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Alaska District

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REMEDIAL ACTIONS
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SITE 28
TECHNICAL MEMORANDUM ADDENDUM
REVISION 1
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Submitted by:

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ACRONYMS AND ABBREVIATIONS

′	minutes
°	degrees
AC&WS	Aircraft Control and Warning Station
ADEC	Alaska Department of Environmental Conservation
AK	Alaska Test Method
AST	aboveground storage tank
bgs	below ground surface
Bristol	Bristol Environmental Remediation Services, LLC
BTEX	benzene, toluene, ethylbenzene and xylenes
COC	contaminant of concern
DRO	diesel range organics
FUDS	formerly used defense site
GRO	gasoline range organics
mg/kg	milligrams per kilogram
MI	*MULTI INCREMENT*®
MOC	Main Operations Complex
NE Cape	Northeast Cape
NOM	natural organic matter
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
POL	petroleum, oil and lubricants
QAR	Quality Assurance Representative
RI	remedial investigation
RRO	residual range organics
SG	silica gel
Suqi	Suqitughneq
Tech Memo	Technical Memorandum
TestAmerica	TestAmerica Laboratories, Inc.
TOC	total organic carbon
USACE	US Army Corps of Engineers
USAF	U.S. Air Force
WACS	White Alice Communications System

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1.0 INTRODUCTION

This Technical Memorandum (Tech Memo) Addendum presents the results of sediment mapping and sampling activities performed in July 2012 at Site 28 of Northeast Cape (NE Cape) on Saint Lawrence Island, Alaska. This Addendum was prepared to supplement characterization data collected at Site 28 in August 2011. Bristol Environmental Remediation Services, LLC (Bristol), performed the work for the US Army Corps of Engineers (USACE), Alaska District, under Contract No. W911KB-12-C-0003.

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 (°) 20 minutes (′) north latitude and 168° 59′ west longitude (Figure 1). The project site, which originally encompassed 4,800 acres located near 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 (USAF) Aircraft Control and Warning Station (AC&WS) was constructed at the site during 1950 and 1951 and was activated in 1952. In 1954, the USAF constructed a White Alice Communications System (WACS) 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.

The AC&WS and WACS operations were terminated in 1969 and 1972, respectively. The majority of the military personnel were removed from the NE Cape site by the end of 1969. The NE Cape buildings and the majority of furnishings and equipment were abandoned in place because of the high cost of off-island transport. In 2000, the White

Alice Station was reclassified as a formerly used defense sites- (FUDS-) eligible property, and the USACE included the area in the ongoing cleanup program for NE Cape.

1.2 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. Remedial investigations (RIs) were initiated at NE Cape during the summer of 1994. Additional sampling was performed during subsequent investigations: Phase II RI (Montgomery Watson, 1996 and 1999); Phase III RI (Montgomery Watson Harza, 2003); and Phase IV RI (Shannon & Wilson, Inc., 2005). 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. Bristol Environmental & Engineering Services Corporation performed removal actions in both 2003 and 2005. In 2009, Bristol (Bristol Environmental Remediation Services, LLC), returned to the island to construct a landfill cap, remove petroleum, oil, and lubricants- (POL-) containing drums, and perform a chemical oxidation study. Bristol again returned to NE Cape during the summer of 2010 to excavate POL-contaminated soils from sites 1, 3, 6, and 32; to excavate polychlorinated biphenyl- (PCB-) contaminated soils from sites 13, 16, 21, and 31; to excavate arsenic-contaminated soils from Site 21; to cap the Site 9 landfill; and to continue monitoring Site 8 for natural attenuation. In 2011, Bristol excavated 8,091 tons of diesel range organic- (DRO-) contaminated soil from two areas within the Main Operations Complex (MOC), excavated 3,838 tons of PCB-contaminated soil from sites 13 and 31, and excavated 14.8 tons of arsenic-contaminated soil from Site 21. Extensive soil and sediment sampling was conducted in the Site 28 wetland, and additional samples were collected from Site 8 and from groundwater monitoring wells within the MOC. Thirty-four tons of metal and miscellaneous debris were also removed and disposed of during field activities in 2011.

2.0 SITE 28 DESCRIPTION AND BACKGROUND

The Site 28 drainage basin is located north of the MOC and drains north into the Suqitughneq (Suqi) River, as shown in Figure 3. This site contains variable surface features consisting of wetlands, rolling tundra, ponds, and flowing streams. The most significant sources of surface water are overland flow (runoff) from the MOC and from the ground in the form of seeps immediately north of the MOC gravel pad and periodically throughout the drainage basin. Two distinct sub-drainages containing feeder streams originating as seeps drain into the main stream approximately one-quarter of the way down the drainage. Surface water runoff, usually during and immediately following occasional rainfall events, can contribute significant amounts of water to the basin. The general area contains subsurface, discontinuous permafrost, which significantly impacts the appearance of surface topography.

Three distinct drainages originate from the upgradient MOC gravel pad and contribute flow to Site 28 (Figure 4). 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 originates from an area where a culvert was removed during 2010 remedial actions that previously directed flow from Site 27; and the western drainage is located downgradient of Site 13. 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. The manhole likely served as the drain leading from Building 110 (Heat and Electrical Power Building) at the MOC. In 2010, the concrete manhole structure was cleaned and removed. A 12-inch corrugated metal pipe, which attached to the manhole and continued upgradient toward the MOC, was cut, and 63 feet of the pipe was removed. The open end of the pipe was then filled with bentonite and welded shut. In the middle drainage, another 12-inch corrugated metal pipe, measuring 32 feet in length, was completely removed.

Site 28 has been impacted by historical MOC bulk fuel releases, in addition to releases from other sources. 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 have been described as stained and will produce sheen when disturbed. Sampling activities occurred at the drainage basin between 1994 and 2001. Based on data available before 2011, the primary contaminants of concern (COCs) in soil and sediments are chromium, lead, zinc, PCBs, polynuclear aromatic hydrocarbons (PAHs), DRO, and residual range organics (RRO). The highest concentrations of contaminants are located proximal to the edge of the MOC gravel pad.

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.

Sediment and soil sampling was conducted by Bristol in 2011 along 11 transects placed between the upper end of Site 28 (near the MOC) and its confluence with the Suqi River to delineate the extent and magnitude of contamination at Site 28. Transect lines were placed to include areas of historical contamination and were analyzed to gain a general understanding of the potential contaminants throughout the drainage. This sampling event did not result in a full characterization of the drainage system. Results from the 2011 sampling event found contaminants that included DRO, RRO, toluene, ethylbenzene, total xylenes, PAHs, PCBs, arsenic, cadmium, chromium, lead, and

selenium. The Site 28 Technical Memorandum (Bristol Engineering Services Corporation, 2012) presents detailed information from the 2011 Site 28 investigation.

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3.0 2012 SITE 28 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 organic) except for that which is actively growing vegetation or is part of the vegetative mat. Photographs from the Site 28 sediment mapping and sampling effort are presented in Appendix A.

3.1 SEDIMENT MAPPING

The following items were delineated during the mapping effort:

- The extent and thickness of sediment
- The extent of vegetative mat in areas where sediment was present
- The extent and depth of water to the nearest 0.1 foot where sediment was present

Mapping began on the north end of the drainage basin at the Suqi River and progressed south to the MOC. The sediment mapping was conducted in two phases. During the first phase, streams and ponds in the drainage basin were visually and manually (by hand) inspected for the presence of loose material. Personnel from ECO-LAND, LLC (a licensed professional surveying company) accompanied the Bristol field scientist to collect horizontal survey data of the sediment boundaries as delineated by Bristol.

During the second phase of the mapping effort, probing was conducted to determine the thickness of sediment and the composition of the underlying material in each sediment area delineated in the first phase of the mapping. Probing was conducted using a 4-inch-diameter hand auger with a T-handle. Probing depths were measured by marking the auger handle at 6-inch intervals, beginning at the ground surface, of its sample collection depth. These reference marks were used to calculate the depth below ground surface (bgs) of each probing location. Material collected from within the auger barrel was examined and described on field forms, which are included in Appendix B. The field

forms also include the depth of water to the top of the sediment layer at each probing location and an estimated sediment thickness at the probing locations (based on the material removed with the auger). Boring logs (Appendix C) were developed for each probing location using the information recorded on the field forms. Horizontal positions, as well as the water surface elevation, were surveyed by ECO-LAND, LLC, at each probing location. Probing locations are shown in Figure 4.

3.2 SEDIMENT SAMPLING

After the mapping effort, 51 primary sediment samples were collected from the mapped sediment areas. Sample locations and densities were chosen in consultation with the USACE Quality Assurance Representative (QAR). Sediment sample locations are shown in Figure 4.

3.3 SAMPLING PROCEDURES

Site 28 sediment samples were collected using a modified clam gun. Each sample was collected across the entire sediment interval, as determined from probing data from the mapping effort. Sample depths were measured by marking the clam gun at 6-inch intervals from the bottom of the barrel (the start of its sample collection depth) and using these reference marks to calculate the depth bgs of each sample location. Sample material was removed from the clam gun and placed into a stainless steel bowl and then placed into appropriate containers provided by the laboratory. Samples for volatile analyses were collected first by transferring approximately 20–25 grams of material into a tared 4-ounce container. Methanol preservative (provided by the laboratory) was immediately poured over the soil sample, and the container was sealed tightly. The remaining analyses were collected after the volatile samples. All samples were placed into a chilled sample cooler and then transferred to the sample refrigerator until shipment to the laboratory. New, disposable nitrile gloves were used for each sample, and the clam gun and bowl were decontaminated between each sample. Decontamination procedures consisted of an

Alconox wash followed by a double rinse of tap water and deionized water. Brushes were used during the initial wash to aid in the removal of solid particles. Sample locations were marked with lath and surveyed by ECO-LAND, LLC. The samples were shipped via Bering Air to Nome and then from Nome to TestAmerica Laboratories, Inc. (TestAmerica), in Tacoma, Washington, under chain-of-custody procedures. Field activities are shown in a photograph log included in Appendix A. Sample information and field observations were recorded on field forms included in Appendix B.

Samples were analyzed for petroleum hydrocarbons (benzene, toluene, ethylbenzene, and xylenes [BTEX]; gasoline-range organics [GRO]; DRO/RRO; and PAHs), PCBs, and Resource Conservation and Recovery Act (RCRA) 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), plus nickel and vanadium. Analyses also included silica gel (SG) cleanup of DRO/RRO extracts and total organic carbon (TOC) for a biogenic interference evaluation following the Alaska Department of Environmental Conservation (ADEC) Technical Memorandum 06-001 (ADEC, 2006). Duplicate samples were collected at a rate of one per 10 samples or 10 percent, and matrix spike/matrix spike duplicate (MS/MSD) analyses samples were collected at a rate of one for every 20 primary samples or 5 percent. Analytical results are discussed in Section 4.0.

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4.0 SITE CHARACTERIZATION RESULTS

4.1 SEDIMENT MAPPING RESULTS

Figure 5 presents the mapped sediment areas, sediment probing locations, sediment thickness, and an estimated volume of sediment present in each sediment area. Sediment thickness ranged from 0.5 foot to 2 feet throughout Site 28, as shown in the figure. Approximately 400 cubic yards of sediment was mapped within the Site 28 drainage basin in 2012.

4.2 2011 ANALYTICAL RESULTS

Of the 22 samples classified as sediment during the 2011 Site 28 activities, 10 meet the definition of sediment developed for the 2012 characterization activities, which is all loose mineral or organic material except for that which is actively growing vegetation or is part of the vegetative mat. These samples are 11NC28SS018, -019, -020, -036, -054, -060, -061, -062, -063, and -064. These sample locations are shown in Figures 6 through 9 and are included in the discussion of the 2012 results in the following sections.

4.3 2012 ANALYTICAL RESULTS

Analytical results were compared to the site-specific cleanup levels listed in the decision document (USACE, 2009). The primary Site 28 COCs are DRO, RRO, select PAH analytes, PCBs, chromium, lead, and zinc. Some analytes (such as GRO, BTEX, several PAH analytes, and several metal analytes) do not have sediment cleanup levels listed in the 2009 Decision Document.

The 2012 Site 28 sediment analytical results are presented in Table 1. The laboratory Level IV data report is provided electronically along with the electronic data deliverables. Figure 6 shows sample locations that exceed cleanup levels for any analyte. Analytical results are discussed in more detail in the following sections.

4.3.1 Fuel Constituents Analytical Results

Fuel-related analytes that exceeded cleanup levels specified in the Decision Document (USACE, 2009) include DRO, RRO, 2-methylnaphthalene, acenaphthene, fluorene, naphthalene, and phenanthrene. The low molecular weight PAHs, which are closely associated with DRO as fuel constituents, also exceeded site-specific cleanup levels. The most prevalent fuel contaminants at Site 28 are DRO and 2-methylnaphthalene, with approximately 55 percent of the sediment samples collected in 2012 exceeding the site-specific DRO sediment cleanup level of 3,500 milligrams per kilogram (mg/kg), and 60 percent exceeding the 2-methylnaphthalene site-specific sediment cleanup level of 0.6 mg/kg.

The average DRO concentration for the sediment samples was approximately 23,000 mg/kg before SG treatment and approximately 21,000 mg/kg after SG treatment. The average RRO concentration was approximately 5,200 mg/kg before SG treatment and 3,500 mg/kg after treatment. Four samples exceeded cleanup levels for RRO but not DRO. Of those four samples, only one (12NC28SS034) exceeded the RRO cleanup levels after SG treatment. The RRO site-specific cleanup level for sediment is 3,500 mg/kg.

All of the 10 samples collected in 2011 that meet the 2012 definition of sediment exceeded cleanup levels for fuel constituent analytes. See the 2011 Site 28 Tech Memo (Bristol Engineering Services Corporation, 2012) for analytical results and a detailed discussion of the 2011 investigation.

Fuel contamination is prevalent in the sediment at Site 28. Concentrated areas of fuel contamination are located in the southern portion of Site 28 near the MOC, particularly in the middle drainage. Downgradient of the MOC, several sample locations near the beginning of the stream channel and two ponds that the stream empties into have high concentrations of fuel analytes. Only one sample location between the two ponds and the Suqi River exceeded cleanup levels for fuel constituent analytes.

Table 1 shows complete analytical results, and Figure 7 shows the sample locations that exceed the cleanup levels of fuel constituents.

4.3.1.1 Biogenic Components

Site 28 is a low-lying area with some standing water and a drainage that empties into the Suqi River. The site contains lush vegetation with a thick organic mat, and discontinuous permafrost underlies the site. Because of the short summer season and saturated conditions, vegetative organic matter does not break down and decompose readily, which leads to deposition of natural organic matter (NOM). A portion of this NOM is extracted when soil samples are analyzed for DRO/RRO and PAHs. PAH sample concentrations are not affected by NOM, but the instrument capability is affected as non-target interference, which in some cases necessitates the dilution of sample extracts. When samples are analyzed for DRO and RRO, there is no way to directly distinguish between natural and petrogenic DRO and RRO. The inability to distinguish between natural and petrogenic compounds is termed "biogenic interference." Silica gel treatment of sample extracts removes most medium and high polarity compounds from both natural and petrogenic sources. Unweathered fuel is mainly composed of non-polar compounds (i.e., straight chain hydrocarbons), so the SG treatment does not remove the fuel component from the extract.

The 2012 sample results showed less than 8 percent reduction in DRO after SG treatment. The RRO concentrations were reduced by roughly 30 percent after SG treatment. A review of DRO/RRO sample chromatograms with fuel present at various sample locations showed that straight chain hydrocarbons are present in the samples, and that is likely attributed to fuel in the diesel range. Motor oil, which elutes in the residual range, does not contain discernable amounts of alkanes. Sample chromatograms from SG-treated and -untreated samples display alkanes and other components in the residual range, which suggests that NOM components are a major constituent in the RRO results. Sample

chromatograms are included in the laboratory data reports, which are presented in the supplemental data in the electronic version of this report.

Sample 12NC28SS029 had an uncharacteristic increase in DRO after SG treatment, with DRO concentrations going from 63,000 mg/kg to 100,000 mg/kg. These results are an anomaly compared to the rest of the data set.

The sample chromatogram for 12NC28SS034 before SG treatment displays a chromatographic pattern consistent with fuel in the DRO range; the RRO range displays a chromatographic pattern that more closely resembles biogenics due to the presence of n-alkanes, which are not found in motor oil.

Site 28 samples were also analyzed for TOC in accordance with ADEC requirements when evaluating samples for biogenic interference (ADEC, 2006). The TOC results varied, with a range from 22,000 to 370,000 mg/kg, with an average of approximately 152,000 mg/kg. The TOC analysis also does not distinguish between NOM and POL, and there is no extraction or cleanup method to separate NOM and POL components for TOC analysis.

4.3.1.2 DRO/RRO Sample Results with Silica Gel Cleanup

The current ADEC approach for the use of SG-treated DRO and RRO sample results is to allow SG-treated results to demonstrate that site cleanup goals have been met when no discernable fuel pattern is present in chromatograms and biogenics are present in the sample chromatograms. Per Technical Memorandum 06-001 (ADEC, 2006), in order to use SG-treated sample data, a single soil sample is extracted once and an aliquot of the extract is analyzed for DRO and RRO by Alaska Test Methods AK102 and AK103 without any further alteration or treatment. A second aliquot of the same extract is passed through an activated SG column, and the extract is analyzed with the same analytical methods as the untreated samples. Additionally, the same soil is analyzed for TOC content as part of the requirements stated in Technical Memorandum 06-001. For future

confirmation sampling at this site, an ADEC-approved correlation study must be conducted if SG-treated results are to be used to determine whether the sample results adequately demonstrate that site cleanup goals have been met. In order to use the SG-treated results, the presence of biogenics must be clearly demonstrated in the SG-treated and -untreated results and sample chromatograms. SG-treated results will only be used after discussion with and concurrence by ADEC. At this time, ADEC has not approved the use of SG cleanup results to determine whether or not cleanup levels have been met.

4.4 PCB ANALYTICAL RESULTS

PCBs exceeded the site-specific cleanup level of 0.7 mg/kg in two of the 51 primary Site 28 sediment samples collected in 2012: 12NC28SS036 and 12NC28SS046, with concentrations of 2.1-QH mg/kg and 0.84-QH mg/kg, respectively. (*QH* means the result is an estimated value with high bias due to quality control failure). These samples were located near the MOC, within approximately 250 feet of the pad.

None of the 10 samples collected in 2011 that meet the 2012 definition of sediment exceeded cleanup levels for PCBs. See the 2011 Site 28 Tech Memo (Bristol Engineering Services Corporation, 2012) for analytical results and a detailed discussion of the 2011 investigation.

Table 1 shows complete analytical results, and Figure 8 highlights the two sample locations that exceeded the PCB cleanup level.

4.5 METALS ANALYTICAL RESULTS

In 2012, zinc was detected above the site-specific cleanup level of 96 mg/kg in 17 of the 51 primary samples. Zinc concentrations in the 17 samples that exceeded the cleanup criteria ranged from 97 mg/kg to 380 mg/kg. The only other metal to exceed the cleanup level in 2012 was arsenic, which was detected above the site-specific cleanup level of 93

mg/kg in one sample. Arsenic was detected in sample 12NC28SS017 at a concentration of 100 mg/kg. The samples that exceeded one or more of the metals cleanup levels are located throughout most of the sediment areas in the Site 28 drainage basin and are not confined to one particular area. No metals exceedances were present within approximately 450 feet of the Suqi River.

None of the 10 samples collected in 2011 that meet the 2012 definition of sediment exceeded cleanup levels for metals. See the 2011 Site 28 Tech Memo (Bristol Engineering Services Corporation, 2012) for analytical results and a detailed discussion of the 2011 investigation.

Table 1 shows complete analytical results, and Figure 9 highlights sample locations that exceeded the cleanup level of one or more metals.

4.6 DATA VERIFICATION

The analytical results for the Site 28 sediment samples collected in 2012 were reviewed by Bristol personnel for completeness and accuracy. AECOM performed third-party data verification of all samples submitted for certified laboratory analysis, as described in the NE Cape 2012 Quality Assurance Project Plan (QAPP) (Bristol, 2012a). The ADEC Laboratory Data Review Checklist and the Chemical Data Verification Report prepared by AECOM are provided in Appendix D.

4.7 NATURE AND EXTENT OF CONTAMINATION

The point sources of contamination that have impacted Site 28 appear to originate from several locations of the MOC, including the former ASTs near the eastern drainage, and two former culverts that terminated in the western and middle drainages.

Contaminants exceeding ADEC and site-specific cleanup levels at the site include DRO, RRO, PAHs, PCBs, arsenic, and zinc. Based on the total number of exceedances, fuel-related contamination is most frequently observed in the Site 28 sediments.

Figure 10 shows potential sediment removal areas, along with estimated removal depths and volumes. Figure 10 also shows the proposed locations for a water processing area that will need to be constructed for the sediment removal activities.

Remediation decisions will need to take into consideration whether aggressive sediment removal would cause more harm than good. Wetlands are often effective in stabilizing sediments, metals, and organic contaminants.

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5.0 PHASE I REMOVAL ACTION RECOMMENDATIONS

Bristol will initiate a Phase I contaminated sediment removal operation to remove approximately 140 bank cubic yards of contaminated sediment. The purpose of this action is to evaluate multiple methods for mechanical removal of sediment at Site 28, and it will be conducted in accordance with the sediment removal decisions made by the project team. Appendix E presents minutes from the project team's teleconference discussing the Phase I sediment removal action on September 7, 2012, as well as ADEC's September 7, 2012, email granting tentative approval to implement the Phase I sediment removal action.

Bristol recommends that the Phase I removal action of approximately 140 bank cubic yards be conducted at the following locations:

- Directly off the MOC pad in the Middle Drainage where samples 12NC28SS044, -048, and -049 were located (approximately 10 cubic yards). Sediment thickness in this area ranged from approximately 1.0–1.5 feet.
- Directly off the MOC pad in the Western Drainage where sample 12NC28SS051 was located (approximately 2 cubic yards). Sediment thickness in this area was estimated to be approximately 1.0–1.5 feet.
- The stretch of stream bed channel between samples 12NC28SS028 through -033 (approximately 45 cubic yards). Sediment thickness in this area ranged from approximately 0.75–1.5 feet.
- The remainder of the 140 bank cubic yards are proposed to be removed from the ponded area where samples 12NC28SS017 through -023 were located (up to approximately 83 cubic yards). Sediment thickness in this area ranged from approximately 0.75–1.5 feet.

Proposed sediment removal areas are shown in Figure 10.

For the sediment removal, Bristol will establish an infrastructure for operations. Construction elements will include tundra mats, pumps and piping, suction/vacuum dredges, Geotubes, water impoundments/collection sumps, and an in-stream sediment trap system. The Phase I sediment removal action will evaluate at least two methods for

accessing contaminated sediment, removing and dewatering contaminated sediment, and controlling/minimizing suspended sediment downstream from removal operations.

For the two recommended sediment removal areas close to the MOC pad, Bristol will evaluate the effectiveness of removal operations using heavy equipment, such as an excavator and rock trucks. Sediment removed by excavator will be dewatered as much as possible at the time of removal by allowing water to naturally flow out of the excavator bucket via gravity. If further dewatering is needed, the sediment will be placed in a lined area separate from the Geotubes, similar to the dewatering activities at Site 98. The sediment will be placed into bulk bags before the end of the 2012 field season. If a lined dewatering area for the sediment removed by excavator is necessary, the location of the dewatering area will be discussed and agreed upon by the project team. For the stream channel and the ponded area, sediment removal will consist of a suction dredge or vacuum hose attached to pumps, tubing, and piping that will direct the sediment to a water processing site at the MOC. Removal activities will be conducted in a manner that minimizes stream headcutting and follows Environmental Best Practice Guidelines 3 from the Wetlands and Waterways Works Manual (Gallagher, 2003). The field team will carefully observe conditions during the removal to ensure that damage to the wetland is kept to a minimum. If any problems such as headcutting are observed during sediment removal, the field team will immediately stop operations and discuss the problem with the project team. The depth of sediment removal will depend on site conditions during removal operations but is not anticipated to exceed 2 feet in any removal area.

The water processing site will consist of a Geotube placed atop an impermeable liner. The proposed location of the water processing area is shown in Figure 10. The water processing area will hold a volume of approximately 20,000 gallons of water. One *MULTI INCREMENT*® (MI)[1] sample will be collected prior to the construction of the water

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

processing area, and one MI sample will be collected after the water impoundment area has been disassembled. 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 TestAmerica for all Site 28 COCs. Water from the primary impoundment will be treated through a filtering system and discharged into a secondary impoundment. Wastewater samples will be collected from the secondary impoundment and analyzed at TestAmerica 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 a vegetated upland area that is not within the drainage system, to avoid turbidity and other potential issues.

Bristol anticipates that the sediment will remain in the Geotube through the winter, for disposal in 2013. The Geotube will be cut open, and the sediments will be transferred into bulk bags for subsequent transportation and disposal. Bristol will keep the QAR and USACE Project Manager updated on the expected time frame for disposal. Geotechnical samples and laboratory analytical samples will be collected from the sediment prior to disposal as described in the 2012 Work Plan (Bristol, 2012b). Final disposal of the sediment will be determined based on the results from these samples.

Downstream sediment controls will be used to minimize migration of sediment off site. A sediment trap will be installed immediately downstream of the work site to capture particles that may become suspended in the water column during construction activities (see Figure 10). The sediment trap will consist of a metal box placed across the stream channel that will contain straw wattles and other filtration material such as sorbent boom. Sediment controls will be monitored throughout the sediment removal effort and adjusted

or changed as necessary. Details and specifications of sediment controls are presented in the Storm Water Pollution Prevention Plan (Bristol, 2012c).

Surface water samples will be collected at three locations before, during, and after the sediment-removal process. Sample locations will be downstream of the sediment-removal operations and selected in consultation with the on-site USACE QAR. During active sediment removal operations, surface water samples will be collected at one location immediately downstream of the sediment trap to confirm that the operations are not adversely affecting water quality downstream of the sediment trap. The field team will visually observe and document water conditions (such as turbidity) downstream of the sediment trap during active sediment removal. One surface water sample will be collected per every 1–2 hours of disturbance, based on visual observations, with samples collected at a higher frequency if disturbances downstream of the sediment trap are observed. A maximum of three surface water samples will be collected per day. The surface water samples will be collected as described in the 2012 Work Plan (Bristol, 2012a).

