsl	8082	TestAmerica Seattle		13NC10SS012	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-3	13NC10SS013	Solid	7/16/2013 17:00	3-4 ft	8082	TestAmerica Seattle		13NC10SS013	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-4	13NC10SS014	Solid	7/17/2013 8:00	68.2 ft amsl	8082	TestAmerica Seattle		13NC10SS014	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-5	13NC10SS015	Solid	7/17/2013 8:10	68.2 ft amsl	8082	TestAmerica Seattle		13NC10SS015	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-6	13NC10SS016	Solid	7/16/2013 17:15	65.0 ft amsl	8082	TestAmerica Seattle	Field Duplicate of 13NC10SS012	13NC10SS016	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-1	13NC10SS011	Solid	7/16/2013 16:30	2-3 ft	8260B	TestAmerica Seattle	MS/MSD	13NC10SS011	EB/LK	Methanol	071713-01	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39382-2	13NC10SS012	Solid	7/16/2013 16:45	65.0 ft amsl	8260B	TestAmerica Seattle		13NC10SS012	EB/LK	Methanol	071713-01	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39382-3	13NC10SS013	Solid	7/16/2013 17:00	3-4 ft	8260B	TestAmerica Seattle		13NC10SS013	EB/LK	Methanol	071713-01	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39382-4	13NC10SS014	Solid	7/17/2013 8:00	68.2 ft amsl	8260B	TestAmerica Seattle		13NC10SS014	EB/LK	Methanol	071713-01	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39382-5	13NC10SS015	Solid	7/17/2013 8:10	68.2 ft amsl	8260B	TestAmerica Seattle		13NC10SS015	EB/LK	Methanol	071713-01	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39382-6	13NC10SS016	Solid	7/16/2013 17:15	65.0 ft amsl	8260B	TestAmerica Seattle	Field Duplicate of 13NC10SS012	13NC10SS016	EB/LK	Methanol	071713-01	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39382-1	13NC10SS011	Solid	7/16/2013 16:30	2-3 ft	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	13NC10SS011	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-2	13NC10SS012	Solid	7/16/2013 16:45	65.0 ft amsl	8270C SIM/DoD	TestAmerica Seattle		13NC10SS012	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-3	13NC10SS013	Solid	7/16/2013 17:00	3-4 ft	8270C SIM/DoD	TestAmerica Seattle		13NC10SS013	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39382-4	13NC10SS014	Solid	7/17/2013 8:00	68.2 ft amsl	8270C SIM/DoD	TestAmerica Seattle		13NC10SS014	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-5	13NC10SS015	Solid	7/17/2013 8:10	68.2 ft amsl	8270C SIM/DoD	TestAmerica Seattle		13NC10SS015	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-6	13NC10SS016	Solid	7/16/2013 17:15	65.0 ft amsl	8270C SIM/DoD	TestAmerica Seattle	Field Duplicate of 13NC10SS012	13NC10SS016	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-1	13NC10SS011	Solid	7/16/2013 16:30	2-3 ft	AK101	TestAmerica Seattle	MS/MSD	13NC10SS011	EB/LK	Methanol	071713-01	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39382-2	13NC10SS012	Solid	7/16/2013 16:45	65.0 ft amsl	AK101	TestAmerica Seattle		13NC10SS012	EB/LK	Methanol	071713-01	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39382-3	13NC10SS013	Solid	7/16/2013 17:00	3-4 ft	AK101	TestAmerica Seattle		13NC10SS013	EB/LK	Methanol	071713-01	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39382-4	13NC10SS014	Solid	7/17/2013 8:00	68.2 ft amsl	AK101	TestAmerica Seattle		13NC10SS014	EB/LK	Methanol	071713-01	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39382-5	13NC10SS015	Solid	7/17/2013 8:10	68.2 ft amsl	AK101	TestAmerica Seattle		13NC10SS015	EB/LK	Methanol	071713-01	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39382-6	13NC10SS016	Solid	7/16/2013 17:15	65.0 ft amsl	AK101	TestAmerica Seattle	Field Duplicate of 13NC10SS012	13NC10SS016	EB/LK	Methanol	071713-01	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39382-1	13NC10SS011	Solid	7/16/2013 16:30	2-3 ft	AK102 & 103	TestAmerica Seattle	MS/MSD	13NC10SS011	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-2	13NC10SS012	Solid	7/16/2013 16:45	65.0 ft amsl	AK102 & 103	TestAmerica Seattle		13NC10SS012	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-3	13NC10SS013	Solid	7/16/2013 17:00	3-4 ft	AK102 & 103	TestAmerica Seattle		13NC10SS013	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-4	13NC10SS014	Solid	7/17/2013 8:00	68.2 ft amsl	AK102 & 103	TestAmerica Seattle		13NC10SS014	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-5	13NC10SS015	Solid	7/17/2013 8:10	68.2 ft amsl	AK102 & 103	TestAmerica Seattle		13NC10SS015	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-6	13NC10SS016	Solid	7/16/2013 17:15	65.0 ft amsl	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NC10SS012	13NC10SS016	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-1	13NC10SS011	Solid	7/16/2013 16:30	2-3 ft	D 2216	TestAmerica Seattle	MS/MSD	13NC10SS011	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-2	13NC10SS012	Solid	7/16/2013 16:45	65.0 ft amsl	D 2216	TestAmerica Seattle		13NC10SS012	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-3	13NC10SS013	Solid	7/16/2013 17:00	3-4 ft	D 2216	TestAmerica Seattle		13NC10SS013	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-4	13NC10SS014	Solid	7/17/2013 8:00	68.2 ft amsl	D 2216	TestAmerica Seattle		13NC10SS014	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-5	13NC10SS015	Solid	7/17/2013 8:10	68.2 ft amsl	D 2216	TestAmerica Seattle		13NC10SS015	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39382-6	13NC10SS016	Solid	7/16/2013 17:15	65.0 ft amsl	D 2216	TestAmerica Seattle	Field Duplicate of 13NC10SS012	13NC10SS016	EB/LK	None	071713-01	2_Day_RUSH	Soil jar 16oz
580-39439-MOC Soils													
580-39439-1	13NCMOCSS014	Solid	7/18/2013 13:30	55.1 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS014	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39439-4	13NCMOCSS017	Solid	7/18/2013 13:45	55.1 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS017	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39439-5	13NCMOCSS018	Solid	7/18/2013 14:00	11-15 ft	AK102 & 103	TestAmerica Seattle		13NCMOCSS018	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39439-6	13NCMOCSS019	Solid	7/18/2013 14:05	11-15 ft	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NCMOCSS018	13NCMOCSS019	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39439-7	13NCMOCSS020	Solid	7/18/2013 14:10	11-13 ftt	AK102 & 103	TestAmerica Seattle		13NCMOCSS020	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39439-8	13NCMOCSS021	Solid	7/18/2013 14:20	11-13 ftt	AK102 & 103	TestAmerica Seattle		13NCMOCSS021	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39439-1	13NCMOCSS014	Solid	7/18/2013 13:30	55.1 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS014	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39439-2	13NCMOCSS015	Solid	7/18/2013 13:35	55.1 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS015	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39439-3	13NCMOCSS016	Solid	7/18/2013 13:40	55.1 ft amsl	D 2216	TestAmerica Seattle	MS/MSD	13NCMOCSS016	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39439-4	13NCMOCSS017	Solid	7/18/2013 13:45	55.1 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS017	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39439-5	13NCMOCSS018	Solid	7/18/2013 14:00	11-15 ft	D 2216	TestAmerica Seattle		13NCMOCSS018	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39439-6	13NCMOCSS019	Solid	7/18/2013 14:05	11-15 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NCMOCSS018	13NCMOCSS019	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39439-7	13NCMOCSS020	Solid	7/18/2013 14:10	11-13 ftt	D 2216	TestAmerica Seattle		13NCMOCSS020	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39439-8	13NCMOCSS021	Solid	7/18/2013 14:20	11-13 ftt	D 2216	TestAmerica Seattle		13NCMOCSS021	LK	None	072213-08	2_Day_RUSH	Soil Jar 4oz Amber
580-39440-1-Site 10 Bulk Waste													
580-39440-1	13NC10WS05	Solid	7/20/2013 16:10	N/A	6020	TestAmerica Tacoma	MS/MSD	13NC10WS05	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39440-1	13NC10WS05	Solid	7/20/2013 16:10	N/A	7470A	TestAmerica Tacoma	MS/MSD	13NC10WS05	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39440-1	13NC10WS05	Solid	7/20/2013 16:10	N/A	8082	TestAmerica Tacoma	MS/MSD	13NC10WS05	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39440-1	13NC10WS05	Solid	7/20/2013 16:10	N/A	8260B	TestAmerica Tacoma	MS/MSD	13NC10WS05	EB/LK	Methanol	072213-08	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39440-1	13NC10WS05	Solid	7/20/2013 16:10	N/A	8270C SIM	TestAmerica Tacoma	MS/MSD	13NC10WS05	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39440-1	13NC10WS05	Solid	7/20/2013 16:10	N/A	AK101	TestAmerica Tacoma	MS/MSD	13NC10WS05	EB/LK	Methanol	072213-08	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39440-1	13NC10WS05	Solid	7/20/2013 16:10	N/A	AK102 & 103	TestAmerica Tacoma	MS/MSD	13NC10WS05	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39440-1	13NC10WS05	Solid	7/20/2013 16:10	N/A	D 2216	TestAmerica Tacoma	MS/MSD	13NC10WS05	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39441-Glycols													
580-39441-1	13NC10WS05	Solid	7/20/2013 16:10	N/A	8015C	TestAmerica Denver	MS/MSD	13NC10WS05	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39441-2	13NC10SS017	Solid	7/21/2013 10:30	77.2 ft amsl	8015C	TestAmerica Denver		13NC10SS017	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39441-3	13NC10SS018	Solid	7/21/2013 10:30	78.1 ft amsl	8015C	TestAmerica Denver		13NC10SS018	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39441-4	13NC10SS021	Solid	7/21/2013 10:50	79.8 ft amsl	8015C	TestAmerica Denver		13NC10SS021	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39441-5	13NC10SS022	Solid	7/21/2013 11:00	79.8 ft amsl	8015C	TestAmerica Denver		13NC10SS022	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39441-1	13NC10WS05	Solid	7/20/2013 16:10	N/A	Moisture	TestAmerica Denver	MS/MSD	13NC10WS05	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39441-2	13NC10SS017	Solid	7/21/2013 10:30	77.2 ft amsl	Moisture	TestAmerica Denver		13NC10SS017	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39441-3	13NC10SS018	Solid	7/21/2013 10:30	78.1 ft amsl	Moisture	TestAmerica Denver		13NC10SS018	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39441-4	13NC10SS021	Solid	7/21/2013 10:50	79.8 ft amsl	Moisture	TestAmerica Denver		13NC10SS021	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39441-5	13NC10SS022	Solid	7/21/2013 11:00	79.8 ft amsl	Moisture	TestAmerica Denver		13NC10SS022	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39443-Site 10 Soil													
580-39443-1	13NC10SS017	Solid	7/20/2013 16:30	77.2 ft amsl	6020	TestAmerica Seattle	MS/MSD	13NC10SS017	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-2	13NC10SS018	Solid	7/21/2013 10:30	78.1 ft amsl	6020	TestAmerica Seattle		13NC10SS018	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-3	13NC10SS021	Solid	7/21/2013 10:50	79.8 ft amsl	6020	TestAmerica Seattle		13NC10SS021	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-4	13NC10SS022	Solid	7/21/2013 11:00	79.8 ft amsl	6020	TestAmerica Seattle	Field Duplicate of 13NC10SS021	13NC10SS022	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-1	13NC10SS017	Solid	7/20/2013 16:30	77.2 ft amsl	7471A	TestAmerica Seattle	MS/MSD	13NC10SS017	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-2	13NC10SS018	Solid	7/21/2013 10:30	78.1 ft amsl	7471A	TestAmerica Seattle		13NC10SS018	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-3	13NC10SS021	Solid	7/21/2013 10:50	79.8 ft amsl	7471A	TestAmerica Seattle		13NC10SS021	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-4	13NC10SS022	Solid	7/21/2013 11:00	79.8 ft amsl	7471A	TestAmerica Seattle	Field Duplicate of 13NC10SS021	13NC10SS022	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-1	13NC10SS017	Solid	7/20/2013 16:30	77.2 ft amsl	8082	TestAmerica Seattle	MS/MSD	13NC10SS017	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-2	13NC10SS018	Solid	7/21/2013 10:30	77.2 ft amsl	8082	TestAmerica Seattle		13NC10SS018	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-3	13NC10SS021	Solid	7/21/2013 10:50	79.8 ft amsl	8082	TestAmerica Seattle		13NC10SS021	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-4	13NC10SS022	Solid	7/21/2013 11:00	79.8 ft amsl	8082	TestAmerica Seattle	Field Duplicate of 13NC10SS021	13NC10SS022	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-1	13NC10SS017	Solid	7/20/2013 16:30	77.2 ft amsl	8260B	TestAmerica Seattle	MS/MSD	13NC10SS017	EB/LK	Methanol	072213-08	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39443-2	13NC10SS018	Solid	7/21/2013 10:30	78.1 ft amsl	8260B	TestAmerica Seattle		13NC10SS018	EB/LK	Methanol	072213-08	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39443-3	13NC10SS021	Solid	7/21/2013 10:50	79.8 ft amsl	8260B	TestAmerica Seattle		13NC10SS021	EB/LK	Methanol	072213-08	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39443-4	13NC10SS022	Solid	7/21/2013 11:00	79.8 ft amsl	8260B	TestAmerica Seattle	Field Duplicate of 13NC10SS021	13NC10SS022	EB/LK	Methanol	072213-08	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39443-1	13NC10SS017	Solid	7/20/2013 16:30	77.2 ft amsl	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	13NC10SS017	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39443-2	13NC10SS018	Solid	7/21/2013 10:30	78.1 ft amsl	8270C SIM/DoD	TestAmerica Seattle		13NC10SS018	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-3	13NC10SS021	Solid	7/21/2013 10:50	79.8 ft amsl	8270C SIM/DoD	TestAmerica Seattle		13NC10SS021	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-4	13NC10SS022	Solid	7/21/2013 11:00	79.8 ft amsl	8270C SIM/DoD	TestAmerica Seattle	Field Duplicate of 13NC10SS021	13NC10SS022	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-1	13NC10SS017	Solid	7/20/2013 16:30	77.2 ft amsl	AK101	TestAmerica Seattle	MS/MSD	13NC10SS017	EB/LK	Methanol	072213-08	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39443-2	13NC10SS018	Solid	7/21/2013 10:30	78.1 ft amsl	AK101	TestAmerica Seattle		13NC10SS018	EB/LK	Methanol	072213-08	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39443-3	13NC10SS021	Solid	7/21/2013 10:50	79.8 ft amsl	AK101	TestAmerica Seattle		13NC10SS021	EB/LK	Methanol	072213-08	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39443-4	13NC10SS022	Solid	7/21/2013 11:00	79.8 ft amsl	AK101	TestAmerica Seattle	Field Duplicate of 13NC10SS021	13NC10SS022	EB/LK	Methanol	072213-08	2_Day_RUSH	Soil jar 4oz - with Methanol
580-39443-1	13NC10SS017	Solid	7/20/2013 16:30	77.2 ft amsl	AK102 & 103	TestAmerica Seattle	MS/MSD	13NC10SS017	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-2	13NC10SS018	Solid	7/21/2013 10:30	78.1 ft amsl	AK102 & 103	TestAmerica Seattle		13NC10SS018	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-3	13NC10SS021	Solid	7/21/2013 10:50	79.8 ft amsl	AK102 & 103	TestAmerica Seattle		13NC10SS021	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-4	13NC10SS022	Solid	7/21/2013 11:00	79.8 ft amsl	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NC10SS021	13NC10SS022	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-1	13NC10SS017	Solid	7/20/2013 16:30	77.2 ft amsl	D 2216	TestAmerica Seattle	MS/MSD	13NC10SS017	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-2	13NC10SS018	Solid	7/21/2013 10:30	78.1 ft amsl	D 2216	TestAmerica Seattle		13NC10SS018	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-3	13NC10SS021	Solid	7/21/2013 10:50	79.8 ft amsl	D 2216	TestAmerica Seattle		13NC10SS021	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39443-4	13NC10SS022	Solid	7/21/2013 11:00	79.8 ft amsl	D 2216	TestAmerica Seattle	Field Duplicate of 13NC10SS021	13NC10SS022	EB/LK	None	072213-08	2_Day_RUSH	Soil jar 16oz
580-39470-Site 28 Monitoring Waters													
580-39470-1	13NC28PRWA01	Water	7/23/2013 14:00	Surface	6020	TestAmerica Tacoma		13NC28PRWA01	JC	Nitric Acid	072413-04	14_Days	Plastic 250ml - with Nitric Acid
580-39470-2	13NC28PRWA02	Water	7/23/2013 14:15	Surface	6020	TestAmerica Tacoma	Field Duplicate 13NC28PRWA01	13NC28PRWA02	JC	Nitric Acid	072413-04	14_Days	Plastic 250ml - with Nitric Acid
580-39470-3	13NC28PRWA03	Water	7/23/2013 14:50	Surface	6020	TestAmerica Tacoma	MS/MSD	13NC28PRWA03	JC	Nitric Acid	072413-07	14_Days	Plastic 250ml - with Nitric Acid
580-39470-4	13NC28PRWA04	Water	7/23/2013 15:40	Surface	6020	TestAmerica Tacoma		13NC28PRWA04	JC	Nitric Acid	072413-04	14_Days	Plastic 250ml - with Nitric Acid
580-39470-1	13NC28PRWA01	Water	7/23/2013 14:00	Surface	7470A	TestAmerica Tacoma		13NC28PRWA01	JC	Nitric Acid	072413-04	14_Days	Plastic 250ml - with Nitric Acid
580-39470-2	13NC28PRWA02	Water	7/23/2013 14:15	Surface	7470A	TestAmerica Tacoma	Field Duplicate 13NC28PRWA01	13NC28PRWA02	JC	Nitric Acid	072413-04	14_Days	Plastic 250ml - with Nitric Acid
580-39470-3	13NC28PRWA03	Water	7/23/2013 14:50	Surface	7470A	TestAmerica Tacoma	MS/MSD	13NC28PRWA03	JC	Nitric Acid	072413-07	14_Days	Plastic 250ml - with Nitric Acid
580-39470-4	13NC28PRWA04	Water	7/23/2013 15:40	Surface	7470A	TestAmerica Tacoma		13NC28PRWA04	JC	Nitric Acid	072413-04	14_Days	Plastic 250ml - with Nitric Acid
580-39470-1	13NC28PRWA01	Water	7/23/2013 14:00	Surface	8082	TestAmerica Tacoma		13NC28PRWA01	JC	None	072413-06	14_Days	Amber Glass 1 liter - unpreserved
580-39470-2	13NC28PRWA02	Water	7/23/2013 14:15	Surface	8082	TestAmerica Tacoma	Field Duplicate 13NC28PRWA01	13NC28PRWA02	JC	None	072413-06	14_Days	Amber Glass 1 liter - unpreserved
580-39470-3	13NC28PRWA03	Water	7/23/2013 14:50	Surface	8082	TestAmerica Tacoma	MS/MSD	13NC28PRWA03	JC	None	072413-06	14_Days	Amber Glass 1 liter - unpreserved
580-39470-4	13NC28PRWA04	Water	7/23/2013 15:40	Surface	8082	TestAmerica Tacoma		13NC28PRWA04	JC	None	072413-07	14_Days	Amber Glass 1 liter - unpreserved
580-39470-1	13NC28PRWA01	Water	7/23/2013 14:00	Surface	8260B/DoD	TestAmerica Tacoma		13NC28PRWA01	JC	Hydrochloric Acid	072413-07	14_Days	Voa Vial 40ml - Hydrochloric Acid
580-39470-2	13NC28PRWA02	Water	7/23/2013 14:15	Surface	8260B/DoD	TestAmerica Tacoma	Field Duplicate 13NC28PRWA01	13NC28PRWA02	JC	Hydrochloric Acid	072413-07	14_Days	Voa Vial 40ml - Hydrochloric Acid
580-39470-3	13NC28PRWA03	Water	7/23/2013 14:50	Surface	8260B/DoD	TestAmerica Tacoma	MS/MSD	13NC28PRWA03	JC	Hydrochloric Acid	072413-07	14_Days	Voa Vial 40ml - Hydrochloric Acid
580-39470-4	13NC28PRWA04	Water	7/23/2013 15:40	Surface	8260B/DoD	TestAmerica Tacoma		13NC28PRWA04	JC	Hydrochloric Acid	072413-07	14_Days	Voa Vial 40ml - Hydrochloric Acid
580-39470-1	13NC28PRWA01	Water	7/23/2013 14:00	Surface	8270C SIM/DoD	TestAmerica Tacoma		13NC28PRWA01	JC	None	072413-05	14_Days	Amber Glass 1 liter - unpreserved
580-39470-2	13NC28PRWA02	Water	7/23/2013 14:15	Surface	8270C SIM/DoD	TestAmerica Tacoma	Field Duplicate 13NC28PRWA01	13NC28PRWA02	JC	None	072413-05	14_Days	Amber Glass 1 liter - unpreserved
580-39470-3	13NC28PRWA03	Water	7/23/2013 14:50	Surface	8270C SIM/DoD	TestAmerica Tacoma	MS/MSD	13NC28PRWA03	JC	None	072413-06	14_Days	Amber Glass 1 liter - unpreserved
580-39470-4	13NC28PRWA04	Water	7/23/2013 15:40	Surface	8270C SIM/DoD	TestAmerica Tacoma		13NC28PRWA04	JC	None	072413-07	14_Days	Amber Glass 1 liter - unpreserved
580-39470-1	13NC28PRWA01	Water	7/23/2013 14:00	Surface	AK102 & 103	TestAmerica Tacoma		13NC28PRWA01	JC	None	072413-05	14_Days	Amber Glass 1 liter - unpreserved
580-39470-2	13NC28PRWA02	Water	7/23/2013 14:15	Surface	AK102 & 103	TestAmerica Tacoma	Field Duplicate 13NC28PRWA01	13NC28PRWA02	JC	None	072413-05	14_Days	Amber Glass 1 liter - unpreserved
580-39470-3	13NC28PRWA03	Water	7/23/2013 14:50	Surface	AK102 & 103	TestAmerica Tacoma	MS/MSD	13NC28PRWA03	JC	None	072413-06	14_Days	Amber Glass 1 liter - unpreserved
580-39470-4	13NC28PRWA04	Water	7/23/2013 15:40	Surface	AK102 & 103	TestAmerica Tacoma		13NC28PRWA04	JC	Hydrochloric Acid	072413-07	14_Days	Amber Glass 1 liter - Hydrochloric
580-39471-MOC Surface Water													
580-39471-1	13NCMOCSWA005	Water	7/23/2013 9:20	Surface	8260B/DoD	TestAmerica Seattle	MS/MSD	13NCMOCSWA005	LK	Hydrochloric Acid	072413-03	14_Days	Voa Vial 40ml - Hydrochloric Acid
580-39471-2	13NCMOCSWA006	Water	7/23/2013 10:15	Surface	8260B/DoD	TestAmerica Seattle		13NCMOCSWA006	LK	Hydrochloric Acid	072413-03	14_Days	Voa Vial 40ml - Hydrochloric Acid
580-39471-3	13NCMOCSWA007	Water	7/23/2013 10:55	Surface	8260B/DoD	TestAmerica Seattle		13NCMOCSWA007	LK	Hydrochloric Acid	072413-03	14_Days	Voa Vial 40ml - Hydrochloric Acid
580-39471-1	13NCMOCSWA005	Water	7/23/2013 9:20	Surface	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	13NCMOCSWA005	LK	None	072413-02	14_Days	Amber Glass 1 liter - unpreserved
580-39471-2	13NCMOCSWA006	Water	7/23/2013 10:15	Surface	8270C SIM/DoD	TestAmerica Seattle		13NCMOCSWA006	LK	None	072413-02	14_Days	Amber Glass 1 liter - unpreserved
580-39471-3	13NCMOCSWA007	Water	7/23/2013 10:55	Surface	8270C SIM/DoD	TestAmerica Seattle		13NCMOCSWA007	LK	None	072413-02	14_Days	Amber Glass 1 liter - unpreserved
580-39471-1	13NCMOCSWA005	Water	7/23/2013 9:20	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	13NCMOCSWA005	LK	Hydrochloric Acid	072413-01	14_Days	Amber Glass 1 liter - Hydrochloric
580-39471-2	13NCMOCSWA006	Water	7/23/2013 10:15	Surface	AK102 & 103	TestAmerica Seattle		13NCMOCSWA006	LK	Hydrochloric Acid	072413-01	14_Days	Amber Glass 1 liter - Hydrochloric
580-39471-3	13NCMOCSWA007	Water	7/23/2013 10:55	Surface	AK102 & 103	TestAmerica Seattle		13NCMOCSWA007	LK	Hydrochloric Acid	072413-01	14_Days	Amber Glass 1 liter - Hydrochloric
580-39510-Site 13 Confirmation													
580-39510-1	13NC13SS005	Solid	7/25/2013 8:00	0-3 ft	8082	TestAmerica Seattle		13-005	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-10	13NC13SS014	Solid	7/25/2013 8:09	0-3 ft	8082	TestAmerica Seattle		13-014	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-11	13NC13SS015	Solid	7/25/2013 8:10	0-3 ft	8082	TestAmerica Seattle		13-015	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-12	13NC13SS016	Solid	7/25/2013 8:11	0-3 ft	8082	TestAmerica Seattle		13-016	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-13	13NC13SS017	Solid	7/25/2013 8:12	0-3 ft	8082	TestAmerica Seattle		13-017	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-14	13NC13SS018	Solid	7/25/2013 8:13	0-3 ft	8082	TestAmerica Seattle		13-018	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-15	13NC13SS019	Solid	7/25/2013 8:14	0-3 ft	8082	TestAmerica Seattle	MS/MSD	13-019	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-16	13NC13SS020	Solid	7/25/2013 8:15	0-3 ft	8082	TestAmerica Seattle		13-020	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-17	13NC13SS021	Solid	7/25/2013 8:16	0-3 ft	8082	TestAmerica Seattle	MS/MSD	13-021	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-18	13NC13SS022	Solid	7/25/2013 8:17	0-3 ft	8082	TestAmerica Seattle		13-022	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-19	13NC13SS023	Solid	7/25/2013 8:18	0-3 ft	8082	TestAmerica Seattle		13-023	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-2	13NC13SS006	Solid	7/25/2013 8:01	0-3 ft	8082	TestAmerica Seattle		13-006	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-20	13NC13SS024	Solid	7/25/2013 8:19	0-3 ft	8082	TestAmerica Seattle		13-024	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-21	13NC13SS025	Solid	7/25/2013 8:20	0-3 ft	8082	TestAmerica Seattle		13-025	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-22	13NC13SS026	Solid	7/25/2013 8:21	0-3 ft	8082	TestAmerica Seattle		13-026	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-23	13NC13SS027	Solid	7/25/2013 8:22	0-3 ft	8082	TestAmerica Seattle		13-027	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-24	13NC13SS028	Solid	7/25/2013 8:23	0-3 ft	8082	TestAmerica Seattle		13-028	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-25	13NC13SS029	Solid	7/25/2013 8:24	0-3 ft	8082	TestAmerica Seattle		13-029	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-26	13NC13SS030	Solid	7/25/2013 8:25	0-3 ft	8082	TestAmerica Seattle		13-030	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-27	13NC13SS031	Solid	7/25/2013 8:26	0-3 ft	8082	TestAmerica Seattle		13-031	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-28	13NC13SS032	Solid	7/25/2013 8:27	0-3 ft	8082	TestAmerica Seattle		13-032	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-29	13NC13SS033	Solid	7/25/2013 8:28	0-3 ft	8082	TestAmerica Seattle		13-033	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-3	13NC13SS007	Solid	7/25/2013 8:02	0-3 ft	8082	TestAmerica Seattle		13-007	EB	None	072613-001	3_Days	Soil jar 4oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39510-30	13NC13SS034	Solid	7/25/2013 8:29	0-3 ft	8082	TestAmerica Seattle		13-034	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-31	13NC13SS035	Solid	7/25/2013 8:30	0-3 ft	8082	TestAmerica Seattle		13-035	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-32	13NC13SS036	Solid	7/25/2013 8:31	0-3 ft	8082	TestAmerica Seattle		13-036	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-33	13NC13SS037	Solid	7/25/2013 8:32	0-3 ft	8082	TestAmerica Seattle		13-037	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-34	13NC13SS038	Solid	7/25/2013 8:33	0-3 ft	8082	TestAmerica Seattle		13-038	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-34	13NC13SS038	Solid	7/25/2013 8:33	0-3 ft	8082	TestAmerica Seattle		13-038	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-35	13NC13SS039	Solid	7/25/2013 8:34	0-3 ft	8082	TestAmerica Seattle		13-039	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-36	13NC13SS040	Solid	7/25/2013 8:35	0-3 ft	8082	TestAmerica Seattle		13-040	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-37	13NC13SS041	Solid	7/25/2013 8:36	0-3 ft	8082	TestAmerica Seattle		13-041	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-38	13NC13SS042	Solid	7/25/2013 8:37	0-3 ft	8082	TestAmerica Seattle		13-042	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-39	13NC13SS043	Solid	7/25/2013 8:38	0-3 ft	8082	TestAmerica Seattle		13-043	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-4	13NC13SS008	Solid	7/25/2013 8:03	0-3 ft	8082	TestAmerica Seattle		13-008	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-40	13NC13SS044	Solid	7/25/2013 8:39	0-3 ft	8082	TestAmerica Seattle		13-044	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-41	13NC13SS045	Solid	7/25/2013 8:40	0-3 ft	8082	TestAmerica Seattle		13-045	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-42	13NC13SS046	Solid	7/25/2013 8:41	0-3 ft	8082	TestAmerica Seattle		13-046	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-43	13NC13SS047	Solid	7/25/2013 8:42	0-3 ft	8082	TestAmerica Seattle		13-047	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-44	13NC13SS048	Solid	7/25/2013 8:43	0-3 ft	8082	TestAmerica Seattle		13-048	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-45	13NC13SS049	Solid	7/25/2013 8:44	0-3 ft	8082	TestAmerica Seattle		13-049	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-46	13NC13SS050	Solid	7/25/2013 8:45	0-3 ft	8082	TestAmerica Seattle		13-050	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-47	13NC13SS051	Solid	7/25/2013 8:46	0-3 ft	8082	TestAmerica Seattle		13-051	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-48	13NC13SS052	Solid	7/25/2013 8:47	0-3 ft	8082	TestAmerica Seattle	MS/MSD	13-052	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-49	13NC13SS053	Solid	7/25/2013 8:48	0-3 ft	8082	TestAmerica Seattle		13-053	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-5	13NC13SS009	Solid	7/25/2013 8:04	0-3 ft	8082	TestAmerica Seattle		13-009	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-50	13NC13SS054	Solid	7/25/2013 8:49	0-3 ft	8082	TestAmerica Seattle		13-054	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-51	13NC13SS055	Solid	7/25/2013 8:50	0-3 ft	8082	TestAmerica Seattle		13-055	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-52	13NC13SS056	Solid	7/25/2013 8:51	0-3 ft	8082	TestAmerica Seattle		13-056	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-53	13NC13SS057	Solid	7/25/2013 8:52	0-3 ft	8082	TestAmerica Seattle		13-057	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-54	13NC13SS058	Solid	7/25/2013 8:53	0-3 ft	8082	TestAmerica Seattle		13-058	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-55	13NC13SS059	Solid	7/25/2013 8:54	0-3 ft	8082	TestAmerica Seattle	MS/MSD	13-059	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-56	13NC13SS060	Solid	7/25/2013 8:55	0-3 ft	8082	TestAmerica Seattle		13-060	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-57	13NC13SS061	Solid	7/25/2013 8:56	0-3 ft	8082	TestAmerica Seattle		13-061	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-58	13NC13SS062	Solid	7/25/2013 8:57	0-3 ft	8082	TestAmerica Seattle		13-062	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-59	13NC13SS063	Solid	7/25/2013 8:58	0-3 ft	8082	TestAmerica Seattle		13-063	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-6	13NC13SS010	Solid	7/25/2013 8:05	0-3 ft	8082	TestAmerica Seattle		13-010	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-60	13NC13SS064	Solid	7/25/2013 8:59	0-3 ft	8082	TestAmerica Seattle		13-064	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-61	13NC13SS065	Solid	7/25/2013 9:00	0-3 ft	8082	TestAmerica Seattle	MS/MSD	13-065	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-62	13NC13SS066	Solid	7/25/2013 9:01	0-3 ft	8082	TestAmerica Seattle		13-066	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-63	13NC13SS067	Solid	7/25/2013 9:02	0-3 ft	8082	TestAmerica Seattle		13-067	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-64	13NC13SS068	Solid	7/25/2013 9:03	0-3 ft	8082	TestAmerica Seattle		13-068	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-65	13NC13SS069	Solid	7/25/2013 9:04	0-3 ft	8082	TestAmerica Seattle		13-069	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-66	13NC13SS070	Solid	7/25/2013 9:05	0-3 ft	8082	TestAmerica Seattle		13-070	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-67	13NC13SS071	Solid	7/25/2013 9:06	0-3 ft	8082	TestAmerica Seattle		13-071	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-68	13NC13SS072	Solid	7/25/2013 9:07	0-3 ft	8082	TestAmerica Seattle		13-072	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-69	13NC13SS073	Solid	7/25/2013 9:08	0-3 ft	8082	TestAmerica Seattle	Field Duplicate of 13NC13SS005	13-073	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-7	13NC13SS011	Solid	7/25/2013 8:06	0-3 ft	8082	TestAmerica Seattle		13-011	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-70	13NC13SS074	Solid	7/25/2013 9:09	0-3 ft	8082	TestAmerica Seattle	Field Duplicate of 13NC13SS028	13-074	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-71	13NC13SS075	Solid	7/25/2013 9:10	0-3 ft	8082	TestAmerica Seattle	Field Duplicate of 13NC13SS030	13-075	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-72	13NC13SS076	Solid	7/25/2013 9:11	0-3 ft	8082	TestAmerica Seattle	Field Duplicate of 13NC13SS033	13-076	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-73	13NC13SS077	Solid	7/25/2013 9:12	0-3 ft	8082	TestAmerica Seattle	Field Duplicate of 13NC13SS039	13-077	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-74	13NC13SS078	Solid	7/25/2013 9:13	0-3 ft	8082	TestAmerica Seattle	Field Duplicate of 13NC13SS046	13-078	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-75	13NC13SS079	Solid	7/25/2013 9:14	0-3 ft	8082	TestAmerica Seattle		13-079	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-8	13NC13SS012	Solid	7/25/2013 8:07	0-3 ft	8082	TestAmerica Seattle		13-012	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-9	13NC13SS013	Solid	7/25/2013 8:08	0-3 ft	8082	TestAmerica Seattle		13-013	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-1	13NC13SS005	Solid	7/25/2013 8:00	0-3 ft	D 2216	TestAmerica Seattle		13-005	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-10	13NC13SS014	Solid	7/25/2013 8:09	0-3 ft	D 2216	TestAmerica Seattle		13-014	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-11	13NC13SS015	Solid	7/25/2013 8:10	0-3 ft	D 2216	TestAmerica Seattle		13-015	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-12	13NC13SS016	Solid	7/25/2013 8:11	0-3 ft	D 2216	TestAmerica Seattle		13-016	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-13	13NC13SS017	Solid	7/25/2013 8:12	0-3 ft	D 2216	TestAmerica Seattle		13-017	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-14	13NC13SS018	Solid	7/25/2013 8:13	0-3 ft	D 2216	TestAmerica Seattle		13-018	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-15	13NC13SS019	Solid	7/25/2013 8:14	0-3 ft	D 2216	TestAmerica Seattle	MS/MSD	13-019	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-16	13NC13SS020	Solid	7/25/2013 8:15	0-3 ft	D 2216	TestAmerica Seattle		13-020	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-17	13NC13SS021	Solid	7/25/2013 8:16	0-3 ft	D 2216	TestAmerica Seattle	MS/MSD	13-021	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-18	13NC13SS022	Solid	7/25/2013 8:17	0-3 ft	D 2216	TestAmerica Seattle		13-022	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-19	13NC13SS023	Solid	7/25/2013 8:18	0-3 ft	D 2216	TestAmerica Seattle		13-023	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-19	13NC13SS023	Solid	7/25/2013 8:18	0-3 ft	D 2216	TestAmerica Seattle		13-023	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-2	13NC13SS006	Solid	7/25/2013 8:01	0-3 ft	D 2216	TestAmerica Seattle		13-006	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-2	13NC13SS006	Solid	7/25/2013 8:01	0-3 ft	D 2216	TestAmerica Seattle		13-006	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-20	13NC13SS024	Solid	7/25/2013 8:19	0-3 ft	D 2216	TestAmerica Seattle		13-024	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-20	13NC13SS024	Solid	7/25/2013 8:19	0-3 ft	D 2216	TestAmerica Seattle		13-024	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-21	13NC13SS025	Solid	7/25/2013 8:20	0-3 ft	D 2216	TestAmerica Seattle		13-025	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-21	13NC13SS025	Solid	7/25/2013 8:20	0-3 ft	D 2216	TestAmerica Seattle		13-025	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-22	13NC13SS026	Solid	7/25/2013 8:21	0-3 ft	D 2216	TestAmerica Seattle		13-026	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-22	13NC13SS026	Solid	7/25/2013 8:21	0-3 ft	D 2216	TestAmerica Seattle		13-026	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-23	13NC13SS027	Solid	7/25/2013 8:22	0-3 ft	D 2216	TestAmerica Seattle		13-027	EB	None	072613-001	3_Days	Soil jar 4oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39510-24	13NC13SS028	Solid	7/25/2013 8:23	0-3 ft	D 2216	TestAmerica Seattle		13-028	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-25	13NC13SS029	Solid	7/25/2013 8:24	0-3 ft	D 2216	TestAmerica Seattle		13-029	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-26	13NC13SS030	Solid	7/25/2013 8:25	0-3 ft	D 2216	TestAmerica Seattle		13-030	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-27	13NC13SS031	Solid	7/25/2013 8:26	0-3 ft	D 2216	TestAmerica Seattle		13-031	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-28	13NC13SS032	Solid	7/25/2013 8:27	0-3 ft	D 2216	TestAmerica Seattle		13-032	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-29	13NC13SS033	Solid	7/25/2013 8:28	0-3 ft	D 2216	TestAmerica Seattle		13-033	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-3	13NC13SS007	Solid	7/25/2013 8:02	0-3 ft	D 2216	TestAmerica Seattle		13-007	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-30	13NC13SS034	Solid	7/25/2013 8:29	0-3 ft	D 2216	TestAmerica Seattle		13-034	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-31	13NC13SS035	Solid	7/25/2013 8:30	0-3 ft	D 2216	TestAmerica Seattle		13-035	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-32	13NC13SS036	Solid	7/25/2013 8:31	0-3 ft	D 2216	TestAmerica Seattle		13-036	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-33	13NC13SS037	Solid	7/25/2013 8:32	0-3 ft	D 2216	TestAmerica Seattle		13-037	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-34	13NC13SS038	Solid	7/25/2013 8:33	0-3 ft	D 2216	TestAmerica Seattle		13-038	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-35	13NC13SS039	Solid	7/25/2013 8:34	0-3 ft	D 2216	TestAmerica Seattle		13-039	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-36	13NC13SS040	Solid	7/25/2013 8:35	0-3 ft	D 2216	TestAmerica Seattle		13-040	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-37	13NC13SS041	Solid	7/25/2013 8:36	0-3 ft	D 2216	TestAmerica Seattle		13-041	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-38	13NC13SS042	Solid	7/25/2013 8:37	0-3 ft	D 2216	TestAmerica Seattle		13-042	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-39	13NC13SS043	Solid	7/25/2013 8:38	0-3 ft	D 2216	TestAmerica Seattle		13-043	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-4	13NC13SS008	Solid	7/25/2013 8:03	0-3 ft	D 2216	TestAmerica Seattle		13-008	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-40	13NC13SS044	Solid	7/25/2013 8:39	0-3 ft	D 2216	TestAmerica Seattle		13-044	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-41	13NC13SS045	Solid	7/25/2013 8:40	0-3 ft	D 2216	TestAmerica Seattle		13-045	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-42	13NC13SS046	Solid	7/25/2013 8:41	0-3 ft	D 2216	TestAmerica Seattle		13-046	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-43	13NC13SS047	Solid	7/25/2013 8:42	0-3 ft	D 2216	TestAmerica Seattle		13-047	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-44	13NC13SS048	Solid	7/25/2013 8:43	0-3 ft	D 2216	TestAmerica Seattle		13-048	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-45	13NC13SS049	Solid	7/25/2013 8:44	0-3 ft	D 2216	TestAmerica Seattle		13-049	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-46	13NC13SS050	Solid	7/25/2013 8:45	0-3 ft	D 2216	TestAmerica Seattle		13-050	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-47	13NC13SS051	Solid	7/25/2013 8:46	0-3 ft	D 2216	TestAmerica Seattle		13-051	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-48	13NC13SS052	Solid	7/25/2013 8:47	0-3 ft	D 2216	TestAmerica Seattle	MS/MSD	13-052	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-49	13NC13SS053	Solid	7/25/2013 8:48	0-3 ft	D 2216	TestAmerica Seattle		13-053	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-5	13NC13SS009	Solid	7/25/2013 8:04	0-3 ft	D 2216	TestAmerica Seattle		13-009	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-50	13NC13SS054	Solid	7/25/2013 8:49	0-3 ft	D 2216	TestAmerica Seattle		13-054	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-51	13NC13SS055	Solid	7/25/2013 8:50	0-3 ft	D 2216	TestAmerica Seattle		13-055	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-52	13NC13SS056	Solid	7/25/2013 8:51	0-3 ft	D 2216	TestAmerica Seattle		13-056	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-53	13NC13SS057	Solid	7/25/2013 8:52	0-3 ft	D 2216	TestAmerica Seattle		13-057	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-54	13NC13SS058	Solid	7/25/2013 8:53	0-3 ft	D 2216	TestAmerica Seattle		13-058	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-55	13NC13SS059	Solid	7/25/2013 8:54	0-3 ft	D 2216	TestAmerica Seattle	MS/MSD	13-059	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-56	13NC13SS060	Solid	7/25/2013 8:55	0-3 ft	D 2216	TestAmerica Seattle		13-060	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-57	13NC13SS061	Solid	7/25/2013 8:56	0-3 ft	D 2216	TestAmerica Seattle		13-061	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-58	13NC13SS062	Solid	7/25/2013 8:57	0-3 ft	D 2216	TestAmerica Seattle		13-062	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-59	13NC13SS063	Solid	7/25/2013 8:58	0-3 ft	D 2216	TestAmerica Seattle		13-063	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-6	13NC13SS010	Solid	7/25/2013 8:05	0-3 ft	D 2216	TestAmerica Seattle		13-010	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-60	13NC13SS064	Solid	7/25/2013 8:59	0-3 ft	D 2216	TestAmerica Seattle		13-064	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-61	13NC13SS065	Solid	7/25/2013 9:00	0-3 ft	D 2216	TestAmerica Seattle	MS/MSD	13-065	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-62	13NC13SS066	Solid	7/25/2013 9:01	0-3 ft	D 2216	TestAmerica Seattle		13-066	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-63	13NC13SS067	Solid	7/25/2013 9:02	0-3 ft	D 2216	TestAmerica Seattle		13-067	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-64	13NC13SS068	Solid	7/25/2013 9:03	0-3 ft	D 2216	TestAmerica Seattle		13-068	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-65	13NC13SS069	Solid	7/25/2013 9:04	0-3 ft	D 2216	TestAmerica Seattle		13-069	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-66	13NC13SS070	Solid	7/25/2013 9:05	0-3 ft	D 2216	TestAmerica Seattle		13-070	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-67	13NC13SS071	Solid	7/25/2013 9:06	0-3 ft	D 2216	TestAmerica Seattle		13-071	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-68	13NC13SS072	Solid	7/25/2013 9:07	0-3 ft	D 2216	TestAmerica Seattle		13-072	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-69	13NC13SS073	Solid	7/25/2013 9:08	0-3 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NC13SS005	13-073	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-7	13NC13SS011	Solid	7/25/2013 8:06	0-3 ft	D 2216	TestAmerica Seattle		13-011	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-70	13NC13SS074	Solid	7/25/2013 9:09	0-3 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NC13SS028	13-074	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-71	13NC13SS075	Solid	7/25/2013 9:10	0-3 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NC13SS030	13-075	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-72	13NC13SS076	Solid	7/25/2013 9:11	0-3 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NC13SS033	13-076	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-73	13NC13SS077	Solid	7/25/2013 9:12	0-3 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NC13SS039	13-077	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-74	13NC13SS078	Solid	7/25/2013 9:13	0-3 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NC13SS046	13-078	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-75	13NC13SS079	Solid	7/25/2013 9:14	0-3 ft	D 2216	TestAmerica Seattle		13-079	EB	None	072613-002	3_Days	Soil jar 4oz
580-39510-8	13NC13SS012	Solid	7/25/2013 8:07	0-3 ft	D 2216	TestAmerica Seattle		13-012	EB	None	072613-001	3_Days	Soil jar 4oz
580-39510-9	13NC13SS013	Solid	7/25/2013 8:08	0-3 ft	D 2216	TestAmerica Seattle		13-013	EB	None	072613-001	3_Days	Soil jar 4oz
580-39511 MOC Soil and Site 21 Borings													
580-39511-14	13NC21SS18-0.5	Solid	7/25/2013 7:30	0.5 ft	6020	TestAmerica Tacoma		13NC21SB18	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-15	13NC21SS18-2	Solid	7/25/2013 7:35	2 ft	6020	TestAmerica Tacoma		13NC21SB18	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-16	13NC21SS18-3	Solid	7/25/2013 7:40	3 ft	6020	TestAmerica Tacoma	MS/MSD	13NC21SB18	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-17	13NC21SS19-0.5	Solid	7/25/2013 7:45	0.5 ft	6020	TestAmerica Tacoma		13NC21SB19	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-18	13NC21SS19-2	Solid	7/25/2013 7:50	2 ft	6020	TestAmerica Tacoma		13NC21SB19	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-19	13NC21SS19-3	Solid	7/25/2013 7:55	3 ft	6020	TestAmerica Tacoma		13NC21SB19	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-20	13NC21SS20-0.5	Solid	7/25/2013 8:00	0.5 ft	6020	TestAmerica Tacoma		13NC21SB20	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-21	13NC21SS20-2	Solid	7/25/2013 8:10	2 ft	6020	TestAmerica Tacoma		13NC21SB20	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-22	13NC21SS20-3	Solid	7/25/2013 8:15	3 ft	6020	TestAmerica Tacoma		13NC21SB20	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-23	13NC21SS20-1	Solid	7/25/2013 8:05	1 ft	6020	TestAmerica Tacoma		13NC21SB20	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-1	13NCMOCSS022	Solid	7/25/2013 14:05	62.5 ft amsl	AK102 & 103	TestAmerica Tacoma		MOCSS22	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-10	13NCMOCSS031	Solid	7/25/2013 13:45	76.1 ft amsl	AK102 & 103	TestAmerica Tacoma	MS/MSD	MOCSS31	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-11	13NCMOCSS032	Solid	7/25/2013 13:50	73.7 ft amsl	AK102 & 103	TestAmerica Tacoma		MOCSS32	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-12	13NCMOCSS033	Solid	7/25/2013 14:35	83.7 ft amsl	AK102 & 103	TestAmerica Tacoma	Field Duplicate of 13NCMOCSS002	MOCSS33	LK	None	072613-03	3_Days	Soil jar 4oz

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39511-13	13NCMOCSS034	Solid	7/25/2013 14:40	83.7 ft amsl	AK102 & 103	TestAmerica Tacoma	Field Duplicate of 13NCMOCSS027	MOCSS34	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-2	13NCMOCSS023	Solid	7/25/2013 14:00	62.5 ft amsl	AK102 & 103	TestAmerica Tacoma		MOCSS23	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-3	13NCMOCSS024	Solid	7/25/2013 13:55	62.5 ft amsl	AK102 & 103	TestAmerica Tacoma		MOCSS24	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-4	13NCMOCSS025	Solid	7/25/2013 14:30	62.5 ft amsl	AK102 & 103	TestAmerica Tacoma		MOCSS25	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-5	13NCMOCSS026	Solid	7/25/2013 14:25	62.5 ft amsl	AK102 & 103	TestAmerica Tacoma		MOCSS26	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-6	13NCMOCSS027	Solid	7/25/2013 14:20	62.5 ft amsl	AK102 & 103	TestAmerica Tacoma		MOCSS27	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-7	13NCMOCSS028	Solid	7/25/2013 14:15	62.5 ft amsl	AK102 & 103	TestAmerica Tacoma		MOCSS28	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-8	13NCMOCSS029	Solid	7/25/2013 14:10	62.5 ft amsl	AK102 & 103	TestAmerica Tacoma		MOCSS29	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-9	13NCMOCSS030	Solid	7/25/2013 13:40	63 ft amsl	AK102 & 103	TestAmerica Tacoma		MOCSS30	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-1	13NCMOCSS022	Solid	7/25/2013 14:05	62.5 ft amsl	D 2216	TestAmerica Tacoma		MOCSS22	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-10	13NCMOCSS031	Solid	7/25/2013 13:45	63 ft amsl	D 2216	TestAmerica Tacoma	MS/MSD	MOCSS31	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-11	13NCMOCSS032	Solid	7/25/2013 13:50	63 ft amsl	D 2216	TestAmerica Tacoma		MOCSS32	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-12	13NCMOCSS033	Solid	7/25/2013 14:35	83.7 ft amsl	D 2216	TestAmerica Tacoma	Field Duplicate of 13NCMOCSS002	MOCSS33	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-13	13NCMOCSS034	Solid	7/25/2013 14:40	83.7 ft amsl	D 2216	TestAmerica Tacoma	Field Duplicate of 13NCMOCSS027	MOCSS34	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-14	13NC21SS18-0.5	Solid	7/25/2013 7:30	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SB18	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-15	13NC21SS18-2	Solid	7/25/2013 7:35	2 ft	D 2216	TestAmerica Tacoma		13NC21SB18	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-16	13NC21SS18-3	Solid	7/25/2013 7:40	3 ft	D 2216	TestAmerica Tacoma	MS/MSD	13NC21SB18	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-17	13NC21SS19-0.5	Solid	7/25/2013 7:45	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SB19	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-18	13NC21SS19-2	Solid	7/25/2013 7:50	2 ft	D 2216	TestAmerica Tacoma		13NC21SB19	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-19	13NC21SS19-3	Solid	7/25/2013 7:55	3 ft	D 2216	TestAmerica Tacoma		13NC21SB19	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-2	13NCMOCSS023	Solid	7/25/2013 14:00	62.5 ft amsl	D 2216	TestAmerica Tacoma		MOCSS23	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-20	13NC21SS20-0.5	Solid	7/25/2013 8:00	0.5 ft	D 2216	TestAmerica Tacoma		13NC21SB20	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-21	13NC21SS20-2	Solid	7/25/2013 8:10	2 ft	D 2216	TestAmerica Tacoma		13NC21SB20	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-22	13NC21SS20-3	Solid	7/25/2013 8:15	3 ft	D 2216	TestAmerica Tacoma		13NC21SB20	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-23	13NC21SS20-1	Solid	7/25/2013 8:05	1 ft	D 2216	TestAmerica Tacoma		13NC21SB20	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-3	13NCMOCSS024	Solid	7/25/2013 13:55	62.5 ft amsl	D 2216	TestAmerica Tacoma		MOCSS24	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-4	13NCMOCSS025	Solid	7/25/2013 14:30	62.5 ft amsl	D 2216	TestAmerica Tacoma		MOCSS25	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-5	13NCMOCSS026	Solid	7/25/2013 14:25	62.5 ft amsl	D 2216	TestAmerica Tacoma		MOCSS26	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-6	13NCMOCSS027	Solid	7/25/2013 14:20	62.5 ft amsl	D 2216	TestAmerica Tacoma		MOCSS27	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-7	13NCMOCSS028	Solid	7/25/2013 14:15	62.5 ft amsl	D 2216	TestAmerica Tacoma		MOCSS28	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-8	13NCMOCSS029	Solid	7/25/2013 14:10	62.5 ft amsl	D 2216	TestAmerica Tacoma		MOCSS29	LK	None	072613-03	3_Days	Soil jar 4oz
580-39511-9	13NCMOCSS030	Solid	7/25/2013 13:40	63 ft amsl	D 2216	TestAmerica Tacoma		MOCSS30	LK	None	072613-03	3_Days	Soil jar 4oz
580-39513-1 MI Bag Soil													
580-39513-1	13NCBGSS01	Solid	7/18/2013 14:30	0-0.5 ft	8082	TestAmerica Seattle	MS/MSD	MOCBG-001	EB	None	072613-001	15_Days	Plastic Bag
580-39513-1	13NCBGSS01	Solid	7/18/2013 14:30	0-0.5 ft	AK102	TestAmerica Seattle	MS/MSD	MOCBG-001	EB	None	072613-001	15_Days	Plastic Bag
580-39566 MOC Soils													
580-39566-1	13NCMOCSS035	Solid	7/28/2013 16:30	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS035	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-10	13NCMOCSS044	Solid	7/29/2013 11:00	14-15 ft	AK102 & 103	TestAmerica Tacoma	Field Duplicate of 13NCMOCSS040	13NCMOCSS044	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-11	13NCMOCSS045	Solid	7/30/2013 16:00	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS045	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-12	13NCMOCSS046	Solid	7/30/2013 16:05	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS046	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-13	13NCMOCSS047	Solid	7/30/2013 16:10	60.5 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS047	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-14	13NCMOCSS048	Solid	7/30/2013 16:15	60 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS048	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-15	13NCMOCSS049	Solid	7/30/2013 16:20	59.8 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS049	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-16	13NCMOCSS050	Solid	7/30/2013 16:25	60 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS050	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-17	13NCMOCSS051	Solid	7/30/2013 16:30	60 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS051	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-18	13NCMOCSS052	Solid	7/30/2013 16:35	60.1 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS052	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-19	13NCMOCSS053	Solid	7/30/2013 16:40	59.5 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS053	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-2	13NCMOCSS036	Solid	7/28/2013 16:35	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS036	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-20	13NCMOCSS054	Solid	7/30/2013 16:45	59.7 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS054	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-21	13NCMOCSS055	Solid	7/30/2013 16:50	59.9 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS055	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-22	13NCMOCSS056	Solid	7/30/2013 16:55	60.0 ft amsl	AK102 & 103	TestAmerica Tacoma	MS/MSD	13NCMOCSS056	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-23	13NCMOCSS057	Solid	7/30/2013 17:00	60.8 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS057	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-24	13NCMOCSS058	Solid	7/30/2013 17:05	60.7 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS058	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-25	13NCMOCSS059	Solid	7/30/2013 16:38	60.5 ft amsl	AK102 & 103	TestAmerica Tacoma	Field Duplicate of 13NCMOCSS047	13NCMOCSS059	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-3	13NCMOCSS037	Solid	7/28/2013 16:37	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS037	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-4	13NCMOCSS038	Solid	7/29/2013 10:30	14-15 ft	AK102 & 103	TestAmerica Tacoma		13NCMOCSS038	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-5	13NCMOCSS039	Solid	7/29/2013 10:35	14-15 ft	AK102 & 103	TestAmerica Tacoma		13NCMOCSS039	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-6	13NCMOCSS040	Solid	7/29/2013 10:40	14-15 ft	AK102 & 103	TestAmerica Tacoma		13NCMOCSS040	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-7	13NCMOCSS041	Solid	7/29/2013 10:45	14-15 ft	AK102 & 103	TestAmerica Tacoma		13NCMOCSS041	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-8	13NCMOCSS042	Solid	7/29/2013 10:50	14-15 ft	AK102 & 103	TestAmerica Tacoma	MS/MSD	13NCMOCSS042	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-9	13NCMOCSS043	Solid	7/29/2013 10:55	14-15 ft	AK102 & 103	TestAmerica Tacoma		13NCMOCSS043	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-1	13NCMOCSS035	Solid	7/28/2013 16:30	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS035	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-10	13NCMOCSS044	Solid	7/29/2013 11:00	14-15 ft	D 2216	TestAmerica Tacoma	Field Duplicate of 13NCMOCSS040	13NCMOCSS044	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-11	13NCMOCSS045	Solid	7/30/2013 16:00	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS045	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-12	13NCMOCSS046	Solid	7/30/2013 16:05	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS046	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-13	13NCMOCSS047	Solid	7/30/2013 16:10	60.5 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS047	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-14	13NCMOCSS048	Solid	7/30/2013 16:15	60 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS048	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-15	13NCMOCSS049	Solid	7/30/2013 16:20	59.8 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS049	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-16	13NCMOCSS050	Solid	7/30/2013 16:25	60 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS050	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-17	13NCMOCSS051	Solid	7/30/2013 16:30	60 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS051	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-18	13NCMOCSS052	Solid	7/30/2013 16:35	60.1 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS052	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-19	13NCMOCSS053	Solid	7/30/2013 16:40	59.5 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS053	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-2	13NCMOCSS036	Solid	7/28/2013 16:35	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS036	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-20	13NCMOCSS054	Solid	7/30/2013 16:45	59.7 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS054	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39566-21	13NCMOCSS055	Solid	7/30/2013 16:50	59.9 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS055	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-22	13NCMOCSS056	Solid	7/30/2013 16:55	60.0 ft amsl	D 2216	TestAmerica Tacoma	MS/MSD	13NCMOCSS056	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-23	13NCMOCSS057	Solid	7/30/2013 17:00	60.8 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS057	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-24	13NCMOCSS058	Solid	7/30/2013 17:05	60.7 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS058	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-25	13NCMOCSS059	Solid	7/30/2013 16:38	60.5 ft amsl	D 2216	TestAmerica Tacoma	Field Duplicate of 13NCMOCSS047	13NCMOCSS059	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-3	13NCMOCSS037	Solid	7/28/2013 16:37	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS037	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-4	13NCMOCSS038	Solid	7/29/2013 10:30	14-15 ft	D 2216	TestAmerica Tacoma		13NCMOCSS038	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-5	13NCMOCSS039	Solid	7/29/2013 10:35	14-15 ft	D 2216	TestAmerica Tacoma		13NCMOCSS039	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-6	13NCMOCSS040	Solid	7/29/2013 10:40	14-15 ft	D 2216	TestAmerica Tacoma		13NCMOCSS040	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-7	13NCMOCSS041	Solid	7/29/2013 10:45	14-15 ft	D 2216	TestAmerica Tacoma		13NCMOCSS041	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-8	13NCMOCSS042	Solid	7/29/2013 10:50	14-15 ft	D 2216	TestAmerica Tacoma	MS/MSD	13NCMOCSS042	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39566-9	13NCMOCSS043	Solid	7/29/2013 10:55	14-15 ft	D 2216	TestAmerica Tacoma		13NCMOCSS043	LK	None	073113-01	2_Day_RUSH	Soil jar 4oz
580-39641-2 Site 28 Waters													
580-39641-2	13NC28TWA04	Water	8/4/2013 14:20	Surface	6020	TestAmerica Tacoma		13NC28TWA04	JC	Nitric Acid	080513-05	2_Day_RUSH	Plastic 250ml - with Nitric Acid
580-39641-3	13NC28TWA05	Water	8/4/2013 15:00	Surface	6020	TestAmerica Tacoma	Field Duplicate of 13NC28TWA04	13NC28TWA05	JC	Nitric Acid	080513-05	2_Day_RUSH	Plastic 250ml - with Nitric Acid
580-39641-2	13NC28TWA04	Water	8/4/2013 14:20	Surface	7470A	TestAmerica Tacoma		13NC28TWA04	JC	Nitric Acid	080513-05	2_Day_RUSH	Plastic 250ml - with Nitric Acid
580-39641-3	13NC28TWA05	Water	8/4/2013 15:00	Surface	7470A	TestAmerica Tacoma	Field Duplicate of 13NC28TWA04	13NC28TWA05	JC	Nitric Acid	080513-05	2_Day_RUSH	Plastic 250ml - with Nitric Acid
580-39641-2	13NC28TWA04	Water	8/4/2013 14:20	Surface	8082	TestAmerica Tacoma		13NC28TWA04	JC	None	080513-05	2_Day_RUSH	Amber Glass 1 liter - unpreserved
580-39641-3	13NC28TWA05	Water	8/4/2013 15:00	Surface	8082	TestAmerica Tacoma	Field Duplicate of 13NC28TWA04	13NC28TWA05	JC	None	080513-05	2_Day_RUSH	Amber Glass 1 liter - unpreserved
580-39641-2	13NC28TWA04	Water	8/4/2013 14:20	Surface	8260B/DoD	TestAmerica Tacoma		13NC28TWA04	JC	Hydrochloric Acid	080513-07	2_Day_RUSH	Voa Vial 40ml - Hydrochloric Acid
580-39641-3	13NC28TWA05	Water	8/4/2013 15:00	Surface	8260B/DoD	TestAmerica Tacoma	Field Duplicate of 13NC28TWA04	13NC28TWA05	JC	Hydrochloric Acid	080513-07	2_Day_RUSH	Voa Vial 40ml - Hydrochloric Acid
580-39641-2	13NC28TWA04	Water	8/4/2013 14:20	Surface	8270C SIM/DoD	TestAmerica Tacoma		13NC28TWA04	JC	None	080513-06	2_Day_RUSH	Amber Glass 1 liter - unpreserved
580-39641-3	13NC28TWA05	Water	8/4/2013 15:00	Surface	8270C SIM/DoD	TestAmerica Tacoma		13NC28TWA05	JC	None	080513-06	2_Day_RUSH	Amber Glass 1 liter - unpreserved
580-39641-2	13NC28TWA04	Water	8/4/2013 14:20	Surface	AK102 & 103	TestAmerica Tacoma		13NC28TWA04	JC	Hydrochloric Acid	080513-04	2_Day_RUSH	Amber Glass 1 liter - Hydrochloric
580-39641-3	13NC28TWA05	Water	8/4/2013 15:00	Surface	AK102 & 103	TestAmerica Tacoma	Field Duplicate of 13NC28TWA04	13NC28TWA05	JC	Hydrochloric Acid	080513-04	2_Day_RUSH	Amber Glass 1 liter - Hydrochloric
580-39641-1 Site 28 Waters													
580-39641-1	13NC28WA01	Water	8/4/2013 8:05	Surface	6020	TestAmerica Seattle	MS/MSD	13NC28WA01	JC	Nitric Acid	080513-04	6_Days	Plastic 250ml - with Nitric Acid
580-39641-5	13NC28STW01	Water	8/2/2013 14:30	Surface	6020	TestAmerica Seattle		13NC28STW01	JC	Nitric Acid	080513-03	6_Days	Plastic 250ml - with Nitric Acid
580-39641-6	13NC28STW02	Water	8/3/2013 13:55	Surface	6020	TestAmerica Seattle	MS/MSD	13NC28STW02	JC	Nitric Acid	080513-03	6_Days	Plastic 250ml - with Nitric Acid
580-39641-1	13NC28WA01	Water	8/4/2013 8:05	Surface	7470A	TestAmerica Seattle	MS/MSD	13NC28WA01	JC	Nitric Acid	080513-04	6_Days	Plastic 250ml - with Nitric Acid
580-39641-5	13NC28STW01	Water	8/2/2013 14:30	Surface	7470A	TestAmerica Seattle		13NC28STW01	JC	Nitric Acid	080513-03	6_Days	Plastic 250ml - with Nitric Acid
580-39641-6	13NC28STW02	Water	8/3/2013 13:55	Surface	7470A	TestAmerica Seattle	MS/MSD	13NC28STW02	JC	Nitric Acid	080513-03	6_Days	Plastic 250ml - with Nitric Acid
580-39641-1	13NC28WA01	Water	8/4/2013 8:05	Surface	8082	TestAmerica Seattle	MS/MSD	13NC28WA01	JC	None	080513-06	6_Days	Amber Glass 1 liter - unpreserved
580-39641-5	13NC28STW01	Water	8/2/2013 14:30	Surface	8082	TestAmerica Seattle		13NC28STW01	JC	None	080513-02	6_Days	Amber Glass 1 liter - unpreserved
580-39641-6	13NC28STW02	Water	8/3/2013 13:55	Surface	8082	TestAmerica Seattle	MS/MSD	13NC28STW02	JC	None	080513-02	6_Days	Amber Glass 1 liter - unpreserved
580-39641-1	13NC28WA01	Water	8/4/2013 8:05	Surface	8260B/DoD	TestAmerica Seattle	MS/MSD	13NC28WA01	JC	Hydrochloric Acid	080513-07	6_Days	Voa Vial 40ml - Hydrochloric Acid
580-39641-5	13NC28STW01	Water	8/2/2013 14:30	Surface	8260B/DoD	TestAmerica Seattle		13NC28STW01	JC	Hydrochloric Acid	080513-03	6_Days	Voa Vial 40ml - Hydrochloric Acid
580-39641-6	13NC28STW02	Water	8/3/2013 13:55	Surface	8260B/DoD	TestAmerica Seattle	MS/MSD	13NC28STW02	JC	Hydrochloric Acid	080513-03	6_Days	Voa Vial 40ml - Hydrochloric Acid
580-39641-1	13NC28WA01	Water	8/4/2013 8:05	Surface	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	13NC28WA01	JC	Hydrochloric Acid	080513-04	6_Days	Amber Glass 1 liter - Hydrochloric
580-39641-5	13NC28STW01	Water	8/2/2013 14:30	Surface	8270C SIM/DoD	TestAmerica Seattle		13NC28STW01	JC	None	080513-02	6_Days	Amber Glass 1 liter - unpreserved
580-39641-6	13NC28STW02	Water	8/3/2013 13:55	Surface	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	13NC28STW02	JC	None	080513-02	6_Days	Amber Glass 1 liter - unpreserved
580-39641-1	13NC28WA01	Water	8/4/2013 8:05	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	13NC28WA01	JC	Hydrochloric Acid	080513-04	6_Days	Amber Glass 1 liter - Hydrochloric
580-39641-5	13NC28STW01	Water	8/2/2013 14:30	Surface	AK102 & 103	TestAmerica Seattle		13NC28STW01	JC	Hydrochloric Acid	080513-01	6_Days	Amber Glass 1 liter - Hydrochloric
580-39641-6	13NC28STW02	Water	8/3/2013 13:55	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	13NC28STW02	JC	Hydrochloric Acid	080513-01	6_Days	Amber Glass 1 liter - Hydrochloric
580-39754-1 MOC Soil													
580-39754-1	13NCMOCSS060	Solid	8/5/2013 16:16	62.2 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS60	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-10	13NCMOCSS069	Solid	8/11/2013 13:05	62.7 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS69	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-11	13NCMOCSS070	Solid	8/11/2013 13:10	62.7 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS70	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-12	13NCMOCSS071	Solid	8/11/2013 13:12	62.7 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS71	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-13	13NCMOCSS072	Solid	8/11/2013 13:15	62.7 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS72	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-14	13NCMOCSS073	Solid	8/11/2013 13:17	62.7 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS73	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-15	13NCMOCSS074	Solid	8/11/2013 13:20	62.7 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS74	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-16	13NCMOCSS075	Solid	8/11/2013 13:22	62.7 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS75	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-17	13NCMOCSS076	Solid	8/11/2013 13:25	62.7 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS76	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-18	13NCMOCSS077	Solid	8/11/2013 13:30	60.9 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS77	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-19	13NCMOCSS078	Solid	8/11/2013 13:40	63.3 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS78	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-2	13NCMOCSS061	Solid	8/5/2013 16:20	62.2 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS61	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-20	13NCMOCSS079	Solid	8/11/2013 13:42	63.3 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS79	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-21	13NCMOCSS080	Solid	8/11/2013 13:45	62.6 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS80	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-22	13NCMOCSS081	Solid	8/11/2013 13:50	62.3 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS81	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-23	13NCMOCSS082	Solid	8/11/2013 13:55	62.3 ft amsl	AK102 & 103	TestAmerica Seattle	MS/MSD	13NCMOCS82	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-24	13NCMOCSS083	Solid	8/11/2013 13:57	62.3 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS83	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-25	13NCMOCSS084	Solid	8/11/2013 14:00	62.3 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS84	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-26	13NCMOCSS085	Solid	8/11/2013 13:35	60.9 ft amsl	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NCMOCSS077	13NCMOCS85	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-3	13NCMOCSS062	Solid	8/5/2013 16:24	62.2 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS62	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-4	13NCMOCSS063	Solid	8/5/2013 16:27	62.2 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS63	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-5	13NCMOCSS064	Solid	8/5/2013 16:28	62.2 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS64	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-6	13NCMOCSS065	Solid	8/5/2013 16:31	62.2 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS65	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-7	13NCMOCSS066	Solid	8/5/2013 16:36	8 ft	AK102 & 103	TestAmerica Seattle	MS/MSD	13NCMOCS66	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-8	13NCMOCSS067	Solid	8/5/2013 16:38	8 ft	AK102 & 103	TestAmerica Seattle		13NCMOCS67	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-9	13NCMOCSS068	Solid	8/11/2013 13:00	62.7 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCS68	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-1	13NCMOCSS060	Solid	8/5/2013 16:16	62.7 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS60	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-10	13NCMOCSS069	Solid	8/11/2013 13:05	62.7 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS69	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-11	13NCMOCSS070	Solid	8/11/2013 13:10	62.7 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS70	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39754-12	13NCMOCSS071	Solid	8/11/2013 13:12	62.7 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS71	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-13	13NCMOCSS072	Solid	8/11/2013 13:15	62.7 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS72	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-14	13NCMOCSS073	Solid	8/11/2013 13:17	62.7 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS73	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-15	13NCMOCSS074	Solid	8/11/2013 13:20	62.7 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS74	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-16	13NCMOCSS075	Solid	8/11/2013 13:22	62.7 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS75	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-17	13NCMOCSS076	Solid	8/11/2013 13:25	62.7 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS76	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-18	13NCMOCSS077	Solid	8/11/2013 13:30	60.9 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS77	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-19	13NCMOCSS078	Solid	8/11/2013 13:40	63.3 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS78	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-2	13NCMOCSS061	Solid	8/5/2013 16:20	62.2 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS61	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-20	13NCMOCSS079	Solid	8/11/2013 13:42	63.3 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS79	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-21	13NCMOCSS080	Solid	8/11/2013 13:45	62.6 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS80	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-22	13NCMOCSS081	Solid	8/11/2013 13:50	62.3 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS81	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-23	13NCMOCSS082	Solid	8/11/2013 13:55	62.3 ft amsl	D 2216	TestAmerica Seattle	MS/MSD	13NCMOCS82	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-24	13NCMOCSS083	Solid	8/11/2013 13:57	62.3 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS83	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-25	13NCMOCSS084	Solid	8/11/2013 14:00	62.3 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS84	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-26	13NCMOCSS085	Solid	8/11/2013 13:35	60.9 ft amsl	D 2216	TestAmerica Seattle	Field Duplicate of 13NCMOCSS077	13NCMOCS85	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-3	13NCMOCSS062	Solid	8/5/2013 16:24	62.2 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS62	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-4	13NCMOCSS063	Solid	8/5/2013 16:27	62.2 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS63	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-5	13NCMOCSS064	Solid	8/5/2013 16:28	62.2 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS64	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-6	13NCMOCSS065	Solid	8/5/2013 16:31	62.2 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS65	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-7	13NCMOCSS066	Solid	8/5/2013 16:36	8 ft	D 2216	TestAmerica Seattle	MS/MSD	13NCMOCS66	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-8	13NCMOCSS067	Solid	8/5/2013 16:38	8 ft	D 2216	TestAmerica Seattle		13NCMOCS67	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39754-9	13NCMOCSS068	Solid	8/11/2013 13:00	62.7 ft amsl	D 2216	TestAmerica Seattle		13NCMOCS68	LK	None	081213-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39367-MOC Monitoring Waters													
580-39367-1	13NCMOCWA001	Water	7/13/2013 10:50	Surface	8260B/DoD	TestAmerica Seattle		MOCSW01	LK	Hydrochloric Acid	071513-02	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-39367-2	13NCMOCWA002	Water	7/13/2013 11:40	Surface	8260B/DoD	TestAmerica Seattle	MS/MSD	MOCSW02	LK	Hydrochloric Acid	071513-02	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-39367-3	13NCMOCWA003	Water	7/13/2013 11:40	Surface	8260B/DoD	TestAmerica Seattle		MOCSW03	LK	Hydrochloric Acid	071513-02	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-39367-4	13NCMOCWA004	Water	7/13/2013 11:15	Surface	8260B/DoD	TestAmerica Seattle	Field Duplicate of 13NCMOCWA001	MOCSW04	LK	Hydrochloric Acid	071513-02	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-39367-1	13NCMOCWA001	Water	7/13/2013 10:50	Surface	8270C SIM/DoD	TestAmerica Seattle		MOCSW01	LK	None	071513-01	15_Days	Amber Glass 1 liter - unpreserved
580-39367-2	13NCMOCWA002	Water	7/13/2013 11:40	Surface	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	MOCSW02	LK	None	071513-01	15_Days	Amber Glass 1 liter - unpreserved
580-39367-3	13NCMOCWA003	Water	7/13/2013 11:40	Surface	8270C SIM/DoD	TestAmerica Seattle		MOCSW03	LK	None	071513-02	15_Days	Amber Glass 1 liter - unpreserved
580-39367-4	13NCMOCWA004	Water	7/13/2013 11:15	Surface	8270C SIM/DoD	TestAmerica Seattle	Field Duplicate of 13NCMOCWA001	MOCSW04	LK	None	071513-02	15_Days	Amber Glass 1 liter - unpreserved
580-39367-1	13NCMOCWA001	Water	7/13/2013 10:50	Surface	AK102 & 103	TestAmerica Seattle		MOCSW01	LK	Hydrochloric Acid	071513-01	15_Days	Amber Glass 1 liter - Hydrochloric
580-39367-2	13NCMOCWA002	Water	7/13/2013 11:40	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	MOCSW02	LK	Hydrochloric Acid	071513-01	15_Days	Amber Glass 1 liter - Hydrochloric
580-39367-3	13NCMOCWA003	Water	7/13/2013 11:40	Surface	AK102 & 103	TestAmerica Seattle		MOCSW03	LK	Hydrochloric Acid	071513-02	15_Days	Amber Glass 1 liter - Hydrochloric
580-39367-4	13NCMOCWA004	Water	7/13/2013 11:15	Surface	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NCMOCWA001	MOCSW04	LK	Hydrochloric Acid	071513-02	15_Days	Amber Glass 1 liter - Hydrochloric
580-39723-1 Site 28 Treated and Surface Water													
580-39723-1	13NC28WA02	Water	8/8/2013 8:45	Surface	6020	TestAmerica Seattle		13NC28WA02	JC	Nitric Acid	080913-09	15_Days	Plastic 250ml - with Nitric Acid
580-39723-1	13NC28WA02	Water	8/8/2013 8:45	Surface	7470A	TestAmerica Seattle		13NC28WA02	JC	Nitric Acid	080913-09	15_Days	Plastic 250ml - with Nitric Acid
580-39723-1	13NC28WA02	Water	8/8/2013 8:45	Surface	8082	TestAmerica Seattle		13NC28WA02	JC	None	080913-08	15_Days	Amber Glass 1 liter - unpreserved
580-39723-1	13NC28WA02	Water	8/8/2013 8:45	Surface	8260B/DoD	TestAmerica Seattle		13NC28WA02	JC	Hydrochloric Acid	080913-09	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-39723-1	13NC28WA02	Water	8/8/2013 8:45	Surface	8270C SIM/DoD	TestAmerica Seattle		13NC28WA02	JC	None	080913-07	15_Days	Amber Glass 1 liter - unpreserved
580-39723-1	13NC28WA02	Water	8/8/2013 8:45	Surface	AK102 & 103	TestAmerica Seattle		13NC28WA02	JC	Hydrochloric Acid	080913-07	15_Days	Amber Glass 1 liter - Hydrochloric
580-39723-2 Site 28 Treated and Surface Water													
580-39723-2	13NC28TWA06	Water	8/8/2013 9:45	Surface	6020	TestAmerica Seattle	MS/MSD	13NC28TWA06	JC	Nitric Acid	080913-09	3_Day_RUSH	Plastic 250ml - with Nitric Acid
580-39723-2	13NC28TWA06	Water	8/8/2013 9:45	Surface	7470A	TestAmerica Seattle	MS/MSD	13NC28TWA06	JC	Nitric Acid	080913-09	3_Day_RUSH	Plastic 250ml - with Nitric Acid
580-39723-2	13NC28TWA06	Water	8/8/2013 9:45	Surface	8082	TestAmerica Seattle	MS/MSD	13NC28TWA06	JC	None	080913-08	3_Day_RUSH	Amber Glass 1 liter - unpreserved
580-39723-2	13NC28TWA06	Water	8/8/2013 9:45	Surface	8260B/DoD	TestAmerica Seattle	MS/MSD	13NC28TWA06	JC	Hydrochloric Acid	080913-09	3_Day_RUSH	Voa Vial 40ml - Hydrochloric Acid
580-39723-2	13NC28TWA06	Water	8/8/2013 9:45	Surface	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	13NC28TWA06	JC	None	080913-08	3_Day_RUSH	Amber Glass 1 liter - unpreserved
580-39723-2	13NC28TWA06	Water	8/8/2013 9:45	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	13NC28TWA06	JC	Hydrochloric Acid	080913-07	3_Day_RUSH	Amber Glass 1 liter - Hydrochloric
580-39794-1 MOC Soils													
580-39794-1	13NCMOCSS086	Solid	8/13/2013 11:00	62 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS086	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-10	13NCMOCSS095	Solid	8/13/2013 13:10	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS095	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-11	13NCMOCSS096	Solid	8/13/2013 13:12	62 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS096	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-12	13NCMOCSS097	Solid	8/13/2013 13:15	63 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS097	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-13	13NCMOCSS098	Solid	8/13/2013 13:20	60.1 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS098	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-14	13NCMOCSS099	Solid	8/13/2013 13:25	60.1 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS099	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-15	13NCMOCSS100	Solid	8/13/2013 13:35	11-13 ft	AK102 & 103	TestAmerica Seattle	MS/MSD	13NCMSS100	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-16	13NCMOCSS101	Solid	8/13/2013 11:20	62 ft amsl	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NCMOCSS088	13NCMSS101	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-17	13NCMOCSS102	Solid	8/13/2013 11:32	61 ft amsl	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NCMOCSS090	13NCMSS102	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-2	13NCMOCSS087	Solid	8/13/2013 11:05	62 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS087	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-3	13NCMOCSS088	Solid	8/13/2013 11:10	62 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS088	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-4	13NCMOCSS089	Solid	8/13/2013 11:15	62 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS089	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-5	13NCMOCSS090	Solid	8/13/2013 11:30	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS090	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-6	13NCMOCSS091	Solid	8/13/2013 11:35	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS091	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-7	13NCMOCSS092	Solid	8/13/2013 12:00	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS092	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-8	13NCMOCSS093	Solid	8/13/2013 13:00	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS093	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-9	13NCMOCSS094	Solid	8/13/2013 13:05	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS094	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-1	13NCMOCSS086	Solid	8/13/2013 11:00	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS086	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-10	13NCMOCSS095	Solid	8/13/2013 13:10	61 ft amsl	D 2216	TestAmerica Seattle		13NCMSS095	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-11	13NCMOCSS096	Solid	8/13/2013 13:12	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS096	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-12	13NCMOCSS097	Solid	8/13/2013 13:15	63 ft amsl	D 2216	TestAmerica Seattle		13NCMSS097	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-13	13NCMOCSS098	Solid	8/13/2013 13:20	60.1 ft amsl	D 2216	TestAmerica Seattle		13NCMSS098	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-14	13NCMOCSS099	Solid	8/13/2013 13:25	61 ft amsl	D 2216	TestAmerica Seattle		13NCMSS099	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39794-15	13NCMOCSS100	Solid	8/13/2013 13:35	11-13 ft	D 2216	TestAmerica Seattle	MS/MSD	13NCMSS100	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-16	13NCMOCSS101	Solid	8/13/2013 11:20	62 ft amsl	D 2216	TestAmerica Seattle	Field Duplicate of 13NCMOCSS088	13NCMSS101	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-17	13NCMOCSS102	Solid	8/13/2013 11:32	61 ft amsl	D 2216	TestAmerica Seattle	Field Duplicate of 13NCMOCSS090	13NCMSS102	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-2	13NCMOCSS087	Solid	8/13/2013 11:05	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS087	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-3	13NCMOCSS088	Solid	8/13/2013 11:10	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS088	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-4	13NCMOCSS089	Solid	8/13/2013 11:15	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS089	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-5	13NCMOCSS090	Solid	8/13/2013 11:30	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS090	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-6	13NCMOCSS091	Solid	8/13/2013 11:35	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS091	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-7	13NCMOCSS092	Solid	8/13/2013 12:00	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS092	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-8	13NCMOCSS093	Solid	8/13/2013 13:00	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS093	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39794-9	13NCMOCSS094	Solid	8/13/2013 13:05	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS094	LK	None	081413-01	2_Day_RUSH	Soil jar 4oz
580-39796-1 Site 10 Soils													
580-39796-1	13NC10SS031	Solid	8/14/2013 8:50	76.1 ft amsl	8015C	TestAmerica Tacoma	MS/MSD	13NC10SS31	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39796-2	13NC10SS032	Solid	8/14/2013 8:55	73.7 ft amsl	8015C	TestAmerica Tacoma		13NC10SS32	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39796-3	13NC10SS033	Solid	8/14/2013 9:00	83.7 ft amsl	8015C	TestAmerica Tacoma		13NC10SS33	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39796-4	13NC10SS034	Solid	8/14/2013 9:05	73.7 ft amsl	8015C	TestAmerica Tacoma	Field Duplicate of 13NC10SS033	13NC10SS34	EB/LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39796-1	13NC10SS031	Solid	8/14/2013 8:50	76 ft amsl	Moisture	TestAmerica Tacoma	MS/MSD	13NC10SS31	EB/LK	None	081413-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39796-2	13NC10SS032	Solid	8/14/2013 8:55	73.7 ft amsl	Moisture	TestAmerica Tacoma		13NC10SS32	EB/LK	None	081413-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39796-3	13NC10SS033	Solid	8/14/2013 9:00	83.7 ft amsl	Moisture	TestAmerica Tacoma		13NC10SS33	EB/LK	None	081413-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39796-4	13NC10SS034	Solid	8/14/2013 9:05	73.7 ft amsl	Moisture	TestAmerica Tacoma	Field Duplicate of 13NC10SS033	13NC10SS34	EB/LK	None	081413-02	2_Day_RUSH	Soil Jar 4oz Amber
580-38889-1 Floc													
580-38889-1	Spinpro Flocculent	Waste	6/12/2013 12:00	N/A	8260B	TestAmerica Seattle		Spinpro Flocculent	EB	None	Box	5_Day_RUSH	Voa Vial 40ml - unpreserved
580-38889-1	Spinpro Flocculent	Waste	6/12/2013 12:00	N/A	8270C	TestAmerica Seattle		Spinpro Flocculent	EB	None	Box	5_Day_RUSH	Voa Vial 40ml - unpreserved
580-38889-2 Floc													
580-38889-2	Spinpro Flocculent	Water	6/12/2013 12:00	N/A	8270C SIM	TestAmerica Seattle		Spinpro Flocculent	EB	None	Box	4_Days	Amber Glass 1 liter - unpreserved
580-38889-2	Spinpro Flocculent	Water	6/12/2013 12:00	N/A	8260B	TestAmerica Seattle		Spinpro Flocculent	EB	Hydrochloric Acid	Box	4_Days	Voa Vial 40ml - Hydrochloric Acid
580-39336-2 TCLP Results													
580-39336-19	13NC21SS07-0.5	Solid	7/11/2013 13:30	0.5 ft	6020	TestAmerica Tacoma	MS/MSD	13NC21SB07	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39359-1 Site 31													
580-39359-1	13NC31SS001	Solid	7/13/2013 14:00	0-0.5 ft	8082	TestAmerica Seattle	MS/MSD	31SS001	EB	None	071513-03	2_Day_RUSH	Soil Jar 4oz Amber
580-39359-2	13NC31SS002	Solid	7/13/2013 14:15	0-0.5 ft	8082	TestAmerica Seattle	Field Duplicate of 13NC13SS001	31SS002	EB	None	071513-03	2_Day_RUSH	Soil Jar 4oz Amber
580-39336-2 TCLP Arsenic													
580-39336-19	13NC21SS07-0.5	Solid	7/11/2013 13:30	0.5 ft	6020	TestAmerica Seattle	MS/MSD	13NC21SB07	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-40004-1 MOC Soils													
580-40004-1	13NCMOCSS127	Solid	8/22/2013 14:42	60 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS127	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-10	13NCMOCSS136	Solid	8/26/2013 16:10	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS136	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-11	13NCMOCSS137	Solid	8/27/2013 14:30	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS137	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-12	13NCMOCSS138	Solid	8/27/2013 14:35	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS138	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-13	13NCMOCSS139	Solid	8/26/2013 16:15	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS139	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-2	13NCMOCSS128	Solid	8/24/2013 13:00	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS128	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-3	13NCMOCSS129	Solid	8/24/2013 13:05	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS129	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-4	13NCMOCSS130	Solid	8/26/2013 15:00	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS130	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-5	13NCMOCSS131	Solid	8/26/2013 15:15	61 ft amsl	AK102 & 103	TestAmerica Tacoma	MS/MSD	13NCMOCSS131	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-6	13NCMOCSS132	Solid	8/26/2013 15:50	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS132	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-7	13NCMOCSS133	Solid	8/24/2013 13:10	61 ft amsl	AK102 & 103	TestAmerica Tacoma	Field Duplicate of 13NCMOCSS128	13NCMOCSS133	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-8	13NCMOCSS134	Solid	8/26/2013 16:00	61 ft amsl	AK102 & 103	TestAmerica Tacoma		13NCMOCSS134	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-9	13NCMOCSS135	Solid	8/26/2013 16:05	61.0	AK102 & 103	TestAmerica Tacoma		13NCMOCSS135	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-1	13NCMOCSS127	Solid	8/22/2013 14:42	60 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS127	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-10	13NCMOCSS136	Solid	8/26/2013 16:10	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS136	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-11	13NCMOCSS137	Solid	8/27/2013 14:30	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS137	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-12	13NCMOCSS138	Solid	8/27/2013 14:35	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS138	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-13	13NCMOCSS139	Solid	8/26/2013 16:15	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS139	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-2	13NCMOCSS128	Solid	8/24/2013 13:00	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS128	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-3	13NCMOCSS129	Solid	8/24/2013 13:05	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS129	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-4	13NCMOCSS130	Solid	8/26/2013 15:00	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS130	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-5	13NCMOCSS131	Solid	8/26/2013 15:15	61 ft amsl	D 2216	TestAmerica Tacoma	MS/MSD	13NCMOCSS131	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-6	13NCMOCSS132	Solid	8/26/2013 15:50	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS132	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-7	13NCMOCSS133	Solid	8/24/2013 13:10	61 ft amsl	D 2216	TestAmerica Tacoma	Field Duplicate of 13NCMOCSS128	13NCMOCSS133	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-8	13NCMOCSS134	Solid	8/26/2013 16:00	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS134	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-9	13NCMOCSS135	Solid	8/26/2013 16:05	61 ft amsl	D 2216	TestAmerica Tacoma		13NCMOCSS135	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40158-1 Hach Waste													
580-40158-1	Hach001	Water	9/5/2013 11:40	N/A	6020	TestAmerica Seattle		Hach001	MH	Nitric Acid	lg grey white	5_Days	Plastic 250ml - with Nitric Acid
580-40158-1	Hach001	Water	9/5/2013 11:40	N/A	7470A	TestAmerica Seattle		Hach001	MH	Nitric Acid	lg grey white	5_Days	Plastic 250ml - with Nitric Acid
580-40164-1 Site 21 Arsenic													
580-40164-1	13NC21SS043	Solid	9/3/2013 15:30	50.7 ft amsl	6020	TestAmerica Seattle		21-SS-043	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-10	BW21-17_18	Solid	9/3/2013 13:00	N/A	6020	TestAmerica Seattle		BW21-17_18	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-2	13NC21SS044	Solid	9/3/2013 15:35	52.6 ft amsl	6020	TestAmerica Seattle		21-SS-044	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-3	13NC21SS045	Solid	9/3/2013 15:40	51.7 ft amsl	6020	TestAmerica Seattle		21-SS-045	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-4	13NC21SS046	Solid	9/3/2013 15:45	52.2 ft amsl	6020	TestAmerica Seattle	MS/MSD	21-SS-046	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-5	13NC21SS047	Solid	9/3/2013 15:50	52.1 ft amsl	6020	TestAmerica Seattle		21-SS-047	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-6	13NC21SS048	Solid	9/3/2013 15:55	49.8 ft amsl	6020	TestAmerica Seattle		21-SS-048	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-7	13NC21SS049	Solid	9/3/2013 16:00	49.0 ft amsl	6020	TestAmerica Seattle		21-SS-049	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-8	13NC21SS050	Solid	9/3/2013 16:05	49.5 ft amsl	6020	TestAmerica Seattle		21-SS-050	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-9	13NC21SS051	Solid	9/3/2013 16:10	49.5 ft amsl	6020	TestAmerica Seattle		21-SS-051	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-40164-1	13NC21SS043	Solid	9/3/2013 15:30	50.7 ft amsl	D 2216	TestAmerica Seattle		21-SS-043	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-10	BW21-17_18	Solid	9/3/2013 13:00	N/A	D 2216	TestAmerica Seattle		BW21-17_18	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-2	13NC21SS044	Solid	9/3/2013 15:35	52.6 ft amsl	D 2216	TestAmerica Seattle		21-SS-044	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-3	13NC21SS045	Solid	9/3/2013 15:40	51.7 ft amsl	D 2216	TestAmerica Seattle		21-SS-045	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-4	13NC21SS046	Solid	9/3/2013 15:45	52.2 ft amsl	D 2216	TestAmerica Seattle	MS/MSD	21-SS-046	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-5	13NC21SS047	Solid	9/3/2013 15:50	52.1 ft amsl	D 2216	TestAmerica Seattle		21-SS-047	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-6	13NC21SS048	Solid	9/3/2013 15:55	49.8 ft amsl	D 2216	TestAmerica Seattle		21-SS-048	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-7	13NC21SS049	Solid	9/3/2013 16:00	49.0 ft amsl	D 2216	TestAmerica Seattle		21-SS-049	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-8	13NC21SS050	Solid	9/3/2013 16:05	49.5 ft amsl	D 2216	TestAmerica Seattle		21-SS-050	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40164-9	13NC21SS051	Solid	9/3/2013 16:10	49.5 ft amsl	D 2216	TestAmerica Seattle		21-SS-051	EB/JC	None	090813-2	3_Day_RUSH	Soil Jar 4oz Amber
580-40072-1 MOC Soil													
580-40072-1	13NCMOCSS140	Solid	9/1/2013 15:00	62 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS140	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-10	13NCMOCSS149	Solid	9/1/2013 14:10	62 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS149	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-11	13NCMOCSS150	Solid	8/26/2013 14:15	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS150	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-12	13NCMOCSS151	Solid	9/1/2013 14:20	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS151	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-13	13NCMOCSS152	Solid	9/1/2013 14:12	62 ft amsl	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NCMOCSS149	13NCMSS149	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-14	13NCMOCSS153	Solid	9/1/2013 14:22	61 ft amsl	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NCMOCSS151	13NCMSS151	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-2	13NCMOCSS141	Solid	9/1/2013 15:05	60 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS141	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-3	13NCMOCSS142	Solid	9/1/2013 15:10	59 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS142	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-4	13NCMOCSS143	Solid	9/1/2013 15:15	59 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS143	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-5	13NCMOCSS144	Solid	9/1/2013 15:20	59 ft amsl	AK102 & 103	TestAmerica Seattle	MS/MSD	13NCMSS144	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-6	13NCMOCSS145	Solid	9/1/2013 15:25	59 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS145	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-7	13NCMOCSS146	Solid	9/1/2013 15:30	58 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS146	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-8	13NCMOCSS147	Solid	8/26/2013 14:00	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS147	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-9	13NCMOCSS148	Solid	9/1/2013 14:05	62 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMSS148	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-1	13NCMOCSS140	Solid	9/1/2013 15:00	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS140	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-10	13NCMOCSS149	Solid	9/1/2013 14:10	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS149	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-11	13NCMOCSS150	Solid	8/26/2013 14:15	61 ft amsl	D 2216	TestAmerica Seattle		13NCMSS150	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-12	13NCMOCSS151	Solid	9/1/2013 14:20	61 ft amsl	D 2216	TestAmerica Seattle		13NCMSS151	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-13	13NCMOCSS152	Solid	9/1/2013 14:12	62 ft amsl	D 2216	TestAmerica Seattle	Field Duplicate of 13NCMOCSS149	13NCMSS149	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-14	13NCMOCSS153	Solid	9/1/2013 14:22	61 ft amsl	D 2216	TestAmerica Seattle	Field Duplicate of 13NCMOCSS151	13NCMSS151	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-2	13NCMOCSS141	Solid	9/1/2013 15:05	61 ft amsl	D 2216	TestAmerica Seattle		13NCMSS141	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-3	13NCMOCSS142	Solid	9/1/2013 15:10	61 ft amsl	D 2216	TestAmerica Seattle		13NCMSS142	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-4	13NCMOCSS143	Solid	9/1/2013 15:15	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS143	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-5	13NCMOCSS144	Solid	9/1/2013 15:20	59 ft amsl	D 2216	TestAmerica Seattle	MS/MSD	13NCMSS144	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-6	13NCMOCSS145	Solid	9/1/2013 15:25	59 ft amsl	D 2216	TestAmerica Seattle		13NCMSS145	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-7	13NCMOCSS146	Solid	9/1/2013 15:30	58 ft amsl	D 2216	TestAmerica Seattle		13NCMSS146	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-8	13NCMOCSS147	Solid	8/26/2013 14:00	61 ft amsl	D 2216	TestAmerica Seattle		13NCMSS147	LK	None	090213-08	2_Days	Soil jar 4oz
580-40072-9	13NCMOCSS148	Solid	9/1/2013 14:05	62 ft amsl	D 2216	TestAmerica Seattle		13NCMSS148	LK	None	090213-08	2_Days	Soil jar 4oz
580-40073-1 Site 28 Downstream Water													
580-40073-1	13NC28STW10	Water	8/30/2013 17:05	Surface	6020	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	090213-02	15_Days	Plastic 250ml - with Nitric Acid
580-40073-2	13NC28STW11	Water	8/31/2013 11:30	Surface	6020	TestAmerica Seattle	MS/MSD	28-SW-01	JC	Nitric Acid	090213-01	15_Days	Plastic 250ml - with Nitric Acid
580-40073-3	13NC28STW12	Water	8/31/2013 16:50	Surface	6020	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	090213-03	15_Days	Plastic 250ml - with Nitric Acid
580-40073-6	13NC28STW13	Water	9/1/2013 16:20	Surface	6020	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	090213-03	15_Days	Plastic 250ml - with Nitric Acid
580-40073-7	13NC28STW14	Water	9/1/2013 16:40	Surface	6020	TestAmerica Seattle	Field Duplicate of 13NC28STW13	28-SW-01	JC	Nitric Acid	090213-04	15_Days	Plastic 250ml - with Nitric Acid
580-40073-1	13NC28STW10	Water	8/30/2013 17:05	Surface	7470A	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	090213-02	15_Days	Plastic 250ml - with Nitric Acid
580-40073-2	13NC28STW11	Water	8/31/2013 11:30	Surface	7470A	TestAmerica Seattle	MS/MSD	28-SW-01	JC	Nitric Acid	090213-01	15_Days	Plastic 250ml - with Nitric Acid
580-40073-3	13NC28STW12	Water	8/31/2013 16:50	Surface	7470A	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	090213-03	15_Days	Plastic 250ml - with Nitric Acid
580-40073-6	13NC28STW13	Water	9/1/2013 16:20	Surface	7470A	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	090213-03	15_Days	Plastic 250ml - with Nitric Acid
580-40073-7	13NC28STW14	Water	9/1/2013 16:40	Surface	7470A	TestAmerica Seattle	Field Duplicate of 13NC28STW13	28-SW-01	JC	Nitric Acid	090213-04	15_Days	Plastic 250ml - with Nitric Acid
580-40073-1	13NC28STW10	Water	8/30/2013 17:05	Surface	8082	TestAmerica Seattle		28-SW-01	JC	None	090213-03	15_Days	Amber Glass 1 liter - unpreserved
580-40073-2	13NC28STW11	Water	8/31/2013 11:30	Surface	8082	TestAmerica Seattle	MS/MSD	28-SW-01	JC	None	090213-03	15_Days	Amber Glass 1 liter - unpreserved
580-40073-3	13NC28STW12	Water	8/31/2013 16:50	Surface	8082	TestAmerica Seattle		28-SW-01	JC	None	090213-03	15_Days	Amber Glass 1 liter - unpreserved
580-40073-6	13NC28STW13	Water	9/1/2013 16:20	Surface	8082	TestAmerica Seattle		28-SW-01	JC	None	090213-06	15_Days	Amber Glass 1 liter - unpreserved
580-40073-7	13NC28STW14	Water	9/1/2013 16:40	Surface	8082	TestAmerica Seattle	Field Duplicate of 13NC28STW13	28-SW-01	JC	None	090213-07	15_Days	Amber Glass 1 liter - unpreserved
580-40073-1	13NC28STW10	Water	8/30/2013 17:05	Surface	8260B/DoD	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	090213-07	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40073-2	13NC28STW11	Water	8/31/2013 11:30	Surface	8260B/DoD	TestAmerica Seattle	MS/MSD	28-SW-01	JC	Hydrochloric Acid	090213-07	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40073-3	13NC28STW12	Water	8/31/2013 16:50	Surface	8260B/DoD	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	090213-07	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40073-6	13NC28STW13	Water	9/1/2013 16:20	Surface	8260B/DoD	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	090213-07	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40073-7	13NC28STW14	Water	9/1/2013 16:40	Surface	8260B/DoD	TestAmerica Seattle	Field Duplicate of 13NC28STW13	28-SW-01	JC	Hydrochloric Acid	090213-07	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40073-1	13NC28STW10	Water	8/30/2013 17:05	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-01	JC	None	090213-02	15_Days	Amber Glass 1 liter - unpreserved
580-40073-2	13NC28STW11	Water	8/31/2013 11:30	Surface	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	28-SW-01	JC	None	090213-02	15_Days	Amber Glass 1 liter - unpreserved
580-40073-3	13NC28STW12	Water	8/31/2013 16:50	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-01	JC	None	090213-02	15_Days	Amber Glass 1 liter - unpreserved
580-40073-6	13NC28STW13	Water	9/1/2013 16:20	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-01	JC	None	090213-05	15_Days	Amber Glass 1 liter - unpreserved
580-40073-7	13NC28STW14	Water	9/1/2013 16:40	Surface	8270C SIM/DoD	TestAmerica Seattle	Field Duplicate of 13NC28STW13	28-SW-01	JC	None	090213-07	15_Days	Amber Glass 1 liter - unpreserved
580-40073-1	13NC28STW10	Water	8/30/2013 17:05	Surface	AK102 & 103	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	090213-01	15_Days	Amber Glass 1 liter - Hydrochloric
580-40073-2	13NC28STW11	Water	8/31/2013 11:30	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	28-SW-01	JC	Hydrochloric Acid	090213-01	15_Days	Amber Glass 1 liter - Hydrochloric
580-40073-3	13NC28STW12	Water	8/31/2013 16:50	Surface	AK102 & 103	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	090213-01	15_Days	Amber Glass 1 liter - Hydrochloric
580-40073-6	13NC28STW13	Water	9/1/2013 16:20	Surface	AK102 & 103	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	090213-04	15_Days	Amber Glass 1 liter - Hydrochloric
580-40073-7	13NC28STW14	Water	9/1/2013 16:40	Surface	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NC28STW13	28-SW-01	JC	Hydrochloric Acid	090213-07	15_Days	Amber Glass 1 liter - Hydrochloric
580-40280-1 Site 28 Water													
580-40280-1	13NC28STW21	Water	9/11/2013 10:40	Surface	6020	TestAmerica Seattle	MS/MSD	28-SW-01B	JC	Nitric Acid	091313-01	15_Days	Plastic 250ml - with Nitric Acid
580-40280-2	13NC28TWA17	Water	9/11/2013 11:30	Surface	6020	TestAmerica Seattle		TWA-17	JC	Nitric Acid	091313-01	15_Days	Plastic 250ml - with Nitric Acid
580-40280-3	13NC28STW22	Water	9/12/2013 14:30	Surface	6020	TestAmerica Seattle		28-SW-01B	JC	Nitric Acid	091313-01	15_Days	Plastic 250ml - with Nitric Acid

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-40280-4	13NC28TWA18	Water	9/12/2013 8:20	Surface	6020	TestAmerica Seattle		TWA-18	JC	Nitric Acid	091313-01	15_Days	Plastic 250ml - with Nitric Acid
580-40280-5	13NC28TWA19	Water	9/13/2013 10:00	Surface	6020	TestAmerica Seattle		TWA-19	JC	Nitric Acid	091313-01	15_Days	Plastic 250ml - with Nitric Acid
580-40280-1	13NC28STW21	Water	9/11/2013 10:40	Surface	7470A	TestAmerica Seattle	MS/MSD	28-SW-01B	JC	Nitric Acid	091313-01	15_Days	Plastic 250ml - with Nitric Acid
580-40280-2	13NC28TWA17	Water	9/11/2013 11:30	Surface	7470A	TestAmerica Seattle		TWA-17	JC	Nitric Acid	091313-01	15_Days	Plastic 250ml - with Nitric Acid
580-40280-3	13NC28STW22	Water	9/12/2013 14:30	Surface	7470A	TestAmerica Seattle		28-SW-01B	JC	Nitric Acid	091313-01	15_Days	Plastic 250ml - with Nitric Acid
580-40280-4	13NC28TWA18	Water	9/12/2013 8:20	Surface	7470A	TestAmerica Seattle		TWA-18	JC	Nitric Acid	091313-01	15_Days	Plastic 250ml - with Nitric Acid
580-40280-5	13NC28TWA19	Water	9/13/2013 10:00	Surface	7470A	TestAmerica Seattle		TWA-19	JC	Nitric Acid	091313-01	15_Days	Plastic 250ml - with Nitric Acid
580-40280-1	13NC28STW21	Water	9/11/2013 10:40	Surface	8082	TestAmerica Seattle	MS/MSD	28-SW-01B	JC	None	091313-04	15_Days	Amber Glass 1 liter - unpreserved
580-40280-2	13NC28TWA17	Water	9/11/2013 11:30	Surface	8082	TestAmerica Seattle		TWA-17	JC	None	091313-03	15_Days	Amber Glass 1 liter - unpreserved
580-40280-3	13NC28STW22	Water	9/12/2013 14:30	Surface	8082	TestAmerica Seattle		28-SW-01B	JC	None	091313-03	15_Days	Amber Glass 1 liter - unpreserved
580-40280-4	13NC28TWA18	Water	9/12/2013 8:20	Surface	8082	TestAmerica Seattle		TWA-18	JC	None	091313-02	15_Days	Amber Glass 1 liter - unpreserved
580-40280-5	13NC28TWA19	Water	9/13/2013 10:00	Surface	8082	TestAmerica Seattle		TWA-19	JC	None	091313-02	15_Days	Amber Glass 1 liter - unpreserved
580-40280-1	13NC28STW21	Water	9/11/2013 10:40	Surface	8260B/DoD	TestAmerica Seattle	MS/MSD	28-SW-01B	JC	Hydrochloric Acid	091313-01	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40280-2	13NC28TWA17	Water	9/11/2013 11:30	Surface	8260B/DoD	TestAmerica Seattle		TWA-17	JC	Hydrochloric Acid	091313-01	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40280-3	13NC28STW22	Water	9/12/2013 14:30	Surface	8260B/DoD	TestAmerica Seattle		28-SW-01B	JC	Hydrochloric Acid	091313-01	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40280-4	13NC28TWA18	Water	9/12/2013 8:20	Surface	8260B/DoD	TestAmerica Seattle		TWA-18	JC	Hydrochloric Acid	091313-01	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40280-5	13NC28TWA19	Water	9/13/2013 10:00	Surface	8260B/DoD	TestAmerica Seattle		TWA-19	JC	Hydrochloric Acid	091313-01	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40280-1	13NC28STW21	Water	9/11/2013 10:40	Surface	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	28-SW-01B	JC	None	091313-04	15_Days	Amber Glass 1 liter - unpreserved
580-40280-2	13NC28TWA17	Water	9/11/2013 11:30	Surface	8270C SIM/DoD	TestAmerica Seattle		TWA-17	JC	None	091313-03	15_Days	Amber Glass 1 liter - unpreserved
580-40280-3	13NC28STW22	Water	9/12/2013 14:30	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-01B	JC	None	091313-03	15_Days	Amber Glass 1 liter - unpreserved
580-40280-4	13NC28TWA18	Water	9/12/2013 8:20	Surface	8270C SIM/DoD	TestAmerica Seattle		TWA-18	JC	None	091313-02	15_Days	Amber Glass 1 liter - unpreserved
580-40280-5	13NC28TWA19	Water	9/13/2013 10:00	Surface	8270C SIM/DoD	TestAmerica Seattle		TWA-19	JC	None	091313-02	15_Days	Amber Glass 1 liter - unpreserved
580-40280-1	13NC28STW21	Water	9/11/2013 10:40	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	28-SW-01B	JC	Hydrochloric Acid	091313-01	15_Days	Amber Glass 1 liter - Hydrochloric
580-40280-2	13NC28TWA17	Water	9/11/2013 11:30	Surface	AK102 & 103	TestAmerica Seattle		TWA-17	JC	Hydrochloric Acid	091313-03	15_Days	Amber Glass 1 liter - Hydrochloric
580-40280-3	13NC28STW22	Water	9/12/2013 14:30	Surface	AK102 & 103	TestAmerica Seattle		28-SW-01B	JC	Hydrochloric Acid	091313-03	15_Days	Amber Glass 1 liter - Hydrochloric
580-40280-4	13NC28TWA18	Water	9/12/2013 8:20	Surface	AK102 & 103	TestAmerica Seattle		TWA-18	JC	Hydrochloric Acid	091313-02	15_Days	Amber Glass 1 liter - Hydrochloric
580-40280-5	13NC28TWA19	Water	9/13/2013 10:00	Surface	AK102 & 103	TestAmerica Seattle		TWA-19	JC	Hydrochloric Acid	091313-02	15_Days	Amber Glass 1 liter - Hydrochloric
580-40323-1 28 and MOC Water													
580-40323-1	13NC28STW023	Water	9/13/2013 15:00	Surface	6020	TestAmerica Seattle	MS/MSD	28-SW-01	EB	Nitric Acid	091613-07	15_Days	Plastic 250ml - with Nitric Acid
580-40323-2	13NC28TWA020	Water	9/14/2013 9:10	Surface	6020	TestAmerica Seattle		TWA-20	EB	Nitric Acid	091613-07	15_Days	Plastic 250ml - with Nitric Acid
580-40323-1	13NC28STW023	Water	9/13/2013 15:00	Surface	7470A	TestAmerica Seattle	MS/MSD	28-SW-01	EB	Nitric Acid	091613-07	15_Days	Plastic 250ml - with Nitric Acid
580-40323-2	13NC28TWA020	Water	9/14/2013 9:10	Surface	7470A	TestAmerica Seattle		TWA-20	EB	Nitric Acid	091613-07	15_Days	Plastic 250ml - with Nitric Acid
580-40323-1	13NC28STW023	Water	9/13/2013 15:00	Surface	8082	TestAmerica Seattle	MS/MSD	28-SW-01	EB	None	091613-03	15_Days	Amber Glass 1 liter - unpreserved
580-40323-2	13NC28TWA020	Water	9/14/2013 9:10	Surface	8082	TestAmerica Seattle		TWA-20	EB	None	091613-04	15_Days	Amber Glass 1 liter - unpreserved
580-40323-1	13NC28STW023	Water	9/13/2013 15:00	Surface	8260B/DoD	TestAmerica Denver	MS/MSD	28-SW-01	EB	Hydrochloric Acid	091613-07	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40323-2	13NC28TWA020	Water	9/14/2013 9:10	Surface	8260B/DoD	TestAmerica Denver		TWA-20	EB	Hydrochloric Acid	091613-07	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40323-3	13NC28MOCSW08	Water	9/15/2013 15:15	Surface	8260B/DoD	TestAmerica Denver		MOCSW01	EB	Hydrochloric Acid	091613-07	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40323-4	13NC28MOCSW09	Water	9/15/2013 15:25	Surface	8260B/DoD	TestAmerica Denver		MOCSW02	EB	Hydrochloric Acid	091613-07	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40323-5	13NC28MOCSW010	Water	9/15/2013 15:40	Surface	8260B/DoD	TestAmerica Denver		MOCSW03	EB	Hydrochloric Acid	091613-07	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40323-1	13NC28STW023	Water	9/13/2013 15:00	Surface	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	28-SW-01	EB	None	091613-03	15_Days	Amber Glass 1 liter - unpreserved
580-40323-2	13NC28TWA020	Water	9/14/2013 9:10	Surface	8270C SIM/DoD	TestAmerica Seattle		TWA-20	EB	None	091613-04	15_Days	Amber Glass 1 liter - unpreserved
580-40323-3	13NC28MOCSW08	Water	9/15/2013 15:15	Surface	8270C SIM/DoD	TestAmerica Seattle		MOCSW01	EB	None	091613-02	15_Days	Amber Glass 1 liter - unpreserved
580-40323-4	13NC28MOCSW09	Water	9/15/2013 15:25	Surface	8270C SIM/DoD	TestAmerica Seattle		MOCSW02	EB	None	091613-02	15_Days	Amber Glass 1 liter - unpreserved
580-40323-5	13NC28MOCSW010	Water	9/15/2013 15:40	Surface	8270C SIM/DoD	TestAmerica Seattle		MOCSW03	EB	None	091613-02	15_Days	Amber Glass 1 liter - unpreserved
580-40323-1	13NC28STW023	Water	9/13/2013 15:00	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	28-SW-01	EB	Hydrochloric Acid	091613-03	15_Days	Amber Glass 1 liter - Hydrochloric
580-40323-2	13NC28TWA020	Water	9/14/2013 9:10	Surface	AK102 & 103	TestAmerica Seattle		TWA-20	EB	Hydrochloric Acid	091613-04	15_Days	Amber Glass 1 liter - Hydrochloric
580-40323-3	13NC28MOCSW08	Water	9/15/2013 15:15	Surface	AK102 & 103	TestAmerica Seattle		MOCSW01	EB	Hydrochloric Acid	091613-02	15_Days	Amber Glass 1 liter - Hydrochloric
580-40323-4	13NC28MOCSW09	Water	9/15/2013 15:25	Surface	AK102 & 103	TestAmerica Seattle		MOCSW02	EB	Hydrochloric Acid	091613-02	15_Days	Amber Glass 1 liter - Hydrochloric
580-40323-5	13NC28MOCSW010	Water	9/15/2013 15:40	Surface	AK102 & 103	TestAmerica Seattle		MOCSW03	EB	Hydrochloric Acid	091613-02	15_Days	Amber Glass 1 liter - Hydrochloric
580-40004-1 MOC Soils													
580-40004-1	13NCMOCSS127	Solid	8/22/2013 14:42	60 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS127	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-10	13NCMOCSS136	Solid	8/26/2013 16:10	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS136	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-11	13NCMOCSS137	Solid	8/27/2013 14:30	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS137	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-12	13NCMOCSS138	Solid	8/27/2013 14:35	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS138	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-13	13NCMOCSS139	Solid	8/26/2013 16:15	61 ft amsl	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NCMOCSS136	13NCMOCSS139	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-2	13NCMOCSS128	Solid	8/24/2013 13:00	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS128	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-3	13NCMOCSS129	Solid	8/24/2013 13:05	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS129	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-4	13NCMOCSS130	Solid	8/26/2013 15:00	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS130	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-5	13NCMOCSS131	Solid	8/26/2013 15:15	61 ft amsl	AK102 & 103	TestAmerica Seattle	MS/MSD	13NCMOCSS131	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-6	13NCMOCSS132	Solid	8/26/2013 15:50	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS132	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-7	13NCMOCSS133	Solid	8/24/2013 13:10	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS133	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-8	13NCMOCSS134	Solid	8/26/2013 16:00	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS134	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-9	13NCMOCSS135	Solid	8/26/2013 16:05	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS135	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-1	13NCMOCSS127	Solid	8/22/2013 14:42	60 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS127	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-10	13NCMOCSS136	Solid	8/26/2013 16:10	61 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS136	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-11	13NCMOCSS137	Solid	8/27/2013 14:30	61 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS137	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-12	13NCMOCSS138	Solid	8/27/2013 14:35	61 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS138	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-13	13NCMOCSS139	Solid	8/26/2013 16:15	61 ft amsl	D 2216	TestAmerica Seattle	Field Duplicate of 13NCMOCSS136	13NCMOCSS139	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-2	13NCMOCSS128	Solid	8/24/2013 13:00	61 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS128	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-3	13NCMOCSS129	Solid	8/24/2013 13:05	61 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS129	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-4	13NCMOCSS130	Solid	8/26/2013 15:00	61 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS130	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-5	13NCMOCSS131	Solid	8/26/2013 15:15	61 ft amsl	D 2216	TestAmerica Seattle	MS/MSD	13NCMOCSS131	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-6	13NCMOCSS132	Solid	8/26/2013 15:50	61 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS132	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-7	13NCMOCSS133	Solid	8/24/2013 13:10	61 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS133	LK	None	lg blue white	2_Days	Soil jar 4oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-40004-8	13NCMOCSS134	Solid	8/26/2013 16:00	61 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS134	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40004-9	13NCMOCSS135	Solid	8/26/2013 16:05	61 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS135	LK	None	lg blue white	2_Days	Soil jar 4oz
580-40062-1 Site 28 Water													
580-40062-1	13NC28STW06	Water	8/27/2013 10:50	Surface	6020	TestAmerica Seattle	MS/MSD	28-SW-01	JC	Nitric Acid	083013-02	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-2	13NC28STW07	Water	8/28/2013 14:45	Surface	6020	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	083013-02	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-3	13NC28TWA08	Water	8/29/2013 8:35	Surface	6020	TestAmerica Seattle		28-TWA-08	JC	Nitric Acid	083013-05	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-4	13NC28STW08	Water	8/29/2013 14:05	Surface	6020	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	083013-05	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-5	13NC28STW09	Water	8/29/2013 16:35	Surface	6020	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	083013-05	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-6	13NC28TWA09	Water	8/30/2013 7:40	Surface	6020	TestAmerica Seattle		28-TWA-09	JC	Nitric Acid	083013-05	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-7	13NC28TWA10	Water	8/30/2013 7:50	Surface	6020	TestAmerica Seattle		28-TWA-10	JC	Nitric Acid	083013-05	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-1	13NC28STW06	Water	8/27/2013 10:50	Surface	7470A	TestAmerica Seattle	MS/MSD	28-SW-01	JC	Nitric Acid	083013-02	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-2	13NC28STW07	Water	8/28/2013 14:45	Surface	7470A	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	083013-02	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-3	13NC28TWA08	Water	8/29/2013 8:35	Surface	7470A	TestAmerica Seattle		28-TWA-08	JC	Nitric Acid	083013-05	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-4	13NC28STW08	Water	8/29/2013 14:05	Surface	7470A	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	083013-05	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-5	13NC28STW09	Water	8/29/2013 16:35	Surface	7470A	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	083013-05	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-6	13NC28TWA09	Water	8/30/2013 7:40	Surface	7470A	TestAmerica Seattle		28-TWA-09	JC	Nitric Acid	083013-05	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-7	13NC28TWA10	Water	8/30/2013 7:50	Surface	7470A	TestAmerica Seattle		28-TWA-10	JC	Nitric Acid	083013-05	15_Day_Rush	Plastic 250ml - with Nitric Acid
580-40062-1	13NC28STW06	Water	8/27/2013 10:50	Surface	8082	TestAmerica Seattle	MS/MSD	28-SW-01	JC	Hydrochloric Acid	083013-02	15_Day_Rush	Amber Glass 1 liter - Hydrochloric
580-40062-2	13NC28STW07	Water	8/28/2013 14:45	Surface	8082	TestAmerica Seattle		28-SW-01	JC	None	083013-02	15_Day_Rush	Amber Glass 1 liter - unpreserved
580-40062-3	13NC28TWA08	Water	8/29/2013 8:35	Surface	8082	TestAmerica Seattle		28-TWA-08	JC	None	083013-03	15_Day_Rush	Amber Glass 1 liter - unpreserved
580-40062-4	13NC28STW08	Water	8/29/2013 14:05	Surface	8082	TestAmerica Seattle		28-SW-01	JC	None	083013-03	15_Day_Rush	Amber Glass 1 liter - unpreserved
580-40062-5	13NC28STW09	Water	8/29/2013 16:35	Surface	8082	TestAmerica Seattle		28-SW-01	JC	None	083013-04	15_Day_Rush	Amber Glass 1 liter - unpreserved
580-40062-6	13NC28TWA09	Water	8/30/2013 7:40	Surface	8082	TestAmerica Seattle		28-TWA-09	JC	None	083013-04	15_Day_Rush	Amber Glass 1 liter - unpreserved
580-40062-7	13NC28TWA10	Water	8/30/2013 7:50	Surface	8082	TestAmerica Seattle		28-TWA-10	JC	None	083013-05	15_Day_Rush	Amber Glass 1 liter - unpreserved
580-40062-1	13NC28STW06	Water	8/27/2013 10:50	Surface	8260B/DoD	TestAmerica Seattle	MS/MSD	28-SW-01	JC	Hydrochloric Acid	083013-05	15_Day_Rush	Voa Vial 40ml - Hydrochloric Acid
580-40062-2	13NC28STW07	Water	8/28/2013 14:45	Surface	8260B/DoD	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	083013-05	15_Day_Rush	Voa Vial 40ml - Hydrochloric Acid
580-40062-3	13NC28TWA08	Water	8/29/2013 8:35	Surface	8260B/DoD	TestAmerica Seattle		28-TWA-08	JC	Hydrochloric Acid	083013-05	15_Day_Rush	Voa Vial 40ml - Hydrochloric Acid
580-40062-4	13NC28STW08	Water	8/29/2013 14:05	Surface	8260B/DoD	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	083013-05	15_Day_Rush	Voa Vial 40ml - Hydrochloric Acid
580-40062-5	13NC28STW09	Water	8/29/2013 16:35	Surface	8260B/DoD	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	083013-05	15_Day_Rush	Voa Vial 40ml - Hydrochloric Acid
580-40062-6	13NC28TWA09	Water	8/30/2013 7:40	Surface	8260B/DoD	TestAmerica Seattle		28-TWA-09	JC	Hydrochloric Acid	083013-05	15_Day_Rush	Voa Vial 40ml - Hydrochloric Acid
580-40062-7	13NC28TWA10	Water	8/30/2013 7:50	Surface	8260B/DoD	TestAmerica Seattle		28-TWA-10	JC	Hydrochloric Acid	083013-05	15_Day_Rush	Voa Vial 40ml - Hydrochloric Acid
580-40062-1	13NC28STW06	Water	8/27/2013 10:50	Surface	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	28-SW-01	JC	None	083013-01	15_Day_Rush	Amber Glass 1 liter - unpreserved
580-40062-2	13NC28STW07	Water	8/28/2013 14:45	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-01	JC	None	083013-02	15_Day_Rush	Amber Glass 1 liter - unpreserved
580-40062-3	13NC28TWA08	Water	8/29/2013 8:35	Surface	8270C SIM/DoD	TestAmerica Seattle		28-TWA-08	JC	None	083013-03	15_Day_Rush	Amber Glass 1 liter - unpreserved
580-40062-4	13NC28STW08	Water	8/29/2013 14:05	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-01	JC	None	083013-03	15_Day_Rush	Amber Glass 1 liter - unpreserved
580-40062-5	13NC28STW09	Water	8/29/2013 16:35	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-01	JC	None	083013-04	15_Day_Rush	Amber Glass 1 liter - unpreserved
580-40062-6	13NC28TWA09	Water	8/30/2013 7:40	Surface	8270C SIM/DoD	TestAmerica Seattle		28-TWA-09	JC	None	083013-04	15_Day_Rush	Amber Glass 1 liter - unpreserved
580-40062-7	13NC28TWA10	Water	8/30/2013 7:50	Surface	8270C SIM/DoD	TestAmerica Seattle		28-TWA-10	JC	None	083013-05	15_Day_Rush	Amber Glass 1 liter - unpreserved
580-40062-1	13NC28STW06	Water	8/27/2013 10:50	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	28-SW-01	JC	Hydrochloric Acid	083013-02	15_Day_Rush	Amber Glass 1 liter - Hydrochloric
580-40062-2	13NC28STW07	Water	8/28/2013 14:45	Surface	AK102 & 103	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	083013-02	15_Day_Rush	Amber Glass 1 liter - Hydrochloric
580-40062-3	13NC28TWA08	Water	8/29/2013 8:35	Surface	AK102 & 103	TestAmerica Seattle		28-TWA-08	JC	Hydrochloric Acid	083013-03	15_Day_Rush	Amber Glass 1 liter - Hydrochloric
580-40062-4	13NC28STW08	Water	8/29/2013 14:05	Surface	AK102 & 103	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	083013-03	15_Day_Rush	Amber Glass 1 liter - Hydrochloric
580-40062-5	13NC28STW09	Water	8/29/2013 16:35	Surface	AK102 & 103	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	083013-04	15_Day_Rush	Amber Glass 1 liter - Hydrochloric
580-40062-6	13NC28TWA09	Water	8/30/2013 7:40	Surface	AK102 & 103	TestAmerica Seattle		28-TWA-09	JC	Hydrochloric Acid	083013-04	15_Day_Rush	Amber Glass 1 liter - Hydrochloric
580-40062-7	13NC28TWA10	Water	8/30/2013 7:50	Surface	AK102 & 103	TestAmerica Seattle		28-TWA-10	JC	Hydrochloric Acid	083013-05	15_Day_Rush	Amber Glass 1 liter - Hydrochloric
580-40073-2 Site 28 Treated Water													
580-40073-4	13NC28TWA11	Water	9/1/2013 13:45	Surface	6020	TestAmerica Seattle	MS/MSD	28-TWA-11	JC	Nitric Acid	090213-04	2_Days	Plastic 250ml - with Nitric Acid
580-40073-5	13NC28TWA12	Water	9/1/2013 14:00	Surface	6020	TestAmerica Seattle		28-TWA-12	JC	Nitric Acid	090213-03	2_Days	Plastic 250ml - with Nitric Acid
580-40073-4	13NC28TWA11	Water	9/1/2013 13:45	Surface	7470A	TestAmerica Seattle	MS/MSD	28-TWA-11	JC	Nitric Acid	090213-04	2_Days	Plastic 250ml - with Nitric Acid
580-40073-5	13NC28TWA12	Water	9/1/2013 14:00	Surface	7470A	TestAmerica Seattle		28-TWA-12	JC	Nitric Acid	090213-03	2_Days	Plastic 250ml - with Nitric Acid
580-40073-4	13NC28TWA11	Water	9/1/2013 13:45	Surface	8082	TestAmerica Seattle	MS/MSD	28-TWA-11	JC	None	090213-06	2_Days	Amber Glass 1 liter - unpreserved
580-40073-5	13NC28TWA12	Water	9/1/2013 14:00	Surface	8082	TestAmerica Seattle		28-TWA-12	JC	None	090213-06	2_Days	Amber Glass 1 liter - unpreserved
580-40073-4	13NC28TWA11	Water	9/1/2013 13:45	Surface	8260B/DoD	TestAmerica Seattle	MS/MSD	28-TWA-11	JC	Hydrochloric Acid	090213-07	2_Days	Voa Vial 40ml - Hydrochloric Acid
580-40073-5	13NC28TWA12	Water	9/1/2013 14:00	Surface	8260B/DoD	TestAmerica Seattle		28-TWA-12	JC	Hydrochloric Acid	090213-07	2_Days	Voa Vial 40ml - Hydrochloric Acid
580-40073-4	13NC28TWA11	Water	9/1/2013 13:45	Surface	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	28-TWA-11	JC	None	090213-06	2_Days	Amber Glass 1 liter - unpreserved
580-40073-5	13NC28TWA12	Water	9/1/2013 14:00	Surface	8270C SIM/DoD	TestAmerica Seattle		28-TWA-12	JC	None	090213-06	2_Days	Amber Glass 1 liter - unpreserved
580-40073-4	13NC28TWA11	Water	9/1/2013 13:45	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	28-TWA-11	JC	Hydrochloric Acid	090213-04	2_Days	Amber Glass 1 liter - Hydrochloric
580-40073-5	13NC28TWA12	Water	9/1/2013 14:00	Surface	AK102 & 103	TestAmerica Seattle		28-TWA-12	JC	Hydrochloric Acid	090213-04	2_Days	Amber Glass 1 liter - Hydrochloric
580-40328 Site 28 MI Samples													
580-40328-1	13NC28SS025	Solid	9/12/2013 16:00	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS025	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-10	13NC28SS034	Solid	9/12/2013 17:10	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS034	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-11	13NC28SS035	Solid	9/14/2013 14:40	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS035	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-12	13NC28SS036	Solid	9/14/2013 14:46	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS036	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-13	13NC28SS037	Solid	9/14/2013 14:57	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS037	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-14	13NC28SS038	Solid	9/14/2013 15:05	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS038	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-15	13NC28SS039	Solid	9/14/2013 15:20	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS039	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-16	13NC28SS040	Solid	9/14/2013 15:30	0-0.5 ft	6020	TestAmerica Seattle	Field Duplicate of 13NC28SS039	13NC28SS040	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-17	13NC28SS041	Solid	9/14/2013 15:40	0-0.5 ft	6020	TestAmerica Seattle	MS/MSD	13NC28SS041	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-18	13NC28SS042	Solid	9/14/2013 16:10	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS042	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-19	13NC28SS043	Solid	9/14/2013 16:20	0-0.5 ft	6020	TestAmerica Seattle	Field Duplicate of 13NC28SS042	13NC28SS043	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-2	13NC28SS026	Solid	9/12/2013 16:12	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS026	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-20	13NC28SS044	Solid	9/14/2013 16:32	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS044	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-21	13NC28SS045	Solid	9/14/2013 16:40	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS045	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-22	13NC28SS046	Solid	9/15/2013 9:40	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS046	EB	None	091613-06	15_Days	Soil jar 8oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-40328-3	13NC28SS027	Solid	9/12/2013 16:20	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS027	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-4	13NC28SS028	Solid	9/12/2013 16:30	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS028	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-5	13NC28SS029	Solid	9/12/2013 16:35	0-0.5 ft	6020	TestAmerica Seattle	MS/MSD	13NC28SS029	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-6	13NC28SS030	Solid	9/12/2013 16:50	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS030	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-7	13NC28SS031	Solid	9/12/2013 16:55	0-0.5 ft	6020	TestAmerica Seattle	Field Duplicate of 13NC28SS030	13NC28SS031	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-8	13NC28SS032	Solid	9/12/2013 17:00	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS032	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-9	13NC28SS033	Solid	9/12/2013 17:05	0-0.5 ft	6020	TestAmerica Seattle		13NC28SS033	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-1	13NC28SS025	Solid	9/12/2013 16:00	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS025	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-10	13NC28SS034	Solid	9/12/2013 17:10	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS034	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-11	13NC28SS035	Solid	9/14/2013 14:40	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS035	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-12	13NC28SS036	Solid	9/14/2013 14:46	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS036	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-13	13NC28SS037	Solid	9/14/2013 14:57	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS037	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-14	13NC28SS038	Solid	9/14/2013 15:05	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS038	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-15	13NC28SS039	Solid	9/14/2013 15:20	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS039	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-16	13NC28SS040	Solid	9/14/2013 15:30	0-0.5 ft	7471A	TestAmerica Seattle	Field Duplicate of 13NC28SS039	13NC28SS040	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-17	13NC28SS041	Solid	9/14/2013 15:40	0-0.5 ft	7471A	TestAmerica Seattle	MS/MSD	13NC28SS041	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-18	13NC28SS042	Solid	9/14/2013 16:10	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS042	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-19	13NC28SS043	Solid	9/14/2013 16:20	0-0.5 ft	7471A	TestAmerica Seattle	Field Duplicate of 13NC28SS042	13NC28SS043	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-2	13NC28SS026	Solid	9/12/2013 16:12	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS026	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-20	13NC28SS044	Solid	9/14/2013 16:32	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS044	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-21	13NC28SS045	Solid	9/14/2013 16:40	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS045	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-22	13NC28SS046	Solid	9/15/2013 9:40	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS046	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-3	13NC28SS027	Solid	9/12/2013 16:20	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS027	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-4	13NC28SS028	Solid	9/12/2013 16:30	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS028	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-5	13NC28SS029	Solid	9/12/2013 16:35	0-0.5 ft	7471A	TestAmerica Seattle	MS/MSD	13NC28SS029	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-6	13NC28SS030	Solid	9/12/2013 16:50	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS030	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-7	13NC28SS031	Solid	9/12/2013 16:55	0-0.5 ft	7471A	TestAmerica Seattle	Field Duplicate of 13NC28SS030	13NC28SS031	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-8	13NC28SS032	Solid	9/12/2013 17:00	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS032	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-9	13NC28SS033	Solid	9/12/2013 17:05	0-0.5 ft	7471A	TestAmerica Seattle		13NC28SS033	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-1	13NC28SS025	Solid	9/12/2013 16:00	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS025	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-10	13NC28SS034	Solid	9/12/2013 17:10	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS034	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-11	13NC28SS035	Solid	9/14/2013 14:40	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS035	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-12	13NC28SS036	Solid	9/14/2013 14:46	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS036	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-13	13NC28SS037	Solid	9/14/2013 14:57	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS037	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-14	13NC28SS038	Solid	9/14/2013 15:05	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS038	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-15	13NC28SS039	Solid	9/14/2013 15:20	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS039	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-16	13NC28SS040	Solid	9/14/2013 15:30	0-0.5 ft	8082	TestAmerica Seattle	Field Duplicate of 13NC28SS039	13NC28SS040	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-17	13NC28SS041	Solid	9/14/2013 15:40	0-0.5 ft	8082	TestAmerica Seattle	MS/MSD	13NC28SS041	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-18	13NC28SS042	Solid	9/14/2013 16:10	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS042	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-19	13NC28SS043	Solid	9/14/2013 16:20	0-0.5 ft	8082	TestAmerica Seattle	Field Duplicate of 13NC28SS042	13NC28SS043	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-2	13NC28SS026	Solid	9/12/2013 16:12	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS026	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-20	13NC28SS044	Solid	9/14/2013 16:32	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS044	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-21	13NC28SS045	Solid	9/14/2013 16:40	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS045	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-22	13NC28SS046	Solid	9/15/2013 9:40	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS046	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-3	13NC28SS027	Solid	9/12/2013 16:20	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS027	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-4	13NC28SS028	Solid	9/12/2013 16:30	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS028	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-5	13NC28SS029	Solid	9/12/2013 16:35	0-0.5 ft	8082	TestAmerica Seattle	MS/MSD	13NC28SS029	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-6	13NC28SS030	Solid	9/12/2013 16:50	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS030	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-7	13NC28SS031	Solid	9/12/2013 16:55	0-0.5 ft	8082	TestAmerica Seattle	Field Duplicate of 13NC28SS030	13NC28SS031	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-8	13NC28SS032	Solid	9/12/2013 17:00	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS032	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-9	13NC28SS033	Solid	9/12/2013 17:05	0-0.5 ft	8082	TestAmerica Seattle		13NC28SS033	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-1	13NC28SS025	Solid	9/12/2013 16:00	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS025	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-10	13NC28SS034	Solid	9/12/2013 17:10	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS034	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-11	13NC28SS035	Solid	9/14/2013 14:40	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS035	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-12	13NC28SS036	Solid	9/14/2013 14:46	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS036	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-13	13NC28SS037	Solid	9/14/2013 14:57	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS037	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-14	13NC28SS038	Solid	9/14/2013 15:05	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS038	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-15	13NC28SS039	Solid	9/14/2013 15:20	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS039	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-16	13NC28SS040	Solid	9/14/2013 15:30	0-0.5 ft	8260B/DoD	TestAmerica Denver	Field Duplicate of 13NC28SS039	13NC28SS040	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-17	13NC28SS041	Solid	9/14/2013 15:40	0-0.5 ft	8260B/DoD	TestAmerica Denver	MS/MSD	13NC28SS041	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-18	13NC28SS042	Solid	9/14/2013 16:10	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS042	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-19	13NC28SS043	Solid	9/14/2013 16:20	0-0.5 ft	8260B/DoD	TestAmerica Denver	Field Duplicate of 13NC28SS042	13NC28SS043	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-2	13NC28SS026	Solid	9/12/2013 16:12	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS026	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-20	13NC28SS044	Solid	9/14/2013 16:32	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS044	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-21	13NC28SS045	Solid	9/14/2013 16:40	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS045	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-22	13NC28SS046	Solid	9/15/2013 9:40	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS046	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-3	13NC28SS027	Solid	9/12/2013 16:20	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS027	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-4	13NC28SS028	Solid	9/12/2013 16:30	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS028	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-5	13NC28SS029	Solid	9/12/2013 16:35	0-0.5 ft	8260B/DoD	TestAmerica Denver	MS/MSD	13NC28SS029	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-6	13NC28SS030	Solid	9/12/2013 16:50	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS030	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-7	13NC28SS031	Solid	9/12/2013 16:55	0-0.5 ft	8260B/DoD	TestAmerica Denver	Field Duplicate of 13NC28SS030	13NC28SS031	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-8	13NC28SS032	Solid	9/12/2013 17:00	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS032	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-9	13NC28SS033	Solid	9/12/2013 17:05	0-0.5 ft	8260B/DoD	TestAmerica Denver		13NC28SS033	EB	Methanol	091613-01	15_Days	Soil jar 4oz - with Methanol
580-40328-1	13NC28SS025	Solid	9/12/2013 16:00	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS025	EB	None	091613-06	15_Days	Soil jar 8oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-40328-10	13NC28SS034	Solid	9/12/2013 17:10	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS034	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-11	13NC28SS035	Solid	9/14/2013 14:40	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS035	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-12	13NC28SS036	Solid	9/14/2013 14:46	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS036	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-13	13NC28SS037	Solid	9/14/2013 14:57	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS037	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-14	13NC28SS038	Solid	9/14/2013 15:05	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS038	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-15	13NC28SS039	Solid	9/14/2013 15:20	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS039	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-16	13NC28SS040	Solid	9/14/2013 15:30	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle	Field Duplicate of 13NC28SS039	13NC28SS040	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-17	13NC28SS041	Solid	9/14/2013 15:40	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	13NC28SS041	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-18	13NC28SS042	Solid	9/14/2013 16:10	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS042	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-19	13NC28SS043	Solid	9/14/2013 16:20	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle	Field Duplicate of 13NC28SS042	13NC28SS043	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-2	13NC28SS026	Solid	9/12/2013 16:12	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS026	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-20	13NC28SS044	Solid	9/14/2013 16:32	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS044	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-21	13NC28SS045	Solid	9/14/2013 16:40	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS045	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-22	13NC28SS046	Solid	9/15/2013 9:40	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS046	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-3	13NC28SS027	Solid	9/12/2013 16:20	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS027	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-4	13NC28SS028	Solid	9/12/2013 16:30	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS028	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-5	13NC28SS029	Solid	9/12/2013 16:35	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	13NC28SS029	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-6	13NC28SS030	Solid	9/12/2013 16:50	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS030	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-7	13NC28SS031	Solid	9/12/2013 16:55	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle	Field Duplicate of 13NC28SS030	13NC28SS031	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-8	13NC28SS032	Solid	9/12/2013 17:00	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS032	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-9	13NC28SS033	Solid	9/12/2013 17:05	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		13NC28SS033	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-1	13NC28SS025	Solid	9/12/2013 16:00	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS025	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-10	13NC28SS034	Solid	9/12/2013 17:10	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS034	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-11	13NC28SS035	Solid	9/14/2013 14:40	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS035	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-12	13NC28SS036	Solid	9/14/2013 14:46	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS036	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-13	13NC28SS037	Solid	9/14/2013 14:57	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS037	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-14	13NC28SS038	Solid	9/14/2013 15:05	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS038	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-15	13NC28SS039	Solid	9/14/2013 15:20	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS039	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-16	13NC28SS040	Solid	9/14/2013 15:30	0-0.5 ft	9060	TestAmerica Seattle	Field Duplicate of 13NC28SS039	13NC28SS040	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-17	13NC28SS041	Solid	9/14/2013 15:40	0-0.5 ft	9060	TestAmerica Seattle	MS/MSD	13NC28SS041	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-18	13NC28SS042	Solid	9/14/2013 16:10	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS042	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-19	13NC28SS043	Solid	9/14/2013 16:20	0-0.5 ft	9060	TestAmerica Seattle	Field Duplicate of 13NC28SS042	13NC28SS043	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-2	13NC28SS026	Solid	9/12/2013 16:12	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS026	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-20	13NC28SS044	Solid	9/14/2013 16:32	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS044	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-21	13NC28SS045	Solid	9/14/2013 16:40	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS045	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-22	13NC28SS046	Solid	9/15/2013 9:40	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS046	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-3	13NC28SS027	Solid	9/12/2013 16:20	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS027	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-4	13NC28SS028	Solid	9/12/2013 16:30	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS028	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-5	13NC28SS029	Solid	9/12/2013 16:35	0-0.5 ft	9060	TestAmerica Seattle	MS/MSD	13NC28SS029	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-6	13NC28SS030	Solid	9/12/2013 16:50	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS030	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-7	13NC28SS031	Solid	9/12/2013 16:55	0-0.5 ft	9060	TestAmerica Seattle	Field Duplicate of 13NC28SS030	13NC28SS031	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-8	13NC28SS032	Solid	9/12/2013 17:00	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS032	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-9	13NC28SS033	Solid	9/12/2013 17:05	0-0.5 ft	9060	TestAmerica Seattle		13NC28SS033	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-1	13NC28SS025	Solid	9/12/2013 16:00	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS025	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-10	13NC28SS034	Solid	9/12/2013 17:10	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS034	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-11	13NC28SS035	Solid	9/14/2013 14:40	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS035	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-12	13NC28SS036	Solid	9/14/2013 14:46	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS036	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-13	13NC28SS037	Solid	9/14/2013 14:57	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS037	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-14	13NC28SS038	Solid	9/14/2013 15:05	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS038	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-15	13NC28SS039	Solid	9/14/2013 15:20	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS039	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-16	13NC28SS040	Solid	9/14/2013 15:30	0-0.5 ft	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NC28SS039	13NC28SS040	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-17	13NC28SS041	Solid	9/14/2013 15:40	0-0.5 ft	AK102 & 103	TestAmerica Seattle	MS/MSD	13NC28SS041	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-18	13NC28SS042	Solid	9/14/2013 16:10	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS042	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-19	13NC28SS043	Solid	9/14/2013 16:20	0-0.5 ft	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NC28SS042	13NC28SS043	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-2	13NC28SS026	Solid	9/12/2013 16:12	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS026	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-20	13NC28SS044	Solid	9/14/2013 16:32	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS044	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-21	13NC28SS045	Solid	9/14/2013 16:40	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS045	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-22	13NC28SS046	Solid	9/15/2013 9:40	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS046	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-3	13NC28SS027	Solid	9/12/2013 16:20	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS027	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-4	13NC28SS028	Solid	9/12/2013 16:30	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS028	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-5	13NC28SS029	Solid	9/12/2013 16:35	0-0.5 ft	AK102 & 103	TestAmerica Seattle	MS/MSD	13NC28SS029	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-6	13NC28SS030	Solid	9/12/2013 16:50	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS030	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-7	13NC28SS031	Solid	9/12/2013 16:55	0-0.5 ft	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NC28SS030	13NC28SS031	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-8	13NC28SS032	Solid	9/12/2013 17:00	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS032	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-9	13NC28SS033	Solid	9/12/2013 17:05	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC28SS033	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-1	13NC28SS025	Solid	9/12/2013 16:00	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS025	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-10	13NC28SS034	Solid	9/12/2013 17:10	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS034	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-11	13NC28SS035	Solid	9/14/2013 14:40	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS035	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-12	13NC28SS036	Solid	9/14/2013 14:46	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS036	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-13	13NC28SS037	Solid	9/14/2013 14:57	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS037	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-14	13NC28SS038	Solid	9/14/2013 15:05	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS038	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-15	13NC28SS039	Solid	9/14/2013 15:20	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS039	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-16	13NC28SS040	Solid	9/14/2013 15:30	0-0.5 ft	AK102/103	TestAmerica Seattle	Field Duplicate of 13NC28SS039	13NC28SS040	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-17	13NC28SS041	Solid	9/14/2013 15:40	0-0.5 ft	AK102/103	TestAmerica Seattle	MS/MSD	13NC28SS041	EB	None	091613-06	15_Days	Soil jar 8oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-40328-18	13NC28SS042	Solid	9/14/2013 16:10	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS042	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-2	13NC28SS026	Solid	9/12/2013 16:12	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS026	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-20	13NC28SS044	Solid	9/14/2013 16:32	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS044	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-21	13NC28SS045	Solid	9/14/2013 16:40	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS045	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-22	13NC28SS046	Solid	9/15/2013 9:40	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS046	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-3	13NC28SS027	Solid	9/12/2013 16:20	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS027	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-4	13NC28SS028	Solid	9/12/2013 16:30	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS028	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-5	13NC28SS029	Solid	9/12/2013 16:35	0-0.5 ft	AK102/103	TestAmerica Seattle	MS/MSD	13NC28SS029	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-6	13NC28SS030	Solid	9/12/2013 16:50	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS030	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-7	13NC28SS031	Solid	9/12/2013 16:55	0-0.5 ft	AK102/103	TestAmerica Seattle	Field Duplicate of 13NC28SS030	13NC28SS031	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-8	13NC28SS032	Solid	9/12/2013 17:00	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS032	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-9	13NC28SS033	Solid	9/12/2013 17:05	0-0.5 ft	AK102/103	TestAmerica Seattle		13NC28SS033	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-1	13NC28SS025	Solid	9/12/2013 16:00	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS025	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-10	13NC28SS034	Solid	9/12/2013 17:10	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS034	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-11	13NC28SS035	Solid	9/14/2013 14:40	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS035	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-12	13NC28SS036	Solid	9/14/2013 14:46	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS036	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-13	13NC28SS037	Solid	9/14/2013 14:57	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS037	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-14	13NC28SS038	Solid	9/14/2013 15:05	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS038	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-15	13NC28SS039	Solid	9/14/2013 15:20	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS039	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-16	13NC28SS040	Solid	9/14/2013 15:30	0-0.5 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NC28SS039	13NC28SS040	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-17	13NC28SS041	Solid	9/14/2013 15:40	0-0.5 ft	D 2216	TestAmerica Seattle	MS/MSD	13NC28SS041	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-18	13NC28SS042	Solid	9/14/2013 16:10	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS042	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-19	13NC28SS043	Solid	9/14/2013 16:20	0-0.5 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NC28SS042	13NC28SS043	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-2	13NC28SS026	Solid	9/12/2013 16:12	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS026	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-20	13NC28SS044	Solid	9/14/2013 16:32	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS044	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-21	13NC28SS045	Solid	9/14/2013 16:40	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS045	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-22	13NC28SS046	Solid	9/15/2013 9:40	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS046	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-3	13NC28SS027	Solid	9/12/2013 16:20	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS027	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-4	13NC28SS028	Solid	9/12/2013 16:30	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS028	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-5	13NC28SS029	Solid	9/12/2013 16:35	0-0.5 ft	D 2216	TestAmerica Seattle	MS/MSD	13NC28SS029	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-6	13NC28SS030	Solid	9/12/2013 16:50	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS030	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-7	13NC28SS031	Solid	9/12/2013 16:55	0-0.5 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NC28SS030	13NC28SS031	EB	None	091613-05	15_Days	Soil jar 8oz
580-40328-8	13NC28SS032	Solid	9/12/2013 17:00	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS032	EB	None	091613-06	15_Days	Soil jar 8oz
580-40328-9	13NC28SS033	Solid	9/12/2013 17:05	0-0.5 ft	D 2216	TestAmerica Seattle		13NC28SS033	EB	None	091613-05	15_Days	Soil jar 8oz
580-40408-1 Site 28 Waters													
580-40408-1	13NC28TWA021	Water	9/16/2013 14:00	Surface	6020	TestAmerica Seattle	MS/MSD	TWA-21	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-2	13NC28PSW03	Water	9/17/2013 17:16	Surface	6020	TestAmerica Seattle		28-SW-03	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-3	13NC28PSW02	Water	9/17/2013 17:25	Surface	6020	TestAmerica Seattle		28-SW-02	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-4	13NC28PSW01	Water	9/17/2013 17:35	Surface	6020	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-5	13NC28TWA22	Water	9/17/2013 17:45	Surface	6020	TestAmerica Seattle		TWA-22	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-6	13NC28TWA23	Water	9/18/2013 10:00	Surface	6020	TestAmerica Seattle		TWA-23	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-7	13NC28TWA24	Water	9/18/2013 10:15	Surface	6020	TestAmerica Seattle	Field Duplicate of 13NC28TWA23	TWA-24	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-1	13NC28TWA021	Water	9/16/2013 14:00	Surface	7470A	TestAmerica Seattle	MS/MSD	TWA-21	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-2	13NC28PSW03	Water	9/17/2013 17:16	Surface	7470A	TestAmerica Seattle		28-SW-03	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-3	13NC28PSW02	Water	9/17/2013 17:25	Surface	7470A	TestAmerica Seattle		28-SW-02	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-4	13NC28PSW01	Water	9/17/2013 17:35	Surface	7470A	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-5	13NC28TWA22	Water	9/17/2013 17:45	Surface	7470A	TestAmerica Seattle		TWA-22	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-6	13NC28TWA23	Water	9/18/2013 10:00	Surface	7470A	TestAmerica Seattle		TWA-23	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-7	13NC28TWA24	Water	9/18/2013 10:15	Surface	7470A	TestAmerica Seattle	Field Duplicate of 13NC28TWA23	TWA-24	JC	Nitric Acid	091813-05	15_Days	Plastic 250ml - with Nitric Acid
580-40408-1	13NC28TWA021	Water	9/16/2013 14:00	Surface	8082	TestAmerica Seattle	MS/MSD	TWA-21	JC	None	091813-02	15_Days	Amber Glass 1 liter - unpreserved
580-40408-2	13NC28PSW03	Water	9/17/2013 17:16	Surface	8082	TestAmerica Seattle		28-SW-03	JC	None	091813-01	15_Days	Amber Glass 1 liter - unpreserved
580-40408-3	13NC28PSW02	Water	9/17/2013 17:25	Surface	8082	TestAmerica Seattle		28-SW-02	JC	None	091813-01	15_Days	Amber Glass 1 liter - unpreserved
580-40408-4	13NC28PSW01	Water	9/17/2013 17:35	Surface	8082	TestAmerica Seattle		28-SW-01	JC	None	091813-04	15_Days	Amber Glass 1 liter - unpreserved
580-40408-5	13NC28TWA22	Water	9/17/2013 17:45	Surface	8082	TestAmerica Seattle		TWA-22	JC	None	091813-04	15_Days	Amber Glass 1 liter - unpreserved
580-40408-6	13NC28TWA23	Water	9/18/2013 10:00	Surface	8082	TestAmerica Seattle		TWA-23	JC	None	091813-03	15_Days	Amber Glass 1 liter - unpreserved
580-40408-7	13NC28TWA24	Water	9/18/2013 10:15	Surface	8082	TestAmerica Seattle	Field Duplicate of 13NC28TWA23	TWA-24	JC	None	091813-03	15_Days	Amber Glass 1 liter - unpreserved
580-40408-1	13NC28TWA021	Water	9/16/2013 14:00	Surface	8260B/DoD	TestAmerica Seattle	MS/MSD	TWA-21	JC	Hydrochloric Acid	091813-05	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40408-2	13NC28PSW03	Water	9/17/2013 17:16	Surface	8260B/DoD	TestAmerica Seattle		28-SW-03	JC	Hydrochloric Acid	091813-05	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40408-3	13NC28PSW02	Water	9/17/2013 17:25	Surface	8260B/DoD	TestAmerica Seattle		28-SW-02	JC	Hydrochloric Acid	091813-05	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40408-4	13NC28PSW01	Water	9/17/2013 17:35	Surface	8260B/DoD	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	091813-05	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40408-5	13NC28TWA22	Water	9/17/2013 17:45	Surface	8260B/DoD	TestAmerica Seattle		TWA-22	JC	Hydrochloric Acid	091813-05	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40408-6	13NC28TWA23	Water	9/18/2013 10:00	Surface	8260B/DoD	TestAmerica Seattle		TWA-23	JC	Hydrochloric Acid	091813-05	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40408-7	13NC28TWA24	Water	9/18/2013 10:15	Surface	8260B/DoD	TestAmerica Seattle	Field Duplicate of 13NC28TWA23	TWA-24	JC	Hydrochloric Acid	091813-05	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-40408-1	13NC28TWA021	Water	9/16/2013 14:00	Surface	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	TWA-21	JC	None	091813-02	15_Days	Amber Glass 1 liter - unpreserved
580-40408-2	13NC28PSW03	Water	9/17/2013 17:16	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-03	JC	None	091813-01	15_Days	Amber Glass 1 liter - unpreserved
580-40408-3	13NC28PSW02	Water	9/17/2013 17:25	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-02	JC	None	091813-01	15_Days	Amber Glass 1 liter - unpreserved
580-40408-4	13NC28PSW01	Water	9/17/2013 17:35	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-01	JC	None	091813-04	15_Days	Amber Glass 1 liter - unpreserved
580-40408-5	13NC28TWA22	Water	9/17/2013 17:45	Surface	8270C SIM/DoD	TestAmerica Seattle		TWA-22	JC	None	091813-04	15_Days	Amber Glass 1 liter - unpreserved
580-40408-6	13NC28TWA23	Water	9/18/2013 10:00	Surface	8270C SIM/DoD	TestAmerica Seattle		TWA-23	JC	None	091813-03	15_Days	Amber Glass 1 liter - unpreserved
580-40408-7	13NC28TWA24	Water	9/18/2013 10:15	Surface	8270C SIM/DoD	TestAmerica Seattle	Field Duplicate of 13NC28TWA23	TWA-24	JC	None	091813-03	15_Days	Amber Glass 1 liter - unpreserved
580-40408-1	13NC28TWA021	Water	9/16/2013 14:00	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	TWA-21	JC	Hydrochloric Acid	091813-02	15_Days	Amber Glass 1 liter - Hydrochloric
580-40408-2	13NC28PSW03	Water	9/17/2013 17:16	Surface	AK102 & 103	TestAmerica Seattle		28-SW-03	JC	Hydrochloric Acid	091813-01	15_Days	Amber Glass 1 liter - Hydrochloric
580-40408-3	13NC28PSW02	Water	9/17/2013 17:25	Surface	AK102 & 103	TestAmerica Seattle		28-SW-02	JC	Hydrochloric Acid	091813-01	15_Days	Amber Glass 1 liter - Hydrochloric
580-40408-4	13NC28PSW01	Water	9/17/2013 17:35	Surface	AK102 & 103	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	091813-04	15_Days	Amber Glass 1 liter - Hydrochloric