Sediment confirmation samples will be collected and analyzed for all Site 28 COCs if any sediment remains in an area after the sediment removal operations. Confirmation samples will not be collected from a non-sediment matrix. If all sediment has been removed down to the soil or vegetative mat beneath the sediment, no confirmation samples will be collected.

All sediment-removal areas, in addition to the locations of surface water samples and any confirmation samples collected from removal areas, will be surveyed by the on-site surveyor. A Phase I Sediment Removal Action Report will be prepared describing the sediment-removal activities performed at Site 28 during the 2012 field season. The report will be separate from the main 2012 NE Cape report and will detail the effort involved and effectiveness of specific methods employed throughout the operation, including but

not limited to removal techniques, downstream sediment containment, dewatering, and water treatment. The report will include photographs of the site removal areas, infrastructure, dewatering areas, and treatment system. Maps will be included to show the Site 28 topography, location of all samples collected, locations of sediment removed and of that recommended for future removal, and any infrastructure/physical components necessary for future, full-scale sediment-removal operations. Recommendations will be made for future sediment-removal operations based on information gleaned from 2012 operations.

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6.0 REFERENCES

Alaska Department of Environmental Conservation. 2006. Technical Memorandum 06-001: *Biogenic Interference and Silica Gel Cleanup*. Division of Spill Prevention and Response, Contaminated Sites Program. May.

Bristol Engineering Services Corporation. 2012. *Site 28 Technical Memorandum: Northeast Cape HTRW Remedial Actions.* Revision 1. Contract No. W911KB-06-D-0007. F10AK096903_03.10_0021_a. February.

Bristol Environmental Remediation Services, LLC (Bristol). 2012a. *Northeast Cape HTRW Remedial Actions Quality Assurance Project Plan.* Prepared for US Army Corps of Engineers, Alaska District. Contract No. W911KB-06-D-0007/W911KB-12-C-003. FUDS No. F10AK096903. August.

Bristol. 2012b. *Northeast Cape HTRW Remedial Actions Work Plan, Northeast Cape, St. Lawrence Island, Alaska.* Revision 1. July.

Bristol. 2012c. *Northeast Cape HTRW Remedial Actions Stormwater Pollution Prevention Plan, Northeast Cape, St. Lawrence Island, Alaska.* May.

Gallagher, Steve. 2003. *Wetlands and Waterways Works Manual, Environmental Best Practice Guidelines 3. Excavating in Waterways.*

Montgomery Watson. 1996. *Draft Phase II Remedial Investigation/Feasibility Study, Northeast Cape, Alaska*. December 6.

Montgomery Watson. 1999. *Final Phase II Remedial Investigation, Northeast Cape, St. Lawrence Island, Alaska*. Volume I: Report Body. August.

Montgomery Watson Harza. 2003. *Phase III Remedial Investigation Northeast Cape, St. Lawrence Island, Alaska*. Final.

Shannon & Wilson, Inc. 2005. *Phase IV Remedial Investigation, Northeast Cape, St. Lawrence Island, Alaska.* Final. June.

US Army Corps of Engineers (USACE), Alaska District. *2009 Decision Document Hazardous, Toxic, and Radioactive Waste (HTRW) Project #F10AK096903 Northeast Cape Formerly Used Defense Site (FUDS) St. Lawrence Island, Alaska*. January.

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TABLE

Table 1 - 2012 Site 28 Sediment Analytical Results
(all values in mg/kg)

Analyte	Analytical Method	Sediment Cleanup Level[1]	Sample ID	12NC28SS001	12NC28SS002	12NC28SS003	12NC28SS004	12NC28SS005	12NC28SS105	12NC28SS006	12NC28SS007	12NC28SS008	12NC28SS009	12NC28SS010	12NC28SS011	12NC28SS012	12NC28SS013	12NC28SS014	12NC28SS114	12NC28SS015	12NC28SS016	12NC28SS017	12NC28SS018	12NC28SS019	12NC28SS020	12NC28SS021
			Sample Interval (feet bgs)	0–1	0–1.75	0–1.5	0–1	0–1	0–1	0–1	0–1.25	0–1	0–1	0–2	0–1.75	0–1.5	0–1.5	0–1.5	0–1.5	0–0.75	0–1	0–0.75	0–1	0–1	0–1.5	0–1.5
			Laboratory ID	580-34102-1	580-34102-2	580-34102-3	580-34102-4	580-34102-5	580-34102-6	580-34102-7	580-34102-8	580-34102-9	580-34102-10	580-34102-11	580-34102-12	580-34102-13	580-34102-14	580-34102-15	580-34102-16	580-34102-17	580-34102-18	580-34102-19	580-34102-20	580-34102-21	580-34102-22	580-34102-23
			Location ID	028-001	028-002	028-003	028-004	028-005	028-005	028-006	028-007	028-008	028-009	028-010	028-011	028-012	028-013	028-014	028-014	028-015	028-016	028-017	028-018	028-019	028-020	028-021
			Collection Date	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012	7/19/2012	7/19/2012
Percent Moisture (%)	EPA Moisture	--	44	65	59	73	72	71	82	37	75	77	52	59	82	84	61	61	73	62	83	64	56	61	70
DRO	AK102	3500	370	230	1800	470	8900	6500	830	190	430	330	790	800	480	2200	45000	48000	110000	65000	2900	43000	90000	31000	2300
DRO with Silica Gel	AK102	3500	310	160	1700	300	9000	6500	810	190	350	230	630	680	440	2100	41000	47000	110000	63000	3000	40000	42000	31000	1700
RRO	AK103	3500	900	540	1800	740	2600	2500	1400	250	650	610	800 J	1800	880	1400	14000 QL	15000 QL	24000 QL	13000 QL	980	13000 QL	9800	6800 MH	4000 MH
RRO with Silica Gel	AK103	3500	330	170	1300	310	1700	2000	680	120	240	250	300	1000	330	710	13000	13000	23000	11000	640	8900	7300	4200	1100
Total Organic Carbon	EPA 9060-Quad	--	63000	22000	73000	120000	150000	120000	31000	22000	66000	120000	37000	27000	110000	130000	140000	150000	170000	140000	120000	120000	110000	96000	180000
GRO	AK101	--	ND (0.94) ML	ND (1.5) ML	ND (1.2) ML	ND (2) ML	ND (2.1) ML	ND (1.8) ML	ND (3) ML	ND (0.93) ML	ND (2.2) ML	ND (2.7) ML	ND (0.84) ML	ND (1.5) ML	ND (3.9) ML	ND (5.7) ML	6.2 ML	7.4 B ML	5.4 J ML	52 ML	ND (2.7) ML	25 ML	28 ML	16 ML	2 J ML
Benzene	EPA 8260B	--	ND (0.0086)	ND (0.014)	ND (0.011)	ND (0.018)	ND (0.019)	ND (0.016)	ND (0.027)	ND (0.0085)	ND (0.020)	ND (0.025)	ND (0.0077)	ND (0.014)	ND (0.035)	ND (0.051)	ND (0.014)	ND (0.017)	ND (0.021)	ND (0.013)	ND (0.025)	ND (0.016)	0.032	0.0083 J	ND (0.017)
Ethylbenzene	EPA 8260B	--	ND (0.026)	ND (0.041)	ND (0.032)	ND (0.055)	ND (0.057)	ND (0.049)	ND (0.081)	ND (0.025)	ND (0.061)	ND (0.074)	ND (0.023)	ND (0.042)	ND (0.110)	ND (0.150)	0.15	0.18	0.039 J	0.77	ND (0.074)	0.3	0.65	0.19	ND (0.051)
o-Xylene	EPA 8260B	--	ND (0.026)	ND (0.041)	ND (0.032)	ND (0.055)	ND (0.057)	ND (0.049)	ND (0.081)	ND (0.025)	ND (0.061)	ND (0.074)	ND (0.023)	ND (0.042)	ND (0.110)	ND (0.150)	0.43	0.53	0.081 J	2.2	ND (0.074)	1.3	1.5	0.35	ND (0.051)
m,p-Xylene	EPA 8260B	--	ND (0.017)	ND (0.027)	ND (0.021)	ND (0.037)	ND (0.038)	ND (0.033)	ND (0.054)	ND (0.017)	ND (0.041)	ND (0.050)	ND (0.015)	ND (0.028)	ND (0.070)	ND (0.100)	0.59	0.73	0.14	3.3	ND (0.049)	1.8	2.6	0.46	ND (0.034)
Total Xylenes	EPA 8260B	--	ND (0.043)	ND (0.068)	ND (0.053)	ND (0.092)	ND (0.095)	ND (0.082)	ND (0.135)	ND (0.042)	ND (0.102)	ND (0.124)	ND (0.038)	ND (0.07)	ND (0.180)	ND (0.250)	1.02	1.26	0.221 J	5.5	ND (0.123)	3.1	4.1	0.81	ND (0.085)
Toluene	EPA 8260B	--	ND (0.026)	ND (0.041)	ND (0.032)	ND (0.055)	ND (0.057)	ND (0.049)	ND (0.081)	ND (0.025)	ND (0.061)	ND (0.074)	ND (0.023)	ND (0.042)	ND (0.110)	ND (0.150)	ND (0.043)	ND (0.051)	ND (0.063)	ND (0.040)	ND (0.074)	ND (0.048)	0.016 J	ND (0.048)	ND (0.051)
PCB-1016	EPA 8082A	0.7	ND (0.0088)	ND (0.014)	ND (0.012)	ND (0.017)	ND (0.018)	ND (0.017)	ND (0.027)	ND (0.0079)	ND (0.019)	ND (0.021)	ND (0.01)	ND (0.012)	ND (0.026)	ND (0.03)	ND (0.012)	ND (0.012) QL	ND (0.018) QL	ND (0.012)	ND (0.029)	ND (0.013)	ND (0.011)	ND (0.012)	ND (0.017)
PCB-1221	EPA 8082A	0.7	ND (0.018)	ND (0.027)	ND (0.024)	ND (0.034)	ND (0.035)	ND (0.035)	ND (0.055)	ND (0.016)	ND (0.038)	ND (0.042)	ND (0.02)	ND (0.024)	ND (0.052)	ND (0.059)	ND (0.024)	ND (0.025) QL	ND (0.035) QL	ND (0.025)	ND (0.059)	ND (0.027)	ND (0.022)	ND (0.025)	ND (0.033)
PCB-1232	EPA 8082A	0.7	ND (0.018)	ND (0.027)	ND (0.024)	ND (0.034)	ND (0.035)	ND (0.035)	ND (0.055)	ND (0.016)	ND (0.038)	ND (0.042)	ND (0.02)	ND (0.024)	ND (0.052)	ND (0.059)	ND (0.024)	ND (0.025) QL	ND (0.035) QL	ND (0.025)	ND (0.059)	ND (0.027)	ND (0.022)	ND (0.025)	ND (0.033)
PCB-1242	EPA 8082A	0.7	ND (0.0088)	ND (0.014)	ND (0.012)	ND (0.017)	ND (0.018)	ND (0.017)	ND (0.027)	ND (0.0079)	ND (0.019)	ND (0.021)	ND (0.01)	ND (0.012)	ND (0.026)	ND (0.03)	ND (0.012)	ND (0.012) QL	ND (0.018) QL	ND (0.012)	ND (0.029)	ND (0.013)	ND (0.011)	ND (0.012)	ND (0.017)
PCB-1248	EPA 8082A	0.7	ND (0.0088)	ND (0.014)	ND (0.012)	ND (0.017)	ND (0.018)	ND (0.017)	ND (0.027)	ND (0.0079)	ND (0.019)	ND (0.021)	ND (0.01)	ND (0.012)	ND (0.026)	ND (0.03)	ND (0.012)	ND (0.012) QL	ND (0.018) QL	ND (0.012)	ND (0.029)	ND (0.013)	ND (0.011)	ND (0.012)	ND (0.017)
PCB-1254	EPA 8082A	0.7	ND (0.0088)	ND (0.014)	ND (0.012)	ND (0.017)	ND (0.018)	ND (0.017)	ND (0.027)	ND (0.0079)	ND (0.019)	ND (0.021)	ND (0.01)	ND (0.012)	ND (0.026)	ND (0.03)	ND (0.012)	ND (0.012) QL	ND (0.018) QL	ND (0.012)	ND (0.029)	ND (0.013)	ND (0.011)	ND (0.012)	ND (0.017)
PCB-1260	EPA 8082A	0.7	ND (0.0088)	ND (0.014)	0.044	0.017 J	0.025 J	0.023 J	ND (0.027)	ND (0.0079)	ND (0.019)	ND (0.021)	0.011 J	0.016 J	ND (0.026)	0.022 J	0.29	0.23 QL	0.14 QL	0.31	0.02 J	0.16	0.12	0.1	ND (0.017)
PCBs-Total	EPA 8082A	0.7	ND (0.018)	ND (0.027)	0.044	0.017 J	0.025 J	0.023 J	ND (0.055)	ND (0.016)	ND (0.038)	ND (0.042)	0.011 J	0.016 J	ND (0.052)	0.022 J	0.29	0.23 QL	0.14 QL	0.31	0.02 J	0.16	0.12	0.1	ND (0.033)
Arsenic	EPA 6020	93	11	7.6	9.4	11	11	12	30	3.5	28	63	7.8	4.5	66	90	19	17	20	15	100	9.2	8	9.8	6
Barium	EPA 6020	--	58	48	52	67	75	69	120	19	83	120	40	52	150	160	130	130	120	140	180	110	100	76	100
Cadmium	EPA 6020	--	0.095 J	0.098 J	0.11 J	0.14 J	0.13 J	0.12 J	0.23 J	0.069 J	0.14 J	0.077 J	0.093 J	0.3 J	0.16 J	0.16 J	0.64	0.61	0.61 J	0.71	0.25 J	0.31 J	0.38 J	0.18 J	0.27 J
Chromium	EPA 6020	270	6.5 MH	5.9 MH	6.5 MH	9.3 MH	10 MH	9.6 MH	13 MH	2.7 MH	11 MH	6.9 MH	6 J MH	7.2 MH	10 MH	12 MH	21 MH	22 MH	20 MH	22 MH	13 MH	18 MH	16	12	13
Lead	EPA 6020	530	5.1	6.5	6.6	8.1	9.5	7.7	14	4.3	8.9	6.6	5.5	9.5	9.2	12	31	31	36	33	13	19	20	11	9.1
Nickel	EPA 6020	--	4.2	5.3	4.4	6.3	7.7	6.4	12	3.4	7.2	3.8	4.9	8.1	6.4	6.7	14	15	13	15	6.7	11	9.5	6.7	9.9
Selenium	EPA 6020	--	0.71 J	0.73 J	0.73 J	1 J	1 J	0.99 J	1.5 J	0.37 J	0.88 J	1 J	0.53 J	0.8 J	1.4 J	1.6 J	1.3 J	1.2 J	1.2 J	1.4	1.3 J	1.1 J	1.1 J	0.89 J	1.3 J
Silver	EPA 6020	--	0.035 J	0.032 J	0.034 J	0.05 J	0.055 J	0.053 J	0.058 J	0.016 J	0.057 J	0.047 J	0.031 J	0.037 J	0.061 J	0.066 J	0.14 J	0.15 J	0.14 J	0.18 J	0.081 J	0.097 J	0.093 J	0.055 J	0.058 J
Vanadium	EPA 6020	--	12	12	13	15	21	19	26	5.5	20	16	11	13	22	26	32	34	31	35	29	28	25	21	24
Zinc	EPA 6020	96	20	21	27	32	37	31	61	13	48	51	22	26	56	91	150	150	140	170	75	84	77	49	56
Mercury	EPA 7471A	--	0.02 J	0.017 J	0.04	0.046 J	0.065	0.063	0.043 J	0.016 J	0.046 J	0.031 J	0.036	0.023 J	0.062 J	0.11	0.13	0.13	0.14	0.12	0.056 J	0.031 J	0.074	0.065	0.085
1-Methylnaphthalene	EPA 8270C SIM	--	0.024	0.021	0.064	0.025	ND (0.018)	0.2	0.08	0.02	0.029	ND (0.010)	0.045	0.25	0.17	0.069	20	17	18	94	0.29	45	130	38	4.4
2-Methylnaphthalene	EPA 8270C SIM	0.6	0.011	0.015	ND (0.006)	0.019	ND (0.018)	ND (0.0083)	0.049	0.013	0.021	ND (0.01)	0.05	0.21	0.26	0.02 J	20	16	25	160	ND (0.014)	58	200	41	6.5
Acenaphthene	EPA 8270C SIM	0.5	ND (0.0043)	ND (0.007)	ND (0.006)	ND (0.0089)	ND (0.18)	ND (0.0083)	0.018 J	0.0048 J	0.016 J	0.042	0.0059 J	0.015	ND (0.013)	ND (0.015)	1.3	1.1	1.2	3.8	ND (0.014)	1.3	3.2	1.2	0.24
Acenaphthylene	EPA 8270C SIM	--	0.01	0.0069 J	0.039	0.017 J	0.15	0.1	0.016 J	0.0044 J	0.014 J	0.0084 J	0.0032 J	0.017	0.016 J	0.029 J	0.4	0.49	0.39	0.94	0.63	0.34	1	0.52	0.064
Anthracene	EPA 8270C SIM	--	ND (0.0043)	ND (0.007)	ND (0.006)	0.0068 J	0.014 J	0.016 J	0.012 J	0.0046 J	0.024	0.011 J	0.0032 J	ND (0.0059)	ND (0.013)	ND (0.015)	0.2	0.22	0.17	0.24	0.011 J	0.11	0.26	0.28	0.12
Benzo(a)anthracene	EPA 8270C SIM	--	0.0034 J	ND (0.007)	ND (0.006)	ND (0.0089)	0.017 J	0.017	0.018 J	0.0027 J	0.045	0.0077 J	ND (0.0049)	0.0053 J	ND (0.013)	0.0098 J	0.15	0.12	0.077	0.17	0.021 J	0.32	0.11	0.15	0.061
Benzo(a)pyrene	EPA 8270C SIM	--	ND (0.0043)	ND (0.007)	ND (0.006)	ND (0.0089)	ND (0.018)	ND (0.0083)	0.023 J	ND (0.0037)	0.031	0.002 J	ND (0.0049)	ND (0.0059)	ND (0.013)	ND (0.015)	0.047	ND (0.013)	ND (0.0093)	ND (0.063)	0.025 J	0.079	0.027	0.039	0.023
Benzo(g,h,i)perylene	EPA 8270C SIM	1.7	ND (0.0043)	ND (0.007)	ND (0.006)	ND (0.0089)	ND (0.018)	ND (0.0083)	ND (0.014)	ND (0.0037)	0.019 J	ND (0.01)	ND (0.0049)	ND (0.0059)	ND (0.013)	ND (0.015)	0.054	0.057	0.032	0.12 J	ND (0.014)	0.05	0.032	ND (0.0062)	0.015 J
Benzo(b)fluoranthene	EPA 8270C SIM	--	ND (0.0043)	ND (0.007)	ND (0.006)	ND (0.0089)	ND (0.018)	0.031	0.04	0.0085	0.063	0.027	ND (0.0049)	ND (0.0059)	ND (0.013)	0.04	0.19	0.2	0.11	0.29	0.05	0.23	0.12	0.094	0.049
Benzo(k)fluoranthene	EPA 8270C SIM	--	ND (0.0043)	ND (0.007)	ND (0.006)	ND (0.0089)	ND (0.018)	ND (0.0083)	ND (0.014)	ND (0.0037)	0.022	ND (0.01)	ND (0.0049)	ND (0.0059)	ND (0.013)	0.0098 J	0.048	0.049	0.025	0.066 J	0.0084 J	0.065	0.025	0.027	0.017
Chrysene	EPA 8270C SIM	--	0.0058 J	ND (0.007)	0.018	ND (0.0089)	0.067	0.046	0.038	0.0068 J	0.1	0.022	ND (0.0049)	0.0089 J	ND (0.013)	0.024 J	0.35	0.27	0.18	0.44	0.036	0.46	0.26	0.23	0.083
Dibenz(a,h)anthracene	EPA 8270C SIM	--	ND (0.0043)	ND (0.007)	ND (0.006)	ND (0.0089)	ND (0.018)	ND (0.0083)	ND (0.014)	ND (0.0037)	ND (0.0099)	ND (0.01)	ND (0.0049)	ND (0.0059)	ND (0.013)	ND (0.015)	ND (0.013)	ND (0.013)	ND (0.0093)	ND (0.063)	ND (0.014)	ND (0.0067)	ND (0.011)	ND (0.0062)	ND (0.0081)
Fluoranthene	EPA 8270C SIM	2	0.02	0.016	0.016	0.016 J	0.13	0.099	0.14	0.029	0.19	0.069	0.0048 J	0.016	0.0086 J	0.04	0.83	0.68	0.55	1.2	0.097	2.1	0.65	1.2	0.53
Fluorene	EPA 8270C SIM	0.8	0.019	0.014	0.014	0.012 J	0.069	0.061	0.042	0.016	0.032	0.08	0.013	0.054	0.024 J	0.014 J	3.1	2.5	3.2	5.1	0.054	3.5	4.6	3.8	0.45
Indeno(1,2,3-cd)pyrene	EPA 8270C SIM	3.2	ND (0.0043)	ND (0.007)	ND (0.006)	ND (0.0089)	ND (0.018)	ND (0.0083)	ND (0.014)	ND (0.0037)	0.027	ND (0.01)	ND (0.0049)	ND (0.0059)	ND (0.013)	ND (0.015)	0.058	0.055	0.033	0.17	ND (0.014)	0.064	0.04	0.024	0.022
Naphthalene	EPA 8270C SIM	1.7	0.0043 J	0.011 J	0.015	0.021	0.049	0.047	0.034	0.012	0.021	0.031	0.018	0.082	0.14	0.021 J	5.8	5.3	5.1	73	0.12	20	68	5.9	1.2
Phenanthrene	EPA 8270C SIM	4.8	0.027	0.024	0.051	0.036	0.23	0.2	0.11	0.052	0.14	0.12	0.018 B	0.051	0.03	0.049	2.8	2.6	2.8	4.9	0.088	4.8	4.8	4.9	0.74
Pyrene	EPA 8270C SIM	--	0.02	0.017	0.036	0.018	0.11	0.093	0.12	0.026	0.21	0.069	0.0075 J	0.02	0.018 J	0.082	1	0.88	0.59	1.1	0.16	1.9	0.5	0.89	0.42
Sum LPAHs		7.8	0.0603 J	0.0599 J	0.119	0.0928 J	0.512 J	0.424 J	0.232 J	0.0938 J	0.247 J	0.2924 J	0.0533 J B	0.219	0.21 J	0.113 J	13.6	12.21	12.86	87.98	0.903 J	30.05	81.86	16.6	2.814
Sum HPAHs		9.6	0.0292 J	0.016	0.07	0.034 J	0.324 J	0.286	0.379 J	0.073 J	0.707 J	0.1967 J	0.0123 J	0.0979 J	0.0266 J	0.2056 J	2.727	2.311	1.597	3.556 J	0.3974 J	5.268	1.764	2.654	1.22J

Color Code:
Positive Result Exceeds Cleanup Level
Adjacent sample is a field duplicate

Notes:
[1] Site-specific cleanup levels established in 2009 Decision Document (US Army Corps of Engineers [USACE], Alaska District. 2009 Decision Document Hazardous, Toxic, and Radioactive Waste [HTRW] Project #F10AK096903 Northeast Cape Formerly Used Defense Site [FUDS] St. Lawrence Island, Alaska. January)

B = analyte was detected in the method or trip blank at a concentration less than 10 times the sample concentration; the result is an estimate with high bias
J = result is an estimated value between the detection limit and the limit of quantitation
MH = result is an estimate with high bias due to matrix interference
ML = result is an estimate with low bias due to matrix interference
MN = result is an estimate with no bias direction due to matrix interference
QH = result is an estimated value with high bias due to a quality control failure
QL = result is an estimated value with low bias due to a quality control failure
QN = result is an estimated value with an uncertain bias due to a quality control failure

-- = No cleanup value specified
AK = Alaska Test Method
bgs = below ground surface
DRO = diesel range organics
EPA = U.S. Environmental Protection Agency
GRO = gasoline range organics
HPAH = high molecular weight ponynuclear aromatic hydrocarbon
LPAH = low molecular weight ponynuclear aromatic hydrocarbon
mg/kg = milligrams per kilogram
ND = not detected, limit of detection in parentheses
PCB = polychlorinated biphenyl
RRO = residual range organics
SIM = selective ion monitoring

Table 1 - 2012 Site 28 Sediment Analytical Results (continued)
(all values in mg/kg)