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-40408-5	13NC28TWA22	Water	9/17/2013 17:45	Surface	AK102 & 103	TestAmerica Seattle		TWA-22	JC	Hydrochloric Acid	091813-04	15_Days	Amber Glass 1 liter - Hydrochloric
580-40408-6	13NC28TWA23	Water	9/18/2013 10:00	Surface	AK102 & 103	TestAmerica Seattle		TWA-23	JC	Hydrochloric Acid	091813-03	15_Days	Amber Glass 1 liter - Hydrochloric
580-40408-7	13NC28TWA24	Water	9/18/2013 10:15	Surface	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NC28TWA23	TWA-24	JC	Hydrochloric Acid	091813-03	15_Days	Amber Glass 1 liter - Hydrochloric
580-40427-1 MI Samples													
580-40427-13	13NC28MI01	Solid	9/16/2013 18:10	0-0.5 ft	6020	TestAmerica Seattle	MS/MSD	028-01	EB	None	092013-01	15_Days	Plastic Bag
580-40427-14	13NC28MI02	Solid	9/17/2013 15:30	0-0.6 ft	6020	TestAmerica Seattle		028-02	EB	None	092013-01	15_Days	Plastic Bag
580-40427-15	13NC28MI03	Solid	9/18/2013 17:15	0-0.7 ft	6020	TestAmerica Seattle		028-03	EB	None	092013-02	15_Days	Plastic Bag
580-40427-16	13NC28MI04	Solid	9/19/2013 10:00	0-0.8 ft	6020	TestAmerica Seattle		028-04	EB	None	092013-02	15_Days	Plastic Bag
580-40427-17	13NC28WDA01	Solid	9/19/2013 15:30	0-0.9 ft	6020	TestAmerica Seattle	MS/MSD	28WDA-01	EB	None	092013-01	15_Days	Soil jar 8oz
580-40427-18	13NC28WDA02	Solid	9/19/2013 15:45	0-0.10 ft	6020	TestAmerica Seattle	Field Duplicate of 13NC28WDA01	28WDA-02	EB	None	092013-01	15_Days	Soil jar 8oz
580-40427-13	13NC28MI01	Solid	9/16/2013 18:10	0-0.11 ft	7471A	TestAmerica Seattle	MS/MSD	028-01	EB	None	092013-01	15_Days	Plastic Bag
580-40427-14	13NC28MI02	Solid	9/17/2013 15:30	0-0.12 ft	7471A	TestAmerica Seattle		028-02	EB	None	092013-01	15_Days	Plastic Bag
580-40427-15	13NC28MI03	Solid	9/18/2013 17:15	0-0.13 ft	7471A	TestAmerica Seattle		028-03	EB	None	092013-02	15_Days	Plastic Bag
580-40427-16	13NC28MI04	Solid	9/19/2013 10:00	0-0.14 ft	7471A	TestAmerica Seattle		028-04	EB	None	092013-02	15_Days	Plastic Bag
580-40427-17	13NC28WDA01	Solid	9/19/2013 15:30	0-0.15 ft	7471A	TestAmerica Seattle	MS/MSD	28WDA-01	EB	None	092013-01	15_Days	Soil jar 8oz
580-40427-18	13NC28WDA02	Solid	9/19/2013 15:45	0-0.16 ft	7471A	TestAmerica Seattle	Field Duplicate of 13NC28WDA01	28WDA-02	EB	None	092013-01	15_Days	Soil jar 8oz
580-40427-1	13NCBGSS02	Solid	9/9/2013 14:30	0-0.17 ft	8082	TestAmerica Seattle		13MOCBG-02	EB	None	092013-02	15_Days	Plastic Bag
580-40427-13	13NC28MI01	Solid	9/16/2013 18:10	0-0.18 ft	8082	TestAmerica Seattle	MS/MSD	028-01	EB	None	092013-01	15_Days	No Container
580-40427-14	13NC28MI02	Solid	9/17/2013 15:30	0-0.19 ft	8082	TestAmerica Seattle		028-02	EB	None	092013-01	15_Days	Plastic Bag
580-40427-15	13NC28MI03	Solid	9/18/2013 17:15	0-0.20 ft	8082	TestAmerica Seattle		028-03	EB	None	092013-02	15_Days	Plastic Bag
580-40427-16	13NC28MI04	Solid	9/19/2013 10:00	0-0.21 ft	8082	TestAmerica Seattle		028-04	EB	None	092013-02	15_Days	Plastic Bag
580-40427-17	13NC28WDA01	Solid	9/19/2013 15:30	0-0.22 ft	8082	TestAmerica Seattle	MS/MSD	28WDA-01	EB	None	092013-01	15_Days	Soil jar 8oz
580-40427-18	13NC28WDA02	Solid	9/19/2013 15:45	0-0.23 ft	8082	TestAmerica Seattle	Field Duplicate of 13NC28WDA01	28WDA-02	EB	None	092013-01	15_Days	Soil jar 8oz
580-40427-2	13NCBGSS03	Solid	9/9/2013 16:30	0-0.24 ft	8082	TestAmerica Seattle		13MOCBG-03	EB	None	092013-01	15_Days	Plastic Bag
580-40427-3	13NCBGSS04	Solid	9/10/2013 11:10	0-0.25 ft	8082	TestAmerica Seattle		13MOCBG-04	EB	None	092013-01	15_Days	Plastic Bag
580-40427-4	13NCBGSS05	Solid	9/10/2013 11:30	0-0.26 ft	8082	TestAmerica Seattle		13MOCBG-05	EB	None	092013-02	15_Days	Plastic Bag
580-40427-5	13NCBGSS06	Solid	9/10/2013 11:50	0-0.27 ft	8082	TestAmerica Seattle	Field Replicate of 13NCBGSS04	13MOCBG-06	EB	None	092013-02	15_Days	Plastic Bag
580-40427-6	13NCBGSS07	Solid	9/10/2013 14:00	0-0.28 ft	8082	TestAmerica Seattle	Field Replicate of 13NCBGSS04	S6-01	EB	None	092013-01	15_Days	Plastic Bag
580-40427-7	13NCBGSS08	Solid	9/10/2013 14:55	0-0.29 ft	8082	TestAmerica Seattle		S6-02	EB	None	092013-01	15_Days	Plastic Bag
580-40427-8	13NCBGSS09	Solid	9/12/2013 10:20	0-0.30 ft	8082	TestAmerica Seattle		S6-03	EB	None	092013-02	15_Days	Plastic Bag
580-40427-9	13NCBGSS10	Solid	9/12/2013 11:20	0-0.31 ft	8082	TestAmerica Seattle		S6-04	EB	None	092013-01	15_Days	Plastic Bag
580-40427-10	13NCISO01	Solid	9/11/2013 14:25	0-0.32 ft	8260B	TestAmerica Seattle	Field Replicate of 13NCIS001 MS/MSD	ISO-01	EB	Methanol	092013-02	15_Days	Voa Vial 40ml - 10mL MeOH
580-40427-11	13NCISO02	Solid	9/11/2013 15:08	0-0.33 ft	8260B	TestAmerica Seattle	Field Replicate of 13NCIS001	ISO-02	EB	Methanol	092013-02	15_Days	Voa Vial 40ml - 10mL MeOH
580-40427-12	13NCISO03	Solid	9/11/2013 15:50	0-0.34 ft	8260B	TestAmerica Seattle		ISO-03	EB	Methanol	092013-02	15_Days	Voa Vial 40ml - 10mL MeOH
580-40427-13	13NC28MI01	Solid	9/16/2013 18:10	0-0.35 ft	8260B	TestAmerica Seattle	MS/MSD	028-01	EB	Methanol	092013-01	15_Days	Voa Vial 40ml - 10mL MeOH
580-40427-14	13NC28MI02	Solid	9/17/2013 15:30	0-0.36 ft	8260B	TestAmerica Seattle		028-02	EB	Methanol	092013-01	15_Days	Voa Vial 40ml - 10mL MeOH
580-40427-15	13NC28MI03	Solid	9/18/2013 17:15	0-0.37 ft	8260B	TestAmerica Seattle		028-03	EB	Methanol	092013-02	15_Days	Voa Vial 40ml - 10mL MeOH
580-40427-16	13NC28MI04	Solid	9/19/2013 10:00	0-0.38 ft	8260B	TestAmerica Seattle		028-04	EB	Methanol	092013-02	15_Days	Voa Vial 40ml - 10mL MeOH
580-40427-17	13NC28WDA01	Solid	9/19/2013 15:30	0-0.39 ft	8260B/DoD	TestAmerica Seattle	MS/MSD	28WDA-01	EB	Methanol	092013-01	15_Days	Soil jar 4oz - with Methanol
580-40427-18	13NC28WDA02	Solid	9/19/2013 15:45	0-0.40 ft	8260B/DoD	TestAmerica Seattle	Field Duplicate of 13NC28WDA01	28WDA-02	EB	Methanol	092013-01	15_Days	Soil jar 4oz - with Methanol
580-40427-13	13NC28MI01	Solid	9/16/2013 18:10	0-0.41 ft	8270C SIM	TestAmerica Seattle	MS/MSD	028-01	EB	None	092013-01	15_Days	Plastic Bag
580-40427-14	13NC28MI02	Solid	9/17/2013 15:30	0-0.42 ft	8270C SIM	TestAmerica Seattle		028-02	EB	None	092013-01	15_Days	Plastic Bag
580-40427-15	13NC28MI03	Solid	9/18/2013 17:15	0-0.43 ft	8270C SIM	TestAmerica Seattle		028-03	EB	None	092013-02	15_Days	Plastic Bag
580-40427-16	13NC28MI04	Solid	9/19/2013 10:00	0-0.44 ft	8270C SIM	TestAmerica Seattle		028-04	EB	None	092013-02	15_Days	Plastic Bag
580-40427-17	13NC28WDA01	Solid	9/19/2013 15:30	0-0.45 ft	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	28WDA-01	EB	None	092013-01	15_Days	Soil jar 8oz
580-40427-18	13NC28WDA02	Solid	9/19/2013 15:45	0-0.46 ft	8270C SIM/DoD	TestAmerica Seattle		28WDA-02	EB	None	092013-01	15_Days	Soil jar 8oz
580-40427-10	13NCISO01	Solid	9/11/2013 14:25	0-0.47 ft	AK101	TestAmerica Seattle		ISO-01	EB	Methanol	092013-02	15_Days	Voa Vial 40ml - 10mL MeOH
580-40427-11	13NCISO02	Solid	9/11/2013 15:08	0-0.48 ft	AK101	TestAmerica Seattle		ISO-02	EB	Methanol	092013-02	15_Days	Voa Vial 40ml - 10mL MeOH
580-40427-12	13NCISO03	Solid	9/11/2013 15:50	0-0.49 ft	AK101	TestAmerica Seattle		ISO-03	EB	Methanol	092013-02	15_Days	Voa Vial 40ml - 10mL MeOH
580-40427-1	13NCBGSS02	Solid	9/9/2013 14:30	0-0.50 ft	AK102 & 103	TestAmerica Seattle		13MOCBG-02	EB	None	092013-02	15_Days	Plastic Bag
580-40427-10	13NCISO01	Solid	9/11/2013 14:25	0-0.51 ft	AK102 & 103	TestAmerica Seattle	Field Replicate of 13NCIS001, MS/MSD	ISO-01	EB	None	092013-02	15_Days	Plastic Bag
580-40427-11	13NCISO02	Solid	9/11/2013 15:08	0-0.52 ft	AK102 & 103	TestAmerica Seattle	Field Replicate of 13NCIS001	ISO-02	EB	None	092013-02	15_Days	Plastic Bag
580-40427-12	13NCISO03	Solid	9/11/2013 15:50	0-0.53 ft	AK102 & 103	TestAmerica Seattle		ISO-03	EB	None	092013-02	15_Days	Plastic Bag
580-40427-13	13NC28MI01	Solid	9/16/2013 18:10	0-0.54 ft	AK102 & 103	TestAmerica Seattle	MS/MSD	028-01	EB	None	092013-01	15_Days	Plastic Bag
580-40427-14	13NC28MI02	Solid	9/17/2013 15:30	0-0.55 ft	AK102 & 103	TestAmerica Seattle		028-02	EB	None	092013-01	15_Days	Plastic Bag
580-40427-15	13NC28MI03	Solid	9/18/2013 17:15	0-0.56 ft	AK102 & 103	TestAmerica Seattle		028-03	EB	None	092013-02	15_Days	Plastic Bag
580-40427-16	13NC28MI04	Solid	9/19/2013 10:00	0-0.57 ft	AK102 & 103	TestAmerica Seattle		028-04	EB	None	092013-02	15_Days	Plastic Bag
580-40427-17	13NC28WDA01	Solid	9/19/2013 15:30	0-0.58 ft	AK102 & 103	TestAmerica Seattle	MS/MSD	28WDA-01	EB	None	092013-01	15_Days	Soil jar 8oz
580-40427-18	13NC28WDA02	Solid	9/19/2013 15:45	0-0.59 ft	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NC28WDA01	28WDA-02	EB	None	092013-01	15_Days	Soil jar 8oz
580-40427-2	13NCBGSS03	Solid	9/9/2013 16:30	0-0.60 ft	AK102 & 103	TestAmerica Seattle		13MOCBG-03	EB	None	092013-01	15_Days	Plastic Bag
580-40427-3	13NCBGSS04	Solid	9/10/2013 11:10	0-0.61 ft	AK102 & 103	TestAmerica Seattle		13MOCBG-04	EB	None	092013-01	15_Days	Plastic Bag
580-40427-4	13NCBGSS05	Solid	9/10/2013 11:30	0-0.62 ft	AK102 & 103	TestAmerica Seattle		13MOCBG-05	EB	None	092013-02	15_Days	Plastic Bag
580-40427-5	13NCBGSS06	Solid	9/10/2013 11:50	0-0.63 ft	AK102 & 103	TestAmerica Seattle	Field Replicate of 13NCBGSS04	13MOCBG-06	EB	None	092013-02	15_Days	Plastic Bag
580-40427-6	13NCBGSS07	Solid	9/10/2013 14:00	0-0.64 ft	AK102 & 103	TestAmerica Seattle	Field Replicate of 13NCBGSS04	S6-01	EB	None	092013-01	15_Days	Plastic Bag
580-40427-7	13NCBGSS08	Solid	9/10/2013 14:55	0-0.65 ft	AK102 & 103	TestAmerica Seattle		S6-02	EB	None	092013-01	15_Days	Plastic Bag
580-40427-8	13NCBGSS09	Solid	9/12/2013 10:20	0-0.66 ft	AK102 & 103	TestAmerica Seattle		S6-03	EB	None	092013-02	15_Days	Plastic Bag
580-40427-9	13NCBGSS10	Solid	9/12/2013 11:20	0-0.67 ft	AK102 & 103	TestAmerica Seattle		S6-04	EB	None	092013-01	15_Days	Plastic Bag
580-40427-10	13NCISO01	Solid	9/11/2013 14:25	0-0.68 ft	D 2216	TestAmerica Seattle	Field Replicate of 13NCIS001, MS/MSD	ISO-01	EB	None	092013-02	15_Days	Plastic Bag
580-40427-11	13NCISO02	Solid	9/11/2013 15:08	0-0.69 ft	D 2216	TestAmerica Seattle	Field Replicate of 13NCIS001	ISO-02	EB	None	092013-02	15_Days	Plastic Bag
580-40427-12	13NCISO03	Solid	9/11/2013 15:50	0-0.70 ft	D 2216	TestAmerica Seattle		ISO-03	EB	None	092013-02	15_Days	Plastic Bag
580-40427-13	13NC28MI01	Solid	9/16/2013 18:10	0-0.71 ft	D 2216	TestAmerica Seattle	MS/MSD	028-01	EB	None	092013-01	15_Days	Plastic Bag
580-40427-14	13NC28MI02	Solid	9/17/2013 15:30	0-0.72 ft	D 2216	TestAmerica Seattle		028-02	EB	None	092013-01	15_Days	Plastic Bag
580-40427-15	13NC28MI03	Solid	9/18/2013 17:15	0-0.73 ft	D 2216	TestAmerica Seattle		028-03	EB	None	092013-02	15_Days	Plastic Bag
580-40427-16	13NC28MI04	Solid	9/19/2013 10:00	0-0.74 ft	D 2216	TestAmerica Seattle		028-04	EB	None	092013-02	15_Days	Plastic Bag
580-40427-17	13NC28WDA01	Solid	9/19/2013 15:30	0-0.75 ft	D 2216	TestAmerica Seattle	MS/MSD	28WDA-01	EB	None	092013-01	15_Days	Soil jar 8oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-40427-18	13NC28WDA02	Solid	9/19/2013 15:45	0-0.76 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NC28WDA01	28WDA-02	EB	None	092013-01	15_Days	Soil jar 8oz
280-46414-1 MOC Post Stockpile													
280-46414-1	13NCMOCSP001	Solid	9/8/2013 13:30	N/A	AK102 & 103	TestAmerica Denver		13NCMOCSP001	EB	None		2_Day_RUSH	Soil jar 4oz
280-46414-2 Site 21 Water													
280-46414-2	13NC21SWA06	Water	9/7/2013 13:30	Surface	6020	TestAmerica Denver	MS/MSD	13NC21SWA06	EB	Nitric Acid	1 of 1	15_Days	Plastic 250ml - with Nitric Acid
280-46414-3	13NC21SWA07	Water	9/7/2013 13:40	Surface	6020	TestAmerica Denver		13NC21SWA07	EB	Nitric Acid	1 of 1	15_Days	Plastic 250ml - with Nitric Acid
280-46550-1 Site 28 GAC													
280-46550-1	GAC01	Solid	9/10/2013 11:00	N/A	8260B	TestAmerica Denver	MS/MSD	GAC01	EB	None		2_Day_RUSH	Soil jar 8oz
280-46550-2 Site 28 Treated Water													
280-46550-10	13NC28STW20	Water	9/10/2013 10:00	Surface	6010B	TestAmerica Denver		13NC28STW20	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-11	13NC28STW15	Water	9/7/2013 15:40	Surface	6010B	TestAmerica Denver	MS/MSD	13NC28STW15	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-2	13NC28TWA13	Water	9/7/2013 13:10	Surface	6010B	TestAmerica Denver		13NC28TWA13	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-2	13NC28TWA13	Water	9/7/2013 13:10	Surface	6010B	TestAmerica Denver		13NC28TWA13	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-4	13NC28STW16	Water	9/8/2013 15:35	Surface	6010B	TestAmerica Denver		13NC28STW16	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-5	13NC28STW17	Water	9/9/2013 10:00	Surface	6010B	TestAmerica Denver	MS/MSD	13NC28STW17	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-6	13NC28STW18	Water	9/9/2013 14:30	Surface	6010B	TestAmerica Denver		13NC28STW18	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-7	13NC28STW19	Water	9/9/2013 14:45	Surface	6010B	TestAmerica Denver	Field Duplicate of 13NC28STW18	13NC28STW19	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-8	13NC28TWA15	Water	9/9/2013 16:40	Surface	6010B	TestAmerica Denver		13NC28TWA15	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-9	13NC28TWA16	Water	9/10/2013 10:30	Surface	6010B	TestAmerica Denver		13NC28TWA16	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-10	13NC28STW20	Water	9/10/2013 10:00	Surface	7470A	TestAmerica Denver		13NC28STW20	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-11	13NC28STW15	Water	9/7/2013 15:40	Surface	7470A	TestAmerica Denver	MS/MSD	13NC28STW15	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-2	13NC28TWA13	Water	9/7/2013 13:10	Surface	7470A	TestAmerica Denver		13NC28TWA13	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-3	13NC28TWA14	Water	9/8/2013 7:45	Surface	7470A	TestAmerica Denver		13NC28TWA14	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-4	13NC28STW16	Water	9/8/2013 15:35	Surface	7470A	TestAmerica Denver		13NC28STW16	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-5	13NC28STW17	Water	9/9/2013 10:00	Surface	7470A	TestAmerica Denver	MS/MSD	13NC28STW17	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-6	13NC28STW18	Water	9/9/2013 14:30	Surface	7470A	TestAmerica Denver		13NC28STW18	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-7	13NC28STW19	Water	9/9/2013 14:45	Surface	7470A	TestAmerica Denver	Field Duplicate of 13NC28STW18	13NC28STW19	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-8	13NC28TWA15	Water	9/9/2013 16:40	Surface	7470A	TestAmerica Denver		13NC28TWA15	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-9	13NC28TWA16	Water	9/10/2013 10:30	Surface	7470A	TestAmerica Denver		13NC28TWA16	JC/EB	Nitric Acid	091113-05	10_Days	Plastic 250ml - with Nitric Acid
280-46550-10	13NC28STW20	Water	9/10/2013 10:00	Surface	8082A	TestAmerica Denver		13NC28STW20	JC/EB	None	091113-03	10_Days	Amber Glass 1 liter - unpreserved
280-46550-11	13NC28STW15	Water	9/7/2013 15:40	Surface	8082A	TestAmerica Denver	MS/MSD	13NC28STW15	JC/EB	None	091113-01	10_Days	Amber Glass 1 liter - unpreserved
280-46550-2	13NC28TWA13	Water	9/7/2013 13:10	Surface	8082A	TestAmerica Denver		13NC28TWA13	JC/EB	None	091113-07	10_Days	Amber Glass 1 liter - unpreserved
280-46550-3	13NC28TWA14	Water	9/8/2013 7:45	Surface	8082A	TestAmerica Denver		13NC28TWA14	JC/EB	None	091113-03	10_Days	Amber Glass 1 liter - unpreserved
280-46550-4	13NC28STW16	Water	9/8/2013 15:35	Surface	8082A	TestAmerica Denver		13NC28STW16	JC/EB	None	091113-06	10_Days	Amber Glass 1 liter - unpreserved
280-46550-5	13NC28STW17	Water	9/9/2013 10:00	Surface	8082A	TestAmerica Denver	MS/MSD	13NC28STW17	JC/EB	None	091113-02	10_Days	Amber Glass 1 liter - unpreserved
280-46550-6	13NC28STW18	Water	9/9/2013 14:30	Surface	8082A	TestAmerica Denver		13NC28STW18	JC/EB	None	091113-04	10_Days	Amber Glass 1 liter - unpreserved
280-46550-7	13NC28STW19	Water	9/9/2013 14:45	Surface	8082A	TestAmerica Denver	Field Duplicate of 13NC28STW18	13NC28STW19	JC/EB	None	091113-04	10_Days	Amber Glass 1 liter - unpreserved
280-46550-8	13NC28TWA15	Water	9/9/2013 16:40	Surface	8082A	TestAmerica Denver		13NC28TWA15	JC/EB	None	091113-01	10_Days	Amber Glass 1 liter - unpreserved
280-46550-9	13NC28TWA16	Water	9/10/2013 10:30	Surface	8082A	TestAmerica Denver		13NC28TWA16	JC/EB	None	091113-06	10_Days	Amber Glass 1 liter - unpreserved
280-46550-10	13NC28STW20	Water	9/10/2013 10:00	Surface	8260B/DoD	TestAmerica Denver		13NC28STW20	JC/EB	Hydrochloric Acid	091113-05	10_Days	Voa Vial 40ml - Hydrochloric Acid
280-46550-11	13NC28STW15	Water	9/7/2013 15:40	Surface	8260B/DoD	TestAmerica Denver	MS/MSD	13NC28STW15	JC/EB	Hydrochloric Acid	091113-05	10_Days	Voa Vial 40ml - Hydrochloric Acid
280-46550-2	13NC28TWA13	Water	9/7/2013 13:10	Surface	8260B/DoD	TestAmerica Denver		13NC28TWA13	JC/EB	Hydrochloric Acid	091113-05	10_Days	Voa Vial 40ml - Hydrochloric Acid
280-46550-3	13NC28TWA14	Water	9/8/2013 7:45	Surface	8260B/DoD	TestAmerica Denver		13NC28TWA14	JC/EB	Hydrochloric Acid	091113-05	10_Days	Voa Vial 40ml - Hydrochloric Acid
280-46550-4	13NC28STW16	Water	9/8/2013 15:35	Surface	8260B/DoD	TestAmerica Denver		13NC28STW16	JC/EB	Hydrochloric Acid	091113-05	10_Days	Voa Vial 40ml - Hydrochloric Acid
280-46550-5	13NC28STW17	Water	9/9/2013 10:00	Surface	8260B/DoD	TestAmerica Denver	MS/MSD	13NC28STW17	JC/EB	Hydrochloric Acid	091113-05	10_Days	Voa Vial 40ml - Hydrochloric Acid
280-46550-6	13NC28STW18	Water	9/9/2013 14:30	Surface	8260B/DoD	TestAmerica Denver		13NC28STW18	JC/EB	Hydrochloric Acid	091113-05	10_Days	Voa Vial 40ml - Hydrochloric Acid
280-46550-7	13NC28STW19	Water	9/9/2013 14:45	Surface	8260B/DoD	TestAmerica Denver	Field Duplicate of 13NC28STW18	13NC28STW19	JC/EB	Hydrochloric Acid	091113-05	10_Days	Voa Vial 40ml - Hydrochloric Acid
280-46550-8	13NC28TWA15	Water	9/9/2013 16:40	Surface	8260B/DoD	TestAmerica Denver		13NC28TWA15	JC/EB	Hydrochloric Acid	091113-05	10_Days	Voa Vial 40ml - Hydrochloric Acid
280-46550-9	13NC28TWA16	Water	9/10/2013 10:30	Surface	8260B/DoD	TestAmerica Denver		13NC28TWA16	JC/EB	Hydrochloric Acid	091113-05	10_Days	Voa Vial 40ml - Hydrochloric Acid
280-46550-10	13NC28STW20	Water	9/10/2013 10:00	Surface	8270C SIM/DoD	TestAmerica Denver		13NC28STW20	JC/EB	None	091113-03	10_Days	Amber Glass 1 liter - unpreserved
280-46550-11	13NC28STW15	Water	9/7/2013 15:40	Surface	8270C SIM/DoD	TestAmerica Denver	MS/MSD	13NC28STW15	JC/EB	None	091113-01	10_Days	Amber Glass 1 liter - unpreserved
280-46550-2	13NC28TWA13	Water	9/7/2013 13:10	Surface	8270C SIM/DoD	TestAmerica Denver		13NC28TWA13	JC/EB	None	091113-07	10_Days	Amber Glass 1 liter - unpreserved
280-46550-3	13NC28TWA14	Water	9/8/2013 7:45	Surface	8270C SIM/DoD	TestAmerica Denver		13NC28TWA14	JC/EB	None	091113-03	10_Days	Amber Glass 1 liter - unpreserved
280-46550-4	13NC28STW16	Water	9/8/2013 15:35	Surface	8270C SIM/DoD	TestAmerica Denver		13NC28STW16	JC/EB	None	091113-06	10_Days	Amber Glass 1 liter - unpreserved
280-46550-5	13NC28STW17	Water	9/9/2013 10:00	Surface	8270C SIM/DoD	TestAmerica Denver	MS/MSD	13NC28STW17	JC/EB	None	091113-02	10_Days	Amber Glass 1 liter - unpreserved
280-46550-6	13NC28STW18	Water	9/9/2013 14:30	Surface	8270C SIM/DoD	TestAmerica Denver		13NC28STW18	JC/EB	None	091113-04	10_Days	Amber Glass 1 liter - unpreserved
280-46550-7	13NC28STW19	Water	9/9/2013 14:45	Surface	8270C SIM/DoD	TestAmerica Denver	Field Duplicate of 13NC28STW18	13NC28STW19	JC/EB	None	091113-04	10_Days	Amber Glass 1 liter - unpreserved
280-46550-8	13NC28TWA15	Water	9/9/2013 16:40	Surface	8270C SIM/DoD	TestAmerica Denver		13NC28TWA15	JC/EB	None	091113-01	10_Days	Amber Glass 1 liter - unpreserved
280-46550-9	13NC28TWA16	Water	9/10/2013 10:30	Surface	8270C SIM/DoD	TestAmerica Denver		13NC28TWA16	JC/EB	None	091113-06	10_Days	Amber Glass 1 liter - unpreserved
280-46550-10	13NC28STW20	Water	9/10/2013 10:00	Surface	AK102 & 103	TestAmerica Denver		13NC28STW20	JC/EB	Hydrochloric Acid	091113-03	10_Days	Amber Glass 1 liter - Hydrochloric
280-46550-11	13NC28STW15	Water	9/7/2013 15:40	Surface	AK102 & 103	TestAmerica Denver	MS/MSD	13NC28STW15	JC/EB	Hydrochloric Acid	091113-01	10_Days	Amber Glass 1 liter - Hydrochloric
280-46550-2	13NC28TWA13	Water	9/7/2013 13:10	Surface	AK102 & 103	TestAmerica Denver		13NC28TWA13	JC/EB	Hydrochloric Acid	091113-07	10_Days	Amber Glass 1 liter - Hydrochloric
280-46550-3	13NC28TWA14	Water	9/8/2013 7:45	Surface	AK102 & 103	TestAmerica Denver		13NC28TWA14	JC/EB	Hydrochloric Acid	091113-03	10_Days	Amber Glass 1 liter - Hydrochloric
280-46550-4	13NC28STW16	Water	9/8/2013 15:35	Surface	AK102 & 103	TestAmerica Denver		13NC28STW16	JC/EB	Hydrochloric Acid	091113-06	10_Days	Amber Glass 1 liter - Hydrochloric
280-46550-5	13NC28STW17	Water	9/9/2013 10:00	Surface	AK102 & 103	TestAmerica Denver	MS/MSD	13NC28STW17	JC/EB	Hydrochloric Acid	091113-02	10_Days	Amber Glass 1 liter - Hydrochloric
280-46550-6	13NC28STW18	Water	9/9/2013 14:30	Surface	AK102 & 103	TestAmerica Denver		13NC28STW18	JC/EB	Hydrochloric Acid	091113-04	10_Days	Amber Glass 1 liter - Hydrochloric
280-46550-7	13NC28STW19	Water	9/9/2013 14:45	Surface	AK102 & 103	TestAmerica Denver	Field Duplicate of 13NC28STW18	13NC28STW19	JC/EB	Hydrochloric Acid	091113-04	10_Days	Amber Glass 1 liter - Hydrochloric
280-46550-8	13NC28TWA15	Water	9/9/2013 16:40	Surface	AK102 & 103	TestAmerica Denver		13NC28TWA15	JC/EB	Hydrochloric Acid	091113-01	10_Days	Amber Glass 1 liter - Hydrochloric
280-46550-9	13NC28TWA16	Water	9/10/2013 10:30	Surface	AK102 & 103	TestAmerica Denver		13NC28TWA16	JC/EB	Hydrochloric Acid	091113-06	10_Days	Amber Glass 1 liter - Hydrochloric
580-39336-2 TCLP Arsenic													
580-39336-19	13NC21SS07-0.5	Solid	7/11/2013 13:30	0.5 ft	6020	TestAmerica Seattle	MS/MSD	13NC21SB07	EB/JC	None	071213-2	3_Days	Soil jar 4oz
580-39444-1 MOC Groundwater													
580-39444-1	13NCMOCGW01	Water	7/19/2013 11:30	41 ft BTOC	6020	TestAmerica Seattle	MS/MSD	26MW-1	JC	Nitric Acid	072213-01	10_Days	Plastic 250ml - w/nitric - dis
580-39444-2	13NCMOCGW02	Water	7/19/2013 15:40	32.5 ft BTOC	6020	TestAmerica Seattle		22MW-2	JC	Nitric Acid	072213-02	10_Days	Plastic 250ml - w/nitric - dis
580-39444-3	13NCMOCGW03	Water	7/20/2013 10:30	16 ft BTOC	6020	TestAmerica Seattle		17MW-01	JC	Nitric Acid	072213-02	10_Days	Plastic 250ml - w/nitric - dis

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39444-4	13NCMOCGW04	Water	7/20/2013 14:25	11 ft BTOC	6020	TestAmerica Seattle		MW10-1	JC	Nitric Acid	072213-03	10_Days	Plastic 250ml - w/nitric - dis
580-39444-5	13NCMOCGW05	Water	7/20/2013 16:25	27.5 ft BTOC	6020	TestAmerica Seattle		20MW-1	JC	Nitric Acid	072213-03	10_Days	Plastic 250ml - w/nitric - dis
580-39444-6	13NCMOCGW06	Water	7/21/2013 10:15	25 ft BTOC	6020	TestAmerica Seattle		MW88-10	JC	Nitric Acid	072213-04	10_Days	Plastic 250ml - w/nitric - dis
580-39444-7	13NCMOCGW07	Water	7/21/2013 11:00	25 ft BTOC	6020	TestAmerica Seattle	Field Duplicate of 13NCMOCGW06	MW88-10	JC	Nitric Acid	072213-04	10_Days	Plastic 250ml - w/nitric - dis
580-39444-8	13NCMOCGW08	Water	7/21/2013 13:00	22 ft BTOC	6020	TestAmerica Seattle		MW88-1	JC	Nitric Acid	072213-05	10_Days	Plastic 250ml - w/nitric - dis
580-39444-1	13NCMOCGW01	Water	7/19/2013 11:30	41 ft BTOC	7470A	TestAmerica Seattle	MS/MSD	26MW-1	JC	Nitric Acid	072213-01	10_Days	Plastic 250ml - with Nitric Acid
580-39444-1	13NCMOCGW01	Water	7/19/2013 11:30	41 ft BTOC	7470A	TestAmerica Seattle	MS/MSD	26MW-1	JC	None	072213-04	10_Days	Amber Glass 1 liter - unpreserved
580-39444-2	13NCMOCGW02	Water	7/19/2013 15:40	32.5 ft BTOC	7470A	TestAmerica Seattle		22MW-2	JC	Nitric Acid	072213-02	10_Days	Plastic 250ml - w/nitric - dis
580-39444-3	13NCMOCGW03	Water	7/20/2013 10:30	16 ft BTOC	7470A	TestAmerica Seattle		17MW-01	JC	Nitric Acid	072213-02	10_Days	Plastic 250ml - w/nitric - dis
580-39444-4	13NCMOCGW04	Water	7/20/2013 14:25	11 ft BTOC	7470A	TestAmerica Seattle		MW10-1	JC	Nitric Acid	072213-03	10_Days	Plastic 250ml - w/nitric - dis
580-39444-5	13NCMOCGW05	Water	7/20/2013 16:25	27.5 ft BTOC	7470A	TestAmerica Seattle		20MW-1	JC	Nitric Acid	072213-03	10_Days	Plastic 250ml - w/nitric - dis
580-39444-6	13NCMOCGW06	Water	7/21/2013 10:15	25 ft BTOC	7470A	TestAmerica Seattle		MW88-10	JC	Nitric Acid	072213-04	10_Days	Plastic 250ml - w/nitric - dis
580-39444-7	13NCMOCGW07	Water	7/21/2013 11:00	25 ft BTOC	7470A	TestAmerica Seattle	Field Duplicate of 13NCMOCGW06	MW88-10	JC	Nitric Acid	072213-04	10_Days	Plastic 250ml - w/nitric - dis
580-39444-8	13NCMOCGW08	Water	7/21/2013 13:00	22 ft BTOC	7470A	TestAmerica Seattle		MW88-1	JC	Nitric Acid	072213-05	10_Days	Plastic 250ml - w/nitric - dis
580-39444-1	13NCMOCGW01	Water	7/19/2013 11:30	41 ft BTOC	8082	TestAmerica Seattle	MS/MSD	26MW-1	JC	None	072213-03	10_Days	Amber Glass 1 liter - unpreserved
580-39444-2	13NCMOCGW02	Water	7/19/2013 15:40	32.5 ft BTOC	8082	TestAmerica Seattle		22MW-2	JC	None	072213-03	10_Days	Amber Glass 1 liter - unpreserved
580-39444-3	13NCMOCGW03	Water	7/20/2013 10:30	16 ft BTOC	8082	TestAmerica Seattle		17MW-01	JC	None	072213-05	10_Days	Amber Glass 1 liter - unpreserved
580-39444-4	13NCMOCGW04	Water	7/20/2013 14:25	11 ft BTOC	8082	TestAmerica Seattle		MW10-1	JC	None	072213-06	10_Days	Amber Glass 1 liter - unpreserved
580-39444-5	13NCMOCGW05	Water	7/20/2013 16:25	27.5 ft BTOC	8082	TestAmerica Seattle		20MW-1	JC	None	072213-06	10_Days	Amber Glass 1 liter - unpreserved
580-39444-6	13NCMOCGW06	Water	7/21/2013 10:15	25 ft BTOC	8082	TestAmerica Seattle		MW88-10	JC	None	072213-06	10_Days	Amber Glass 1 liter - unpreserved
580-39444-7	13NCMOCGW07	Water	7/21/2013 11:00	25 ft BTOC	8082	TestAmerica Seattle	Field Duplicate of 13NCMOCGW06	MW88-10	JC	None	072213-06	10_Days	Amber Glass 1 liter - unpreserved
580-39444-8	13NCMOCGW08	Water	7/21/2013 13:00	22 ft BTOC	8082	TestAmerica Seattle		MW88-1	JC	None	072213-04	10_Days	Amber Glass 1 liter - unpreserved
580-39444-1	13NCMOCGW01	Water	7/19/2013 11:30	41 ft BTOC	8260B/DoD	TestAmerica Seattle	MS/MSD	26MW-1	JC	Nitric Acid	072213-01	10_Days	Plastic 250ml - w/nitric - dis
580-39444-2	13NCMOCGW02	Water	7/19/2013 15:40	32.5 ft BTOC	8260B/DoD	TestAmerica Seattle		22MW-2	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-3	13NCMOCGW03	Water	7/20/2013 10:30	16 ft BTOC	8260B/DoD	TestAmerica Seattle		17MW-01	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-4	13NCMOCGW04	Water	7/20/2013 14:25	11 ft BTOC	8260B/DoD	TestAmerica Seattle		MW10-1	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-5	13NCMOCGW05	Water	7/20/2013 16:25	27.5 ft BTOC	8260B/DoD	TestAmerica Seattle		20MW-1	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-6	13NCMOCGW06	Water	7/21/2013 10:15	25 ft BTOC	8260B/DoD	TestAmerica Seattle		MW88-10	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-7	13NCMOCGW07	Water	7/21/2013 11:00	25 ft BTOC	8260B/DoD	TestAmerica Seattle	Field Duplicate of 13NCMOCGW06	MW88-10	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-8	13NCMOCGW08	Water	7/21/2013 13:00	22 ft BTOC	8260B/DoD	TestAmerica Seattle		MW88-1	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-1	13NCMOCGW01	Water	7/19/2013 11:30	41 ft BTOC	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	26MW-1	JC	None	072213-03	10_Days	Amber Glass 1 liter - unpreserved
580-39444-2	13NCMOCGW02	Water	7/19/2013 15:40	32.5 ft BTOC	8270C SIM/DoD	TestAmerica Seattle		22MW-2	JC	None	072213-05	10_Days	Amber Glass 1 liter - unpreserved
580-39444-3	13NCMOCGW03	Water	7/20/2013 10:30	16 ft BTOC	8270C SIM/DoD	TestAmerica Seattle		17MW-01	JC	None	072213-03	10_Days	Amber Glass 1 liter - unpreserved
580-39444-4	13NCMOCGW04	Water	7/20/2013 14:25	11 ft BTOC	8270C SIM/DoD	TestAmerica Seattle		MW10-1	JC	None	072213-04	10_Days	Amber Glass 1 liter - unpreserved
580-39444-5	13NCMOCGW05	Water	7/20/2013 16:25	27.5 ft BTOC	8270C SIM/DoD	TestAmerica Seattle		20MW-1	JC	None	072213-04	10_Days	Amber Glass 1 liter - unpreserved
580-39444-6	13NCMOCGW06	Water	7/21/2013 10:15	25 ft BTOC	8270C SIM/DoD	TestAmerica Seattle		MW88-10	JC	None	072213-04	10_Days	Amber Glass 1 liter - unpreserved
580-39444-7	13NCMOCGW07	Water	7/21/2013 11:00	25 ft BTOC	8270C SIM/DoD	TestAmerica Seattle	Field Duplicate of 13NCMOCGW06	MW88-10	JC	None	072213-04	10_Days	Amber Glass 1 liter - unpreserved
580-39444-8	13NCMOCGW08	Water	7/21/2013 13:00	22 ft BTOC	8270C SIM/DoD	TestAmerica Seattle		MW88-1	JC	None	072213-06	10_Days	Amber Glass 1 liter - unpreserved
580-39444-1	13NCMOCGW01	Water	7/19/2013 11:30	41 ft BTOC	AK101	TestAmerica Seattle	MS/MSD	26MW-1	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-2	13NCMOCGW02	Water	7/19/2013 15:40	32.5 ft BTOC	AK101	TestAmerica Seattle		22MW-2	JC	Hydrochloric Acid	072213-02	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-3	13NCMOCGW03	Water	7/20/2013 10:30	16 ft BTOC	AK101	TestAmerica Seattle		17MW-01	JC	Hydrochloric Acid	072213-02	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-4	13NCMOCGW04	Water	7/20/2013 14:25	11 ft BTOC	AK101	TestAmerica Seattle		MW10-1	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-5	13NCMOCGW05	Water	7/20/2013 16:25	27.5 ft BTOC	AK101	TestAmerica Seattle		20MW-1	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-6	13NCMOCGW06	Water	7/21/2013 10:15	25 ft BTOC	AK101	TestAmerica Seattle		MW88-10	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-7	13NCMOCGW07	Water	7/21/2013 11:00	25 ft BTOC	AK101	TestAmerica Seattle	Field Duplicate of 13NCMOCGW06	MW88-10	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-8	13NCMOCGW08	Water	7/21/2013 13:00	22 ft BTOC	AK101	TestAmerica Seattle		MW88-1	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-1	13NCMOCGW01	Water	7/19/2013 11:30	41 ft BTOC	AK102 & 103	TestAmerica Seattle	MS/MSD	26MW-1	JC	Hydrochloric Acid	072213-01	10_Days	Amber Glass 1 liter - Hydrochloric
580-39444-2	13NCMOCGW02	Water	7/19/2013 15:40	32.5 ft BTOC	AK102 & 103	TestAmerica Seattle		22MW-2	JC	Hydrochloric Acid	072213-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-39444-3	13NCMOCGW03	Water	7/20/2013 10:30	16 ft BTOC	AK102 & 103	TestAmerica Seattle		17MW-01	JC	Hydrochloric Acid	072213-01	10_Days	Amber Glass 1 liter - Hydrochloric
580-39444-4	13NCMOCGW04	Water	7/20/2013 14:25	11 ft BTOC	AK102 & 103	TestAmerica Seattle		MW10-1	JC	Hydrochloric Acid	072213-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-39444-5	13NCMOCGW05	Water	7/20/2013 16:25	27.5 ft BTOC	AK102 & 103	TestAmerica Seattle		20MW-1	JC	Hydrochloric Acid	072213-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-39444-6	13NCMOCGW06	Water	7/21/2013 10:15	25 ft BTOC	AK102 & 103	TestAmerica Seattle		MW88-10	JC	Hydrochloric Acid	072213-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-39444-7	13NCMOCGW07	Water	7/21/2013 11:00	25 ft BTOC	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NCMOCGW06	MW88-10	JC	Hydrochloric Acid	072213-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-39444-8	13NCMOCGW08	Water	7/21/2013 13:00	22 ft BTOC	AK102 & 103	TestAmerica Seattle		MW88-1	JC	Hydrochloric Acid	072213-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-39444-1	13NCMOCGW01	Water	7/19/2013 11:30	41 ft BTOC	RSK-175	TestAmerica Denver	MS/MSD	26MW-1	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-2	13NCMOCGW02	Water	7/19/2013 15:40	32.5 ft BTOC	RSK-175	TestAmerica Denver		22MW-2	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-3	13NCMOCGW03	Water	7/20/2013 10:30	16 ft BTOC	RSK-175	TestAmerica Denver		17MW-01	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-4	13NCMOCGW04	Water	7/20/2013 14:25	11 ft BTOC	RSK-175	TestAmerica Denver		MW10-1	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-5	13NCMOCGW05	Water	7/20/2013 16:25	27.5 ft BTOC	RSK-175	TestAmerica Denver		20MW-1	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-6	13NCMOCGW06	Water	7/21/2013 10:15	25 ft BTOC	RSK-175	TestAmerica Denver		MW88-10	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-7	13NCMOCGW07	Water	7/21/2013 11:00	25 ft BTOC	RSK-175	TestAmerica Denver	Field Duplicate of 13NCMOCGW06	MW88-10	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39444-8	13NCMOCGW08	Water	7/21/2013 13:00	22 ft BTOC	RSK-175	TestAmerica Denver		MW88-1	JC	Hydrochloric Acid	072213-07	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-39655-1 Site 10 Glycol													
580-39655-1	13NC10SS26	Solid	8/5/2013 9:40	75 ft amsl	8015C	TestAmerica Denver		13NC10SS26	LK			3_Day_RUSH	
580-39655-2	13NC10SS27	Solid	8/5/2013 9:45	75 ft amsl	8015C	TestAmerica Denver	MS/MSD	13NC10SS27	LK			3_Day_RUSH	
580-39655-3	13NC10SS28	Solid	8/5/2013 9:50	75 ft amsl	8015C	TestAmerica Denver		13NC10SS28	LK			3_Day_RUSH	
580-39655-4	13NC10SS29	Solid	8/5/2013 9:55	75 ft amsl	8015C	TestAmerica Denver		13NC10SS29	LK			3_Day_RUSH	
580-39655-5	13NC10SS30	Solid	8/5/2013 10:00	75 ft amsl	8015C	TestAmerica Denver		13NC10SS30	LK			3_Day_RUSH	
580-39655-1	13NC10SS26	Solid	8/5/2013 9:40	75 ft amsl	Moisture	TestAmerica Denver		13NC10SS26	LK			3_Day_RUSH	
580-39655-2	13NC10SS27	Solid	8/5/2013 9:45	75 ft amsl	Moisture	TestAmerica Denver	MS/MSD	13NC10SS27	LK			3_Day_RUSH	
580-39655-3	13NC10SS28	Solid	8/5/2013 9:50	75 ft amsl	Moisture	TestAmerica Denver		13NC10SS28	LK			3_Day_RUSH	
580-39655-4	13NC10SS29	Solid	8/5/2013 9:55	75 ft amsl	Moisture	TestAmerica Denver		13NC10SS29	LK			3_Day_RUSH	
580-39655-5	13NC10SS30	Solid	8/5/2013 10:00	74 ft amsl	Moisture	TestAmerica Denver		13NC10SS30	LK			3_Day_RUSH	
580-39724-1 Site 28 Downstream Monitoring													
580-39724-1	13NC28STW03	Water	8/6/2013 16:30	Surface	6020	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	080913-02	15_Days	Plastic 250ml - with Nitric Acid

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39724-2	13NC28DSW01	Water	8/7/2013 14:45	Surface	6020	TestAmerica Seattle	MS/MSD	28-SW-01	JC	Nitric Acid	080913-06	15_Days	Plastic 250ml - with Nitric Acid
580-39724-3	13NC28DSW02	Water	8/7/2013 15:25	Surface	6020	TestAmerica Seattle		28-SW-02	JC	Nitric Acid	080913-06	15_Days	Plastic 250ml - with Nitric Acid
580-39724-4	13NC28DSW03	Water	8/7/2013 15:50	Surface	6020	TestAmerica Seattle		28-SW-03	JC	Nitric Acid	080913-02	15_Days	Plastic 250ml - with Nitric Acid
580-39724-5	13NC28STW04	Water	8/8/2013 11:30	Surface	6020	TestAmerica Seattle	Field Duplicate of 13NC28STW05	28-SW-01	JC	Nitric Acid	080913-02	15_Days	Plastic 250ml - with Nitric Acid
580-39724-6	13NC28STW05	Water	8/8/2013 11:45	Surface	6020	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	080913-02	15_Days	Plastic 250ml - with Nitric Acid
580-39724-1	13NC28STW03	Water	8/6/2013 16:30	Surface	7470A	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	080913-02	15_Days	Plastic 250ml - with Nitric Acid
580-39724-2	13NC28DSW01	Water	8/7/2013 14:45	Surface	7470A	TestAmerica Seattle	MS/MSD	28-SW-01	JC	Nitric Acid	080913-06	15_Days	Plastic 250ml - with Nitric Acid
580-39724-3	13NC28DSW02	Water	8/7/2013 15:25	Surface	7470A	TestAmerica Seattle		28-SW-02	JC	Nitric Acid	080913-06	15_Days	Plastic 250ml - with Nitric Acid
580-39724-4	13NC28DSW03	Water	8/7/2013 15:50	Surface	7470A	TestAmerica Seattle		28-SW-03	JC	Nitric Acid	080913-02	15_Days	Plastic 250ml - with Nitric Acid
580-39724-5	13NC28STW04	Water	8/8/2013 11:30	Surface	7470A	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	080913-02	15_Days	Plastic 250ml - with Nitric Acid
580-39724-6	13NC28STW05	Water	8/8/2013 11:45	Surface	7470A	TestAmerica Seattle		28-SW-01	JC	Nitric Acid	080913-02	15_Days	Plastic 250ml - with Nitric Acid
580-39724-1	13NC28STW03	Water	8/6/2013 16:30	Surface	8082	TestAmerica Seattle		28-SW-01	JC	None	080913-02	15_Days	Amber Glass 1 liter - unpreserved
580-39724-2	13NC28DSW01	Water	8/7/2013 14:45	Surface	8082	TestAmerica Seattle	MS/MSD	28-SW-01	JC	None	080913-04	15_Days	Amber Glass 1 liter - unpreserved
580-39724-3	13NC28DSW02	Water	8/7/2013 15:25	Surface	8082	TestAmerica Seattle		28-SW-02	JC	None	080913-05	15_Days	Amber Glass 1 liter - unpreserved
580-39724-4	13NC28DSW03	Water	8/7/2013 15:50	Surface	8082	TestAmerica Seattle		28-SW-03	JC	None	080913-05	15_Days	Amber Glass 1 liter - unpreserved
580-39724-5	13NC28STW04	Water	8/8/2013 11:30	Surface	8082	TestAmerica Seattle		28-SW-01	JC	None	080913-03	15_Days	Amber Glass 1 liter - unpreserved
580-39724-6	13NC28STW05	Water	8/8/2013 11:45	Surface	8082	TestAmerica Seattle		28-SW-01	JC	None	080913-03	15_Days	Amber Glass 1 liter - unpreserved
580-39724-1	13NC28STW03	Water	8/6/2013 16:30	Surface	8260B/DoD	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	080913-06	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-39724-2	13NC28DSW01	Water	8/7/2013 14:45	Surface	8260B/DoD	TestAmerica Seattle	MS/MSD	28-SW-01	JC	Hydrochloric Acid	080913-06	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-39724-3	13NC28DSW02	Water	8/7/2013 15:25	Surface	8260B/DoD	TestAmerica Seattle		28-SW-02	JC	Hydrochloric Acid	080913-06	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-39724-4	13NC28DSW03	Water	8/7/2013 15:50	Surface	8260B/DoD	TestAmerica Seattle		28-SW-03	JC	Hydrochloric Acid	080913-06	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-39724-5	13NC28STW04	Water	8/8/2013 11:30	Surface	8260B/DoD	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	080913-06	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-39724-6	13NC28STW05	Water	8/8/2013 11:45	Surface	8260B/DoD	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	080913-06	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-39724-1	13NC28STW03	Water	8/6/2013 16:30	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-01	JC	None	080913-02	15_Days	Amber Glass 1 liter - unpreserved
580-39724-2	13NC28DSW01	Water	8/7/2013 14:45	Surface	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	28-SW-01	JC	None	080913-03	15_Days	Amber Glass 1 liter - unpreserved
580-39724-3	13NC28DSW02	Water	8/7/2013 15:25	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-02	JC	None	080913-04	15_Days	Amber Glass 1 liter - unpreserved
580-39724-4	13NC28DSW03	Water	8/7/2013 15:50	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-03	JC	None	080913-04	15_Days	Amber Glass 1 liter - unpreserved
580-39724-5	13NC28STW04	Water	8/8/2013 11:30	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-01	JC	None	080913-03	15_Days	Amber Glass 1 liter - unpreserved
580-39724-6	13NC28STW05	Water	8/8/2013 11:45	Surface	8270C SIM/DoD	TestAmerica Seattle		28-SW-01	JC	None	080913-03	15_Days	Amber Glass 1 liter - unpreserved
580-39724-1	13NC28STW03	Water	8/6/2013 16:30	Surface	AK102 & 103	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	080913-01	15_Days	Amber Glass 1 liter - Hydrochloric
580-39724-2	13NC28DSW01	Water	8/7/2013 14:45	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	28-SW-01	JC	Hydrochloric Acid	080913-01	15_Days	Amber Glass 1 liter - Hydrochloric
580-39724-3	13NC28DSW02	Water	8/7/2013 15:25	Surface	AK102 & 103	TestAmerica Seattle		28-SW-02	JC	Hydrochloric Acid	080913-01	15_Days	Amber Glass 1 liter - Hydrochloric
580-39724-4	13NC28DSW03	Water	8/7/2013 15:50	Surface	AK102 & 103	TestAmerica Seattle		28-SW-03	JC	None	080913-05	15_Days	Amber Glass 1 liter - unpreserved
580-39724-5	13NC28STW04	Water	8/8/2013 11:30	Surface	AK102 & 103	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	080913-02	15_Days	Amber Glass 1 liter - Hydrochloric
580-39724-6	13NC28STW05	Water	8/8/2013 11:45	Surface	AK102 & 103	TestAmerica Seattle		28-SW-01	JC	Hydrochloric Acid	080913-01	15_Days	Amber Glass 1 liter - Hydrochloric
580-39755-1 Site 28 Confirmation Samples													
580-39755-1	13NC28SS001	Solid	8/5/2013 14:50	0-0.5 ft	6020	TestAmerica Seattle	MS/MSD	028-001	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-10	13NC28SS010	Solid	8/11/2013 10:05	0-0.5 ft	6020	TestAmerica Seattle		028-009	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-11	13NC28SS011	Solid	8/11/2013 10:15	0-0.5 ft	6020	TestAmerica Seattle		028-010	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-12	13NC28SS012	Solid	8/11/2013 10:25	0-0.5 ft	6020	TestAmerica Seattle		028-011	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-13	13NC28SS013	Solid	8/11/2013 10:35	0-0.5 ft	6020	TestAmerica Seattle		028-012	JC	None	081213-2	15_Days	Soil jar 16oz
580-39755-2	13NC28SS002	Solid	8/5/2013 15:15	0-0.5 ft	6020	TestAmerica Seattle		028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-3	13NC28SS003	Solid	8/5/2013 15:20	0-0.5 ft	6020	TestAmerica Seattle	Field Duplicate of 13NC28SS002	028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-4	13NC28SS004	Solid	8/5/2013 15:35	0-0.5 ft	6020	TestAmerica Seattle		028-003	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-5	13NC28SS005	Solid	8/5/2013 15:55	0-0.5 ft	6020	TestAmerica Seattle		028-004	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-6	13NC28SS006	Solid	8/5/2013 16:25	0-0.5 ft	6020	TestAmerica Seattle		028-005	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-7	13NC28SS007	Solid	8/5/2013 16:45	0-0.5 ft	6020	TestAmerica Seattle		028-006	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-8	13NC28SS008	Solid	8/11/2013 9:40	0-0.5 ft	6020	TestAmerica Seattle	MS/MSD	028-007	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-9	13NC28SS009	Solid	8/11/2013 9:50	0-0.5 ft	6020	TestAmerica Seattle		028-008	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-1	13NC28SS001	Solid	8/5/2013 14:50	0-0.5 ft	7471A	TestAmerica Seattle	MS/MSD	028-001	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-10	13NC28SS010	Solid	8/11/2013 10:05	0-0.5 ft	7471A	TestAmerica Seattle		028-009	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-11	13NC28SS011	Solid	8/11/2013 10:15	0-0.5 ft	7471A	TestAmerica Seattle		028-010	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-12	13NC28SS012	Solid	8/11/2013 10:25	0-0.5 ft	7471A	TestAmerica Seattle		028-011	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-13	13NC28SS013	Solid	8/11/2013 10:35	0-0.5 ft	7471A	TestAmerica Seattle		028-012	JC	None	081213-2	15_Days	Soil jar 16oz
580-39755-2	13NC28SS002	Solid	8/5/2013 15:15	0-0.5 ft	7471A	TestAmerica Seattle		028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-3	13NC28SS003	Solid	8/5/2013 15:20	0-0.5 ft	7471A	TestAmerica Seattle	Field Duplicate of 13NC28SS002	028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-4	13NC28SS004	Solid	8/5/2013 15:35	0-0.5 ft	7471A	TestAmerica Seattle		028-003	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-5	13NC28SS005	Solid	8/5/2013 15:55	0-0.5 ft	7471A	TestAmerica Seattle		028-004	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-6	13NC28SS006	Solid	8/5/2013 16:25	0-0.5 ft	7471A	TestAmerica Seattle		028-005	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-7	13NC28SS007	Solid	8/5/2013 16:45	0-0.5 ft	7471A	TestAmerica Seattle		028-006	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-8	13NC28SS008	Solid	8/11/2013 9:40	0-0.5 ft	7471A	TestAmerica Seattle	MS/MSD	028-007	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-9	13NC28SS009	Solid	8/11/2013 9:50	0-0.5 ft	7471A	TestAmerica Seattle		028-008	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-1	13NC28SS001	Solid	8/5/2013 14:50	0-0.5 ft	8082	TestAmerica Seattle	MS/MSD	028-001	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-10	13NC28SS010	Solid	8/11/2013 10:05	0-0.5 ft	8082	TestAmerica Seattle		028-009	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-11	13NC28SS011	Solid	8/11/2013 10:15	0-0.5 ft	8082	TestAmerica Seattle		028-010	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-12	13NC28SS012	Solid	8/11/2013 10:25	0-0.5 ft	8082	TestAmerica Seattle		028-011	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-13	13NC28SS013	Solid	8/11/2013 10:35	0-0.5 ft	8082	TestAmerica Seattle		028-012	JC	None	081213-2	15_Days	Soil jar 16oz
580-39755-2	13NC28SS002	Solid	8/5/2013 15:15	0-0.5 ft	8082	TestAmerica Seattle		028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-3	13NC28SS003	Solid	8/5/2013 15:20	0-0.5 ft	8082	TestAmerica Seattle	Field Duplicate of 13NC28SS002	028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-4	13NC28SS004	Solid	8/5/2013 15:35	0-0.5 ft	8082	TestAmerica Seattle		028-003	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-5	13NC28SS005	Solid	8/5/2013 15:55	0-0.5 ft	8082	TestAmerica Seattle		028-004	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-6	13NC28SS006	Solid	8/5/2013 16:25	0-0.5 ft	8082	TestAmerica Seattle		028-005	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-7	13NC28SS007	Solid	8/5/2013 16:45	0-0.5 ft	8082	TestAmerica Seattle		028-006	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-8	13NC28SS008	Solid	8/11/2013 9:40	0-0.5 ft	8082	TestAmerica Seattle	MS/MSD	028-007	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-9	13NC28SS009	Solid	8/11/2013 9:50	0-0.5 ft	8082	TestAmerica Seattle		028-008	JC	None	081213-1	15_Days	Soil jar 16oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39755-1	13NC28SS001	Solid	8/5/2013 14:50	0-0.5 ft	8260B/DoD	TestAmerica Seattle	MS/MSD	028-001	JC	Methanol	081213-2	15_Days	Soil jar 4oz - with Methanol
580-39755-10	13NC28SS010	Solid	8/11/2013 10:05	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-009	JC	Methanol	081213-2	15_Days	Soil jar 4oz - with Methanol
580-39755-11	13NC28SS011	Solid	8/11/2013 10:15	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-010	JC	Methanol	081213-2	15_Days	Soil jar 4oz - with Methanol
580-39755-12	13NC28SS012	Solid	8/11/2013 10:25	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-011	JC	Methanol	081213-2	15_Days	Soil jar 4oz - with Methanol
580-39755-13	13NC28SS013	Solid	8/11/2013 10:35	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-012	JC	Methanol	081213-2	15_Days	Soil jar 4oz - with Methanol
580-39755-2	13NC28SS002	Solid	8/5/2013 15:15	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-002	JC	Methanol	081213-2	15_Days	Soil jar 4oz - with Methanol
580-39755-3	13NC28SS003	Solid	8/5/2013 15:20	0-0.5 ft	8260B/DoD	TestAmerica Seattle	Field Duplicate of 13NC28SS002	028-002	JC	Methanol	081213-2	15_Days	Soil jar 4oz - with Methanol
580-39755-4	13NC28SS004	Solid	8/5/2013 15:35	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-003	JC	Methanol	081213-2	15_Days	Soil jar 4oz - with Methanol
580-39755-5	13NC28SS005	Solid	8/5/2013 15:55	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-004	JC	Methanol	081213-2	15_Days	Soil jar 4oz - with Methanol
580-39755-6	13NC28SS006	Solid	8/5/2013 16:25	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-005	JC	Methanol	081213-2	15_Days	Soil jar 4oz - with Methanol
580-39755-7	13NC28SS007	Solid	8/5/2013 16:45	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-006	JC	Methanol	081213-2	15_Days	Soil jar 4oz - with Methanol
580-39755-8	13NC28SS008	Solid	8/11/2013 9:40	0-0.5 ft	8260B/DoD	TestAmerica Seattle	MS/MSD	028-007	JC	Methanol	081213-2	15_Days	Soil jar 4oz - with Methanol
580-39755-9	13NC28SS009	Solid	8/11/2013 9:50	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-008	JC	Methanol	081213-2	15_Days	Soil jar 4oz - with Methanol
580-39755-1	13NC28SS001	Solid	8/5/2013 14:50	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	028-001	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-10	13NC28SS010	Solid	8/11/2013 10:05	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-009	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-11	13NC28SS011	Solid	8/11/2013 10:15	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-010	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-12	13NC28SS012	Solid	8/11/2013 10:25	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-011	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-13	13NC28SS013	Solid	8/11/2013 10:35	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-012	JC	None	081213-2	15_Days	Soil jar 16oz
580-39755-2	13NC28SS002	Solid	8/5/2013 15:15	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-3	13NC28SS003	Solid	8/5/2013 15:20	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle	Field Duplicate of 13NC28SS002	028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-4	13NC28SS004	Solid	8/5/2013 15:35	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-003	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-5	13NC28SS005	Solid	8/5/2013 15:55	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-004	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-6	13NC28SS006	Solid	8/5/2013 16:25	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-005	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-7	13NC28SS007	Solid	8/5/2013 16:45	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-006	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-8	13NC28SS008	Solid	8/11/2013 9:40	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	028-007	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-9	13NC28SS009	Solid	8/11/2013 9:50	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-008	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-1	13NC28SS001	Solid	8/5/2013 14:50	0-0.5 ft	9060	TestAmerica Seattle	MS/MSD	028-001	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-10	13NC28SS010	Solid	8/11/2013 10:05	0-0.5 ft	9060	TestAmerica Seattle		028-009	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-11	13NC28SS011	Solid	8/11/2013 10:15	0-0.5 ft	9060	TestAmerica Seattle		028-010	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-12	13NC28SS012	Solid	8/11/2013 10:25	0-0.5 ft	9060	TestAmerica Seattle		028-011	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-13	13NC28SS013	Solid	8/11/2013 10:35	0-0.5 ft	9060	TestAmerica Seattle		028-012	JC	None	081213-2	15_Days	Soil jar 16oz
580-39755-2	13NC28SS002	Solid	8/5/2013 15:15	0-0.5 ft	9060	TestAmerica Seattle		028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-3	13NC28SS003	Solid	8/5/2013 15:20	0-0.5 ft	9060	TestAmerica Seattle	Field Duplicate of 13NC28SS002	028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-4	13NC28SS004	Solid	8/5/2013 15:35	0-0.5 ft	9060	TestAmerica Seattle		028-003	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-5	13NC28SS005	Solid	8/5/2013 15:55	0-0.5 ft	9060	TestAmerica Seattle		028-004	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-6	13NC28SS006	Solid	8/5/2013 16:25	0-0.5 ft	9060	TestAmerica Seattle		028-005	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-7	13NC28SS007	Solid	8/5/2013 16:45	0-0.5 ft	9060	TestAmerica Seattle		028-006	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-8	13NC28SS008	Solid	8/11/2013 9:40	0-0.5 ft	9060	TestAmerica Seattle	MS/MSD	028-007	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-9	13NC28SS009	Solid	8/11/2013 9:50	0-0.5 ft	9060	TestAmerica Seattle		028-008	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-1	13NC28SS001	Solid	8/5/2013 14:50	0-0.5 ft	AK102 & 103	TestAmerica Seattle	MS/MSD	028-001	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-10	13NC28SS010	Solid	8/11/2013 10:05	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-009	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-11	13NC28SS011	Solid	8/11/2013 10:15	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-010	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-12	13NC28SS012	Solid	8/11/2013 10:25	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-011	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-13	13NC28SS013	Solid	8/11/2013 10:35	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-012	JC	None	081213-2	15_Days	Soil jar 16oz
580-39755-2	13NC28SS002	Solid	8/5/2013 15:15	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-3	13NC28SS003	Solid	8/5/2013 15:20	0-0.5 ft	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NC28SS002	028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-4	13NC28SS004	Solid	8/5/2013 15:35	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-003	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-5	13NC28SS005	Solid	8/5/2013 15:55	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-004	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-6	13NC28SS006	Solid	8/5/2013 16:25	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-005	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-7	13NC28SS007	Solid	8/5/2013 16:45	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-006	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-8	13NC28SS008	Solid	8/11/2013 9:40	0-0.5 ft	AK102 & 103	TestAmerica Seattle	MS/MSD	028-007	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-9	13NC28SS009	Solid	8/11/2013 9:50	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-008	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-1	13NC28SS001	Solid	8/5/2013 14:50	0-0.5 ft	AK102/103	TestAmerica Seattle	MS/MSD	028-001	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-10	13NC28SS010	Solid	8/11/2013 10:05	0-0.5 ft	AK102/103	TestAmerica Seattle		028-009	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-11	13NC28SS011	Solid	8/11/2013 10:15	0-0.5 ft	AK102/103	TestAmerica Seattle		028-010	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-12	13NC28SS012	Solid	8/11/2013 10:25	0-0.5 ft	AK102/103	TestAmerica Seattle		028-011	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-13	13NC28SS013	Solid	8/11/2013 10:35	0-0.5 ft	AK102/103	TestAmerica Seattle		028-012	JC	None	081213-2	15_Days	Soil jar 16oz
580-39755-2	13NC28SS002	Solid	8/5/2013 15:15	0-0.5 ft	AK102/103	TestAmerica Seattle		028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-3	13NC28SS003	Solid	8/5/2013 15:20	0-0.5 ft	AK102/103	TestAmerica Seattle	Field Duplicate of 13NC28SS002	028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-4	13NC28SS004	Solid	8/5/2013 15:35	0-0.5 ft	AK102/103	TestAmerica Seattle		028-003	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-5	13NC28SS005	Solid	8/5/2013 15:55	0-0.5 ft	AK102/103	TestAmerica Seattle		028-004	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-6	13NC28SS006	Solid	8/5/2013 16:25	0-0.5 ft	AK102/103	TestAmerica Seattle		028-005	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-7	13NC28SS007	Solid	8/5/2013 16:45	0-0.5 ft	AK102/103	TestAmerica Seattle		028-006	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-8	13NC28SS008	Solid	8/11/2013 9:40	0-0.5 ft	AK102/103	TestAmerica Seattle	MS/MSD	028-007	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-9	13NC28SS009	Solid	8/11/2013 9:50	0-0.5 ft	AK102/103	TestAmerica Seattle		028-008	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-1	13NC28SS001	Solid	8/5/2013 14:50	0-0.5 ft	D 2216	TestAmerica Seattle	MS/MSD	028-001	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-10	13NC28SS010	Solid	8/11/2013 10:05	0-0.5 ft	D 2216	TestAmerica Seattle		028-009	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-11	13NC28SS011	Solid	8/11/2013 10:15	0-0.5 ft	D 2216	TestAmerica Seattle		028-010	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-12	13NC28SS012	Solid	8/11/2013 10:25	0-0.5 ft	D 2216	TestAmerica Seattle		028-011	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-13	13NC28SS013	Solid	8/11/2013 10:35	0-0.5 ft	D 2216	TestAmerica Seattle		028-012	JC	None	081213-2	15_Days	Soil jar 16oz
580-39755-2	13NC28SS002	Solid	8/5/2013 15:15	0-0.5 ft	D 2216	TestAmerica Seattle		028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-3	13NC28SS003	Solid	8/5/2013 15:20	0-0.5 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NC28SS002	028-002	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-4	13NC28SS004	Solid	8/5/2013 15:35	0-0.5 ft	D 2216	TestAmerica Seattle		028-003	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-5	13NC28SS005	Solid	8/5/2013 15:55	0-0.5 ft	D 2216	TestAmerica Seattle		028-004	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-6	13NC28SS006	Solid	8/5/2013 16:25	0-0.5 ft	D 2216	TestAmerica Seattle		028-005	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-7	13NC28SS007	Solid	8/5/2013 16:45	0-0.5 ft	D 2216	TestAmerica Seattle		028-006	JC	None	081213-1	15_Days	Soil jar 16oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39755-8	13NC28SS008	Solid	8/11/2013 9:40	0-0.5 ft	D 2216	TestAmerica Seattle	MS/MSD	028-007	JC	None	081213-1	15_Days	Soil jar 16oz
580-39755-9	13NC28SS009	Solid	8/11/2013 9:50	0-0.5 ft	D 2216	TestAmerica Seattle		028-008	JC	None	081213-1	15_Days	Soil jar 16oz
580-39757-1 Pipeline Break													
580-39757-1	13NCPBSS01	Solid	8/10/2013 11:15	1 ft	8260B/DoD	TestAmerica Seattle		PBR-01-1	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-2	13NCPBSS02	Solid	8/10/2013 11:40	2 ft	8260B/DoD	TestAmerica Seattle		PBR-01-2	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-3	13NCPBSS03	Solid	8/10/2013 13:00	1 ft	8260B/DoD	TestAmerica Seattle		PBR-02-1	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-4	13NCPBSS04	Solid	8/10/2013 13:05	1 ft	8260B/DoD	TestAmerica Seattle	Field Duplicate of 13NCPBSS03	PBR-02-1	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-5	13NCPBSS05	Solid	8/10/2013 13:15	2 ft	8260B/DoD	TestAmerica Seattle		PBR-02-2	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-6	13NCPBSS06	Solid	8/10/2013 13:25	1 ft	8260B/DoD	TestAmerica Seattle		PBR-03-1	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-7	13NCPBSS07	Solid	8/10/2013 13:40	2 ft	8260B/DoD	TestAmerica Seattle		PBR-03-2	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-8	13NCPBSS08	Solid	8/10/2013 13:55	1 ft	8260B/DoD	TestAmerica Seattle		PBR-04-1	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-9	13NCPBSS09	Solid	8/10/2013 14:10	2 ft	8260B/DoD	TestAmerica Seattle	MS/MSD	PBR-04-2	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-1	13NCPBSS01	Solid	8/10/2013 11:15	1 ft	AK101	TestAmerica Seattle		PBR-01-1	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-2	13NCPBSS02	Solid	8/10/2013 11:40	2 ft	AK101	TestAmerica Seattle		PBR-01-2	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-3	13NCPBSS03	Solid	8/10/2013 13:00	1 ft	AK101	TestAmerica Seattle		PBR-02-1	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-4	13NCPBSS04	Solid	8/10/2013 13:05	1 ft	AK101	TestAmerica Seattle	Field Duplicate of 13NCPBSS03	PBR-02-1	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-5	13NCPBSS05	Solid	8/10/2013 13:15	2 ft	AK101	TestAmerica Seattle		PBR-02-2	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-6	13NCPBSS06	Solid	8/10/2013 13:25	1 ft	AK101	TestAmerica Seattle		PBR-03-1	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-7	13NCPBSS07	Solid	8/10/2013 13:40	2 ft	AK101	TestAmerica Seattle		PBR-03-2	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-8	13NCPBSS08	Solid	8/10/2013 13:55	1 ft	AK101	TestAmerica Seattle		PBR-04-1	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-9	13NCPBSS09	Solid	8/10/2013 14:10	2 ft	AK101	TestAmerica Seattle	MS/MSD	PBR-04-2	JC	Methanol	081213-3	15_Days	Soil jar 4oz - with Methanol
580-39757-1	13NCPBSS01	Solid	8/10/2013 11:15	1 ft	AK102 & 103	TestAmerica Seattle		PBR-01-1	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-2	13NCPBSS02	Solid	8/10/2013 11:40	2 ft	AK102 & 103	TestAmerica Seattle		PBR-01-2	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-3	13NCPBSS03	Solid	8/10/2013 13:00	1 ft	AK102 & 103	TestAmerica Seattle		PBR-02-1	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-4	13NCPBSS04	Solid	8/10/2013 13:05	1 ft	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NCPBSS03	PBR-02-1	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-5	13NCPBSS05	Solid	8/10/2013 13:15	2 ft	AK102 & 103	TestAmerica Seattle		PBR-02-2	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-6	13NCPBSS06	Solid	8/10/2013 13:25	1 ft	AK102 & 103	TestAmerica Seattle		PBR-03-1	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-7	13NCPBSS07	Solid	8/10/2013 13:40	2 ft	AK102 & 103	TestAmerica Seattle		PBR-03-2	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-8	13NCPBSS08	Solid	8/10/2013 13:55	1 ft	AK102 & 103	TestAmerica Seattle		PBR-04-1	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-9	13NCPBSS09	Solid	8/10/2013 14:10	2 ft	AK102 & 103	TestAmerica Seattle	MS/MSD	PBR-04-2	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-1	13NCPBSS01	Solid	8/10/2013 11:15	1 ft	D 2216	TestAmerica Seattle		PBR-01-1	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-2	13NCPBSS02	Solid	8/10/2013 11:40	2 ft	D 2216	TestAmerica Seattle		PBR-01-2	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-3	13NCPBSS03	Solid	8/10/2013 13:00	1 ft	D 2216	TestAmerica Seattle		PBR-02-1	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-4	13NCPBSS04	Solid	8/10/2013 13:05	1 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NCPBSS03	PBR-02-1	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-5	13NCPBSS05	Solid	8/10/2013 13:15	2 ft	D 2216	TestAmerica Seattle		PBR-02-2	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-6	13NCPBSS06	Solid	8/10/2013 13:25	1 ft	D 2216	TestAmerica Seattle		PBR-03-1	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-7	13NCPBSS07	Solid	8/10/2013 13:40	2 ft	D 2216	TestAmerica Seattle		PBR-03-2	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-8	13NCPBSS08	Solid	8/10/2013 13:55	1 ft	D 2216	TestAmerica Seattle		PBR-04-1	JC	None	081213-3	15_Days	Soil jar 4oz
580-39757-9	13NCPBSS09	Solid	8/10/2013 14:10	2 ft	D 2216	TestAmerica Seattle	MS/MSD	PBR-04-2	JC	None	081213-3	15_Days	Soil jar 4oz
580-39839-1 Roadway Samples													
580-39839-20	13NCRWSS01	Solid	8/18/2013 9:00	0-0.5 ft	6020	TestAmerica Seattle		RWS-01-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-21	13NCRWSS02	Solid	8/18/2013 9:10	0-0.5 ft	6020	TestAmerica Seattle		RWS-01-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-22	13NCRWSS03	Solid	8/18/2013 9:45	0-0.5 ft	6020	TestAmerica Seattle		RWS-02-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-23	13NCRWSS04	Solid	8/18/2013 9:55	0-0.5 ft	6020	TestAmerica Seattle		RWS-02-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-24	13NCRWSS05	Solid	8/18/2013 10:15	0-0.5 ft	6020	TestAmerica Seattle		RWS-03-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-25	13NCRWSS06	Solid	8/18/2013 10:20	0-0.5 ft	6020	TestAmerica Seattle	Field Duplicate of 13NCRWSS05	RWS-03-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-26	13NCRWSS07	Solid	8/18/2013 10:25	0-0.5 ft	6020	TestAmerica Seattle		RWS-03-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-27	13NCRWSS08	Solid	8/18/2013 11:05	0-0.5 ft	6020	TestAmerica Seattle	MS/MSD	RWS-04-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-28	13NCRWSS09	Solid	8/18/2013 11:20	0-0.5 ft	6020	TestAmerica Seattle		RWS-04-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-20	13NCRWSS01	Solid	8/18/2013 9:00	0-0.5 ft	7471A	TestAmerica Seattle		RWS-01-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-21	13NCRWSS02	Solid	8/18/2013 9:10	0-0.5 ft	7471A	TestAmerica Seattle		RWS-01-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-22	13NCRWSS03	Solid	8/18/2013 9:45	0-0.5 ft	7471A	TestAmerica Seattle		RWS-02-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-23	13NCRWSS04	Solid	8/18/2013 9:55	0-0.5 ft	7471A	TestAmerica Seattle		RWS-02-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-24	13NCRWSS05	Solid	8/18/2013 10:15	0-0.5 ft	7471A	TestAmerica Seattle		RWS-03-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-25	13NCRWSS06	Solid	8/18/2013 10:20	0-0.5 ft	7471A	TestAmerica Seattle	Field Duplicate of 13NCRWSS05	RWS-03-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-26	13NCRWSS07	Solid	8/18/2013 10:25	0-0.5 ft	7471A	TestAmerica Seattle		RWS-03-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-27	13NCRWSS08	Solid	8/18/2013 11:05	0-0.5 ft	7471A	TestAmerica Seattle	MS/MSD	RWS-04-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-28	13NCRWSS09	Solid	8/18/2013 11:20	0-0.5 ft	7471A	TestAmerica Seattle		RWS-04-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-20	13NCRWSS01	Solid	8/18/2013 9:00	0-0.5 ft	8082	TestAmerica Seattle		RWS-01-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-21	13NCRWSS02	Solid	8/18/2013 9:10	0-0.5 ft	8082	TestAmerica Seattle		RWS-01-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-22	13NCRWSS03	Solid	8/18/2013 9:45	0-0.5 ft	8082	TestAmerica Seattle		RWS-02-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-23	13NCRWSS04	Solid	8/18/2013 9:55	0-0.5 ft	8082	TestAmerica Seattle		RWS-02-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-24	13NCRWSS05	Solid	8/18/2013 10:15	0-0.5 ft	8082	TestAmerica Seattle		RWS-03-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-25	13NCRWSS06	Solid	8/18/2013 10:20	0-0.5 ft	8082	TestAmerica Seattle	Field Duplicate of 13NCRWSS05	RWS-03-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-26	13NCRWSS07	Solid	8/18/2013 10:25	0-0.5 ft	8082	TestAmerica Seattle		RWS-03-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-27	13NCRWSS08	Solid	8/18/2013 11:05	0-0.5 ft	8082	TestAmerica Seattle	MS/MSD	RWS-04-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-28	13NCRWSS09	Solid	8/18/2013 11:20	0-0.5 ft	8082	TestAmerica Seattle		RWS-04-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-20	13NCRWSS01	Solid	8/18/2013 9:00	0-0.5 ft	8260B/DoD	TestAmerica Seattle		RWS-01-1	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-21	13NCRWSS02	Solid	8/18/2013 9:10	0-0.5 ft	8260B/DoD	TestAmerica Seattle		RWS-01-2	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-22	13NCRWSS03	Solid	8/18/2013 9:45	0-0.5 ft	8260B/DoD	TestAmerica Seattle		RWS-02-1	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-23	13NCRWSS04	Solid	8/18/2013 9:55	0-0.5 ft	8260B/DoD	TestAmerica Seattle		RWS-02-2	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-24	13NCRWSS05	Solid	8/18/2013 10:15	0-0.5 ft	8260B/DoD	TestAmerica Seattle		RWS-03-1	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-25	13NCRWSS06	Solid	8/18/2013 10:20	0-0.5 ft	8260B/DoD	TestAmerica Seattle	Field Duplicate of 13NCRWSS05	RWS-03-1	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-26	13NCRWSS07	Solid	8/18/2013 10:25	0-0.5 ft	8260B/DoD	TestAmerica Seattle		RWS-03-2	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-27	13NCRWSS08	Solid	8/18/2013 11:05	0-0.5 ft	8260B/DoD	TestAmerica Seattle	MS/MSD	RWS-04-1	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39839-28	13NCRWSS09	Solid	8/18/2013 11:20	0-0.5 ft	8260B/DoD	TestAmerica Seattle		RWS-04-2	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-20	13NCRWSS01	Solid	8/18/2013 9:00	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		RWS-01-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-21	13NCRWSS02	Solid	8/18/2013 9:10	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		RWS-01-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-22	13NCRWSS03	Solid	8/18/2013 9:45	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		RWS-02-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-23	13NCRWSS04	Solid	8/18/2013 9:55	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		RWS-02-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-24	13NCRWSS05	Solid	8/18/2013 10:15	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		RWS-03-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-25	13NCRWSS06	Solid	8/18/2013 10:20	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle	Field Duplicate of 13NCRWSS05	RWS-03-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-26	13NCRWSS07	Solid	8/18/2013 10:25	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		RWS-03-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-27	13NCRWSS08	Solid	8/18/2013 11:05	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	RWS-04-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-28	13NCRWSS09	Solid	8/18/2013 11:20	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		RWS-04-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-20	13NCRWSS01	Solid	8/18/2013 9:00	0-0.5 ft	AK101	TestAmerica Seattle		RWS-01-1	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-21	13NCRWSS02	Solid	8/18/2013 9:10	0-0.5 ft	AK101	TestAmerica Seattle		RWS-01-2	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-22	13NCRWSS03	Solid	8/18/2013 9:45	0-0.5 ft	AK101	TestAmerica Seattle		RWS-02-1	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-23	13NCRWSS04	Solid	8/18/2013 9:55	0-0.5 ft	AK101	TestAmerica Seattle		RWS-02-2	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-24	13NCRWSS05	Solid	8/18/2013 10:15	0-0.5 ft	AK101	TestAmerica Seattle		RWS-03-1	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-25	13NCRWSS06	Solid	8/18/2013 10:20	0-0.5 ft	AK101	TestAmerica Seattle	Field Duplicate of 13NCRWSS05	RWS-03-1	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-26	13NCRWSS07	Solid	8/18/2013 10:25	0-0.5 ft	AK101	TestAmerica Seattle		RWS-03-2	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-27	13NCRWSS08	Solid	8/18/2013 11:05	0-0.5 ft	AK101	TestAmerica Seattle	MS/MSD	RWS-04-1	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-28	13NCRWSS09	Solid	8/18/2013 11:20	0-0.5 ft	AK101	TestAmerica Seattle		RWS-04-2	JC	Methanol	081913-01	15_Days	Soil jar 4oz - with Methanol
580-39839-13	13NC10SS039	Solid	8/18/2013 11:00	0-0.5 ft	AK102 & 103	TestAmerica Seattle		13NC10SS39	JC	None	081913-02	15_Days	Soil Jar 4oz Amber
580-39839-20	13NCRWSS01	Solid	8/18/2013 9:00	0-0.5 ft	AK102 & 103	TestAmerica Seattle		RWS-01-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-21	13NCRWSS02	Solid	8/18/2013 9:10	0-0.5 ft	AK102 & 103	TestAmerica Seattle		RWS-01-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-22	13NCRWSS03	Solid	8/18/2013 9:45	0-0.5 ft	AK102 & 103	TestAmerica Seattle		RWS-02-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-23	13NCRWSS04	Solid	8/18/2013 9:55	0-0.5 ft	AK102 & 103	TestAmerica Seattle		RWS-02-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-24	13NCRWSS05	Solid	8/18/2013 10:15	0-0.5 ft	AK102 & 103	TestAmerica Seattle		RWS-03-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-25	13NCRWSS06	Solid	8/18/2013 10:20	0-0.5 ft	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NCRWSS05	RWS-03-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-26	13NCRWSS07	Solid	8/18/2013 10:25	0-0.5 ft	AK102 & 103	TestAmerica Seattle		RWS-03-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-27	13NCRWSS08	Solid	8/18/2013 11:05	0-0.5 ft	AK102 & 103	TestAmerica Seattle	MS/MSD	RWS-04-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-28	13NCRWSS09	Solid	8/18/2013 11:20	0-0.5 ft	AK102 & 103	TestAmerica Seattle		RWS-04-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-13	13NC10SS039	Solid	8/18/2013 11:00	0-0.5 ft	D 2216	TestAmerica Seattle		13NC10SS39	JC	None	081913-02	15_Days	Soil Jar 4oz Amber
580-39839-20	13NCRWSS01	Solid	8/18/2013 9:00	0-0.5 ft	D 2216	TestAmerica Seattle		RWS-01-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-21	13NCRWSS02	Solid	8/18/2013 9:10	0-0.5 ft	D 2216	TestAmerica Seattle		RWS-01-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-22	13NCRWSS03	Solid	8/18/2013 9:45	0-0.5 ft	D 2216	TestAmerica Seattle		RWS-02-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-23	13NCRWSS04	Solid	8/18/2013 9:55	0-0.5 ft	D 2216	TestAmerica Seattle		RWS-02-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-24	13NCRWSS05	Solid	8/18/2013 10:15	0-0.5 ft	D 2216	TestAmerica Seattle		RWS-03-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-25	13NCRWSS06	Solid	8/18/2013 10:20	0-0.5 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NCRWSS05	RWS-03-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-26	13NCRWSS07	Solid	8/18/2013 10:25	0-0.5 ft	D 2216	TestAmerica Seattle		RWS-03-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-27	13NCRWSS08	Solid	8/18/2013 11:05	0-0.5 ft	D 2216	TestAmerica Seattle	MS/MSD	RWS-04-1	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-28	13NCRWSS09	Solid	8/18/2013 11:20	0-0.5 ft	D 2216	TestAmerica Seattle		RWS-04-2	JC	None	081913-01	15_Days	Soil jar 8oz
580-39839-2 MOC Soil and Treated Water													
580-39839-30	13NC28TWA07	Water	8/19/2013 9:15	Surface	6020	TestAmerica Seattle	MS/MSD	13NC28TWA07	JC	Nitric Acid	081913-04	2_Day_RUSH	Plastic 500ml - with Nitric Acid
580-39839-30	13NC28TWA07	Water	8/19/2013 9:15	Surface	7470A	TestAmerica Seattle	MS/MSD	13NC28TWA07	JC	Nitric Acid	081913-04	2_Day_RUSH	Plastic 500ml - with Nitric Acid
580-39839-19	13NC10SS045	Solid	8/19/2013 12:00	69 ft amsl	8015C	TestAmerica Denver		13NC10SS045	EB	None	081913-01	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-30	13NC28TWA07	Water	8/19/2013 9:15	Surface	8082	TestAmerica Seattle	MS/MSD	13NC28TWA07	JC	Hydrochloric Acid	081913-04	2_Day_RUSH	Voa Vial 40ml - Hydrochloric Acid
580-39839-30	13NC28TWA07	Water	8/19/2013 9:15	Surface	8260B/DoD	TestAmerica Seattle	MS/MSD	13NC28TWA07	JC	Hydrochloric Acid	081913-04	2_Day_RUSH	Voa Vial 40ml - Hydrochloric Acid
580-39839-1	13NCMOCSS103	Solid	8/15/2013 10:00	74.4 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS103	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-10	13NC10SS036	Solid	8/18/2013 10:50	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NC10SS036	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-11	13NC10SS037	Solid	8/18/2013 11:05	61 ft amsl	AK102 & 103	TestAmerica Seattle		13NC10SS037	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-12	13NC10SS038	Solid	8/18/2013 11:15	74.2 ft amsl	AK102 & 103	TestAmerica Seattle		13NC10SS038	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-14	13NC10SS040	Solid	8/18/2013 11:20	74.4 ft amsl	AK102 & 103	TestAmerica Seattle		13NC10SS040	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-15	13NC10SS041	Solid	8/18/2013 11:25	72.2 ft amsl	AK102 & 103	TestAmerica Seattle		13NC10SS041	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-16	13NC10SS042	Solid	8/18/2013 10:55	71.8 ft amsl	AK102 & 103	TestAmerica Seattle		13NC10SS042	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-17	13NC10SS043	Solid	8/18/2013 15:50	70.8 ft amsl	AK102 & 103	TestAmerica Seattle		13NC10SS043	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-18	13NC10SS044	Solid	8/18/2013 16:00	14-15 ft	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NC10SS038	13NC10SS044	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-2	13NCMOCSS104	Solid	8/18/2013 14:00	58 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS104	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-3	13NCMOCSS105	Solid	8/18/2013 14:05	58 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS105	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-30	13NC28TWA07	Water	8/19/2013 9:15	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	13NC28TWA07	JC	Hydrochloric Acid	081913-04	2_Day_RUSH	Voa Vial 40ml - Hydrochloric Acid
580-39839-4	13NCMOCSS106	Solid	8/18/2013 14:10	58 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS106	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-5	13NCMOCSS107	Solid	8/18/2013 14:15	57.7 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS107	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-6	13NCMOCSS108	Solid	8/18/2013 14:20	57.8 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS108	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-7	13NCMOCSS109	Solid	8/18/2013 14:25	58 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS109	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-8	13NCMOCSS110	Solid	8/19/2013 12:30	62 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS110	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-9	13NC10SS035	Solid	8/18/2013 10:40	75.5 ft amsl	AK102 & 103	TestAmerica Seattle		13NC10SS035	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-1	13NCMOCSS103	Solid	8/15/2013 10:00	74.4 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS103	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-10	13NC10SS036	Solid	8/18/2013 10:50	61 ft amsl	D 2216	TestAmerica Seattle		13NC10SS036	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-11	13NC10SS037	Solid	8/18/2013 11:05	61 ft amsl	D 2216	TestAmerica Seattle		13NC10SS037	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-12	13NC10SS038	Solid	8/18/2013 11:15	74.2 ft amsl	D 2216	TestAmerica Seattle		13NC10SS038	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-14	13NC10SS040	Solid	8/18/2013 11:20	74.4 ft amsl	D 2216	TestAmerica Seattle		13NC10SS040	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-15	13NC10SS041	Solid	8/18/2013 11:25	72.2 ft amsl	D 2216	TestAmerica Seattle		13NC10SS041	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-16	13NC10SS042	Solid	8/18/2013 10:55	71.8 ft amsl	D 2216	TestAmerica Seattle		13NC10SS042	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-17	13NC10SS043	Solid	8/18/2013 15:50	70.8 ft amsl	D 2216	TestAmerica Seattle		13NC10SS043	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-18	13NC10SS044	Solid	8/18/2013 16:00	14-15 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NC10SS038	13NC10SS044	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-2	13NCMOCSS104	Solid	8/18/2013 14:00	58 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS104	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-3	13NCMOCSS105	Solid	8/18/2013 14:05	58 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS105	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-4	13NCMOCSS106	Solid	8/18/2013 14:10	58 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS106	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39839-5	13NCMOCSS107	Solid	8/18/2013 14:15	57.7 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS107	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-6	13NCMOCSS108	Solid	8/18/2013 14:20	57.8 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS108	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-7	13NCMOCSS109	Solid	8/18/2013 14:25	58 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS109	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-8	13NCMOCSS110	Solid	8/19/2013 12:30	62 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS110	LK	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-9	13NC10SS035	Solid	8/18/2013 10:40	75.5 ft amsl	D 2216	TestAmerica Seattle		13NC10SS035	EB	None	081913-02	2_Day_RUSH	Soil Jar 4oz Amber
580-39839-19	13NC10SS045	Solid	8/19/2013 12:00	69 ft amsl	Moisture	TestAmerica Denver		13NC10SS045	EB	None	081913-01	2_Day_RUSH	Soil Jar 4oz Amber
580-39925-1 MOC Soil													
580-39925-1	13NCMOCSS111	Solid	8/16/2013 13:00	59 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS111	LK	None	082313-01	3_Days	Soil jar 4oz
580-39925-2	13NCMOCSS112	Solid	8/16/2013 13:30	59 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS112	LK	None	082313-01	3_Days	Soil jar 4oz
580-39925-3	13NCMOCSS113	Solid	8/21/2013 14:00	59 ft amsl	AK102 & 103	TestAmerica Seattle	MS/MSD	13NCMOCSS113	LK	None	082313-01	3_Days	Soil jar 4oz
580-39925-4	13NCMOCSS114	Solid	8/16/2013 13:35	59 ft amsl	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NCMOCSS112	13NCMOCSS114	LK	None	082313-01	3_Days	Soil jar 4oz
580-39925-5	13NCMOCSS115	Solid	8/21/2013 10:00	76.3 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS115	LK	None	082313-01	3_Days	Soil jar 4oz
580-39925-6	13NCMOCSS116	Solid	8/20/2013 10:30	60 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS116	LK	None	082313-01	3_Days	Soil jar 4oz
580-39925-7	13NCMOCSS117	Solid	8/22/2013 9:30	60 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS117	LK	None	082313-01	3_Days	Soil jar 4oz
580-39925-1	13NCMOCSS111	Solid	8/16/2013 13:00	59 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS111	LK	None	082313-01	3_Days	Soil jar 4oz
580-39925-2	13NCMOCSS112	Solid	8/16/2013 13:30	59 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS112	LK	None	082313-01	3_Days	Soil jar 4oz
580-39925-3	13NCMOCSS113	Solid	8/21/2013 14:00	59 ft amsl	D 2216	TestAmerica Seattle	MS/MSD	13NCMOCSS113	LK	None	082313-01	3_Days	Soil jar 4oz
580-39925-4	13NCMOCSS114	Solid	8/16/2013 13:35	59 ft amsl	D 2216	TestAmerica Seattle	Field Duplicate of 13NCMOCSS112	13NCMOCSS114	LK	None	082313-01	3_Days	Soil jar 4oz
580-39925-5	13NCMOCSS115	Solid	8/21/2013 10:00	76.3 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS115	LK	None	082313-01	3_Days	Soil jar 4oz
580-39925-6	13NCMOCSS116	Solid	8/20/2013 10:30	60 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS116	LK	None	082313-01	3_Days	Soil jar 4oz
580-39925-7	13NCMOCSS117	Solid	8/22/2013 9:30	60 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS117	LK	None	082313-01	3_Days	Soil jar 4oz
580-39926-1 Site 21 Surface Water													
580-39926-1	13NC21SW004	Water	8/22/2013 13:25	Surface	6020	TestAmerica Seattle		13NC21SW004	EB	Nitric Acid	082313-01	15_Days	Plastic 250ml - with Nitric Acid
580-39926-2	13NC21SW005	Water	8/22/2013 13:45	Surface	6020	TestAmerica Seattle	MS/MSD	13NC21SW005	EB	Nitric Acid	082313-01	15_Days	Plastic 250ml - with Nitric Acid
580-39959-1 Site 21 and MOC Soil													
580-39959-1	13NC21SS021	Solid	8/23/2013 13:50	49.5 ft amsl	6020	TestAmerica Seattle		13NC21SS021	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-10	13NC21SS030	Solid	8/23/2013 16:10	51.5 ft amsl	6020	TestAmerica Seattle		13NC21SS030	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-11	13NC21SS031	Solid	8/23/2013 16:15	51.6 ft amsl	6020	TestAmerica Seattle		13NC21SS031	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-12	13NC21SS032	Solid	8/24/2013 8:10	51.1 ft amsl	6020	TestAmerica Seattle		13NC21SS032	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-13	13NC21SS033	Solid	8/24/2013 8:13	50.2 ft amsl	6020	TestAmerica Seattle		13NC21SS033	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-14	13NC21SS034	Solid	8/24/2013 8:15	51.9 ft amsl	6020	TestAmerica Seattle		13NC21SS034	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-15	13NC21SS035	Solid	8/24/2013 8:18	51.9 ft amsl	6020	TestAmerica Seattle		13NC21SS035	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-16	13NC21SS036	Solid	8/24/2013 8:20	51.9 ft amsl	6020	TestAmerica Seattle	Field Duplicate of 13NC21SS035	13NC21SS036	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-17	13NC21SS037	Solid	8/24/2013 8:22	52.7 ft amsl	6020	TestAmerica Seattle		13NC21SS037	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-18	13NC21SS038	Solid	8/24/2013 8:25	40.6 ft amsl	6020	TestAmerica Seattle		13NC21SS038	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-19	13NC21SS039	Solid	8/24/2013 8:27	53 ft amsl	6020	TestAmerica Seattle		13NC21SS039	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-2	13NC21SS022	Solid	8/23/2013 14:00	49.7 ft amsl	6020	TestAmerica Seattle		13NC21SS022	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-20	13NC21SS040	Solid	8/24/2013 8:30	52.2 ft amsl	6020	TestAmerica Seattle		13NC21SS040	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-21	13NC21SS041	Solid	8/24/2013 8:35	51.3 ft amsl	6020	TestAmerica Seattle		13NC21SS041	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-22	13NC21SS042	Solid	8/24/2013 8:38	36.6 ft amsl	6020	TestAmerica Seattle		13NC21SS042	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-23	BW-21-12	Solid	8/22/2013 15:00	N/A	6020	TestAmerica Seattle		BW-21-12	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-24	BW-21-13	Solid	8/23/2013 8:25	N/A	6020	TestAmerica Seattle		BW-21-13	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-25	BW-21-14	Solid	8/23/2013 10:30	N/A	6020	TestAmerica Seattle		BW-21-14	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-26	BW-21-15	Solid	8/23/2013 13:15	N/A	6020	TestAmerica Seattle		BW-21-15	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-27	BW-21-16	Solid	8/23/2013 13:30	N/A	6020	TestAmerica Seattle		BW-21-16	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-3	13NC21SS023	Solid	8/23/2013 14:40	48.8 ft amsl	6020	TestAmerica Seattle		13NC21SS023	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-4	13NC21SS024	Solid	8/23/2013 14:45	49.7 ft amsl	6020	TestAmerica Seattle		13NC21SS024	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-5	13NC21SS025	Solid	8/23/2013 15:50	51.4 ft amsl	6020	TestAmerica Seattle		13NC21SS025	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-6	13NC21SS026	Solid	8/23/2013 15:55	51.7 ft amsl	6020	TestAmerica Seattle	MS/MSD	13NC21SS026	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-7	13NC21SS027	Solid	8/23/2013 16:00	52.6 ft amsl	6020	TestAmerica Seattle		13NC21SS027	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-8	13NC21SS028	Solid	8/23/2013 16:05	52.6 ft amsl	6020	TestAmerica Seattle	Field Duplicate of 13NC21SS027	13NC21SS028	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-9	13NC21SS029	Solid	8/23/2013 16:08	51.6 ft amsl	6020	TestAmerica Seattle		13NC21SS029	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-28	13NCMOCSS118	Solid	8/17/2013 14:00	58 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS118	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-29	13NCMOCSS119	Solid	8/21/2013 15:00	60 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS119	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-30	13NCMOCSS120	Solid	8/21/2013 15:10	60 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS120	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-31	13NCMOCSS121	Solid	8/22/2013 14:30	60 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS121	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-32	13NCMOCSS122	Solid	8/22/2013 14:35	60 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS122	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-33	13NCMOCSS123	Solid	8/22/2013 14:40	60 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS123	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-34	13NCMOCSS124	Solid	8/22/2013 14:45	60 ft amsl	AK102 & 103	TestAmerica Seattle		13NCMOCSS124	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-35	13NCMOCSS125	Solid	8/22/2013 14:50	60 ft amsl	AK102 & 103	TestAmerica Seattle	MS/MSD	13NCMOCSS125	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-36	13NCMOCSS126	Solid	8/22/2013 14:55	60 ft amsl	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NCMOCSS124	13NCMOCSS126	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-1	13NC21SS021	Solid	8/23/2013 13:50	49.5 ft amsl	D 2216	TestAmerica Seattle		13NC21SS021	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-10	13NC21SS030	Solid	8/23/2013 16:10	63 ft amsl	D 2216	TestAmerica Seattle		13NC21SS030	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-11	13NC21SS031	Solid	8/23/2013 16:15	63 ft amsl	D 2216	TestAmerica Seattle		13NC21SS031	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-12	13NC21SS032	Solid	8/24/2013 8:10	63 ft amsl	D 2216	TestAmerica Seattle		13NC21SS032	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-13	13NC21SS033	Solid	8/24/2013 8:13	50.2 ft amsl	D 2216	TestAmerica Seattle		13NC21SS033	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-14	13NC21SS034	Solid	8/24/2013 8:15	51.9 ft amsl	D 2216	TestAmerica Seattle		13NC21SS034	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-15	13NC21SS035	Solid	8/24/2013 8:18	61 ft amsl	D 2216	TestAmerica Seattle		13NC21SS035	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-16	13NC21SS036	Solid	8/24/2013 8:20	61 ft amsl	D 2216	TestAmerica Seattle	Field Duplicate of 13NC21SS035	13NC21SS036	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-17	13NC21SS037	Solid	8/24/2013 8:22	61 ft amsl	D 2216	TestAmerica Seattle		13NC21SS037	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-18	13NC21SS038	Solid	8/24/2013 8:25	52.8 ft amsl	D 2216	TestAmerica Seattle		13NC21SS038	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-19	13NC21SS039	Solid	8/24/2013 8:27	53 ft amsl	D 2216	TestAmerica Seattle		13NC21SS039	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-2	13NC21SS022	Solid	8/23/2013 14:00	49.7 ft amsl	D 2216	TestAmerica Seattle		13NC21SS022	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-20	13NC21SS040	Solid	8/24/2013 8:30	52.2 ft amsl	D 2216	TestAmerica Seattle		13NC21SS040	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-21	13NC21SS041	Solid	8/24/2013 8:35	51.3 ft amsl	D 2216	TestAmerica Seattle		13NC21SS041	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-39959-22	13NC21SS042	Solid	8/24/2013 8:38	51.3 ft amsl	D 2216	TestAmerica Seattle		13NC21SS042	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-23	BW-21-12	Solid	8/22/2013 15:00	N/A	D 2216	TestAmerica Seattle		BW-21-12	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-24	BW-21-13	Solid	8/23/2013 8:25	N/A	D 2216	TestAmerica Seattle		BW-21-13	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-25	BW-21-14	Solid	8/23/2013 10:30	N/A	D 2216	TestAmerica Seattle		BW-21-14	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-26	BW-21-15	Solid	8/23/2013 13:15	N/A	D 2216	TestAmerica Seattle		BW-21-15	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-27	BW-21-16	Solid	8/23/2013 13:30	N/A	D 2216	TestAmerica Seattle		BW-21-16	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-28	13NCMOCSS118	Solid	8/17/2013 14:00	58 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS118	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-29	13NCMOCSS119	Solid	8/21/2013 15:00	60 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS119	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-3	13NC21SS023	Solid	8/23/2013 14:40	48.8 ft amsl	D 2216	TestAmerica Seattle		13NC21SS023	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-30	13NCMOCSS120	Solid	8/21/2013 15:10	60 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS120	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-31	13NCMOCSS121	Solid	8/22/2013 14:30	60 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS121	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-32	13NCMOCSS122	Solid	8/22/2013 14:35	60 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS122	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-33	13NCMOCSS123	Solid	8/22/2013 14:40	60 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS123	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-34	13NCMOCSS124	Solid	8/22/2013 14:45	60 ft amsl	D 2216	TestAmerica Seattle		13NCMOCSS124	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-35	13NCMOCSS125	Solid	8/22/2013 14:50	60 ft amsl	D 2216	TestAmerica Seattle	MS/MSD	13NCMOCSS125	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-36	13NCMOCSS126	Solid	8/22/2013 14:55	60 ft amsl	D 2216	TestAmerica Seattle	Field Duplicate of 13NCMOCSS124	13NCMOCSS126	LK	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-4	13NC21SS024	Solid	8/23/2013 14:45	49.7 ft amsl	D 2216	TestAmerica Seattle		13NC21SS024	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-5	13NC21SS025	Solid	8/23/2013 15:50	51.4 ft amsl	D 2216	TestAmerica Seattle		13NC21SS025	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-6	13NC21SS026	Solid	8/23/2013 15:55	51.7 ft amsl	D 2216	TestAmerica Seattle	MS/MSD	13NC21SS026	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-7	13NC21SS027	Solid	8/23/2013 16:00	52.6 ft amsl	D 2216	TestAmerica Seattle		13NC21SS027	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-8	13NC21SS028	Solid	8/23/2013 16:05	52.6 ft amsl	D 2216	TestAmerica Seattle	Field Duplicate of 13NC21SS027	13NC21SS028	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-9	13NC21SS029	Solid	8/23/2013 16:08	51.6 ft amsl	D 2216	TestAmerica Seattle		13NC21SS029	EB/JC	None	082613-01	2_Day_RUSH	Soil jar 4oz
580-39959-2 Site 21 TCLP													
580-39959-20	13NC21SS040	Solid	8/24/2013 8:30	0-0.5 ft	6020	TestAmerica Seattle	MS/MSD	21-038	EB	None	082613-01	3_Day_RUSH	Soil jar 4oz
580-39959-21	13NC21SS041	Solid	8/24/2013 8:35	0-0.5 ft	6020	TestAmerica Seattle		21-039	EB	None	082613-01	3_Day_RUSH	Soil jar 4oz
580-40073-2 Site 28 Treated Water													
580-40073-4	13NC28TWA11	Water	9/1/2013 13:45	Surface	6020	TestAmerica Seattle	MS/MSD	28-TWA-11	JC	Nitric Acid	090213-04	2_Days	Plastic 250ml - with Nitric Acid
580-40073-5	13NC28TWA12	Water	9/1/2013 14:00	Surface	6020	TestAmerica Seattle		28-TWA-12	JC	Nitric Acid	090213-03	2_Days	Plastic 250ml - with Nitric Acid
580-40073-4	13NC28TWA11	Water	9/1/2013 13:45	Surface	7470A	TestAmerica Seattle	MS/MSD	28-TWA-11	JC	Nitric Acid	090213-04	2_Days	Plastic 250ml - with Nitric Acid
580-40073-5	13NC28TWA12	Water	9/1/2013 14:00	Surface	7470A	TestAmerica Seattle		28-TWA-12	JC	Nitric Acid	090213-03	2_Days	Plastic 250ml - with Nitric Acid
580-40073-4	13NC28TWA11	Water	9/1/2013 13:45	Surface	8082	TestAmerica Seattle	MS/MSD	28-TWA-11	JC	None	090213-06	2_Days	Amber Glass 1 liter - unpreserved
580-40073-5	13NC28TWA12	Water	9/1/2013 14:00	Surface	8082	TestAmerica Seattle		28-TWA-12	JC	None	090213-06	2_Days	Amber Glass 1 liter - unpreserved
580-40073-4	13NC28TWA11	Water	9/1/2013 13:45	Surface	8260B/DoD	TestAmerica Seattle	MS/MSD	28-TWA-11	JC	Hydrochloric Acid	090213-07	2_Days	Voa Vial 40ml - Hydrochloric Acid
580-40073-5	13NC28TWA12	Water	9/1/2013 14:00	Surface	8260B/DoD	TestAmerica Seattle		28-TWA-12	JC	Hydrochloric Acid	090213-07	2_Days	Voa Vial 40ml - Hydrochloric Acid
580-40073-4	13NC28TWA11	Water	9/1/2013 13:45	Surface	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	28-TWA-11	JC	None	090213-06	2_Days	Amber Glass 1 liter - unpreserved
580-40073-5	13NC28TWA12	Water	9/1/2013 14:00	Surface	8270C SIM/DoD	TestAmerica Seattle		28-TWA-12	JC	None	090213-06	2_Days	Amber Glass 1 liter - unpreserved
580-40073-4	13NC28TWA11	Water	9/1/2013 13:45	Surface	AK102 & 103	TestAmerica Seattle	MS/MSD	28-TWA-11	JC	Hydrochloric Acid	090213-04	2_Days	Amber Glass 1 liter - Hydrochloric
580-40073-5	13NC28TWA12	Water	9/1/2013 14:00	Surface	AK102 & 103	TestAmerica Seattle		28-TWA-12	JC	Hydrochloric Acid	090213-04	2_Days	Amber Glass 1 liter - Hydrochloric
580-40214-1 Site 28 Confirmation Soil													
580-40214-1	13NC28SS014	Solid	8/30/2013 14:05	0-0.5 ft	6020	TestAmerica Seattle		028-013	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-10	13NC28SS023	Solid	8/30/2013 16:10	0-0.5 ft	6020	TestAmerica Seattle		028-021	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-11	13NC28SS024	Solid	8/30/2013 16:20	0-0.5 ft	6020	TestAmerica Seattle		028-022	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-2	13NC28SS015	Solid	8/30/2013 14:10	0-0.5 ft	6020	TestAmerica Seattle	Field Duplicate of 13NC28SS014	028-014	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-3	13NC28SS016	Solid	8/30/2013 14:20	0-0.5 ft	6020	TestAmerica Seattle		028-014	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-4	13NC28SS017	Solid	8/30/2013 14:40	0-0.5 ft	6020	TestAmerica Seattle		028-015	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-5	13NC28SS018	Solid	8/30/2013 14:55	0-0.5 ft	6020	TestAmerica Seattle		028-016	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-6	13NC28SS019	Solid	8/30/2013 15:15	0-0.5 ft	6020	TestAmerica Seattle	MS/MSD	028-017	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-7	13NC28SS020	Solid	8/30/2013 15:30	0-0.5 ft	6020	TestAmerica Seattle		028-018	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-8	13NC28SS021	Solid	8/30/2013 15:45	0-0.5 ft	6020	TestAmerica Seattle		028-019	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-9	13NC28SS022	Solid	8/30/2013 15:55	0-0.5 ft	6020	TestAmerica Seattle		028-020	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-1	13NC28SS014	Solid	8/30/2013 14:05	0-0.5 ft	7471A	TestAmerica Seattle		028-013	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-10	13NC28SS023	Solid	8/30/2013 16:10	0-0.5 ft	7471A	TestAmerica Seattle		028-021	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-11	13NC28SS024	Solid	8/30/2013 16:20	0-0.5 ft	7471A	TestAmerica Seattle		028-022	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-2	13NC28SS015	Solid	8/30/2013 14:10	0-0.5 ft	7471A	TestAmerica Seattle	Field Duplicate of 13NC28SS014	028-014	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-3	13NC28SS016	Solid	8/30/2013 14:20	0-0.5 ft	7471A	TestAmerica Seattle		028-014	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-4	13NC28SS017	Solid	8/30/2013 14:40	0-0.5 ft	7471A	TestAmerica Seattle		028-015	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-5	13NC28SS018	Solid	8/30/2013 14:55	0-0.5 ft	7471A	TestAmerica Seattle		028-016	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-6	13NC28SS019	Solid	8/30/2013 15:15	0-0.5 ft	7471A	TestAmerica Seattle	MS/MSD	028-017	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-7	13NC28SS020	Solid	8/30/2013 15:30	0-0.5 ft	7471A	TestAmerica Seattle		028-018	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-8	13NC28SS021	Solid	8/30/2013 15:45	0-0.5 ft	7471A	TestAmerica Seattle		028-019	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-9	13NC28SS022	Solid	8/30/2013 15:55	0-0.5 ft	7471A	TestAmerica Seattle		028-020	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-1	13NC28SS014	Solid	8/30/2013 14:05	0-0.5 ft	8082	TestAmerica Seattle		028-013	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-10	13NC28SS023	Solid	8/30/2013 16:10	0-0.5 ft	8082	TestAmerica Seattle		028-021	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-11	13NC28SS024	Solid	8/30/2013 16:20	0-0.5 ft	8082	TestAmerica Seattle		028-022	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-2	13NC28SS015	Solid	8/30/2013 14:10	0-0.5 ft	8082	TestAmerica Seattle	Field Duplicate of 13NC28SS014	028-014	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-3	13NC28SS016	Solid	8/30/2013 14:20	0-0.5 ft	8082	TestAmerica Seattle		028-014	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-4	13NC28SS017	Solid	8/30/2013 14:40	0-0.5 ft	8082	TestAmerica Seattle		028-015	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-5	13NC28SS018	Solid	8/30/2013 14:55	0-0.5 ft	8082	TestAmerica Seattle		028-016	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-6	13NC28SS019	Solid	8/30/2013 15:15	0-0.5 ft	8082	TestAmerica Seattle	MS/MSD	028-017	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-7	13NC28SS020	Solid	8/30/2013 15:30	0-0.5 ft	8082	TestAmerica Seattle		028-018	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-8	13NC28SS021	Solid	8/30/2013 15:45	0-0.5 ft	8082	TestAmerica Seattle		028-019	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-9	13NC28SS022	Solid	8/30/2013 15:55	0-0.5 ft	8082	TestAmerica Seattle		028-020	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-1	13NC28SS014	Solid	8/30/2013 14:05	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-013	JC	Methanol	090913-01	15_Days	Soil jar 4oz - with Methanol
580-40214-10	13NC28SS023	Solid	8/30/2013 16:10	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-021	JC	Methanol	090913-01	15_Days	Soil jar 4oz - with Methanol
580-40214-11	13NC28SS024	Solid	8/30/2013 16:20	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-022	JC	Methanol	090913-01	15_Days	Soil jar 4oz - with Methanol

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-40214-2	13NC28SS015	Solid	8/30/2013 14:10	0-0.5 ft	8260B/DoD	TestAmerica Seattle	Field Duplicate of 13NC28SS014	028-014	JC	Methanol	090913-01	15_Days	Soil jar 4oz - with Methanol
580-40214-3	13NC28SS016	Solid	8/30/2013 14:20	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-014	JC	Methanol	090913-01	15_Days	Soil jar 4oz - with Methanol
580-40214-4	13NC28SS017	Solid	8/30/2013 14:40	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-015	JC	Methanol	090913-01	15_Days	Soil jar 4oz - with Methanol
580-40214-5	13NC28SS018	Solid	8/30/2013 14:55	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-016	JC	Methanol	090913-01	15_Days	Soil jar 4oz - with Methanol
580-40214-6	13NC28SS019	Solid	8/30/2013 15:15	0-0.5 ft	8260B/DoD	TestAmerica Seattle	MS/MSD	028-017	JC	Methanol	090913-01	15_Days	Soil jar 4oz - with Methanol
580-40214-7	13NC28SS020	Solid	8/30/2013 15:30	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-018	JC	Methanol	090913-01	15_Days	Soil jar 4oz - with Methanol
580-40214-8	13NC28SS021	Solid	8/30/2013 15:45	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-019	JC	Methanol	090913-01	15_Days	Soil jar 4oz - with Methanol
580-40214-9	13NC28SS022	Solid	8/30/2013 15:55	0-0.5 ft	8260B/DoD	TestAmerica Seattle		028-020	JC	Methanol	090913-01	15_Days	Soil jar 4oz - with Methanol
580-40214-1	13NC28SS014	Solid	8/30/2013 14:05	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-013	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-10	13NC28SS023	Solid	8/30/2013 16:10	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-021	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-11	13NC28SS024	Solid	8/30/2013 16:20	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-022	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-2	13NC28SS015	Solid	8/30/2013 14:10	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle	Field Duplicate of 13NC28SS014	028-014	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-3	13NC28SS016	Solid	8/30/2013 14:20	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-014	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-4	13NC28SS017	Solid	8/30/2013 14:40	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-015	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-5	13NC28SS018	Solid	8/30/2013 14:55	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-016	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-6	13NC28SS019	Solid	8/30/2013 15:15	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	028-017	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-7	13NC28SS020	Solid	8/30/2013 15:30	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-018	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-8	13NC28SS021	Solid	8/30/2013 15:45	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-019	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-9	13NC28SS022	Solid	8/30/2013 15:55	0-0.5 ft	8270C SIM/DoD	TestAmerica Seattle		028-020	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-1	13NC28SS014	Solid	8/30/2013 14:05	0-0.5 ft	9060	TestAmerica Seattle		028-013	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-10	13NC28SS023	Solid	8/30/2013 16:10	0-0.5 ft	9060	TestAmerica Seattle		028-021	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-11	13NC28SS024	Solid	8/30/2013 16:20	0-0.5 ft	9060	TestAmerica Seattle		028-022	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-2	13NC28SS015	Solid	8/30/2013 14:10	0-0.5 ft	9060	TestAmerica Seattle	Field Duplicate of 13NC28SS014	028-014	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-3	13NC28SS016	Solid	8/30/2013 14:20	0-0.5 ft	9060	TestAmerica Seattle		028-014	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-4	13NC28SS017	Solid	8/30/2013 14:40	0-0.5 ft	9060	TestAmerica Seattle		028-015	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-5	13NC28SS018	Solid	8/30/2013 14:55	0-0.5 ft	9060	TestAmerica Seattle		028-016	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-6	13NC28SS019	Solid	8/30/2013 15:15	0-0.5 ft	9060	TestAmerica Seattle	MS/MSD	028-017	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-7	13NC28SS020	Solid	8/30/2013 15:30	0-0.5 ft	9060	TestAmerica Seattle		028-018	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-8	13NC28SS021	Solid	8/30/2013 15:45	0-0.5 ft	9060	TestAmerica Seattle		028-019	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-9	13NC28SS022	Solid	8/30/2013 15:55	0-0.5 ft	9060	TestAmerica Seattle		028-020	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-1	13NC28SS014	Solid	8/30/2013 14:05	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-013	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-10	13NC28SS023	Solid	8/30/2013 16:10	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-021	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-11	13NC28SS024	Solid	8/30/2013 16:20	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-022	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-2	13NC28SS015	Solid	8/30/2013 14:10	0-0.5 ft	AK102 & 103	TestAmerica Seattle	Field Duplicate of 13NC28SS014	028-014	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-3	13NC28SS016	Solid	8/30/2013 14:20	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-014	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-4	13NC28SS017	Solid	8/30/2013 14:40	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-015	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-5	13NC28SS018	Solid	8/30/2013 14:55	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-016	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-6	13NC28SS019	Solid	8/30/2013 15:15	0-0.5 ft	AK102 & 103	TestAmerica Seattle	MS/MSD	028-017	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-7	13NC28SS020	Solid	8/30/2013 15:30	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-018	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-8	13NC28SS021	Solid	8/30/2013 15:45	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-019	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-9	13NC28SS022	Solid	8/30/2013 15:55	0-0.5 ft	AK102 & 103	TestAmerica Seattle		028-020	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-1	13NC28SS014	Solid	8/30/2013 14:05	0-0.5 ft	AK102/103	TestAmerica Seattle		028-013	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-10	13NC28SS023	Solid	8/30/2013 16:10	0-0.5 ft	AK102/103	TestAmerica Seattle		028-021	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-11	13NC28SS024	Solid	8/30/2013 16:20	0-0.5 ft	AK102/103	TestAmerica Seattle		028-022	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-2	13NC28SS015	Solid	8/30/2013 14:10	0-0.5 ft	AK102/103	TestAmerica Seattle	Field Duplicate of 13NC28SS014	028-014	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-3	13NC28SS016	Solid	8/30/2013 14:20	0-0.5 ft	AK102/103	TestAmerica Seattle		028-014	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-4	13NC28SS017	Solid	8/30/2013 14:40	0-0.5 ft	AK102/103	TestAmerica Seattle		028-015	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-5	13NC28SS018	Solid	8/30/2013 14:55	0-0.5 ft	AK102/103	TestAmerica Seattle		028-016	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-6	13NC28SS019	Solid	8/30/2013 15:15	0-0.5 ft	AK102/103	TestAmerica Seattle	MS/MSD	028-017	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-7	13NC28SS020	Solid	8/30/2013 15:30	0-0.5 ft	AK102/103	TestAmerica Seattle		028-018	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-8	13NC28SS021	Solid	8/30/2013 15:45	0-0.5 ft	AK102/103	TestAmerica Seattle		028-019	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-9	13NC28SS022	Solid	8/30/2013 15:55	0-0.5 ft	AK102/103	TestAmerica Seattle		028-020	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-1	13NC28SS014	Solid	8/30/2013 14:05	0-0.5 ft	D 2216	TestAmerica Seattle		028-013	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-10	13NC28SS023	Solid	8/30/2013 16:10	0-0.5 ft	D 2216	TestAmerica Seattle		028-021	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-11	13NC28SS024	Solid	8/30/2013 16:20	0-0.5 ft	D 2216	TestAmerica Seattle		028-022	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-2	13NC28SS015	Solid	8/30/2013 14:10	0-0.5 ft	D 2216	TestAmerica Seattle	Field Duplicate of 13NC28SS014	028-014	JC	None	090913-01	15_Days	Soil jar 16oz
580-40214-3	13NC28SS016	Solid	8/30/2013 14:20	0-0.5 ft	D 2216	TestAmerica Seattle		028-014	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-4	13NC28SS017	Solid	8/30/2013 14:40	0-0.5 ft	D 2216	TestAmerica Seattle		028-015	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-5	13NC28SS018	Solid	8/30/2013 14:55	0-0.5 ft	D 2216	TestAmerica Seattle		028-016	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-6	13NC28SS019	Solid	8/30/2013 15:15	0-0.5 ft	D 2216	TestAmerica Seattle	MS/MSD	028-017	JC	None	090913-02	15_Days	Soil jar 8oz
580-40214-7	13NC28SS020	Solid	8/30/2013 15:30	0-0.5 ft	D 2216	TestAmerica Seattle		028-018	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-8	13NC28SS021	Solid	8/30/2013 15:45	0-0.5 ft	D 2216	TestAmerica Seattle		028-019	JC	None	090913-01	15_Days	Soil jar 8oz
580-40214-9	13NC28SS022	Solid	8/30/2013 15:55	0-0.5 ft	D 2216	TestAmerica Seattle		028-020	JC	None	090913-01	15_Days	Soil jar 8oz
280-46355-1 Site 10 Drum Contents													
280-46355-3	13NC10DS03	Waste	9/5/2013 13:55	N/A	1010A	TestAmerica Denver	MS/MSD	13NC10DS03	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz
280-46355-1	13NC10DS01	Solid	9/5/2013 13:40	N/A	6010B	TestAmerica Denver	MS/MSD	13NC10DS01	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz
280-46355-2	13NC10DS02	Solid	9/5/2013 13:50	N/A	6010B	TestAmerica Denver		13NC10DS02	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz
280-46355-3	13NC10DS03	Waste	9/5/2013 13:55	N/A	6010B	TestAmerica Denver		13NC10DS03	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz
280-46355-1	13NC10DS01	Solid	9/5/2013 13:40	N/A	7470A	TestAmerica Denver	MS/MSD	13NC10DS01	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz
280-46355-2	13NC10DS02	Solid	9/5/2013 13:50	N/A	7470A	TestAmerica Denver		13NC10DS02	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz
280-46355-3	13NC10DS03	Waste	9/5/2013 13:55	N/A	7471A	TestAmerica Denver	MS/MSD	13NC10DS03	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz
280-46355-3	13NC10DS03	Waste	9/5/2013 13:55	N/A	8082	TestAmerica Denver	MS/MSD	13NC10DS03	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz
280-46355-1	13NC10DS01	Solid	9/5/2013 13:40	N/A	8260B	TestAmerica Denver	MS/MSD	13NC10DS01	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz
280-46355-2	13NC10DS02	Solid	9/5/2013 13:50	N/A	8260B	TestAmerica Denver		13NC10DS02	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz
280-46355-3	13NC10DS03	Waste	9/5/2013 13:55	N/A	8260B	TestAmerica Denver	MS/MSD	13NC10DS03	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
280-46355-3	13NC10DS03	Waste	9/5/2013 13:55	N/A	8270C	TestAmerica Denver	MS/MSD	13NC10DS03	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz
280-46355-1	13NC10DS01	Solid	9/5/2013 13:40	N/A	8270C SIM/DoD	TestAmerica Denver	MS/MSD	13NC10DS01	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz
280-46355-2	13NC10DS02	Solid	9/5/2013 13:50	N/A	8270C SIM/DoD	TestAmerica Denver		13NC10DS02	EB/RJ	None	1 of 1	4_Day_RUSH	Soil jar 8oz
580-39544-1 Site 10 Glycols													
580-39544-1	13NC10WS06	Solid	7/25/2013 11:30	N/A	8015C	TestAmerica Denver		13NC10WS06	LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39544-2	13NC10SS23	Solid	7/21/2013 11:40	4-10 ft	8015C	TestAmerica Denver	MS/MSD	13NC10SS23	LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39544-3	13NC10SS24	Solid	7/21/2013 11:45	4-10 ft	8015C	TestAmerica Denver		13NC10SS24	LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39544-4	13NC10SS25	Solid	7/21/2013 11:50	4-10 ft	8015C	TestAmerica Denver	Field Duplicate of 13NC10SS024	13NC10SS25	LK	None		2_Day_RUSH	Soil Jar 4oz Amber
580-39544-1	13NC10WS06	Solid	7/25/2013 11:30	N/A	Moisture	TestAmerica Denver		13NC10WS06	LK	None	072613-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39544-2	13NC10SS23	Solid	7/21/2013 11:40	4-10 ft	Moisture	TestAmerica Denver	MS/MSD	13NC10SS23	LK	None	072613-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39544-3	13NC10SS24	Solid	7/21/2013 11:45	4-10 ft	Moisture	TestAmerica Denver		13NC10SS24	LK	None	072613-04	2_Day_RUSH	Soil Jar 4oz Amber
580-39544-4	13NC10SS25	Solid	7/21/2013 11:50	4-10 ft	Moisture	TestAmerica Denver	Field Duplicate of 13NC10SS024	13NC10SS25	LK	None	072613-04	2_Day_RUSH	Soil Jar 4oz Amber
580-40324-1 Site 21 Waters													
580-40324-1	13NC21SW008	Water	9/15/2013 10:00	Surface	6020	TestAmerica Seattle	MS/MSD	13NC21SW008	EB	Nitric Acid	091613-07	15_Days	Plastic 250ml - with Nitric Acid
580-40324-2	13NC21SW009	Water	9/15/2013 10:10	Surface	6020	TestAmerica Seattle		13NC21SW009	EB	Nitric Acid	091613-07	15_Days	Plastic 250ml - with Nitric Acid

ATTACHMENT 2

ADEC Checklists

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 10/25/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 280-46355-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Denver

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples were received in good condition. It was noted in the case narrative that 13NC10DS01 and –DS02 were received with headspace in the sample containers. Soil samples were submitted for TCLP VOCS for waste determination.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes No NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

TheTCLP-VOC sample results can be used for project purposes, which are waste characterization and disposal, without qualification. All TCLP-VOC results were non-detect.

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

BFB surrogate recovered high in samples 13NC10DS01 and –DS02 for 8260-VOC analysis. All results were ND so data was not impacted.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

Anti-foam was added to samples 13NC10DS01, -DS02 and the method blank due to excessive foaminess in the samples for TCLP/ZHE extraction and 8260 waste analysis. The anti-foam was added to the method blank to show it did not contribute to or bias results. The 8260 LCS/LCSD in prep batch 280-190771 had recoveries exceed the upper control limit for 1,2-dichloroethane, benzene, carbon tetrachlroride, chloroform, and tetrachloroethene. A variance was not requested nor granted for the high recoveries in the LCS/LCSD. No analytes were detected in the sample and the instrument showed ability to detect the analytes so no flagging was necessary. Sample 13NC10DS03 was analyzed at a dilution for both PAHs by 8270 and PCBs due to non-target interference. The diluted results are usable for waste disposal purposes.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      X□Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      X□Yes □ No □NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X□Yes □ No □NA (Please explain.) Comments:

      Results were used for waste characterization and disposal purposes. No results exceeded hazardous material thresholds.

   e. Data quality or usability affected?
      Comments:

      Sample results are usable for project purposes without qualification for holding times or reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes □ No □NA (Please explain.) Comments:

      Barium was detected in the leachate method blank for 6010B metals analysis. All sample results were greater than 10 times the blank barium concentration so no flagging was necessary.

      iii. If above PQL, what samples are affected?
      Comments:

      No samples were affected.

v. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □ No □XNA (Please explain.) Comments:

No flags required

vi. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X□Yes □ No X□NA (Please explain.) Comments:

.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□Yes X□ No□NA (Please explain.) Comments:

The 8260 LCS/LCSD in prep batch 280-190771 had recoveries exceed the upper control limit for 1,2-dichloroethane, benzene, carbon tetrachlroride, chloroform, and tetrachloroethene. A variance was not requested nor granted for he high recoveries in the LCS/LCSD. No analytes were detected in the sample and the instrument showed ability to detect the analytes so no flagging was necessary. The 8260 MSD recovered 2% below the lower acceptance limit for chlorobenzene in sample 13NC10DS01. The parent sample result was ND and was flagged QL. The 8270 SIM MS/MSD on sample 13NC10DS03 had high recoveries of hexachloroethane, sample result was ND so no flags. Due to sample dilution prior to analysis, 2,4-dinitrotoluene and pentachlorophenol were not able to be quantitated properly and their MS/MSD results were not reported. The LCS met method criteria so no flagging was necessary. The PCB MS/MSD in prep batch 280-190849 on sample 13NC10DS03 had low recoveries of Aroclor 1260 and decachlorobiphenyl. Results were ND for that sample and flagged QL. The lab noted that the 6010B metals MS/MSD on sample 13CN1DS03 could not accurately calculate zinc recoveries because the parent zinc concentration was more than 4 times the spike amount but the recoveries met accuracy and RPD limits for zinc so it met criteria, even with the high parent zinc concentration.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

□X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

It was primarily sample 13NC10DS03 that was used for the MS/MSD and it met most criteria except as noted above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X□Yes □ No □NA (Please explain.) Comments:

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes, which is waste characterization for disposal. The analytical results are usable for waste disposal with the above noted qualifications.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes □X No □NA (Please explain.) Comments:

The 8260 LCS surrogate recovered above the upper acceptance limit for 1,2-dichlroethene-d4. BFB surrogate recovered high in samples 13NC10DS01 and –DS02 for 8260-VOC analysis. The PCB surrogate in sample 13NC10DS03 was recovered slightly below the lower acceptance limit, sample results were already flagged QL based on MS/MSD recoveries so no additional flagging was necessary.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □X No □NA (Please explain.) Comments:

PCB results already flagged QL for low PCB MS/MSD recoveries, no additional flags for surrogate as it would be redundent.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable for project purposes, which is waste disposal.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

□Yes X□ No□NA (Please explain.) Comments:

Soil samples were submitted for TCLP-VOC analyses without methanol preservative for TCLP/ZHE extraction purposes. There are currently no trip blanks that contain only soil so a trip blank was not submitted. Samples were submitted for waste characterization and disposal purposes only.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

□Yes □ No □X NA (Please explain.) Comments:

iii. All results less than PQL?

□Yes □ No □X NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

□Yes X□ No□NA (Please explain.) Comments:

Waste disposal samples do not require field duplicates.

ii. Submitted blind to lab?

□Yes □ No □XNA (Please explain.) Comments:

Waste disposal samples do not require field duplicates.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

Yes □ No □X NA (Please explain.) Comments:

Waste disposal samples do not require field duplicates.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Waste disposal samples do not require field duplicates.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 9/12/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 280-46414-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Denver

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes No NA (Please explain.) Comments:

The case narrative noted that an MS/MSD could not be performed due to insufficient sample volume. The Sample Receipt Checklist noted that collection times on the sample label and CoC do not match but offer no further explanation. The sample was extracted and analyzed well within holding times so no issue was apparent.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes. . Method precision and accuracy have been verified by acceptable LCS/LCSD recoveries and precision However, the project requirement of a project MS/MSD sample in every analytical batch was not met.

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

The case narrative noted that an MS/MSD could not be performed due to insufficient sample volume. The Sample Receipt Checklist noted that collection times on the sample label and CoC do not match but offer no further explanation. The sample was extracted and analyzed well within holding times so no issue was apparent. See surrogate section for further discussion.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5.Samples Results

a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X□Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X□Yes □ No □NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X□Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?
□X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

.

iii. If above PQL, what samples are affected?
Comments:

NA

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □ No □XNA (Please explain.) Comments:

No flags required.

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

□X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

□Yes □ No X□NA (Please explain.) Comments:

Sample analyzed for DRO/RRO only

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□Yes □X No □NA (Please explain.) Comments:

No flagging required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

While no MS/MSD could be performed due to insufficient sample volume, sample results are still usable for project purposes.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes X□ No□NA (Please explain.) Comments:

The case narrative noted that DRO and RRO surrogate recoveries exceeded upper control limits. Upon examination of the results it was noted that the surrogate control limits for DRO were stated as 60-120 %, which is incorrect. The method stated surrogate limits are 50-150% so no flags were assigned to the DRO result for sample 13NCMOCSP001. The RRO surrogate result greatly exceeded the upper control limit of 120% with a 744% recovery. Examination of the chromatogram indicated likely non-target analyte interference do to co-elution with extracted analyte. Results are still usable to demonstrate the post-stockpile results are below cleanup levels where lined stockpiles had been placed.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
X□Yes □ No □NA (Please explain.) Comments:

The RRO results is flagged QH to indicate quality issue with potential high bias.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Potential high bias

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□Yes X□ No□NA (Please explain.) Comments:

Samples were submitted for DRO/RRO analysis only, which does not require a trip blank.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
□Yes □ No □NA (Please explain.) Comments:

Samples were submitted for DRO/RRO analysis only, which does not require a trip blank.

iv. All results less than PQL?
□Yes □ No □NA (Please explain.) Comments:

NA

v. If above PQL, what samples are affected?
Comments:

NA

vi. Data quality or usability affected? (Please explain.)
Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
□Yes X□ No□NA (Please explain.) Comments:

Only one sample was submitted with this work order. The overall 10% field duplicate frequency was met for the project.

ii. Submitted blind to lab?
□Yes □ No □XNA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

Yes □ No □NA (Please explain.) Comments:

NA

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)
Comments:

NA

g. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X□Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/22/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number:

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Denver

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes No NA (Please explain.) Comments:

The sample container for 13NC21WA06 had a collection time of 1330, the CoC listed 1630 as the collection time, samples were logged in per the CoC. The container label for 13NC21WA07 listed a collection time of 1340 on the sample container and 1645 on the CoC. Samples were logged in per the CoC. The narrative also noted that additional analyses requested on the CoC were logged in under work order 280-46414-1 as some sample had rush analyses requested and these 2 water samples had standard TAT requested.

e. Data quality or usability affected? (Please explain.)
Comments:

The collection time discrepancies had no impact on holding times or analyses and results are usable for project purposes without qualification.

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes X No NA (Please explain.) Comments:

No discrepancies were noted in the case narrative. All analyses were within method control limits.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
X□Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
□Yes □ No X□NA (Please explain.) Comments:

Two water samples were submitted for total and dissolved arsenic analysis.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X□Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to sample reporting limits meeting project data quality objectives.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
□X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

NA

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □ No □XNA (Please explain.) Comments:

NA

vi. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to method blank analyses and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

□Yes □ No □X NA (Please explain.) Comments:

Samples submitted for arsenic analysis only

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□Yes □X No □NA (Please explain.) Comments:

NA

vii. Data quality or usability affected? (Use comment box to explain.)

Sample results are usable for project purposes without qualification with respect to acceptable QC.

Comments:

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
Yes □ No X□NA (Please explain.) Comments:

Samples were submitted and analyzed for arsenic only, which does not require surrogates.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes □ No □NA (Please explain.) Comments:

NA

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No □NA (Please explain.) Comments:

NA

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

NA

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□Yes X□ No□NA (Please explain.) Comments:

Samples were submitted and analyzed for arsenic only, which does not require a trip blank

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
□Yes □ No □NA (Please explain.) Comments:

NA

iii. All results less than PQL?
□Yes □ No □NA (Please explain.) Comments:

NA

v. If above PQL, what samples are affected?

Comments:

NA

vi. Data quality or usability affected? (Please explain.)

Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☐Yes X☐ No☐NA (Please explain.) Comments:

The overall 10% frequency was met for the project, only 2 water samples were submitted with this work order.

ii. Submitted blind to lab?

☐Yes ☐ No ☐XNA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes ☐ No ☐NA (Please explain.) Comments:

NA

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

NA.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes X☐ No☐NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

☐Yes ☐ No ☐NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes No NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 9/272013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 280-46550-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Denver

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

The CoC noted the sample container was received with headspace. The sample was granular activated charcoal (GAC) from the water treatment system at Site 28. The headspace did not affect analytical results.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes No X NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to headspace in the sample. The sample was extracted by TCLP/ZHE leaching procedures before 8260 BTEX analysis.

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes X No NA (Please explain.) Comments:

No discrepancies were noted in the case narrative other than the one internal standard response did not meet acceptance criteria but no target analytes (BTEX) were associated with that internal standard so sample results are not affected.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
□Yes □ No X□NA (Please explain.) Comments:

Solid sample was leached by TCLP/ZHE leaching and reported in mg/L

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

Benzene is the only regulated volatile compound and reporting limits were more than sufficient for hazard determination. The sample was non-detect and non-hazardous for disposal purposes.

e. Data quality or usability affected?
Comments:

No

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
□X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

.

iii. If above PQL, what samples are affected?
Comments:

NA

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □ No X □XNA (Please explain.) Comments:

MB result was ND

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for waste disposal purposes.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□Yes □ No X□NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

NA

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□Yes □X No □NA (Please explain.) Comments:

No flagging was required.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to QC meeting acceptance criteria.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
XYes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No X□NA (Please explain.) Comments:

Sample and QC met acceptance criteria

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X□Yes □ No □NA (Please explain.) Comments:

A trip blank was analyzed with samples shipped together and reported in lab report 280-46550-2, which was analyzed on a 2-day rush basis.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X □Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?

X□Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

NA

vi. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analyses and reporting. All sample results were ND.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

□Yes □x No □NA (Please explain.) Comments:

No field duplicate required for waste disposal.

ii. Submitted blind to lab?

□Yes □ No □X NA (Please explain.) Comments:

No field duplicate required for waste disposal.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes □ No X NA (Please explain.) Comments:

No field duplicate required for waste disposal.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

NA

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

iii. If above PQL, what samples are affected?

Comments:

NA

iv. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 9/30/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 280-46550-2

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X☐NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Denver

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
□ X Yes □No □NA (Please explain.) Comments:

One HCL preserved and one unpreserved 1-liter amber were received broken for sample 13NC28TWA15 and one unpreserved 1-liter amber was received broken for sample 13NC28TW15, the narrative noted sufficient sample remained for all analyses. Sample 13NC28STW15 was received but not on the CoC. Bristol was notified and requested analyses were performed.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes □X No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Broken containers did not impact data quality or reporting. The failure to record sample 13NC28STW15 on the CoC also did not impact reporting.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No □NA (Please explain.) Comments:

Surrogates 1,2-dichloroethane-d4 and Dibromofluoromethane for 8260 analyses were out of control in sample 13NC28STW15 and the method blank in batch 280-192138. The LCS/LCSD had low 8270-SIM recoveries in batch 280-191499 and sample 13NC28STW15 was re-extracted out of hold time, both sets of data were reported. 8270 surrogate nitrobenzene-d5 was recovered above acceptance limits in samples 13NC28STW17, -STW19 and -TWA15, results may be biased high. Several analytes were detected in 8270 MB 280-191299; associated affected results are B flagged. 8270 surrogate 2-fluorobiphenyl was recovered below acceptance limits in the re-extraction of sample 13NC28STW15, the original extraction met surrogate recoveries but with failed LCS recoveries, both sets of data were reported.

c. Were all corrective actions documented?
X□Yes □ No □NA (Please explain.) Comments:

Sample 13NC28STW15 was re-extracted due to LCS failures in batch 280-191499, lab forgot to spike the LCS. All other samples met holding times.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Sample results are usable for project purposes with qualifications identified in the QC sections. The re-extracted sample 13NC28STW15 was reported from the out of hold analyses, even with failing QC as no QC was available from the original extraction. The lab failed to follow Bristol project procedures of extracting all samples with project MS/MSD. They extracted the first 10 samples with passing LCS/LCSD but not the 11th sample, which is 13NC28STW15.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

□Yes □X No□NA (Please explain.) Comments:

Sample 13NC28STW15 was initially extracted within hold but the LCS/LCSD failed recoveries and the sample was re-extracted outside of hold with acceptable QC.

c. All soils reported on a dry weight basis?

□Yes □ No □X NA (Please explain.) Comments:

All samples were water samples

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?

Comments:

Sample results are usable for project purposes without qualification except as noted above with respect to holding times and reporting limits.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

□X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X Yes □ No □NA (Please explain.) Comments:

Twelve target analytes were detected in 8270-PAH MB 280-191299 at concentrations similar to sample results. Affected sample results are B flagged.

iii. If above PQL, what samples are affected?

Comments:

Nearly all samples had a reportable concentration of at least 4 analytes detected in the method blank at similar concentrations. All results are less than regulatory limits and have no impact to the usability of results for discharge of treated water or monitoring downstream at Site 28 during sediment removal activities.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

□Yes □ No □XNA (Please explain.) Comments:

Sample results with concentrations less than ten times the MB concentrations had results changed are B flagged.

v. Data quality or usability affected? (Please explain.)

Comments:

Results are usable for project purposes of monitoring water for discharge and monitoring surface water at site 28 during sediment removal activities.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □ X No □NA (Please explain.) Comments:

The LCS/LCSD had low 8270 recoveries in batch 280-191499 and sample 13NC28STW15 was re-extracted out of hold time, both sets of data were reported.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

NA

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X□Yes □X No□NA (Please explain.) Comments:

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes with qualifications as noted above.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes X□ No□NA (Please explain.) Comments:

Surrogates 1,2-dichloroethane-d4 and Dibromofluoromethane for 8260 analyses were out of control in sample 13NC28STW15 and the method blank in batch 280-192138. Samples 13NC28STW17 and –STW19 in extraction batch 280-191299 had high surrogate recoveries for nitrobenzene-d5; naphthalene, 1-methylnaphylene and 2-methylnapthalene are associated with this surrogate, the samples were ND for naphthalene so only 1- and 2-methylnaphthalene were flagged QH on samples 13NC28STW17 and –STW19

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
X□Yes □ No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes with above noted qualifications.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes No NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes No NA (Please explain.) Comments:

iii. All results less than PQL?

X Yes No NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

All trip blank results were ND for BTEX

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes with no qualification for trip blanks. All results were ND.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?

X Yes ☐ No ☐NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X Yes ☐ No ☐NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

All positive sample results met RPD criteria, even those reported at less than the LOQ.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes X☐ No☐NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

☐Yes ☐ No ☐NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes ☐ No ☐NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist Date: 8/7/2013

CS Report Name: Northeast Cape (Site 28) Report Date: 7/23/13

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39293-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      Yes ☐X No☐NA (Please explain.) Comments:

      Two of the three coolers were received at temperatures below 2 degrees Celsius. However, there were no sample integrity issue or frozen samples noted; therefore, there will be no qualifications made on this basis.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes ☐ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes ☐ No ☐X NA (Please explain.) Comments:

No discrepancies were noted on the cooler receipt or case narrative.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. Case Narrative
a. Present and understandable?
X Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes ☐ No NA (Please explain.) Comments:

Case narrative discusses primarily dilutions required, MS/MSDs, and MB. See below and QA Summary for further details.

c. Were all corrective actions documented?
X Yes ☐ No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

See above.

5.Samples Results

a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
Yes □ No □ X NA (Please explain.) Comments:

Only water samples were submitted.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No □NA (Please explain.) Comments:

8270 SIM MB contained dibenz(a,h)anthracene, indeno[1,2,3-cd]pyrene, and pyrene less than the LOQ but greater than ½ LOQ. Mercury was detected in a MB at a concentration less than the LOQ but greater than ½ LOQ. Associated samples that are less than ten times the amount in the method blank should be flagged B and analyte result should be considered a high estimated value. All detected mercury, dibenz(a,h)anthracene, indeno[1,2,3-cd]pyrene, and pyrene will be B flagged on the basis of method blank contamination.

iii. If above PQL, what samples are affected?
Comments:

See above.

v. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

vi. Data quality or usability affected? (Please explain.)
Comments:

See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□X Yes □ No □ NA (Please explain.) Comments:

For both 6020 and 7470A, the lab reported a LCSD and laboratory duplicate.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes □X No □NA (Please explain.) Comments:

The PAH MSD in prep batch 580-139750 failed to meet lower acceptance criteria for anthracene and both the MS and MSD failed to meet lower recovery and precision criteria for benzo(a)pyrene.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes X No □NA (Please explain.) Comments:

RPD were within limits for LCS/LCSD and sample/sample duplicates., THE PAH MS/MSD failed to meet precision criteria for benzo(a)pyrene. Report submitted 7/23 stated in case narrative that the benzene RPD for MS/MSD failed but the MS/MSD was analyzed at a 10x dilution so no flags were assigned to the benzene results.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X Yes □ No □ NA (Please explain.) Comments:

The anthracene and benzo(a)pyrene results for sample 13NC28TWA01 were flagged QL for quality issues with potential low bias.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X □Yes No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X NA (Please explain.) Comments:

No qualifications on this basis.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
X Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?
Yes □ No XNA (Please explain.) Comments:

See above.

iv. If above PQL, what samples are affected?
Comments:

See above.

v. Data quality or usability affected? (Please explain.)
Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□ Yes X No NA (Please explain.) Comments:

Naphthalene was the only target analyte not to meet RPD for water samples.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)
Comments:

Sample results are usable for project purposes with naphthalene flagged QN for RPD exceedence. The treated water met discharge permit criteria.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

iii. If above PQL, what samples are affected?