		Sample ID	12NC28SS022	12NC28SS023	12NC28SS024	12NC28SS025	12NC28SS026	12NC28SS126	12NC28SS027	12NC28SS028	12NC28SS029	12NC28SS030	12NC28SS031	12NC28SS032	12NC28SS033	12NC28SS034	12NC28SS035	12NC28SS036	12NC28SS037	12NC28SS038	12NC28SS138	12NC28SS039	12NC28SS040	12NC28SS041	12NC28SS042
		Sample Interval (feet bgs)	0–0.75	0–0.75	0–2	0–2	0–2	0–2	0–0.75	0–1	0–1.25	0–1.5	0–1.25	0–1	0–0.75	0–0.5	0–0.75	0–0.75	0–0.5	0–0.75	0–0.75	0–0.75	0–0.75	0–0.75	0–1
		Laboratory ID	580-34102-24	580-34102-25	580-34102-26	580-34102-27	580-34102-28	580-34102-29	580-34102-30	580-34102-31	580-34102-32	580-34102-33	580-34102-34	580-34102-35	580-34102-36	580-34102-37	580-34102-38	580-34102-39	580-34102-40	580-34102-41	580-34102-42	580-34102-43	580-34102-44	580-34102-45	580-34102-46
		Location ID	028-022	028-023	028-024	028-025	028-026	028-026	028-027	028-028	028-029	028-030	028-031	028-032	028-033	028-034	028-035	028-036	028-037	028-038	028-038	028-039	028-040	028-041	028-042
		Collection Date	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/19/2012	7/20/2012	7/20/2012	7/20/2012	7/20/2012	7/20/2012	7/20/2012
Analyte	**Analytical Method**	**Sediment Cleanup Level[1]**																							
Percent Moisture (%)	EPA Moisture	--	81	81	67	75	78	75	83	83	66	68	55	89	87	83	73	73	85	83	80	89	89	92	87
DRO	AK102	3500	6300	4800	26000 J	6900	11000	12000	33000	4100	63000	43000	37000	1500	2100	2900	21000	97000	1500	2700	4500	2400	9800	3900	38 J B
DRO with Silica Gel	AK102	3500	5900	4200	22000 J	6000	9300	9500	29000	3700	100000	33000	31000	1100	1700	2200	17000	80000	580	2600	3900	2300	8600	3700	63 J
RRO	AK103	3500	3800 MH	1400 MH	3800 MH	3200 MH	3900 MH	4000 MH	5800 MH	3900 MH	17000 MH	6900 MH	3800 MH	2000 MH	4100 MH	7700 MH	13000 MH	34000 ML, MN	7900 MH	480 QN ML	890 QN ML	940 ML	2200 ML	1500 ML	160 J ML
RRO with Silica Gel	AK103	3500	1400	530	1100 ~~MH~~	1000	1100	1200	3400	2000	14000	3000	1600	670	1500	3500	7600	28000 QL	1900	360	550	310 J	810	570	ND (190)
Total Organic Carbon	EPA 9060-Quad	--	87000	110000	140000	120000	230000	210000	200000	180000	120000	140000	92000	200000	290000	190000	210000	180000	320000	150000	140000	380000	350000	330000	370000
GRO	AK101	--	2 J ML	ND (3.2) ML	25 ML	20 ML	14 J ML	11 J ML	2.3 J ML	ND (4) ML	24 ML	60 ML	4.4 ML	4.8 J ML	ND (5.3) ML	ND (3.6) ML	14 ML	23 ML	ND (4) ML	20 ML	13 ML	ND (7) ML	ND (5.6) ML	ND (6.8) ML	ND (4.4) ML
Benzene	EPA 8260B	--	ND (0.025)	ND (0.029)	ND (0.021)	ND (0.023)	ND (0.041)	ND (0.034)	ND (0.038)	ND (0.037)	ND (0.021)	ND (0.028)	ND (0.011)	ND (0.062)	ND (0.048)	ND (0.033)	ND (0.030)	0.013 J	ND (0.036)	ND (0.034)	ND (0.027)	ND (0.064)	ND (0.051)	ND (0.062)	ND (0.040)
Ethylbenzene	EPA 8260B	--	ND (0.076)	ND (0.087)	0.053 J	0.43	0.27	0.23	ND (0.110)	ND (0.110)	ND (0.063)	ND (0.083)	0.021 J	ND (0.180)	ND (0.140)	ND (0.099)	0.33	0.4	ND (0.110)	0.15	0.100 J	0.073 J	0.091 J	ND (0.190)	ND (0.120)
o-Xylene	EPA 8260B	--	ND (0.076)	ND (0.087)	0.074 J	0.76	0.29	0.24	ND (0.110)	ND (0.110)	ND (0.063)	ND (0.083)	ND (0.032)	ND (0.180)	ND (0.140)	ND (0.099)	0.65	0.89	ND (0.110)	0.42	0.3	ND (0.190)	ND (0.150)	ND (0.190)	ND (0.120)
m,p-Xylene	EPA 8260B	--	ND (0.051)	ND (0.058)	0.12	1.8	0.91	0.73	ND (0.077)	ND (0.073)	0.039 J	0.046 J	0.032 J	ND (0.120)	ND (0.096)	ND (0.066)	1.1	1.5	ND (0.073)	0.58	0.42	0.130 J	0.140 J	ND (0.120)	ND (0.081)
Total Xylenes	EPA 8260B	--	ND (0.127)	ND (0.145)	0.194 J	2.56	1.2	0.97	ND (0.187)	ND (0.183)	0.039 J	0.046 J	0.032 J	ND (0.3)	ND (1.496)	ND (0.165)	1.75	2.39	ND (0.183)	1	0.72	0.130 J	0.140 J	ND (0.310)	ND (0.201)
Toluene	EPA 8260B	--	ND (0.076)	ND (0.087)	ND (0.062)	ND (0.069)	ND (0.120)	ND (0.100)	ND (0.110)	ND (0.110)	ND (0.063)	ND (0.083)	ND (0.032)	ND (0.180)	ND (0.140)	ND (0.099)	ND (0.090)	ND (0.063)	ND (0.110)	ND (0.100)	ND (0.082)	ND (0.190)	ND (0.150)	ND (0.190)	ND (0.120)
PCB-1016	EPA 8082A	0.7	ND (0.026)	ND (0.024)	ND (0.015)	ND (0.019)	ND (0.022)	ND (0.018)	ND (0.028)	ND (0.03)	ND (0.014)	ND (0.015)	ND (0.011)	ND (0.042)	ND (0.039)	ND (0.029)	ND (0.018)	ND (0.018)	ND (0.032)	ND (0.028)	ND (0.024)	ND (0.046)	ND (0.044)	ND (0.056)	ND (0.036)
PCB-1221	EPA 8082A	0.7	ND (0.051)	ND (0.049)	ND (0.03)	ND (0.038)	ND (0.044)	ND (0.037)	ND (0.057)	ND (0.06)	ND (0.029)	ND (0.031)	ND (0.022)	ND (0.084)	ND (0.079)	ND (0.058)	ND (0.035)	ND (0.036)	ND (0.064)	ND (0.055)	ND (0.048)	ND (0.091)	ND (0.089)	ND (0.11)	ND (0.072)
PCB-1232	EPA 8082A	0.7	ND (0.051)	ND (0.049)	ND (0.03)	ND (0.038)	ND (0.044)	ND (0.037)	ND (0.057)	ND (0.06)	ND (0.029)	ND (0.031)	ND (0.022)	ND (0.084)	ND (0.079)	ND (0.058)	ND (0.035)	ND (0.036)	ND (0.064)	ND (0.055)	ND (0.048)	ND (0.091)	ND (0.089)	ND (0.11)	ND (0.072)
PCB-1242	EPA 8082A	0.7	ND (0.026)	ND (0.024)	ND (0.015)	ND (0.019)	ND (0.022)	ND (0.018)	ND (0.028)	ND (0.03)	ND (0.014)	ND (0.015)	ND (0.011)	ND (0.042)	ND (0.039)	ND (0.029)	ND (0.018)	ND (0.018)	ND (0.032)	ND (0.028)	ND (0.024)	ND (0.046)	ND (0.044)	ND (0.056)	ND (0.036)
PCB-1248	EPA 8082A	0.7	ND (0.026)	ND (0.024)	ND (0.015)	ND (0.019)	ND (0.022)	ND (0.018)	ND (0.028)	ND (0.03)	ND (0.014)	ND (0.015)	ND (0.011)	ND (0.042)	ND (0.039)	ND (0.029)	ND (0.018)	ND (0.018)	ND (0.032)	ND (0.028)	ND (0.024)	ND (0.046)	ND (0.044)	ND (0.056)	ND (0.036)
PCB-1254	EPA 8082A	0.7	ND (0.026)	ND (0.024)	ND (0.015)	ND (0.019)	ND (0.022)	ND (0.018)	ND (0.028)	ND (0.03)	ND (0.014)	ND (0.015)	ND (0.011)	ND (0.042)	ND (0.039)	ND (0.029)	ND (0.018)	ND (0.018)	ND (0.032)	ND (0.028)	ND (0.024)	ND (0.046)	ND (0.044)	ND (0.056)	ND (0.036)
PCB-1260	EPA 8082A	0.7	0.019 J	0.079	0.02 J	0.015 J	ND (0.022)	ND (0.018)	0.056 J	0.072	0.24	0.046	0.086	0.065 J	0.1	0.2	0.45	2.1 QH	0.12	0.018 J	ND (0.024)	ND (0.046)	ND (0.044)	ND (0.056)	ND (0.036)
PCBs-Total	EPA 8082A	0.7	0.019 J	0.079	0.02 J	0.015 J	ND (0.044)	ND (0.037)	0.056 J	0.072	0.24	0.046	0.086	0.065 J	0.1	0.2	0.45	2.1 QH	0.12	0.018 J	ND (0.048)	ND (0.091)	ND (0.089)	ND (0.11)	ND (0.072)
Arsenic	EPA 6020	93	22	91	27	31	8.5 QN	43 QN	45	55	23	15	9.4	68	57	7.6	6.4	12	4.5	45	33	9.8	11	9.7	11
Barium	EPA 6020	--	140	160	110	110	73 QN	130 QN	110	140	120	94	79	180	160	140	110	160	95	110 MH	100 MH	61 MH	64 MH	76 MH	88 MH
Cadmium	EPA 6020	--	0.25 J	0.11 J	0.22 J	0.17 J	0.12 J	0.086 J	0.063 J	0.14 J	0.89	0.29 J	0.22 J	0.38 J	0.41 J	0.9 J	0.72	1.4	0.59 J	0.11 J	0.13 J	0.64 J	0.43 J	0.13 J	0.36 J
Chromium	EPA 6020	270	17	9.1	14	10	5.3 QN	8.9 QN	8.3	11	15	15	15	11	10	22	18	35	14	8.8 MH	8.3 MH	9.7 MH	8.4 MH	9.5 MH	12 MH
Lead	EPA 6020	530	13	7.2	11	8.8	4.6	6.9	9.6	16	47	15	12	18	16	31	34	91	24	7.9	7.5	12	14	17	19
Nickel	EPA 6020	--	11	3.8	7.1	6.1	4.8	5.3	5	6.1	9	9.6	8.1	11	9	16	12	24	15	5.6 MH	5.3 MH	6.6 MH	6.4 MH	6.4 MH	8.6 MH
Selenium	EPA 6020	--	1.5 J	1.3 J	1.2 J	1.3 J	1.1 J	1.3 J	1.2 J	1.3 J	1.1 J	1.1 J	0.87 J	2.2 J	2.3 J	1.9 J	1.4 J	1.7 J	1.9 J	1.4 J	1.1 J	2.8 J	2.7 J	2.1 J	1.9 J
Silver	EPA 6020	--	0.08 J	0.049 J	0.067 J	0.054 J	ND (0.071)	ND (0.071)	ND (0.1)	0.071 J	0.16 J	0.093 J	0.072 J	0.15 J	0.12 J	0.15 J	0.13 J	0.31 J	0.19 J	ND (0.1)	0.048 J	0.15 J	0.13 J	0.13 J	0.16 J
Vanadium	EPA 6020	--	36	21	27	22	11	17	19	24	28	29	22	28	23	33	28	40	22	18 MH	17 MH	26 MH	23 MH	26 MH	31 MH
Zinc	EPA 6020	96	97	37	54	39	22	22	42	51	180	77	67	220	190	210	150	380	220	53 MH	45 MH	40 MH	65 MH	32 MH	50 MH
Mercury	EPA 7471A	--	0.087	0.083 J	0.099 J	0.073	0.092	0.075	0.057 J	0.098	0.11	0.078	0.068	0.17	0.19	0.15	0.054	0.12	0.29	0.057 J	0.052 J	0.17	0.14	0.15 J	0.1 J
1-Methylnaphthalene	EPA 8270C SIM	--	2.7	0.35	5.8 J MH	16	9.5	7.4	9.4	0.23	220	16	11	1.3	1.4	0.26	24	200	0.81	2.2 QN	0.81 QN	2.5	3.5	0.8	0.14
2-Methylnaphthalene	EPA 8270C SIM	0.6	3.4	0.33	6.8	27	13	10	11	0.12	290	10	7	1.5	0.65	0.34	33	320	1.2	2.5 QN	0.94 QN	3.3	4.5	0.57	0.077
Acenaphthene	EPA 8270C SIM	0.5	0.48	ND (0.013)	0.54 J ML	0.42	0.16	0.13	0.32	ND (0.014)	7.4	1.8	0.88	0.17	0.3	ND (0.014)	0.74	6.3	0.04	0.17 QN	0.051 QN	0.075	0.082	0.06	0.018 J
Acenaphthylene	EPA 8270C SIM	--	0.11	0.067	0.3	0.17	0.11	0.066	0.71	0.053	2.2	0.79	0.055	0.056	0.095	0.038	0.25	1.9	0.019 J	0.089 QN	0.023 J QN	0.056	0.044	0.066	ND (0.018)
Anthracene	EPA 8270C SIM	--	0.24	0.0097 J	0.054	ND (0.01)	ND (0.011)	ND (0.0095)	0.14 J	ND (0.014)	0.65	0.14 J	0.094 J	ND (0.022)	0.011 J	0.0094 J	0.1	0.66	0.01 J	0.017 J	ND (0.012)	0.014 J	ND (0.022)	ND (0.028)	ND (0.018)
Benzo(a)anthracene	EPA 8270C SIM	--	0.13	ND (0.013)	0.0055 J	ND (0.010)	ND (0.011)	ND (0.0095)	ND (0.14)	ND (0.014)	0.05 J	ND (0.077)	ND (0.055)	ND (0.022)	ND (0.019)	0.021 J	0.059	0.3	ND (0.015)	0.01 J	ND (0.012)	0.023 J	ND (0.022)	ND (0.028)	ND (0.018)
Benzo(a)pyrene	EPA 8270C SIM	--	0.057	ND (0.013)	ND (0.0074)	ND (0.01)	ND (0.011)	ND (0.0095)	ND (0.14)	ND (0.014)	ND (0.069)	ND (0.077)	ND (0.055)	ND (0.022)	ND (0.019)	ND (0.014)	0.03	0.3	0.029 J	ND (0.014)	ND (0.012)	0.049	ND (0.022)	ND (0.028)	ND (0.018)
Benzo(g,h,i)perylene	EPA 8270C SIM	1.7	0.038	0.021 J	ND (0.0074)	ND (0.01)	ND (0.011)	ND (0.0095)	ND (0.14)	0.033	0.12 J	ND (0.077)	ND (0.055)	ND (0.022)	ND (0.019)	ND (0.014)	0.064	0.33	ND (0.015)	ND (0.014)	ND (0.012)	0.037 J	ND (0.022)	ND (0.028)	ND (0.018)
Benzo(b)fluoranthene	EPA 8270C SIM	--	0.19	0.025	ND (0.0074)	ND (0.01)	ND (0.011)	ND (0.0095)	ND (0.14)	0.035	ND (0.069)	ND (0.077)	ND (0.055)	ND (0.022)	ND (0.019)	0.052	0.094	0.6	0.051	0.03	ND (0.012)	0.052	ND (0.022)	ND (0.028)	ND (0.018)
Benzo(k)fluoranthene	EPA 8270C SIM	--	0.055	ND (0.013)	ND (0.0074)	ND (0.01)	ND (0.011)	ND (0.0095)	ND (0.14)	ND (0.014)	ND (0.069)	ND (0.077)	ND (0.055)	ND (0.022)	ND (0.019)	0.0098 J	0.027	0.17 J	0.011 J	ND (0.014)	ND (0.012)	ND (0.023)	ND (0.022)	ND (0.028)	ND (0.018)
Chrysene	EPA 8270C SIM	--	0.31	0.011 J	0.016	ND (0.01)	ND (0.011)	ND (0.0095)	ND (0.14)	ND (0.014)	0.21	ND (0.077)	ND (0.055)	ND (0.022)	ND (0.019)	0.054	0.15	0.67	ND (0.015)	0.023 J	ND (0.012)	0.027 J	ND (0.022)	ND (0.028)	ND (0.018)
Dibenz(a,h)anthracene	EPA 8270C SIM	--	0.027	ND (0.013)	ND (0.0074)	ND (0.01)	ND (0.011)	ND (0.0095)	ND (0.14)	ND (0.014)	ND (0.069)	ND (0.077)	ND (0.055)	ND (0.022)	ND (0.019)	ND (0.014)	0.032	0.32	ND (0.015)	ND (0.014)	ND (0.012)	ND (0.023)	ND (0.022)	ND (0.028)	ND (0.018)
Fluoranthene	EPA 8270C SIM	2	2	0.013 J	0.046	0.0096 J	0.027 QN	0.0062 J QN	0.11 J	0.012 J	0.34	0.068 J	0.067 J	ND (0.022)	0.015 J	0.046	0.16	0.68	0.06	0.068 QN	0.019 J QN	0.016 J	0.014 J	ND (0.028)	ND (0.018)
Fluorene	EPA 8270C SIM	0.8	1.1	0.25	2100 J ML	0.77	0.41	0.25	0.56	0.027 J	16	3.6	2.8	0.37	0.72	0.067	1.3	13	0.11	0.27 QN	0.095 QN	0.23	0.17	0.22	0.059
Indeno(1,2,3-cd)pyrene	EPA 8270C SIM	3.2	0.052	ND (0.013)	ND (0.0074)	ND (0.01)	ND (0.011)	ND (0.0095)	ND (0.14)	ND (0.014)	ND (0.069)	ND (0.077)	ND (0.055)	ND (0.022)	ND (0.019)	ND (0.014)	0.04	0.42	0.039	ND (0.014)	ND (0.012)	0.54	ND (0.022)	ND (0.028)	ND (0.018)
Naphthalene	EPA 8270C SIM	1.7	0.76	0.11	2700 J MH	15000	4.8	6700	1.8	0.052	26	4.2	2.9	0.49	1.4	0.08	6.2	84	0.3	0.76 QN	0.33 QN	1.5	1.7	1.6	0.46
Phenanthrene	EPA 8270C SIM	4.8	4	0.065	0.77	0.24	0.12 QN	0.061 QN	0.86	0.06	10	2.2	0.82	0.095	0.093	0.089	1.4	7.4	0.074	0.27 QN	0.08 QN	0.1	0.07	0.09	ND (0.018)
Pyrene	EPA 8270C SIM	--	1.3	0.015 J B	0.051	0.015 J B	0.027 QN	0.0085 J QN B	0.18 J	0.024 J B	0.34	0.063 J	0.062 J	0.015 J B	0.019 J B	0.074	0.2	0.79	0.055	0.07 QN	0.027 QN	0.028 J	0.017 J	0.021 J	ND (0.018)
Sum LPAHs		7.8	6.69	0.5017 J	7.924 J	4801.6	5.6	6700.507	4.39 J	0.542 J	62.25	12.73 J	7.549 J	1.181	2.619 J	0.8834 J	9.99	113.26	0.724 J	1.576 J QN	0.579 J QN	1.975 J	2.066	2.036	0.537 J
Sum HPAHs		9.6	4.159	0.085 B J	0.113 J	0.1185 J B	0.054	0.0147 J B	0.29 J	0.104 J	1.06 J	0.131 J	0.129 J	0.015 J B	0.034 J B	0.2568 J	0.856	4.58 J B	0.245 J	0.201 J QN	0.046 J QN	0.772 J	0.031 J	0.021 J	ND (0.018)

Color Code:
Positive Result Exceeds Cleanup Level
Adjacent sample is a field duplicate

Notes:
[1] Site-specific cleanup levels established in 2009 Decision Document (US Army Corps of Engineers [USACE], Alaska District. 2009 Decision Document Hazardous, Toxic, and Radioactive Waste [HTRW] Project #F10AK096903 Northeast Cape Formerly Used Defense Site [FUDS] St. Lawrence Island, Alaska. January)

B = analyte was detected in the method or trip blank at a concentration less than 10 times the sample concentration; the result is an estimate with high bias
J = result is an estimated value between the detection limit and the limit of quantitation
MH = result is an estimate with high bias due to matrix interference
ML = result is an estimate with low bias due to matrix interference
MN = result is an estimate with no bias direction due to matrix interference
QH = result is an estimated value with high bias due to a quality control failure
QL = result is an estimated value with low bias due to a quality control failure
QN = result is an estimated value with an uncertain bias due to a quality control failure

-- = No cleanup value specified
AK = Alaska Test Method
bgs = below ground surface
DRO = diesel range organics
EPA = U.S. Environmental Protection Agency
GRO = gasoline range organics
HPAH = high molecular weight ponynuclear aromatic hydrocarbon
LPAH = low molecular weight ponynuclear aromatic hydrocarbon
mg/kg = milligrams per kilogram
ND = not detected, limit of detection in parentheses
PCB = polychlorinated biphenyl
RRO = residual range organics
SIM = selective ion monitoring

Table 1 - 2012 Site 28 Sediment Analytical Results (continued)
(all values in mg/kg)

		Sample ID	12NC28SS043	12NC28SS044	12NC28SS144	12NC28SS045	12NC28SS046	12NC28SS047	12NC28SS147	12NC28SS048	12NC28SS049	12NC28SS050	12NC28SS051
		Sample Interval (feet bgs)	0–1	0–1.5	0–1.5	0–1.25	0–1	0–1	0–1	0–1.5	0–1	0–0.75	0–1
		Laboratory ID	580-34102-47	580-34102-48	580-34102-49	580-34102-50	580-34102-51	580-34102-52	580-34102-53	580-34102-54	580-34102-55	580-34102-56	580-34102-57
		Location ID	028-043	028-044	028-044	028-045	028-046	028-047	028-047	028-048	028-049	028-050	028-051
		Collection Date	7/20/2012	7/20/2012	7/20/2012	7/20/2012	7/20/2012	7/20/2012	7/20/2012	7/20/2012	7/20/2012	7/20/2012	7/20/2012
Analyte	Analytical Method	Sediment Cleanup Level[1]											
Percent Moisture (%)	EPA Moisture	--	88	50	46	92	89	72	88	47	29	61	41
DRO	AK102	3500	100 J	86000	81000	22000	75000	3400 QN	14000 QN	110000	70000	7500 J	6700
DRO with Silica Gel	AK102	3500	57 J	76000	78000	21000	74000	2900 QN	13000 QN	110000	67000	5100 J	5900
RRO	AK103	3500	430 ML	6500 ML	5300 MH	5000 MH	7700 MH	1100 QN MH	4900 QN ML	9200 ML	4000 ML	2700 J ML	1400 ML
RRO with Silica Gel	AK103	3500	100 J	4600	3900	3800	6500	870 QN	4200 QN	7700	3200	1300 J MN	1100
Total Organic Carbon	EPA 9060-Quad	--	300000	120000	130000	260000	210000	130000	130000	200000	40000	67000	34000
GRO	AK101	--	ND (6.3) ML	90 ML	90 ML	21 J ML	18 J ML	16 B QN ML	64 QN ML	300 ML	310	17 J ML	42 ML
Benzene	EPA 8260B	--	ND (0.057)	0.3	0.31	ND (0.094)	ND (0.058)	ND (0.023)	ND (0.054)	0.57	0.52	ND (0.018)	ND (0.011)
Ethylbenzene	EPA 8260B	--	ND (0.170)	1.4	1.5	0.310 J	0.33	0.4 QN	1.6 QN	3.6	3.4	ND (0.053)	0.091
o-Xylene	EPA 8260B	--	ND (0.170)	3.7	3.7	0.49	0.64	0.71 QN	2.7 QN	7.7	14	0.020 J MN	0.25
m,p-Xylene	EPA 8260B	--	ND (0.110)	6.4	6.7	1	1.2	1.4 QN	5.5 QN	14	19	0.031 J MN	0.4
Total Xylenes	EPA 8260B	--	ND (0.280)	10.1	10.4	1.49	1.84	2.11 QN	8.2 QN	21.7	33	0.051 J MN	0.65
Toluene	EPA 8260B	--	0.093 J	0.047 J	0.052	ND (0.280)	ND (0.170)	ND (0.070)	ND (0.160)	1.4	0.42	0.020 J MN	0.044 J
PCB-1016	EPA 8082A	0.7	ND (0.039)	ND (0.0095)	ND (0.009)	ND (0.06)	ND (0.042)	ND (0.018)	ND (0.04)	ND (0.0093)	ND (0.0069)	ND (0.012)	ND (0.0081)
PCB-1221	EPA 8082A	0.7	ND (0.078)	ND (0.019)	ND (0.018)	ND (0.12)	ND (0.084)	ND (0.035)	ND (0.081)	ND (0.019)	ND (0.014)	ND (0.025)	ND (0.016)
PCB-1232	EPA 8082A	0.7	ND (0.078)	ND (0.019)	ND (0.018)	ND (0.12)	ND (0.084)	ND (0.035)	ND (0.081)	ND (0.019)	ND (0.014)	ND (0.025)	ND (0.016)
PCB-1242	EPA 8082A	0.7	ND (0.039)	ND (0.0095)	ND (0.009)	ND (0.06)	ND (0.042)	ND (0.018)	ND (0.04)	ND (0.0093)	ND (0.0069)	ND (0.025)	ND (0.0081)
PCB-1248	EPA 8082A	0.7	ND (0.039)	ND (0.0095)	ND (0.009)	ND (0.06)	ND (0.042)	ND (0.018)	ND (0.04)	ND (0.0093)	ND (0.0069)	ND (0.025)	ND (0.0081)
PCB-1254	EPA 8082A	0.7	ND (0.039)	ND (0.0095)	ND (0.009)	ND (0.06)	ND (0.042)	ND (0.018)	ND (0.04)	ND (0.0093)	ND (0.0069)	ND (0.025)	ND (0.0081)
PCB-1260	EPA 8082A	0.7	0.19 QH	0.35	0.38	ND (0.06)	0.84 QH	0.27 QN QH	0.63 QN QH	0.14 QH	0.093	0.11 J ML	0.79
PCBs-Total	EPA 8082A	0.7	0.19 QH	0.35	0.38	ND (0.12)	0.84 QH	0.27 QN QH	0.63 QN QH	0.14 QH	0.093	0.11 J ML	0.79
Arsenic	EPA 6020	93	12	5.1	6	9.2	29	9.1 QN	19 QN	6.8	4.9	5.1 J	6.6
Barium	EPA 6020	--	84 MH	93 MH	94 MH	83 MH	140 MH	65 QN MH	150 QN MH	140 MH	73 MH	90 J MH	85 MH
Cadmium	EPA 6020	--	0.23 J	0.45	0.54	0.5 J	1.1 J	0.41 J	0.94 J	0.93	0.77	0.38 J	0.56
Chromium	EPA 6020	270	6.3 MH	18 MH	19 MH	15 MH	27 MH	14 QN MH	31 QN MH	30 MH	21 MH	20 J MH	20 MH
Lead	EPA 6020	530	18	43	51	35	89	33 QN	76 QN	74	77	26 J	48
Nickel	EPA 6020	--	5.8 MH	11 MH	12 MH	12 MH	23 MH	10 QN MH	22 QN MH	18 MH	12 MH	13 J MH	15 MH
Selenium	EPA 6020	--	1.8 J	1 J	1.1	2.3 J	3 J	1.2 J	2.5 J	1.4	0.64	0.98 J	0.92
Silver	EPA 6020	--	0.11 J	0.095 J	0.1 J	0.15 J	0.34 J	0.13 J	0.28 J	0.16 J	0.12 J	0.098 J	0.13 J
Vanadium	EPA 6020	--	24 MH	26 MH	27 MH	24 MH	47 MH	20 QN MH	44 QN MH	38 MH	27 MH	26 J MH	29 MH
Zinc	EPA 6020	96	49 MH	64 MH	77 MH	120 MH	240 MH	120 QN MH	270 QN MH	160 MH	120 MH	90 J MH	130 MH
Mercury	EPA 7471A	--	0.075 J	0.091	0.081	0.18 J	0.12 J	0.059 QN	0.24 QN	0.21	0.14	0.092	0.099
1-Methylnaphthalene	EPA 8270C SIM	--	0.054	160	150	13	37	3.4 QN	11 QN	250	180	1.9	6.3 QH
2-Methylnaphthalene	EPA 8270C SIM	0.6	0.027 J	220	220	16	35	3.3 QN	11 QN	330	240	2.1	10 QH
Acenaphthene	EPA 8270C SIM	0.5	ND (0.02)	2.9	2.8	0.61	2	0.17 QN	0.65 QN	5.7	4.4	0.13	0.21QH
Acenaphthylene	EPA 8270C SIM	--	ND (0.020)	1.5	1.3	0.47	1.4	0.097 QN	0.3 QN	1.8	1.9	0.097	0.088 QH
Anthracene	EPA 8270C SIM	--	ND (0.02)	0.31	0.39	0.18	0.5	0.039 QN	0.14 QN	0.31	0.35	0.024	0.021 QH
Benzo(a)anthracene	EPA 8270C SIM	--	ND (0.02)	0.033 J	0.042 J	0.045 J	1.1	0.017 QN	0.064 QN	ND (0.046)	ND (0.035)	0.0081 J	0.023 QH
Benzo(a)pyrene	EPA 8270C SIM	--	ND (0.02)	ND (0.047)	ND (0.046)	0.07	0.39	0.015 J	ND (0.02)	ND (0.046)	ND (0.035)	0.011 J	0.019 QH
Benzo(g,h,i)perylene	EPA 8270C SIM	1.7	ND (0.02)	ND (0.047)	ND (0.046)	0.063	0.21 J	0.18 QN	0.57 QN	ND (0.046)	ND (0.035)	0.012	0.02 QH
Benzo(b)fluoranthene	EPA 8270C SIM	--	ND (0.02)	0.12	0.1	0.1	0.67	0.034 QN	0.12 QN	ND (0.046)	ND (0.035)	0.018	0.036 QH
Benzo(k)fluoranthene	EPA 8270C SIM	--	ND (0.02)	ND (0.047)	ND (0.046)	0.031 J	0.19 J	0.0084 J	0.023 J	ND (0.046)	ND (0.035)	ND (0.0061)	0.0087 QH
Chrysene	EPA 8270C SIM	--	ND (0.02)	0.13	0.12	0.15	1.1	0.052 QN	0.21 QN	0.074 J	0.064 J	0.017	0.051 QH
Dibenz(a,h)anthracene	EPA 8270C SIM	--	ND (0.02)	ND (0.047)	ND (0.046)	ND (0.031)	ND (0.11)	ND (0.0084)	ND (0.02)	ND (0.046)	ND (0.035)	ND (0.0061)	0.012 QH
Fluoranthene	EPA 8270C SIM	2	0.015 J	0.24	0.22	0.22	5.6	0.059 QN	0.22 QN	0.21	0.14	0.017	0.055 QH
Fluorene	EPA 8270C SIM	0.8	0.019 J	4800	4200	1.3	4.6	0.36 QN	1.4 QN	7.3	5.9	0.23	0.23 QH
Indeno(1,2,3-cd)pyrene	EPA 8270C SIM	3.2	ND (0.02)	ND (0.047)	ND (0.046)	0.077	0.3	0.022 QN	0.058 QN	ND (0.046)	ND (0.035)	0.014	0.022 QH
Naphthalene	EPA 8270C SIM	1.7	0.068	68000	81000	6.3	11	2.1 QN	6.6 QN	52	52	0.25	3 QH
Phenanthrene	EPA 8270C SIM	4.8	0.02 J	4.2	4	1.5	6	0.32 QN	1 QN	57	5.2	0.32	0.16 QH
Pyrene	EPA 8270C SIM	--	0.018 J	0.23	0.21	0.32	4.4	0.062 QN	0.26 QN	0.16	0.12	0.02	0.055 QH
Sum LPAHs		7.8	0.107 J	72808.91	85208.49	10.36	25.5	3.086 QN	10.09 QN	7124.11	69.75	5.051	20.009 QH
Sum HPAHs		9.6	0.033 J	0.753 J	0.692 J	1.076 J	13.36 J	0.4494 J QN	1.525 J QN	0.444 J	0.324 J	0.1171 J	0.3017 QH