Comments:

n/a

iv. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist Date: 8/7/2013

CS Report Name: Northeast Cape (Site 21) Report Date: 7/19/13

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39336-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      Yes X☐ No☐NA (Please explain.) Comments:

      One of the two coolers shipped was received with a temperature less than 2 degrees Celsius. However, there were no sample integrity issues or frozen samples noted; therefore, there will be no qualifications made on this basis.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X Yes □ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

X Yes □ No □ NA (Please explain.) Comments:

The label for 13NC21SS07-3, 13NC21SS07-3 MSD, 13NC21SS09-2, 13NC21SS09-3, 13NC21SS15-0.5, 13NC21SS15-2, and 13NC21SS15-3 showed a sample date of 07/11/2013. The COC lists date of 07/12/2013. The label for 13NC21SS10-2 showed a time of 1032. The COC lists time of 0832. The label for 13NC21SS10-2.5 showed a time of 1036. The COC lists time of 0836. These discrepancies were all logged in according to the COC and the Sample Summary table matches the CoC and the data deliverables.

e. Data quality or usability affected? (Please explain.)

Comments:

Results are usable without qualification.

4. Case Narrative

a. Present and understandable?

X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

X Yes □ No NA (Please explain.) Comments:

Case narrative discusses primarily dilutions required, duplicates, and MS/MSDs. See below and QA Summary for further details.

c. Were all corrective actions documented?

X Yes □ No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

See above.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      X Yes No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      X Yes □ No □ NA (Please explain.) Comments:

      Both soil and water samples were submitted.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X Yes □ No NA (Please explain.)
      Comments:

   e. Data quality or usability affected?
      Comments:

      No.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes No □NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

      See above.

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      X Yes □ No □NA (Please explain.) Comments:

v. Data quality or usability affected? (Please explain.)
Comments:

See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes □ No X NA (Please explain.) Comments:

Only metals analyses requested.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□X Yes □ No □ NA (Please explain.) Comments:

For these 6020 samples, the lab reported a LCSD and laboratory duplicate.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X□Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes X No □NA (Please explain.) Comments:

The arsenic MS/MSD RPD for sample 13NC21SS07-3 was outside acceptance limits. The result was J flagged by the lab on this basis, this will be replaced with a MN flag to indicate the result should be considered estimated with an uncertain bias on the basis for MS/MSD RPD.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes □ No □X NA (Please explain.) Comments:

No exceedances or qualifications on this basis.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
Yes □ No X□NA (Please explain.) Comments:

Only 6020 analyses requested.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□Yes No X□NA (Please explain.) Comments:

See above.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X NA (Please explain.) Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes □ No X□NA (Please explain.) Comments:

Only non-volatile, 6020 analyses requested

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes □ No X□NA (Please explain.) Comments:

See above.

iii. All results less than PQL?
Yes □ No XNA (Please explain.) Comments:

See above.

iv. If above PQL, what samples are affected?
Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes No NA (Please explain.) Comments:

One water field duplicate was submitted. Duplicate frequency calculated on a project basis rather than on a sample delivery group basis.

ii. Submitted blind to lab?

Yes No X NA (Please explain.) Comments:

See above.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

□ Yes No X NA (Please explain.) Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No qualifications on this basis for this SDG.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

iii. If above PQL, what samples are affected?

Comments:

n/a

iv. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist Date: 8/13/2013

CS Report Name: Northeast Cape (Site 21) Report Date: 8/5/13

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39336-2

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      Yes ☐X No☐NA (Please explain.) Comments:

      One of the two coolers shipped was received with a temperature less than 2 degrees Celsius. However, there were no sample integrity issues or frozen samples noted; therefore, there will be no qualifications made on this basis

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes □ No □X NA (Please explain.) Comments:

No discrepancies.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. Case Narrative
   a. Present and understandable?
   X Yes □ No □NA (Please explain.) Comments:

   b. Discrepancies, errors or QC failures identified by the lab?
   Yes □ No X NA (Please explain.) Comments:

No discrepancies, errors, or QC failures.

   c. Were all corrective actions documented?
   Yes □ No X NA (Please explain.) Comments:

See above.

   d. What is the effect on data quality/usability according to the case narrative?
   Comments:

See above.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
   X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
Yes □ No □X NA (Please explain.) Comments:

TCLP results reported in mg/L regardless of matrix.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

See above.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

v. Data quality or usability affected? (Please explain.)
Comments:

See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes □ No X NA (Please explain.) Comments:

Only TCLP arsenic analysis requested.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□X Yes □ No □ NA (Please explain.) Comments:

For this sample result, the lab reported a LCSD and laboratory duplicate.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X□Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes □ No □X NA (Please explain.) Comments:

No exceedances or qualifications on this basis.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
Yes □ No X□NA (Please explain.) Comments:

Only 6020 analyses requested.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

□Yes No X□NA (Please explain.) Comments:

See above.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No X NA (Please explain.) Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes □ No X□NA (Please explain.) Comments:

Only non-volatile, 6020 analyses requested

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes □ No X□NA (Please explain.) Comments:

See above.

iii. All results less than PQL?

Yes □ No XNA (Please explain.) Comments:

See above.

iv. If above PQL, what samples are affected?

Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes X No NA (Please explain.) Comments:

2 previously analyzed samples with high results for arsenic were re-submitted for TCLP extraction and hazard determination based on TCLP results. The TCLP sample results were non-hazardous.

ii. Submitted blind to lab?
Yes No X NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□ Yes No X NA (Please explain.) Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No qualifications on this basis for this SDG.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iv. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist Date: 8/7/2013

CS Report Name: Northeast Cape (MOC) Report Date: 7/24/13

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39358-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      Yes X☐ No☐NA (Please explain.) Comments:

      The single cooler shipped was received with a temperature less than 2 degrees Celsius. However, there were no sample integrity issues or frozen samples noted; therefore, there will be no qualifications made on this basis

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X Yes □ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes □ No □X NA (Please explain.) Comments:

No discrepancies

e. Data quality or usability affected? (Please explain.)

Comments:

Results are usable without qualification.

4. Case Narrative

a. Present and understandable?

X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

X Yes □ No NA (Please explain.) Comments:

Case narrative discusses primarily dilutions required and instrument blanks. See below and QA Summary for further details.

c. Were all corrective actions documented?

X Yes □ No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

See above.

5.Samples Results

a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □ NA (Please explain.) Comments:

Both soil and water samples were submitted.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No □NA (Please explain.) Comments:

However, two instrument blanks contained DRO and RRO at detectable concentrations less than ½ the LOQ in analytical batches 580-140237 (8.06 and 19.4, respectively) and 580-140299 (7.82 and 18.3, respectively).

iii. If above PQL, what samples are affected?
Comments:

See above.

v. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

The associated sample results (four DRO and one RRO) within ten times the amount in the instrument are B flagged to indicate a high estimated value.

vi. Data quality or usability affected? (Please explain.)
Comments:

See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□ Yes □ No □ X NA (Please explain.) Comments:

Only organic analyses

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X□Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes □ No □X NA (Please explain.) Comments:

No exceedances or qualifications on this basis.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□X Yes No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X NA (Please explain.) Comments:

No surrogate failures.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes □ No X□NA (Please explain.) Comments:

Only non-volatile analyses requested

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes □ No X□NA (Please explain.) Comments:

See above.

iii. All results less than PQL?
Yes □ No XNA (Please explain.) Comments:

See above.

iv. If above PQL, what samples are affected?

Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes No NA (Please explain.) Comments:

One soil field duplicate was submitted.

ii. Submitted blind to lab?

X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

X Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No qualifications on this basis for this SDG.

f. Decontamination or Equipment Blank (If not used explain why).

Yes No X NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

iii. If above PQL, what samples are affected?

Comments:

n/a

iv. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist Date: 8/14/2013

CS Report Name: Northeast Cape (Site 31) Report Date: 7/24/13

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39359-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X Yes □ No NA (Please explain.) Comments:

All samples received in good condition.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes □ No X NA (Please explain.) Comments:

No discrepancies.

f. Data quality or usability affected? (Please explain.)

Comments:

Results are usable without qualification.

4. Case Narrative

a. Present and understandable?

X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

X Yes □ No NA (Please explain.) Comments:

Case narrative discusses MS/MSDs, RPDs, and CCVs. See below and QA Summary for further details.

c. Were all corrective actions documented?

X Yes □ No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

See above.

5.Samples Results

a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

See above.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

v. Data quality or usability affected? (Please explain.)
Comments:

See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No X NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□ Yes □ No □X NA (Please explain.) Comments:

Just PCBs requested.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X□Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes X No □NA (Please explain.) Comments:

The PCB-1260 MS/MSD recoveries and RPD for sample 13NC31SS001MS were outside acceptance limits. This will be replaced with a MH flag to indicate the result should be considered estimated with a high bias on the basis for MS/MSD recoveries.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes □ No □X NA (Please explain.) Comments:

No exceedances or qualifications on this basis.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X □Yes No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X NA (Please explain.) Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes □ No X□NA (Please explain.) Comments:

Only non-volatile analyses requested

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes □ No X□NA (Please explain.) Comments:

See above.

iii. All results less than PQL?
Yes □ No XNA (Please explain.) Comments:

See above.

v. If above PQL, what samples are affected?

Comments:

See above.

vi. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes No NA (Please explain.) Comments:

One soil field duplicate was submitted with one primary sample from Site 13.

ii. Submitted blind to lab?

X Yes No NA (Please explain.) Comments:

See above.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

□ Yes X No NA (Please explain.) Comments:

The RPD limit was not met but one result was J flagged for results less than the LOQ so no flags were assigned.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No flags were assigned for RPD, the PCB results were well below cleanup levels..

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Keather McLoone/Marty Hannah

Title: Project Chemist Date: 8/7/2013

CS Report Name: Northeast Cape (Site 10) Report Date: 7/30/13

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39360-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

X Yes ☐ No ☐NA (Please explain.) Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

X☐Yes ☐ No NA (Please explain.) Comments:

Samples were analyzed for glycol by TA Denver. TA-Denver is DoD ELAP and ADEC-CS approved.

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

X Yes ☐ No ☐NA (Please explain.) Comments:

b. Correct analyses requested?

X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?

X Yes ☐ No ☐NA (Please explain.) Comments:

2 coolers were shipped with this work order, one was received with a cooler temp of 0.2 degrees C and a temp blank at 4.3 degrees C. The other was received with the cooler temp at 4.0 degrees C and the temp blank at 3.3 degrees C.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X Yes □ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

X Yes □ No □ NA (Please explain.) Comments:

The label for 13NC10WS001, -WS002, –WS003 and WS004 did not match the sample labels, which were 13NC10WS01, -WS02, –WS03 and WS04, the extra "0" was omitted from the sample labels.
These discrepancies were all logged in according to the COC.

e. Data quality or usability affected? (Please explain.)

Comments:

Results are usable without qualification.

4. Case Narrative

a. Present and understandable?

X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

X Yes □ No NA (Please explain.) Comments:

Low surrogate in VOC sample, method blank contamination for mercury, barium VOCs and DRO along with high VOC LCS recovery of 1,2-dichloropropane and the data usability are discussed in later sections.

c. Were all corrective actions documented?

X Yes □ No NA (Please explain.) Comments:

Yes, QC failures did not require corrective action but were noted in the case narrative

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Sample results are usable for project purposes with some qualifications.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

X Yes □ No □NA (Please explain.) Comments:

VOC samples were not TCLP/ZHE extracted after consultation with TA-Tacoma and were run as soil as the samples were submitted with methanol preservation.

b. All applicable holding times met?

X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

X Yes □ No □ NA (Please explain.) Comments:

GRO/VOCs, DRO/RRO and glycols reported on dry weight basis. All other samples TCLP extracted and reported in mg/L or ug/L following TCLP extraction.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

X Yes □ No NA (Please explain.)

Comments:

e. Data quality or usability affected?

Comments:

No.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X Yes No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?

Comments:

Barium, mercury, acetone , GRO and DRO were detected at concentrations less than ½ the LOQ. Positive sample results with reported concentrations less than 10 times the concentration detected in the respective method blank were B flagged and are considered estimates with potential high bias.

v. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

Samples will be flagged as noted in 6.a.iii

vi. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes. The sample concentrations reported for GRO and mercury were less than 100 times the site action level.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No X NA (Please explain.) Comments:

LCS/LCSD was performed on all analyses in all analytical batches.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□X Yes □ No □ NA (Please explain.) Comments:

For these 6020 samples, the lab reported an LCSD/ LCSD and laboratory duplicate.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes □X No □NA (Please explain.) Comments:

The VOC LCS had a high recovery of 1,2-dichloropropane in analysis batch 580-140137, samples were non-detect and a variance request was granted by the USACE project chemist, sample results were not flagged as the analysis was sufficient in detecting the analytes of interest. The SVOC analysis had a low recovery of anthracene at 50% (lower limit 51%). Results were reported with QL qualification, all anthracene sample results were non-detect. Ethylene glycol recovery in the MSD was 41% with a 50% lower control limit, however, the initial sample concentration was greater than 4 times the spike amount so no results were qualified.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No □NA (Please explain.) Comments:

vi. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

All samples had the anthracene result flagged QL for quality issue with low bias. All anthracene results were non-detect. The results will be used for waste characterization and disposal.

vii. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X Yes □ No □ NA (Please explain.) Comments:

Explained in 6.b.v.

Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes, which is waste characterization and disposal.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□Yes X NoX□NA (Please explain.) Comments:

Sample 13NC10WS003 had trifluorotoluene (an AK101 field surrogate) reported below the laboratory lower acceptance limit of 75% at 70%. Because this surrogate is not directly a part of the laboratory analysis, no results were flagged for low surrogate recovery. The trifluorotoluene met the AK101-GRO method acceptance limit at 78%, the AK101 lower acceptance limit is 50%.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X NA (Please explain.) Comments:

No flags were assigned based on surrogate recoveries.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification based on surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes □ No X□NA (Please explain.) Comments:

iii. All results less than PQL?

X Yes □ No XNA (Please explain.) Comments:

See above.

iv. If above PQL, what samples are affected?

Comments:

1,1dichloroethene was detected in Trip Blank 071513-1 along with GRO. 1,1 dichloroethene was not detected in any samples so no qualification was necessary. GRO was also detected in the same trip blank , laboratory method blank and all samples. The laboratory GRO method blank concentration was greater than all project sample concentrations except the trip blank. All results were less than the LOQ. Results were changed to ND at the LOQ and a B qualifier was assigned.

v. Data quality or usability affected? (Please explain.)

Comments:

Even with the GRO results B qualified and changed to ND at the LOQ, results are still usable to demonstrate the sample results are more than 100 times below the site cleanup level for GRO.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?

X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□ X Yes No X NA (Please explain.) Comments:

The majority of results were non-detect so no valid comparison could be made on those results. All results that were comparable met RPD limits.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes without qualification with respect to field duplicates.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □X No□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist Date: 8/15/2013

CS Report Name: Northeast Cape (Site 13) Report Date: 7/25/13

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39361-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X Yes □ No NA (Please explain.) Comments:

All samples received in good condition.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes □ No □X NA (Please explain.) Comments:

No discrepancies.

f. Data quality or usability affected? (Please explain.)

Comments:

Results are usable without qualification.

4. Case Narrative

a. Present and understandable?

X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

X Yes □ No NA (Please explain.) Comments:

Case narrative discusses primarily MS/MSDs and CCV. See below and QA Summary for further details.

c. Were all corrective actions documented?

X Yes □ No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

See above.

5.Samples Results

a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

See above.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

v. Data quality or usability affected? (Please explain.)
Comments:

See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□ Yes □ No □X NA (Please explain.) Comments:

Only PCB analyses requested.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X□Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes X No □NA (Please explain.) Comments:

The PCB-1260 MS/MSD recoveries for sample 13NC13SS001 were below acceptance limits. The result will not be qualified because the concentration of the sample was more than four times that of the spike.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

RPD did not fail.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes □ No □X NA (Please explain.) Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

See above.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X□Yes No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X NA (Please explain.) Comments:

No qualifications on this basis.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes □ No X□NA (Please explain.) Comments:

Only non-volatile analyses requested

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes □ No X□NA (Please explain.) Comments:

See above.

iii. All results less than PQL?
Yes □ No XNA (Please explain.) Comments:

See above.

iv. If above PQL, what samples are affected?
Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes No NA (Please explain.) Comments:

No field duplicates were submitted with the four samples from this work order. Duplicate frequency calculated on a project basis rather than on a sample delivery group basis and the 10% project frequency was met.

ii. Submitted blind to lab?

Yes No X NA (Please explain.) Comments:

See above.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

□ Yes No X NA (Please explain.) Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No qualifications on this basis for this SDG.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist Date: 8/15/2013

CS Report Name: Northeast Cape (Site 10) Report Date: 7/25/13

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39362-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X NA (Please explain.) Comments:

      TestAmerica Denver performed the 8015C analyses but this method is not part of the ADEC lab approval program.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      Yes X☐ No☐NA (Please explain.) Comments:

      One cooler temperature was recorded at 0.2 degrees Celsius but there were no sample integrity issues, so there will be no qualifications made on this basis.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes □ No □X NA (Please explain.) Comments:

The container label for 13NC10SS005 did not match the information listed on the COC. The container label lists a time of 1130. The COC lists a time of 1100. The lab logged in per COC. The container label for 13NC10SS009 did not match the information listed on the COC. The container label does not list time. The COC lists time of 1550. The lab logged in per COC.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes □ No NA (Please explain.) Comments:

Case narrative discusses primarily dilutions, MB, LCS/LCSDs, MS/MSDs, RPDs, internal standards and CCV. See below and QA Summary for further details.

c. Were all corrective actions documented?
X Yes □ No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

See above.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      X Yes No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      X Yes □ No □ NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      Yes X□ No NA (Please explain.)
      Comments:

1,2,3-Trichloropropane and 1,2-Dibromoethane were non-detect in samples but the LODs were greater than the cleanup levels. The QAPP identified these analytes as not likely to meet CULs due to the CULs being lower than current instrument capabilities.

   e. Data quality or usability affected?
      Comments:

Results are still usable to demonstrate the lack of presence of these analytes, just not at the CUL.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes No □NA (Please explain.) Comments:

MB results are less than LOQ but methylene chloride was detected in a MB between the LOQ and ½ the LOQ. All ten samples in this SDG were in this batch were reported as not detected; therefore, there are no qualifications on the basis of this MB.
DRO was detected in another MB between the LOQ and ½ the LOQ. One associated sample results was within ten times the amount in the blank, will be flagged B, and should be considered an estimated result with high bias. Two instrument blanks (IB) also contained DRO and RRO between the LOQ and ½ the LOQ. The IB for analytical batch 580-140240 contained 8.0 and 22.4 mg/L DRO and RRO, respectively. Only one associated result, not already B flagged due to MB contamination will be qualified on the basis of this IB. An IB for analytical batch 580-140237 contained 9.1 and 21.6 mg/L DRO and RRO, respectively. The other IB run with that analytical batch contained 8.06 and 19.4 mg/L DRO and RRO, respectively. Two DRO and two RRO results are B flagged on the basis of these two IBs.

iii. If above PQL, what samples are affected?

Comments:

See above.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

X Yes □ No □NA (Please explain.) Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes □ No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

□ X Yes □ No □ NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes X□ No□NA (Please explain.) Comments:

The 1,2-dichloropropane LCSD was above acceptance criteria. However, the associated results were all not detected; therefore, no qualifications on the basis of this LCSD.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes X No □NA (Please explain.) Comments:

The RPD for the tetrachloroethene LCS/LCSD was above acceptance criteria; therefore, all the associated results will be flagged QN to indicate estimated results with an uncertain bias. The hexachlorobutadiene MSD recovery was above acceptance criteria and the RPD was high. The sample, 13NC10SS004, was not detected and no qualification was made on the basis of this MSD or RPD.

The GRO MS/MSD RPD was greater than lab acceptance criteria which was more restrictive than the QAPP limits. Results were within QAPP limits; therefore, no qualifications were made on the basis of this RPD.

The MS/MSD RPD for cadmium on sample13NC10SS004 was above acceptance criteria as well the recovery of the MS. This sample result will be qualified MH to indicate an estimated result with a high bias. The recovery of zinc in the MS for this sample was below acceptance criteria; therefore, this zinc result will be qualified ML to indicate a low bias and estimated result.

The RPD for the mercury laboratory duplicate sample 13NC10SS004 was above acceptance; therefore, this result will be flagged MN to indicate an estimated results with an uncertain bias.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes □ No □X NA (Please explain.) Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

See above.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X□Yes No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No X NA (Please explain.) Comments:

No qualifications on this basis.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes □ No □NA (Please explain.) Comments:

Trip blank associated with this shipment (Trip Blank 071513) reported under SDG 36360.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes □ No □ NA (Please explain.) Comments:

iii. All results less than PQL?

Yes □ No XNA (Please explain.) Comments:

All trip blank results less than the LOQ; however, GRO was detected below the LOQ at 3.8 mg/kg. 1,1-Dichloroethene was also detected below the LOQ at 10 ug/kg. There were no associated, detected 1,1-dichloroethene results. Four associated, detected GRO results are considered estimated with a B flag for a potential high bias.

iv. If above PQL, what samples are affected?

Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

One field duplicate was submitted with nine prmary samples

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No qualifications on this basis for this SDG, all RPDs were met.

g. Decontamination or Equipment Blank (If not used explain why).

Yes No X NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

Yes No X NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iv. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 11-20-2013

CS Report Name: NE Cape HTRW report 2013 Report Date: 7-30-2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39367-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID.212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X☐NA (Please explain.) Comments:

      All analyses were performed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      ☐X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      ☐X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X☐ Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X☐ Yes ☐ No ☐NA (Please explain.) Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X☐Yes ☐ No ☐NA (Please explain.) Comments:

Sample 13NCMOCWA003 had a collection time of 1315 listed on the container and 1140 on the CoC. Samples were logged in with the CoC time.

e. Data quality or usability affected? (Please explain.)
Comments:

Data quality was not impacted in regards to sample receipt and documentation.

4. Case Narrative
a. Present and understandable?
X☐ Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X☐Yes ☐ No ☐NA (Please explain.) Comments:

Trifluorotoluene had a high recovery in the 8260 LCSD along with BTEX in batch 580-140358. A variance was granted by USACE-Alaska for reporting the results with a QH flag on all positive results. ND results not affected. The BFB 8260 tune had ion 50 abundance slightly below acceptance criteria but met criteria when the values were rounded up. Data was reported. DRO and RRO were detected in the method blank in ex batch 580-140293 at concentrations less than 10 times the lowest sample concentration, no B flags were assigned based on the 10X rule. The DRO/RRO MS/MSD had recoveries less than acceptance limits.

c. Were all corrective actions documented?
X ☐Yes ☐ No ☐NA (Please explain.) Comments:

The DRO/RRO method blank in batch 580-140293 was re-analyzed to confirm the results were less than 10 times any project sample result, no flags were assigned to the final results on the data table.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes, which is monitoring the surface water near MOC soil excavations.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X☐ Yes ☐ No ☐NA (Please explain.) Comments:

   b. All applicable holding times met?
      X☐ Yes ☐ No ☐NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      ☐Yes ☐ No ☐NA (Please explain.) Comments:

      All samples were water samples.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X☐ Yes ☐ No ☐NA (Please explain.) Comments:

   e. Data quality or usability affected?
      Comments:

      Sample results are usable for project purposes without qualification in respect to correct analyses, holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

      DRO and RRO were detected in the method blank. All sample results were greater 10x the MB concentration so no flags were assigned to the results

      iii. If above PQL, what samples are affected?
      Comments:

v. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes X□ No□NA (Please explain.) Comments:

Data is flagged on the lab report but not on the data table as all sample concentrations are greater than 10X the MB concentration

vi. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to method blanks.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□Yes □ No □X NA (Please explain.) Comments:

Only organics analyzed in this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□Yes X□ No□NA (Please explain.) Comments:

The 8260 BTEX LCSD had recoveries exceeding the upper control limit. Positive BTEX sample results are flagged QH. The DRO/RRO MS/MSD on sample 13NCMOCWA002 in prep batch 580-140293 failed to meet lower recovery limits for both DRO and RRO. The LCS/LCSD met batch precision and accuracy criteria so only the DRO and RRO results are flagged ML for matrix interference with potential low bias.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X□Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

All samples in this work order except 13NCMOCWA002 had at least one BTEX result flagged.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X□Yes □ No □NA (Please explain.) Comments:

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes, which is monitoring the surface water near the MOC for potential impact from adjacent excavation activities.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□Yes X□ No□NA (Please explain.) Comments:

The BTEX LCSD had trifluorotoluene (surrogate) exceed the upper control limit as well as the BTEX spike analytes. A variance was granted for reporting with the high recoveries along with qualification of positive BTEX results. All project sample surrogates for all analyses met acceptance criteria.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X□NA (Please explain.) Comments:

All project sample surrogate recoveries met acceptance criteria.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X□Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X □Yes □ No □NA (Please explain.) Comments:

The cooler containing the trip and all volatile samples are noted in the special instructions section of the CoC.

iii. All results less than PQL?

X□Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

All trip blank results are ND.

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification in respect to the trip blank.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X□Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

□Yes □X No □NA (Please explain.) Comments:

Fluorene did not meet criteria in the field duplicates, fluorene results are flagged MN for matrix interference with no directional bias. All other analytes with both results above the LOQ met criteria.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes in respect to field duplicate results. All results are well below regulatory criteria with the exception of DRO and RRO.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □X No □NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □X NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment.

ii. If above PQL, what samples are affected?

Comments:

All samples were collected with disposable sampling equipment.

iii. Data quality or usability affected? (Please explain.)

Comments:

All samples were collected with disposable sampling equipment.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X □Yes □ No □NA (Please explain.) Comments:

Flags are consistent with QAPP

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/11/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 7/30/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39382-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☒ Yes ☐ No ☐ NA (Please explain.) Comments:

      Glycol analysis was subcontracted to TA-Denver for analysis. TA Denver is DoD/ELAP and ADEC CS accredited.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?

      One cooler was shipped to TestAmerica Tacoma and was received in good condition with a cooler temperature of 1.6°C. The trip blank (TB 071713) was received without a time or label, it was logged in per the CoC. Glycol samples were sub-contracted to TA-Denver and were shipped via Fed Ex from TA-Tacoma. The glycol sample cooler was temporarily lost by Fed Ex and was delivered 2 days later at a temperature of 20.8 °C. The USACE was notified immediately and a variance was granted for the analysis to proceed as glycol is relatively non-volatile. Glycol results are reported without flagging in regards to the cooler being well above temperature upon receipt

□Yes X□ No□NA (Please explain.) Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

No breakage was noted.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X □Yes □ No □NA (Please explain.) Comments:

See 3.a. above

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable without qualification in respect to sample receipt, documentation and preservation.

4. Case Narrative
a. Present and understandable?
X□Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X□Yes □ No □NA (Please explain.) Comments:

c. Were all corrective actions documented?
X□Yes □ No □NA (Please explain.) Comments:

PCB sample extracts were acid cleaned along with batch QC due to non-target analyte inteferrence, likely diesel. All sample and batch QC met acceptance criteria.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes with some qualifications as discussed in further sections (method blank).

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X□Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      X□Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      X□Yes □ No □NA (Please explain.) Comments:

Samples 13NC10DS01 and -02 were TCLP extracted and reported on a mg/L basis. The samples were from drummed soil and characterized for disposal.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      □Yes X□ No□NA (Please explain.) Comments:

1,2,3-trichloropropane, 1,2 dicbromoethane and chloromethane results were non-detect. The limit of detection for these 3 analytes was greater than the cleanup level. Results are bolded on results table.

   e. Data quality or usability affected?
      Comments:

Sample results are usable for project purposes without qualification in respect to reporting and analysis. The above noted 3 analytes whose limit of detection did not meet were not detected in any drum liquid contents analyzed in 2012 at Site 10. The project specific QAPP noted that the laboratory reporting limits for 4 analytes were not sensitive enough to report at concentrations less than the cleanup levels.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X□Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X□Yes □ No □NA (Please explain.) Comments:

The GRO instrument blank (CCB) and method blank had positive detections at 0.81 mg/kg in the method blank analytical batch 580-140310. Samples 13NC10SS011 through -16 were also analyzed in the batch and had reportable results near the concentration reported in the instrument blank. Results for 13NC10SS011 through -16 were B flagged to indicate blank contamination with potential high bias.
Lead was detected in the method blank (580-140357/18-A) at a concentration less than half the LOQ, all project sample results were at least 50X higher than the lead concentration reported in the method blank so no flagging was necessary.

iii. If above PQL, what samples are affected?

Comments:

All samples including the trip blank had GRO hits near the blank concentrations. All GRO results were B flaggged. Lead results were unaffected and no flagging was necessary.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

□X Yes □ No □NA (Please explain.) Comments:

B flags.

v. Data quality or usability affected? (Please explain.)

Comments:

While there were likely GRO detections not related to the actual site conditions, the concentrations were well below the project action limits by roughly 300X.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □X No □NA (Please explain.) Comments:

The metals MS/MSD on sample 13NC10SS011 had zinc and chromium recoveries exceed method acceptance limits. Results for this sample are flagged MH for matrix interference with potential high bias. The LCS/LCSD in extraction batch 580-140357 met method acceptance criteria.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes No NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

The only affected sample was 13NC10SS011used for the 6020 metals MS/MSD as noted above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X Yes No NA (Please explain.) Comments:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable for project purposes with above noted qualifications.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X Yes No NA (Please explain.) Comments:

Trifluorotoluene exceeded 8260 VOC recoveries but it is a field surrogate added specifically for AK101-GRO analysis and is not evaluated for VOC analysis as stated in the QAPP.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes X No NA (Please explain.) Comments:

No flags were assigned to samples based on surrogate recoveries. Except as noted above in c.ii all surrogate recoveries met method acceptance criteria.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable for project purposes without qualification in respect to surrogate recoveries and reporting.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes No NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes No NA (Please explain.) Comments:

Only one cooler was shipped for this work order and it contained all samples including the trip blank.

iii. All results less than PQL?

X Yes No NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

GRO sample results were near the concentrations reported in the instrument blank (CCB) and method blank. Results for all samples were changed to ND at the LOQ and B flagged to indicate blank contamination.

v. Data quality or usability affected? (Please explain.)

Comments:

While the results were changed to ND, the reported concentrations in samples were well below the GRO project action levels. The data quality is less than ideal but the results are still usable for project purposes to demonstrate that soil remaining after excavation was below project cleanup levels for all analytes.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?

X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X□Yes □ No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Field duplicate results are usable for project purposes without qualification in respect to field duplicate results.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □X No □NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

ii. If above PQL, what samples are affected?

Comments:

Not applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X□Yes □ No □NA (Please explain.) Comments:

Data flags were assigned as specified in the QAPP.

Laboratory Data Review Checklist

Completed by: Emily Conway

Title: Geologist Date: 8/23/2013

CS Report Name: Northeast Cape (MOC) Report Date: 7/30/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39439-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X Yes □ No NA (Please explain.) Comments:

All samples received in good condition.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes □ No □X NA (Please explain.) Comments:

No discrepancies were noted on the cooler receipt or case narrative.

f. Data quality or usability affected? (Please explain.)

Comments:

Results are usable without qualification.

4. Case Narrative

a. Present and understandable?

X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes □ X No NA (Please explain.) Comments:

All QC parameters are within the acceptance limits except the DRO MS/MSD as noted in the LCS section.

c. Were all corrective actions documented?

Yes □ No X NA (Please explain.) Comments:

No corrective actions were necessary.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

See above.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □ NA (Please explain.) Comments:

ii. All method blank results less than PQL?
Yes No □ NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

See above.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
Yes □ No □X NA (Please explain.) Comments:

No flags were required.

v. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification in respect to method blank analyses and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□ Yes No X NA (Please explain.) Comments:

No metals were analyzed.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□X Yes X□ No□NA (Please explain.) Comments:

Sample 13NCMOCSS016 was specified on the CoC for MS/MSD analysis for DRO/RRO and had recoveries exceed method acceptance limits. The LCS/LCSD were within limits, the DRO parent sample concentration was greater than 4 times the spike amount so no flagging was necessary.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Sample 13NCMOCSS016 was flagged QH.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes □ No □X NA (Please explain.) Comments:

No flags necessary

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable with above noted qualification. The sample results were for 13NCMOCSS016 were roughly 60% of project action limits so the results were usable for project purposes to demonstrate the soil near the sample collection location were below project action levels.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X Yes No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X NA (Please explain.) Comments:

No qualifications were necessary.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes □ No □X NA (Please explain.) Comments:

No trip blank was required.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes □ No □X NA (Please explain.) Comments:

See above.

iii. All results less than PQL?
Yes No X NA (Please explain.) Comments:

See above.

v. If above PQL, what samples are affected?
Comments:

See above.

vi. Data quality or usability affected? (Please explain.)
Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration
□X Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No qualifications on this basis for this SDG.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected? (Please explain.)

Comments:

N/A

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables with definitions and are also discussed in the QA summary.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/11/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 7/31/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39440-1

ADEC File Number: 475.038.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      □X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      The one project sample submitted was analyzed by TA-Tacoma. Glycol samples were collected in separate containers and submitted directly to TA Denver and are reported under work order 580-39441. The glycol results have a * symbol after them and are defined in Table Notes as being analyzed under work order 580-39441-1

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X□Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X□Yes □ No □NA (Please explain.) Comments:

      Volatile samples were submitted for analysis methanol preserved, therefore TCLP-ZHE leaching/extraction could not be performed and the project sample was analyzed using standard methods and not TCLP. The full 8260 VOC list was reported.

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X□Yes □ No □NA (Please explain.) Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X☐Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X☐Yes ☐ No ☐NA (Please explain.) Comments:

The methanol preserved portion of sample 13NC10WS05 was received with a smeared label and "05" was visible. This was the only project sample submitted under this CoC and analysis was performed after the sample ID was clarified. The trip blank shipped with this sample leaked methanol as noted in the case narrative and was likely the cause of label smearing in the project sample. The case narrative noted GRO analysis was completed on the trip blank but not on 8260 VOC analyses. Acetone was the only VOC analyte detected in the project sample and was also detected in method blank 580-140694/1 at a slightly lesser concentration. Upon review the acetone result was B flagged.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

☐Yes ☐X No ☐NA (Please explain.) Comments:

No discrepancies were noted.

e. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable without qualification in respect to sample shipping and documentation.

4. Case Narrative

a. Present and understandable?

X☐Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

☐X Yes ☐ No ☐NA (Please explain.) Comments:

Volatile samples were submitted for analysis methanol preserved, therefore TCLP-ZHE leaching/extraction could not be performed and the project sample was analyzed using standard methods and not TCLP. The full 8260 VOC list was reported. Refer to section 6 of this checklist for further discussion of method blanks, LCS/LCSD and MS/MSD recoveries out of control.

c. Were all corrective actions documented?

X☐Yes ☐ No ☐NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

While there were several issues with sample shipping and analysis, the results are usable for project purposes, which is waste characterization for proper disposal.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      □Yes □X No □NA (Please explain.) Comments:

The trip blank could not be analyzed for VOCs as most methanol had leaked. The CoC had TCLP/ZHE extraction requested for VOCs but the sample was submitted methanol preserved. The sample was analyzed as a soil sample and results were ND for all target analytes except acetone, which was a noted lab contaminant. The CoC also had PAHS, PCBs, and metals listed for TCLP extraction. PCBs and metals were TCLP extracted and reported, PAHs were analyzed as soils and reported on a dry weight basis.

   b. All applicable holding times met?
      X□Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      X□Yes □ No □NA (Please explain.) Comments:

As noted above, PCBs and metals were TCLP extracted and reported in mg/L, PAHs GRO and VOCs were reported on a dry weight basis.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X□Yes □ No □NA (Please explain.) Comments:

   e. Data quality or usability affected?

Comments:

NA

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

Acetone was detected in method blank 580-140694/1and the only VOC analyte detected in the only project sample in this work order at a slightly lesser concentration. Upon review the acetone result was result was B flagged. Napthalene was also detected in method blank 580-140660/1 at a concentration less than the LOQ but greater than the sample. The sample result was B flagged. DRO was detected in the method blank at a concentration less than 10 times the sample result so no flagging. Barium, lead and silver were detected in the method blank at concentrations that are greater than 10X less than any samples, silver was ND in the sample. Mercury was detected in the method blank at a concentration greater than the sample concentration, the sample result is B flagged. GRO was detected in the method blank at a concentration greater than the reported sample concentration, GRO sample results were B flagged.

iii. If above PQL, what samples are affected?

Comments:

All results were less than the LOQ, acetone, mercury and naphthalene results for 13NC10WS05 were affected.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

X□Yes □ No □NA (Please explain.) Comments:

Yes, B flagged

v. Data quality or usability affected? (Please explain.)

Comments:

While there was blank contamination, the results are usable for project purposes which are to characterize bulk soil for waste disposal. Sample results are usable for that purpose.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □X No □NA (Please explain.) Comments:

Vinyl chloride, bromomethane, chloroethane and hexachlorobutadiene exceeded upper control limits in both the MS and MSD 8260 analyses, none of these analytes were detected in the sample so no flagging was necessary.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

□Yes □X No □NA (Please explain.) Comments:

The 8260 LCS/LCSD in analysis batch 580-140693 exceeded RPD limits for chloroethane, trichlorotrifluoromethane, carbon disulfide, acetone, methylene chloride, , 2,2-dichloropropane, 2-butanone (MEK), and tetrachloroethene. All analytes were within method control limits in both the LCS and LCSD, only the RPD limits failed. The case narrative for 580-39440-1 also indicated that RPD was exceeded for "several" target anlytes in the MS/MSD when there were 35 analytes flagged in the report for not meeting RPDs, based on soil weight and concentration. Upon review of MS/MSD results and comparison of percent recoveries, none of the results exceeded RPD limits when percent recoveries were calculated. As example, both the MS and MSD had reported 100% recovery for benzene but the RPD was reported at 31%. This is due to the calculation being based on the differing soil weights in both the MS and MSD sample containers and not on percent recovery. This is allowed under EPA methodology but as in this example provides seemingly erroneous results.

The DRO/RRO MS/MSD on sample 13NC10WS05 greatly exceeded recovery limits due to the parent sample concentrations for both DRO and RRO being greater than 4 times the spike concentration so no flagging was necessary.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No results were affected by %R or RPD limit exceedences as noted above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□Yes X□ No□NA (Please explain.) Comments:

No flagging was necessary based on recoveries exceeding the upper control limit and results being non-detect for those analytes.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

While data quality is less than ideal, results are still usable for project purposes, which is proper waste characterization for disposal purposes only.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
□X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X□Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No □X NA (Please explain.) Comments:

Not applicable

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
X□Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
X□Yes □ No □NA (Please explain.) Comments:

Only one project sample and a trip blank with submitted in a single cooler for this work order.

iii. All results less than PQL?
X□Yes □ No □NA (Please explain.) Comments:

v. If above PQL, what samples are affected?

Comments:

Not applicable

vi. Data quality or usability affected? (Please explain.)

Comments:

As noted above, the trip blank leaked methanol and VOC analysis was cancelled, the sample was non-detect for all VOC analytes except acetone, which was detected in the method blank near the concentration of the sample so results were changed to ND at theLOQ and B flagged. The trip blank was analyzed for GRO and also was detected in the method blank near the sample concentration so those results were also changed to ND at the LOQ with a B flag to indicate blank contamination.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

□Yes □X No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

□Yes □ No □NA (Please explain.) Comments:

Not applicable

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

□Yes □ No □NA (Please explain.) Comments:

Not applicable

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Not applicable, no duplicate submitted with this work order.

f. Decontamination or Equipment Blank (If not used explain why).

Samples were collected with disposable sampling equipment.

□Yes X□ No□NA (Please explain.) Comments:

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

Not applicable

ii. If above PQL, what samples are affected?

Comments:

Not applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

□X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in the CDQR and in the data results table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/12/13

CS Report Name: NE Cape HTRW 2013 Report Date: 8/5/13

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Denver Laboratory Report Number: 580-39441-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes X ☐ No ☐ NA (Please explain.) Comments:

      Glycol samples were directed shipped to TA Denver for analyses from NE Cape.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

      Soil samples for glycol analyses were received at 2.3 °C and in good condition.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
□ Yes □ No □ X NA (Please explain.) Comments:

No sample container issues

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes □ No □ X NA (Please explain.) Comments:

No discrepancies.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to sample shipping, receipt and documentation.

4. Case Narrative
a. Present and understandable?
□X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
□Yes X□ No□NA (Please explain.) Comments:

No discrepancies were noted in the case narrative and none were discovered upon review of the lab report.

c. Were all corrective actions documented?
□Yes □X No□NA (Please explain.) Comments:

No corrective actions were required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification in respect to data review and statements in the case narrative.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
□X Yes □ No □NA (Please explain.) Comments:

c. All applicable holding times met?
X□Yes □ No □NA (Please explain.) Comments:

d. All soils reported on a dry weight basis?
X□Yes □ No □NA (Please explain.) Comments:

e. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X□Yes □ No □NA (Please explain.) Comments:

f. Data quality or usability affected?
Comments:

Sample results are usable without qualification in respect to sample reporting limits and correct analyses as requested on the CoC.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X□Yes □ No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

NA

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □ No □ X NA (Please explain.) Comments:

No flagging required.

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable without qualification in respect to method blank analysis and reporting, MB result ND at the LOD and DL.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□Yes □ No X□NA (Please explain.) Comments:

Glycol analysis only with both LCS/LCSD and MS/MSD on project samples.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X□Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X□Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Not applicable

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□Yes X□ No□NA (Please explain.) Comments:

No flagging required.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to LCS/LCSD and MS/MSD recoveries, all were within method specified limits.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X□Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No □ X NA (Please explain.) Comments:

No flags required, all surrogates within control limits.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable without qualification in respect to surrogate recoveries and reporting. All surrogates within limits.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

□Yes X□ No□NA (Please explain.) Comments:

Samples were submitted for glycol analysis only, which is a semi-volatile analyte and not trip blank was required.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

□Yes □ No □NA (Please explain.) Comments:

Not applicable

iii. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

Not applicable

iv. If above PQL, what samples are affected?

Not applicable

Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

No trip blank required so no impact on data quality. All QC met criteria for all samples and analytical batches.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X□Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

X□Yes □ No □NA (Please explain.) Comments:

Results were ND so no comparison could be made.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results for field duplicates were ND so no comparison could be made, duplicates met criteria, even though they were non-detect.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □X NA (Please explain.) Comments:

Not applicable

ii. If above PQL, what samples are affected?

Comments:

Not applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes No NA (Please explain.) Comments:

Flags are defined in the QAPP and Table notes and are consistent with USACE flagging conventions.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/12/13

CS Report Name: NE Cape HTRW 2013 Report Date: 7/31/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39443-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X☐NA (Please explain.) Comments:

      All samples were received and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

One of the methanol preserved samples, 13NC10SS017, was received with a slightly smeared label. The ID was confirmed based on writing on the cap and by confirming all other samples were present as stated on the CoC.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
 Yes No X NA (Please explain.) Comments:

Samples were received at proper temperature with no discrepancies except as noted above.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable without qualification in respect to sample shipping, documentation and temperatures upon receipt.

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

The 8260 ICAL ICV was mis-spiked with tri-fluorotoluene (TFT) due to analyst oversight. Because TFT is also used as an AK101 field surrogate and is not spiked into samples for 8260 analyses, analysis was allowed without qualification. The 8260 TFT surrogate recovery for sample 13NC10SS018 was below acceptance criteria, all lab spiked surrogates were within control so no flagging was necessary. There were multiple method blank and MS/MSD failures that will be discussed in further sections where appropriate.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

Sample 13NC10SS021 was re-analyzed for GRO due to the likelihood of instrument carryover from the previous sample on the initial analysis. Samples 13NC10SS018 and -021 were diluted due to non-target interference prior to initial analysis.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes to demonstrate most analytes met cleanup criteria. Sample 13NC10SS018 had positive RRO results above cleanup levels, refer to sensitivity section for discussion of ND results above cleanup levels.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X□Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      X□Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      □XYes □ No □NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      □Yes X□ No□NA (Please explain.) Comments:

Site 10 in-situ soil was analyzed for full list VOCs and as stated in the QAPP, chloroethane, 1,2 dibromoethene (EDB), 1,2 dichloroethane and 1,2,3-trichloropropane had the limit of quantitation greater than the soil cleanup level. All Site 10 results were non-detect for all four analytes and none were detected in the drum liquid contents, which is considered the point source of contamination at Site 10. Only Site 10 soils were analyzed for full list VOCs, which included the aforementioned 4 VOC analytes

   e. Data quality or usability affected?
      Comments:

Sample results are usable for project purposes. The LOD for 1,2,3-trichloropropane and , 1,2 dibromoethene (EDB) were greater than soil cleanup levels. This was known prior to field implementation and a project variance was granted.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X□Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

□Yes X□ No□NA (Please explain.) Comments:

GRO method blank results were less than the PQL/LOQ but near concentrations reported in all project samples submitted with this work order. DRO was detected in method blank 580-140760 but sample concentrations greatly exceeded the MB concentration so no flags. Acetone was detected in method blank 580-140694/1 at 0.137 mg/kg and also detected in project sample 13NC10SS018 at 0.26 mg/kg. Upon review the acetone result for sample 13NC10SS018 was B flagged. Lead was detected in method blank 580-140662 but at a concentration far less than any project samples so no flagging.

iii. If above PQL, what samples are affected?

Comments:

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iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

X□Yes □ No □NA (Please explain.) Comments:

The GRO results for 13NC10SS017, -018, -021 and -022 were B flagged to indicate blank contamination with potential high bias.

v. Data quality or usability affected? (Please explain.)

Comments:

The GRO results were still usable to demonstrate that the excavation floor samples met site-specific cleanup levels

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □X No □NA (Please explain.) Comments:

The MSD on sample 13NC10SS017 in extraction batch 580-140733 had a benzo[b]fluoranthene exceed the upper control limit, the LCS/LCSD was within contro limits so only the parent sample result was flagged QH for quality issue with potential high bias. All sample results were well below cleanup levels for benzo[b]fluoranthene. Sample 13NC10SS017 had a very high RRO recovery in the MSD sample and was not flagged as the parent sample concentration was greater than 4 times the spike concentration. EPA method 6020 Metals MS and/or MSD recoveries on sample 1NC10SS017 in extraction batch 580-140662 exceeded recovery criteria for barium, cadmium, chromium, nickel and vanadium. Cadmium also exceed RPD criteria (20%) with an RPD of 32%, however, based on review only the QH flags were assigned to metals analytes that exceeded the recovery criteria. Dichlorodifluoromethane, chloromethane, vinyl chloride, bromomethane, chloroethane, trichlorofluoromethane, carbon disulfide, 2-butanone (MEK), 1,2-dichloroethane, trichloroethene, 1,2-dichloropropane, 4-methyl-2-pentanone (MIBK) and hexachlorobutadiene exceeded upper control limits in either the MS and/or MSD, none of these analytes were detected in the sample so no flagging was necessary. USACE project chemists granted a variance request was granted for the 1,2-dichloropropane. None of the analytes were detected in the MS/MSD sample. Even with the multiple QC failures for RPD or recoveries, no results were flagged as the instrument demonstrated adequate sensitivity to detect target analytes.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

□Yes □X No □NA (Please explain.) Comments:

The RPD on the PCB MS/MSD (13NC10SS017)exceeded 30% criteria, only Aroclor 1254 was reported in this sample and its result was flagged QN for quality issue with no directional bias. Both the MS and MSD met acceptance criteria. The 8260 LCS/LCSD in analysis batch 580-140693 exceeded RPD limits for chloroethane, trichlorotrifluoromethane, carbon disulfide, acetone, methylene chloride, 2,2-dichloropropane, 2-butanone (MEK), and tetrachloroethene. All analytes were within method control limits in both the LCS and LCSD, only the RPD limits failed except 1,2-dichloropropane, which exceeded the control limits but was not detected in any samples. The DRO/RRO MS/MSD failed to meet RPD limits for both analytes. The RRO parent concentration was greater than 4X the spike concentration so no flags for the RRO result. The DRO result is already flagged QH for spike recoveries exceeding the upper control limit.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Because an LCS/LCSD was analyzed with each extraction batch and were in control, only the MS/MSD sample results were flagged, mostly QH for high recoveries with the exception of the PCB result which was flagged QN due to only RPD being out of control.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X□Yes □ No □NA (Please explain.) Comments:

Flags are defined in this document, in the CDQR and in the table notes.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□Yes □X No□NA (Please explain.) Comments:

Decachlorobiphenyl (surrogate) recoveries in sample 13NC10SS018 exceeded upper recovery criteria, the sample also had multiple Aroclors (1254 and 1260) reported. The 1254 and 1260 results are flagged QH for quality issue with potential high bias. The sample results were well below cleanup criteria and results are usable as qualified.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□X Yes □ No □NA (Please explain.) Comments:

PCB results are flagged QH for sample 13NC10SS018

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

The sample results were well below cleanup criteria and results are usable as qualified.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

A trip blank was submitted with samples for work orders 580-39440-1 and 580-39443-1 inside a single cooler with 2 CoCs and the trip blank leaked methanol and smeared the label on the methanol preserved container for sample 13NC10WS05(39440), the laboratory determined it was the correct sample. Due to the trip blank leakage 8260 VOC analysis was cancelled as noted in the lab report case narrative but GRO analysis proceeded and was reported with the leakage noted.

X□Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X□Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?

X□Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

Trip blank GRO results are usable for project purposes, because samples submitted for VOC analysis were virtually non-detect and below cleanup levels, results were not adversely impacted due to non-analysis of the trip blank for VOCs.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X□Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

Most analytes met precision with the exception of several PAHs. 1 and 2-methylnaphthylene, benzo[a]pyrene and naphthalene exceeded 50% RPD limits and were flagged QN for quality issues with no directional bias.

□Yes □x No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data is usable for project purposes

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ X No □NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

Not Applicable

ii. If above PQL, what samples are affected?

Comments:

Not Applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>

a. Defined and appropriate?

X□Yes □ No □NA (Please explain.) Comments:

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Project Chemist Date: October 17, 2013

CS Report Name: NE Cape HTRW Report Date: 9/9/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39444-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

      All samples were analyzed at TA-Tacoma except methane, which was analyzed at TA-Denver. TA-Denver is ADEC CS and DoD ELAP approved as is TA-Tacoma.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

      7 total coolers containing samples were shipped and properly chilled. All coolers were less than 6 degrees C and 4 of the 7 were less than 2 degrees C.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X□Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X□Yes □ No □NA (Please explain.) Comments:

Several containers for –GW01 and –GW02 were received broken but there was sufficient sample submitted and there was no impact to sample analyses.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes X□ No□NA (Please explain.) Comments:

f. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to shipping and preservation of samples.

4. Case Narrative
a. Present and understandable?
X□Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X□Yes □ No □NA (Please explain.) Comments:

BTEX method blank had high TFT (surrogate) recovery, 3 PAH analytical samples (-GW04, -GW06 and –GW07) had high internal standard recoveries for some analytes, the samples were re-analyzed with acceptable IS recoveries, both sets of results were reported. Benzo(a)pyrene had low recovery in the LCSD in batch 580-140759, results are Q flagged. The CCB for AK101/GRO had reportable concentrations less than half the LOQ, only two GRO samples had positive results and were B flagged. Lead and mercury were detected in the MBs, results were flagged accordingly.

c. Were all corrective actions documented?
X□Yes □ No □NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes, some results are qualified.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes No NA (Please explain.) Comments:

   b. All applicable holding times met?
      X Yes No NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      Yes No NA (Please explain.) Comments:

      All samples were water samples

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X Yes No NA (Please explain.) Comments:

      As noted, positive lead results were changed to ND at the LOQ, which is also the cleanup level. The results are still considered less than the cleanup level. Affected lead results are B flagged at the LOQ. Non-flagged non-detect results are reported at the LOD.

   e. Data quality or usability affected?
      Comments:

      Sample results are usable for project purposes with some qualifications.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes No NA (Please explain.) Comments:

      The GRO instrument blank had positive detections at 0.0152 mg/L in analytical batch 580-141312. Samples 13NCMOCGW06 and –GW-07 were also analyzed in the batch and had reportable results roughly twice the concentration reported in the instrument blank but less than the LOD. GRO results for –GW06 and –GW07 were B flagged to indicate blank contamination with potential high bias. All other GRO samples in this work order were non-detect or analyzed in a different batch. A variance was granted by the USACE chemist regarding the GRO instrument blank contamination.
      Lead was detected in the method blank (580-140774/22-A) at a concentration less than half the LOQ (0.000218 mg/L, DL 0.00017), as were total or dissolved results for project samples 13NCMOCGW01,-GW04, -GW06, and-GW07. Positive sample results were B flagged to indicate blank contamination with potential high bias. Mercury was detected in method blank 580-140787 at a concentration less than half the LOQ. All samples in this work order had concentrations comparable to the MB concentration and all total and dissolved mercury results are B flagged. Lab contamination is highly suspected.

ii. All method blank results less than PQL?
X□Yes □ No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

Noted above, all affected samples were less than the LOQ.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X□Yes □ No □NA (Please explain.) Comments:

Data flags are defined in the table notes and a full explanation can be found in the QA Summary.

v. Data quality or usability affected? (Please explain.)
Comments:

The positive total and dissolved lead were B flagged to indicate blank contamination with potential high bias. Because all results were barely above the detection limit before being modified the raw results can still be used to demonstrate that lead in the water is less than cleanup level.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□Yes □X No □NA (Please explain.) Comments:

The 8270 SIM LCSD had low recovery for benzo(a)pyrene. The LCS and MS/MSD were in control. A variance was granted by the USACE chemist for LCSD out of control and all B(a)Pyrene results were non-detect.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X□Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Not applicable.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□Yes □ No □NA (Please explain.) Comments:

No data flags were assigned based on LCS/LCSD or MS/MSD recoveries. Only 1 analyte was out of control for all analyses (Benzo(a)pyrene in the LCSD for 8270SIM analyses.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to LCS/LCSD and MS/MSD recoveries.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□Yes □X No□NA (Please explain.) Comments:

Trifluorotoluene was omitted from the 8260-BTEX method blank, all other surrogates were in control and no qualification was necessary. Trifluorotoluene was recovered high (128%-120% upper limit). All sample surrogates were within limits and no qualification was necessary. Decachlorobiphenyl (8082 surrogate) was outside of the control limit (39%, 40% lower limit) in the method blank analysis as reported on the confirmation column. The primary column was in control and no qualification was necessary.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No □X NA (Please explain.) Comments:

No data flags were assigned as stated above.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to surrogate recoveries in project samples.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
X Yes No NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
X Yes No NA (Please explain.) Comments:

iii. All results less than PQL?
X Yes No NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?
Comments:

Not applicable

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to trip blank analyses. All trip blank results were non-detect for GRO, BTEX and methane.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?

X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□Yes X□ No□NA (Please explain.) Comments:

Total zinc, 1-methylnaphthalene and acenaphthene RPDs were outside of control limits. The duplicate results are flagged QN for quality issues with no directional bias.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Field duplicate results were within RPD limits with noted exceptions above. All duplicate results were well below cleanup levels and demonstrated that field sampling procedures are adequate for project purposes.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □X No □NA (Please explain.) Comments:

All samples were collected with disposable sample equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

Not applicable

ii. If above PQL, what samples are affected?

Comments:

Not applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X□Yes □ No □NA (Please explain.) Comments:

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/12/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/7/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39470-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐X No ☐NA (Please explain.) Comments:

      All samples were analyzed at TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      ☐Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X□Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes □X No□NA (Please explain.) Comments:

No discrepancies were noted.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable without qualification in respect to sample shipment, sample condition and no discrepancies.

4. Case Narrative
a. Present and understandable?
X□Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X□Yes □ No □NA (Please explain.) Comments:

The 8270-SIM PAH LCS/LCSD in batch 580-141497 exceeded 30 % RPDcontrol limits for naphthalene, 1-methylnaphthylene, 2-methylnaphthylene, acenaphthene and acenaphtylene. A variance was granted by USACE project chemists for reporting as both the LCS and LCSD were within spike acceptance criteria. Results are flagged QN.

c. Were all corrective actions documented?
x□Yes □ No □NA (Please explain.) Comments:

No corrective actions were required as a variance was granted for reporting PAHs with RPDs exceeding limits as noted above

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes with qualifications as noted above

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X□Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X□Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
□Yes □ No □X NA (Please explain.) Comments:

All samples submitted in this work order were water samples

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X□Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable without qualification in respect to holding times reporting limits and correct analyses.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
□X Yes □ No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?

Mercury was detected in method blank 580-141104 at a concentration less than ½ the LOQ at 0.0000542 mg/L, which is within 1-2% of sample results. Affected sample results were B flagged to indicate blank contamination. The results are nearly 2 orders of magnitude less than regulatory limits and demonstrate mercury is not present above regulatory limits. DRO was detected in the method blank in extraction batch 580-140910 at a concentration greater than ½ the LOQ and near reported sample concentrations. The entire extraction batch was re-extracted within hold time and the method blank result for extraction batch 580-141199 was again positive but less than ½ the LOQ, results for samples 13NC28PRWA01 and -02 were greater than 10x the blank concentration. Sample results for 13NC28PRWA03 and -04 were slightly less than 10X the blank concentration and were reported with a B flag.

Comments:

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X □Yes □ No □NA (Please explain.) Comments:

Sample results were B flagged to indicate blank contamination.

v. Data quality or usability affected? (Please explain.)
Comments:

While the mercury results have likely contamination, the results can still be used to demonstrate that surface waters at Site 28 do not exceed regulatory limits for mercury.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
□X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X□Yes □ No □NA (Please explain.) Comments:

The case narrative noted the PAH MS spike concentration was twice the normal limit and % recvories met RPD limits. Benzo[a]anthracene recovery in matrix spike sample 13NC28PRWA01 exceeded recovery limits by 2% at 112%, limit 110%. Benzo[a]anthracene was not detected in the parent MS sample so no flagging was required.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
□Yes □X No□NA (Please explain.) Comments:

The 8270-SIM PAH LCS/LCSD in batch 580-141497 exceeded 30 % RPD control limits for naphthalene, 1-methylnaphthylene, 2-methylnaphthylene, acenaphthene and acenaphtylene. A variance was granted by USACE project chemists for reporting as both the LCS and LCSD were within spike acceptance criteria. Results are flagged QN and are considered estimates.

vi. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Samples 13NC28PRWA01 thru WA04 PAH analyte results as noted above were flagged QN.

vii. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□X Yes □ No □NA (Please explain.) Comments:

See above

viii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes, which is to monitor for adverse effects to water quality during dredging operations at Site 28.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X□Yes □ No □NA (Please explain.) Comments:

The 8260 method blank in batch 580-141210 was not spiked with trifluorotoluene and did not meet recoveries. All other surrogates added to QC and project samples met acceptance limits. Trifluorotoluene was added to the preserving methanol as a field surrogate for GRO by AK101 analysis. No flags were assigned based on the MB TFT surrogate failure.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X□Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X□NA (Please explain.) Comments:

All surrogates were within control limits.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to surrogate recoveries without qualification.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes ☐ No ☐ NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes ☐ No ☐ NA (Please explain.) Comments:

iii. All results less than PQL?

X Yes ☐ No ☐ NA (Please explain.) Comments:

All results were ND.

iv. If above PQL, what samples are affected?

Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable without qualification in respect to trip blank submittal and reporting

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes ☐ No ☐ NA (Please explain.) Comments:

ii. Submitted blind to lab?

X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X□Yes □ No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Field duplicate results met the 30% RPD limit for water field duplicates so no qualification was necessary and all data quality objectives were met with respect to field duplicate results.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □X No□NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

Not applicable

ii. If above PQL, what samples are affected?

Comments:

Not applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X □Yes □ No □NA (Please explain.) Comments:

Flags are defined and used as noted in the project RFP, QAPP and data table. s

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/12/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/7/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39471-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No ☐X NA (Please explain.) Comments:

      All samples were analyzed at TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes X No NA (Please explain.) Comments:

No discrepancies were noted not identified during review of shipping and receiving documents.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes in respect to sample shipment, documentation and preservation.

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

The 8270-SIM PAH LCS/LCSD in batch 580-141497 exceeded 30 % RPD control limits for naphthalene, 1-methylnaphthylene, 2-methylnaphthylene, acenaphthene and acenaphtylene. A variance was granted by USACE project chemists for reporting as both the LCS and LCSD were within spike acceptance criteria. Results are flagged QN and are considered estimates. Benzo[a]anthracene recoveries in MS/MSD sample 13NCMOCSWA005 exceeded recovery limits by 2% and 5% respectively, upper limit 110%. Chrysene exceeded the upper limit in the MS by 1%, 110% limit. Benzo[a]anthracene and chrysene were not detected in the parent MS sample so no flagging was required as the LCS and LCSD were within control limits. The DRO/RRO method blank from extraction batch 580-140910 had both DRO and RRO detected at concentrations less than the LOQ. All sample results except the RRO result for 13NCMOCSWA005 were greater than 10 times the method blank concentration so only the RRO result for 13NCMOCSWA005 was B flagged.

c. Were all corrective actions documented?
Yes X No NA (Please explain.) Comments:

No corrective actions were required, a variance was granted for reporting PAH results with high LCS/LCSD RPDs with qualification. ND results were not qualified as the instrument demonstrated the ability to detect samples at stated reporting limits.

e. What is the effect on data quality/usability according to the case narrative?

Comments:

Sample results are usable with above stated qualifications.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      □X Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      □X Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      □Yes □ No X□NA (Please explain.) Comments:

All samples were water samples

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X□Yes □ No □NA (Please explain.) Comments:

   e. Data quality or usability affected?

Comments:

Sample results are usable for project purposes without qualification in respect to correct analyses, holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X□Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X□Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

The DRO/RRO method blank from extraction batch 580-140910 had both DRO and RRO detected at concentrations less than the LOQ. All sample results except the RRO result for 13NCMOCSWA005 were greater than 10 times the method blank concentration so only the RRO result for 13NCMOCSWA005 was B flagged.

v. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

□X Yes □ No □NA (Please explain.) Comments:

Flagged as stated above in iii.

vi. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes with above stated B flag. The purpose of these results are to monitor for adverse effects as a result of excavation activities as the MOC.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □X No□NA (Please explain.) Comments:

Benzo[a]anthracene recoveries in MS/MSD sample 13NCMOCSWA005 exceeded recovery limits by 2% and 5% respectively, upper limit 110%. Chrysene exceeded the upper limit in the MS by 1%, 110% limit. Benzo[a]anthracene and chrysene were not detected in the parent MS sample so no flagging was required as the LCS and LCSD were within control limits.

v. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

□Yes X□ No□NA (Please explain.) Comments:

The 8270-SIM PAH LCS/LCSD in batch 580-141497 exceeded 30 % RPD control limits for naphthalene, 1-methylnaphthylene, 2-methylnaphthylene, acenaphthene and acenaphtylene. A variance was granted by USACE project chemists for reporting as both the LCS and LCSD were within spike acceptance criteria. Results are flagged QN and are considered estimates.

vi. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Samples 13NCMOCSWA005 -006 and -007 are flagged QN for 1-methylnaphthylene, 2-methylnaphthylene, acenaphthene and acenaphtylene due to the LCS/LCSD not meeting RPD limits.

vii. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□X Yes □ No □NA (Please explain.) Comments:

viii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable for project purposes, which is monitoring surface water near the MOC.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

□X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

□Yes X□ No□NA (Please explain.) Comments:

The RRO method blank in prep batch 580-140910 failed to meet the lower the recovery limit for the surrogate n-Triacontane-d62, all samples met surrogate recovery limits so sample results were not impacted. Sample results were used for surface water monitoring at the MOC excavations.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No □X NA (Please explain.) Comments:

All surrogates were within control limits.

v. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Not applicable, all surrogates met control limits.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X□Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X □Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?

X□Yes □ No □NA (Please explain.) Comments:

All results were ND in the trip blank.

iv. If above PQL, what samples are affected?

Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification in respect to trip blank analyses and reporting ND for all target analytes.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

□Yes □ No □X NA (Please explain.) Comments:

A field duplicate was not submitted with this work order, the 10% overall frequency was met for the project.

ii. Submitted blind to lab?

Not applicable

□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□Yes □ No □NA (Please explain.) Comments:

Not applicable

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Not applicable for this work order.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment.11

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

Not applicable

ii. If above PQL, what samples are affected?

Comments:

Not applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X□Yes □ No □NA (Please explain.) Comments:

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/12/13

CS Report Name: NE Cape HTRW 2013 Report Date: 8/5/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39510-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      □X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X□Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      □X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X□Yes □ No □NA (Please explain.) Comments:

      Soil samples for PCB analysis were received at 0.9 and 1.3°C. No impact to sample analysis and results.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X□Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X□Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes □X No□NA (Please explain.) Comments:

No discrepancies were noted in the case narrative and none were identified during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable without qualification with respect to sample shipment, documentation and sample condition upon receipt.

4. Case Narrative
a. Present and understandable?
X□Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X □Yes □ No □NA (Please explain.) Comments:

The PCB LCS was double spiked in extraction batch 580-141196, when the spike concentration was corrected it met acceptance limits. The MS/MSD in extraction batch 580-141196 failed to meet lower recovery criteria (40%) for Aroclor 1260 on sample 13NC13SS059. Because the LCS/LCSD met criteria, the Aroclor 1260 result for 13NC113SS059 was flagged QL and is considered an estimate with low bias. Q flags on samples in this extraction batch had the Q removed from the final results on the report table.

c. Were all corrective actions documented?
□X Yes □ No □NA (Please explain.) Comments:

The only corrective action required was adjusting the spike amount in LIMS to the correct amount and results were acceptable.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

The corrective actions have no effect on the sample results except for the parent sample of the MS/MSD which was flagged QL.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X□Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      X□Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      X□Yes □ No □NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X□Yes □ No □NA (Please explain.) Comments:

   e. Data quality or usability affected?
      Comments:

      Sample results are usable without qualification in respect to analyses, holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X□Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X□Yes □ No □NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

      Not applicable

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      □Yes □ No □X NA (Please explain.) Comments:

      All method blanks were non-detect.

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable without qualification in respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

□Yes □ No X□NA (Please explain.) Comments:

Samples were analyzed for PCBs in soil only.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

The PCB LCS was double spiked in extraction batch 580-141196, when the spike concentration was corrected it met acceptance limits. The MS/MSD in extraction batch 580-141196 failed to meet lower recovery criteria of 40% for Aroclor 1260 on sample 13NC13SS059 (-3 and 20% recoveries). Because the LCS/LCSD met criteria, the Aroclor 1260 result for 13NC113SS059 was flagged QL and is considered an estimate with low bias. Q flags on samples in this extraction batch had the Q removed from the final results on the report table.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□X Yes □ No □NA (Please explain.) Comments:

The aroclor 1260 result for 13NC13SS059 was flagged QL for quality issues with potential low bias.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes to demonstrate that no excavation areas remain above cleanup levels at Site 13.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□X Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X□NA (Please explain.) Comments:

All samples met surrogate recovery limits.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□Yes □ No X□NA (Please explain.) Comments:

Samples were submitted for PCB analysis only, which does not require a trip blank.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
□Yes □ No X□NA (Please explain.) Comments:

NA

iv. All results less than PQL?
□Yes □ No X□NA (Please explain.) Comments:

NA

v. If above PQL, what samples are affected?
Comments:

vi. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes, no trip blank submitted for PCB analysis only.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
□X Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?
X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X□Yes □ No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)
Comments:

All duplicate results met 50% RPD limits with very good agreement between samples.

f. Decontamination or Equipment Blank (If not used explain why).

All samples were collected with disposable sampling equipment.

□Yes □X No□NA (Please explain.) Comments:

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

Not applicable

ii. If above PQL, what samples are affected?

Comments:

Not applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      □X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in the QAPP, CDQR and table notes and meet USACE criteria.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/12/13

CS Report Name: NE Cape HTRW 2013 Report Date:

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39511-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No ☐ X NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

      All samples were soil samples and received at proper temperature.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X□Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes □X No□NA (Please explain.) Comments:

No discrepancies were noted in the case narrative nor identified upon document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment, preservation and documentation

4. Case Narrative
   a. Present and understandable?
   □X Yes □ No □NA (Please explain.) Comments:

   b. Discrepancies, errors or QC failures identified by the lab?
   □Yes X□ No□NA (Please explain.) Comments:

No discrepancies were noted in the case narrative nor identified upon document review.

   c. Were all corrective actions documented?
   □Yes □ No X□NA (Please explain.) Comments:

No corrective actions were required with the exception of one sample being diluted in order to bring target analytes within the calibration range.

   d. What is the effect on data quality/usability according to the case narrative?
   Comments:

Sample results are usable without qualification in respect to QC errors or corrective actions, which were not required.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
   □X Yes □ No □NA (Please explain.) Comments:

c. All applicable holding times met?
X□Yes □ No □NA (Please explain.) Comments:

d. All soils reported on a dry weight basis?
X□Yes □ No □NA (Please explain.) Comments:

e. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X□Yes □ No □NA (Please explain.) Comments:

f. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to holding times, reporting limits and correct analyses.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      x□Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      x□Yes □ No □NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

Not applicable

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      □Yes □ No X□NA (Please explain.) Comments:

No samples were affected, all MBs were ND at the DL.

      v. Data quality or usability affected? (Please explain.)
      Comments:

Sample results are usable for project purposes without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X□Yes □ No □NA (Please explain.) Comments:

LCSD performed on arsenic samples as well per Bristol QAPP requirements.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□Yes □ No X□NA (Please explain.) Comments:

No flagging necessary, all QC within limits.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable for project purposes with respect to LCS.LCSD and MS/MSD recoveries, all met control limits.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X□Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X□Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No X□NA (Please explain.) Comments:

All samples met surrogate recovery criteria for DRO/RRO. Arsenic analysis does not use a surrogate.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to surrogate recoveries and reporting.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

□Yes □ No X□NA (Please explain.) Comments:

Samples were submitted for DRO/RRO and arsenic analysis only, which do not require trip blanks.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

□Yes □ No X□NA (Please explain.) Comments:

iii. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Not applicable

Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X□Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X□Yes □ No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

All field duplicate samples met RPD limits.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment

i. All results less than PQL?

□Yes □ No □X NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?

Comments:

NA

iv. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X□Yes □ No □NA (Please explain.) Comments:

Flags are assigned using USACE convention and are defined in the CDQR and table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/12/13

CS Report Name: NE Cape HTRW 2013 Report Date: 8/7/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica (TA) Laboratory Report Number: 580-39513-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X NA (Please explain.) Comments:

      All samples were received and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

      The single MI soil sample submitted with this work order was received with a cooler temperature of 0.9 degreesC. This had no impact on the analysis of soil for PCBs and DRO/RRO.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X□Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X□Yes □ No □NA (Please explain.) Comments:

Sample received in good condition.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes X□ No□NA (Please explain.) Comments:

No discrepancies were noted in the case narrative nor identified during document review.

f. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable without qualification with respect to sample shipment, condition and documentation.

4. Case Narrative
a. Present and understandable?
X□Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X□Yes □ No □NA (Please explain.) Comments:

Non-target matrix interference of the PCB surrogate TCMX was noted and confirmed on a secondary columne.

c. Were all corrective actions documented?
□Yes □X No□NA (Please explain.) Comments:

No corrective action was necessary as the surrogate DCB was within limits on both columns, results were reported without issues.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable without qualification in respect to QC errors or failures.

6. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes No NA (Please explain.) Comments:

   b. All applicable holding times met?
      X Yes No NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      X Yes No NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X Yes No NA (Please explain.) Comments:

   e. Data quality or usability affected?

      Comments:

      Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

7. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes No NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes No NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?

      Comments:

      Not applicable. The DRO method blank reported a positive result of 0.839 mg/kg, the sample result was 87 mg/kg so no flagging was necessary.

v. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □ No □NA (Please explain.) Comments:

Not needed

vi. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□Yes □ No X□NA (Please explain.) Comments:

No metals were analyzed, only DRO/RRO and PCBs

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□Yes □X No□NA (Please explain.) Comments:

The PCB MS/MSD on sample 13NCBGSS01 exceeded spike recovery criteria for Aroclor 1016, which was not detected in the sample and the MS/MSD also failed to meet lower recovery criteria for Aroclor 1260 probably due to the parent sample concentration of Aroclor 1260 being greater than 6 times the spike concentration. No PCB results were qualified for MS/MSD recoveries outside of acceptance limits.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X□Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Sample 13NCBGSS01 was the only sample analyzed in this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□Yes □ No X□NA (Please explain.) Comments:

Samples were not qualified as stated above.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

While the data quality is less than ideal, results are usable for project purposes to demonstrate that bagging and temporary of contaminated soils did not impact the areas the bags were staged at prior to off-island transport and disposal.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
□XYes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□Yes X□ No□NA (Please explain.) Comments:

The surrogate tetrachloro-meta-xylene (TCMX) faild to meet acceptance limits for PCB analysis on the primary column with a 246% recovery, upper limit 155% for sample 13NCBGSS01. TCMX did meet method criteria on the secondary column as well as the surrogate decachlorobiphenyl(DCB), which was within acceptance criteria on both columns, no flags were applied based on surrogate recoveries.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □X No □NA (Please explain.) Comments:

See text in above in ii.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□Yes X□ No□NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

□Yes □ No X□NA (Please explain.) Comments:

The single sample was submitted for DRO/RRO and PCB analysis only so no trip blank was required.

iii. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

See above

iv. If above PQL, what samples are affected?

Comments:

Not applicable

v. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

□Yes □ No X□NA (Please explain.) Comments:

The overall 10% frequency was met for the project but no field duplicate was submitted with this work order.

ii. Submitted blind to lab?

□Yes □ No □NA (Please explain.) Comments:

Not applicable

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\dfrac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□Yes □ No X□NA (Please explain.) Comments:

No field duplicate submitted with this work order.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Overall field duplicates (replicates for MI samples) RPD was met for this task in the project.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No x□NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □X NA (Please explain.) Comments:

See above

ii. If above PQL, what samples are affected?

Comments:

See above

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

8. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

x□Yes □ No □NA (Please explain.) Comments:

Data flags are defined in the QAPP, CDQR and Table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/12/13

CS Report Name: NE Cape HTRW 2013 Report Date: 8/25/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39544-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X□Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      Samples were shipped to and analyzed by TA-Denver

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      □XYes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      x□Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      □Yes X□ No□NA (Please explain.) Comments:

      Samples were received at 8.3 °C, however, the slightly above acceptance range temperature does not adversely affect sample results due to the very low volatility and high boiling point of ethylene glycol.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X□Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
□Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes X□ No□NA (Please explain.) Comments:

No discrepancies were noted in the case narrative nor identified during document review.

f. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and documentation.

4. Case Narrative
a. Present and understandable?
□X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X□Yes □ No □NA (Please explain.) Comments:

The RPD between the two differing columns exceeded 40% for propylene glycol in in sample 13NC10SS23. The results are flagged QN for quality issues with no directional bias.

c. Were all corrective actions documented?
X□Yes □ No □NA (Please explain.) Comments:

Samples and the CCV exceeded calibration limits in analytical batch 280-185838, samples were re-analyzed at a dilution and reported with an acceptable CCV.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable with above noted QN qualification on sample 13NC10SS23.

5.Samples Results

a. Correct analyses performed/reported as requested on COC?
X□Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X□Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X□Yes □ No □NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X□Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable without qualification in respect to sample analysis, holding times and reporting limits.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X□Yes □ No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

Not applicable

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □X No □NA (Please explain.) Comments:

No flagging required due to method blank analysis and reporting.

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

□Yes □ No X□NA (Please explain.) Comments:

Samples were analyzed for glycol only.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □ No □NA (Please explain.) Comments:

The MS/MSD failed to meet recovery criteria for ethylene glycol due to the parent sample concentration being greater than 40 times the spike concentration so no qualification was necessary. The LCS/LCSD met all criteria so no flagging was necessary.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NO samples were affected as noted above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□Yes X□ No□NA (Please explain.) Comments:

No flagging required as the parent sample result for ethylene glycol was more than 40x greater than the spike concentration.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to LCS/LCSD and MS/MSD recoveries and precision.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
□X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X□Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X□NA (Please explain.) Comments:

All samples and QC met surrogate recovery criteria.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable without qualification with respect to surrogate recoveries and reporting.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□Yes X□ No□NA (Please explain.) Comments:

Samples were submitted for glycol analysis only, which does not require a trip blank.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
□Yes □ No □X NA (Please explain.) Comments:

No trip

iii. All results less than PQL?
□Yes □ No □NA (Please explain.) Comments:

Not applicable

iv. If above PQL, what samples are affected?

Comments:

Not applicable

v. Data quality or usability affected? (Please explain.)

Comments:

Data is not affected as a trip blank is not required for glycol analysis.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X□Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

X□Yes □ No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Blind field duplicates met precision criteria with less than 5% RPD between duplicate samples.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No x□NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment

ii. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

Not applicable

iii. If above PQL, what samples are affected?

Comments:

Not applicable

iv. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X□Yes □ No □NA (Please explain.) Comments:

Flags are defined in the CDQR and in table notes of the respective results.

Laboratory Data Review Checklist

Completed by: Emily Conway

Title: Geologist Date: 8/23/2013

CS Report Name: Northeast Cape (MOC) Report Date: 8/05/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-39566-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No NA (Please explain.) Comments:

All samples received in good condition.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes □ No □X NA (Please explain.) Comments:

No discrepancies were noted on the cooler receipt or case narrative.

f. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes □X No NA (Please explain.) Comments:

All QC parameters are within the acceptance limits. Two samples had sample time discrepancies; the time listed on the CoC was used.

c. Were all corrective actions documented?
Yes □ No X NA (Please explain.) Comments:

No corrective actions were necessary.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

See above.

5.Samples Results

a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □X NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X. Yes No □X NA (Please explain.) Comments:

Yes. The DRO/RRO method blank in extraction batch 5801-141507 had DRO reported at less than ½ the LOQ at 8.45 mg/kg and RRO reported at 18.1 mg/kg. Sample results less than 10 times the concentrations reported in the method blank are B flagged for blank contamination and have potential high bias.

iii. If above PQL, what samples are affected?
Comments:

See above.

v. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
Yes □ No □X NA (Please explain.) Comments:

Samples 13NCMOCSS03, -039, -040, -041, -044, -046, -047, -048 and -049 had their RRO results B flagged for blank contamination and are considered estimates with potential high bias.

vi. Data quality or usability affected? (Please explain.)
Comments:

See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□ Yes □X No□ NA (Please explain.) Comments:

No metals were analyzed.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□ Yes X□ No□NA (Please explain.) Comments:

The DRO MSD recovery on sample 13NCMOCSS042 in extraction batch 580-141560 exceeded the upper control limit due to the parent sample concentrations being greater than 4 times the spike concentration so no sample results were flagged.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Not Applicable

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes □ No □X NA (Please explain.) Comments:

No exccedances or qualifications on this basis.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Data quality was not affected on this basis.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□X Yes No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X NA (Please explain.) Comments:

No qualifications on this basis.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes □ No □X NA (Please explain.) Comments:

No trip blank was required.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes □ No □X NA (Please explain.) Comments:

See above.

iii. All results less than PQL?
Yes □ No X NA (Please explain.) Comments:

See above.

iv. If above PQL, what samples are affected?
Comments:

See above.

v. Data quality or usability affected? (Please explain.)
Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes without qualifiction with respect to field duplicate precision.

f. Decontamination or Equipment Blank (If not used explain why).

All samples were collected using disposable or dedicated equipment.

□Yes □ No □X NA (Please explain.) Comments:

i. All results less than PQL?

□Yes □ No □X NA (Please explain.) Comments:

See above.

ii. If above PQL, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected? (Please explain.)

Comments:

N/A

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/13/13

CS Report Name: NE Cape HTRW 2013 Report Date: 8/30/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39641-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X NA (Please explain.) Comments:

      All samples were received and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ☐ Yes X No ☐ NA (Please explain.) Comments:

      Seven coolers were shipped, 3 of the coolers had temperatures less than 2 degrees C, however, it had no impact on sample results as sample documentation noted that no samples were frozen, which would impact sample results. The samples were water samples.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X□Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X□Yes □ No □NA (Please explain.) Comments:

Two unpreserved 1-liter amber bottles were received broken at TA. Additional volumes were available and analysis proceeded without impact.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

X□Yes □ No □NA (Please explain.) Comments:

Temperatures noted above.

f. Data quality or usability affected? (Please explain.)

Comments:

While there were minor issues such as cooler temperatures and broken bottles, these issues had no impact on the overall data quality or usability of results.

4. Case Narrative

a. Present and understandable?

X□Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

X□Yes □ No □NA (Please explain.) Comments:

The laboratory indicated in the case narratives for the above listed work orders that ion 50 results for the BFB tunes were slightly less than the 15 to 40% criteria at roughly 14.87%. Since the values round to the acceptable tune criteria, the results are acceptable and do not require qualification. The PCB CCV for analytical batch 580-141860 was out of control for the surrogate decachlorobiphenyl on the primary column, the secondary column was in control and both sets of data were reported with client approval and a USACE variance granted. The DRO MS/MSD in analysis batch 580-142044 failed to meet the lower acceptance criteria du eto the parent sample concentration being more than 30 times greater than the spike amount, the LCS/LCSD met criteria.

c. Were all corrective actions documented?

X□Yes □ No □NA (Please explain.) Comments:

No re-extractions or re-analyses were performed except for dilutions to bring the target analytes into calibration range (DRO and PAHs)

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Sample results are usable for project purposes with qualifications stated in the QC section. Results are usable to demonstrate that treated water meet discharge criteria to the ground.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X□Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      X□Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      □Yes □ No X□NA (Please explain.) Comments:

All samples were water samples.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X□Yes □ No □NA (Please explain.) Comments:

   e. Data quality or usability affected?

Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X□Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X□Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

Not applicable, all MB results ND.

v. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

□Yes □ No X□NA (Please explain.) Comments:

No samples were affected based on MB reporting non-detect

vi. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

□XYes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □ No □NA (Please explain.) Comments:

The DRO/RRO MS/MSD failed low for recoveries in sample 13NC28WA01 in analysis batch580-142044, the parent result greater than 30 times the spike concentration so no flags were assigned based on the MS/MSD recoveries.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Sample 13NC28WA01 only for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X□Yes □ No □NA (Please explain.) Comments:

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes, the affected sample is a pre-treated sample and is usable to monitor analytes prior to water treatment and discharge.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□Yes X□ No□NA (Please explain.) Comments:

The trip blank had high surrogate recovery of trifluorotoluene for VOCs, results are ND so no impact to results and detection is adequate. PCB MS/MSD and parent sample surrogate recoveries failed low in sample 13NC28WA01 in analysis batch 580-141860, the parent result is flagged QL for quality issues with potential low bias, all results were non-detect

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □X No □NA (Please explain.) Comments:

Trip blank results were ND so high surrogate recovery has no impact. The PCB results are flagged QL for sample 13NC28WA01.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification. All trip blank results were ND so no impact on any project sample results. The PCB results showed sample concentrations are well below regulatory limits.

e. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X□Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X□Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?

X□Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analyses and reporting.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X□Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□Yes □X No□NA (Please explain.) Comments:

Anthracene did not meet 30% RPD criteria in the duplicate sample results. All other analytes with reportable concentrations met RPD criteria.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes with only anthracene not meeting criteria.

g. Decontamination or Equipment Blank (If not used explain why).

□Yes □X No □NA (Please explain.) Comments:

Samples were collected with disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

Not applicable

ii. If above PQL, what samples are affected?

Comments:

Not applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

□X Yes □ No □NA (Please explain.) Comments:

Flags are defined in the CDQR and in the table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/13/13

CS Report Name: NE Cape HTRW 2013 Report Date: 8/30/13

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39641-2

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X NA (Please explain.) Comments:

      All samples were received and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ☐ Yes X No ☐ NA (Please explain.) Comments:

      Seven coolers were shipped, 3 of the coolers had temperatures less than 2 degrees C, however, it had no impact on sample results.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X□Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

□XYes □ No □NA (Please explain.) Comments:

Two unpreserved 1-liter amber bottles were received broken at TA. Additional volumes were available and analysis proceeded without impact.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

X□Yes □ No □NA (Please explain.) Comments:

Temperatures noted above

f. Data quality or usability affected? (Please explain.)

Comments:

While there were minor issues such as cooler temperatures and broken bottles, these issues had no impact on the overall data quality or usability of results.

4. Case Narrative

a. Present and understandable?

□XYes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

X□Yes □ No □NA (Please explain.) Comments:

The laboratory indicated in the case narratives for the above listed work orders that ion 50 results for the BFB tunes were slightly less than the 15 to 40% criteria at roughly 14.87%. Since the values round to the acceptable tune criteria, the results are acceptable and do not require qualification. The PCB CCV for analytical batch 580-141860 was out of control for the surrogate decachlorobiphenyl on the primary column, the secondary column was in control and both sets of data were reported with client approval and a USACE variance granted. The DRO MS/MSD in analysis batch 580-142044 failed to meet the lower acceptance criteria du eto the parent sample concentration being more than 30 times greater than the spike amount, the LCS/LCSD met criteria. Acenaphthene, anthracene and benzo[a]pyrene recovered low in the LCS/LCSD in analysis batch 580-141948, samples were re-extracted within holding time and the re-extracted results are acceptable without qualification.

c. Were all corrective actions documented?

Samples were re-extracted for PAHs within hold time and reported with acceptable QC results.

□X Yes □ No □NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Sample results are usable for project purposes with some qualifications as stated in the QC sections below.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

X□Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

X□Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

□Yes □ No □X NA (Please explain.) Comments:

All samples were water samples

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

X□Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?

Comments:

Sample results are usable for project purposes with some qualifications.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

□X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X□Yes □ No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?

Not applicable

Comments:

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □ No X□NA (Please explain.) Comments:

No flags were assigned due to method blank analysis

v. Data quality or usability affected? (Please explain.)
Comments:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□Yes □X No□NA (Please explain.) Comments:

The DRO/RRO MS/MSD failed low for recoveries in sample 13NC28WA01 in analysis batch580-142044, the parent result greater than 30 times the spike concentration so no flags were assigned based on the MS/MSD recoveries

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
□X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

NA

vii. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X□Yes □ No □NA (Please explain.) Comments:

Yes

viii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes, the affected sample is a pre-treated sample and is usable to monitor analytes prior to water treatment and discharge

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□Yes □ No □NA (Please explain.) Comments:

PCB MS/MSD and parent sample surrogate recoveries failed low in sample 13NC28WA01 in analysis batch 580-141860, the parent result is flagged QL for quality issues with potential low bias, all results were non-detect.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
X□Yes □ No □NA (Please explain.) Comments:

The PCB results are flagged QL for sample 13NC28WA01

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes with above noted qualifications.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
X□Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X□Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?
X□Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?
Comments:

NA

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analyses and reporting

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?
X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□Yes X□ No□NA (Please explain.) Comments:

Anthracene did not meet 30% RPD criteria in the duplicate sample results. All other analytes with reportable concentrations met RPD criteria

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)
Comments:

Sample results are usable for project purposes with only anthracene not meeting criteria

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □X No□NA (Please explain.) Comments:

Samples were collected with disposable sampling equipment

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

See above

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

□X Yes □ No □NA (Please explain.) Comments:

Flags are defined in the CDQR and in the table notes

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/12/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/25/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39655-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X☐NA (Please explain.) Comments:

      Samples were directly shipped to and analyzed by TA-Denver

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
□X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition and at proper temperature

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes X□ No□NA (Please explain.) Comments:

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment an documentation.

4. Case Narrative
a. Present and understandable?
X□Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X□Yes □ No □NA (Please explain.) Comments:

The glycol MS/MSD failed recovery and RPD criteria due to the presence of glycol in the parent sample at a concentration more than 50 times the spike concentration, no data flags were assigned based on the high concentration in the parent sample.

c. Were all corrective actions documented?
X□Yes □ No □NA (Please explain.) Comments:

No corrective action was required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification in respect to discrepancies and QC failures.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
C□Yes□ No □NA (Please explain.) Comments:

c. All applicable holding times met?
□X Yes □ No □NA (Please explain.) Comments:

d. All soils reported on a dry weight basis?
□XYes □ No □NA (Please explain.) Comments:

e. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X□Yes □ No □NA (Please explain.) Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

f. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X□Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X□Yes □ No □NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

Not applicable

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      □Yes □ No X□NA (Please explain.) Comments:

No flags required.

      v. Data quality or usability affected? (Please explain.)
      Comments:

Sample results are usable for project purposes without qualification with respect to Method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

x□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

□Yes □ No x□NA (Please explain.) Comments:

Samples were analyzed for glycols only.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □X No □NA (Please explain.) Comments:

The glycol MS/MSD failed recovery criteria due to the presence of glycol in the parent sample at a concentration more than 50 times the spike concentration, no data flags were assigned based on the high concentration in the parent sample

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

□Yes X□ No□NA (Please explain.) Comments:

The glycol MS/MSD failed RPD criteria due to the presence of glycol in the parent sample at a concentration more than 50 times the spike concentration, no data flags were assigned based on the high concentration in the parent sample

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Because the glycol spike was so much less than the parent concentration no sample results are impacted.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□Yes X□ No□NA (Please explain.) Comments:

See above

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to QC analysis and reporting

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X□Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X□NA (Please explain.) Comments:

All surrogates were within limits.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□Yes □X No□NA (Please explain.) Comments:

Samples were submitted for glycol analysis only, which does not require a trip blank.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
□Yes □ No x□NA (Please explain.) Comments:

iii. All results less than PQL?
□Yes □ No X□NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

No trip blank so no impact.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

□Yes □ No □NA (Please explain.) Comments:

No field duplicate was submitted with the 5 primary samples, the overall field duplicate frequency met regulatory and QAPP specified frequencies.

ii. Submitted blind to lab?

□Yes □ No □NA (Please explain.) Comments:

NA

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

□Yes □ No □NA (Please explain.) Comments:

NA

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

NA

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

ii. If above PQL, what samples are affected?

Comments:

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes No NA (Please explain.) Comments:

Flags are defined above, in the CDQR and in the table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/13/13

CS Report Name: NE Cape HTRW 2013 Report Date: 8/25/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39723-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No ☐ X NA (Please explain.) Comments:

      All samples in this work order were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      ☐ X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ☐ Yes X ☐ No ☐ NA (Please explain.) Comments:

      One of 3 coolers shipped for this work order was received at 0.7 degrees C, samples were not impacted.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X□Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
□Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes x□ No □NA (Please explain.) Comments:

No discrepancies were noted nor identified during document review.

f. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample preservation and shipping.

4. Case Narrative
a. Present and understandable?
X□Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
□X Yes □ No □NA (Please explain.) Comments:

The 8270 SIM PAH CCV in analysis batch 580-142226 had recoveries exceed the upper control limit for benzo[k]fluoranthene and dibenz[a,h]anthracene, LCSD/LCSD and MS/MSD recoveries met control limits. Samples were ND so a variance was granted by USACE to report with notation in the CDQR. The PAH MSD in analysis batch 580-142226 exceeded the upper control limits for acenaphthylene, results were ND so no flagging was necessary. The PCB CCV for analytical batch 580-141860 was out of control for the surrogate decachlorobiphenyl on the primary column, the secondary column was in control and both sets of data were reported with client approval and a USACE variance granted

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective action required for PAHs or PCBs as a variance was granted, results were ND in all samples.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Sample results are usable for project purposes without qualification with respect to discrepancies and QC failures.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

☐X Yes ☐ No ☐NA (Please explain.) Comments:

b. All applicable holding times met?

☐X Yes ☐ No ☐NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

☐Yes ☐ No X NA (Please explain.) Comments:

All samples were water samples

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

☐X Yes ☐ No ☐NA (Please explain.) Comments:

e. Data quality or usability affected?

Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

X☐Yes ☐ No ☐NA (Please explain.) Comments:

ii. All method blank results less than PQL?

☐Yes ☐X No☐NA (Please explain.) Comments:

DRO and RRO were detected in method blank 580-142421 at less than ½ the LOQ (0.0492 and .00517 mg/L respectively.

iii. If above PQL, what samples are affected?

Comments:

Sample results were more than 10 times greater than the DRO or RRO detected in the method blank so no qualification is necessary.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

□Yes □X No□NA (Please explain.) Comments:

No flagging was required.

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to MB analysis and reporting

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes X□ No□NA (Please explain.) Comments:

The DRO/RRO MS/MSD failed low for recoveries in sample 13NC28WA02 in analysis batch 580-142459, the DRO parent result was greater than 5 times the spike concentration so no DRO flags were assigned. The RRO MS had low recovery, results for 13NC28WA02 are flagged QL for quality issue with potential low bias. The PAH MSD in analysis batch 580-142226 exceeded the upper control limits for acenaphthylene, results were ND so no flagging was necessary

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

NA

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□Yes X□ No□NA (Please explain.) Comments:

No flagging was required except for the RRO MS result from 580-39723-1, which was analyzed with this work order.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable with above noted qualification of the RRO parent MS result.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X□Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X□NA (Please explain.) Comments:

All surrogate recoveries were within control limits.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable without qualification with respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
□X Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?
X□Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?
Comments:

All results were ND

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analysis and reporting.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X□Yes □ No □NA (Please explain.) Comments:

Only one sample was shipped with this work order, the overall 10% frequency was met for the project.

ii. Submitted blind to lab?
□Yes □ No □NA (Please explain.) Comments:

NA

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□Yes □ No □NA (Please explain.) Comments:

NA

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The overall 10% frequency required for the project was met, no field duplicate was submitted with this work order.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X No □NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □X NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X□Yes □ No □NA (Please explain.) Comments:

Flags are defined in the checklist, CDQR and table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/13/13

CS Report Name: NE Cape HTRW 2013 Report Date: 8/27/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39723-2

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X NA (Please explain.) Comments:

      All samples were received and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ☐ Yes X ☐ No ☐ NA (Please explain.) Comments:

      One of 3 coolers shipped for this work order was received at 0.7 degrees C, samples were not impacted.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X□Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X□Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

□Yes X□ No□NA (Please explain.) Comments:

No discrepancies were noted nor identified during document review

f. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to sample preservation and shipping

4. Case Narrative

a. Present and understandable?

□X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

□X Yes □ No □NA (Please explain.) Comments:

The 8270 SIM PAH CCV in analysis batch 580-142226 had recoveries exceed the upper control limit for benzo[k]fluoranthene and dibenz[a,h]anthracene, LCSD/LCSD and MS/MSD recoveries met control limits. Samples were ND so a variance was granted by USACE to report with notation in the CDQR. The PAH MSD in analysis batch 580-142226 exceeded the upper control limits for acenaphthylene, results were ND so no flagging was necessary. The PCB CCV for analytical batch 580-141860 was out of control for the surrogate decachlorobiphenyl on the primary column, the secondary column was in control and both sets of data were reported with client approval and a USACE variance granted

c. Were all corrective actions documented?

□Yes □ No □NA (Please explain.) Comments:

No corrective action required for PAHs and PCBs as a variance was granted, results were ND in all samples

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Sample results are usable for project purposes without qualification with respect to discrepancies and QC failures

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

X□Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

X□Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

□Yes □ No X□NA (Please explain.) Comments:

All samples were water samples

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

X□Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?

Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

□Yes □X No□NA (Please explain.) Comments:

DRO and RRO were detected in method blank 580-142421 at less than ½ the LOQ (0.0492 and .00517 mg/L respectively.

iii. If above PQL, what samples are affected?

Comments:

Sample results were more than 10 times greater than the DRO or RRO detected in the method blank so no qualification is necessary

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

□Yes X□ No□NA (Please explain.) Comments:

No flagging was required, 10x rule.

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to MB analysis and reporting

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □ No □X NA (Please explain.) Comments:

The DRO/RRO MS/MSD failed low for recoveries in sample 13NC28WA02 in analysis batch 580-142459, the DRO parent result was greater than 5 times the spike concentration so no DRO flags were assigned. The RRO MS had low recovery, results for 13NC28WA02 are flagged QL for quality issue with potential low bias. The PAH MSD in analysis batch 580-142226 exceeded the upper control limits for acenaphthylene, results were ND so no flagging was necessary

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X Yes No NA (Please explain.) Comments:

No flagging was required except for the RRO MS result from 580-39723-1, which was analyzed with this work order. Samples from 39723-1 were also shipped with this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable with above noted qualification of the RRO parent MS result.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X Yes No NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes X No NA (Please explain.) Comments:

All surrogate recoveries were within acceptance limits.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable without qualification with respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Samples in SDGs 580-39723-1 and 580-39723-2 were shipped together as a single SDG. Due to some samples being analyzed on a rush basis (39723-2), the trip blank was analyzed on standard TAT bases in SDG 580-39723-1.

□X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
□X Yes □ No □NA (Please explain.) Comments:

All volatile samples in both work orders were shipped in a single cooler containing a trip blank.

iii. All results less than PQL?
X□Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?
Comments:

All results were ND in the trip blank.

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analysis and reporting.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
□X Yes □ No □NA (Please explain.) Comments:

Only one sample was shipped with this work order, the overall 10% frequency was met for the project

ii. Submitted blind to lab?
□Yes □ No □NA (Please explain.) Comments:

Na

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□Yes □ No □NA (Please explain.) Comments:

NA

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The overall 10% frequency required for the project was met; no field duplicate was submitted with this work order.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

□X Yes □ No □NA (Please explain.) Comments:

Flags are defined in the checklist, CDQR and table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/13/13

CS Report Name: NE Cape HTRW 2013 Report Date: 8/30/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39724-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No ☒ NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ☐ Yes X ☐ No ☐ NA (Please explain.) Comments:

      Six coolers were shipped with this work order. 3 of the coolers were received at 0.0, 0.7 and 1.3 °C. The coolers did not have any adverse effects on sample results so analysis and reporting proceeded with impact to results. Sample receipt documentation did not note any frozen samples, which would impact results. All samples were water samples.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes No NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X Yes No NA (Please explain.) Comments:

One VOA vial for sample 13NC28DSW01 and one for 13NC28STW04 were received with headspace. Two vials remained for each sample without headspace so those samples were analyzed and reported without qualification.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes X No NA (Please explain.) Comments:

No discrepancies were noted in sample receiving documentation or the case narrative and no issues were discovered upon document review except those noted above.

f. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable without qualification with respect to sample shipment and documentation.

4. Case Narrative

a. Present and understandable?

X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

X Yes No NA (Please explain.) Comments:

DRO/RRO LCS/LCSD in extraction batch 580-142472 failed low for DRO recoveries. Samples were re-extracted outside of holding time. The results outside of holding time were reported for the project results. The lab reported both sets of results and they were comparable. The PCB CCV for analytical batch 580-142437 was out of control for the surrogate decachlorobiphenyl on the primary column, the secondary column was in control and both sets of data were reported with client approval and a USACE variance granted.

c. Were all corrective actions documented?

X Yes No NA (Please explain.) Comments:

The re-extraction of DRO/RRO was documented and both sets of results were reported.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

While the DRO/RRO results were reported outside of extraction holding time, the results are usable for monitoring surface and treated water at Site 28.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

X□Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

□Yes □X No □NA (Please explain.) Comments:

DRO/RRO LCS/LCSD in extraction batch 580-142472 failed low for DRO recoveries. Samples were re-extracted outside of holding time. The results outside of holding time were reported for the project results. The lab reported both sets of results and they were comparable.

c. All soils reported on a dry weight basis?

□Yes □ No X□NA (Please explain.) Comments:

All samples were water samples

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

□Yes X□ No□NA (Please explain.) Comments:

PCB LOQs were at or less than criteria and LODs were 10 times less than monitoring criteria. All PCB results were non-detect at the LOD.

e. Data quality or usability affected?

Comments:

While there is a lesser degree of confidence in the DRO/RRO results re-extracted outside of holding time, the results are still usable for monitoring surface water at Site 28.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

□X Yes □ No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?

Comments:

Not applicable

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

□Yes □ No X□NA (Please explain.) Comments:

No results were impacted; all MBs were ND at the DL.

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

X Yes □ No □NA (Please explain.) Comments:

DRO/RRO LCS/LCSD in extraction batch 580-142472 failed low for DRO recoveries. Samples were re-extracted outside of holding time. The results outside of holding time were reported for the project results. The lab reported both sets of results and they were comparable.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

All samples had DRO and RRO results H flagged for holding time exceedence

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X Yes No NA (Please explain.) Comments:

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Results are usable for project purposes, which are to monitor surface waters at Site 28.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X Yes No NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
Yes No X NA (Please explain.) Comments:

All surrogate recoveries were within acceptance limits.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to surrogate recoveries and reporting

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
X Yes No NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?
Comments:

Not applicable

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analysis and reporting.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?
X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X□Yes □ No □NA (Please explain.) Comments:

All analytes met 30% RPD.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)
Comments:

Sample results are usable for project purposes without qualification with respect field duplicate analysis and reporting.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment

i. All results less than PQL?

□Yes □ No □XNA (Please explain.) Comments:

No blank samples collected

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

□X Yes □ No □NA (Please explain.) Comments:

Flags are defined in the CDQR and table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/13/13

CS Report Name: NE Cape HTRW 2013 Report Date: 8/27/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39754-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No ☐X NA (Please explain.) Comments:

      All samples were shipped to and analyzed at TestAmerica acoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X☐Yes ☐ No ☐NA (Please explain.) Comments:

      One cooler was shipped with this work order and was received at 4.0 degrees C.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      x☐Yes ☐ No ☐NA (Please explain.) Comments:

      Cool was the preservative and samples arrived at specified temperature.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes No X NA (Please explain.) Comments:

No discrepancies were noted in the case narrative nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and documentation

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

DRO was reported in the method blank associated with prep batch 580-142386 at 6.9 mg/kg. The MS/MSD on sample 13NCMOC066 failed recovery high for both DRO and RRO in extraction batch 580-142386.

c. Were all corrective actions documented?
Yes No X NA (Please explain.) Comments:

No corrective actions were required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Only one sample (13NCMOCSS071) had results less than 10 times the concentration in the methold blank. The parent MS/MSD sample was flagged QH for high MS/MSD recoveries. Results are usable for project purposes of demonstrating the excavated areas are below cleanup levels.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to sample holding times and reporting limits.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

DRO was reported in the method blank associated with prep batch 580-142386 at 6.9 mg/kg. Only one sample (13NCMOCSS071) had results less than 10 times the concentration in the method blank.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X□Yes □ No □NA (Please explain.) Comments:

The single result is B flagged.

vi. Data quality or usability affected? (Please explain.)

Comments:

Results are usable for project purposes of demonstrating the excavated areas are below cleanup levels

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

□Yes □ No X□NA (Please explain.) Comments:

Soil samples analyzed for DRO/RRO only

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □X No□NA (Please explain.) Comments:

The MS/MSD on sample 13NCMOC066 failed recovery high for both DRO and RRO in extraction batch 580-142386, the LCS/LCSD were within limits. The parent MS/MSD sample was flagged QH for high MS/MSD recoveries.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

13NCMOC066

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□X Yes □ No □NA (Please explain.) Comments:

The parent MS/MSD sample was flagged QH for high MS/MSD recoveries.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Results are usable for project purposes of demonstrating the excavated areas are below cleanup levels

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X□Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X□NA (Please explain.) Comments:

All samples and QC met surrogate recovery criteria

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□Yes □ No □XNA (Please explain.) Comments:

Samples were submitted for DRO/RRO analysis only, which does not require a trip blank.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
□Yes □ No □X NA (Please explain.) Comments:

See above

iv. All results less than PQL?
□Yes □ No X□NA (Please explain.) Comments:

NA

v. If above PQL, what samples are affected?
Comments:

NA

vi. Data quality or usability affected? (Please explain.)
Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X□Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?
X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□X Yes □ No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)
Comments:

Field duplicate results meet RPD criteria and support the project objectives without qualification.

f. Decontamination or Equipment Blank (If not used explain why).

All samples were collected with disposable sampling equipment.

□Yes X□ No□NA (Please explain.) Comments:

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X□Yes □ No □NA (Please explain.) Comments:

Flags are defined in the CDQR and in the table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/13/13

CS Report Name: NE Cape HTRW 2013 Report Date: 8/29/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39755-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X ☐ NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
□X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes □ No X NA (Please explain.) Comments:

No discrepancies were noted or discovered upon document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and documentation.

4. Case Narrative
a. Present and understandable?
□X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes □ No □NA (Please explain.) Comments:

The laboratory indicated in the case narratives for the above listed work orders that ion 50 results for the BFB tunes were slightly less than the 15 to 40% criteria at roughly 14.67%. Since the values round to the acceptable tune criteria, the results are acceptable and do not require qualification. Trifluorotoluene, an AK101-GRO field surrogate had recoveries exceed the upper limit for 8260 VOC analysis.Since VOCs by 8260 do not use field surrogate the high TFT recoveries do not impact results. The DRO/RRO MS/MSDs on samples 13NC28 SS001 and -008 failed to meet recovery criteria. Because the DRO and RRO concentrations in the parent samples were greater than 4 times the spike concentration no flagging was assigned to these samples. The LCS/LCSDs in both batches met recovery and RPD criteria. The PCB surrogate tetrachloro-meta-xylene failed to meet 40% D comparability criteria on the secondary column, the primary column was in control and surrogate results were reported from the primary column. All PCB surrogates in sample and QC meet acceptance criteria.

c. Were all corrective actions documented?
□Yes □ No X□NA (Please explain.) Comments:

No corrective actions were required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification based on the case narrative and review of analytical results and QC.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      X Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      □X Yes □ No □NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      □X Yes □ No □NA (Please explain.) Comments:

   e. Data quality or usability affected?
      Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X□Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      □Yes □ No □NA (Please explain.) Comments:

The PAH method blank 580-142612 had concentrations of fluoranthene (2.19 ug/l), pyrene, (2.53), benzo[a]anthracene (1.92), chrysene (1.97), benzo[b]fluoranthene (1.75), benzo[k]fluoranthene, and benzo[a]pyrene 1.84 (ug/L) detected in the sample at concentrations less than half the LOQ with the exception of pyrene, which slightly exceeded ½ the LOQ. Sample results with analyte concentrations less than 10 times the method blank concentration were B flagged and are considered estimates with potential high bias. Barium and lead were detected in the 6020 method blank at concentrations less than ½ the LOQ. All samples results were far greater than 10 times the blank concentration so no flagging is necessary.

iii. If above PQL, what samples are affected?

Comments:

Nearly all samples in this work order received at least one flag for blank contamination. Refer to the Site 28 confirmation results table for specific samples.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

X Yes □ No □NA (Please explain.) Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

While the blank contamination decreases the accuracy and B flagged results are considered estimates, none of the B flagged results exceed regulatory limits.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

□X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X□Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □X No□NA (Please explain.) Comments:

The DRO/RRO MS/MSDs on samples 13NC28 SS001 and -008 failed to meet recovery criteria. Because the DRO and RRO concentrations in the parent samples were greater than 4 times the spike concentration no flagging was assigned to these samples. The LCS/LCSDs in both batches met recovery and RPD criteria. . The MS/MSD recoveries of sample 13NC28SS001 for barium, chromium and vanadium were outside of acceptance criteria, the LCS/LCSD were in control. Results for sample 13NC28SS001 were flagged QH for barium, chromium and vanadium. The PCB MS/MSD for 13NC28SS001 greatly exceeded recovery limits for aroclor 1016, the parent sample was ND for PCBs so no flags were assigned. The mercury MSD slightly exceeded recovery limits on sample 13NC28SS001, the parent result was flagged QH for quality issues with potential high bias.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from

LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

□Yes □X No □NA (Please explain.) Comments:

The LCS/LCSD for silica gel treated DRO/RRO in extraction batch 580-142833 failed to meet RPD criteria, the LCS and LCSD met recovery criteria and no flagging was assigned

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Because the parent samples of the MS/MSD samples had concentrations greater than 4 times the spike concentration no flags were assigned.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□Yes □ No X□NA (Please explain.) Comments:

No flags were assigned based on LCS/LCSD or MS/MSD recoveries.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable for project purposes with some qualifications with respect to QC recoveries. The results are still usable to demonstrate site conditions at Site 28.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X Yes □ No □NA (Please explain.) Comments:

The only noted surrogate failure was trifluorotoluene, which is an AK101 field surrogate in this instance. Method 8260 does not include a field surrogate, which TFT is for this project. All surrogates added at the lab per the 8260 method and TA SOP met acceptance criteria

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No X□NA (Please explain.) Comments:

All surrogates met recovery limits.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable for project purposes with respect to surrogate recoveries without qualification.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X □Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?

X Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

All trip blank results were ND

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analysis and results.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

X□Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□Yes □X No□NA (Please explain.) Comments:

Acenapthene, acenaphthylene, fluoranthene, fluorene and phenanthrene failed to meet RPD limits, those results are flagged MN on the data tables.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes, the MN flagged results are considered estimates.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes x□ No □NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

Not Applicable, all samples were collected with disposable sampling equipment

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 9/6/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39757-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X ☐ NA (Please explain.) Comments:

      All samples were received and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
□X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes X□ No□NA (Please explain.) Comments:

No discrepancies were noted in the case narrative nor discovered upon document review

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment, receiving conditions and documentation.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes □ No □NA (Please explain.) Comments:

GRO field surrogate (TFT) recovered low in 2 samples and MS/MSD, DRO one sample and MS/MSD. The GRO and DRO method blanks had positive hits (to be discussed in further sections). The DRO/RRO MS/MSD had low recoveries. The same sample that had low GRO, DRO/RRO surrogate recoveries also was used for the MS/MSD. 75% moisture in that sample is noted in the case narrative so matrix interference (water) is suspected.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes with some qualifications for low surrogate and failed MS/MSDs.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
XYes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
□X Yes □ No □NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

The GRO method blank 580-142629 had reportable GRO at 0.725 mg/kg. All GRO project sample results were greater than 10 times the blank concentration so no flagging was necessary. Sample 13NCPBSS07 was already B flagged due to detections in the trip blank.
DRO method blank 580-143065 had reportable DRO at 7.65 mg/kg and RRO at 16.7 mg/kg.

iii. If above PQL, what samples are affected?
Comments:

13NCPBSS07 (GRO), 13NCPBSS01, -02, -03 and -04 for DRO and -02 and -04 for RRO .

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

Samples noted above are all B flagged for their respective analyses as noted.

v. Data quality or usability affected? (Please explain.)
Comments:

All results are still usable to demonstrate the suspected pipeline break area is below site-specific cleanup levels

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□Yes □ No X NA (Please explain.) Comments:

No metals requested on this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□Yes □X No□NA (Please explain.) Comments:

Sample 13NCPBSS09 was used for the batch MS/MSD for DRO/RRO and had low DRO recovery (53%) in the MSD and also failed 30% RPD limits at 50%. The RRO MS recovery was 121% (upper limit 120%) and the MSD had 62% recovery, lower limit 60%. The RRO MS/MSD failed RPD limits at 33%. While the MS/MSD components are out of control in several different directions, the DRO parent sample result was flagged QL mainly due to the low MSD recovery and the RRO parent result was flagged QN due mainly to the high RPD values.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
□Yes X No □NA (Please explain.) Comments:

See above

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

13NCPBSS09 was flagged for low DRO in the MSD as well as 50% RPD for the DRO/MS/MSD. The parent RRO result for –PBSS09 was flagged QN due mainly to the RPD being 33%.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

Flagged as noted above.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

While there are several MS/MSD components out of control, the results are still usable to demonstrate the suspected pipeline break area is below site-specific cleanup levels

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□Yes X□ No□NA (Please explain.) Comments:

Samples 13NCPBSS08, -09 and -09 MS/MSD had surrogate recoveries less than the lower acceptance limits, results are flagged QL. The previous J flag for results less than the LOQ was removed and QL was substituted. 13NCPBSS08 and 13NCPBSS09 had 77% and 78% moisture reported so matrix interference from water is highly suspected. The results are still usable to demonstrate the area is well below cleanup levels for GRO

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□X Yes □ No □NA (Please explain.) Comments:

Results are flagged QL. The previous J flag for results less than the LOQ was removed and QL was substituted.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

While the flags essentially change the results to estimates with potential low bias, the results are still usable to demonstrate the area is well below cleanup levels for GRO

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□ X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X □Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?
X□Yes □ No □NA (Please explain.) Comments:

The trip blank 081213 submitted with samples from the pipeline break area had positive detections for GRO at 1.4 mg/kg and toluene at 13 ug/kg, both results were less than the LOQ. All project samples were ND for toluene and all had GRO concentrations were greater than 10 times the concentration in the trip blank with the exception of 13NCPBSS07, which had GRO at 9 times the trip blank concentration and its result was B flagged. No samples exceeded or had any results close to clean up levels.

iv. If above PQL, what samples are affected?
Comments:

13NCPBSS07 GRO result was B flagged.

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes with above noted qualification for GRO in the trip blank.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?
X Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X□Yes □ No □NA (Please explain.) Comments:

Samples 12NCPBSS03 and -04 were blind field duplicates and the RRO RPD was 53% but no flags were assigned as -04 was already B flagged as an estimate so no QN flag was assigned.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes with some qualifications as noted.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes ☐x No ☐NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment

i. All results less than PQL?

☐Yes ☐ No ☐NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes ☐ No ☐NA (Please explain.) Comments:

Data flags are defined in previous sections, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/27/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39794-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

NA

4. Case Narrative
   a. Present and understandable?
   X Yes □ No □NA (Please explain.) Comments:

   b. Discrepancies, errors or QC failures identified by the lab?
   Yes X No □NA (Please explain.) Comments:

The method blank in extraction batch 580-142846 had detectable concentrations of DRO at less than ½ the LOQ at 4.09 mg/kg. All samples extracted in the batch had DRO results greater than 10 times the blank concentration so no flagging was required. The DRO MS/MSD on sample 13NCMOCSS100 in extraction batch 580-142864 had an MS recovery of 127%, limit 125%. The LCS/LCSD were in control so only the parent result was flagged QH for quality issue with potential high bias. The results for all samples in this work order were below cleanup levels so there is no impact on the usability of sample results.

   c. Were all corrective actions documented?
   X Yes □ No □NA (Please explain.) Comments:

   d. What is the effect on data quality/usability according to the case narrative?
   Comments:

The results for all samples in this work order were below cleanup levels so there is no impact on the usability of sample results

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
   X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes □ No □NA (Please explain.) Comments:

The method blank in extraction batch 580-142846 had detectable concentrations of DRO at less than ½ the LOQ at 4.09 mg/kg. All samples extracted in the batch had DRO results greater than 10 times the blank concentration so no flagging was required.

      iii. If above PQL, what samples are affected?
      Comments:

No sample results are affected

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      □Yes □ No □XNA (Please explain.) Comments:

No sample results are affected

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to method blank analyses and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

□Yes □ No X□NA (Please explain.) Comments:

Samples in this work order analyzed for DRO/RRO only.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes X□ No□NA (Please explain.) Comments:

The DRO MS/MSD on sample 13NCMOCSS100 in extraction batch 580-142864 had an MS recovery of 127%, limit 125%. The LCS/LCSD were in control so only the parent result was flagged QH for quality issue with potential high bias. The results for all samples in this work order were below cleanup levels so there is no impact on the usability of sample results

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

13NCMOCSS100

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□X Yes □ No □NA (Please explain.) Comments:

The LCS/LCSD were in control so only the parent result for 13NCMOCSS100 was flagged QH for quality issue with potential high bias

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

The results for all samples in this work order were below cleanup levels so there is no impact on the usability of sample results.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No □NA (Please explain.) Comments:

All samples and QC met recovery limit so no flagging was necessary

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

NA

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□Yes X□ No□NA (Please explain.) Comments:

Samples were submitted for DRO/RRO analyses only, which do not require trip blanks.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
□Yes □ No □NA (Please explain.) Comments:

NA

iii. All results less than PQL?
□Yes □ No □NA (Please explain.) Comments:

NA

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

X Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

X Yes □ No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No impact, field duplicates met 50% RPD limits for soil.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

ii. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

iii. If above PQL, what samples are affected?

Comments:

NA

iv. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/22/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39796-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X ☐ NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Denver

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

      Cooler was received at 1.3 degrees C, which did not impact glycol results.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes X No □NA (Please explain.) Comments:

No discrepancies were noted in the case narrative. All analyses were within method control limits.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X□Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes □ No □NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

No sample results are affected

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      □Yes □ No □XNA (Please explain.) Comments:

No sample results are affected

      v. Data quality or usability affected? (Please explain.)
      Comments:

Sample results are usable for project purposes without qualification with respect to method blank analyses and reporting.

c. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

□Yes □ No X□NA (Please explain.) Comments:

Samples in this work order analyzed for glycols only.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

X Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□Yes □X No □NA (Please explain.) Comments:

No flagging required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

d. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No □NA (Please explain.) Comments:

All samples and QC met recovery limit so no flagging was necessary

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

NA

e. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

□Yes X□ No□NA (Please explain.) Comments:

Samples were submitted for glycol analyses only, which do not require trip blanks.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

□Yes □ No □NA (Please explain.) Comments:

NA

iii. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

NA

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes □ No □NA (Please explain.) Comments:

One field duplicate was submitted with this work order of 4 samples, the overall 10% project field duplicate frequency was met.

ii. Submitted blind to lab?
□X Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X Yes □ No □NA (Please explain.) Comments:

Ethylene glycol RPD was 6% and propylene glycol was 0% RPD.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results demonstrate that sampling technique was sufficient and the site is somewhat homogeneous with respect to glycol contamination. The ethylene glycol results were roughly 9 times the cleanup levels at the site.

g. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 9/6/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39839-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X NA (Please explain.) Comments:

      All samples were received and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

      Four coolers were received and one cooler was received at 1.8 degrees C but had no impact on sample results.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
□X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition.

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
□Yes X□ No□NA (Please explain.) Comments:

No discrepancies were noted in the case narrative nor discovered upon document review

f. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment, receiving conditions and documentation.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes □ No □NA (Please explain.) Comments:

Sample 13NCRWSS08 had low GRO surrogate (TFT) recovery. The DRO/RRO method blank from extraction batch and 580-143436 had a positive DRO result at 2.54 mg/kg. Barium was detected in method blank 580-143197, the MS/MSD in the same extraction batch on sample 13NCRWSS08 failed to meet recovery criteria on sample 13NCRWSS08 for barium, chromium and zinc, the LCS/LCSD met criteria.

c. Were all corrective actions documented?
Yes □ No □ X NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes with some qualifications for low surrogate and the 6020 metals MS/MSD failing high for barium, chromium and zinc.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      X Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      □X Yes □ No □NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X Yes □ No □NA (Please explain.) Comments:

   e. Data quality or usability affected?
      Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes □ No □NA (Please explain.) Comments:

DRO method blank 580-143436 had reportable DRO at 2.54 mg/kg. Barium was detected in MB 580-143197 at 0.035 mg/kg. All sample barium results had reportable concentrations greater than 10 times the blank concentration so no barium results were qualified.

      iii. If above PQL, what samples are affected?

MB DRO result was less than PQL, samples 13NCRWSS01, -03, -04, -05, -07, -08 and -10 were B flagged for MB contamination less than 10 times the blank concentration.

Comments:

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

Samples noted above are all B flagged for DRO.

v. Data quality or usability affected? (Please explain.)
Comments:

All results are still usable to demonstrate the suspected pipeline break area is below site-specific cleanup levels

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□Yes □ No X□NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□Yes □X No□NA (Please explain.) Comments:

The 6020 metals MS/MSD in the same extraction batch on sample exceeded recovery criteria on sample 13NCRWSS08 for barium, chromium and zinc, the LCS/LCSD met criteria.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Barium, chromium and zinc results for 13NCRWSS08 were flagged QH and are considered estimates with potential high bias.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

Flagged as noted above.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

While there are several metals MS/MSD components out of control, the results are still usable to demonstrate the roadway is below site-specific cleanup levels

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□Yes X□ No□NA (Please explain.) Comments:

Sample 13NCRWSS08 had low GRO surrogate (TFT) recovery.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□X Yes □ No □NA (Please explain.) Comments:

Results are flagged QL. The previous J flag for results less than the LOQ was removed and QL was substituted.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

While the flags essentially change the results to estimates with potential low bias, the results are still usable to demonstrate the area is well below cleanup levels for GRO

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□ X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?
X□Yes □ No □NA (Please explain.) Comments:

The trip blank 081913 submitted with samples from the roadway had positive detections for GRO at 8 mg/kg. All project samples that had GRO concentrations less than 10 times the concentration in the trip blank were B flagged. No samples exceeded or had any results close to clean up levels.

iv. If above PQL, what samples are affected?
Comments:

GRO sample results for 13NCRWSS01 and -04 were B flagged, all other GRO results were ND.

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes with above noted qualifications for GRO in the trip blank.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?
X Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X Yes x□ No □NA (Please explain.) Comments:

Samples 12NCRWSS05 and -06 were blind field duplicates and the DRO and RRO RPDs were greater than 50% and flagged QN for quality issue with no directional bias.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes with some qualifications as noted.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □x No □NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment

i. All results less than PQL?

□Yes □ No □X NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in previous sections, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/29/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39839-2

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No X NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐ NA (Please explain.) Comments:

      Four coolers were received and one cooler was received at 1.8 degrees C but had no impact on sample results.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

The sample times listed on the jars did not match the CoC for samples 13NC10SS035 through -044. Samples were logged in per the CoC, which matched the recorded times in field notes.

f. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment, receiving conditions and documentation. The sample collection time discrepancy did not impact sample analysis or results.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No □NA (Please explain.) Comments:

The laboratory indicated in the case narratives for the above listed work orders that ion 50 results for the BFB tunes were slightly less than the 15 to 40% criteria at roughly 14.8%. Since the values round to the acceptable tune criteria, the results are acceptable and do not require qualification. Sample 13NC10SS045 had high 1,4-butanediol surrogate recovery in the diluted sample. The undiluted sample met surrogate recovery criteria so no flags were assigned. Sample 13NC10SS045 was also used for the glycol MS/MSD and failed high for ethylene glycol due to the parent sample being more than 4 times the spike concentration so no flags were assigned.
The DRO/RRO MS/MSD on sample 13NC10SS036 in extraction batch 580-143160 exceeded upper control limits due to the parent concentration being more than 4 times the spike concentration so no flags were assigned. DRO was also detected in method blank 580-143160 at 9.86 mg/kg , only sample 13NC10S040 was flagged. Sample 13NC28TWA07 was used for the mercury MS/MSD in extraction batch 580-143209 and had recoveries slightly less than the 80% lower acceptance limit, the sample mercury result was ND and QL was assigned for quality issue with potential low bias.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
   X Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
   X Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
   X Yes □ No □NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
   X□Yes □ No □NA (Please explain.) Comments:

   e. Data quality or usability affected?
   Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

iii. All method blank results less than PQL?
X Yes No NA (Please explain.) Comments:

DRO was detected in method blank 580-143160 at 9.86 mg/kg(<1/2 LOQ), only sample 13NC10S040 was affected. The DRO result for 13NC10SS040 was less than the concentration reported in the method blank so the sample result was B flagged to indicate blank contamination

iv. If above PQL, what samples are affected?
Comments:

13NC10SS040, results were less than PQL

v. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes No NA (Please explain.) Comments:

B flags, yes defined in tables and CDQR.

vi. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes with above noted qualifications.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes No X NA (Please explain.) Comments:

Samples in this work order analyzed for glycols only.

Sample 13NC10SS045 was also used for the glycol MS/MSD and the MS failed low for ethylene glycol due to the parent sample being more than 4 times the spike concentration so no flags were assigned. The DRO/RRO MS/MSD on sample 13NC10SS036 in extraction batch 580-143160 exceeded upper control limits due to the parent concentration being more than 4 times the spike concentration so no flags were assigned. DRO was also detected in method blank 580-143160 at 9.86 mg/kg . Sample 13NC28TWA07 was used for the mercury MS/MSD in extraction batch 580-143209 and had recoveries slightly less than the 80% lower acceptance limit, the sample mercury result was ND and QL was assigned for quality issue with potential low bias.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes □X No□NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X□Yes No □NA (Please explain.) Comments:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable for project purposes with above noted qualifications. Flagged results are considered estimates.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X Yes □ No □NA (Please explain.) Comments:

Sample 13NC10SS045 had high 1,4-butanediol surrogate recovery in the diluted sample. The undiluted sample met surrogate recovery criteria so no flags were assigned.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No □NA (Please explain.) Comments:

All samples and QC met surrogate recovery limits so no flagging was necessary

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

□Yes X□ No□NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X □Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?

X Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X□Yes □ No □NA (Please explain.) Comments:

One field duplicate was submitted with this work order of 4 samples, the overall 10% project field duplicate frequency was met.

ii. Submitted blind to lab?

X□Yes □ No □XNA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X Yes □ No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

NA

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X□Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/22/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39925-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and preservation.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes X No □NA (Please explain.) Comments:

The DRO method blank 580-143436 had DRO reported at 2.54 mg/kg. The DRO/RRO MS/MSD in extraction batch 580-143436 failed DRO recovery limits, the parent sample concentration was greater than 4 times the spike concentration so no flagging was necessary the batch LCS/LCSD met control limits

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

c. All applicable holding times met?
X Yes □ No □NA (Please explain.) Comments:

d. All soils reported on a dry weight basis?
X Yes □ No □NA (Please explain.) Comments:

e. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

f. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to sample holding times and reporting limits.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
□X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
Yes □ No □NA (Please explain.) Comments:

The DRO method blank 580-143436 had DRO reported at 2.54 mg/kg, all sample result were greater than 10 times the reported method blank concentration so no flagging was necessary.

iii. If above PQL, what samples are affected?
Comments:

See above

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □ No □X NA (Please explain.) Comments:

vi. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to method blank analyses and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

□Yes □ No X□NA (Please explain.) Comments:

Samples were analyzed for DRO/RRO only.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □X No □NA (Please explain.) Comments:

The DRO/RRO MS/MSD in extraction batch 580-143436 failed DRO recovery limits, the parent sample concentration was greater than 4 times the spike concentration so no flagging was necessary. The batch LCS/LCSD met control limits.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No results were flagged, only the MS/MSD did not meet control limits and that was due to high initial DRO concentration in the parent sample.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□Yes □X No □NA (Please explain.) Comments:

viii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to QC being in control.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X Yes ☐ No ☐NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
☐Yes ☐ No X☐NA (Please explain.) Comments:

All surrogates met acceptance limits.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to surrogate recoveries and reporting.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
☐Yes X No ☐NA (Please explain.) Comments:

Samples were submitted for DRO/RRO analyses only.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
☐Yes ☐ No X☐NA (Please explain.) Comments:

NA

iii. All results less than PQL?
☐Yes ☐ No ☐NA (Please explain.) Comments:

NA

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Submitted blind to lab?

☐Yes ☐ No ☐X NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

X Yes ☐ No ☐NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes without qualification with respect to field duplicates, RPD was met.

f. Decontamination or Equipment Blank (If not used explain why).

All samples were collected using disposable sampling equipment.

□Yes X□ No□NA (Please explain.) Comments:

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/22/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39926-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X☐NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and preservation.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes X No □NA (Please explain.) Comments:

No discrepancies were noted in the case narrative. All analyses were within method control limits.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

X Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
□Yes □ No X□NA (Please explain.) Comments:

All samples were water samples.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes □ No □NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

      NA

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      □Yes □ No □XNA (Please explain.) Comments:

      v. Data quality or usability affected? (Please explain.)
      Comments:

      Sample results are usable for project purposes without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

Samples analyzed for arsenic only, an LCS/LCSD was analyzed with project samples.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

NA

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□Yes □X No □NA (Please explain.) Comments:

No flagging was required.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to QC analysis and reporting. All QC results were within limits

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
Yes □ No X□NA (Please explain.) Comments:

Metals analysis only, no surrogates.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes □ No X□NA (Please explain.) Comments:

See above

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No X□NA (Please explain.) Comments:

See above

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

NA

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

□Yes X□ No□NA (Please explain.) Comments:

Samples were submitted for metals analysis only, which does not require a trip blank.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

□Yes □ No X NA (Please explain.) Comments:

Samples were submitted for metals analysis only, which does not require a trip blank.

iii. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

Samples were submitted for metals analysis only, which does not require a trip blank.

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
□Yes □ No X□NA (Please explain.) Comments:

The 10% project frequency was met for the project, only 2 water samples were submitted in this work order.

ii. Submitted blind to lab?
□Yes □ No □XNA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

Yes □ No X NA (Please explain.) Comments:

The 10% project frequency was met for the project, only 2 water samples were submitted in this work order.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

NA

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/22/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39959-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and condition upon receipt.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No □NA (Please explain.) Comments:

DRO method blank 580-143354 had a detectable concentration of DRO at 3.88 mg/kg., all project samples extracted with that method blank had DRO concentrations more than 10 times the blank concentration so no flagging was necessary. Sample 13NCMOCSS125 was used for the DRO/RRO MS/MSD in the same extraction batch (580-143354) and failed recovery criteria low for DRO in the MS sample. The initial parent sample concentration was greater than 4 times the spike concentration so no flagging was necessary.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to sample holding times and reporting limits.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
□X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

DRO method blank 580-143354 had a detectable concentration of DRO at 3.88 mg/kg., all project samples extracted with that method blank had DRO concentrations more than 10 times the blank concentration so no flagging was necessary

iii. If above PQL, what samples are affected?
Comments:

No sample results were affected.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □ No □XNA (Please explain.) Comments:

No flagging was necessary.

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X Yes ☐ No ☐NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☐Yes X☐ No☐NA (Please explain.) Comments:

Sample 13NCMOCSS125 was used for the DRO MS/MSD in the same extraction batch (580-143354) and failed recovery criteria low for DRO in the MS sample. The initial parent sample concentration was greater than 4 times the spike concentration so no flagging was necessary

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes ☐ No ☐NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐Yes ☐X No ☐NA (Please explain.) Comments:

No flagging was necessary

viii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable without qualification with respect to QC analysis and reporting.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No □X NA (Please explain.) Comments:

No flagging was required.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to surrogate analysis and reporting. All surrogates met acceptance limits.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□Yes X□ No□NA (Please explain.) Comments:

All samples submitted in this work order were for semi-volatile or metals analyses and did not require a trip blank.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
□Yes □ No X NA (Please explain.) Comments:

All samples submitted in this work order were for semi-volatile or metals analyses and did not require a trip blank.

iii. All results less than PQL?

□Yes □ No □X NA (Please explain.) Comments:

All samples submitted in this work order were for semi-volatile or metals analyses and did not require a trip blank

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

X Yes □ No □XNA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes X□ No□NA (Please explain.) Comments:

Three sets of field duplicates were submitted with this work order, 2 met criteria but the Site 21 samples 13NC21SS035 and -036 failed to meet RPD criteria with 67% RPD between arsenic field duplicates. Results are flagged QN.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

While the arsenic field duplicates did not meet RPD limits, both sets of results are above cleanup levels and are usable to show where arsenic contamination remains.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/22/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-39959-2

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and condition upon receipt.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes X No □NA (Please explain.) Comments:

No discrepancies or QC failures were noted or identified during document review.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

X Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
Yes X No □NA (Please explain.) Comments:

Samples were analyzed for TCLP arsenic only.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to sample holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes □ No □NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

No sample results were affected.

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      □Yes □ No □XNA (Please explain.) Comments:

No flagging was necessary.

      v. Data quality or usability affected? (Please explain.)
      Comments:

Sample results are usable for project purposes without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
□Yes □ No X□NA (Please explain.) Comments:

Samples were analyzed for TCLP arsenic only

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

NA

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□Yes □X No □NA (Please explain.) Comments:

No flagging was necessary

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable without qualification with respect to QC analysis and reporting.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
Yes □ No X□NA (Please explain.) Comments:

Samples were analyzed for TCLP arsenic only.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No □X NA (Please explain.) Comments:

No flagging was required.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to surrogate analysis and reporting. All surrogates met acceptance limits.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

□Yes X□ No□NA (Please explain.) Comments:

All samples submitted in this work order were for metals analyses and did not require a trip blank.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

□Yes □ No X NA (Please explain.) Comments:

All samples submitted in this work order were for metals analyses and did not require a trip blank.

iii. All results less than PQL?

□Yes □ No □X NA (Please explain.) Comments:

All samples submitted in this work order were for metals analyses and did not require a trip blank.

iv. If above PQL, what samples are affected?

Comments:

NA; All samples submitted in this work order were for metals analyses and did not require a trip blank

vi. Data quality or usability affected? (Please explain.)

Comments:

NA; All samples submitted in this work order were for metals analyses and did not require a trip blank

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes □ No X□NA (Please explain.) Comments:

Only 2 samples were analyzed in this work order. The overall 10% field duplicate frequency was met for this project.

ii. Submitted blind to lab?

□Yes □ No □X NA (Please explain.) Comments:

Only 2 samples were analyzed in this work order. The overall 10% field duplicate frequency was met for this project.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes □ No □ X NA (Please explain.) Comments:

NA

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Overall field duplicate frequency and comparability was met for the project.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA; No blank collected

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/22/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-40004-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      □Yes X□ No□NA (Please explain.) Comments:

      One sample cooler containing soil samples for DRO/RRO analysis only was received at -0.2°C. Samples were in good condition and analysis proceeded without impact to sample integrity or results. Sample receipt documentation did not note any frozen samples upon receipt. Samples were soil samples so the slightly depressed cooler temperatures had not impact on results.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

Sample 13NCMOCSS133 was received with a time of 1305 on the sample jar and 1310 on the CoC. Samples were logged in per the CoC and the time discrepancy did not impact extraction or analytical holding times.

f. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and documentation. The cooler temperature and collection discrepancy did not impact the quality or usability of sample results.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes X No □NA (Please explain.) Comments:

Sample 13NCMOCSS131 was designated on the CoC for DRO/RRO MS/MSD analyses. The MS/MSD results for sample 13NCMOCSS131 in extraction batch 580-143759 failed to meet lower recovery criteria for DRO recovery. The initial parent sample concentration was greater than 4 times the spike concentration so no flagging was necessary.

c. Were all corrective actions documented?
□Yes □ No □ X NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      X Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      X Yes □ No □NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X Yes □ No □NA (Please explain.) Comments:

   e. Data quality or usability affected?
      Comments:

      Sample results are usable for project purposes without qualification with respect to sample holding times and reporting limits

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes □ No □NA (Please explain.) Comments:

      .

      iii. If above PQL, what samples are affected?
      Comments:

      NA

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      □Yes □ No □XNA (Please explain.) Comments:

      All method blank results analyzed with this work order were non-detect.

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□Yes □ No X□NA (Please explain.) Comments:

Samples were analyzed for DRO/RRO only.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□Yes □ No □NA (Please explain.) Comments:

Sample 13NCMOCSS131 was designated on the CoC for DRO/RRO MS/MSD analyses. The MS/MSD results for sample 13NCMOCSS131 in extraction batch 580-143759 failed to meet lower recovery criteria for DRO recovery. The initial parent sample concentration was greater than 4 times the spike concentration so no flagging was necessary.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

NA

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□Yes □X No □NA (Please explain.) Comments:

No flagging necessary, initial concentration more than 4 times the spikes amount.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable without qualification with respect to QC analysis and reporting.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X Yes ☐ No ☐NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
☐Yes ☐ No X NA (Please explain.) Comments:

All surrogates met recovery criteria.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to surrogate analysis and reporting.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
☐Yes X☐ No☐NA (Please explain.) Comments:

Samples were submitted for DRO/RRO analysis, which does not require a trip blank.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
☐Yes ☐ No X NA (Please explain.) Comments:

iii. All results less than PQL?

NA

□Yes □ No X□NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

X Yes □ No □XNA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

X Yes □ No □NA (Please explain.) Comments:

Two sets of field duplicates were submitted with this work order and both met soil precision criteria.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes without qualification with respect to field duplicate analysis and reporting. The duplicates met RPD limits and were in good agreement.

f. Decontamination or Equipment Blank (If not used explain why).

All samples were collected using disposable sampling equipment.

□Yes X□ No□NA (Please explain.) Comments:

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/22/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-40062-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

      Five coolers were received and one cooler was received at 1.6 degrees C. Sample receipt documentation was reviewed and no samples were received frozen. The samples were water samples and the slightly depressed temperatures had no impact on sample results.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

It was also noted in the receipt portion of the narrative that samples were received with more than 50% of holding time expired for PAH analysis. Sample extraction occurred within hold times.

f. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and documentation.

4. Case Narrative
a. Present and understandable?
X□ es □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No □NA (Please explain.) Comments:

Project water samples were initially prepared in extraction batch 580-144589 within holding time, the method blank had reportable DRO at 0.0224 mg/L and the batch LCSD/LCSD and MS/MSD failed to meet lower recovery criteria. The client was contacted and requested re-extraction even with some of the seven samples outside of hold time.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

Sample 13NC28STW06 was re-extracted two days past hold time, Sample 13NC28STW07 was re-extracted one day outside of hold time. All other samples were re-extracted within hold time even though they are H flagged (hold time) in the laboratory report.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes with qualification of 2 sample DRO results for holding time exceedance. All results were well below regulatory limits.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      Yes X□ No□NA (Please explain.) Comments:

      Sample 13NC28STW06 was re-extracted two days past hold time, Sample 13NC28STW07 was re-extracted one day outside of hold time. All other samples were re-extracted within hold time even though they are H flagged (hold time) in the laboratory report.

   c. All soils reported on a dry weight basis?
      □Yes □ No □X NA (Please explain.) Comments:

      All samples in this work order were water samples.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X Yes □ No □NA (Please explain.) Comments:

      Six samples were submitted for analysis with this SDG. All six samples had PCB LOQs equal to surface water evaluation criteria. All PCB LODs were approximately 10 times less than evaluation criteria.

   e. Data quality or usability affected?
      Comments:

      Sample results are usable for project purposes with holding time qualifiers. The results demonstrate Site 28 waters meet regulatory criteria.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes □ No □NA (Please explain.) Comments:

      Project water samples were initially prepared in extraction batch 580-144589 within holding time, the method blank had reportable DRO at 0.0224 mg/L. Samples were re-extracted in batch 580-144764 and the method blank DRO result was non-detect.

iv. If above PQL, what samples are affected?

Comments:

Samples are not affected. All DRO results from the re-extraction were reported with all QC meeting acceptance criteria with the exception of 2 samples being re-extracted outside of hold time.

v. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

X Yes □ No □XNA (Please explain.) Comments:

Samples 13NCMOCSTW06 and -07 are H flagged for holding time exceedence. No other flags were assigned as all QC met acceptance criteria.

vi. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes with no results qualified for method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

□Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X Yes □ No NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Project water samples were initially prepared in extraction batch 580-144589 within holding time, the method blank had reportable DRO at 0.0224 mg/L and the batch LCSD/LCSD and MS/MSD failed to meet lower recovery criteria. The client was contacted and requested re-extraction even with some of the seven samples outside of hold time. Sample 13NC28STW06 was re-extracted two days past hold time, Sample 13NC28STW07 was re-extracted one day outside of hold time. All other samples were re-extracted within hold time even though they are H flagged (hold time) in the laboratory report. The CoC was reviewed against the re-extraction time to determine five of the seven samples were within hold time. Sample results from the re-extraction were reported based on acceptable method blank, LCS/LCSD and MS/MSD results, all of which met acceptance criteria. Sample results from the initial and re-extracted samples were compared and the concentrations were in good general agreement. All re-extracted DRO results were reported on the data tables, the RRO results from the initial extraction and analysis were reported as all QC met criteria on the initial extraction and analysis.

X Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

All QC met acceptance criteria.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□Yes □X No □NA (Please explain.) Comments:

No flagging was necessary for QC, all QC met acceptance criteria.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable without qualification with respect to analytical QC, all QC met acceptance criteria.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X□NA (Please explain.) Comments:

All samples met surrogate acceptance criteria so no flagging was necessary.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to surrogates meeting acceptance criteria.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□Yes X□ No□NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
X Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?
Comments:

Not applicable

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analysis and reporting.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
□Yes □ No □x NA (Please explain.) Comments:

No field duplicates were submitted with this work order. The overall 10% frequency was met for the project.

ii. Submitted blind to lab?

□Yes □ No □X NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

Yes □ No □NA (Please explain.) Comments:

NA

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No field duplicate with this work order. Overall 10% frequency was met.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 9/12/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-40072-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

      The single cooler of samples shipped for this work order was received with a cooler temperature of 6.2°C, the temperature blank was 4.3°C, the sample cooler temperature was acceptable based on the temperature blank being within acceptance limits

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

The container labels for samples 13NCMOCSS147 and 13NCMOCSS150 had a collection date of 9/1/13 listed and the CoC had 8/26/13 listed as the collection date. Upon review of field notes, the 2 samples as well as samples 13NCMOCSS148 through -153 were collected on 9/2/13. All samples in this work order were extracted for DRO/RRO analysis only on 9/4/2013 so holding times were not an issue.

f. Data quality or usability affected? (Please explain.)
Comments:

While the CoC documentation is in error on the sample collection dates, the discrepancy had no impact on sample extraction and reporting, results were not qualified based on documentation discrepancies or holding times.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No □NA (Please explain.) Comments:

The DRO/RRO MS/MSD on sample 13NCMOCSS144 exceeded the upper control limit for DRO in the MSD and also failed to meet RPD criteria, the DRO result was flagged QH for quality issue with potential high bias. The RRO MS and MSD results failed to meet lower acceptance criteria, the RRO result for 13NCMOCSS144 was flagged QL for quality issue with low potential bias . The LCS/LCSD in extraction batch 580-144161 met acceptance criteria so only the DRO and RRO results for 13NCMOCSS144 were flagged for failure to meet acceptance criteria.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Sample results are usable for project purposes without qualification with the exception of sample 13NCMOCSS144, which was flagged for DRO/RRO MS/MSD recovery and RPD failures.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

X Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

X Yes □ No □NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?

Comments:

Sample results are usable for project purposes without qualification with respect to sample holding times and reporting limits.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

□X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X Yes □ No □X NA (Please explain.) Comments:

All method blank results were ND.

iii. If above PQL, what samples are affected?

NA

Comments:

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □ No □XNA (Please explain.) Comments:

All method blank results were ND.

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
□Yes □ No X□NA (Please explain.) Comments:

Samples were analyzed for DRO/RRO only

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□Yes □ No □NA (Please explain.) Comments:

The DRO/RRO MS/MSD on sample 13NCMOCSS144 exceeded the upper control limit for DRO in the MSD and also failed to meet RPD criteria, the DRO result was flagged QH for quality issue with potential high bias. The RRO MS and MSD results failed to meet lower acceptance criteria, the RRO result for 13NCMOCSS144 was flagged QL for quality issue with low potential bias . The LCS/LCSD in extraction batch 580-144161 met acceptance criteria so only the DRO and RRO results for 13NCMOCSS144 were flagged for failure to meet acceptance criteria

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
□Yes X□ No□NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Only the DRO and RRO results for 13NCMOCSS144 were flagged for failure to meet acceptance criteria

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X Yes □No □NA (Please explain.) Comments:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

While the failure of the DRO/RRO MS/MSD on sample 13NCMOCSS144 failed to QC meet acceptance criteria, the all sample results are usable to determine if site-specific cleanup levels have been met at the MOC excavations.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No X□NA (Please explain.) Comments:

All surrogates met acceptance criteria.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to surrogates meeting all acceptance criteria.

e. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□Yes X□ No□NA (Please explain.) Comments:

Samples were submitted for DRO/RRO analysis only, which does not require a trip blank.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
□Yes □ No X NA (Please explain.) Comments:

iii. All results less than PQL?
□Yes □ No □NA (Please explain.) Comments:

NA

iv. If above PQL, what samples are affected?
Comments:

NA

v. Data quality or usability affected? (Please explain.)
Comments:

Not Applicable

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes □ No □NA (Please explain.) Comments:

Two sets of field duplicates were submitted with this work order.

iii. Submitted blind to lab?
X Yes □ No □XNA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X Yes □ No □NA (Please explain.) Comments:

v. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results for field duplicates met soil RPD criteria, no results were flagged.

g. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
   X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/22/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-40073-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      □Yes X□ No□NA (Please explain.) Comments:

      Seven coolers were shipped with this work order. The cooler temperatures at the time of receipt were -0.6, 1.1, 1.9, 3.4, 4.0, 4.2, and 5.6°C upon receipt. The temperature blank temperatures were within 1-2° of the cooler temperatures. The slightly depressed temperatures of 3 of the 7 coolers had no impact on sample analysis or results so no qualification was necessary.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and documentation. The slightly depressed cooler temperatures had no impact on sample analysis and reporting.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes X No □NA (Please explain.) Comments:

No discrepancies were noted in the case narrative. All analyses were within method control limits.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
□Yes □ No X□NA (Please explain.) Comments:

All samples were water samples

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
Yes □X No□NA (Please explain.) Comments:

Some PCB LOQs were greater than surface water quality criteria and LODs were nearly 10 times less than quality criteria. All PCB results were non-detect at the LOD.

e. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to sample holding times and reporting limits.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
□X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

All method blank results were non-detect.

iii. If above PQL, what samples are affected?
Comments:

Not applicable

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □ No □XNA (Please explain.) Comments:

Sample results are usable for project purposes without qualification with respect to method blank analysis and reporting.

v. Data quality or usability affected? (Please explain.)
Comments:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes ☐ No ☐NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
☐X Yes ☐ No ☐NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

All QC met acceptance criteria so no flagging was necessary.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
☐Yes ☐X No ☐NA (Please explain.) Comments:

No flagging was required and no samples had any impacts

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to QC analysis and reporting. All batch and project QC met method acceptance criteria.

d. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X NA (Please explain.) Comments:

All surrogates met acceptance criteria.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to surrogate analysis and reporting. All surrogates met acceptance criteria.

e. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
X □Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

All trip blank results were ND for BTEX, the only volatile analyses requested for this work order.

v. If above PQL, what samples are affected?

Comments:

Not applicable

vi. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analysis and reporting.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

X Yes □ No □XNA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes □X No □NA (Please explain.) Comments:

Sample 13NC28STW13 and –STW14 were submitted as blind field duplicates, only 1-methyl naphthalene failed to meet 30% RPD criteria for water analysis and those results are flagged QN for quality issue with no directional bias. All other results met QC criteria.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes to demonstrate that sediment dredging activities at site 28 do not adversely impact surface water quality.

g. Decontamination or Equipment Blank (If not used explain why).

All samples were collected using disposable sampling equipment.

□Yes X□ No□NA (Please explain.) Comments:

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/22/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-40158-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X☐NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and documentation.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No □NA (Please explain.) Comments:

The mercury MS/MSD failed to meet recovery criteria for sample Hach001, the LCS/LCSD met criteria. The mercury sample result for Hach001 was flagged QL and is considered an estimate. The un-spiked parent result for mercury was non-detect.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required, the LCS/LCSD met criteria for mercury.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes with qualifications noted above.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

X Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
□Yes □ No X□NA (Please explain.) Comments:

The sample was a water sample.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to sampling holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes □ No □NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

All method blank results were non-detect so no samples were affected.

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      □Yes □ No □X NA (Please explain.) Comments:

No results were flagged

      v. Data quality or usability affected? (Please explain.)
      Comments:

Sample results are usable for project purposes without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

□Yes □ No X□NA (Please explain.) Comments:

The sample was analyzed for metals only.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes X□ No□NA (Please explain.) Comments:

The mercury MS/MSD failed to meet recovery criteria for sample Hach001, the LCS/LCSD met accuracy and precision criteria. The mercury sample result for Hach001 was flagged QL and is considered an estimate. The un-spiked parent result for mercury was non-detect.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes □X No□NA (Please explain.) Comments:

The RPD for the mercury MS/MSD was not calculated due to both the MS and MSD results being non-detect as was the parent sample result. The mercury result is already flagged QL due to the MS and MSD failing to meet recovery limits.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Hach001 mercury result

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X Yes No □NA (Please explain.) Comments:

The mercury result was flagged QL for sample hach001.

vii. Data quality or usability affected? (Use comment box to explain.)