Color Code:
Positive Result Exceeds Cleanup Level
Adjacent sample is a field duplicate

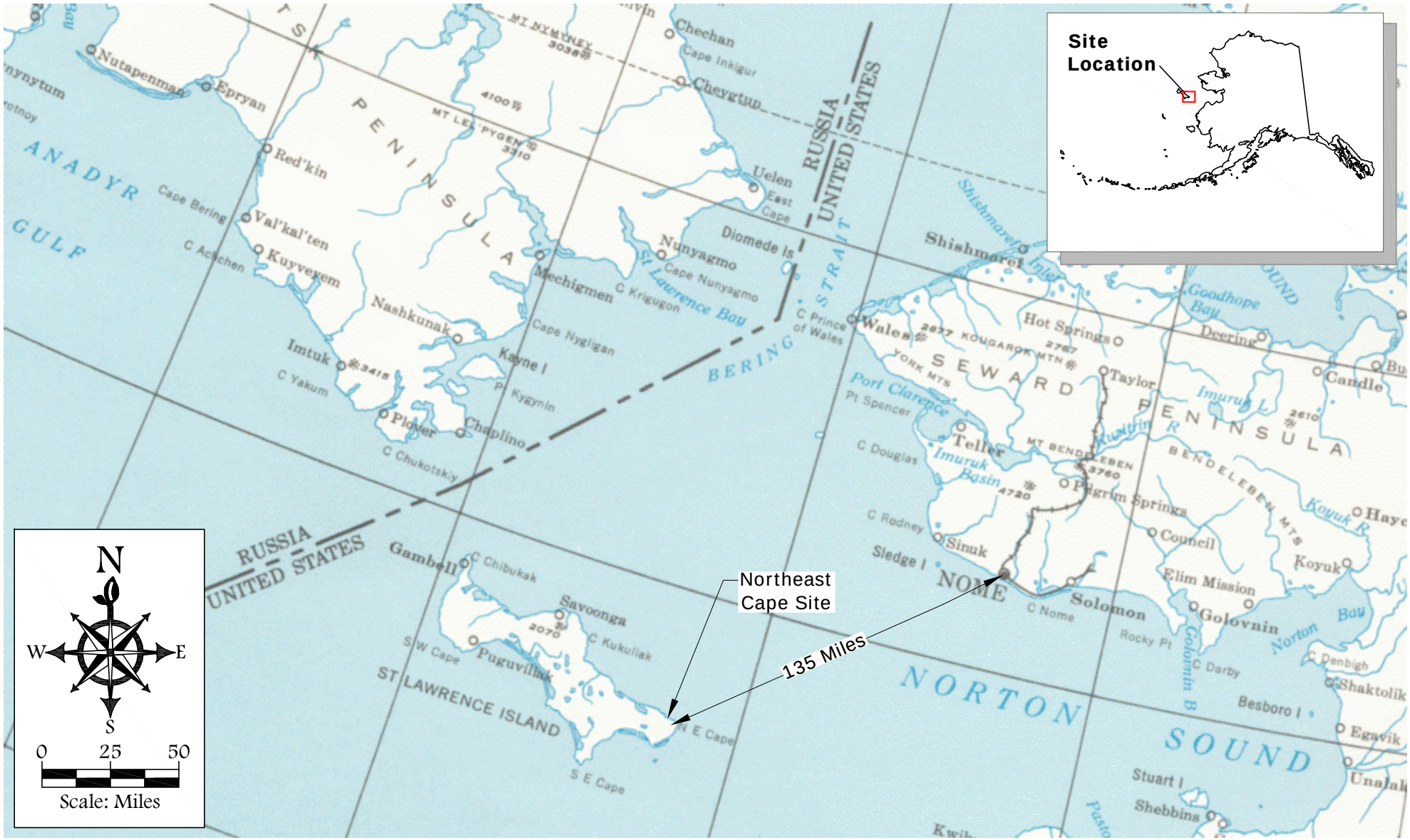
Notes:
[1] Site-specific cleanup levels established in 2009 Decision Document (US Army Corps of Engineers [USACE], Alaska District. 2009 Decision Document Hazardous, Toxic, and Radioactive Waste [HTRW] Project #F10AK096903 Northeast Cape Formerly Used Defense Site [FUDS] St. Lawrence Island, Alaska. January)

B = analyte was detected in the method or trip blank at a concentration less than 10 times the sample concentration; the result is an estimate with high bias
J = result is an estimated value between the detection limit and the limit of quantitation
MH = result is an estimate with high bias due to matrix interference
ML = result is an estimate with low bias due to matrix interference
MN = result is an estimate with no bias direction due to matrix interference
QH = result is an estimated value with high bias due to a quality control failure
QL = result is an estimated value with low bias due to a quality control failure
QN = result is an estimated value with an uncertain bias due to a quality control failure

-- = No cleanup value specified
AK = Alaska Test Method
bgs = below ground surface
DRO = diesel range organics
EPA = U.S. Environmental Protection Agency
GRO = gasoline range organics
HPAH = high molecular weight ponynuclear aromatic hydrocarbon
LPAH = low molecular weight ponynuclear aromatic hydrocarbon
mg/kg = milligrams per kilogram
ND = not detected, limit of detection in parentheses
PCB = polychlorinated biphenyl
RRO = residual range organics
SIM = selective ion monitoring

FIGURES

Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-SITE28-JULY2012\FIG1-SITE28-JULY12.DWG - Layout: 34120057-FIG1-JULY12
User: NPEACOCK Aug 27, 2012 - 10:29am Xrefs: - Images: NECAPE.JPG



Source: USGS National Atlas Sheet Number 42-43

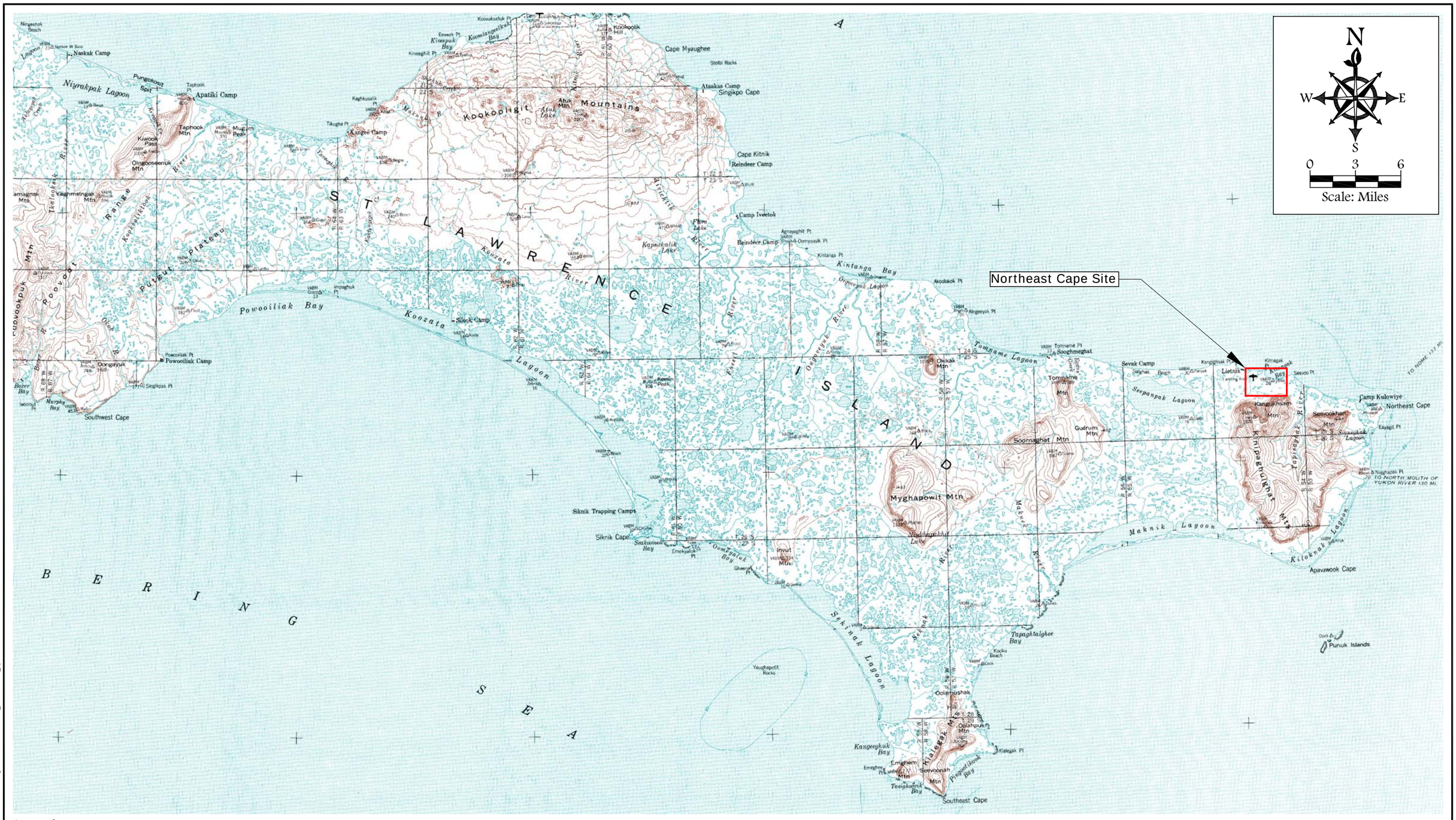
Legend:

HTRW — Hazardous, Toxic, and Radioactive Waste

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:	NAD 83
PROJECTION:	STATE PLANE AK 9
Project No.	34120057
DATE	07/30/12
DWN.	MTG
SCALE	SHOWN
APPRVD.	JRC



Legend:

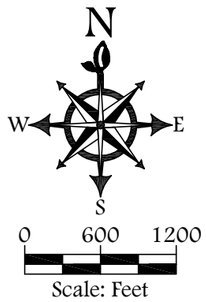
HTRW Hazardous, Toxic, and Radioactive Waste

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 83
PROJECTION: STATE PLANE AK 9
Project No. 34120057

DATE 07/30/12
DWN. MTG
SCALE SHOWN
APPRVD. JRC



Temporary Construction Camp

Cargo Beach Staging Area

Sugitughneq River

Site 28-Drainage Basin

MOC

Legend

HTRW	Hazardous, Toxic, and Radioactive Waste
MOC	Main Operations Complex

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

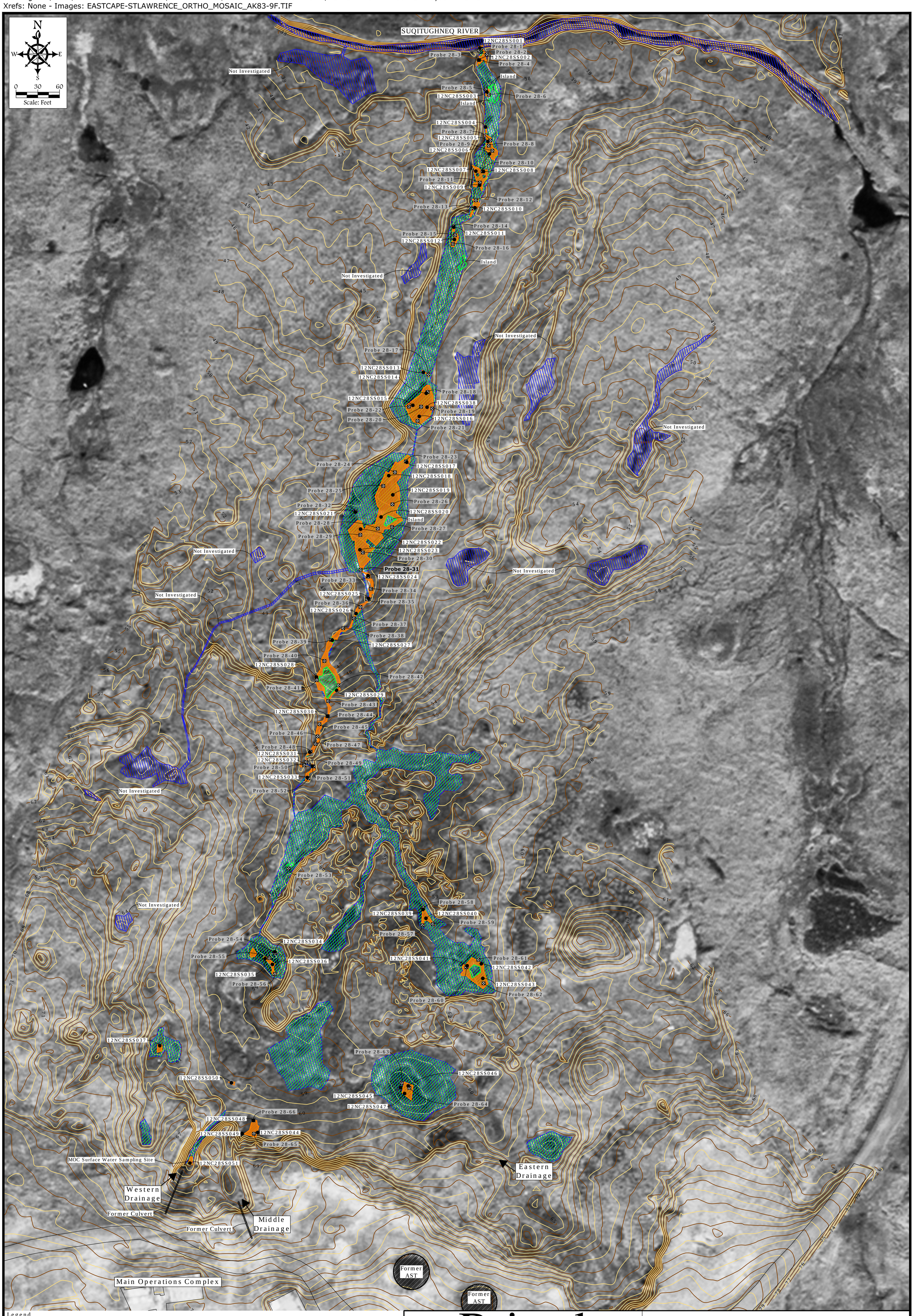
FIGURE 3
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
PROJECT WORK SITES

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

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
Project No. 34120057

DATE 07/31/12
DWN. MTG
SCALE SHOWN
APPRVD. JRC

User: NPEACOCK Jan 17, 2013 - 2:31pm
Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-SITE28-JULY2012\FIG4-SITE28-FINAL.DWG - Layout: FIG4-SITE28-JULY12
Xrefs: None - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF



Legend

- Sediment Boundary
- Vegetative Mat Boundary
- ponded water
- 2012 sample location
- 2012 probing location
- secondary contours
- primary contours

12NC28SS051	sample identification
AST	aboveground storage tank
HTRW	hazardous, toxic, and radioactive waste
MOC	main operations complex

Bristol

ENVIRONMENTAL REMEDIATION SERVICES, LLC

Phone (907) 563-0013 Fax (907) 563-6713
Project No. 34120057

FIGURE 4
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NE CAPE HTRW REMEDIAL ACTIONS
2012 SITE 28 SEDIMENT PROBE AND SAMPLE LOCATIONS

SCALE: 1" = 60'	DESIGNED:	CHECKED: JRC	DRAWN: MTG	DATE: 07/30/12

User: NPEACOCK Jan 17, 2013 - 2:43pm
Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-SITE28-JULY2012\FIG5-SITE28-FINAL.DWG - Layout: FIG5-SITE28-JULY12
Xrefs: None - Images: None

N
W E
S
0 30 60
Scale: Feet

SUQITUGHNEQ RIVER

Probe 28-1
Water Elev.=37.0'
Water Depth=1.4'
Sediment Thickness=1.0'

Probe 28-2
Water Elev=37.0'
Water Depth=0.5'
Sediment Thickness=1.5'

6.8 Cu. Yds.

Probe 28-3
Water Elev.=37.1'
Water Depth=0.5'
Sediment Thickness=1.5'

Probe 28-4
Water Elev.=37.1'
Water Depth=0.5'
Sediment Thickness=1.75'

Not Investigated

Probe 28-5
Water Elev.=38.4'
Water Depth=0.4'
Sediment Thickness=1.5'

Island

2.7 Cu. Yds.

Probe 28-6
Water Elev.=37.4'
Water Depth=0.5'
Sediment Thickness=1.0'

Probe 28-7
Water Elev.=38.9'
Water Depth=1.2'
Sediment Thickness=1.25'

0.3 Cu. Yds.

Probe 28-8
Water Elev=38.9'
Water Depth=0.9'
Sediment Thickness=0.5'

Probe 28-9
Water Elev.=38.9'
Water Depth=1.4'
Sediment Thickness=0.75'

8.2 Cu. Yds.

16.9 Cu. Yds.

Probe 28-10
Water Elev.=38.9'
Water Depth=0.8'
Sediment Thickness=1.25'

Probe 28-11
Water Elev.=38.9'
Water Depth=0.3'
Sediment Thickness=1.0'

7.2 Cu. Yds.

Probe 28-12
Water Elev.=39.1'
Water Depth=0.5'
Sediment Thickness=1.75'

Probe 28-13
Water Elev.=39.1'
Water Depth=0.6'
Sediment Thickness=2.0'

Probe 28-14
Water Elev.=39.4'
Water Depth=1.1'
Sediment Thickness=1.75'

1.3 Cu. Yds.

4.2 Cu. Yds.

Probe 28-15
Water Elev.=39.4'
Water Depth=0.9'
Sediment Thickness=1.0'

Probe 28-16
Water Elev.=39.4'
Water Depth=0.5'
Sediment Thickness=1.5'

Island

Not Investigated

Probe 28-17
Water Elev.=42.3'
Water Depth=0.2'
Sediment Thickness=1.5'

Not Investigated

0.7 Cu. Yds.

62.9 Cu. Yds.

Probe 28-18
Water Elev.=42.4'
Water Depth=1.3'
Sediment Thickness=1.5'

Probe 28-22
Water Elev.=42.4'
Water Depth=1.5'
Sediment Thickness=1.0'

Probe 28-19
Water Elev.=42.4'
Water Depth=1.3'
Sediment Thickness=1.0'

Probe 28-20
Water Elev.=42.4'
Water Depth=2.1'
Sediment Thickness=1.0'

Probe 28-21
Water Elev.=42.4'
Water Depth=1.7'
Sediment Thickness=1.75'

Not Investigated

Probe 28-24
Water Elev.=43.6'
Water Depth=0.9'
Sediment Thickness=0.75'

Probe 28-23
Water Elev.=43.7'
Water Depth=0.6'
Sediment Thickness=0.75'

Probe 28-25
Water Elev.=43.6'
Water Depth=1.2'
Sediment Thickness=1.25'

Probe 28-32
Water Elev.=43.7'
Water Depth=0.8'
Sediment Thickness=1.5'

Probe 28-26
Water Elev.=43.6'
Water Depth=1.1'
Sediment Thickness=1.0'

Probe 28-28
Water Elev.=43.7'
Water Depth=0.7'
Sediment Thickness=1.25'

Island

153.3 Cu. Yds.

Probe 28-27
Water Elev.=43.7'
Water Depth=0.5'
Sediment Thickness=1.5'

Probe 28-29
Water Elev.=43.7'
Water Depth=0.7'
Sediment Thickness=0.75'

Not Investigated

Probe 28-30
Water Elev.=43.7'
Water Depth=0.9'
Sediment Thickness=0.5'

Probe 28-33
Water Elev.=43.7'
Water Depth=07''
Sediment Thickness=1.75'

Probe 28-31
Water Elev.=43.7'
Water Depth=0.9'
Sediment Thickness=1.5'

Not Investigated

Probe 28-36
Water Elev.=44.2'
Water Depth=0.1'
Sediment Thickness=1.0'

Probe 28-34
Water Elev.=43.7'
Water Depth=0.3'
Sediment Thickness=2.0'

Probe 28-35
Water Elev.=43.9'
Water Depth=0.3'
Sediment Thickness=1.75'

Probe 28-39
Water Elev.=45.8'
Water Depth=0.1'
Sediment Thickness=1.0'

Probe 28-37
Water Elev.=44.8'
Water Depth=0.1'
Sediment Thickness=1.5'

Probe 28-38
Water Elev.=45.6'
Water Depth=0.2'
Sediment Thickness=2.0'

Probe 28-40
Water Elev.=46.3'
Water Depth=0.1'
Sediment Thickness=1.5'

69.8 Cu. Yds.

Probe 28-41
Water Elev.=48.1'
Water Depth=0.2'
Sediment Thickness=1.5'

Probe 28-42
Water Elev=48.7'
Water Depth=0.3'
Sediment Thickness=1.0'

Probe 28-43
Water Elev.=49.9'
Water Depth=0.4'
Sediment Thickness=1.0'

Probe 28-46
Water Elev.=51.8''
Water Depth=0.2'
Sediment Thickness=1.0'

Probe 28-44
Water Elev.=51.0'
Water Depth=0.3'
Sediment Thickness=1.5'