While the lack of adequate recovery of the mercury MS/MSD indicates sample matrix interference, the results are still usable for project purposes, which is waste characterization for disposal purposes.

Comments:

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
Yes X☐ No☐NA (Please explain.) Comments:

The one sample submitted with this work order was analyzed for metals only, which do not require surrogates in the analyses.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes ☐ No ☐NA (Please explain.) Comments:

NA

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
☐Yes ☐ No ☐NA (Please explain.) Comments:

NA

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

NA

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
☐Yes X☐ No☐NA (Please explain.) Comments:

The single sample submitted in this work order was analyzed for metals only, which does not require a trip blank.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
☐Yes ☐ No ☐NA (Please explain.) Comments:

NA

iii. All results less than PQL?
☐Yes ☐ No ☐NA (Please explain.) Comments:

NA

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

□Yes X□ No□NA (Please explain.) Comments:

The sample was submitted for waste determination, which does not require a field duplicate. The laboratory did use the sample as a batch duplicate and results met laboratory acceptance criteria.

ii. Submitted blind to lab?

□Yes □ No □XNA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes □ No X□NA (Please explain.) Comments:

The sample was submitted for waste determination, which does not require a field duplicate. The laboratory did use the sample as a batch duplicate and results met laboratory acceptance criteria

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes without a field duplicate, the results are usable for project purposes, which is waste characterization for disposal.

f. Decontamination or Equipment Blank (If not used explain why).

All samples were collected using disposable sampling equipment.

□Yes X□ No□NA (Please explain.) Comments:

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 9/26/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-40164-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and documentation.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes X No □NA (Please explain.) Comments:

No discrepancies were noted in the case narrative. All analyses were within method control limits.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

X Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to sample holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      Yes □ No □X NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

All method blank results were ND at the DL so no samples were affected.

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      □Yes □ No □XNA (Please explain.) Comments:

No samples affected

      v. Data quality or usability affected? (Please explain.)
      Comments:

Sample results are usable for project purposes without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
□Yes □ No X□NA (Please explain.) Comments:

Samples were analyzed for arsenic only.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

All QC was within acceptance limits, no samples were affected.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□Yes □ No X□NA (Please explain.) Comments:

No flagging was required on any samples, all QC met criteria

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to QC analyses and reporting, all QC met criteria.

d. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
Yes □ No X□NA (Please explain.) Comments:

Samples were analyzed for arsenic only, which does not require surrogates.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes □ No X NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No □NA (Please explain.) Comments:

NA

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Samples were analyzed for arsenic only, which does not require surrogates

e. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□Yes X□ No□NA (Please explain.) Comments:

Samples were analyzed for arsenic only, which does not require a trip blank

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
□Yes □ No □X NA (Please explain.) Comments:

NA

iii. All results less than PQL?
□Yes □ No □X NA (Please explain.) Comments:

NA

iv. If above PQL, what samples are affected?
Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

Samples were analyzed for arsenic only, which does not require a trip blank.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

□Yes □ No X□NA (Please explain.) Comments:

No field duplicate was submitted with this work order. The overall 10% project frequency was met for Site 21.

ii. Submitted blind to lab?

□Yes □ No □XNA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes □ No □XNA (Please explain.) Comments:

No field duplicate was submitted with this work order, the overall 10% project frequency was met for Site 21.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No field duplicate was submitted with this work order, the overall 10% project frequency was met for Site 21.

g. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □X NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 8/22/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-40214-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

      The cooler temperature was recorded at 7.3°C upon receipt. Sample containers were measured with an IR thermometer and recorded 4.5°C. The temperature blank was measured at 4.5°C as well so samples were not impacted.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

X Yes □ No □NA (Please explain.) Comments:

The trip blank submitted for BTEX analyses was received without a date or time on the sample label. The trip blank was logged in with the earliest date samples were collected for this work order, which was 8/30/2013 at 0000 hours. The lack of a collection date does not impact results as trip blanks are filled at the laboratory and travel with sample containers after leaving the lab and also when samples are shipped to the lab for analyses.

f. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification.

4. Case Narrative

a. Present and understandable?

X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

Trifluorotoluene, an AK101-GRO field surrogate, had recoveries exceed the upper control limit for 8260 BTEX analysis. Since BTEX by 8260 does not use field surrogate the high TFT recoveries do not impact results and no flagging was assigned based on TFT recoveries. The PAH method blank 580-144688 had reportable concentrations of benzo[k]fluoranthene and dibenz[a,h] anthracene detected in the method blank, sample results less than 10 times the blank concentration have been B flagged. The PAH MS/MSD in the same extraction batch failed low for 1- and 2-methylnaphthylene, the LCS/LCSD met recovery and RPD criteria so only the 1- and 2-methylnaphthylene results for sample 13NC28SS019 were flagged QL for quality issue with low potential bias. The DRO method blank 580-144696 had a reportable DRO concentration at less than ½ the LOQ. All DRO sample results exceeded the blank concentration by more than 10 times so no flagging was required. The DRO MS/MSD in the same extraction batch failed to meet recovery limits with the DRO MS/MSD in both untreated and silica gel treated sample 13NC28SS019 and those results are flagged QL. The untreated RRO MS failed the upper control limit of 120% with a 121% recovery, the un-spiked parent sample result was greater than 4 times the spike concentration so no results were flagged. The silica gel treated MS/MSD also failed to meet the upper recovery limit with a recovery of 122%, the silica gel treated RRO result was less than 4 times the spike concentration and was flagged QH for quality issue with potential high bias.

Chromium and zinc failed to meet upper recovery limits in sample 13NC28SS019 in the MS, the LCS/LCSD met control limits so only chromium and zinc results for 13NC28SS019 were flagged QH for quality issues with potential high bias. The percent solids lab duplicates failed to meet RPD limits on sample 13NS28SS014.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No NA (Please explain.) Comments:

d. All soils reported on a dry weight basis?
X Yes □ No □NA (Please explain.) Comments:

e. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

f. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to sample holding times and reporting limits.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
□X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

The PAH method blank 580-144688 had reportable concentrations of benzo[k]fluoranthene and dibenz[a,h] anthracene detected in the method blank at less than ½ the LOQ, sample results less than 10 times the blank concentration have been B flagged. Most sample results for benzo[k]fluoranthene and dibenz[a,h] anthracene were flagged for blank contamination. The DRO method blank 580-144696 had a reportable DRO concentration at less than ½ the LOQ. All DRO sample results exceeded the blank concentration by more than 10 times so no flagging was required.

iii. If above PQL, what samples are affected?
Comments:

See above

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes □ No □XNA (Please explain.) Comments:

PAH results for benzo[k]fluoranthene and dibenz[a,h] anthracene were B flagged and have potential high bias.

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes with above noted qualifications. All B flagged results were orders of magnitude less than cleanup levels so results are usable to show Site 28 removal areas meet PAH cleanup levels. The DRO results greatly exceeded the blank concentration and the blank contamination had no significant impact to results.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □ No □NA (Please explain.) Comments:

The PAH MS/MSD in extraction batch 580-144688 failed low for 1- and 2-methylnaphthylene, the LCS/LCSD met recovery and RPD criteria so only the 1- and 2-methylnaphthylene results for sample 13NC28SS019 were flagged QL for quality issue with low potential bias. The DRO MS/MSD in extraction batch 580-144696 failed to meet recovery limits low with the DRO MS/MSD in both untreated and silica gel treated sample 13NC28SS019 and those results are flagged QL. The untreated RRO MS failed the upper control limit of 120% with a 121% recovery, the un-spiked parent sample result was greater than 4 times the spike concentration so no results were flagged. The silica gel treated MS/MSD also failed to meet the upper recovery limit with a recovery of 122%, the silica gel treated RRO result was less than 4 times the spike concentration and was flagged QH for quality issue with potential high bias. Chromium and zinc failed to meet upper recovery limits in sample 13NC28SS019 in the MS, the LCS/LCSD met control limits so only chromium and zinc results for 13NC28SS019 were flagged QH for quality issues with potential high bias. The mercury matrix spike on sample 13NC28SS019 in prep batch 580-144703failed to meet lower recovery limits, the parent result is flagged QL for quality issue with potential low bias.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

□Yes □X No □NA (Please explain.) Comments:

The percent solids lab duplicates failed to meet RPD limits on sample 13NC28SS014. No results were flagged due to lack of precision with the percent solids duplicate but does indicate the sample and likely the site are not homogeneous. Sample 13NC28SS019 in prep batch 580-144703 failed to meet 20% RPD limit for the mercury MS/MSD with an RPD of 50.5%. the parent sample result is already flagged QL for low spike recovery.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Affected samples have been noted previously in this section.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X Yes □ No □NA (Please explain.) Comments:

The results of parent samples that did not meet MS/MSD limits have been flagged as described above. No results were flagged for lack of agreement between percent solids lab duplicates.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable for project purposes, which is to demonstrate the remaining contamination levels at Site 28 following sediment removal by dredging. All sediment has been removed in the Site 28 designated removal areas. All remaining material is considered soil.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes □ No □NA (Please explain.) Comments:

Trifluorotoluene, an AK101-GRO field surrogate, had recoveries exceed the upper control limit for 8260 BTEX analysis. Since VOCs by 8260 do not use field surrogate the high TFT recoveries do not impact results and no flagging was assigned based on TFT recoveries.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes □X No □NA (Please explain.) Comments:

Decachlorobiphenyl did not meet lower surrogate recovery limit on the confirmation column for sample 13NC28SS016. DCB met recovery limits on the primary column.
Sample results were ND so no flags were assigned.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No X□NA (Please explain.) Comments:

All surrogates met method recovery criteria with the above noted exceptions, which do not impact sample results.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to surrogate recoveries and reporting.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?

X Yes □ No □NA (Please explain.) Comments:

Trip blank 090813 submitted with this work order had positive detections at concentrations less than the LOQ/PQL for ethylbenzene, m,p-xylenes and toluene.

iv. If above PQL, what samples are affected?

Comments:

Samples submitted with trip blank 090813 with reportable concentrations of ethylbenzene, m,p-xylenes and toluene at concentrations less than 10 times the amount detected in the trip blank are B flagged to indicate blank contamination with potential high bias. Three project samples were B flagged for ethylbenzene and m,p-xylene concentrations less than 10 times the blank concentration, no results were flagged for toluene in the method blank, all sample results were ND for toluene.

v. Data quality or usability affected? (Please explain.)

Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?
X Yes □ No □XNA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

Yes X□ No□NA (Please explain.) Comments:

Samples 13NC28SS014 and -015 were submitted as blind field duplicates. The overall agreement was good with the exception of PAHs, which had eight of the fourteen analytes not meet RPD criteria. Affected PAH and m,p-xylene results for samples 13NC28SS014 and -015 are flagged QN and are considered estimates.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

While there was generally poor agreement between field duplicate PAH a result, the results are still usable for project purposes. 1 and 2-methylnaphthylene results greatly exceeded cleanup levels in both samples; all other duplicate results were less than cleanup levels by orders of magnitude.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7.Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

g. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 9/30/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-40280-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

      Four coolers were shipped with this work order and the cooler temperatures were noted at 1.0, 1.0, 2.9 and 4.0°C. Upon examination of the receipt forms the temperature blanks were all within acceptance range with the exception of cooler 09131303, which had a temp blank at 1.7 degrees. The sample documentation did not note any frozen samples, which would impact results. All samples were water samples.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

f. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable without qualification with respect to sample shipment and documentation.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes X No □NA (Please explain.) Comments:

Triflurotoluene surrogate exceeded the upper control limit for 8260 BTEX analysis. All sample surrogates met criteria so no sample results were affected. Benzo[a]anthracene was recovered above the upper acceptance limit in the 8270-SIM LCS and acenapthylene was recovered above the acceptance limit in the LCSD. A variance was granted by USACE for reporting results with proper qualifiers (QH) on affected samples. The DRO/RRO MS/MSD in extraction batch 580-145358 had DRO and RRO recoveries fail to meet lower recovery limits for DRO in both the MS and MSD due to the parent sample concentration being greater than 10 times the spike concentration, the MS failed lower recovery criteria for RRO and the parent result was flagged QL for quality issue with potential low bias.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

e. What is the effect on data quality/usability according to the case narrative?

Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

X Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

□Yes □ No X NA (Please explain.) Comments:

All samples were water samples

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

Yes □X No □NA (Please explain.) Comments:

One PCB LOQ was greater than surface water quality criteria and LODs were nearly 10 times less than quality criteria. All PCB results were non-detect at the LOD.

e. Data quality or usability affected?

Comments:

Sample results are usable for project purposes with respect to holding times and reporting limits.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

□X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X Yes □ No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?

NA

Comments:

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □ No □X NA (Please explain.) Comments:

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to method blank analyses and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□Yes □ No □NA (Please explain.) Comments:

Benzo[a]anthracene was recovered above the upper acceptance limit in the 8270-SIM LCS and acenapthylene was recovered above the acceptance limit in the LCSD. A variance was granted by USACE for reporting results with proper qualifiers (QH) on affected samples, only sample 13NC28STW22 had a positive result for acenaphthylene and it was flagged QH. The DRO/RRO MS/MSD in extraction batch 580-145358 had DRO and RRO recoveries fail to meet lower recovery limits for DRO in both the MS and MSD due to the parent sample concentration being greater than 10 times the spike concentration, the MS failed lower recovery criteria for RRO and the parent result was flagged QL for quality issue with potential low bias.

v. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

□Yes □X No□NA (Please explain.) Comments:

The RRO MS/MSD in extraction batch 580-145358 also failed to meet RPD limits due to the low recovery in the MS and the RRO result was flagged QL.

vi. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Noted above

vii. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X Yes □ No □NA (Please explain.) Comments:

viii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable for project purposes with above noted qualifications. The results are used to assure treated water meets discharge permit requirements as well as monitoring downstream waters for impact from dredging activities at Site 28.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes □X No □NA (Please explain.) Comments:

Trifluorotoluene was recovered above the method acceptance limit in method blank 580-145290. All other sample surrogate recoveries met acceptance limits so no results were impacted.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No □X NA (Please explain.) Comments:

No results were flagged

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to surrogate recoveries and reporting.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

□X Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?

X Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analyses and reporting.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes □ No □NA (Please explain.) Comments:

No field duplicates were submitted with the 5 water samples. The overall 10% duplicate frequency was met for the project.

ii. Submitted blind to lab?

No field duplicates were submitted with the 5 water samples. The overall 10% duplicate frequency was met for the project.

□Yes □ No □XNA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

Yes □ No X□NA (Please explain.) Comments:

No field duplicates were submitted with the 5 water samples. The overall 10% duplicate frequency was met for the project.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

NA

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 9/30/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-40323-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

      Four coolers were received with this work order at 1.8, 3.0, 3.6, and 4.4°C. The one cooler with temperatures in both the temp blank and cooler temperature at 1.8 degrees was 091613-02. The cooler receipt form did not note any frozen samples, which would impact results. All samples were water samples in this SDG.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

The trip blank listed a prep date of 8/30/13 on the sample containers and CoC. The trip blank was logged in with the date of earliest project sample collection, which was 9/13/13. The container label for 13NC28TWA020 listed a collection date of 9/15/13 and the CoC listed 9/14/13, the sample was logged in with the date from the CoC.

e. Data quality or usability affected? (Please explain.)
Comments:

Data quality was not affected, all samples were extracted and analyzed within holding time.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No □NA (Please explain.) Comments:

Benzo[k]fluoranthene, dibenz[a,h]anthracene and pyrene were detected in the 8270-SIM method blank 580145281 at less than ½ the LOQ. Sample 13NC28MOCSW08 failed recovery low for surrogate terphenyl-d14. Mercury was detected in method blank 580-145370.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes □ No □NA (Please explain.) Comments:

      b. All applicable holding times met?
      X Yes □ No □NA (Please explain.) Comments:

      c. All soils reported on a dry weight basis?
      X Yes □ No □NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      Yes □X No □NA (Please explain.) Comments:

      One PCB LOQ was greater than surface water quality criteria and LODs were nearly 10 times less than quality criteria. All PCB results were non-detect at the LOD..

   e. Data quality or usability affected?
      Comments:

      NA

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      Yes □X No □NA (Please explain.) Comments:

      Benzo[k]fluoranthene, dibenz[a,h]anthracene and pyrene were detected in the 8270-SIM method blank 580145281 at less than ½ the LOQ. Sample 13NC28TWA020 had Benzo[k]fluoranthene and dibenz[a,h]anthracene near the concentration reported in the method blank and its results were B flagged. Samples 13NCMOCSW08, -09 and -10 had reportable pyrene concentrations. Results for 13NCMOCSW08, -SW09 and –SW10 were B flagged. Mercury was detected in method blank 580-145370 at less than ½ the LOQ. Sample 13NCTWA020 was the only project sample with reportable mercury and it was similar to the level in the method blank so its results were B flagged.

      iii. If above PQL, what samples are affected?
      Comments:

      Affected samples are noted above.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

Flags and affected samples are noted above

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes with above noted qualifications. The results are used to monitor surface waters at the MOC and Site 28.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

NA

vii. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□Yes □X No □NA (Please explain.) Comments:

All QC met recovery limits so no flagging was necessary.

viii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to QC recoveries and reporting.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes □ No □NA (Please explain.) Comments:

Sample 13NC28MOCSW08 failed recovery low for surrogate terphenyl-d14, all PAH results for that sample are flagged QL.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes even with the above noted qualifier.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X □Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?
Comments:

NA

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analysis and reporting.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
□Yes □ No X□NA (Please explain.) Comments:

No field duplicates were submitted with this work order. The overall 10% frequency was met for the project.

ii. Submitted blind to lab?
□Yes □ No □XNA (Please explain.) Comments:

NA

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration
Yes □ No □NA (Please explain.) Comments:

NA

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)
Comments:

NA

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 10/2/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-40324-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and documentation.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes X No □NA (Please explain.) Comments:

No discrepancies were noted in the case narrative. All analyses were within method control limits.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

X Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
Yes □ No X□NA (Please explain.) Comments:

2 water samples were submitted for total and dissolved arsenic only.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable for project purposes without qualification with respect to holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes □ No □NA (Please explain.) Comments:

      .

      iii. If above PQL, what samples are affected?
      Comments:

      NA, results were ND

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      □Yes □ No □XNA (Please explain.) Comments:

      No flagging required.

      v. Data quality or usability affected? (Please explain.)
      Comments:

      Sample results are usable without qualification with respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
□Yes □ No X NA (Please explain.) Comments:

Samples were submitted for arsenic analysis only.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

NA, all QC met control limits

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□Yes □ No X□NA (Please explain.) Comments:

No flagging was required.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable without qualification with respect to QC analyses and reporting. All QC met acceptance criteria

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
Yes □ No X□NA (Please explain.) Comments:

Samples analyzed for arsenic only, which does not use a surrogate.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes □ No □NA (Please explain.) Comments:

NA

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No □NA (Please explain.) Comments:

NA

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

NA

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

□Yes X□ No□NA (Please explain.) Comments:

Samples submitted for arsenic analyses only, which does not require a trip blank.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

□Yes □ No X NA (Please explain.) Comments:

iii. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
□Yes □ No X□NA (Please explain.) Comments:

No field duplicate was submitted with the 2 samples in this work order. The overall 10% project frequency was met.

ii. Submitted blind to lab?
□Yes □ No □X NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration
Yes □ No □NA (Please explain.) Comments:

NA

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

NA

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iv. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 10/29/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-40328-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      X Yes ☐ No ☐NA (Please explain.) Comments:

      All samples were initially shipped to TA-Tacoma, volatile samples were subcontracted to TA-Denver for BTEX analysis. TA-Denver is a DoD/ELAP and ADEC CS accredited lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

f. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipping and documentation.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

X Yes No NA (Please explain.) Comments:

Sample 13NC28SS026 had 4-bromofluorobenzene (surrogate) recovery greater than the upper control limit, sample results were ND for BTEX so no flagging was necessary. The BTEX MS/MSD in prep batch 280-192173 on sample 13NC28SS029 had high recoveries for all analytes in the MSD due to high internal standard recoveries. The BTEX MS/in prep batch 280-192207 on sample 13NC28SS041 had high recoveries for all analytes in the MS, the data suggest the MS was also double spiked. When the recovery values for the affected BTEX MS and MSD were halved as if double spiked, the recoveries were within acceptance criteria and all met RPD limits. The laboratory confirmed it was likely the samples were double spiked after review.

Acenaphthylene recovered 3% above the upper acceptance criteria in the LCS in prep batch 580-145371 and anthracene recovered 2% above the upper acceptance in the LCS in prep batch 580-145473. Both sets of LCS/LCSD met RPD criteria. Positive sample results associated with the batch LCS's are flagged QH for their respective analytes that exceeded the upper control limits in the LCS. The MS/MSD on sample 13NC28SS029 in prep batch 580-145473 failed to meet lower recovery criteria for acenaphthene, the parent result is flagged QL. The MS/MSD on sample 13NCSS029 also failed upper recovery criteria for naphthalene, 1- and 2-methylnaphthylene, the parent sample concentrations for these analytes were greater than 4 times the spike concentration and were analyzed at a 10X dilution to bring the analytes into calibration range so no flags were assigned these 3 analytes.

Silica gel treated RRO was detected in method blank 580-145385 at 12.4 mg/kg, all sample results were greater than 10 times the blank concentration so no flagging was necessary. DRO was detected in method blank 580-145393at 2.64 mg/kg, all sample results were greater than 10 times the blank concentration so no flagging was necessary. The DRO/RRO MS/MSD on sample 13NC28SS041 in extraction batch 580-145385 exceeded upper recovery limits for DRO and RRO in the MSD and also failed to meet RPD criteria, parent sample results are flagged QH for the high recoveries in the MSD, surrogates were in control. The silica gel treated DRO/RRO MS/MSD on sample 13NC28SS041 in extraction batch 580-145385 failed to meet lower recovery limits for DRO and RRO in the MS and also failed to meet RPD criteria, parent sample results are flagged QL for the low recoveries in the MS as well as the MS having surrogates fail to meet lower acceptance criteria. It should be noted that sample 13NC28SS041 had 80% moisture content and 12% organic carbon, which suggest matrix interference and non-homogeneity of the sample.

DRO was detected at 2.3 mg/kg and RRO was detected at 11.5 mg/kg in the silica gel treated method blank 580-145393, all sample results were greater than 10 times the reported concentrations in the silica gel treated method blank so no flagging was necessary. The silica gel treated DRO/RRO MS/MSD on sample 13NC28SS029 in extraction batch 580-145393 exceeded the upper recovery limits for DRO and RRO in both the MS andMSD and also failed to meet RPD criteria, the parent sample result was greater than 4 times the spike concentration so no flagging was necessary.

Sample 13NC28SS029 had chromium and vanadium exceed the upper control limits in both the MS and MSD, the MSD also had zinc a recovery exceed the upper control limit in the MSD and are flagged QH. The case narrative noted that arsenic, cadmium, lead, nickel, selenium and silver exceed RPD limits. When percent recoveries were calculated for RPD criteria all above noted analytes met RPD criteria. This is due to how EPA calculates spike recoveries, which is based on sample weight and recovery and not based solely on percent recovery. Results for arsenic, cadmium, lead and nickel in sample 13NC28SS029 had J flags removed, the J flag remained on selenium as it was reported at a concentration less than the LOQ. Sample 13NC28SS041 had chromium and vanadium exceed the upper control limits in the MSD, the parent results for those analytes are flagged QH.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
   X Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
   X Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
   □Yes □ No X□NA (Please explain.) Comments:

All samples were water samples

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
   X Yes □ No □NA (Please explain.) Comments:

   e. Data quality or usability affected?
   Comments:

Sample results are usable for project purposes without qualification with respect to sample holding times and reporting limits.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?

X Yes ☐ No ☐NA (Please explain.) Comments:

Silica gel treated RRO was detected in method blank 580-145385 at 12.4 mg/kg, all sample results were greater than 10 times the blank concentration so no flagging was necessary. DRO was detected in method blank 580-145393at 2.64 mg/kg, all sample results were greater than 10 times the blank concentration so no flagging was necessary. DRO was detected at 2.3 mg/kg and RRO was detected at 11.5 mg/kg in the silica gel treated method blank 580-145393, all sample results were greater than 10 times the reported concentrations in the silica gel treated method blank so no flagging was necessary.

iii. If above PQL, what samples are affected?

Comments:

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
☐Yes ☐ No ☐XNA (Please explain.) Comments:

No flagging was necessary as all sample results were greater than 10 times the concentrations reported in their respective method blank.

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to method blank analyses and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X Yes ☐ No☐ NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

□Yes □ No □NA (Please explain.) Comments:

The BTEX MS/MSD in prep batch 280-192173 on sample 13NC28SS029 had high recoveries for all analytes in the MSD, the laboratory was contacted and noted that the internal standard 1,4-chchlorobenzene-d4 exceeded upper recovery criteria in the MS, on 9/23 analysis, the MSD met IS recovery criteria. The MS sample was reanalyzed on 9/24 with acceptable IS criteria but the MS BTEX results greatly exceeded recovery and RPD criteria. Sample results for 13NC28SS029 are flagged QH for high MS recoveries, which take precedence over RPD criteria. The BTEX MS in prep batch 280-192207 on sample 13NC28SS041 had high recoveries for all analytes in the MS, no target analytes were detected in sample 13NC28SS041 so no flags were applied to results. The LCS/LCSD met criteria.

Acenaphthylene recovered 3% above the upper acceptance criteria in the LCS in prep batch 580-145371 and anthracene recovered 2% above the upper acceptance in the LCS in prep batch 580-145473. Both sets of LCS/LCSD met RPD criteria. Positive sample results associated with the batch LCS's are flagged QH for their respective analytes that exceeded the upper control limits in the LCS. The MS/MSD on sample 13NC28SS029 in prep batch 580-145473 failed to meet lower recovery criteria for acenaphthene, the parent result is flagged QL. The MS/MSD on sample 13NCSS029 also failed upper recovery criteria for naphthalene, 1- and 2-methylnaphthylene, the parent sample concentrations for these analytes were greater than 4 times the spike concentration and were analyzed at a 10X dilution to bring the analytes into calibration range so no flags were assigned these 3 analytes.

Sample 13NC28SS029 had chromium and vanadium exceed the upper control limits in both the MS and MSD, the MSD also had zinc a recovery exceed the upper control limit in the MSD and sample results are flagged QH. The case narrative noted that arsenic, cadmium, lead, nickel, selenium and silver exceeded RPD limits. When percent recoveries were calculated for RPD criteria all above noted analytes met RPD criteria. This is due to how EPA calculates spike recoveries, which is based on sample weight and recovery and not based solely on percent recovery. Results for arsenic, cadmium, lead and nickel in sample 13NC28SS029 had J flags removed, the J flag remained on selenium as it was reported at a concentration less than the LOQ.

Sample 13NC28SS041 had chromium and vanadium exceed the upper control limits in the MSD, the parent results for those analytes are flagged QH

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes □ No □NA (Please explain.) Comments:

The case narrative noted that several DRO/RRO, 8260 BTEX and 8270 analytes failed to meet RPD criteria for DRO/RRO, BTEX and 8270 PAH analyses in MS/MSD samples, those analytes are discussed above and after examination of the QC data and parent sample concentrations, no results were flagged for failing to meet precision criteria either because the percent recoveries met RPD criteria or the parent sample had initial concentrations greater than 4 times the spike concentration.

vi. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Only samples used for MS/MSD spikes failed to meet criteria and the parent results are flagged as described above with the exception of anthracene results being flagged for a high LCS recovery.

vii. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

Yes, flags are described above and defined in the CDQR and table notes.

viii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes with above noted qualifications. The data quality is acceptable as it should be noted all samples in this work order came from the soil/sediment matrix after sediment removal had occurred. The site is a contaminated wetland that served as a drainage for activities at the MOC.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
XYes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes X□ No□NA (Please explain.) Comments:

Sample 13NC28SS026 had 4-bromofluorobenzene (surrogate) recovery greater than the upper control limit, sample results were ND for BTEX so no flagging was necessary.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X□NA (Please explain.) Comments:

No flagging required as stated above.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to surrogate analyses and reporting.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

□Yes X□ No□NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
X Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?
Comments:

NA

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to trip blank analyses and reporting.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes □ No □NA (Please explain.) Comments:

Three sets of field duplicates were submitted with this work order.

ii. Submitted blind to lab?
X Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

Yes X☐ No☐NA (Please explain.) Comments:

Samples 13NC28SS039 and -040 failed to meet RPD criteria for 1-methylnaphthylene, 2-methylnaphthylene and flourene; samples 13NC28SS043 and -044 failed to meet RPD for arsenic. All other results either met criteria or were non-detect.

v. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Three sets of duplicates were submitted with this work order and the majority or results met RPD limits or were non-detect. The overall data comparability was good between duplicates with above noted exceptions.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes X☐ No☐NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

☐Yes ☐ No ☐NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>

a. Defined and appropriate?

X Yes ☐ No ☐NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 10/13/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-40408-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      □Yes X□ No□NA (Please explain.) Comments:

      Five coolers were shipped with this work order, cooler temperatures were -0.4. 1.4, 1.5, 2.1 and 2.1°C. Sample receipt documents were reviewed and no samples were noted as being frozen, which would impact sample results. All samples in this SDG were water samples.

c. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes □ No □NA (Please explain.) Comments:

d. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

e. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

No discrepancies were noted nor discovered during document review.

f. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification with respect to sample shipment and documentation.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes X No □NA (Please explain.) Comments:

The 8260 BFB tunes of analytical batches 146256 and 146261 failed relative abundance m/z by 0.05% and cited due to rounding errors in the calculation, analyses proceeded without issue. The 8260 BFB tune for analytical batch 146515 had m/z=175 failing the 5-9% method criteria with a 9.23% relative abundance due to rounding errors in the calculation, analyses proceeded without issue.
PAH LCS 580-145563 had Acenaphthylene recover above the 105% upper acceptance limit at 108%, only sample 13NC28STW22 had acenaphthylene detected and the result was flagged QH.
Sample 13NC28TWA021 was used for the MS/MSD in prep batch 580-145822 and the MS had the DRO recovery at 72% with a lower acceptance limit of 75%, the parent result was flagged QL for quality issue with potential low bias.
The laboratory case narrative noted that the PCB MS/MSD in prep batch 580-145578 was accidentally mis-spiked with 8081 pesticide analytes, the LCS/LCSD was spiked correctly and met acceptance criteria.
Mercury was detected in method blank 580-145791 at 0.0000712 mg/L, which is comparable to or greater than reported sample concentrations. Mercury results from project samples were B flagged to indicate blank contamination with potential high bias.

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes without qualification.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
   X Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
   □Yes □X No□NA (Please explain.) Comments:

All samples in this work order failed to be analyzed within holding time due to instrument failure. Samples were analyzed 1 to 3 days past holding time, results are H flagged and have potential low bias.

   c. All soils reported on a dry weight basis?
   □Yes □ No X□NA (Please explain.) Comments:

All samples were water samples.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
   Yes □X No □NA (Please explain.) Comments:

All sample PCB LOQs were greater than surface water quality criteria and LODs were nearly 10 times less than quality criteria. All PCB results were non-detect at the LOD.

   e. Data quality or usability affected?
   Comments:

Sample results are usable for project purposes with above noted H flags for holding time exceedance by 1 to 3 days.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      □X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

Mercury was detected in method blank 580-145791 at 0.0000712 mg/L, which is comparable to or greater than reported sample concentrations. Mercury results from project samples were B flagged to indicate blank contamination with potential high bias.

iii. If above PQL, what samples are affected?
Comments:

All samples in this work order were changed to ND a the LOQ and B flagge.d

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X□Yes □ No □NA (Please explain.) Comments:

Stated above

v. Data quality or usability affected? (Please explain.)
Comments:

While blank contamination affected the reported concentrations, all results are still usable to demonstrate the mercury has not impacted Site 28. All initial results were less than the LOQ, which is 10 times less than the regulatory limit.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□Yes □ No □NA (Please explain.) Comments:

PAH LCS 580-145563 had Acenaphthylene recover above the 105% upper acceptance limit at 108%, samples 13NC28STW22, -PSW01 and PSW02 had acenaphthylene detected and their results were flagged QH.
Sample 13NC28TWA021 was used for the MS/MSD in prep batch 580-145822 and the MS had the DRO recovery at 72% with a lower acceptance limit of 75%, the parent result was flagged QL for quality issue with potential low bias.
The laboratory case narrative noted that the PCB MS/MSD in prep batch 580-145578 was accidentally mis-spiked with 8081 pesticide analytes, the LCS/LCSD was spiked correctly and met acceptance criteria.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
□Yes □X No□NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Stated above

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
□Yes □X No □NA (Please explain.) Comments:

Yes, results are flagged as stated above

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

While there were some minor QC issues that slightly impacted overall data quality, the results are still usable to demonstrate that treated water meets discharge permit criteria and that dredging activities as site 28 did not adversely impact the surface water.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X Yes □ No □NA (Please explain.) Comments:

iv. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No X□NA (Please explain.) Comments:

All surrogates met recovery criteria

v. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to surrogate recoveries and reporting.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?

X Yes □ No □NA (Please explain.) Comments:

All trip blank results were ND.

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

Trip blank results are usable for project purposes to demonstrate that no contamination was introduced during collection, transport and analysis of samples.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes □ No □NA (Please explain.) Comments:

One set of field duplicates were submitted with this work order and met all RPD criteria for water samples.

ii. Submitted blind to lab?
X Yes □ No □XNA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X Yes □ No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes without qualification with respect to field duplicate collection, analysis and reporting.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Chemist Date: 12/14/2013

CS Report Name: NE Cape HTRW 2013 Report Date: 10/14/2013

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica Laboratory Report Number: 580-40427-1

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X□NA (Please explain.) Comments:

      All samples were shipped to and analyzed by TA-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

The sample labels did not match the CoC for the ISO MI samples, the CoC had MI omitted from the sample ID which had MI on the bags, logged in per CoC. The sample type was listed as MI on the CoC. The samples times on VOA vials collected at Site 28 and the ISO tanks also did not match the CoC due to MI volatile and semi-volatile samples being logged in with the same time on the CoC while they were actually collected at sequentially at the site with differing collection times. Samples should have been recorded separately on the CoC with the correct samples times. It did not affect sample analyses and reporting though samples did exceed holding time as noted on the data tables. The CoC listed a trip blank but it was accidentally omitted during packing and shipment. It had no impact on results as all sample results for GRO and/or BTEX were non-detect.

e. Data quality or usability affected? (Please explain.)
Comments:

While there were minor discrepancies between the CoC and sample labels, it did not affect the sample analysis or reporting. Sample results are usable for project purposes without qualification with respect to sample shipment and documentation.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

X Yes No NA (Please explain.) Comments:

Samples 13NCISO001-002 and -003, exceeded BTEX and DRO/RRO holding times by 1 to 6 days due to sample drying and preparation of MI samples and are H flagged. Samples 13NCBGSS02 through -BGSS10 were received by the laboratory and prepared for MI drying within holding time but required time to air dry and prepare for analysis. The holding times expired for samples by 1 to 7 days due to the time required to air dry samples. Results are H flagged and considered estimates with potential low bias.

The BTEX CCV in analysis batch 580-146092 recovered above the upper acceptance limit for benzene. Project samples were non-detect for benzene and all BTEX analytes. Sample results are not affected as the instrument demonstrated ability to detect analytes. TFT surrogate failed to meet lower recovery limits for BTEX analyses in 13NC28MI001, -001MS, -001MSD and -28MI002. TFT is an AK101-GRO field surrogate and BTEX does not use a field surrogate. Samples had greater than 40% moisture which may explain the low recoveries.

Acenaphthylene recovery in the LCS/CLSD from extraction batch 580-146198 failed high by 4 and 8% respectively; only sample 13NC28MI002 had a reportable concentration of acenaphthylene and the result is flagged QH. Sample 13NC28MI01 MSD in (MI) prep batch 580-146198 had 1-methylnaphthylene recovery 1% below criteria, the MS/MSD also failed RPD criteria for 1- and 2-mthylnaphthylene, acenapthylene, benzo[a]pyrene, indeno[1,2,3-cd]pyrene, dibenz[a,h]antracene, and benzo[g,h,i]perylene. Positive sample results for the above listed analytes in sample 13NC28MI01 are flagged QN for RPD exceedances, which replaced several J flags issued in the lab report.

The PCV CCV in analysis batch 580-146123 had secondary column recoveries for Aroclor 1016 and 1260 exceed the upper control limit and surrogate TCMX recovered above control limits on both columns, surrogate decachlorobiphenyl passed on both columns. Sample results were non0-detect and a USACE variance was granted for reporting the results without qualification as they were non-detect and surrogates were well within control limits. The case narrative also noted that PCB holding times were exceeded on several MI samples, there is no holding time for PCBs in soil per the method and *ADEC Field Sampling Guidance* so no flags were assigned to any PCB results for holding time. The PCB MS on sample 13NC28MI01 had recoveries less than the lower recovery limits for Arcolor 1260, both surrogates TCMX and decachlorobiphenyl and also failed RPD limits for Aroclor 1260. The parent sample failed to meet surrogate recovery limits for decachlorobiphenyl. The parent result is non-detect and all PCB results are flagged QL for the multiple QC failures with potential low bias.

The DRO/RRO MS/MSD on sample 13NC28MI01 in extraction batch 580-146270 failed to meet DRO and RRO lower recovery criteria in the MSD; the RRO parent result is greater than 4 times the spike concentration so the parent result is flagged QL for DRO only.

Vanadium, chromium and zinc recoveries in MS/MSD sample 13NC28MI01 in extraction batch 580-146485 exceeded the upper control limits in both the MS and MSD. Chromium and zinc concentrations in the parent samples are greater than 4 times the spike concentration so no flagging is necessary. The vanadium result for sample 13NC28MI01is flagged QH with high potential bias.

c. Were all corrective actions documented?

X Yes No NA (Please explain.) Comments:

No corrective actions required. Variances were granted for PCB QC issues.

e. What is the effect on data quality/usability according to the case narrative?

Comments:

Sample results are usable for project purposes without qualification except as noted above.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

XYes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

□Yes X□ No□NA (Please explain.) Comments:

Samples 13NCISO001-002 and -003, exceeded BTEX and DRO/RRO holding times by 1 to 6 days due to sample drying and preparation of MI samples and are H flagged. Samples 13NCBGSS02 through -BGSS10 were received by the laboratory and prepared for MI drying within holding time but required time to air dry and prepare for analysis. The holding times expired for samples by 1 to 7 days due to the time required to air dry samples. Results are H flagged and considered estimates with potential low bias. . The case narrative also noted that PCB holding times were exceeded on several MI samples, there is no holding time for PCBs in soil per the method and *ADEC Field Sampling Guidance* so no flags were assigned to any PCB results.

c. All soils reported on a dry weight basis?

X Yes □ No □NA (Please explain.) Comments:

Samples submitted for MI sampling were air dried during preparation as per MI SOPs and methodologies.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?

Comments:

Sample results are usable for project purposes with above noted H flags for holding time exceedances. The sample results are still usable to demonstrate that excavation as well as soil and water handling activities at NE Cape did not adversely impact surrounding areas.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

□X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X Yes □ No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?

Comments:

Not applicable

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

□Yes □ No □XNA (Please explain.) Comments:

No flags were assigned nor were any deficiencies identified regarding method blank analysis and reporting..

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification with respect to method blank analyses and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
□Yes X□ No□NA (Please explain.) Comments:

Acenaphthylene recovery in the LCS/CLSD from extraction batch 580-146198 failed high by 4 and 8% respectively; only sample 13NC28MI002 had a reportable concentration of acenaphthylene and the result is flagged QH. The PCB MS on sample 13NC28MI01 had recoveries less than the lower recovery limits for Arcolor 1260, both surrogates TCMX and decachlorobiphenyl and also failed RPD limits for Aroclor 1260. The parent result is non-detect and all PCB results are flagged QL for the multiple QC failures including surrogates with potential low bias.
DRO/RRO MS/MSD on sample 13NC28MI01 in extraction batch 580-146270 failed to meet DRO and RRO lower recovery criteria in the MSD; the RRO parent result is greater than 4 times the spike concentration so the parent result is flagged QL for DRO only.
Vanadium, chromium and zinc recoveries in MS/MSD sample 13NC28MI01 in extraction batch 580-146485 exceeded the upper control limits in both the MS and MSD. Chromium and zinc concentrations in the parent samples are greater than 4 times the spike concentration so no flagging is necessary. The vanadium result for sample 13NC28MI01is flagged QH with high potential bias.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
□Yes X□ No□NA (Please explain.) Comments:

Sample 13NC28MI01 MSD in (MI) prep batch 580-146198 had 1-methylnaphthylene recovery 1% below criteria, the MS/MSD also failed RPD criteria for 1- and 2-mthylnaphthylene, acenapthylene, benzo[a]pyrene, indeno[1,2,3-cd]pyrene, dibenz[a,h]antracene, and benzo[g,h,i]perylene. Positive sample results for the above listed analytes in sample 13NC28MI01 are flagged QN for RPD exceedances, which replaced several J flags issued in the lab repor.t

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Affected samples are noted above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

Flags are stated above and fully defined in the CDQR and in table notes.

vii. Data quality or usability affected? (Use comment box to explain.)

Even with above noted QC issues, mostly with MS/MSDs, the sample results are still usable to demonstrate that excavation as well as soil and water handling activities at NE Cape did not adversely impact surrounding areas

Comments:

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes X□ No□NA (Please explain.) Comments:

TFT surrogate failed to meet lower recovery limits for BTEX analyses in 13NC28MI001, -001MS, -001MSD and -28MI002. TFT is an AK101-GRO field surrogate and BTEX does not use a field surrogate. Samples had greater than 40% moisture which may explain the low recoveries. The PCB MS on sample 13NC28MI01 had recoveries less than the lower recovery limits for, both surrogates TCMX and decachlorobiphenyl. The parent sample also failed to meet surrogate recovery limits for decachlorobiphenyl. The parent result is non-detect and all PCB results are flagged QL for the multiple QC failures with potential low bias on this sample.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

While some surrogate recoveries did not meet method acceptance limits, results are still usable for project purposes with above noted qualifications. The matrices at Site 28 are highly organic and its matrix effects on sample and surrogate recoveries have been demonstrated over the years with respect to surrogate and MS/MSD recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
□Yes X□ No□NA (Please explain.) Comments:

The CoC listed a trip blank but it was accidentally omitted during packing and shipment. It had no impact on results as all sample results for GRO and/or BTEX were non-detect.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

□Yes □ No X□NA (Please explain.) Comments:

See above

iii. All results less than PQL?
□Yes □ No X NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?
Comments:

NA

v. Data quality or usability affected? (Please explain.)
Comments:

All sample results for GRO and/or BTEX were non-detect so data quality and usability was not impacted due to the trip blank being omitted during shipment.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

One set of field duplicates was submitted from the Site 28 water discharge area using grab samples, two sets of replicates (primary and 2 duplicates) from multi-increment (MI) samples were also submitted, one from the bag storage area and one from the upper sump area at Site 28

X Yes □ No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

Yes X□ No□NA (Please explain.) Comments:

Arsenic, barium, chromium, nickel, zinc, mercury, fluoranthene and pyrene failed to meet 50% RPD limits in sample duplicates 13NC28WDA01 and –WDA-02, those results are flagged QN for quality issues with no directional bias.

Fluoranthene,2-Methylnaphthylene,Fluorene and Phenanathrene failed to meet RSD limits in 13NC28MI001, -002 and -003 from the upper sump area at Site 28. All replicate results that were QN flagged for not meeting RSD limits were well below cleanup levels, results did not impact data usability.

Replicate sample results from the bag storage areas met RSD limits though the analyte list was much shorter than samples from Site 28.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

All results from the field duplicates 13NC28WDA01 and –WDA-02 had results well below cleanup criteria. MI results from the upper sump at Site 28 had chromium exceed site specific cleanup levels in all 3 replicates and arsenic exceeded site specific criteria of 11 mg/kg in one sample at 12mg/kg and the other 2 replicates had reported arsenic at 11 and 9.1 mg/kg. The RSD for those 3 samples was less than 14%. All results are usable for project purposes with above noted qualifications.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X□ No□NA (Please explain.) Comments:

All samples were collected using disposable sampling equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Data flags are defined in sections above, in the CDQR and in table notes.

ATTACHMENT 3

ADEC Variances

From:	Benjamin, Sean P POA
To:	Welker, Molly; Palmer, Valerie Y POA
Cc:	Hannah, Marty; Barnhill, Eric; James, Russell
Subject:	RE: NE Cape TestAmerica method and MI-sampling information (UNCLASSIFIED)
Date:	Wednesday, June 19, 2013 1:56:58 PM

Classification: UNCLASSIFIED
Caveats: NONE

Using the other two extraction methods are fine, there should be a QAPP addendum or something to reflect the change.

Will ADEC buy off on the MI BTEX? Being new to the project, I don't know if they already did during the WP submittal.

Sean Benjamin, P.E.
907-753-5514

-----Original Message-----
From: Welker, Molly [mailto:mwelker@bristol-companies.com]
Sent: Wednesday, June 19, 2013 1:40 PM
To: Palmer, Valerie Y POA; Benjamin, Sean P POA
Cc: Hannah, Marty; Barnhill, Eric; James, Russell
Subject: NE Cape TestAmerica method and MI-sampling information

Hi Valerie and Sean:

Bristol had a conference call kick-off meeting on June 12, 2013 with TestAmerica to discuss the 2013 NE Cape project and analytical requirements of the contract. Rush turnaround times and data quality objectives were discussed. Bristol received additional information and requests from TestAmerica regarding the following updated methods that were not included in the 2013 NE Cape HTRW Work Plan.

TestAmerica has requested the approval to extract water samples for PCBs, PAHS, and POL by either EPA Method 3510C (separatory funnel) or EPA Method 3520C (continuous liquid-liquid) extraction methods to increase their capability of meeting rush turnaround times. TestAmerica is ADEC and USACE-DoD accredited for both methods for the listed analyses. The 2013 NE Cape QAPP states that POL and PAHs will be extracted by method 3510C and that PCBs will be extracted by 3520C. The 2013 NE Cape Work Plan has gone through technical editing and onto production and therefore this information has not been added to the QAPP. It will be included in the 2013 NE Cape HTRW Final Report if approved.

I also wanted to inform you that Bristol has included a SOP for collection of multi-increment (MI) samples in the 2013 NE Cape QAPP, which includes the collection of volatile samples. Bristol plans to collect and ship the volatile portion of the MI samples for BTEX analysis as follows: an Encore sampler will be used to collect a pre-determined volume of sample that is equal to 2 grams of soil from each cell within a decision unit and place the sample in a tared 32-ounce methanol preserved jar, assuring that no splashing or loss of methanol occurs and methanol and soil are at a 1:1 ratio. If soil conditions are not amenable to Encore sampling, a field scale will be used to weigh out 2 grams of soil collected with a tared stainless steel spoon before placing it in the methanol preserved jar. The jar will be weighed after each decision unit is sampled to determine the soil weight minus the weight of the jar and methanol. Immediately after collecting the volatile sample from each cell, another co-located sample will be collected and placed in an unpreserved jar for percent moisture determination. The laboratory will

be instructed to homogenize the sample before percent moisture determination to best reflect the decision unit conditions. Once a decision unit has been completed for all analyses, methanol will be transferred from the sample jar with a pipette and bulb to a VOA vial with no more than 30 mL of methanol in order to be shipped as dangerous goods in excepted quantity.

If you have any questions regarding this information please contact me or Marty Hannah at 563-0013.

Thanks,

Molly

Molly Welker

Senior Project Manager

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Pham, Ai
To:	Utley, Michael D POA; Hannah, Marty
Subject:	RE: Variance request for Bristol MI job 40427 (UNCLASSIFIED)
Date:	Thursday, October 03, 2013 3:35:45 PM

Great. Thank you. :)

-----Original Message-----
From: Utley, Michael D POA [mailto:Michael.D.Utley@usace.army.mil]
Sent: Thursday, October 03, 2013 4:29 PM
To: Hannah, Marty
Cc: Pham, Ai; Benjamin, Sean P POA
Subject: RE: Variance request for Bristol MI job 40427 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Variance granted....

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Thursday, October 03, 2013 3:22 PM
To: Utley, Michael D POA
Cc: ai.pham@testamericainc.com
Subject: [EXTERNAL] FW: Variance request for Bristol MI job 40427

Mike, not sure if this has already reached you but sending another variance request. I'm on really slow internet and not sure if things go through properly. Could you CC Ai regarding the variance request? She is helping fill in when Melanie is out.

_____
From: Pham, Ai [Ai.Pham@testamericainc.com]
Sent: Thursday, October 03, 2013 9:01 AM
To: Hannah, Marty
Cc: Pham, Ai
Subject: Variance request for Bristol MI job 40427

Marty,
Can we get a variance for this job: the 8082 CCV fails high for 1016 and 1260 on the confirmatory column but passes on the primary. Also, the CCV fails high for Tetrachloro-m-xylene on both columns. The samples are non-detects and the surrogate recoveries for the samples are all ok. The QC is also not adversely affected by the high bias.

Thanks
Ai

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	Hannah, Marty; Benjamin, Sean P POA
Cc:	melissa.armstrong@testamericainc.com
Subject:	RE: Variance request for BTEX-580-39367 (UNCLASSIFIED)
Date:	Tuesday, July 23, 2013 4:24:44 PM

Classification: UNCLASSIFIED
Caveats: NONE

Results show no hits near applicable action limits for BTEX or TAH. Variance request for the LCSD for the BTEX compounds and the surrogate is approved/granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Tuesday, July 23, 2013 2:19 PM
To: Benjamin, Sean P POA; Utley, Michael D POA
Cc: melissa.armstrong@testamericainc.com
Subject: Variance request for BTEX-580-39367

Here are the preliminary results that we have requested a variance for reporting due to high LCSD recoveries for Benzene, Ethylbenzene, m&p-Xylene and o-Xylene. TFT surrogate was also out high in the LCSD. Some samples have "J" flags and some are ND. The results are already ND or J flagged for reporting below the LOQ.

The results are used to monitor for potential impact from excavation activities at the MOC at NE Cape. The big driver there is diesel, which has exceeded groundwater cleanup criteria in past years. These are surface waters but we still analyze for DRO as it is the main contaminant of concern at the MOC.

Also, they are asking for a variance on the 8260 ICV, Acetone at -22.8 and Carbon Disulfide at 23.2. Mike has already said to reject the acetone due to inability to detect with a low ICV. Carbon disulfide can still be detected with the high ICV.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
111 W.16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
FAX : (907) 563-6713
mhannah@bristol-companies.com <mailto:mhannah@bristol-companies.com>
http://www.bristol-companies.com/ <http://www.bristol-companies.com/>

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Classification: UNCLASSIFIED
Caveats: NONE

From: Utley, Michael D POA
To: Pham, Ai; Hannah, Marty
Subject: RE: Variance Request (AK101) (UNCLASSIFIED)
Date: Monday, October 07, 2013 2:44:51 PM

Classification: UNCLASSIFIED
Caveats: NONE

Variance granted.

-----Original Message-----
From: Pham, Ai [mailto:Ai.Pham@testamericainc.com]
Sent: Monday, October 07, 2013 2:34 PM
To: Utley, Michael D POA; Hannah, Marty
Cc: Pham, Ai
Subject: [EXTERNAL] Variance Request (AK101)
Importance: High

Hello Mike and Marty,

The lab is requesting a variance for trifluorotoluene surrogate high (by 1%) in the method blank: recovery at 121%; limits (60-120). The trifluorotoluene surrogate recovery for the method blank associated with these batches was outside recovery limits at 121% (limits 60-120%). All associated sample surrogates fell within acceptance criteria (except for the samples with matrix interference) and the target analytes for all associated samples are either below or undetected at the limit of quantitation.

Batch A with the following jobs: 40273 & 40274 (U.S. Army Corps - NOME_SBH)

Batch B with the following jobs: 40427 (Bristol- NE Cape HTRW),

Please let me know if it's okay to narrate and report.

Thanks,

Ai

Classification: UNCLASSIFIED
Caveats: NONE

From: Benjamin, Sean P POA
To: Hannah, Marty
Cc: Welker, Molly; McLoone, Keather
Subject: RE: Variance from 580-39293-1 NE Cape HTRW - 8270 (UNCLASSIFIED)
Date: Tuesday, July 16, 2013 10:42:48 AM

Classification: UNCLASSIFIED
Caveats: NONE

Variance granted.

Sean Benjamin, P.E.
907-753-5514

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Monday, July 15, 2013 11:40 AM
To: Benjamin, Sean P POA
Cc: Welker, Molly; McLoone, Keather
Subject: FW: Variance from 580-39293-1 NE Cape HTRW - 8270

Bristol wishes to request a variance for reporting PAHs with Dibenz(a,h)anthracene, Indeno[1,2,3-cd]pyrene and Pyrene detected in the Method Blank at above 1/2 the LOQ. We have preliminary results from TA and they are usable for the intended project purpose of monitoring discharge to the ground. The TAH/TAqH limit is 15 ug/L and our highest result is essentially 3 ug/L. The majority of the TAH/TAqH results are from non-detect BTEX results (2.7 ug/L). I've attached the preliminary results sheet for your review.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Monday, July 15, 2013 10:36 AM
To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Variance from 580-39293-1 NE Cape HTRW - 8270

For the 8270 analysis the lab has asked for a variance.

Dibenz(a,h)anthracene, Indeno[1,2,3-cd]pyrene and Pyrene were detected in the Method Blank at above 1/2 the LOQ but below the LOQ. Sample 13NC28TWA03 (580-39293-3) was non-detect for all affected analytes; sample 13NC28TWA02 (580-39293-2) was non-detect for Dibenz(a,h)anthracene and Indeno[1,2,3-cd]pyrene, and was J-flagged for Pyrene; and sample 13NC28TWA01 (580-39293-1) was J-flagged for all affected analytes. Can we narrate and report?

Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback

<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA A ARMSTRONG

TestAmerica Seattle
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 253.922.2310 x135
www.testamericainc.com

Reference: [092459]
Attachments: 1

Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	Hannah, Marty; Benjamin, Sean P POA
Subject:	RE: Variance Request from 580-39359-1 NE Cape HTRW (UNCLASSIFIED)
Date:	Wednesday, July 17, 2013 10:14:13 AM

Classification: UNCLASSIFIED
Caveats: NONE

Variance granted. I can't see how it would significantly impact data usability.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Wednesday, July 17, 2013 10:11 AM
To: Benjamin, Sean P POA; Utley, Michael D POA
Subject: FW: Variance Request from 580-39359-1 NE Cape HTRW

Hi Mike, I believe Sean is headed to Port Heiden or somewhere like that today. We had a secondary column out for the PCB surrogate as noted below from Melissa Armstrong. Can we get a variance for the secondary column?

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Wednesday, July 17, 2013 10:06 AM
To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Variance Request from 580-39359-1 NE Cape HTRW

The lab has asked for a variance for the 8082 analysis. One of the bracketing CCVs failed high for the DCB surrogate on the confirmation column. Can we narrate and report?

Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA A ARMSTRONG

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Reference: [092620]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From: Utley, Michael D POA
To: Hannah, Marty; Benjamin, Sean P POA
Subject: RE: Variance Request from 580-39361-1 NE Cape HTRW (UNCLASSIFIED)
Date: Wednesday, July 17, 2013 10:15:20 AM

Classification: UNCLASSIFIED
Caveats: NONE

Variance granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Wednesday, July 17, 2013 10:12 AM
To: Benjamin, Sean P POA; Utley, Michael D POA
Subject: FW: Variance Request from 580-39361-1 NE Cape HTRW

Here is a similar request for a variance, I'm guessing all of the DoD samples are run on this instrument.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Wednesday, July 17, 2013 10:06 AM
To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Variance Request from 580-39361-1 NE Cape HTRW

The lab has asked for a variance for the 8082 analysis. One of the bracketing CCVs failed high for the DCB surrogate on the confirmation column. Can we narrate and report?

Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA A ARMSTRONG

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Tel: 253.922.2310 x135
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Reference: [092621]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	Hannah, Marty; Benjamin, Sean P POA
Cc:	Welker, Molly; McLoone, Keather
Subject:	RE: Variance Request from 580-39362-1 NE Cape HTRW - 8260 (UNCLASSIFIED)
Date:	Thursday, July 18, 2013 11:32:25 AM

Classification: UNCLASSIFIED
Caveats: NONE

Labs have long had issues with methylene chloride. I doubt the lab will be able to find the source of the contamination.

As long as the samples are nondetect, you're OK. Note that labs should be evaluating MB data to the LOD, not to 1/2 the LOQ. The QSM indicates that MBs should be evaluated to 1/2 the reporting limit, which we have defined as the LOD.

Though you didn't ask, the LCSD variance is accepted as well, since the impacted samples are ND.

Mike

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Thursday, July 18, 2013 10:52 AM
To: Benjamin, Sean P POA; Utley, Michael D POA
Cc: Welker, Molly; McLoone, Keather
Subject: FW: Variance Request from 580-39362-1 NE Cape HTRW - 8260

Bristol wishes to request a variance for methylene chloride in the 8260 method blank at concentrations greater than ½ the LOQ. I've also asked them to find the source of contamination as the concentration is near the cleanup level of 16 mg/Kg for methylene chloride in soil.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Thursday, July 18, 2013 10:26 AM
To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Variance Request from 580-39362-1 NE Cape HTRW - 8260

The lab has asked for a variance for the 8260 analysis. Method Blank has a detection of Methylene Chloride above 1/2 the LOQ (LOQ=16 and the hit is 12.5), affected samples are non-detect. Also LCSD recovery for 1,2-Dichloropropane has a detection at 126% (70-120), affected samples are non-detect. Can we narrate and report?

Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA A ARMSTRONG

TestAmerica Seattle
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Tel: 253.922.2310 x135
www.testamericainc.com

Reference: [092681]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	Hannah, Marty
Cc:	Benjamin, Sean P POA
Subject:	RE: Variance Request from 580-39362-1 NE Cape HTRW (UNCLASSIFIED)
Date:	Wednesday, July 17, 2013 10:16:28 AM

Classification: UNCLASSIFIED
Caveats: NONE

Variance granted. Thanks for double checking.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Wednesday, July 17, 2013 10:13 AM
To: Benjamin, Sean P POA; Utley, Michael D POA
Subject: FW: Variance Request from 580-39362-1 NE Cape HTRW

A third variance request for the same situation. This is for TestAmerica work orders 580-39359, 58039361 and 58039362, all from NE Cape.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Wednesday, July 17, 2013 10:06 AM
To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Variance Request from 580-39362-1 NE Cape HTRW

The lab has asked for a variance for the 8082 analysis. One of the bracketing CCVs failed high for the DCB surrogate on the confirmation column. Can we narrate and report?

Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA A ARMSTRONG

TestAmerica Seattle
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Tel: 253.922.2310 x135
www.testamericainc.com

Reference: [092623]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	Hannah, Marty
Cc:	Benjamin, Sean P POA; melissa.armstrong@testamericainc.com; Welker, Molly
Subject:	RE: Noticification of glycols received out of temperature (UNCLASSIFIED)
Date:	Wednesday, July 24, 2013 1:34:48 PM

Classification: UNCLASSIFIED
Caveats: NONE

No questions, sounds good to me. And Yes, as long as the impacted samples are ND.

Mike

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Wednesday, July 24, 2013 11:57 AM
To: Utley, Michael D POA
Cc: Benjamin, Sean P POA; melissa.armstrong@testamericainc.com; Welker, Molly
Subject: Noticification of glycols received out of temperature

We had submitted samples from Site 10 (drum area) for multiple analyses including glycols. Tacoma received the samples and performed all analyses except glycols, which were shipped via FedEx to Denver by Tacoma. FedEx lost the cooler over the weekend and it was received at approximately 20 degrees C by sample control in Denver on Monday. As Sean and I discussed on the phone, glycols are essentially non-volatile and would not likely result in loss of glycol due to the short period of time that the samples were above acceptable temperature. I have asked TA to narrate this in the report and Sean agreed that this is not a variance but a notification of sample receipt conditions as it was sub-contracted to Denver and this information was not included in the initial notification of sample receipt. Let me know if you have any questions.

Mike, is the variance for 580-39440 for 1,2-dichloropropane applicable to WO 39443 as well? Same analytical batch, different work order.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
111 W.16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
FAX : (907) 563-6713
mhannah@bristol-companies.com <mailto:mhannah@bristol-companies.com>
http://www.bristol-companies.com/ <http://www.bristol-companies.com/>

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Classification: UNCLASSIFIED
Caveats: NONE

From: Utley, Michael D POA
To: Hannah, Marty
Subject: RE: Variance request from 580-39440-1 NE Cape HTRW - Method 8260 (UNCLASSIFIED)
Date: Wednesday, July 24, 2013 11:42:57 AM

Classification: UNCLASSIFIED
Caveats: NONE

Variance accepted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Wednesday, July 24, 2013 11:35 AM
To: Benjamin, Sean P POA; Utley, Michael D POA
Cc: Welker, Molly
Subject: FW: Variance request from 580-39440-1 NE Cape HTRW - Method 8260

8260 variance request for high LCSD for 1,2-dichloropropane. Samples are ND.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Wednesday, July 24, 2013 11:31 AM
To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Variance request from 580-39440-1 NE Cape HTRW - Method 8260

The lab has asked for a variance for the 8260 analysis. The LCSD failed high for 1,2-Dichloropropane samples are ND. Can we narrate and report?

Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA A ARMSTRONG

TestAmerica Seattle
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Tel: 253.922.2310 x135
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Reference: [092935]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	Hannah, Marty
Cc:	Benjamin, Sean P POA
Subject:	RE: Variance request from 580-39443-1 NE Cape HTRW - Method 8260 (UNCLASSIFIED)
Date:	Wednesday, July 24, 2013 1:33:02 PM

Classification: UNCLASSIFIED
Caveats: NONE

Variance accepted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Wednesday, July 24, 2013 11:36 AM
To: Benjamin, Sean P POA; Utley, Michael D POA
Cc: Welker, Molly
Subject: FW: Variance request from 580-39443-1 NE Cape HTRW - Method 8260

8260 variance request for high LCSD for 1,2-dichloropropane. Samples are ND. Different work order than the previous request but analyzed in the same batch. They got shipped off island on the same day.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Wednesday, July 24, 2013 11:31 AM
To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Variance request from 580-39443-1 NE Cape HTRW - Method 8260

The lab has asked for a variance for the 8260 analysis. The LCSD failed high for 1,2-Dichloropropane samples are ND. Can we narrate and report?

Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA A ARMSTRONG

TestAmerica Seattle
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 253.922.2310 x135
www.testamericainc.com

Reference: [092936]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	Armstrong, Melissa; Hannah, Marty
Cc:	Benjamin, Sean P POA
Subject:	RE: Variance request from 580-39444-1 NE Cape HTRW (UNCLASSIFIED)
Date:	Wednesday, July 31, 2013 3:42:37 PM

Classification: UNCLASSIFIED
Caveats: NONE

Field surrogate in the MB is not critical, as long as the other analytical surrogates are in control. Variance accepted.

Mike

-----Original Message-----
From: Armstrong, Melissa [mailto:Melissa.Armstrong@testamericainc.com]
Sent: Wednesday, July 31, 2013 3:23 PM
To: Hannah, Marty; Utley, Michael D POA
Subject: RE: Variance request from 580-39444-1 NE Cape HTRW (UNCLASSIFIED)

Sorry realized I missed that part it is for the 8260.

MELISSA ARMSTRONG
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

5755 8th Street East
Tacoma, WA 98424
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www.testamericainc.com

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Wednesday, July 31, 2013 4:21 PM
To: Utley, Michael D POA
Cc: Armstrong, Melissa
Subject: RE: Variance request from 580-39444-1 NE Cape HTRW
(UNCLASSIFIED)

I'm guessing GRO as TFT is the surrogate for that. The other possibility
is 8260 BTEX. Its groundwater from the MOC wells. Melissa, GRO or 8260
BTEX or both?

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

-----Original Message-----
From: Utley, Michael D POA [mailto:Michael.D.Utley@usace.army.mil]
Sent: Wednesday, July 31, 2013 3:20 PM
To: Hannah, Marty
Subject: RE: Variance request from 580-39444-1 NE Cape HTRW
(UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

What analysis?

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Wednesday, July 31, 2013 3:18 PM
To: Benjamin, Sean P POA; Utley, Michael D POA
Subject: FW: Variance request from 580-39444-1 NE Cape HTRW

Can we get a variance for no surrogate in the method blank? The samples were ND.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Wednesday, July 31, 2013 3:16 PM
To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Variance request from 580-39444-1 NE Cape HTRW

The lab has asked for instructions. The TFT in the method blank was mistakenly not spiked. All other surrogates are in control and samples are ND. Can we narrate and report?

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback <https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA A ARMSTRONG

TestAmerica Seattle
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 253.922.2310 x135
www.testamericainc.com

Reference: [093336]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From: Utley, Michael D POA
To: Hannah, Marty
Subject: RE: Variance request from 580-39444-1 NE Cape HTRW (UNCLASSIFIED)
Date: Monday, August 05, 2013 2:40:46 PM

Classification: UNCLASSIFIED
Caveats: NONE

I'm just a little leery on this one...variance granted, but please ensure all of this info is captured in the data review.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Monday, August 05, 2013 1:41 PM
To: Benjamin, Sean P POA; Utley, Michael D POA
Subject: FW: Variance request from 580-39444-1 NE Cape HTRW (UNCLASSIFIED)

Below is a response from Melissa regarding the low LCSD recovery for Benzo (a)pyrene. The samples were ND and historical data has no Benzo(a) pyrene detected. I've attached the 2012 MOC well results for your review. So can we get a variance for this?

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

-----Original Message-----
From: Armstrong, Melissa [mailto:Melissa.Armstrong@testamericainc.com]
Sent: Monday, August 05, 2013 1:35 PM
To: Hannah, Marty
Subject: RE: Variance request from 580-39444-1 NE Cape HTRW (UNCLASSIFIED)

Here is the labs response:
Most likely, we ran the TurboVap at too high a pressure. Also, if this LCSD sample had less solvent volume than the other samples, it would have concentrated slightly faster than the other samples, which would contribute to analyte loss.

Hope this helps.

Regards,

MELISSA ARMSTRONG
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

5755 8th Street East
Tacoma, WA 98424
Tel 253.922.2310 l Fax 253.922.5047
www.testamericainc.com

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Monday, August 05, 2013 11:58 AM
To: Armstrong, Melissa
Subject: FW: Variance request from 580-39444-1 NE Cape HTRW
(UNCLASSIFIED)

Utley has asked for a little more detail below regarding the failed 8270 LCSD for B(a)P.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013

-----Original Message-----
From: Utley, Michael D POA [mailto:Michael.D.Utley@usace.army.mil]
Sent: Monday, August 05, 2013 10:57 AM
To: Hannah, Marty
Subject: RE: Variance request from 580-39444-1 NE Cape HTRW
(UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

What about RPD? Did the lab give any reason for the failure? (spilled, turbo-vapped too long, etc.?)

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Monday, August 05, 2013 10:55 AM
To: Utley, Michael D POA; Benjamin, Sean P POA
Subject: RE: Variance request from 580-39444-1 NE Cape HTRW
(UNCLASSIFIED)

LOD is 0.075 ug/L and the cleanup level is 0.2 ug/L. These are monitoring well samples from the MOC. Only the LCSD failed, LCS and MS/MSD passed.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013 -----Original Message-----
From: Utley, Michael D POA [mailto:Michael.D.Utley@usace.army.mil]
Sent: Monday, August 05, 2013 10:45 AM
To: Hannah, Marty; Benjamin, Sean P POA
Subject: RE: Variance request from 580-39444-1 NE Cape HTRW
(UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

What is the LOD in comparison to the cleanup limit?

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Friday, August 02, 2013 11:34 AM
To: Benjamin, Sean P POA; Utley, Michael D POA
Subject: FW: Variance request from 580-39444-1 NE Cape HTRW

Bristol wishes to request a variance for low Benzo(a)pyrene recovery in the LCSD. The LCS and MS/MSD passed. Samples are ND.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Friday, August 02, 2013 11:31 AM

To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Variance request from 580-39444-1 NE Cape HTRW

The lab has asked for a variance for the 8270 analysis. LCSD recovered low for Benzo(a)pyrene at 44%, 55% being the lower limit. LCS passed at 61%. The MS/MSD did pass the recovery. All samples are non-detect. Can we narrate and report?

Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at:
Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=12163287
6991>

MELISSA A ARMSTRONG

TestAmerica Seattle
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 253.922.2310 x135
www.testamericainc.com

Reference: [093439]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	Hannah, Marty; Benjamin, Sean P POA
Cc:	Benjamin, Sean P POA
Subject:	RE: Variance request from 580-39444-1 NE Cape HTRW - AK101 (UNCLASSIFIED)
Date:	Wednesday, July 31, 2013 10:15:42 AM

Classification: UNCLASSIFIED
Caveats: NONE

Suggest lab re-runs for the CCB hit - that's just a re-analysis of impacted samples, right?

MB TFT failure - as long as MB is ND, that is accepted.

Mike

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Wednesday, July 31, 2013 9:34 AM
To: Benjamin, Sean P POA; Utley, Michael D POA
Subject: FW: Variance request from 580-39444-1 NE Cape HTRW - AK101

Variance request for a hit in the GRO CCB. The samples are from monitoring wells at the MOC. DRO is our main constituent of concern and we've alrways had historically low GRO, at levels similar to what is being reported.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Tuesday, July 30, 2013 4:41 PM
To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Variance request from 580-39444-1 NE Cape HTRW - AK101

The lab has asked for a variance on the AK101 anlaysis.

CCB hit at 1/2 the RL, the hit was 25 and the RL 50. There are varying degrees of detections, one sample as ND, the others are 0.015, 0.026, 0.033 mg/L.

TFT failed high in the MB 128% (60-120%) and all samples are below the reporting limit for target analytes and pass for surrogate recoveries.

Can we narrate and report?

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA A ARMSTRONG

TestAmerica Seattle
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Tel: 253.922.2310 x135
www.testamericainc.com

Reference: [093254]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	Hannah, Marty
Cc:	Benjamin, Sean P POA
Subject:	RE: Variance request from 580-39470-1 and 580-39471-1 NE Cape HTRW - 8270 analysis (UNCLASSIFIED)
Date:	Monday, August 05, 2013 3:43:45 PM

Classification: UNCLASSIFIED
Caveats: NONE

Variance granted; please narrate and report.

Mike

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Monday, August 05, 2013 3:26 PM
To: Utley, Michael D POA
Subject: FW: Variance request from 580-39470-1 and 580-39471-1 NE Cape HTRW - 8270 analysis (UNCLASSIFIED)

Here are preliminary results for the affected 8270 SIM samples for NEC. All results less than 1/10th the cleanup levels. The QC samples were within limits, just out for RPD.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

-----Original Message-----
From: Armstrong, Melissa [mailto:Melissa.Armstrong@testamericainc.com]
Sent: Monday, August 05, 2013 3:22 PM
To: Hannah, Marty
Subject: RE: Variance request from 580-39470-1 and 580-39471-1 NE Cape HTRW - 8270 analysis (UNCLASSIFIED)

I kind of figured you would need these.

Regards,

MELISSA ARMSTRONG
Project Manager

TestAmerica
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5755 8th Street East
Tacoma, WA 98424
Tel 253.922.2310 l Fax 253.922.5047
www.testamericainc.com

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Monday, August 05, 2013 4:08 PM
To: Armstrong, Melissa
Subject: FW: Variance request from 580-39470-1 and 580-39471-1 NE Cape HTRW - 8270 analysis (UNCLASSIFIED)

Mike has asked for the 8270 sample results for 39470 so he can make an informed decision. Can we

get the results and I'll put the action limits in with the results?

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013

-----Original Message-----
From: Utley, Michael D POA [mailto:Michael.D.Utley@usace.army.mil]
Sent: Monday, August 05, 2013 3:06 PM
To: Hannah, Marty
Subject: RE: Variance request from 580-39470-1 and 580-39471-1 NE Cape HTRW - 8270 analysis (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

How are the sample results compared to the project action limits?
Exceedances are acceptable, so long as the results are either way greater than or way less than the project action limits....

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Monday, August 05, 2013 3:03 PM
To: Benjamin, Sean P POA; Utley, Michael D POA
Cc: melissa.armstrong@testamericainc.com
Subject: FW: Variance request from 580-39470-1 and 580-39471-1 NE Cape HTRW - 8270 analysis

Variance request for Site 28 treated water samples. QC samples are within control limits, RPD is greater than 20%.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Monday, August 05, 2013 2:31 PM
To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Variance request from 580-39470-1 and 580-39471-1 NE Cape HTRW - 8270 analysis

Similar to the other 8270 variance request. The RPD is outside control limits for 1- and 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, and Naphthalene. Individual recoveries are within control. Samples have various detections. Can we narrate and report?

Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at:
Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=12163287
6991>

MELISSA A ARMSTRONG

TestAmerica Seattle
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 253.922.2310 x135
www.testamericainc.com

Reference: [093542]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	Hannah, Marty; Benjamin, Sean P POA
Cc:	Welker, Molly
Subject:	RE: Variance request from 580-39471-1 NE Cape HTRW - AK102/103 (UNCLASSIFIED)
Date:	Tuesday, July 30, 2013 1:09:05 PM

Classification: UNCLASSIFIED
Caveats: NONE

Narrate and report, variance is acceptable.

Mike

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Tuesday, July 30, 2013 12:57 PM
To: Benjamin, Sean P POA; Utley, Michael D POA
Cc: Welker, Molly
Subject: FW: Variance request from 580-39471-1 NE Cape HTRW - AK102/103

TA has asked for a variance request for method blank contamination on DRO analyses. The MB result was 0.0639 mg/L and the RL is 0.1 mg/L. I have an email in to TA asking for all results for the samples but they said one result was 0.4 mg/L. The results are used for monitoring the excavation activities at the MOC and are not used for closure or compliance, just monitoring.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Tuesday, July 30, 2013 12:41 PM
To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Variance request from 580-39471-1 NE Cape HTRW - AK102/103

Hi Marty,

I think I know the answer though have to try anyways. The lab has asked for a variance on the AK102/103 analysis. The MB had a hit at 0.0639 RL = 0.1 mg/L, one of the samples had a hit at 0.40 mg/L can we narrate and report or would you like this re-extracted?

Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA A ARMSTRONG

TestAmerica Seattle

THE LEADER IN ENVIRONMENTAL TESTING

Tel: 253.922.2310 x135
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Reference: [093206]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	Hannah, Marty; Benjamin, Sean P POA
Cc:	melissa.armstrong@testamericainc.com
Subject:	RE: Variance request from 580-39641-2 NE Cape HTRW - 8082 analysis (UNCLASSIFIED)
Date:	Thursday, August 08, 2013 4:42:03 PM

Classification: UNCLASSIFIED
Caveats: NONE

Variance granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Thursday, August 08, 2013 4:41 PM
To: Utley, Michael D POA; Benjamin, Sean P POA
Cc: melissa.armstrong@testamericainc.com
Subject: FW: Variance request from 580-39641-2 NE Cape HTRW - 8082 analysis

We wish to request a variance for high surrogate recovery in the CCV confirmation column. The results will be used to monitor discharge of treated water from Site 28 dredging. The sample results are non-detect.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Thursday, August 08, 2013 4:31 PM
To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Variance request from 580-39641-2 NE Cape HTRW - 8082 analysis

The lab has asked for a variance on the 8082 analysis. The CCV failed high for DCB on the confirmation column. All of the samples are ND can we narrate and report?

We can report what we have and rerun if needed.

Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA A ARMSTRONG

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Reference: [093769]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	Hannah, Marty; Benjamin, Sean P POA
Subject:	RE: Files from 580-39723-1 NE Cape HTRW-Variance request (UNCLASSIFIED)
Date:	Wednesday, August 14, 2013 1:12:21 PM

Classification: UNCLASSIFIED
Caveats: NONE

Granted

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Wednesday, August 14, 2013 1:11 PM
To: Benjamin, Sean P POA; Utley, Michael D POA
Subject: [EXTERNAL] FW: Files from 580-39723-1 NE Cape HTRW-Variance request

Variance request for high surrogate in the confirmation column for PCB analysis. Samples are ND. Results are used to monitor treated water prior to discharge.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Allen, Kristine [mailto:kristine.allen@testamericainc.com]
Sent: Wednesday, August 14, 2013 12:36 PM
To: McLoone, Keather; Hannah, Marty
Cc: Jarrell, Greg; Welker, Molly
Subject: Files from 580-39723-1 NE Cape HTRW

Melissa is out this afternoon so I am filling in for her.

The lab is asking for a variance for the PCBs on this job. The closing CCV is high for DCB on one column but passing on the other. The samples are ND for all analytes.

Please let me know if you need more information and/or if this is acceptable to narrate and report.

Thanks,
Kris
253.922.2310

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

KRISTINE D ALLEN

TestAmerica Seattle
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 253.922.2310

www.testamericainc.com

Reference: [093968]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From: Utley, Michael D POA
To: Hannah, Marty
Subject: RE: Variance request from 580-40280-1 NE Cape HTRW (UNCLASSIFIED)
Date: Thursday, September 19, 2013 10:39:52 PM

Classification: UNCLASSIFIED
Caveats: NONE

Variance Granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Thursday, September 19, 2013 3:28 PM
To: Benjamin, Sean P POA; Utley, Michael D POA
Subject: [EXTERNAL] FW: Variance request from 580-40280-1 NE Cape HTRW

Variance request for high TFT surrogate in the method blank, samples are ND and surrogates are within limits, as noted below.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Pham, Ai [mailto:ai.pham@testamericainc.com]
Sent: Thursday, September 19, 2013 2:01 PM
To: Hannah, Marty
Subject: Variance request from 580-40280-1 NE Cape HTRW

Marty,
I have a variance request from the lab for 8260 analysis. The MB has a high TFT surr recovery, target analytes are ND and sample surrogates are all good. Is it okay to narrate and report?
Thanks.

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

AI H PHAM

TestAmerica Seattle
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Tel: 253.922.2310
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Reference: [095906]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

From: Utley, Michael D POA
To: Pham, Ai
Cc: Hannah, Marty
Subject: RE: Variance Request 8260 BTEX Job: 40427 (Bristol) (UNCLASSIFIED)
Date: Tuesday, October 08, 2013 5:42:05 PM

Classification: UNCLASSIFIED
Caveats: NONE

Variance granted. Thanks for keeping on these.

Mike

-----Original Message-----
From: Pham, Ai [mailto:Ai.Pham@testamericainc.com]
Sent: Tuesday, October 08, 2013 4:06 PM
To: Utley, Michael D POA
Cc: Hannah, Marty
Subject: [EXTERNAL] FW: Variance Request 8260 BTEX Job: 40427 (Bristol)

Mike,

The lab is requesting a variance for NE Cape samples: The continuing calibration verification (CCV) associated with this batch recovered above the upper control limit for Benzene. The samples associated with this CCV were non-detects for the affected analytes.

Thanks,

Ai

Classification: UNCLASSIFIED
Caveats: NONE

From: Utley, Michael D POA
To: Hannah, Marty; Benjamin, Sean P POA
Subject: RE: Variance request-high CCV for PAHs 580-39723 (UNCLASSIFIED)
Date: Monday, August 12, 2013 3:20:17 PM

Classification: UNCLASSIFIED
Caveats: NONE

Granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Monday, August 12, 2013 2:31 PM
To: Utley, Michael D POA; Benjamin, Sean P POA
Subject: [EXTERNAL] Variance request-high CCV for PAHs 580-39723

Bristol wishes to request a variance for a high CCV for Benzo(k)fluoranthene and Dibenz(a,h)anthracene, with samples 39723-1 and 2 being non-detect for these analytes. Also, the LCS/LCSD %recoveries are not adversely affected by the high system bias. The results will be used for discharge of treated water from Site 28. As the results are non-detect, the system would be capable of detecting these analytes, which were not present.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
111 W.16th Avenue, Third Floor
Anchorage, AK 99501-5109
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FAX : (907) 563-6713
mhannah@bristol-companies.com <mailto:mhannah@bristol-companies.com>
http://www.bristol-companies.com/ <http://www.bristol-companies.com/>

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	ai.pham@testamericainc.com
Cc:	Hannah, Marty
Subject:	RE: Variance requests: 4040 & /40409 PCB"s (UNCLASSIFIED)
Date:	Tuesday, October 08, 2013 12:10:09 PM

Classification: UNCLASSIFIED
Caveats: NONE

Ai,

It is acceptable to report as noted. However, remember that the lack of an MS/MSD will cause a data quality issue. Note that the MS/MSD is a site specific requirement, and is meant to verify the analyte recovery in the matrix of interest. Hence, a MS/MSD from another site does not meet QSM requirements.

Mike

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Monday, October 07, 2013 6:32 PM
To: Utley, Michael D POA
Cc: ai.pham@testamericainc.com
Subject: [EXTERNAL] FW: Variance requests: 4040 & /40409 PCB's

Mike, TestAmerica and Bristol are requesting a variance for NE Cape and Ft. Rich samples as noted below. Could you respond directly to Ai and CC me on it. I'm in Nome doing field work and will be back in the office Thursday and can respond in a timely manner at that point. Until then, I am asking Ai to send variance requests directly to you and CC me until I return. Thanks in advance. I'm working with drillers so I can't hear my cell phone ring either.

_____
From: Pham, Ai [Ai.Pham@testamericainc.com]
Sent: Monday, October 07, 2013 1:53 PM
To: Hannah, Marty
Cc: Pham, Ai
Subject: Variance requests: 4040 & /40409 PCB's

Marty,

It looks like there was an MS spiking error in the prep batch with this job. 40408 (NE Cape) and 40409 (Ft Richardson) are both in the prep batch. 40409 has an MS/MSD for both 8081 and 8082. 40408 was supposed to have an additional 8082 MS/MSD, but it was spiked with 8081 spike. Will it be okay to report without a site specific MS/MSD? There is an LCS/LCSD and an MS/MSD from a different job associated with this batch.

In addition, the CCV was high for Endrin with ND sample results. Is it okay to narrate and report?

Please let me know.
Thanks Marty,

Ai

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disclosure, or distribution is prohibited. If you are not the intended recipient, please

contact the sender and destroy all copies of the original document.

Classification: UNCLASSIFIED
Caveats: NONE

From:	Utley, Michael D POA
To:	Hannah, Marty
Cc:	Benjamin, Sean P POA
Subject:	RE: Files from 580-40214-1 NE Cape HTRW (UNCLASSIFIED)
Date:	Monday, September 16, 2013 3:05:04 PM

Classification: UNCLASSIFIED
Caveats: NONE

Please note that any blank result above the LOD has the potential to impact the associated results. There is no magic value about 1/2 the LOQ (the QSM actually means the LOD, not the LOQ) - but anyway....

I didn't see any NOAA issues either, and the results are well below the ADEC limit for soils. So....variance granted.

Mike

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Monday, September 16, 2013 2:48 PM
To: Benjamin, Sean P POA; Utley, Michael D POA
Subject: [EXTERNAL] FW: Files from 580-40214-1 NE Cape HTRW

Bristol wishes to request a variance for reporting Benzo(k) fluoranthene in the 8270 method blank at a concentration slightly greater than ½ the LOQ. The sample results will be used to demonstrate the concentrations remaining in soil/sediment at Site 28 after the above lying sediment was removed via suction dredge. There is no cleanup level for benzo (k) fluoranthene in sediment per the NOAA SQuiRT tables.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Allen, Kristine [mailto:kristine.allen@testamericainc.com]
Sent: Monday, September 16, 2013 2:31 PM
To: Hannah, Marty; Welker, Molly; Cooler Receipt; James, Russell
Subject: Files from 580-40214-1 NE Cape HTRW

The lab has requested a variance for 8270 for this job. See below for the details and please let me know if you need more information and/or if it is acceptable to narrate and report.

The method blank (MB) associated with job 40214 has a detection for Benzo(k)fluoranthene at 2.55 ug/Kg (1/2LOQ = 2.5 ug/Kg, LOQ = 5.0 ug/Kg).

All associated samples are either ND or J-flagged for the affected analyte:

40214-1: 23 ug/Kg (raised RL due to %moisture = 38 ug/Kg)
40214-2: 16 ug/Kg (raised RL due to %moisture = 28 ug/Kg)
40214-3: 8.1 ug/Kg (raised RL due to %moisture = 16 ug/Kg)
40214-4: 14 ug/Kg (raised RL due to %moisture = 33 ug/Kg)

40214-5: 6.0 ug/Kg (raised RL due to %moisture = 13 ug/Kg)
40214-6: ND
40214-7: 13 ug/Kg (raised RL due to %moisture = 27 ug/Kg)
40214-8: 19 ug/Kg (raised RL due to %moisture = 32 ug/Kg)
40214-9: ND
40214-10: 25 ug/Kg (raised RL due to %moisture = 33 ug/Kg)
40214-11: 9.9 ug/Kg (raised RL due to %moisture = 23 ug/Kg)

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback
<https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

KRISTINE D ALLEN

TestAmerica Seattle
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 253.922.2310
www.testamericainc.com

Reference: [095647]
Attachments: 1

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Classification: UNCLASSIFIED
Caveats: NONE

APPENDIX N

Laboratory Certifications

11617 Coldwater Rd., Ste 101
Fort Wayne, IN 46845
Tel: (260) 637 2705
Fax: (260) 637 2791
www.L-A-B.com

January 18, 2013

TestAmerica Laboratories, Inc.
Terri Torres
5755 8th Street East
Tacoma, WA 98424

Dear Terri,

We appreciate your continued dedication to DoD/ELAP and the laboratory community. Laboratory Accreditation Bureau is granting an extension of your accreditation that was originally granted through **January 19, 2013.** This letter serves as an extension of your DoD/ELAP accreditation. The new granted through date is now **March 19, 2013**. The Certificate and the Scope of Accreditation of your location, **L2236** will remain valid until the new granted through date or a new certificate and scope are issued. If within this extension period your company decides to discontinue or cancel your accreditation, your accreditation will immediately be terminated and your listing discontinued as an accredited laboratory.

The current information as described above will be modified within two business days on the directory at www.l-a-b.com. It is L-A-B's policy not to modify the scope or certificate related to extensions of accreditation.

We look forward to a long and continued successful business relationship with your company. We appreciate your dedication to continuous improvement for our laboratory community.

Sincerely,

R. Douglas Leonard, Jr.
Managing Director

THE CERTIFICATE AND SCOPE, AS WELL AS ALL VERSIONS WHICH MAY BE ISSUED IN THE FUTURE, INCLUDING THIS EXTENSION LETTER, ARE THE SOLE PROPERTY OF LABORATORY ACCREDITATION BUREAU

THE STATE OF ALASKA

Department of Environmental Conservation

Laboratory Certification Program

Certificate of Approval for Contaminated Sites Analysis

TestAmerica-Seattle

5755 8th Street East
Tacoma, WA 98424

UST-022

has complied with the provisions set forth in 18 AAC 78 and is hereby recognized by The Department of Environmental Conservation as **Approved** for the analytical parameter listed on the accompanying Scope of Accreditation. This certificate is effective **3/4/13**, and expires **3/4/14**.

Patryce D. McKinney
State of Alaska Certification Authority

Lance W. Morris
Laboratory Chemistry Certification Officer

THE STATE OF ALASKA
Department of Environmental Conservation
Laboratory Approval Program

Scope of Approval **Expiration: 03/04/2014**

TestAmerica-Seattle, WA **UST-022**
5755 8th Street East
Tacoma, WA 98424

is approved by the State of Alaska Department of Environmental Conservation, pursuant to 18 AAC 78, to perform analysis for the parameters listed below using the analytical methods indicated. Approval for all parameters is final. Approval is for the latest version of a method unless specified otherwise in a note. EPA refers to the U.S. Environmental Protection Agency. AK refers to Alaska Methods 101, 102 and 103 for the determination of gasoline, diesel and residual range organics in soil and water. ASTM refers to the American Society for Testing and Materials.

Contaminated Sites

Method/Test Name	Reference	Analyte	Matrix	Status
6010B	EPA	Total Arsenic	Soil	Approved
6010B	EPA	Total Barium	Soil	Approved
6010B	EPA	Total Cadmium	Soil	Approved
6010B	EPA	Total Chromium	Soil	Approved
6010B	EPA	Total Lead	Soil	Approved
6010B	EPA	Total Nickel	Soil	Approved
6010B	EPA	Total Vanadium	Soil	Approved
6010B	EPA	Total Arsenic	Water	Approved
6010B	EPA	Total Barium	Water	Approved
6010B	EPA	Total Cadmium	Water	Approved
6010B	EPA	Total Chromium	Water	Approved
6010B	EPA	Total Lead	Water	Approved
6010B	EPA	Total Nickel	Water	Approved
6010B	EPA	Total Vanadium	Water	Approved
6020	EPA	Total Arsenic	Soil	Approved
6020	EPA	Total Barium	Soil	Approved
6020	EPA	Total Cadmium	Soil	Approved
6020	EPA	Total Chromium	Soil	Approved
6020	EPA	Total Lead	Soil	Approved

Contaminated Sites

Method/Test Name	Reference	Analyte	Matrix	Status
6020	EPA	Total Nickel	Soil	Approved
6020	EPA	Total Vanadium	Soil	Approved
6020	EPA	Total Arsenic	Water	Approved
6020	EPA	Total Barium	Water	Approved
6020	EPA	Total Cadmium	Water	Approved
6020	EPA	Total Chromium	Water	Approved
6020	EPA	Total Lead	Water	Approved
6020	EPA	Total Nickel	Water	Approved
6020	EPA	Total Vanadium	Water	Approved
8021B	EPA	BTEX	Water	Approved
8082	EPA	Polychlorinated Biphenyls-PCB	Soil	Approved
8082	EPA	Polychlorinated Biphenyls-PCB	Water	Approved
8260B	EPA	BTEX	Soil	Approved
8260B	EPA	Total Volatile Chlorinated Solvents	Soil	Approved
8260B	EPA	BTEX	Water	Approved
8260B	EPA	Total Volatile Chlorinated Solvents	Water	Approved
8270C	EPA	PAH	Soil	Approved
8270C	EPA	PAH	Water	Approved
AK101	AK	Gasoline Range Organics	Soil	Approved
AK101	AK	Gasoline Range Organics	Water	Approved
AK101/8021B	EPA	BTEX-methanol preserved	Soil	Approved
AK102	AK	Diesel Range Organics	Soil	Approved
AK102	AK	Diesel Range Organics	Water	Approved
AK102-SV	AK	Diesel Range Organics-small volume	Water	Approved
AK103	AK	Residual Range Organics	Soil	Approved

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

TESTAMERICA DENVER
4955 Yarrow Street
Arvada, CO 80002
Karen Kuoppala Phone: 303-736-1203
www.testamericainc.com

ENVIRONMENTAL

Valid To: October 31, 2013 Certificate Number: 2907.01

In recognition of the successful completion of the A2LA evaluation process, (including an assessment of the laboratory's compliance with ISO IEC 17025:2005, the 2003 NELAC Chapter 5 Standard, and the requirements of the DoD Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in the current DoD Quality Systems Manual for Environmental Laboratories) accreditation is granted to this laboratory to perform recognized EPA methods using the following testing technologies and in the analyte categories identified below:

Testing Technologies

Atomic Absorption/ICP-AES Spectrometry, ICP/MS, Gas Chromatography, Gas Chromatography/Mass Spectrometry, Gravimetry, High Performance Liquid Chromatography, Ion Chromatography, Misc.- Electronic Probes (pH, O_2), Oxygen Demand, Hazardous Waste Characteristics Tests, Spectrophotometry (Visible), Spectrophotometry (Automated), Titrimetry, Total Organic Carbon, Total Organic Halide

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste (Water)	Solid Hazardous Waste (Solid)
Metals			
Aluminum	----------	EPA 6010B/6010C	EPA 6010B/6010C
Antimony	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Arsenic	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Barium	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Beryllium	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Boron	----------	EPA 6010B/6010C	EPA 6010B/6010C
Cadmium	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Calcium	----------	EPA 6010B/6010C	EPA 6010B/6010C
Chromium	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Cobalt	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Copper	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A

5301 Buckeystown Pike, Suite 350 | Frederick, Maryland 21704-8373 | Phone: 301 644 3248 | Fax: 301 662 2974 | www.A2LA.org

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste (Water)	Solid Hazardous Waste (Solid)
Iron	----------	EPA 6010B/6010C	EPA 6010B/6010C
Lead	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Lithium	----------	EPA 6010B/6010C	EPA 6010B/6010C
Magnesium	----------	EPA 6010B/6010C	EPA 6010B/6010C
Manganese	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Mercury	----------	EPA 7470A	EPA /7471A/7471B
Molybdenum	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Nickel	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Potassium	----------	EPA 6010B/6010C	EPA 6010B/6010C
Selenium	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Silica	----------	EPA 6010B/6010C	EPA 6010B/6010C
Silicon	----------	EPA 6010B/6010C	EPA 6010B/6010C
Silver	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Sodium	----------	EPA 6010B/6010C	EPA 6010B/6010C
Strontium	----------	EPA 6010B/6010C	EPA 6010B/6010C
Thallium	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Tin	----------	EPA 6010B/6010C	EPA 6010B/6010C
Titanium	----------	EPA 6010B/6010C	EPA 6010B/6010C
Vanadium	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Zinc	----------	EPA 6010B/6010C/6020/6020A	EPA 6010B/6010C/6020/6020A
Nutrients			
Nitrate (as N)	By calculation	By calculation/ EPA 9056/9056A	By calculation/ EPA 9056/9056A
Nitrate-nitrite (as N)	EPA 353.2	EPA 353.2/ EPA 9056/9056A	EPA 9056/9056A
Nitrite (as N)	SM 4500-NO2 B	SM 4500-NO2 B/ EPA 9056/9056A	EPA 9056/9056A
Orthophosphate (as P)	----------	EPA 9056/9056A	EPA 9056/9056A
Total phosphorus	----------	EPA 6010B/6010C	EPA 6010B/6010C
Demands			
Total organic carbon	----------	EPA 9060 /9060A	EPA 9060 /9060A
Total organic halides	----------	EPA 9020B	----------
Wet Chemistry			
Alkalinity	SM 2320 B	SM 2320 B	SM 2320 B
Ammonia	EPA 350.1	EPA 350.1	----------
Biological Oxygen Demand	SM 5210B	SM 5210B	----------
Bromide	----------	EPA 9056/9056A	EPA 9056/9056A
Total organic carbon	----------	EPA 9060/9060A	EPA 9060/9060A
Chloride	----------	EPA 9056/9056A	EPA 9056/9056A
Chemical Oxygen Demand	EPA 410.4	EPA 410.4	

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste (Water)	Solid Hazardous Waste (Solid)
Conductivity	----------	EPA 9050/EPA 9050A	EPA 9050/EPA 9050A
Cyanide	----------	EPA 9010B/9012A/9012B	EPA 9010B/9012A/9012B
Ferrous Iron	SM 3500 Fe B, D	SM 3500 Fe B, D	
Fluoride	----------	EPA 9056/9056A	EPA 9056/9056A
Hexavalent Chromium	EPA 7196A	EPA 7196A	EPA 7196A/3060A
pH	----------	EPA 9040B/9045C	EPA 9040B/9045C
Oil and Grease (HEM and SGT-HEM)	EPA 1664A	EPA 1664A	9071B
Percent moisture	----------	----------	ASTM D2216
Perchlorate	----------	EPA 6860	EPA 6860
Phenols	----------	EPA 9066	EPA 9066
Solids, Total	SM 2540 B	SM 2540 B	SM 2540 B
Solids, Total Suspended	SM 2540 D	SM 2540 D	SM 2540 D
Solids, Total Dissolved	SM 2540 C	SM 2540 C	SM 2540 C
Sulfate	----------	EPA 9038/9056/9056A	EPA 9038/9056/9056A
Sulfide, Total	----------	EPA 9034	EPA 9034
Sulfide	----------	EPA 9030B	EPA 9030B
Total Kjeldahl Nitrogen	EPA 351.2	EPA 351.2	----------
Purgeable Organics (volatiles)			
Acetone	----------	EPA 8260B	EPA 8260B
Acetonitrile	----------	EPA 8260B	EPA 8260B
Acrolein	----------	EPA 8260B	EPA 8260B
Acrylonitrile	----------	EPA 8260B	EPA 8260B
Allyl Chloride	----------	EPA 8260B	EPA 8260B
Benzene	----------	EPA 8260B/8021B/AK101	EPA 8260B/8021B/AK101
Bromobenzene	----------	EPA 8260B	EPA 8260B
Bromochloromethane	----------	EPA 8260B	EPA 8260B
Bromodichloromethane	----------	EPA 8260B	EPA 8260B
Bromoform	----------	EPA 8260B	EPA 8260B
Bromomethane	----------	EPA 8260B	EPA 8260B
2-Butanone	----------	EPA 8260B	EPA 8260B
n-Butyl alcohol	----------	EPA 8260B/8015B/8015C	EPA 8260B/8015B/8015C
n-Butylbenzene	----------	EPA 8260B	EPA 8260B
Sec-Butylbenzene	----------	EPA 8260B	EPA 8260B
Tert-Butylbenzene	----------	EPA 8260B	EPA 8260B
Carbon disulfide	----------	EPA 8260B	EPA 8260B
Carbon tetrachloride	----------	EPA 8260B	EPA 8260B
Chlorobenzene	----------	EPA 8260B / 8021B	EPA 8260B / 8021B
2-Chloro-1,3-butadiene	----------	EPA 8260B	EPA 8260B
Chloroethane	----------	EPA 8260B	EPA 8260B
2-Chloroethyl vinyl ether	----------	EPA 8260B	EPA 8260B
Chloroform	----------	EPA 8260B	EPA 8260B
1-Chlorohexane	----------	EPA 8260B	EPA 8260B
Chloromethane	----------	EPA 8260B	EPA 8260B
Chloroprene	----------	EPA 8260B	EPA 8260B
3-Chloroprene	----------	EPA 8260B	EPA 8260B
4-Chlorotoluene	----------	EPA 8260B	EPA 8260B
2-Chlorotoluene	----------	EPA 8260B	EPA 8260B
Cyclohexane	----------	EPA 8260B	EPA 8260B
Cyclohexanone	----------	EPA 8260B	EPA 8260B

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste (Water)	Solid Hazardous Waste (Solid)
Dibromochloromethane	----------	EPA 8260B	EPA 8260B
1,2-Dibromo-3-chloropropane (DBCP)	EPA 504	EPA 504/ EPA 8260B/8011	EPA 8260B/8011
Dibromochloromethane	----------	EPA 8260B	EPA 8260B
Dichlorodifluoromethane	----------	EPA 8260B	EPA 8260B
Dibromomethane	----------	EPA 8260B	EPA 8260B
1,2 Dibromoethane (EDB)	EPA 504	EPA 504/ EPA 8260B/8011	EPA 8260B/8011
1,2-Dichlorobenzene	----------	EPA 8260B/8021B	EPA 8260B/8021B
1,3-Dichlorobenzene	----------	EPA 8260B/8021B	EPA 8260B/8021B
1,4-Dichlorobenzene	----------	EPA 8260B/8021B	EPA 8260B/8021B
cis-1,4-Dichloro-2-butene	----------	EPA 8260B	EPA 8260B
trans-1,4-Dichloro-2-butene	----------	EPA 8260B	EPA 8260B
1,1-Dichloroethane	----------	EPA 8260B	EPA 8260B
1,2-Dichloroethane	----------	EPA 8260B	EPA 8260B
1,1-Dichloroethene	----------	EPA 8260B	EPA 8260B
1,2-Dichloroethene	----------	EPA 8260B	EPA 8260B
cis-1,2-Dichloroethene	----------	EPA 8260B	EPA 8260B
trans-1,2-Dichloroethene	----------	EPA 8260B	EPA 8260B
Dichlorofluoromethane	----------	EPA 8260B	EPA 8260B
1,2-Dichloropropane	----------	EPA 8260B	EPA 8260B
1,3-Dichloropropane	----------	EPA 8260B	EPA 8260B
2,2-Dichloropropane	----------	EPA 8260B	EPA 8260B
1,1-Dichloropropene	----------	EPA 8260B	EPA 8260B
1,3-Dichloropropene	----------	EPA 8260B	EPA 8260B
cis-1,3-Dichloropropene	----------	EPA 8260B	EPA 8260B
trans-1,3-Dichloropropene	----------	EPA 8260B	EPA 8260B
Diethyl ether	----------	EPA 8260B	EPA 8260B
Di-isopropylether	----------	EPA 8260B	EPA 8260B
1,4-Dioxane	----------	EPA 8260B/8260B SIM	EPA 8260B/8260B SIM
Ethanol	----------	EPA 8260B/8015B/8015C	EPA 8260B/8015B/8015C
Ethyl acetate	----------	EPA 8260B	EPA 8260B
Ethyl benzene	----------	EPA 8260B/8021B/AK101	EPA 8260B/8021B/AK101
Ethyl methacrylate	----------	EPA 8260B	EPA 8260B
Ethylene Glycol	----------	EPA 8015C	EPA 8015C
Gas Range Organics (GRO)	----------	EPA 8015B/8015C/AK101/8015D	EPA 8015B/8015C/AK101/8015D
Hexane	----------	EPA 8260B	EPA 8260B
2-Hexanone	----------	EPA 8260B	EPA 8260B
Hexachlorobutadiene	----------	EPA 8260B	EPA 8260B
Isobutyl alcohol (2-Methyl-1-propanol)	----------	EPA 8260B/8015B/8015C	EPA 8260B/8015B/8015C
Isopropyl alcohol	----------	EPA 8260B	EPA 8260B
Isopropylbenzene	----------	EPA 8260B	EPA 8260B
1,4-Isopropyltoluene	----------	EPA 8260B	EPA 8260B
Iodomethane	----------	EPA 8260B	EPA 8260B
Methacrylonitrile	----------	EPA 8260B	EPA 8260B
Methanol	----------	EPA 8015B/8015C	EPA 8015B/8015C
Methyl acetate	----------	EPA 8260B	EPA 8260B
Methyl cyclohexane	----------	EPA 8260B	EPA 8260B
Methylene chloride	----------	EPA 8260B	EPA 8260B
Methyl ethyle ketone (MEK)	----------	EPA 8260B	EPA 8260B

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste (Water)	Solid Hazardous Waste (Solid)
Methyl isobutyl ketone	----------	EPA 8260B	EPA 8260B
Methyl methacrylate	----------	EPA 8260B	EPA 8260B
Methyl tert-butyl ether (MtBE)	----------	EPA 8260B/8021B	EPA 8260B/8021B
4-Methyl-2-pentanone	----------	EPA 8260B	EPA 8260B
Naphthalene	----------	EPA 8260B	EPA 8260B
2-Nitropropane	----------	EPA 8260B	EPA 8260B
2,2' Oxybisethanol	----------	EPA 8015C	EPA 8015C
2-Pentanone	----------	EPA 8260B	EPA 8260B
2-Propanol	----------	EPA 8260B	EPA 8260B
Propionitrile	----------	EPA 8260B	EPA 8260B
n-Propylbenzene	----------	EPA 8260B	EPA 8260B
Propylene Glycol	----------	EPA 8015C	EPA 8015C
Styrene	----------	EPA 8260B	EPA 8260B
1,1,1,2-Tetrachloroethane	----------	EPA 8260B	EPA 8260B
1,1,2,2-Tetrachloroethane	----------	EPA 8260B	EPA 8260B
Tetrachloroethene	----------	EPA 8260B	EPA 8260B
Tetrahydrofuran	----------	EPA 8260B	EPA 8260B
Toluene	----------	EPA 8260B / 8021B/AK101	EPA 8260B / 8021B/AK101
Total Petroleum Hydrocarbons (TPH)	EPA 1664A	EPA 1664A	
1,2,3-Trichlorobenzene	----------	EPA 8260B	EPA 8260B
1,1,1-Trichloroethane	----------	EPA 8260B	EPA 8260B
1,1,2-Trichloroethane	----------	EPA 8260B	EPA 8260B
Trichloroethene	----------	EPA 8260B	EPA 8260B
Trichlorofluoromethane	----------	EPA 8260B	EPA 8260B
1,2,3-Trichlorobenzene	----------	EPA 8260B	EPA 8260B
1,2,4-Trichlorobenzene	----------	EPA 8260B	EPA 8260B
1,2,3-Trichloropropane	EPA 504.1	EPA 504.1/ EPA 8260B/8011	EPA 8260B/8011
1,1,2-Trichloro-1,2,2-trifluoroethane	----------	EPA 8260B	EPA 8260B
Triethylene Glycol	----------	EPA 8015C	EPA 8015C
1,2,3-Trimethylbenzene	----------	EPA 8260B	EPA 8260B
1,2,4-Trimethylbenzene	----------	EPA 8260B	EPA 8260B
1,3,5-Trimethylbenzene	----------	EPA 8260B	EPA 8260B
Vinyl acetate	----------	EPA 8260B	EPA 8260B
Vinyl chloride	----------	EPA 8260B	EPA 8260B
Xylenes, total	----------	EPA 8260B/8021B/AK101	EPA 8260B/8021B/AK101
1,2-Xylene	----------	EPA 8260B/8021B/AK101	EPA 8260B/8021B/AK101
M+P-Xylene	----------	EPA 8260B/8021B/AK101	EPA 8260B/8021B/AK101
Methane	----------	RSK-175	----------
Ethane	----------	RSK-175	----------
Ethylene (Ethene)	----------	RSK-175	----------
Acetylene	----------	RSK-175	----------
Acetylene Ethane	----------	RSK-175	----------
Extractable Organics (semivolatiles)			
Acenaphthene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste (Water)	Solid Hazardous Waste (Solid)
Acenaphthylene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Acetophenone	----------	EPA 8270C/8270D	EPA 8270C/8270D
2-Acetylaminofluorene	----------	EPA 8270C/8270D	EPA 8270C/8270D
Alachlor	----------	EPA 8270C/8270D	EPA 8270C/8270D
4-Aminobiphenyl	----------	EPA 8270C/8270D	EPA 8270C/8270D
Aniline	----------	EPA 8270C/8270D	EPA 8270C/8270D
Anthracene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Aramite	----------	EPA 8270C/8270D	EPA 8270C/8270D
Atrazine	----------	EPA 8270C/8270D	EPA 8270C/8270D
Azobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
Benzaldehyde	----------	EPA 8270C/8270D	EPA 8270C/8270D
Benzidine	----------	EPA 8270C/8270D	EPA 8270C/8270D
Benzoic acid	----------	EPA 8270C/8270D	EPA 8270C/8270D
Benzo (a) anthracene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Benzo (b) fluoranthene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Benzo (k) fluoranthene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Benzo (ghi) perylene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Benzo (a) pyrene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Benzyl alcohol	----------	EPA 8270C/8270D	EPA 8270C/8270D
Bis (2-chloroethoxy) methane	----------	EPA 8270C/8270D	EPA 8270C/8270D
Bis (2-chloroethyl) ether	----------	EPA 8270C/8270D	EPA 8270C/8270D
Bis (2-chloroisopropyl) ether (2,2'Oxybis(1-chloropropane)	----------	EPA 8270C/8270D	EPA 8270C/8270D
Bis (2-ethylhexyl) phthalate	----------	EPA 8270C/8270D	EPA 8270C/8270D
4-Bromophenyl phenyl ether	----------	EPA 8270C/8270D	EPA 8270C/8270D
Butyl benzyl phthalate	----------	EPA 8270C/8270D	EPA 8270C/8270D
2-sec-Butyl-4,6-dinitrophenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
Carbazole	----------	EPA 8270C/8270D	EPA 8270C/8270D
4-Chloroanilene	----------	EPA 8270C/8270D	EPA 8270C/8270D
Chlorobenzilate	----------	EPA 8270C/8270D	EPA 8270C/8270D
4-Chloro-3-methylphenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
1-Chloronaphthalene	----------	EPA 8270C/8270D	EPA 8270C/8270D
2-Chloronaphthalene	----------	EPA 8270C/8270D	EPA 8270C/8270D
2-Chlorophenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
4-Chlorophenyl phenyl ether	----------	EPA 8270C/8270D	EPA 8270C/8270D
Chrysene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Cresols	----------	EPA 8270C/8270D	EPA 8270C/8270D
Diallate	----------	EPA 8270C/8270D	EPA 8270C/8270D

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste (Water)	Solid Hazardous Waste (Solid)
Dibenzo (a,h) anthracene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Dibenzofuran	----------	EPA 8270C/8270D	EPA 8270C/8270D
1,2-Dichlorobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
1,3-Dichlorobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
1,4-Dichlorobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
3,3'-Dichlorobenzidine	----------	EPA 8270C/8270D	EPA 8270C/8270D
2,4-Dichlorophenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
2,6-Dichlorophenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
Diethyl phthalate	----------	EPA 8270C/8270D	EPA 8270C/8270D
Dimethoate	----------	EPA 8270C/8270D	EPA 8270C/8270D
3,3-Dimethylbenzidine	----------	EPA 8270C/8270D	EPA 8270C/8270D
p-Dimethylaminoazobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
7,12-Dimethylbenz(a)anthracene	----------	EPA 8270C/8270D	EPA 8270C/8270D
Alpha-,alpha-Dimethylphenethylamine	----------	EPA 8270C/8270D	EPA 8270C/8270D
2,4-Dimethylphenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
Dimethyl phthalate	----------	EPA 8270C/8270D	EPA 8270C/8270D
Di-n-butyl phthalate	----------	EPA 8270C/8270D	EPA 8270C/8270D
Di-n-octyl phthalate	----------	EPA 8270C/8270D	EPA 8270C/8270D
1,3-Dinitrobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
1,4-Dinitrobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
2,4-Dinitrophenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
2,4-Dinitrotoluene	----------	EPA 8270C/8270D	EPA 8270C/8270D
2,6-Dinitrotoluene	----------	EPA 8270C/8270D	EPA 8270C/8270D
1,4-Dioxane	----------	EPA 8270C/8270D	EPA 8270C/8270D
Diphenylamine	----------	EPA 8270C/8270D	EPA 8270C/8270D
1,2-Diphenylhydrazine	----------	EPA 8270C/8270D	EPA 8270C/8270D
Disulfoton	----------	EPA 8270C/8270D	EPA 8270C/8270D
Diesel Range Organics (DRO)	----------	EPA 8015B/8015C, AK102, TX 1005/8015D	EPA 8015B/8015C, AK102, TX 1005/8015D
Ethyl methanesulfonate	----------	EPA 8270C/8270D	EPA 8270C/8270D
Famphur	----------	EPA 8270C/8270D	EPA 8270C/8270D
Fluoroanthene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Fluorene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Gasoline Range Organics	----------	TX 1005	TX 1005
Hexachlorobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
Hexachlorobutadiene	----------	EPA 8270C/8270D	EPA 8270C/8270D
Hexachlorocyclopentadiene	----------	EPA 8270C/8270D	EPA 8270C/8270D
Hexachloroethane	----------	EPA 8270C/8270D	EPA 8270C/8270D
Hexachloropropene	----------	EPA 8270C/8270D	EPA 8270C/8270D
Indeno (1,2,3-cd) pyrene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Isodrin	----------	EPA 8270C/8270D	EPA 8270C/8270D
Isophorone	----------	EPA 8270C/8270D	EPA 8270C/8270D
Isosafrole	----------	EPA 8270C/8270D	EPA 8270C/8270D
Methapyrilene	----------	EPA 8270C/8270D	EPA 8270C/8270D
3-Methylcholanthrene	----------	EPA 8270C/8270D	EPA 8270C/8270D

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste (Water)	Solid Hazardous Waste (Solid)
2-Methyl-4,6-Dinitrophenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
Methyl methane sulfonate	----------	EPA 8270C/8270D	EPA 8270C/8270D
2-Methylcholanthrene	----------	EPA 8270C/8270D	EPA 8270C/8270D
1-Methylnaphthalene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
2-Methylnaphthalene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
2-Methylphenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
3+4-Methylphenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
Naphthalene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
1,4-Naphthoquinone	----------	EPA 8270C/8270D	EPA 8270C/8270D
1-Naphthylamine	----------	EPA 8270C/8270D	EPA 8270C/8270D
2-Naphthylamine	----------	EPA 8270C/8270D	EPA 8270C/8270D
2-Nitroaniline	----------	EPA 8270C/8270D	EPA 8270C/8270D
3-Nitroaniline	----------	EPA 8270C/8270D	EPA 8270C/8270D
4-Nitroaniline	----------	EPA 8270C/8270D	EPA 8270C/8270D
Nitrobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
2-Nitrophenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
4-Nitrophenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
Nitroquinoline-1-oxide	----------	EPA 8270C/8270D	EPA 8270C/8270D
N-Nitrosodiethylamine	----------	EPA 8270C/8270D	EPA 8270C/8270D
N-Nitrosodimethylamine	----------	EPA 8270C/8270D	EPA 8270C/8270D
N-Nitrosodi-n-butylamine	----------	EPA 8270C/8270D	EPA 8270C/8270D
N-Nitrosodi-n-propylamine	----------	EPA 8270C/8270D	EPA 8270C/8270D
N-Nitrosodiphenylamine	----------	EPA 8270C/8270D	EPA 8270C/8270D
N-Nitrosomethylethylamine	----------	EPA 8270C/8270D	EPA 8270C/8270D
N-Nitrosomorpholine	----------	EPA 8270C/8270D	EPA 8270C/8270D
N-Nitrosopiperidine	----------	EPA 8270C/8270D	EPA 8270C/8270D
N-Nitrosopyrrolidine	----------	EPA 8270C/8270D	EPA 8270C/8270D
5-Nitro-o-toluidine	----------	EPA 8270C/8270D	EPA 8270C/8270D
2,2-oxybis(1-chloropropane)	----------	EPA 8270C/8270D	EPA 8270C/8270D
Parathion, methyl	----------	EPA 8270C/8270D	EPA 8270C/8270D
Parathion, ethyl	----------	EPA 8270C/8270D	EPA 8270C/8270D
Pentachlorobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
Pentachloroethane	----------	EPA 8270C/8270D	EPA 8270C/8270D
Pentachloronitobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
Pentachlorophenol	----------	EPA 8270C/8270D/8321A/8321B	EPA 8270C/8270D/8321A/8321B
Phenacetin	----------	EPA 8270C/8270D	EPA 8270C/8270D
Phenanthrene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Phenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
1,4-Phenylenediamine	----------	EPA 8270C/8270D	EPA 8270C/8270D
Phorate	----------	EPA 8270C/8270D	EPA 8270C/8270D
2-Picoline	----------	EPA 8270C/8270D	EPA 8270C/8270D
Pronamide	----------	EPA 8270C/8270D	EPA 8270C/8270D
Pyrene	----------	EPA 8270C/8270D/8270SIM	EPA 8270C/8270D/8270SIM
Pyridine	----------	EPA 8270C/8270D	EPA 8270C/8270D

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste (Water)	Solid Hazardous Waste (Solid)
Safrole	----------	EPA 8270C/8270D	EPA 8270C/8270D
Sulfotepp	----------	EPA 8270C/8270D	EPA 8270C/8270D
1,2,4,5-Tetrachlorobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
2,3,4,6-Tetrachlorophenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
Thionazin	----------	EPA 8270C/8270D	EPA 8270C/8270D
o-Toluidine	----------	EPA 8270C/8270D	EPA 8270C/8270D
1,2,4-Trichlorobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
2,4,5-Trichlorophenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
2,4,6-Trichlorophenol	----------	EPA 8270C/8270D	EPA 8270C/8270D
o,o,o-Triethyl phosphorothioate	----------	EPA 8270C/8270D	EPA 8270C/8270D
1,3,5-Trinitrobenzene	----------	EPA 8270C/8270D	EPA 8270C/8270D
Tris(2,3-Dibromopropyl) phosphate	----------	EPA 8270C/8270D	EPA 8270C/8270D
Motor Oil (Residual Range Organics)	----------	EPA 8015B/8015C, AK103	EPA 8015B/8015C, AK103
Pesticides/Herbicides/PCBs			
Aldrin	----------	EPA 8081A/8081B	EPA 8081A/8081B
Atrazine	----------	EPA 8141A/8141B	EPA 8141A/8141B
Azinophos ethyl	----------	EPA 8141A/8141B	EPA 8141A/8141B
Azinophos methyl	----------	EPA 8141A/8141B	EPA 8141A/8141B
alpha-BHC	----------	EPA 8081A/8081B	EPA 8081A/8081B
Beta-BHC	----------	EPA 8081A/8081B	EPA 8081A/8081B
delta-BHC	----------	EPA 8081A/8081B	EPA 8081A/8081B
Gamma-BHC	----------	EPA 8081A/8081B	EPA 8081A/8081B
Bolstar	----------	EPA 8141A/8141B	EPA 8141A/8141B
Alpha-Chlordane	----------	EPA 8081A/8081B	EPA 8081A/8081B
Gamma-Chlordane	----------	EPA 8081A/8081B	EPA 8081A/8081B
Chlordane (technical)	----------	EPA 8081A/8081B	EPA 8081A/8081B
Chloropyrifos	----------	EPA 8081A/8081B/8141A/8141B	EPA 8081A/8081B/8141A/8141B
Coumaphos	----------	EPA 8141A/8141B	EPA 8141A/8141B
2,4-D	----------	EPA 8151A/8321A	EPA 8151A/8321A
Dalapon	----------	EPA 8151A/8321A	EPA 8151A/8321A
2,4-DB	----------	EPA 8151A/8321A	EPA 8151A/8321A
4,4'-DDD	----------	EPA 8081A/8081B	EPA 8081A/8081B
4,4'-DDE	----------	EPA 8081A/8081B	EPA 8081A/8081B
4,4',-DDT	----------	EPA 8081A/8081B	EPA 8081A/8081B
Demeton-O	----------	EPA 8141A/8141B	EPA 8141A/8141B
Demeton-S	----------	EPA 8141A/8141B	EPA 8141A/8141B
Demeton, total	----------	EPA 8141A/8141B	EPA 8141A/8141B
Diazinon	----------	EPA 8141A/8141B	EPA 8141A/8141B
Dicamba	----------	EPA 8151A/8321A	EPA 8151A/8321A
Dichlorovos	----------	EPA 8141A/8141B	EPA 8141A/8141B
Dichloroprop	----------	EPA 8151A/8321A	EPA 8151A/8321A
Dicofol	----------	EPA 8081A/8081B	EPA 8081A/8081B
Dieldrin	----------	EPA 8081A/8081B	EPA 8081A/8081B
Dimethoate	----------	EPA 8141A/8141B	EPA 8141A/8141B
Dinoseb	----------	EPA 8151A/8321A	EPA 8151A/8321A
Disulfoton	----------	EPA 8141A/8141B	EPA 8141A/8141B
Endosulfan I	----------	EPA 8081A/8081B	EPA 8081A/8081B

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste (Water)	Solid Hazardous Waste (Solid)
Endosulfan II	----------	EPA 8081A/8081B	EPA 8081A/8081B
Endonsulfan sulfate	----------	EPA 8081A/8081B	EPA 8081A/8081B
Endrin	----------	EPA 8081A/8081B	EPA 8081A/8081B
Endrin aldehyde	----------	EPA 8081A/8081B	EPA 8081A/8081B
Endrin ketone	----------	EPA 8081A/8081B	EPA 8081A/8081B
EPN	----------	EPA 8141A/8141B	EPA 8141A/8141B
Ethoprop	----------	EPA 8141A/8141B	EPA 8141A/8141B
Ethyl parathion	----------	EPA 8141A/8141B	EPA 8141A/8141B
Famphur	----------	EPA 8141A/8141B	EPA 8141A/8141B
Fensulfothion	----------	EPA 8141A/8141B	EPA 8141A/8141B
Fenthion	----------	EPA 8141A/8141B	EPA 8141A/8141B
Heptachlor	----------	EPA 8081A/8081B	EPA 8081A/8081B
Heptachlor epoxide	----------	EPA 8081A/8081B	EPA 8081A/8081B
Hexachlorobenzene	----------	EPA 8081A/8081B	EPA 8081A/8081B
Malathion	----------	EPA 8141A/8141B	EPA 8141A/8141B
MCPA	----------	EPA 8151A/8321A	EPA 8151A/8321A
MCPP	----------	EPA 8151A/8321A	EPA 8151A/8321A
Merphos	----------	EPA 8141A/8141B	EPA 8141A/8141B
Methoxychlor	----------	EPA 8081A/8081B	EPA 8081A/8081B
Methyl parathion	----------	EPA 8141A/8141B	EPA 8141A/8141B
Mevinphos	----------	EPA 8141A/8141B	EPA 8141A/8141B
Naled	----------	EPA 8141A/8141B	EPA 8141A/8141B
PCB-1016 (Arochlor)	----------	EPA 8082/8082A	EPA 8082/8082A
PCB-1221	----------	EPA 8082/8082A	EPA 8082/8082A
PCB-1232	----------	EPA 8082/8082A	EPA 8082/8082A
PCB-1242	----------	EPA 8082/8082A	EPA 8082/8082A
PCB-1248	----------	EPA 8082/8082A	EPA 8082/8082A
PCB-1254	----------	EPA 8082/8082A	EPA 8082/8082A
PCB-1260	----------	EPA 8082/8082A	EPA 8082/8082A
PCB-1262	----------	EPA 8082/8082A	EPA 8082/8082A
PCB-1268	----------	EPA 8082/8082A	EPA 8082/8082A
Phorate	----------	EPA 8141A/8141B	EPA 8141A/8141B
Phosmet	----------	EPA 8141A/8141B	EPA 8141A/8141B
Propazine	----------	EPA 8141A/8141B	EPA 8141A/8141B
Ronnel	----------	EPA 8141A/8141B	EPA 8141A/8141B
Simazine	----------	EPA 8081A/8081B/8141A/8141B	EPA 8081A/8081B/8141A/8141B
Stirophos	----------	EPA 8141A/8141B	EPA 8141A/8141B
Sulfotepp	----------	EPA 8141A/8141B	EPA 8141A/8141B
2,4,5-T	----------	EPA 8151A/8321A	EPA 8151A/8321A
Thionazin	----------	EPA 8141A/8141B	EPA 8141A/8141B
Tokuthion	----------	EPA 8141A/8141B	EPA 8141A/8141B
2,4,5-TP	----------	EPA 8151A/8321A	EPA 8151A/8321A
Toxaphene	----------	EPA 8081A/8081B	EPA 8081A/8081B
Trichloronate	----------	EPA 8141A/8141B	EPA 8141A/8141B
o,o,o-triethylphos phorothioate	----------	EPA 8141A/8141B	EPA 8141A/8141B
Explosives			
1,3,5-Trinitrobenzene	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste (Water)	Solid Hazardous Waste (Solid)
1,3-Dinitrobenzene	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
2,4,6-Trinitrotoluene	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
3,5-Dinitroaniline	----------	8330B	8330B
2,4-Dinitrotoluene	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
2,6-Dinitroltoluene	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
2-Amino-4,6-dinitrotoluene	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
2-Nitrotoluene	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
3-Nitrotoluene	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
4-Amino-2,6-dinitrotoluene	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
4-Nitrotoluene	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
Nitrobenzene	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
Nitroglycerin	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
Octahydro-1,3,5,7-tetrabitro-1,3,5,7-tetrazocine (HMX)	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
Pentaerythritoltetranitrate (PETN)	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
Picric acid	----------	EPA 8330A/8330B	EPA 8330A/8330B
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
Tetryl (methyl2,4,6-trinitrophenylnitramine	----------	EPA 8330A/8330B/8321A/8321B	EPA 8330A/8330B/8321A/8321B
Hydrazines			
Hydrazine	SOP DV WC-0077	SOP DV WC-0077	SOP DV WC-0077
Monomethyl hydrazine	SOP DV WC-0077	SOP DV WC-0077	SOP DV WC-0077
1,1-Dimethylhydrazine	SOP DV WC-0077	SOP DV WC-0077	SOP DV WC-0077
Perfluorinated Hydrocarbons (PFCs) and Perfluorinated Sulfonates (PFSs)			
Perfluorobutanoic acid	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluoropentanoic acid	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluorohexanoic acid	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluoroheptanoic acid	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluorooctanoic acid	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluorononanoic acid	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluorodecanoic acid	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluoroundecanoic acid	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluorododecanoic acid	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste (Water)	Solid Hazardous Waste (Solid)
Perfluorotridecanoic acid	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluorotetradecanoic acid	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluorobutane Sulfonate	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluorohexane Sulfonate	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluorooctane Sulfonate	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluorodecane Sulfonate	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
Perfluorooctane Sulfonamide	SOP DV-LC-0012	SOP DV-LC-0012	SOP DV-LC-0012
N-Nitrosodimethylamine (NDMA)	SOP DV-LC-0019	SOP DV-LC-0019	SOP DV-LC-0019
Hazardous Waste Characteristics			
Conductivity	----------	EPA 9050A	EPA 9050A
Corrosivity	----------	EPA 9040B	9045C
Ignitibility	EPA 1010/EPA 1010A	EPA 1010/EPA 1010A	EPA 1010/EPA 1010A
Paint Filter Liquids Test		EPA 9095A	EPA 9095A
Synthetic Precipitation Leaching Procedure (SPLP)	----------	EPA 1312	EPA 1312
ToxicityCharacteristic Leaching Procedure	----------	EPA 1311	EPA 1311
Organic Prep Methods			
Separatory Funnel Liquid-Liquid Extraction	----------	EPA 3510C	----------
Continuous Liquid-Liquid Extraction	----------	EPA 3520C	----------
Soxhlet Extraction	----------	----------	EPA 3540C
Microwave Extraction	----------	----------	EPA 3546
Ultrasonic Extraction	----------	----------	EPA 3550B
Ultrasonic Extraction	----------	----------	EPA 3550C
Waste Dilution	----------	EPA 3580A	EPA 3580A
Solid Phase Extraction Volatiles Purge and trap Volatiles purge and trap for soils	----------	EPA 3535A EPA 5030B	EPA 5030B EPA 5035
Organic Cleanup Procedures			
Florisil Cleanup	----------	EPA 3620B	EPA 3620B
Florisil Cleanup	----------	EPA 3620C	EPA 3620C
Sulfur Cleanup	----------	EPA 3660B	EPA 3660B
Sulfuric Acid/Permanganate Cleanup	----------	EPA 3665A	EPA 3665A
Metals Digestion			
Acid Digestion Total Recoverable or Dissolved Metals	----------	EPA 3005A	----------
Acid Digestion for Total Metals	----------	EPA 3010A	----------

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste (Water)	Solid Hazardous Waste (Solid)
Acid Digestion for Total Metals	----------	EPA 3020A	----------
Acid Digestion of Sediments, Sludges and Soils	----------	----------	EPA 3050B

The American Association for Laboratory Accreditation

World Class Accreditation

Accredited DoD ELAP Laboratory

A2LA has accredited

TESTAMERICA DENVER

Arvada, CO

for technical competence in the field of

Environmental Testing

In recognition of the successful completion of the A2LA evaluation process that includes an assessment of the laboratory's compliance with ISO/IEC 17025:2005, the 2003 NELAC Chapter 5 Standard, and the requirements of the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in the current DoD Quality Systems Manual for Environmental Laboratories (QSM); accreditation is granted to this laboratory to perform recognized EPA methods as defined on the associated A2LA Environmental Scope of Accreditation. This accreditation demonstrates technical competence for this defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 5th day of October 2011.

President & CEO
For the Accreditation Council
Certificate Number 2907.01
Valid to October 31, 2013

For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Environmental Scope of Accreditation.

THE STATE OF ALASKA

Department of Environmental Conservation
Laboratory Certification Program

Certificate of Approval for Contaminated Sites Analysis

TestAmerica-Denver, CO

4955 Yarrow Street
Arvada, CO 80002

UST-030

has complied with the provisions set forth in 18 AAC 78 and is hereby recognized by The Department of Environmental Conservation as **Approved** for the analytical parameters listed on the accompanying Scope of Accreditation. This certificate is effective **4/5/13**, and expires **4/5/14**.

Patryce D. McKinney
State of Alaska Certification Authority

Lance W. Morris
Laboratory Chemistry Certification Officer

THE STATE OF ALASKA
Department of Environmental Conservation
Laboratory Approval Program

Scope of Approval **Expiration: 04/05/2014**

TestAmerica-Denver, CO **UST-030**
4955 Yarrow Street
Arvada, CO 80002

is approved by the State of Alaska Department of Environmental Conservation, pursuant to 18 AAC 78, to perform analysis for the parameters listed below using the analytical methods indicated. Approval for all parameters is final. Approval is for the latest version of a method unless specified otherwise in a note. EPA refers to the U.S. Environmental Protection Agency. AK refers to Alaska Methods 101, 102 and 103 for the determination of gasoline, diesel and residual range organics in soil and water. ASTM refers to the American Society for Testing and Materials.

Contaminated Sites

Method/Test Name	Reference	Analyte	Matrix	Status
6010B	EPA	Total Arsenic	Soil	Approved
6010B	EPA	Total Barium	Soil	Approved
6010B	EPA	Total Cadmium	Soil	Approved
6010B	EPA	Total Chromium	Soil	Approved
6010B	EPA	Total Lead	Soil	Approved
6010B	EPA	Total Nickel	Soil	Approved
6010B	EPA	Total Vanadium	Soil	Approved
6010B	EPA	Total Arsenic	Water	Approved
6010B	EPA	Total Barium	Water	Approved
6010B	EPA	Total Cadmium	Water	Approved
6010B	EPA	Total Chromium	Water	Approved
6010B	EPA	Total Lead	Water	Approved
6010B	EPA	Total Nickel	Water	Approved
6010B	EPA	Total Vanadium	Water	Approved
6020	EPA	Total Arsenic	Soil	Approved
6020	EPA	Total Barium	Soil	Approved
6020	EPA	Total Cadmium	Soil	Approved
6020	EPA	Total Chromium	Soil	Approved
6020	EPA	Total Lead	Soil	Approved

Contaminated Sites

Method/Test Name	Reference	Analyte	Matrix	Status
6020	EPA	Total Nickel	Soil	Approved
6020	EPA	Total Vanadium	Soil	Approved
6020	EPA	Total Arsenic	Water	Approved
6020	EPA	Total Barium	Water	Approved
6020	EPA	Total Cadmium	Water	Approved
6020	EPA	Total Chromium	Water	Approved
6020	EPA	Total Lead	Water	Approved
6020	EPA	Total Nickel	Water	Approved
6020	EPA	Total Vanadium	Water	Approved
8021B	EPA	BTEX	Water	Approved
8021B	EPA	Total Volatile Chlorinated Solvents	Water	Approved
8082	EPA	Polychlorinated Biphenyls-PCB	Soil	Approved
8082	EPA	Polychlorinated Biphenyls-PCB	Water	Approved
8082A	EPA	Polychlorinated Biphenyls-PCB	Soil	Approved
8082A	EPA	Polychlorinated Biphenyls-PCB	Water	Approved
8260B	EPA	BTEX	Soil	Approved
8260B	EPA	Total Volatile Chlorinated Solvents	Soil	Approved
8260B	EPA	BTEX	Water	Approved
8260B	EPA	Total Volatile Chlorinated Solvents	Water	Approved
8270C	EPA	PAH	Soil	Approved
8270C	EPA	PAH	Water	Approved
8270D	EPA	PAH	Soil	Approved
8270D	EPA	PAH	Water	Approved
8310	EPA	PAH	Soil	Approved
8310	EPA	PAH	Water	Approved
AK101	AK	Gasoline Range Organics	Soil	Approved
AK101	AK	Gasoline Range Organics	Water	Approved
AK101/8021B	EPA	BTEX-methanol preserved	Soil	Approved
AK102	AK	Diesel Range Organics	Soil	Approved
AK102	AK	Diesel Range Organics	Water	Approved
AK103	AK	Residual Range Organics	Soil	Approved

APPENDIX O

Laboratory Analytical Limits and
Evaluation Criteria

Table O1 Reference Limits and Evaluation Criteria for Soil and Sediment
NE CAPE

Analyte	Analytical Group	Analytical Method	Preparation Method	CASRN	Units	Cleanup Levels and Evaluation Criteria		Achievable Laboratory Limits		
						SEDIMENT	SOIL	DL	LOD	LOQ
POL										
Gasoline Range Organics - C_6 to C_{10}	FUELS	AK101	SW5035A	NS	mg/kg	NS	300[2]	0.46	1	4
Diesel Range Organics - C_{10} to C_{25}	FUELS	AK102	SW3550B	NS	mg/kg	3500[1]	9200[1]	2.3	6.50	20
Residual Range Organics - C_{25} to C_{36}	FUELS	AK103	SW3550B	NS	mg/kg	3500[1]	9200[1]	11	25.0	50
Volatile Organic Compounds										
Benzene	VOC	SW8260B	SW5035A	71-43-2	µg/kg	NS	2000[1]	4	10.0	16.0
Ethylbenzene	VOC	SW8260B	SW5035A	100-41-4	µg/kg	NS	6900[2]	10.00	30.0	40.0
Toluene	VOC	SW8260B	SW5035A	108-88-3	µg/kg	NS	6500[2]	10.00	30.0	40.0
m-Xylene & p-Xylene	VOC	SW8260B	SW5035A	1330-20-7	µg/kg	NS	NS	10.0	30.0	40
o-Xylene	VOC	SW8260B	SW5035A	95-47-6	µg/kg	NS	NS	10.00	30.0	40.0
Xylenes, total	VOC	SW8260B	SW5035A	1330-20-7	µg/kg	NS	63000[2]	10.00	30.0	40.0
Polynuclear Aromatic Hydrocarbons										
Acenaphthene	PAH	SW8270C-SIM	SW3550B	83-32-9	µg/kg	500[1]	180000[2]	1.5	2.5	5.0
Acenaphthylene	PAH	SW8270C-SIM	SW3550B	208-96-8	µg/kg	NS	180000[2]	1.5	2.5	5.0
Anthracene	PAH	SW8270C-SIM	SW3550B	120-12-7	µg/kg	NS	3000000[2]	1.5	2.5	5.0
Benzo(a)anthracene	PAH	SW8270C-SIM	SW3550B	56-55-3	µg/kg	NS	3600[2]	1.5	2.5	5.0
Benzo(b)fluoranthene	PAH	SW8270C-SIM	SW3550B	205-99-2	µg/kg	NS	12000[2]	1.5	2.5	5.0
Benzo(k)fluoranthene	PAH	SW8270C-SIM	SW3550B	207-08-9	µg/kg	NS	120000[2]	1.5	2.5	5.0
Benzo(a)pyrene	PAH	SW8270C-SIM	SW3550B	50-32-8	µg/kg	NS	2100[2]	1.5	2.5	5.0
Benzo(g,h,i)perylene	PAH	SW8270C-SIM	SW3550B	191-24-2	µg/kg	1700[1]	38700000[2]	1.5	2.5	5.0
Chrysene	PAH	SW8270C-SIM	SW3550B	218-01-9	µg/kg	NS	360000[2]	1.5	5.0	5.0
Dibenz(a,h)anthracene	PAH	SW8270C-SIM	SW3550B	53-70-3	µg/kg	NS	4000[2]	1.5	2.5	5.0
Fluoranthene	PAH	SW8270C-SIM	SW3550B	206-44-0	µg/kg	2000[1]	1400000[2]	1.5	2.5	5.0
Fluorene	PAH	SW8270C-SIM	SW3550B	86-73-7	µg/kg	800[1]	220000[2]	1.5	2.5	5.0
Indeno(1,2,3-cd)pyrene	PAH	SW8270C-SIM	SW3550B	193-39-5	µg/kg	3200[1]	41000[2]	1.5	2.5	5.0
2-Methylnaphthalene	PAH	SW8270C-SIM	SW3550B	91-57-6	µg/kg	600[1]	6100[2]	2.0	5.0	5.0
Naphthalene	PAH	SW8270C-SIM	SW3550B	91-20-3	µg/kg	1700[1]	120000[1]	2.0	2.5	5.0
Phenanthrene	PAH	SW8270C-SIM	SW3550B	94-09-7	µg/kg	4800[1]	3000000[2]	1.5	2.5	5.0
Pyrene	PAH	SW8270C-SIM	SW3550B	129-00-0	µg/kg	NS	1000000[2]	1.5	2.5	5.0
LPAH	PAH	SW8270C-SIM	SW3550B	NA	ug/kg	7800[1]	NS	NS	NS	NS
HPAH	PAH	SW8270C-SIM	SW3550B	NA	ug/kg	9600[1]	NS	NS	NS	NS
Polychlorinated Biphenyls										
PCB-1221	PCB	SW8082A	SW3550B	11104-28-2	mg/kg	0.7[1]	1[1]	0.0032	0.005	0.010
PCB-1016	PCB	SW8082A	SW3550B	12674-11-2	mg/kg	0.7[1]	1[1]	0.0080	0.005	0.011
PCB-1232	PCB	SW8082A	SW3550B	11141-16-5	mg/kg	0.7[1]	1[1]	0.0070	0.010	0.011
PCB-1242	PCB	SW8082A	SW3550B	53469-21-9	mg/kg	0.7[1]	1[1]	0.0021	0.005	0.010
PCB-1248	PCB	SW8082A	SW3550B	12672-29-6	mg/kg	0.7[1]	1[1]	0.0030	0.005	0.010
PCB-1254	PCB	SW8082A	SW3550B	11097-69-1	mg/kg	0.7[1]	1[1]	0.0021	0.005	0.010
PCB-1260	PCB	SW8082A	SW3550B	11096-82-5	mg/kg	0.7[1]	1[1]	0.0030	0.005	0.010
PCBs (sum)	PCB	SW8082A	SW3550B	1336363	mg/kg	0.7[1]	1[1]	NS	NS	NS
Total Metals										
Arsenic	Metals	SW6020A	SW3050B	7440-38-2	mg/kg	93 [1]	11[1]	0.18	0.4	0.50
Barium	Metals	SW6020A	SW3050B	7440-39-3	mg/kg	NS	1100[2]	0.03	0.04	0.20
Cadmium	Metals	SW6020A	SW3050B	7440-43-9	mg/kg	NS	5.0[2]	0.008	0.02	0.20
Chromium	Metals	SW6020A	SW3050B	7440-47-3	mg/kg	270[1]	25[2]	0.113	0.15	0.20
Lead	Metals	SW6020A	SW3050B	7439-92-1	mg/kg	530[1]	400[2]	0.013	0.020	0.20
Mercury	Metals	SW7471B	SW7471B	7439-97-6	mg/kg	NS	1.4[2]	0.0063	0.01	0.02
Nickel	Metals	SW6020A	SW3050B	7440-02-0	mg/kg	NS	86[2]	0.071	0.25	0.50
Selenium	Metals	SW6020A	SW3050B	7782-49-2	mg/kg	NS	3.4[2]	0.202	0.4	0.70
Silver	Metals	SW6020A	SW3050B	7440-22-4	mg/kg	NS	11.2[2]	0.012	0.02	0.20
Vanadium	Metals	SW6020A	SW3050B	7440-62-2	mg/kg	NS	3400[2]	0.473	0.5	0.70
Zinc	Metals	SW6020A	SW3050B	7440-66-6	mg/kg	960[1]	4100[2]	1.12	1.50	2.00

Notes:

[1] Site-specific cleanup values established in 2009 Decision Document

[2] Cleanup levels from 18AAC75 Section 341, Table B1, migration to groundwater

µg/kg = micrograms per kilogram

AAC = Alaska Administrative Code

AK = Alaska Test Method

CASRN = Chemical Abstracts Service Registry Number

DL= detection limit

HPAH=High Molecular Weight PAHs

LOD = limit of detection

LOQ = limit of quantitation

LPAH=Low Molecular Weight

mg/kg = milligrams

NS = not specified

PAH = polynuclear a

PCB = polychlorinat

POL = petroleum, oil, and lubricants

SIM = selective ion

SW = EPA Solid Waste Test Method

VOC = volatile organic compounds

Table O2 Reference Limits and Evaluation Criteria for Water
NE CAPE

Analyte	Analytical Group	Analytical Method	CASRN	Preparation Method	Units	Cleanup Levels and Evaluation Criteria[1]	Achievable Laboratory Limits		
							DL	LOD	LOQ
POL									
Gasoline Range Organics - C_6 to C_{10}	TPH	AK101	NS	SW5030B	mg/L	1.3 [2]	0.015	0.044	0.05
Diesel Range Organics - C_{10} to C25	TPH	AK102	NS	SW3510C	mg/L	1.5 [2]	0.022	0.06	0.1
Residual Range Organics - C_{25} to C36	TPH	AK103	NS	SW3510C	mg/L	1.1 [2]	0.027	0.06	0.1
Volatile Organic Compounds									
Benzene	VOC	SW8260B	71-43-2	SW5030B	µg/L	5 [2]	0.15	0.45	1.0
Ethylbenzene	VOC	SW8260B	100-41-4	SW5030B	µg/L	700 [2]	0.15	0.45	1.0
Toluene	VOC	SW8260B	108-88-3	SW5030B	µg/L	1,000	0.15	0.45	1.0
m-Xylene & p-Xylene	VOC	SW8260B	1330-20-7	SW5030B	µg/L	NS	0.30	0.9	2.0
o-Xylene	VOC	SW8260B	95-47-6	SW5030B	µg/L	NS	0.15	0.45	1.0
Xylenes, total	VOC	SW8260B	1330-20-7	SW5030B	µg/L	10,000	0.45	1.35	3.0
Polynuclear Aromatic Hydrocarbons (PAHs)									
Acenaphthene	PAH	SW8270C-SIM	83-32-9	SW3510C	µg/L	2,200	0.03	0.075	0.13
Acenaphthylene	PAH	SW8270C-SIM	208-96-8	SW3510C	µg/L	2,200	0.03	0.075	0.10
Anthracene	PAH	SW8270C-SIM	120-12-7	SW3510C	µg/L	11,000	0.03	0.075	0.10
Benzo(a)anthracene	PAH	SW8270C-SIM	56-55-3	SW3510C	µg/L	1.2	0.03	0.075	0.10
Benzo(b)fluoranthene	PAH	SW8270C-SIM	205-99-2	SW3510C	µg/L	1.2	0.03	0.075	0.10
Benzo(k)fluoranthene	PAH	SW8270C-SIM	207-08-9	SW3510C	µg/L	12	0.03	0.075	0.10
Benzo(a)pyrene	PAH	SW8270C-SIM	50-32-8	SW3510C	µg/L	0.2	0.03	0.075	0.20
Benzo(g,h,i)perylene	PAH	SW8270C-SIM	191-24-2	SW3510C	µg/L	1,100	0.03	0.075	0.10
Chrysene	PAH	SW8270C-SIM	218-01-9	SW3510C	µg/L	120	0.03	0.075	0.10
Dibenz(a,h)anthracene	PAH	SW8270C-SIM	53-70-3	SW3510C	µg/L	0.12	0.03	0.075	0.10
Fluoranthene	PAH	SW8270C-SIM	206-44-0	SW3510C	µg/L	1,500	0.03	0.075	0.10
Fluorene	PAH	SW8270C-SIM	86-73-7	SW3510C	µg/L	1,500	0.03	0.075	0.10
Indeno(1,2,3-cd)pyrene	PAH	SW8270C-SIM	193-39-5	SW3510C	µg/L	1.2	0.03	0.08	0.10
1-Methylnaphthalene	PAH	SW8270C-SIM	90-12-0	SW3510C	µg/L	150	0.03	0.075	0.10
2-Methylnaphthalene	PAH	SW8270C-SIM	91-57-6	SW3510C	µg/L	150	0.03	0.075	0.10
Naphthalene	PAH	SW8270C-SIM	91-20-3	SW3510C	µg/L	730	0.04	0.075	0.10
Phenanthrene	PAH	SW8270C-SIM	94-09-7	SW3510C	µg/L	11,000	0.03	0.075	0.10
Pyrene	PAH	SW8270C-SIM	129-00-0	SW3510C	µg/L	1,100	0.03	0.075	0.10
Polychlorinated Biphenyls									
PCB-1221	PCB	SW8082A	11104-28-2	SW3520C	µg/L	0.5	0.062	0.13	0.5
PCB-1016	PCB	SW8082A	12674-11-2	SW3520C	µg/L	0.5	0.045	0.10	0.5
PCB-1232	PCB	SW8082A	11141-16-5	SW3520C	µg/L	0.5	0.041	0.10	0.5
PCB-1242	PCB	SW8082A	53469-21-9	SW3520C	µg/L	0.5	0.041	0.10	0.5
PCB-1248	PCB	SW8082A	12672-29-6	SW3520C	µg/L	0.5	0.071	0.08	0.5
PCB-1254	PCB	SW8082A	11097-69-1	SW3520C	µg/L	0.5	0.044	0.13	0.5
PCB-1260	PCB	SW8082A	11096-82-5	SW3520C	µg/L	0.5	0.039	0.08	0.5
Metals									
Arsenic (total)	Metals	SW6020A	7440-38-2	SW3005A	µg/L	NS	3.75	4	5.0
Arsenic (dissolved)	Metals	SW6020A	7440-38-2	SW3005A	µg/L	10 [2]	3.75	4	5.0
Barium (total)	Metals	SW6010C	7440-39-3	SW3005A	µg/L	NS	0.27	1.0	6
Barium (dissolved)	Metals	SW6010C	7440-39-3	SW3005A	µg/L	2,000	0.27	1.0	6
Cadmium (total)	Metals	SW6020A	7440-43-9	SW3005A	µg/L	NS	0.140	0.25	2.0
Cadmium (dissolved)	Metals	SW6020A	7440-43-9	SW3005A	µg/L	5	0.140	0.25	2.0
Chromium (total)	Metals	SW6010C	7440-70-2	SW3005A	µg/L	NS	1.35	1.5	2
Chromium (dissolved) (includes Cr+3 and Cr+6)	Metals	SW6010C	7440-47-3	SW3005A	µg/L	100	1.35	1.5	2
Lead (total)	Metals	SW6010C	7439-89-6	SW3005A	µg/L	NS	0.17	0.25	2
Lead (dissolved)	Metals	SW6020A	7439-92-1	SW3005A	µg/L	15 [2]	0.17	0.25	2
Mercury (total)	Metals	SW6020A	7439-96-5	SW3005A	µg/L	NS	0.041	0.1	0.2
Mercury (dissolved)	Metals	SW7470A	7439-97-6	SW7470A	µg/L	2	0.041	0.1	0.2
Nickel (total)	Metals	SW6010C	7439-98-7	SW3005A	µg/L	NS	2.0	2.50	15
Nickel (dissolved)	Metals	SW6010C	7440-02-0	SW3005A	µg/L	100	2.0	2.50	15
Selenium (total)	Metals	SW6010C	7440-09-7	SW3005A	µg/L	NS	3.55	4	5
Selenium (dissolved)	Metals	SW6020A	7782-49-2	SW3005A	µg/L	50	3.55	4	5
Silver (total)	Metals	SW6020A	7782-49-2	SW3005A	µg/L	NS	0.15	0.25	2.0
Silver (dissolved)	Metals	SW6020A	7440-22-4	SW3005A	µg/L	100	0.15	0.25	2.0
Vanadium (total)	Metals	SW6020A	7440-31-5	SW3005A	µg/L	NS	4.875	5	10
Vanadium (dissolved)	Metals	SW6020A	7440-31-5	SW3005A	µg/L	260	4.875	5	10
Zinc (total)	Metals	SW6010C	7440-62-2	SW3005A	µg/L	NS	4.4	5.0	7
Zinc (dissolved)	Metals	SW6020A	7440-66-6	SW3005A	µg/L	5,000	4.4	5.0	7

Notes:

[1] Unless otherwise noted, values are from 18AAC75 Section 345, Table C, Groundwater Cleanup Levels

[2] Values established in 2009 Decision Document

µg/L = micrograms per liter

ADEC = Alaska Department of Environmental Conservation
AK = Alaska Test Method
CASRN = Chemical Abstracts Service Registry Number
DL= detection limit
LOD = limit of detection
LOQ = limit of quantitation

mg/L= milligrams per liter

NS = not specified

PAH = polynuclear aromatic hydrocarbon
PCB = polychlorinated biphenyls
SIM = selective ion monitoring
SW = EPA Solid Waste Test Method
TPH = total petroleum hydrocarbons
VOC = volatile organic compounds