Probe 28-45
Water Elev.=51.1'
Water Depth=0.1'
Sediment Thickness=1.25'

Probe 28-48
Water Elev.=52.4'
Water Depth=0.1'
Sediment Thickness=1.25'

Probe 28-47
Water Elev.=51.9'
Water Depth=0.5'
Sediment Thickness=1.0'

Probe 28-50
Water Elev.=53.2'
Water Depth=0.1'
Sediment Thickness=0.75'

0.3 Cu. Yds.

0.5 Cu. Yds.

3.3 Cu. Yds.

Probe 28-49
Water Elev.=52.9'
Water Depth=0.5'
Sediment Thickness=1.0'

Not Investigated

Probe 28-51
Water Elev.=54.0'
Water Depth=0.6'
Sediment Thickness=0.75'

Probe 28-52
Water Elev.=54.5'
Water Depth=0.3'
Sediment Thickness=1.25'

Probe 28-53
Water Elev.=56.6'
Water Depth=0.6'
Sediment Thickness=1.5'

Not Investigated

Probe 28-54
Water Elev.=57.8'
Water Depth=2.7'
Sediment Thickness=1.25'

Probe 28-58
Water Elev.=57.0'
Water Depth=1.3'
Sediment Thickness=1.0'

9.3 Cu. Yds.

Probe 28-57
Water Elev.=57.0'
Water Depth=0.7'
Sediment Thickness=1.5'

Probe 28-59
Water Elev.=57.0'
Water Depth=0.5'
Sediment Thickness=2.0'

2.4 Cu. Yds.

Probe 28-55
Water Elev.=57.8'
Water Depth=1.6'
Sediment Thickness=1.0'

Probe 28-61
Water Elev.=58.0'
Water Depth=0.5'
Sediment Thickness=0.75'

29.3 Cu. Yds.

3.8 Cu. Yds.

Probe 28-56
Water Elev.=57.8'
Water Depth=0.7'
Sediment Thickness=0.75'

Probe 28-60
Water Elev.=58.0'
Water Depth=1.0'
Sediment Thickness=1.0'

Probe 28-62
Water Elev.=58.0'
Water Depth=1.5'
Sediment Thickness=1.0'

Probe 28-63
Water Elev.=60.0'
Water Depth=1.7'
Sediment Thickness=1.0'

0.5 Cu. Yds.

6.9 Cu. Yds.

0.5 Cu. Yds.

Probe 28-66
Water Elev.=N/A
Water Depth=N/A
Sediment Thickness=1.5'

Probe 28-64
Water Elev.=60.0'
Water Depth=1.7'
Sediment Thickness=1.25'

7.2 Cu. Yds.

Probe 28-65
Water Elev.=N/A
Water Depth=N/A
Sediment Thickness=1.0'

MOC Surface Water Sampling Site

1.6 Cu. Yds.

Western Drainage

Former Culvert

Former Culvert

Middle Drainage

Eastern Drainage

Main Operations Complex

Former AST

Former AST

Legend

- Sediment Boundary
- Vegetative Mat Boundary
- ponded water
- 2012 probing location
- secondary contours
- primary contours

12NC28SS051	sample identification
AST	aboveground storage tank
HTRW	hazardous, toxic, and radioactive waste
MOC	main operations complex

Bristol
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Project No. 34120057

FIGURE 5
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NE CAPE HTRW REMEDIAL ACTIONS
SEDIMENT THICKNESSES AND ESTIMATED SEDIMENT VOLUMES

SCALE: 1" = 60'	DESIGNED:	CHECKED: JRC	DRAWN: MTG	DATE: 07/30/12

User: NPEACOCK Jan 17, 2013 - 2:47pm
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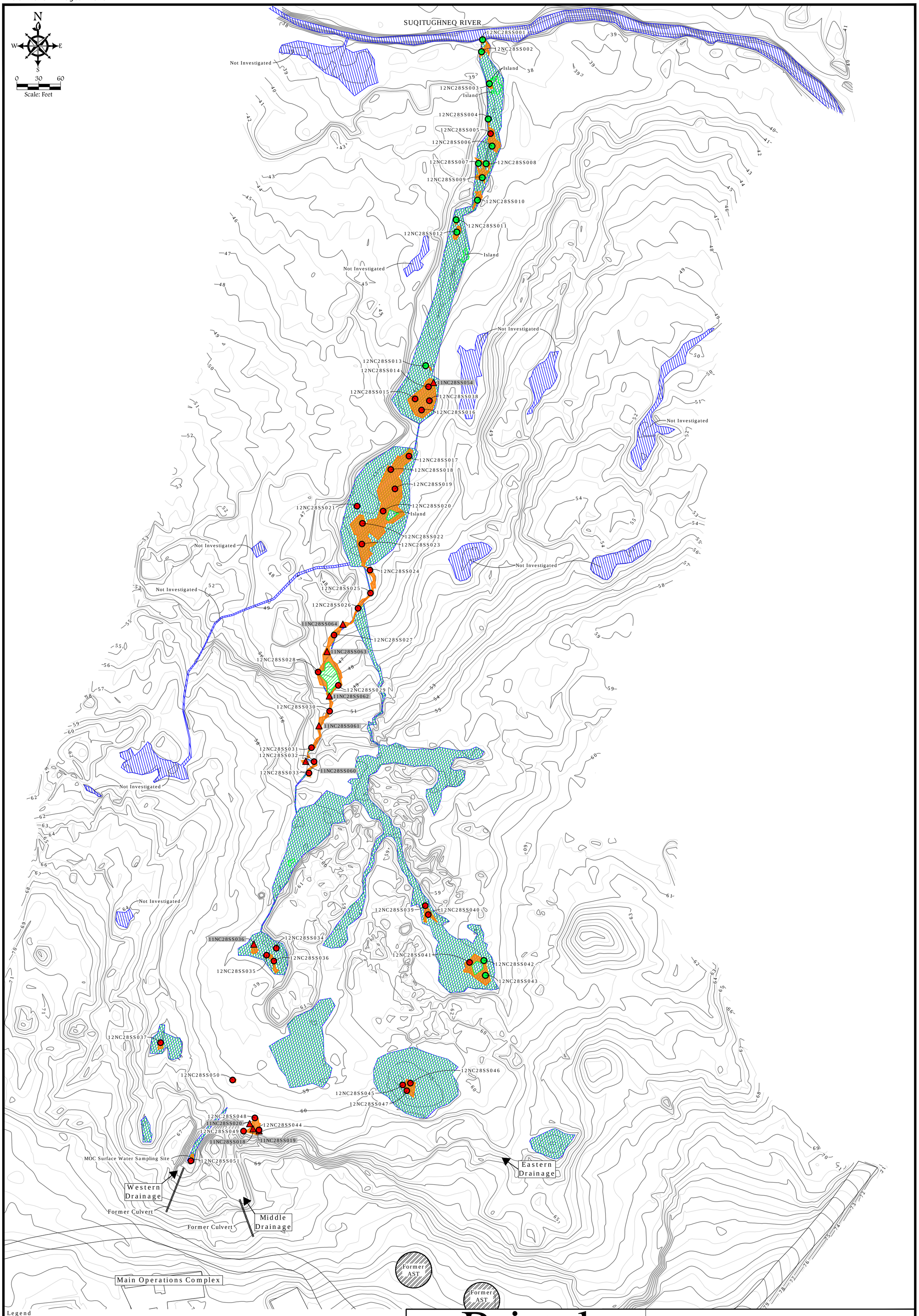
Xrefs: None - Images: None



Legend

- Sediment Boundary
- Vegetative Mat Boundary
- ponded water
- sediment sample exceeding cleanup level of one or more analytes
- no sediment analytes detected above cleanup levels
- 2011 sediment sample exceeding cleanup level of one or more analytes
- secondary contours
- primary contours

12NC28SS051	sample identification
AST	aboveground storage tank
HTRW	hazardous, toxic, and radioactive waste
MOC	main operations complex

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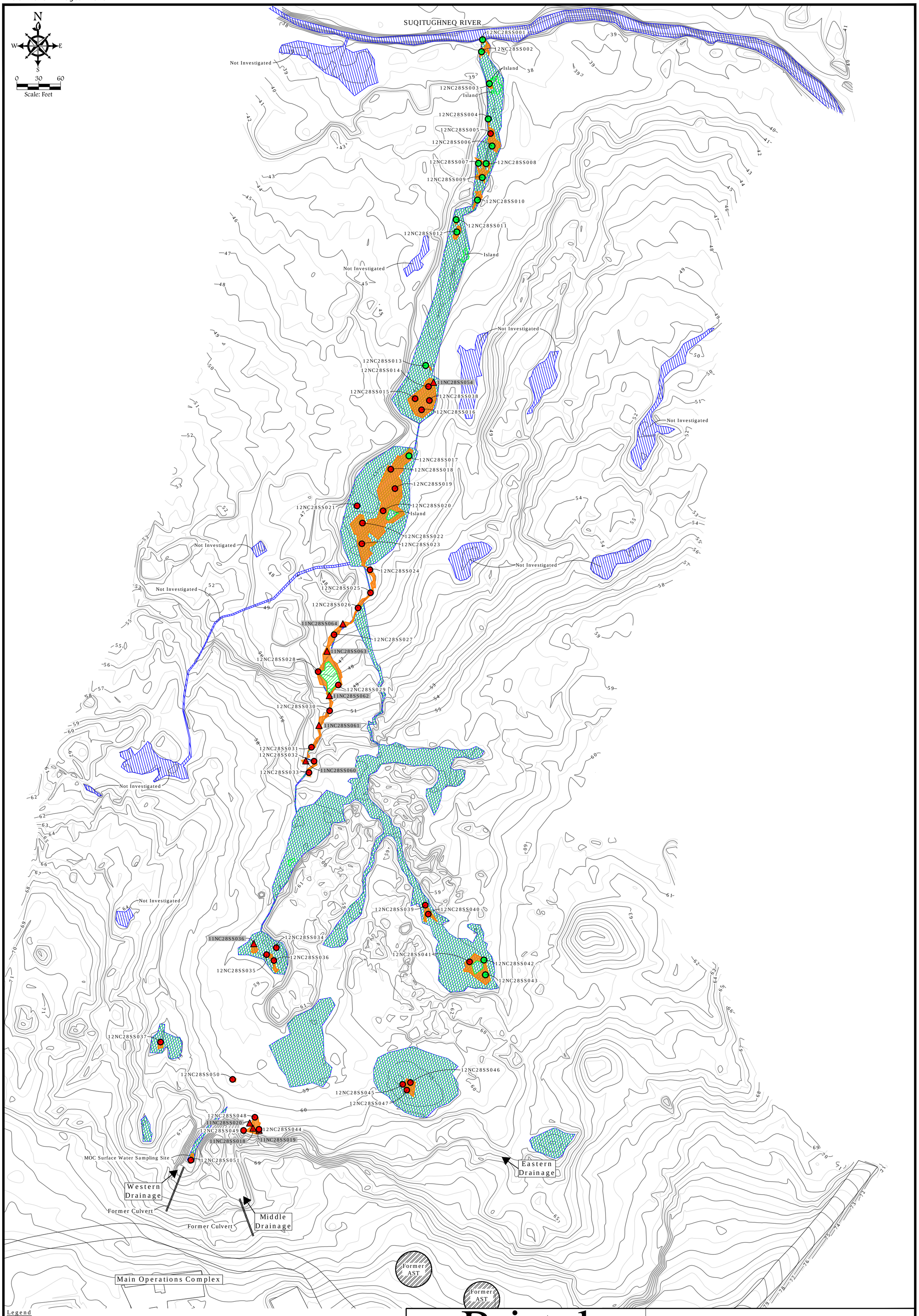
Project No. 34120057

FIGURE 6
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NE CAPE HTRW REMEDIAL ACTIONS
2012 SITE 28 SEDIMENT ANALYTICAL RESULTS EXCEEDING CLEANUP LEVELS

SCALE: 1" = 60'	DESIGNED:	CHECKED: JRC	DRAWN: MTG	DATE: 07/30/12

User: NPEACOCK Jan 17, 2013 - 2:53pm
Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-SITE28-JULY2012\FIG7-SITE28-FINAL.DWG - Layout: FIG7-SITE28-JULY12
Xrefs: None - Images: None



Legend

- Sediment Boundary
- Vegetative Mat Boundary
- ponded water
- sediment sample exceeding cleanup level of one or more fuel constituent analytes
- no sediment analytes detected above cleanup levels for fuel constituents
- 2011 sediment sample exceeding cleanup level of one or more fuel constituent analytes
- secondary contours
- primary contours

12NC28SS051	sample identification
AST	aboveground storage tank
HTRW	hazardous, toxic, and radioactive waste
MOC	main operations complex

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FIGURE 7
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NE CAPE HTRW REMEDIAL ACTIONS
FUEL CONSTITUENTS EXCEEDING CLEANUP LEVELS

SCALE: 1" = 60'	DESIGNED:	CHECKED: JRC	DRAWN: MTG	DATE: 07/30/12

User: NPEACOCK Jan 17, 2013 - 3:08pm
Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-SITE28-JULY2012\FIG8-SITE28-FINAL.DWG - Layout: FIG8-SITE28-JULY12
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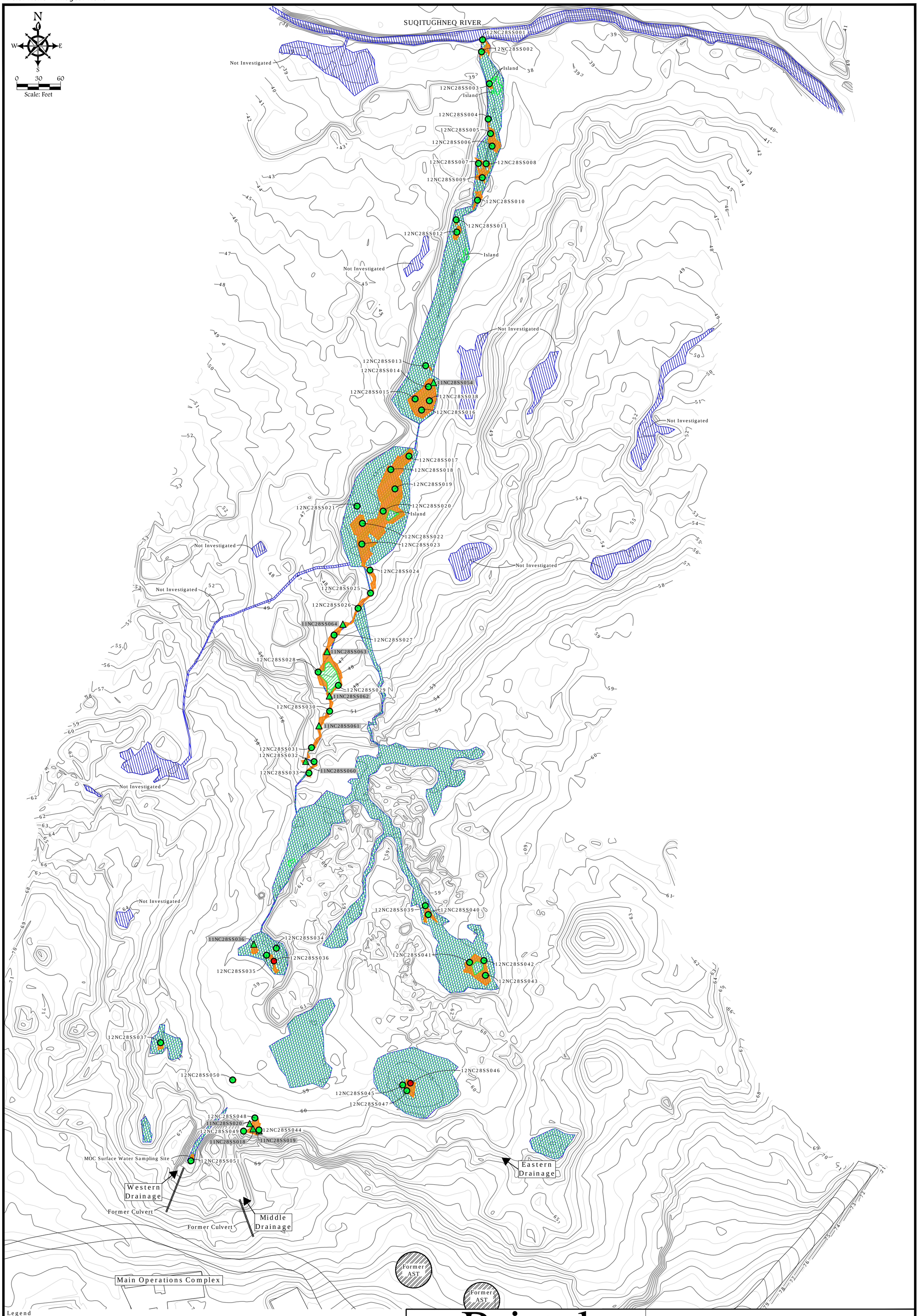

Legend

- Sediment Boundary
- Vegetative Mat Boundary
- ponded water
- sediment sample exceeding cleanup level of one or more PCB analytes
- no sediment analytes detected above cleanup levels for PCBs
- no 2011 sediment analytes detected above cleanup levels for PCBs
- secondary contours
- primary contours

12NC28SS051	sample identification
AST	aboveground storage tank
HTRW	hazardous, toxic, and radioactive waste
MOC	main operations complex

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Project No. 34120057

FIGURE 8
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NE CAPE HTRW REMEDIAL ACTIONS
PCBs EXCEEDING CLEANUP LEVELS

SCALE: 1" = 60'	DESIGNED:	CHECKED: JRC	DRAWN: MTG	DATE: 07/30/12

User: NPEACOCK Jan 17, 2013 - 3:41pm
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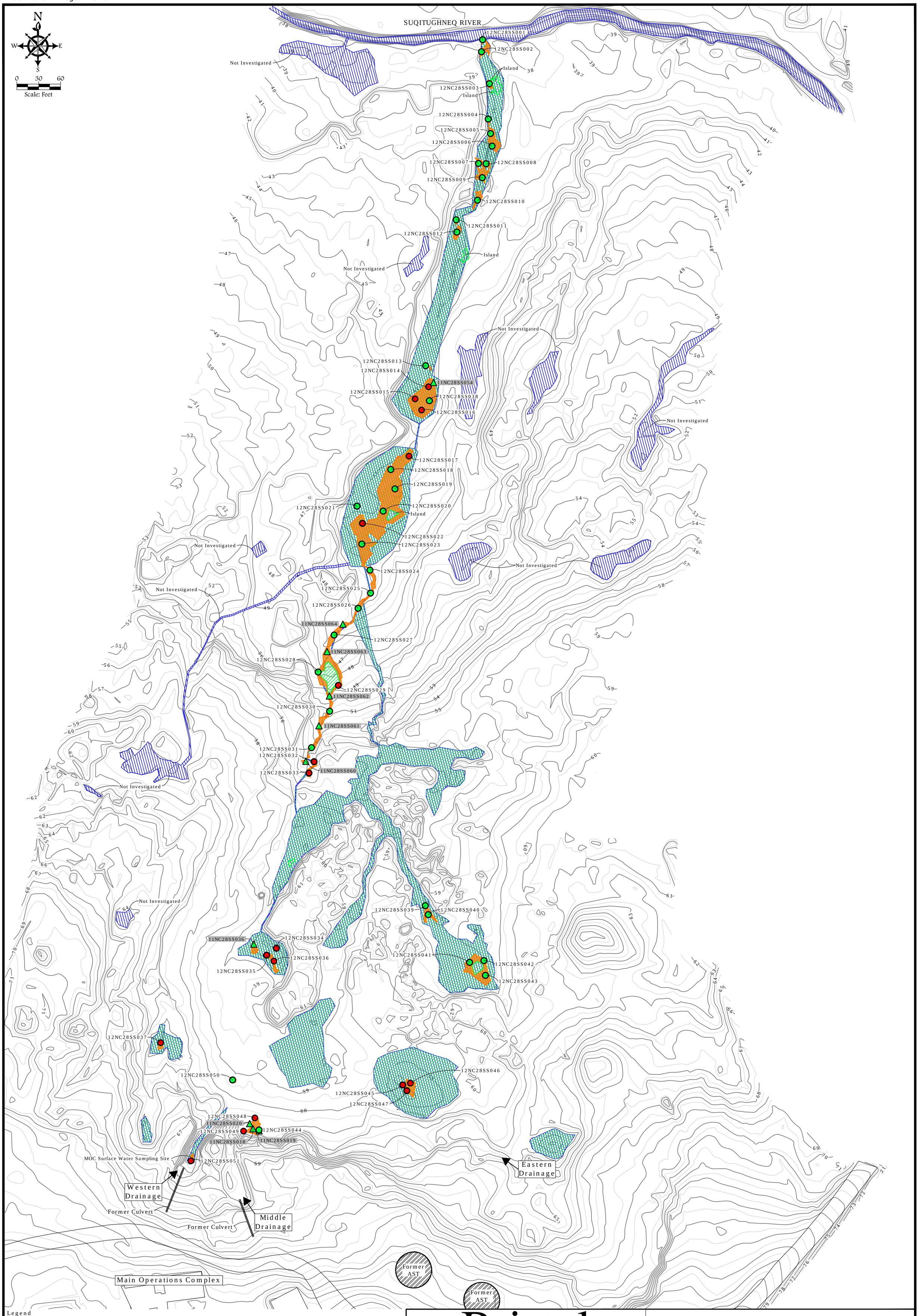
Xrefs: None - Images: None



Legend

- Sediment Boundary
- Vegetative Mat Boundary
- ponded water
- sediment sample exceeding cleanup level of one or more metals analytes
- no sediment analytes detected above cleanup levels for metals
- no 2011 sediment analytes detected above cleanup levels for metals
- secondary contours
- primary contours

12NC28SS051	sample identification
AST	aboveground storage tank
HTRW	hazardous, toxic, and radioactive waste
MOC	main operations complex

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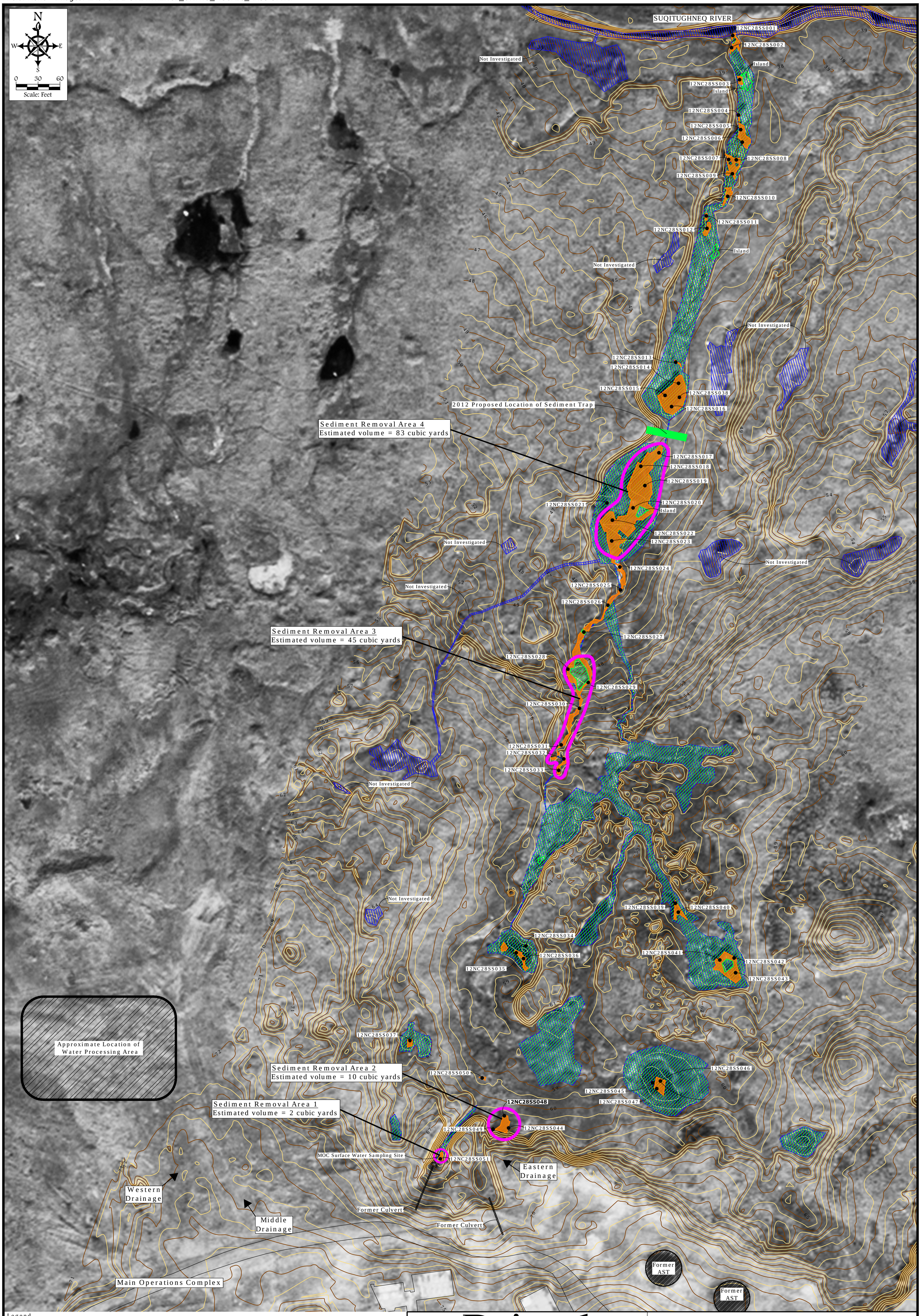
Project No. 34120057

FIGURE 9
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NE CAPE HTRW REMEDIAL ACTIONS
METALS EXCEEDING CLEANUP LEVELS

SCALE: 1" = 60'	DESIGNED:	CHECKED: JRC	DRAWN: MTG	DATE: 07/30/12

User: NPEACOCK Jan 17, 2013 - 3:48pm
Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-SITE28-JULY2012\FIG10-SITE28-FINAL.DWG - Layout: FIG10-SITE28-JULY12
Xrefs: None - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF



Legend

- Sediment Boundary
- Vegetative Mat Boundary
- ponded water
- 2012 sample location
- Proposed Phase 1 Sediment Removal Areas
- secondary contours
- primary contours

12NC28SS051	sample identification
AST	aboveground storage tank
HTRW	hazardous, toxic, and radioactive waste
MOC	main operations complex

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FIGURE 10
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NE CAPE HTRW REMEDIAL ACTIONS
PROPOSED PHASE 1 SEDIMENT REMOVAL AREAS AND PROPOSED WATER PROCESSING AREA

SCALE: 1" = 60'	DESIGNED:	CHECKED: JRC	DRAWN: MTG	DATE: 07/30/12

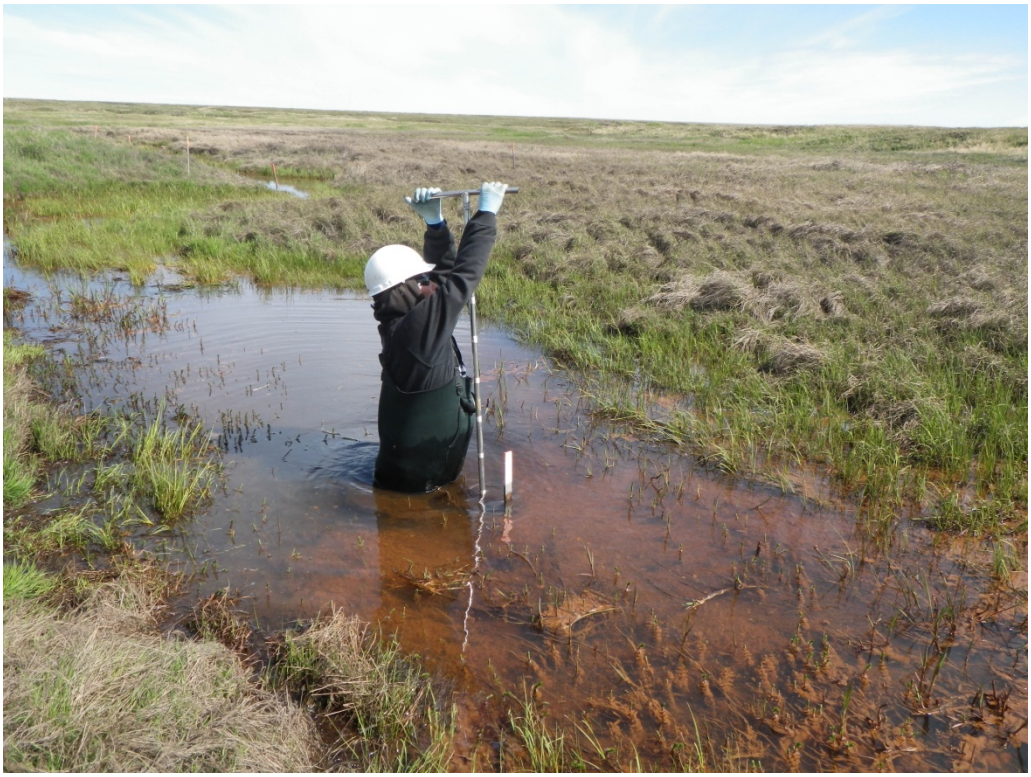
APPENDIX A

Photographic Log

Photograph 1: Overview of Site 28 from Suqi River toward MOC.
Direction: South. Date: July 2012.

Photograph 2: ECO-LAND, LLC, surveying the horizontal extent of a sediment boundary.
Direction: West. Date: July 2012.

Photograph 3: Close-up of sediment beneath the water.
Direction: N/A. Date: July 2012.



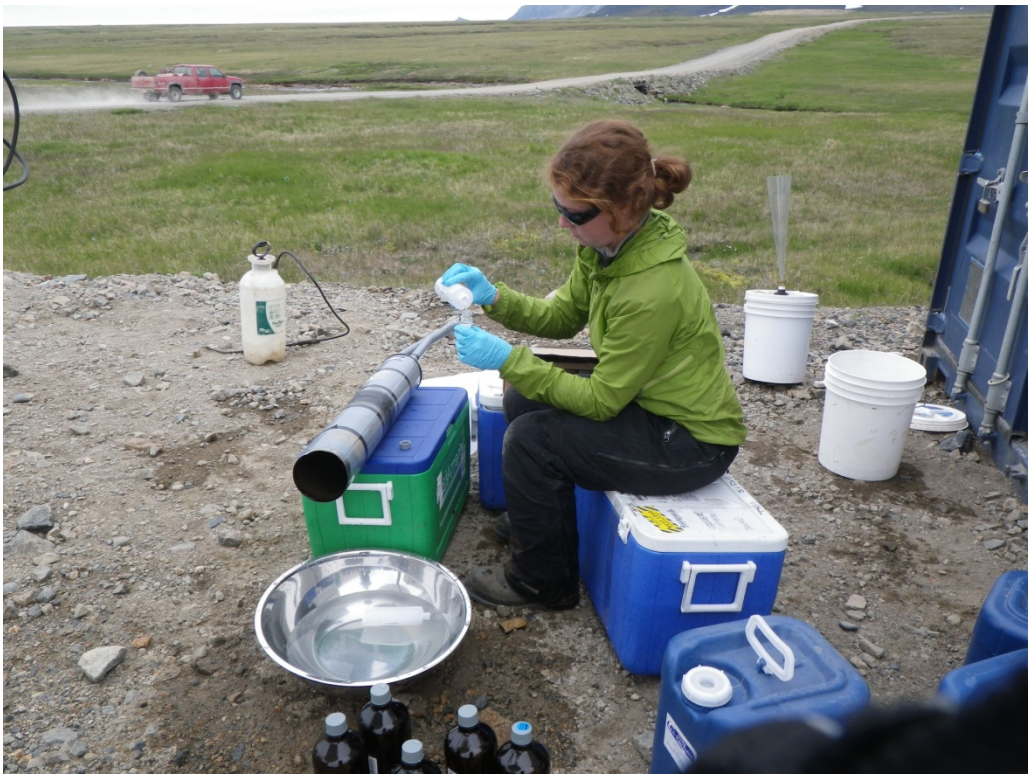
Photograph 4: Local hire Charles Kava conducting sediment probing with a hand auger.
Direction: Northeast. Date: July 2012.

Photograph 5: Collecting sediment sample 12NC28SS023 using the modified clam gun.
Direction: South-Southeast. Date: July 2012.

Photograph 6: Sediment sample material from location 12NC28SS023.
Direction: N/A. Date: July 2012.

Photograph 7: Placing sample into sample container.
Direction: N/A. Date: July 2012.

Photograph 8: Sheen at sample location 12NC28SS015 when sediment was disturbed.
Direction: Southeast. Date: July 2012.



Photograph 9: Collecting rinsate sample from modified clam gun and stainless steel bowl.
Direction: N/A. Date: July 2012.

APPENDIX B

Field Notes and Field Forms

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

ALL-WEATHER

ENVIRONMENTAL FIELD BOOK

Name Julie Clark
Bristol Env. Remed. Services
Address 111 W. 16th Ave., 3rd Floor
Anchorage AK 99501
Phone 907-563-0013

Project 2012 NE Capo

This book is printed on "Rite in the Rain" All-Weather Writing Paper - A unique paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather. For best results, use a pencil or an all-weather pen.

Specifications for this book:

Page Pattern		Cover Options	
Left Page	Right Page	Polyoura Cover	Fabrikoid Cover
Columnar	1/4" Grid	N/A	Item No. 550-4F

CONTENTS

Reference Page Index

2

CONTENTS

PAGE	REFERENCE	DATE

Location NE Cape – 2012 Date 7/3/12

Project / Client USACE

BERS Job # 3412007

0900 J. Clark to Anc. Airport for flight to Nome.

1230 Arrive in Nome. All gear and NE Cape personnel to Bering Air to await flight to NE Cape.

1440 Flight to NE Cape.

1515 Arrive at camp in NE Cape. Have camp orientation meeting. Set up rooms and start going thru envirо gear/supplies.

1900 Dinner, end of day.

Julie Clark
7/3/12

Location NE Cape - 2012 Date 7/4/12

Project / Client USACE

Bristol Job # 3213005.7

0705 Daily safety meeting.
0710 Daily environmental meeting.
0720 Got enviro supplies/equipment sorted out in Connex.
1100 Out to MOC pad to look over, also Cargo Beach and sites 13 and 31.
1200 Lunch.
1230 Look over ADEC comments on work plans to see how this year's sampling will be affected.
1400 J. Clark out to site 28 for a walk-thru to check out conditions.
1530 J. Clark finished walking site 28. Will help L. Heppin gauge MOC wells.
1630 Back to camp.

Photolog for 7/4/12:

IMGP0128: Stream in site 28. Rust-colored material appears to be "sediment" deposited atop grass and other vegetation when the water was higher. View to the south.
IMGP0129: Same as 0128. View to the E.

JC 7/4/12

Location NE Cape-2012 Date 7/4/12

Project / Client USACE

BERS Job # 3213005.7

Photolog for 7/4/12 (cont.)

IMGP0130: Close-up of rust-colored "sediment" atop the grass.
IMGP0131: Photo of bottom of Sagi River. Camera ~ 3' below water surface
IMGP0132: Same as 0132.
IMGP0133: Rust-colored "sediment" next to stream. View SW.
IMGP0134: Close-up of "sediment" deposited on grass next to stream when water was higher.
IMGP0135: Same as 0134.
IMGP0136: MOC well 88-1. Well #5C slightly compromised - metal well cap was located a few feet away, outer casing full of mud.
IMGP0137: Some mud got down Well 88-1.

Julie Clark
7/4/12

6.

Location NE Cape 2012 Date 7/5/12

Project / Client USACE

BERS Job # 3412005 7

0710 Daily safety meeting. Also daily environmental meeting.

0730 Do random stuff around camp.

1110 Security Aviation flight arrives.

1200 Lunch.

1330 Hold Meeting of Understanding. Personnel present: Eric Barnhill, Chuck Croley, Jeremy Craner, Marty Hannah, Lyndsey Kleppin, Julie Clark, Maze Thompson.

1430 Meeting of Understanding over. Prep. Phase meetings for MOC surface water sampling and MI sampling of bulk bag areas. Everyone that was present at Meeting of Understanding is present for Prep. Phase meetings except Marty Hannah.

1545 J. Craner, E. Barnhill, L. Kleppin, J. Clark out to Site 28 to look site over. Also take a look at potential surface water sample locations for MOC surface water.

JC 7/5/12

7

Location NE Cape 2012 Date 7/6/12

Project / Client USACE

BERS Job # 3412005 7

1615 Have looked at proposed surface water samples locations for the MOC surface water, all locations look good, according to USACE QAR.

1700 Have walked thru Site 28 from pad to Suqi River with QAR. J. Craner has seen that the defenition of sediment as material deposited, and primarily NOT atop vegetation or peat interval, is a difficult defenition because most of the material in the basin contains or is atop peat or veg. mat. J. Craner will speak to Aaron Shewman about what we've seen to get more guidance. We can map if we have a definition of how thick (6"? 12"? 18?") deposited material needs to be to be considered sediment.

1730 Dinner. Done for today.

Julie Clark 7/5/12

Location NE Cape - 2012 Date 7/6/12

Project / Client USACE

BERS Job # 34120057

0700 Daily safety meeting.

0810 J. Craner (USACE) and J. Clark sit down w/ Chuck Croley to discuss the Site 28 conditions we observed yesterday during our site walk. Craner wants to discuss situation w/ Aaron Shewman, so wanted to find out from Croley how much sediment (what thickness) could be sucked out during the Phase I sediment removal with while minimizing damage to the vegetation/peat beneath the sediment. Croley thought that a about 6" layer of sediment probably could be sucked out on low throttle, and veg. beneath would probably remain mostly intact. Also, Craner wants to discuss w/ Shewman removing the material right by MOC pad, because we know from last year's results that it is pretty contaminated. This area could be accessed by an excavator from the pad too.

JC 7/6/12

Location NE Cape-2012 Date 7/6/12

Project / Client USACE

BERS job # 34120057

0900 Get together MI sampling supplies - J. Clark will help E. Barnhill with MI sampling while we are awaiting feedback about how to proceed with the Site 28 sediment mapping.

1030 E. Barnhill / J. Clark out at Cargo Beach to lay out first decision unit for MI sampling. A total of 6 decision units will be MI sampled on the beach.

1045 Four flats of bulk bags need to be temporarily moved so we can sample the first decision unit on Cargo Beach.

1105 Loader down on beach to move flats.

1130 Eeoland surveyors at beach to mark out corners of first DU on beach. DU will measure 48' x 240'.

1200 Lunch. Speak w/ J. Craner to see if any progress has been made in Site 28 discussions. Aaron is not in the office today, so J. Craner has been trying to get C. Cossaboom involved. So no progress yet.

Location NE Cape-2012 Date 7/6/12

Project / Client USACE

BERS job # 34120057

1400 Barhill, Klappan, & J. Clark onsite at Cargo Beach. Ecoland setting up corners of first DU for MI sampling.

1430 Ecoland finishes marking corners of 48' x 240' DU. Bristol begins laying out grid of DU. Each increment of DU measures 16' x 16', for a total of 45 increments.

1455 Roll dice to choose random location within each 16' x 16' increment where material for sample will be collected. See Barnhill's notes for a schematic of the random location.

1520 Finished collecting first MI sample from Cargo Beach. Sample ID: 12NCBGSS01.

1545 Back at camp to refrigerate sample and to let Chuck know that the four flats can be moved back where they were.

1700 Talk w/ Jeremy Craner. USACE and ADEC have been talking about how we're going to define "sediment" at site 28

JC 7/6/12

Location NE Cape-2012 Date 7/6/12

Project / Client USACE

BERS job # 34120057

1700 cont. and have pretty much come to a consensus. Once Bristol PMs (Molly Welker & Greg Jarrell) agree, the sediment mapping effort can begin.

1735 Russell James arrives onsite. Also, Savoonga laborers arrive.

Photolog for 7/6/12:

IMGP0138: Overview of 1st DU on Cargo Beach, pin flags show 16' grid edges. View E.

IMGP0139: Collecting sample material from one of the 45 increments. View WSW.

IMGP0140: Same as 0139.

IMGP0141: Swans near Site 8.

IMGP0142: Same as 0141.

Julie Clark 7/6/12

Location NE Cape - 2012 Date 7/7/12

Project / Client USACE

BERS job # 34120057

0700 Daily safety meeting.
0710 Daily enviro meeting.
0720 Prep for today's work.
0945 E. Barnhill / J. Clark to Cargo Beach. Surveyors have relocated the eastern boundary of where bulk bags were staged last year.
0950 E. Barnhill figures out where DU will be placed, and the dimensions for it. (for 2nd MI sample to be collected at (Cargo Beach))
1000 Ecoland begins staking out corners of 60' x 240' DU.
1050 Ecoland finished. Barnhill / Clark begin laying out grid for DU. Each increment is 15' x 15', for a total of 60 increments.
1110 J. Craner (USACE QAR) onsite.
1115 Roll dice to choose random location within each 15' x 15' increment where sample material will be collected. See Barnhill's notes for a schematic.
1140 Finish collecting MI sample 12NCBGSS02 (primary). Will collect dup / triplicate after lunch.

Location NE Cape - 2012 Date 7/7/12

Project / Client USACE

BERS job # 34120057

1145 Craner, Barnhill, Clark depart site, back to camp for lunch.
1200 Lunch
1250 Enviro truck to shop to get a tire change.
1310 Barnhill / Kleppin / Clark onsite at Cargo Beach. Will collect duplicate / triplicate QC samples using the same grid in DU 2. Barnhill rolls dice for random location to sample within each increment. See schematic in Barnhill's notes.
1400 Finish collecting duplicate sample from Cargo Beach DU 2. ID: 12NCBGSS03.
1405 Roll dice for triplicate sample location within each increment. See Barnhill's notes for schematic.
1445 Finish collecting triplicate sample from Cargo Beach DU 2. ID: 12NCBGSS04.
1450 Need 2 flats of bulk bags moved to lay out third DU on Cargo Beach for MI sampling. Depart beach to talk to Chuck Crolet.

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Location NE Cape - 2012 Date 7/7/12

Project / Client USACE

BERS job # 34120057

1600 Barnhill/Kleppin/Clark back at Cargo Beach. Flats have been moved. Measure out 3rd DU on Cargo Beach (60' x 240'). and lay out 15' x 15' increments

1635 Roll dice to choose random location where increments will be collected within each increment. See Barnhill's notes for schematic.

1700 Finish collecting MI sample from 3rd DU on Cargo Beach.

1710 Depart site, head to camp.

Julie Clark 7/7/12

Site 28

15

Location NE Cape - 2012 Date 7/8/12

Project / Client USACE

BERS job # 34120057

0700 Daily safety meeting.

0710 Daily enviro meeting.

0730 Prep phase meeting for MOC wells and Site 8 MNA monitoring. Present: Jeremy Craner, Chuck Croley, Russell James, Eric Barnhill, Julie Clark.

0755 Prep phase meeting for Site 28 Personnel present: Craner, Croley, James, Clark, Jamie Allan (Ecology), Barnhill, Kleppin. Specifics discussed:

- ADEC wants to be kept informed on all site 28 efforts. Bristol will communicate w/ USACE, who will keep in touch with ADEC.

* - NEW definition of sediment: All loose material (mineral & organic) except for that which is actively growing vegetation or is part of the vegetative mat.

* - Wherever we probe to get profile info, a GPS point needs to be taken

- Discuss various probing/investigation tools. Sludge sampler, PVC pipe,

16 Site 25

Location NE Cape - 2012 Date 7/8/12

Project / Client USACE

BERS job # 34120057

(notes from Site 28 prep phase meeting, cont.)

- Plastic Macrocore sleeves with end cap. These may be necessary for deeper areas, shallower areas can probably just use a gloved hand.
- After the mapping effort, ADEC/ USACE want to look at a map of the findings (sediment areas) to determine where sediment samples will be collected.

0840 Site 28 prep phase meeting over.

0910 J. Clark gets UTV orientation from C. Crokey.

0930 Start prepping supplies/equipment to begin Site 28 sediment mapping.

1115 J. Clark at Site 28 by Suqi River.

1130 J. Craner at Site 28. Discuss best option for sediment mapping. Decide that we will begin by visually looking for water bodies with loose material at the bottom. Ecoland will

JC 7/8/12

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Location Site 28 Date 7/08/12

Project / Client NE Cape - 2012 - USACE

BERS Job # 34120057

1130 cont. accompany J. Clark and capture the sediment areas, the water edge and veg. mat. After that is accomplished, J. Clark will go back and do the probing to measure sediment thicknesses. If possible Ecoland will accompany J. Clark ~~at~~ during the probing too to capture water depths and coordinates at each probing location.

1215 J. Clark / J. Craner depart Site 28, head back to camp for lunch.

1340 J. Clark & Ecoland onsite at Site 28. Ecoland setting up the Total station.

1400 J. Craner onsite. Craner, Allan (Ecoland) and Clark discuss how we would like to begin the mapping effort. All agree that for the first pass, we will map the horizontal extent of the sediment only. (no elevation shots taken). When J. Clark does the probing of the sediment, we'll

JC 7/8/12

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Location Site 28 Date 7/8/12

Project / Client NE Cape 2012 - USACE

BERS job # 34120057

1400 cont. get elevation shots, which will be representative enough to calculate the estimated volume of sediment present at Site 28.

1525 J. Craner departs site.

1535 Ecoland begins surveying areas of sediment per Bristol's direction. We're beginning the survey by the sump and working our way up to MOC pad.

1720 Finish collecting survey points at Site 28 for today. Ecoland breaks down survey equipment.

1740 Back at camp for dinner. Done w/ field work for today.

Photolog for 7/8/12:

IMGP0143: Ecoland preparing to begin mapping sediment and other features (veg. mat, water boundary).

IMGP0144: Ecoland collecting survey point View NW.

IMGP0145: Same as 0144 View W.

IMGP0146: Same as 0144. View W.

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Location Site 28 Date 7/8/12

Project / Client NE Cape 2012 - USACE

BERS job # 34120057

Photolog for 7/8/12 (cont.)

IMGP0147: View of Site 28 south toward MOC.

IMGP0148: Area in water defined as veg. mat - no loose sediment present. View SW.

IMGP0149: Area in water defined as sediment - loose matter present.

IMGP0150: Like photo 0148, water area where no sediment present, just veg. mat - non-loose organic matter (grass). View S

Julie Clark 7/8/12

20

Location Site 28 Date 7/9/12

Project / Client NE Cape - 2012 - USACE

BERS job # 3412005 7

0700 Daily safety meeting.
0710 Daily enviro meeting
0730 Prep. meeting for all excavations (PCL, PCB, arsenic) and site 10 drums.
Present: C. Croley, M. Thompson, R. James, J. Craner, E. Barnhill, L. Kleppin, J. Clark.
0800 Finished with prep. phase meeting.
0855 At Cargo Beach w/ Barnhill. Surveyors are collecting points for Barnhill's MI sampling yesterday; after they are finished J. Clark will take them to Site 28 to continue mapping.
0945 J. Clark and Ecoland depart Cargo Beach.
1000 At Site 28 setting up Total Station.
1030 J. Craner onsite.
1040 Begin sediment / veg. mat / water edge mapping.
1130 J. Craner departs site.
1200 Head back to camp for lunch.
1330 Eco-Land and J. Clark back at Site 28 to continue sediment / veg. mat / water edge mapping.

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Location Site 28 Date 7/9/12

Project / Client NE Cape - 2012 - USACE

BERS job # 3412005 7

1710 Finished mapping sediment / veg. mat / edge of water boundaries for today. Ecoland breaks down equipment.
1730 Back at camp. Done for today.

Julie Clark 7/9/12

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Location Site 28 Date 7/10/12

Project / Client NE Cape 2012 - USACE

BERS job # 3412-0057

0700 Daily safety meeting and large safety Meeting to go over the safety plan.

0800 Daily envira. Meeting.

0850 Ecoland and J. Clark at site 28, set up to continue Site 28 mapping.

1005 Begin sediment mapping for today.

1105 Craner onsite. J. Clark / J. Craner discuss mapping sediment in some of the bodies of water east of the main site 28 drainage (i.e. ponds east of 2011's Transect 7 and east of 2011's sample 11NC25550536). Agrees that we will go ahead and map those areas during this mapping effort so we have the data in case it is needed in the future.

1135 J. Craner departs site.

1150 Pack up equipment, will be heading back to camp for lunch.

1330 Ecoland and J. Clark back onsite at Site 28 to continue mapping.

1500 R. James onsite to observe mapping

JC 7/10/12

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Location Site 28 Date 7/10/12

Project / Client 2012 NE Cape - USACE

BERS job # 3412-0057

1620 J. Craner onsite.

1645 R. James / J. Craner depart site.

1650 J. Allan (Ecoland) and J. Clark walk the rest of the site towards the MOC pad to plan out the rest of the mapping effort. Ecoland will be pulled of the Site 28 mapping tomorrow to do some surveying on the pad.

1730 J. Clark and Ecoland depart site 28.

Photolog for 7/10/12:

IMGP 0151: Ecoland doing sediment survey work at Site 28.

Julie Clark 7/10/12

Location Site 28 Date 7/11/12

Project / Client 2012 NE Cape - USACE

BERS job # 34120057

0700 Daily safety meeting. Also discuss AHAs from the health and safety plan.

0745 Get gear/equipment ready for site 28 activities.

0945 J. Clark / Charles Kava onsite at Site 28. Carl/Scott preparing raft in case we need to use it.

1005 J. Clark / C. Kava will wade into ponds near MOC to see if sediment is present. If so, will note it and will have Ecoland survey the boundaries when they are available

1015 Find some areas of sediment in pond where last year's 11NO28SS036 was located. Fuel odor and sheen noted.

1030 All veg. mat (no sediment) in pond where last year's sample 11NO28SS070 was located, except for small sediment pocket right by the 11NO28SS070 location.

1100 Find sediment in a pond where no samples were collected. Info recorded on a map so Ecoland can map it later.

Location Site 28 Date 7/11/12

Project / Client 2012 NE Cape 2012

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1120 Pond just west of last year's sample 11NO28SS069 appears to be veg. mat (no sediment), at least around the edges. Will need the raft to investigate the center of the pond.

1145 Pond north of eastern former AST contains veg. mat (no sediment).

1200 Back to camp for lunch.

1250 J. Clark / C. Kava at Site 25, will use raft to get to the middle of deeper ponds.

1600 Finished investigating ponds near the MOC. Have made notes on a Site 28 map so Ecoland can pick up the points wherever they are free. Head down Site 28 to the Sub-1 to test some probing methods for the probing phase, which will measure the thickness of the sediment in the already identified sediment areas.

1630 Using an auger, C. Kava can feel when auger flights bite into rock beneath the

JC 7/11/12

Location Site 28 Date 7/11/12

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1630 cont. sediment layer. This is visually confirmed by pulling up the auger and there is peat at the bottom.

1645 J. Craner onsite. Discuss using the auger to measure sediment thicknesses, tell him how we were able to "feel" the peat layer with the auger and then visually confirm by looking at the material that we were through the sediment layer. He agrees that this method sounds like a good way to measure sediment thicknesses (measure the thickness from top of material until peat is encountered.)

1725 Depart Site 28, head back to camp for dinner.

Photolog for 7/11/12:

IMGP0152: Bird in Site 28's southeastern most pond

0153: "

0154: "

0155: "

0156: "

JC 7/11/12

Location Site 28 Date 7/11/12

Project / Client 2012 NE Cape - USACE

BERS job # 34120057

Photolog for 7/11/12 (cont.)

IMGP0157: Using Ekman dredge to determine if sediment in middle of a deep pond (2011's Transect 1 and sample 11NC28SS059) is sediment. View W.

0158: Same as 0157

0159: Close-up of sediment material in pond (2011's Transect 1 and 11NC28SS059)

0160: Using Ekman dredge to collect material and determine if it's sediment. Charles Kava with the dredge. View NE.

0161: Close-up of loose material that Charles pulled up with dredge. Though there was a majority of grass/other organics, material determined to be "sediment" because it was loose and not connected to veg. mat.

Julie Clark 7/11/12

Location Site 28 Date 7/12/12

Project / Client 2012 NE Cape - USACE

BERS job # 34120057

0700 Daily safety meeting.

0705 Daily enviro meeting.

0800 J. Clark and Ecoland at Site 28 to pick up points of sediment areas that J. Clark located yesterday.

0540 Begin sediment surveying for today.

1115 Have finished surveying the sediment boundaries in Site 28. After lunch, will begin probing to determine sediment thicknesses. Will have Ecoland onsite to collect survey data at probing locations.

1150 Back at camp for lunch.

1315 Ecoland, C. Kava, and J. Clark at Site 28. Will begin probing sediment areas, beginning at Suqi River.

1345 Begin probing the sediment areas.

Probing ID	Est'd H2O depth to top of sed.	Sed. Thickness
28-1	1.41'	0.5'
28-2	0.51'	1'
28-3	0.54'	1.5'
28-4	0.45'	1'

Sediment in these 4 locations is silt, brown, loose, no odor. Thin layer of iron precipitate on top

Location Site 28 Date 7/12/12

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Probe ID	H2O depth to top of sed	Sed. Thickness	Comments
28-5	0.41'	1.5'	0-0.25=loose iron precipitate, rust-colored. 0.25-1.5=100% mineral sal w/ ~20% organics 1-1.5', dark brown, med. dense, no odor. @ 1.5-2'=50% mineral sed, 50% organics dense, dark brown, no odor
28-6	0.49'	2'	See boring logs
28-7	1.25'	1.25'	See boring logs

1520 J. Craner onsite to observe borings. He would like to see additional info recorded at each probing location, like soil type and other descriptions of the material. It was specified in the SOW that boring logs would be recorded similar to the ones done at Site 28 in 2011, so tomorrow a.m., J. Clark & Charles Kava will re-auger locations 28-1 thru 28-4 adjacent to the original probing location so the description can be recorded. The water depth to sediment data recorded today will be used.

30

Location Site 28 Date 7/12/12

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1625 J. Craner departs site.

1720 Pack up equipment for the day. Will continue probing tomorrow.

Photolog for 7/12/12:

IMGP0162: Jamie Allan (Ecoland) surveying sediment boundary in pond where soil's Transect 1 and discrete sample 11NC28550G9 was located. View NE.

IMGP0163: Same as 0162.

Julie Clark 7/12/12

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Location Site 28 Date 7/13/12

Project / Client 2012 NE Cape - USACE

BERS job # 34120057

0700 Daily safety meeting.

0705 Daily enviro meeting.

0830 J. Clark / C. Kava at site 28. Will re-auger probing locations 28-1 thru 28-4.

0850 Begin augering. See field forms for augering details/info.

0940 Finish re-augering probe locations 28-1 thru 28-4. Ecoland onsite setting up Total Station.

1130 J. Craner onsite.

1145 Breaking down for lunch. Craner, Ecoland, Kava, and Clark depart investigation area and head to vehicle.

1315 J. Clark, C. Kava, and Ecoland back onsite.

1340 Resume probing of sediment areas.

1700 J. Craner onsite.

1725 Finish probing for today. Pack up equipment.

1740 Depart Site 28.

Julie Clark 7/13/12

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Location Site 28 Date 7/13/12

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BERS job # 34120057

Photolog for 7/13/12:

IMGP0164: Charles Kava using hand auger to probe sediment area, view SE.

IMGP0165: Same as 0164, view NE.

IMGP0166: Same as 0165.

IMGP0167: Charles Kava helping Ecoland Survey probing location in deep water. View NW.

IMGP0168: Same as 0169.

Julie Clark 7/13/12

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Location Site 28 Date 7/14/12

Project / Client 2012 NE Cape - USACE

BERS job # 34120057

0700	Daily safety meeting.
0720	Daily enviro meeting.
0810	J. Clark, C. Kava, and Ecoland onsite at Site 28. Begin setting up for today.
0845	Continue probing Site 28 sediment areas. See field forms for more details.
1130	Pack up equipment, will break for lunch.
1300	J. Clark, C. Kava, Ecoland back at site 28.
1320	Resume probing Site 28 sediment areas. See field forms for more details.
1725	Finished probing for today, start packing up gear/equipment.

Photolog for 7/14/12:

IMGP0170: Gravel encountered @ 1' bgs in probing location 28-28.

IMGP0171: String encountered at 1.5' bgs in probing location 28-28.

Julie Clark 7/14/12

Location Site 28 Date 7/15/12

Project / Client 2012 NE Cape - 2012

BERS job # 34120057

0700 Daily safety meeting.
0705 Daily enviro meeting.
0810 J. Clark, C. Kava, and Ecoland onsite, begin setting up to continue sediment mapping / probing.
0840 Continue probing Site 28 sediment areas. See field forms for details.
1200 Pack up for lunch.
1310 Back at Site 28.
1315 Continue probing Site 28 sediment areas. See field forms for details.
1615 Have probed 2 locations in deep pond where 2011's Transect 1 and sample 11NC28SS069 were located. Cannot probe in the SE corner of the pond because too much debris is present.
1720 Finished probing sediment areas in Site 28. * NOTE: Mapped two small sediment pockets by 2011's discrete sample 11NC28SS070 and by the former manhole but did not probe the two locations because they

JD 7/15/12

Location Site 28 Date 7/15/12

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BERS job # 34120057

1720 cont. also happen to be located in the MOC surface water samples that have already been collected, (pre-excavation) and that will be collected during and after the MOC excavation - did not want to disturb those locations and potentially introduce contamination from the probing.

Photolog for 7/15/12:

IMG_0172: Charles Kava and Julie Clark probing a sediment area to determine the thickness of the sediment layer.

Julie Clark 7/15/12.

Location Site 28 Date 7/16/12

Project / Client 2012 NE Cape-USACE

BERS job # 34120057

0700 Daily safety meeting.

0710 Daily enviro. meeting.

0745 Eco-land is putting together a drawing that shows the sediment boundaries that we mapped and the probing locations. Once we have the map, USACE QAR and Bristol will sit down and discuss the best locations to collect the Site 28 sediment samples.

1230 Discuss w/ Jeremy Craner where in sediment profile samples should be collected (i.e. surface of the sediment, bottom of the sediment layer, etc.). J. Clark had phone call w/ Molly Walker and Greg Irell earlier; they had recommended two samples at the same location - surface and bottom of sediment. J. Craner thinks 1 sample should be collected along the whole profile. He will email USACE team to see what they would prefer.

1730 End of day.

Julie Clark 7/16/12

Location Site 28 Date 7/17/12

Project / Client 2012 NE Cape-USACE

BERS jobs # 34120057

0700 Daily safety meeting.

0705 Daily enviro. meeting.

0815 Have received a preliminary map from Eco-land showing sediment boundaries and probe locations. J. Craner, R. James, and J. Clark look at the map to determine where samples will be collected.

- J. Clark did 66 sediment probing locations at pretty good spacing/density, can eliminate some of the probing locations and essentially collect samples in about the same locations as the probings.
- In the stream, plan to collect samples this year between last year's stream sediment sample locations so we have good data coverage from both last year and this year.

0930 J. Clark working on map that shows proposed 2012 sediment sample locations.

1215 Lunch.

JC 7/17/12

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Location Site 28 Date 7/17/12

Project / Client 2012 NE Cape - USACE

BERS job # 34120057

1420 J. Craner and J. Clark at Site 28 to look at some of the mapped sediment boundaries that Craner had questions about.

1615 Email Site 28 sediment boundary map showing proposed sediment sample locations to the Bristol/USACE/ADEC project team.

1630 Start getting coolers/gear ready so sediment sampling can begin tomorrow.

Julie Clark 7/17/12

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Location Site 28 Date 7/18/12

Project / Client 2012 NE Cape - USACE

BERS job # 34120057

0700 Daily safety meeting

0705 Daily enviro meeting.

0720 Prepare for Site 28 sediment sampling.

0835 J. Clark, L. Kleppin, C. Kava at site 28, prepare to begin sampling.

0920 Begin collecting samples. See field forms for details.

1145 Pack up equipment and head back to camp for lunch. Have collected 9 sediment samples.

1400 J. Clark, L. Kleppin, C. Kava back onsite to continue collecting sediment samples. See field forms for details.

1510 R. James onsite.

1520 Aaron Shewman onsite to observe sediment sampling.

1620 R. James/Aaron Shewman depart site.

1715 Start packing up gear/equipment.

1725 Head back to camp to store samples in the sample refrigerator.

JC 7/18/12

40

Location Site 28 Date 7/18/12

Project / Client 2012 NE Cape - USACE

BERS job # 34120057

Photolog for 7/18/12:

IMGP0173: Homogenizing sediment before placing into sample containers.

IMGP0176: Collecting Site 28 sediment sample.

IMGP0178: Sheen in water at 12NC28SS015 sample location. View SE.

IMGP0179: Sheen in water at 12NC28SS015 sample location. View: down.

Julie Clark 7/18/12

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Location Site 28 Date 7/19/12

Project / Client 2012 NE Cape - USACE

BERS job # 34120057

0700 Daily safety meeting.

0705 Daily enviro meeting.

0920 J. Clark, L. Kleppin, C. Kava onsite at site 28. Load UTV w/ coolers & gear.

0935 Begin sampling Site 28 sediment. See field forms for details.

1110 A. Shewman (USACE CWR) onsite to observe sampling.

1140 A. Shewman departs.

1150 Pack up coolers and gear, will head back to camp for lunch.

1215 At lunch, tell J. Allan (Eco-land) that there was a patch of veg. mat in the stream channel at sample location 12NC28SS027 that we'll have to survey in.

1340 J. Clark, L. Kleppin, C. Kava back at site 28 to continue sediment sampling. See field forms for sample details.

1530 A. Shewman onsite.

JC 7/19/12

Location Site 28 Date 7/19/12

Project / Client 2012 NE Capo - USACE

BERS job # 34120057

1550 Try to collect sample at probe location 28-53 (w/ clam gun), but unable to get sample because pond is all veg. mat. Suspect when we did probing with the hand auger, the auger flights loosened the grass and organics, making it "loose" and therefore meeting definition of sediment.

1630 A. Shewman departs site

1710 Collect sample 12NC28SS037 at packed of sediment that was not originally mapped or probed (it was discovered 7/17/12 by a walk-thru w/ J. Clark & J. Orainer). Borehole log description is included on sample information form.

1720 Pack up equipment and coolers.

1725 Head back to camp.

Photolog for 7/19/12:

IMGP0180: Sample material at 12NC28SS023.

DSCF0629: C. Kava / J. Clark collecting sample 12NC28SS023. View SSE.

DSCF0630: Same as DSCF0629 (close-up)

DSCF0631: " "

Location Site 28 Date 7/19/12

Project / Client 2012 NE Capo - 2012

BERS job # 34120057

Photolog for 7/19/12 (cont.)

DSCF0632: Same as DSCF0631

DSCF0633: " "

DSCF0634: " "

DSCF0635: Collecting sample 12NC28SS28. View E.

DSCF0636: Close-up of DSCF0635.

DSCF0637: Collecting sample 12NC28SS034. View E.

DSCF0638: Same as -0637.

DSCF0639: Same as -0638, but view N.

DSCF0640: Close-up of -0639.

DSCF0641: " "

DSCF0642: " "

DSCF0643: " "

Julie Clark 7/19/12

Location Site 28 Date 7/20/12

Project / Client 2012 NE Cape - USACE

BERS job # 3412057

0700 Daily safety meeting.

0710 Daily enviro meeting.

0730 Have proposed 50 sediment sample locations in Site 28, talk to Aaron Shewman to see if he can think of any places to use the remaining 4 samples. He suggests adding one in pond where probes KS-22 were done. Other than that, JC Court he thinks there is pretty good coverage. As of right now, looks like we'll have three samples left over.

0745 Begin getting coolers/gear together to continue site 28 sediment sampling.

0830 J. Clark, C. Kava, L. Kleppin at Site 28.

0845 Begin sampling for the day. See field forms for sample info/details.

0945 Two samples from arrow-shaped pond, 12NC28SS039 and 12NC28SS040, were mostly grass and organics.

1045 Samples 12NC28SS041 and 12NC28SS043 were mostly grass and organics. 12NC28SS042 also ~75% grass/organics.

Location Site 28 Date 7/20/12

Project / Client 2012 NE Cape

BERS job # 3412057

1100 J. Clark helps J. Allan (Eco-land) resurvey sediment boundaries in pond where samples 12NC28SS034, -035, and -036 were located.

1150 Pack up coolers/gear - will head back to camp for lunch.

1330 J. Clark, L. Kleppin, C. Kava, A. Shewman back at site 28, will continue sediment sampling. See field for more details.

1405 A. Shewman departs site.

1545 Finished site 28 sediment sampling. Collected a total of 51 primary samples, 5 duplicates, 3 MS/MSDs.

1700 Collect rinsate sample 12NC28Rinsate of clam gun and stainless steel bowl used for the site 28 samples for QC.

Photolog for 7/20/12:

IMGP0181: Aaron Shewman, USACE QAR at site 28 to observe sediment sampling. View NE.

IMGP0182: Same as -0181.

JC 7/20/12

Location Site 28 Date 7/20/12

Project / Client 2012 NE Cape - USACE

BEFS job # 34120057

Photolog for 7/20/12 (cont.)

IMGP0183: C. Kaya and J. Clark using boat, preparing to collect sample 12NC28SS045 in a pond near the MCC. View NE.

IMGP0184: Iron precip. and sheen at edges of pond near MCC.

IMGP0185: Same as -0183.

IMGP0186: Preparing to collect 12NC28SS045. View N.

IMGP0187: Same as -0186.

IMGP0188: Same as -0186.

IMGP0190: Collecting 12NC28SS045. View NE.

IMGP0193: Finished collecting 12NC28SS045, heading back to shore. View E.

IMGP0194: Same as -0193, but view S.

IMGP0195: Collecting rinsate sample from clam gun and stainless steel bowl. View SE.

Julie Clark
7/20/12

Location Site 28 Date 7/21/12

Project / Client 2012 NE Cape - USACE

BEFS job # 34120057

0700 Daily safety meeting.

0705 Daily enviro meeting.

0730 Work on Site 28 paperwork, COCs, wrap-up.

1310 J. Clark and Ecoland at Site 28. Will survey patch of veg. mat in stream channel near sample 12NC28SS027. Ecoland will also survey the sediment samples collected yesterday.

1445 J. Clark and Ecoland finished survey work at Site 28.

1530 Back at camp, will QC sediment samples to make sure labels are correct.

Photolog for 7/21/12:

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Location Site 28 Date 7/20/12

Project / Client 2012 NE Cape - USACE

BERS job # 3412-0057

0700 Daily safety meeting.
0705 Daily enviro meeting.
0730 J. Clark will do misc. Site 28 paperwork, wrap-up today.

Julie Clark 7/20/12

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Location Site 28 Date 7/23/12

Project / Client 2012 NE Cape - USACE

BERS job # 3412-0057

0700 Daily safety meeting
0705 Daily enviro meeting.
0745 J. Clark prepares Site 28 sediment samples for shipment to TestAmerica-Tacoma.
1300 Have finished packing Site 28 samples in coolers, have a total of 7 coolers. E. Barthhill emails Terri Torres (of TA-Tacoma) the COCs and the AK Airlines Goldstreak airway bill #, 81873175.
1810 Bering Air plane lands at NE Cape, will transport coolers to AK Airlines in Nome for Goldstreak shipping to Tacoma. J. Clark is also departing the island on this flight.
1900 In Nome awaiting flight to Anchorage.
2200 J. Clark departs Nome.
2340 Arrive in Anchorage. Done for today.

Julie Clark 7/23/12

50

Location Site 28 Date 7/31/12

Project / Client 2012 NE Cape - USACE

BERS job # 34120057

0830 J. Clark (Bristol) at Security Aviation in Anchorage, Ak. J. Clark, Greg Jarrell, Bill Burke (all Bristol), Jeremy Craner, Carey Cossaboom (USACE) and Curtis Dunkin (ADEC) will be flying to NE Cape for site visit.

0930 Security Flight departs Anchorage.

1245 Arrive at NE Cape. Have lunch.

1310 Curtis Dunkin, Carey Cossaboom, Jeremy Craner, Aaron Shewman, and Julie Clark do site walk in Site 28.

1530 Cossaboom and Shewman leave NE Cape on Security flight.

1600 J. Clark looks over prelim. Site 28 data we've received to date.

Julie Clark
7/31/12

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Location Site 28 Date 8/1/12

Project / Client 2012 NE Cape - USACE

BERS job # 34120057

0700 Daily safety meeting.

0705 Daily enviro. meeting

0730 Bristol has been receiving preliminary Site 28 sediment data from TestAmerica, J. Clark inputs the data into an Excel spreadsheet so we can look at analytical results while doing a site walk with Curtis Dunkin (ADEC), Jeremy Craner (USACE), Greg Jarrell & Bill Burke (Bristol).

0945 J. Clark, G. Jarrell, B. Burke up at MOC to meet w/ Dunkin & Craner to do walk-thru of site 28.

0950 Dunkin & Craner want to go check out potential sample locations at top of Radar Dome Road mountain before clouds/fog obscure visibility. Will do Site 28 walk-thru with them after lunch.

1000 Clark, Jarrell, and Burke do site 28 visit.

1400 Dunkin, Craner, Burke, Jarrell, Russell James and J. Clark at site 28.

Location Site 28 Date 8/1/12

Project / Client 2012 NE Cape - USACE

BERS job# 3412-0057

1400 cont. to give everyone a demostration of what sediment in site 28 looks like. J. Clark and laborer will use the clam gun to pull up sediment in several different locations. to show the PDT.

1600 ADEC, USACE, and Bristol depart site 28.

1730 J. Clark and C. Dunkin depart NE Cape on Bering Air flight to Nome.

2215 Arrive in Anchorage. Done for today.

Julie Clark 8/1/12

Location Date

Project / Client

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/13/12 Time: 0855

Probing ID: 28-1 H2O Depth to top of Sed: 1.41' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.75' = Very loose iron precipitate/sediment, rust-colored & brown, wet
0.75-1' = Loose, 75% grass/organics 25% silt, brown, wet, no odor
1-1.5' = 100% peat, brown, moist, dense, no odor
1.5-2' = 100% fine sand & silt, gray, moist, very dense, no odor. NATIVE SILT

Date: 7/13/12 Time: 0905

Probing ID: 28-2 H2O Depth to top of Sed: 0.51' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

(0-0.5 iron precipate, very loose),
0.5-1' = Very loose fine sand & silt, dark brown, wet, poss. slight HC odor
1-1.5' = Fine sand & silt, trace peat, trace gravel, loose, wet, poss. slight HC odor
1.5-2' 60% fine sand & silt, 40% peat, dense, wet, poss. slight HC odor
2-2.5' 100% silt, very dense, gray, moist. NATIVE SILT

Date: 7/13/12 Time: 0915

Probing ID: 28-3 H2O Depth to top of Sed: 0.54' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-1' = Sand & silt, ~20% grass/organics, very loose, wet, dark brown & gray, no odor.
~3-6" of very loose iron precipitate at top.
1-1.5' = same as ~0.75-1'
1.5-1.75' = 100% peat, dense, wet, dark brown
1.75-2' = 100% fine sand & silt, very dense, gray, moist. NATIVE SILT

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/13/12 Time: 0930

Probing ID: 28-4 H2O Depth to top of Sed: 0.48' Sed Thickness: 1.75'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.5' = Iron precipitate, very loose, rust-colored, wet
0.5-1' = Fine sand & silt, loose, dark brown, wet, no odor
1-1.5' = Same as 0.5-1'
1.5-1.75' = Same as 1-1.5, except w/ 25% peat
1.75-2' = silt, very dense, brown, moist, no odor

Date: 7/12/12 Time: 1530

Probing ID: 28-5 H2O Depth to top of Sed: 0.41' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precipitate, very loose, rust-colored, wet
0.25-1.5' = Fine sand/silt (w/ 20% organics 1-1.5'), wet, dark brown, med. dense, no odor
1.5-2' = 60% peat, 40% silt, dense, dark brown, no odor

Date: 7/12/12 Time: 1545

Probing ID: 28-6 H2O Depth to top of Sed: 0.49' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.5' = Iron precipitate, very loose, wet, rust-colored
0.5-1' = Silt, loose, dark brown/black, wet, no odor. Grass @ 1'
1-1.5' = 50% silt, 50% peat, med. dense, wet, dark brown, no odor
1.5-2' = 75% Fine sand & silt, 25% organics, med. dense, wet, dark brown, no odor
2-2.5' = Fine sand & silt, trace organics, very dense, moist, brown, no odor

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/12/12 Time: 1600

Probing ID: 28-7 H2O Depth to top of Sed: 1.23' Sed Thickness: 1.25'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.75' = Iron precip., very loose, wet, rust-colored

~~1-1.5' = 50% silt, 50%~~ JC 0.75-1.25 Fine sand/silt, wet, loose, dark brown/black, poss. slight HC odor

1.25-1.75' = Fine sand & silt, trace gravel, no organics, dense, moist, brown, no odor NATIVE MATERIAL

Date: 7/13/12 Time: 1005

Probing ID: 28-8 H2O Depth to top of Sed: 0.91' Sed Thickness: JC 1' 0.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.5' = Very loose fine sand & silt, wet, dark brown, poss. slight odor w/ 40% peat 0.25-0.5'

0.5-1' = ~~50% peat~~ grass/organics/peat, 50% fine sand/silt, loose-med dense, wet, brown (peat) and gray (sand/silt), slight HC odor

1-1.5' = Fine sand & silt, dense, moist, dark brown/gray, no odor

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Date: 7/13/12 Time: 1010

Probing ID: 28-9 H2O Depth to top of Sed: 1.43' Sed Thickness: 0.75'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Very loose iron precipitate, wet

0.25-0.5' = 50% Fine sand, 1/silt, 50% peat, loose, wet, possible slight HC odor

0.5-0.75' = Same as 0.25-0.5'

0.75-1' = silt, very dense, moist, brown & gray, no odor, NATIVE SILT

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/13/12 Time: 1025

Probing ID: 28-10 H2O Depth to top of Sed: 0.77' Sed Thickness: ~~2'~~ JC 1.25'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precipitate, very loose, wet, rust-colored

0.25-0.5' = silt, very loose, wet, dark brown & black, no odor

0.5-1' = same as 0.25-0.5',

1-1.5' = same as 0.5-1', but w/ ~50% peat 1.25-1.5'

1.5-2' = Fine sand & silt, trace organics loose med. dense, wet, dark gray & dark brown, no odor

NATIVE SOIL @ 2' (silt, very dense, moist, gray & brown, no odor)

Date: 7/13/12 Time: 1045

Probing ID: 28-11 H2O Depth to top of Sed: 0.32' Sed Thickness: ~~1.5~~ JC 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precip., very loose, wet, rust-colored

0.25-0.5' = 50% grass/organics, 50% silt, loose, wet, brown (silt) & black (organics), no odor

0.5-1' = same as 0.25-0.5'

1-1.5' = Fine sand & silt, med. dense, wet, gray & brown, no odor

NATIVE SILT @ 1.5' (silt, very dense, moist, gray, no odor)

Date: 7/13/12 Time: 1100

Probing ID: 28-12 H2O Depth to top of Sed: 0.52 Sed Thickness: 1.75'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precip., very loose, wet, rust-colored

0.25-0.5' = 75% ~~peat~~ JC organics, 25% silt, med. dense, wet, brown (silt) & black (~~peat~~ organics) JC, no odor

0.5-1' = 75% sand & small gravel, 25% peat, loose to med. dense, dark brown (gravelly sand) & black (peat), no odor

1-1.5' = 75% silt, 25% peat, loose Med. dense, wet, brown, no odor

1.5-1.75' = same as 1-1.5'

1.75-2' = NATIVE SILT - silt, very dense, moist, brown w/ some gray, no odor

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/13/12 Time: 1120

Probing ID: 28-13 H2O Depth to top of Sed: 0.63' Sed Thickness: 2'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.5' = Iron precip., very loose, wet, rust-colored

0.5-1' = 75% fine sand & silt, 25% organics, very loose, wet, dark brown (sand/silt) & black (organics), no odor

1-1.5' = same as 0.5-1'

1.5-2' = same as 1-1.5', NATIVE SILT @ 2'

2-2.5' = NATIVE SILT, med. dense, moist-wet, gray & brown, no odor

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Date: 7/13/12 Time: 1340

Probing ID: 28-14 H2O Depth to top of Sed: 1.05' Sed Thickness: 1.75'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.5' = Iron precip., very loose, wet rust-colored

0.5-1' = 50% fine sand & silt, 50% grass/organics, loose, wet, brown (fine sand/silt) and black (grass/organics), possible slight HC odor

1-1.5' = Fine sand w/ some silt, loose, wet, grayish brown, no odor

1.5-1.75' = Same as 1-1.5'

1.75-2' = NATIVE SILT. Silt, dense, moist, gray w/ some brown, no odor

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Date: 28-15 Time: 1400

Probing ID: 7/13/12 H2O Depth to top of Sed: 0.93' Sed Thickness: ~~1.75'~~ JC 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.5' = Iron precip., very loose, wet, rust-colored

0.5-1' = Fine sand and silt, loose, wet, brown, poss. slight HC odor

1-1.5' = 50% peat, 50% silt, med. dense, wet, brown., no odor

1.5-1.75' = same as 1-1.5'

1.75-2' = NATIVE SILT. Silt, dense, moist, gray and brown, no odor

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/13/12 Time: 1410

Probing ID: 28-16 H2O Depth to top of Sed: 0.48' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment [
0-0.5' = Iron precip. very loose, wet, rust-colored
0.5-1' = silt, loose, wet, dark brown, no odor
1-1.5' = same as 0.5-1, except w/ trace organics
1.5-2' = NATIVE SILT. Silt, very dense, moist, gray w/ some brown, no odor

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Date: 7/13/12 Time: 1435

Probing ID: 28-17 H2O Depth to top of Sed: 0.24' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment [
0-0.75' = Iron precip., very loose, wet, rust-colored
0.75-1.5' = silt, very loose, wet, dark brown
1.5-2' = 75% peat, 25% silt, med. dense-dense, moist, brown, moderate to strong HC odor

---

Date: 7/13/12 Time: 1500

Probing ID: 28-18 H2O Depth to top of Sed: 1.33' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment [
0-0.25' = Iron precip., very loose, wet rust colored
0.25-1' = silt, loose, wet, dark brown & black, mod. HC odor
1-1.5' = same as 0.25-1, except trace peat, and brown
1.5-2' = 100% peat @ 1.5' bgs (med. dense, dark brown, moist-wet, strong HC odor. 1.5-2' - NATIVE SILT. Silt, brown, dense, moist, slight HC odor

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/13/12 Time: 1515

Probing ID: 28-19 H2O Depth to top of Sed: 1.30' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.5' = 50% grass/organics, 50% silt, loose-med. dense, black (organics), brown (silt), wet, slight HC odor

0.5 - 1' = ~~90% peat~~ JC silt, w/ peat increasing w/ depth. 100% peat at 1' bgs. Med. dense, brown, wet to moist, mod. HC odor, strong HC odor in peat

---

Date: 7/13/12 Time: 1525

Probing ID: 28-20 H2O Depth to top of Sed: 2.13' Sed Thickness: ~~1.5~~ JC 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

Very thin layer of iron precip.

0-0.5' = 75% silt, 25% grass/organics, med. dense (halfway frozen, would likely be loose if not frozen), wet, dark brown (silt) & black (grass/organics), strong HC odor

0.5-1' = same as 0-0.5'

1-1.5' = 50% peat, 50% silt, med. dense, moist, brown

1.5'-1.75' = 100% peat, dense, moist brown, strong odor 1.75-2' = NATIVE SILT. silt, dense, moist, brown, strong odor

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Date: 7/13/12 Time: 1600

Probing ID: 28-21 H2O Depth to top of Sed: 1.68' Sed Thickness: 1.75'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

1-1.75' sediment

Very thin layer of iron precip. on top 0-0.5' = ~~wood~~ silt, loose, wet, dark brown, mod. odor

~~0.5-1.5~~ JC = silt, very loose, brown, wet, mod. HC odor

1.75-2' = ~90% peat, 10% silt, med. dense, brown, moist-wet, strong HC odor

2-2.5' = NATIVE SILT. silt, dense, moist, brown, mod. HC odor

* Sheen generated when augering

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/13/12 Time: 1625

Probing ID: 28-22 H2O Depth to top of Sed: 1.45' Sed Thickness: ~~1.75'~~ JC 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment
- 0-0.5' = Silt w/ trace grass/organics, loose-med. dense, wet, dark brown/black, med. HC odor
- 0.5-1' = 75% Silt w/ 25% peat, loose-med. dense, wet, brown, strong HC odor
- 1-1.5' = 50% peat, 50% silt, med. dense, brown, strong HC odor
- 1.5-~~2~~ 1.75' = same as 1-1.5'
- 1.75-2' = NATIVE SILT. silt, trace peat, dense, moist, brown, med. HC odor

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Date: 7/13/12 Time: 1645

Probing ID: 28-23 H2O Depth to top of Sed: 0.62 Sed Thickness: ~~1'~~ JC 0.75'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment
- Very thin layer of iron precip., very loose, wet, rust-colored
- 0-0.5' = Silt, loose, dark brown and black, wet, no odor
- 0.5-0.75' = same as 0-0.5'

0.75-1 = 50% peat, 50% silt, loose-med. dense, moist-wet, brown, slight HC odor

NATIVE SILT
- 1-1.5' = 90% silt, 10% peat, med. dense, moist, brown, slight HC odor
- 1.5-2' = same as 1-1.5'

Date: 7/13/12 Time: 1705

Probing ID: 28-24 H2O Depth to top of Sed: 0.90' Sed Thickness: ~~1'~~ JC 0.75'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment
- 0-0.25' = Iron precip., very loose, wet, rust-colored
- 0.25-0.75' = Silt, loose, wet, black, slight HC odor
- 0.75-1' = 50% peat, 50% silt, med. dense, brown, mod. HC odor
- 1-1.5' = ~~75% peat~~ JC same as 0.75-1'
- 1.5-1.75' = same as 1-1.5'
- 1.75-2' = NATIVE SILT. silt, trace organics, dense, moist, brown poss. slight HC odor

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/14/12 Time: 0845

Probing ID: 28-25 H2O Depth to top of Sed: 1.15' Sed Thickness: 1.25'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precip., very loose, wet, rust-colored
0.25-1' = Silt w/ trace grass/organics, loose, wet, brown & black, slight HC odor
1-1.25' = Silt w/ trace grass/organics, med. dense, wet-moist, brown & black, mod. HC odor
1.25-1.5' = 75% silt, 25% peat, mod. dense, moist, brown, mod. HC odor
1.5-2' = 75% peat, 25% silt, moist, med. dense, brown, mod. HC odor
2-2.5' = NATIVE SILT, Silt, trace organics, dense, moist, brown, mod. HC odor
* Sheen in water at probing location

Date: 7/14/12 Time: 0915

Probing ID: 28-26 H2O Depth to top of Sed: 1.06' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precip., very loose, wet, rust-colored
0.25-1' = 75% silt, 25% grass/organics, loose, wet, brown (silt) & black (grass/organics), mod. HC odor
1-1.5' = 60% peat, 40% silt, med. dense, moist, brown, mod. HC odor
1.5-2' = 75% peat, 25% silt, med. dense, moist, brown, mod.-strong HC odor.

NATIVE SILT

2-2.5' = Silt w/ trace peat, dense, moist, brown, mod.-strong HC odor
* Sheen in water at probing location

Date: 7/14/12 Time: 0935

Probing ID: 28-27 H2O Depth to top of Sed: 0.53' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

Very thin layer of iron precip., very loose, wet, rust-colored
0-0.5' = Silt, trace fine sand & trace grass/organics, loose, wet, dark brown and black, mod. HC odor
0.5-1' = same as 0-0.5', 1-1.5' = same as 0.5-1'
1.5-1.75' = 90% Peat, 10% silt, med. dense, moist, stained black, strong HC odor
1.75-2' = 90% silt, 10% peat, dense, moist, brown, strong HC odor. NATIVE SILT

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/14/12 Time: 0955

Probing ID: 28-28 H2O Depth to top of Sed: 0.74' Sed Thickness: 1.25'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

Very thin layer of iron precip., wet, very loose, rust-colored
0-0.5' = Fine sand, loose, wet, dark olive gray, mod. HC odor 0.5-0.75' = same as 0-0.5'
0.75-1' = Silt w/ trace grass/organics, wet-moist, loose-med. dense, brown, mod. HC odor
1-1.25' = ~~60~~ JC 75% gravel, 25% sand, loose-med. dense, wet, black, mod. HC odor
1.25-1.5' = Peat, med. dense, moist, brown, mod-strong HC odor. Piece of string at 1.5
1.5-1.75' = Same as 1.25-1.5'
1.75-2' = 90% silt, 10% peat, moist, med. dense, brown, slight HC odor. NATIVE SILT

Date: 7/14/12 Time: 1020

Probing ID: 28-29 H2O Depth to top of Sed: 0.69' Sed Thickness: ~~1.25'~~ JC 0.75'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

Very thin layer of iron precip., very loose, wet, rust-colored
0-0.5' = 90% silt, 10% grass/organics, dark brown/black, loose, wet, no odor
0.5-0.75' = same as 0-0.5. Thin layer of gravel @ 0.75' bgs
0.75-1.25' = 90% peat, 10% silt, loose-med. dense, wet, brown, no odor
1.25'-1.5' = 60% peat, 40% silt, med. dense, moist, brown, poss. slight HC odor
1.5-2' = NATIVE SILT. silt w/ trace peat, med. dense to dense, moist, brown, poss. slight fuel odor

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Date: 7/14/12 Time: 1040

Probing ID: 28-30 H2O Depth to top of Sed: 0.85' Sed Thickness: 0.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.5' = Silt, loose, wet, brown & black, poss. slight HC odor. | Loose 0.5 grass/organics @ (black, wet)
0.5-1 = 50% silt, 50% peat, loose-med. dense, wet, brown, no odor
1-1.5' = same as 0.5-1'
1.5-2' = NATIVE SILT. silt, trace organics ~~med.~~-dense-dense, moist, brown, poss. slight HC odor

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/14/12 Time: 1100

Probing ID: 28-31 H2O Depth to top of Sed: 0.93' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.5' Thin layer of iron precip., very loose, wet, rust-colored
0.5-1' = silt, loose, wet, brown, slight-mod. HC odor
1-1.5' = same as 0.5-1'
1.5-2' = Black grass/organics @ 1.5'. Peat, med. dense, moist, brown, mod. HC odor
2-2.5' = NATIVE SILT. Silt, dense, brown & gray; moist; no odor

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Date: 7/14/12 Time: 1115

Probing ID: 28-32 H2O Depth to top of Sed: 0.82 Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

Thin layer of iron precip, very loose, wet, rust-colored
0-1' = Silt and organics, loose, wet, dark brown/black, no odor
1-1.5' = same as 0-1
1.5-1.75' = Peat, mod. dense, moist, brown,
1.15-2' = NATIVE SILT = Silt, dense, moist, brown, NO odor

Date: 7/14/12 Time: 1320

Probing ID: 28-33 H2O Depth to top of Sed: 0.74' Sed Thickness: ~~1.75'~~ ~~2.25'~~ 1.75' JC JC

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

Thin layer of iron precip., very loose, wet, rust-colored
0-0.5' = Silt, loose, wet, dark brown & black w/some rust color (iron precip.), slight HC odor 0-0.75' = same as 0-0.5'
0.75-1.5' = 75% Organics, 25% silt, loose, wet, black (organics) & dark brown (silt), mod HC odor 1.5-1.75' = same as 0.75-1.5'
1.75-2.25' = Silt, trace organics, loose-med. dense, moist, brown, slight HC odor
2.25-2.5' = Silt, dense, moist, gray, no odor

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/14/12 Time: 1350

Probing ID: 28-34 H2O Depth to top of Sed: 0.32' Sed Thickness: 2.'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precip., very loose, wet, rust-colored
0.25-0.75' = silt, very loose, wet, dark brown & rust-colored, poss. slight HC odor
0.75-1' = 100% grass/organics, loose-med. dense, wet, black, slight HC odor
1-1.5' = 90% silt, 10% peat, loose, wet-moist, dark brown, slight HC odor
1.5-2' = silt w/ trace peat, loose-med. dense (probably frozen-med. dense material is very cold), brown, poss. slight HC odor
2-2.5' = NATIVE SILT. Silt, dense, moist, gray, no odor

Date: 7/14/12 Time: 1415

Probing ID: 28-35 H2O Depth to top of Sed: 0.33' Sed Thickness: 1.75'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

Very thin layer of iron precip, loose, wet, rust-colored
0-0.75' = Silt, loose, wet, dark brown, slight HC odor
0.75-1' = 100% grass/organics, loose, wet, black, slight HC odor
1-1.5' = silt w/ trace organics, loose, wet, brown, slight HC odor
1.5-1.75' = Same as 1-1.5'
1.75-2' = NATIVE SILT. Silt, dense, moist, gray, no odor

Date: 7/14/12 Time: 1440

Probing ID: 28-36 H2O Depth to top of Sed: 0.07' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precip., loose, wet, rust-colored
0.25-0.5' = 75% grass/organics, 25% silt, loose, wet, black (organics) and brown, slight HC odor.
0.5-1' = 50% silt, 50% grass/organics, med. dense, wet to moist, black (org.) and brown (silt), slight-mod. HC odor
1-1.5' = 75% peat, 25% silt, med. dense, dry, to moist brown, mod. HC odor

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/14/12 Time: 1500

Probing ID: 28-37 H2O Depth to top of Sed: 0.04' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precip., loose, wet, rust-colored
0.25-0.5' = Grass/organics w/ trace silt, loose, wet, tan, slight HC odor
0.5-1' = same as 0.25-0.5', but black ~~black~~ 1-1.5' = same as 0.5-1', but med. dense
1-1.5' = 90% silt, 10% organics, wet, loose-med. dense, brown, slight HC odor
1.5-2' = same as 1-1.5', but moist and dense

Date: 7/14/12 Time: 1515

Probing ID: 28-38 H2O Depth to top of Sed: 0.17' Sed Thickness: 2'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precip., loose, wet, rust colored
0.25-0.75' = Silt w/ trace grass/organics, loose, wet, brown & black, mod. HC odor
0.75-1' = 60% organics, 40% silt, loose, wet, black, slight-mod. HC odor
1-2' = 75% silt, 25% organics, wet, loose, dark brown & black, slight HC odor
2-2.25' = Peat w/ trace silt, moist, med. dense, black & dark brown, mod. HC odor
2.25-2.5' = Clayey silt, dense, moist, gray, no odor

Date: 7/14/12 Time: 1530

Probing ID: 28-39 H2O Depth to top of Sed: 0.13' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precip., loose, wet, rust-colored
0.25-0.5 = 90% grass/organics, loose, wet, black/dark brown, poss. slight HC odor
0.5-1' = 50% silt, 50% peat, loose, wet, dark brown, slight HC odor
1-1.25' = Peat, trace silt, med. dense, brown, strong HC odor
1.25-1.75' = ~~50~~ 75% silt, ~~50~~ 25% peat, brown, mod. dense, ~~moist~~ STIFF, ~~slight~~ mod HC odor
1.75-2' = NATIVE SILT. silt, dense, moist, ~~gray and~~ JC brown, mod. HC odor

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/14/12 Time: 1550

Probing ID: 28-40 H2O Depth to top of Sed: 0.10' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precip., loose, wet, rust-colored
0.25-0.75' = silt, loose, wet, brown, poss. slight HC odor
0.75-1.5' = 50% silt, 50% grass/organics, loose-med dense, dark brown (silt) and black, slight HC odor 0.75-1, mod HC odor 1-1.5'
1.5-1.75' = 75% silt, 25% peat, moist, med. dense, brown. Insulation at 1.5'
1.75-2' = silt w/ trace organics, dense, moist, brown.

Date: 7/14/12 Time: 1620

Probing ID: 28-41 H2O Depth to top of Sed: 0.23' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precip., loose, wet, rust-colored
0.25-0.5' = 75% grass/organics, 25% silt, black (organics) & brown (silt), loose, wet, no odor
0.5-1' = 50% silt, 50% grass/organics, loose, wet, brown (silt) & black (organics), no odor
1-1.5' = same as 0.5-1', but med. dense and w/ slight odor. Insulation @ 1.5
JC ~~Cannot get past the insulation at auger~~ Charles (have removed the obstructio
1.5-2' = silt w/ trace organics, dense, moist, brown, mod. HC odor

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Date: 7/14/12 Time: 1650

Probing ID: 28-42 H2O Depth to top of Sed: 0.32' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precip., loose, wet, rust-colored
0.25-1' = 75% grass/organics, 25% silt, black (organics) & dark brown (silt), loose, wet, mod. HC odor
1-1.5' = Grass/organics, trace silt, wet, med. dense, black, mod.-strong HC odor
1.5'-2' = 90% silt, 10% peat, med. dense, dark brown, moist-wet, mod-strong HC odor
2-2.5 = same as 1.5-2', but dense.

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/14/12 Time: 1710

Probing ID: 28-43 H2O Depth to top of Sed: 0.44' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.25' = Iron precip., loose, wet, rust-colored
0.25-0.5' = Silt, trace gravel, wet, loose, black, mod. HC odor
0.5-1' = Silt, trace organics, wet, loose, black, strong HC odor
1-1.5' = Silt, trace organics, moist, mod. dense, dark brown, strong HC odo
1.5-1.75' = Same as 1-1.5, Refusal at 1.75' - rocks. Were hitting rocks from ~1'-1.75' bgs. (or insulation)

(or insulation)

Date: Time:

Probing ID: H2O Depth to top of Sed: Sed Thickness:

Description/Comments: (material type, moisture content, color, density, odor, etc.)

Date: Time:

Probing ID: H2O Depth to top of Sed: Sed Thickness:

Description/Comments: (material type, moisture content, color, density, odor, etc.)

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/15/12 Time: 0845

Probing ID: 28-44 H2O Depth to top of Sed: 0.30' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

Thin layer of iron precip., loose, wet, rust-colored
0-0.5' = 50% silt, 50% grass/organics, loose, wet, black, slight HC odor
0.5-1' = same as 0-0.5', but mod. HC odor
1-1.5' = 75% silt, 25% peat, wet-moist, loose-med dense, brown, mod. HC odor
1.5-2' = 75% silt, 25% peat, moist, med. dense, mod. HC odor
2-2.5' = same as 1.5-2', At 2.5' = NATIVE SILT = silt, very dense, moist-dry; gray, slight HC odor

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Date: 7/15/12 Time: 0910

Probing ID: 28-45 H2O Depth to top of Sed: 0.13' Sed Thickness: 1.25'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

Thin layer of iron precip., loose, wet, rust-colored
0-0.5' = silt, loose, wet, brown & rust-colored
0.5-1' = 50% silt, 50% grass/organics, loose, wet, brown & black, mod. HC odor
1-1.25' = 75% silt, 25% peat, loose-med. dense, moist-wet, brown, mod. HC odor
1.25-1.5' = NATIVE SILT, silt, dense, moist, gray, slight HC odor

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Date: 7/15/12 Time: 0920

Probing ID: 28-46 H2O Depth to top of Sed: 0.24' Sed Thickness: ~~1.25~~ 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

Thin layer of iron precip., loose, wet, rust-colored
0-0.5' = silt, loose, wet, brown & rust-colored
0.5-1' = Grass/organics, trace silt, loose, wet, black, slight HC odor
1-1.25' = 50% silt, 50% peat, loose-med. dense, brown, wet to moist, slight HC odor
1.25-1.5' = NATIVE SILT: silt, dense, moist, gray. slight HC odor

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/15/12 Time: 0935

Probing ID: 28-47 H2O Depth to top of Sed: 0.51' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

Sediment:
Thin layer of iron precip., loose, wet, rust-colored
0-0.5' = Fine sand and silt, loose, wet, brown,
0.5-0.75' = 75% grass/organics, 25% fine sand and silt, loose, wet, black, mod. HC odor
0.75-1' = 90% silt, 10% organics, loose, wet, brown, sl. HC odor
1-1.25' = 50% silt, 50% peat, loose-med dense, moist-wet, brown, sl. HC odor
1.25' = NATIVE SILT, Silt, mod. dense-dense, moist, gray & brown, sl. HC odor

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Date: 7/15/12 Time: 1000

Probing ID: 28-48 H2O Depth to top of Sed: 0.14' Sed Thickness: 1.25'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

Sediment:
Thin layer of iron precip., loose, wet, rust-colored
0-0.5' = Fine sand & silt, ~~trace~~ ~25% grass/organics @ 0.5', loose, wet, dark brown/black, mod. HC odor
0.5-1' = 75% silt, 25% grass/organics, loose, wet, dark brown/black, mod. sl. HC odor
1-1.25' = same as 0.5-1'. 1.25-1.5' = 75% silt, 25% peat, loose-med. dense, wet-moist, brown, mod.
1.5-1.75' = same as 1.25-1.5'. 1.75-2' = NATIVE SILT. Silt, dense, moist, brown w/ some gray,

* Sheen generated at probe location slight HC odor

Date: 7/15/12 Time: 1015

Probing ID: 28-49 H2O Depth to top of Sed: 0.53' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

Sediment:
Very thin layer of iron precip., loose, wet, rust-colored
0-0.5' = Fine sand & gravel, very loose, wet, black, mod-HC odor
0.5-1' = Silt, loose, wet-moist, brown, sl. HC odor
1-1.5' = 50% silt, 50% peat, med. dense, moist, brown, sl. HC odor
Auger cannot get past obstruction at 1.5' bgs - insulation

* Sheen generated at probe location

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/15/12 Time: 1040

Probing ID: 28-50 H2O Depth to top of Sed: 0.05' Sed Thickness: ~~1.5'~~ JC 0.75'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

Sediment

Very thin layer of iron precip.
0-0.5' = Fine sand & gravel, wet, loose, dark gray
0.5-0.75' = 75% grass/organics, 25% fine sand & silt, loose, wet, black, mod. HC odor
0.75-1' = Hard piece of insulation
1-1.5' = 50% silt, 50% peat, med. dense, moist, brown, sl. HC odor
1.5-~~1.75~~ JC = 100% peat, med. dense, moist to wet, reddish-brown, no odor
Obstruction @ 1.75' bgs - probably another piece of insulation

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Date: 7/15/12 Time: 1100

Probing ID: 28-51 H2O Depth to top of Sed: 0.60' Sed Thickness: 0.75'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

Sediment

Very thin layer of iron precip.
0-0.5' ~50% silt and 50% grass/organics, loose, wet, rust-colored, dark brown, and black, sl. HC odor. 0.5-0.75' = same as 0-0.5'
0.75-1.5' = 75% grass, organics and peat, 25% silt, black and dark brown wet, loose-med. dense, sl. HC odor
Obstruction @ 1.5' - probably more insulation

Date: 7/15/12 Time: 1120

Probing ID: 28-52 H2O Depth to top of Sed: 0.33' Sed Thickness: 1.25'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

Thin layer of iron precip.
0-0.5' = 90% grass/organics, 10% silt, wet, loose, brown & black, no odor
0.5-1' = 50% silt, 50% grass, organics and peat, loose-med. dense, wet, sl. HC odor
1-1.25' = Same as 0.5-1.
1.25-1.5' = NATIVE silt, silt, med. dense-dense, wet-moist, gray, sl. HC odor

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/15/12 Time: 1145

Probing ID: 28-53 H2O Depth to top of Sed: 0.55' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

Sediment
- 0-0.5' = 75% grass/organics, 25% silt, loose, wet, dark brown/black, no odor
- 0-1' = Same as 0-0.5'
- 1-1.5' = Grass/organics, trace silt, loose, wet, dark brown, poss. slight HC odor
- 1.5-2' = NATIVE SILT. Silt, med. dense-dense, moist, gray w/ some brown, med. HC odor

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Date: 7/15/12 Time: 1315

Probing ID: 28-54 H2O Depth to top of Sed: 2.68' Sed Thickness: 1.25'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

Sediment
- 0-0.5' = 60% silt, 40% organics/peat, loose-med. dense, wet, dark brown, sl. HC odor
- 0.5-1' = 90% silt, 10% peat, loose, wet, brown, slight HC odor 1-1.25' = same as 0.5-1'
- 1.25-1.5' = 60% peat, 40% silt, med. dense, moist, brown, no odor
- 1.5-1.75' = Same as 1.25-1.5'
- 1.75-2' = NATIVE SILT = Silt, dense, moist, brown, no odor

Date: 7/15/12 Time: 1340

Probing ID: 28-55 H2O Depth to top of Sed: 1.59' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

Sediment
- 0-0.25' = 50% grass/organics, 50% silt, loose, wet, black (organics) & brown (silt) mod. HC odor
- 0.25-1' = 90% silt, 10% peat/organics, loose-med. dense, wet, brown, mod. HC odor
- 1-1.5' = NATIVE SILT. Silt, dense, moist, brown, sl. HC odor

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/15/12 Time: 1400

Probing ID: 28-56 H2O Depth to top of Sed: 0.71 Sed Thickness: 0.75'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment [0-0.5' = Silt, very loose, wet, dark brown/black, strong HC odor
0.5-0.75' = same as 0-0.5'
0.75-1.25' = 60% peat, 40% silt, wet, med. dense, brown, strong HC odor
1.25-1.5' = NATIVE SILT. Silt, 10% peat, moist, dense, brown, mod. HC odor

* Sheen generated at probing location

Date: 7/15/12 Time: 1420

Probing ID: 28-57 H2O Depth to top of Sed: 0.73' Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.) (~75% grass/organics, 25% silt 1-1.5')

sediment [0-0.5 = 90% grass/organics, 10% silt, very loose, wet, no odor
Refusal @ 1.5' bgs. Possible roofing material.

Date: 7/15/12 Time: 1435

Probing ID: 28-58 H2O Depth to top of Sed: 1.33' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment [0-1' = Grass/organics w/ some silt, very loose, wet, dark brown
Refusal @ 1' bgs. Likely roofing material.

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/15/12 Time: 1440

Probing ID: 28-59 H2O Depth to top of Sed: 0.51' Sed Thickness: 2'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-1' = Grass/organics w/ trace silt, very loose, wet, dark brown & black, no odor
1-2' = 75% Fine sand & silt, 25% grass/organics, very loose, wet, dark brown, poss. slight odor.
* Refusal @ 2' bgs =

Date: 7/15/12 Time: 1500

Probing ID: 28-60 H2O Depth to top of Sed: 1.01' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.5' = 60% grass/organics, 40% silt, very loose, wet, dark brown/black, poss. slight HC odor
0.5-1' = 90% grass/organics, 10% silt, loose-med dense, dark brown/black, poss. slight HC odor
1-1.5' = NATIVE SILT. silt, dense, moist, gray & brown, no odor

Date: 7/15/12 Time: 1515

Probing ID: 28-61 H2O Depth to top of Sed: 0.48' Sed Thickness: 0.75'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.75' Loose grass/organics and some silt, wet, dark brown & black, poss. slight HC odor
0.75-1' = NATIVE SILT. Silt, dense, moist, gray, no odor

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/15/12 Time: 1525

Probing ID: 28-62 H2O Depth to top of Sed: 1.52' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment [0-1' = Grass/organics w/ trace silt, loose, wet, dark brown & black, poss. slight HC odor

1-1.5' = NATIVE SILT. Silt, dense, moist, brown & gray, poss. sl. HC odor

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Date: 7/15/12 Time: 1545

Probing ID: 28-63 H2O Depth to top of Sed: 1.70' Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment [0-1' = 60% silt, 40% grass/organics, loose, wet, dark brown and black, mod. HC odor

1-1.5' = Silt w/ trace peat, dense, moist, brown, mod HC odor. NATIVE SILT

Date: 7/15/12 Time: 1600

Probing ID: 28-64 H2O Depth to top of Sed: 2.25' Sed Thickness: 1.25'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment [0-1' = 60% silt, 40% grass/organics, loose, wet, dark brown & black, mod. HC odor

1-1.25' = 75% grass/organics, 25% silt, loose, wet, black & dark brown, mod. HC odor

1.25-1.5' = Silt w/ trace peat, dense, moist, brown, mod HC odor. NATIVE SILT

NE CAPE SITE 28 PROBING FIELD FORM

Date: 7/15/12 Time: 1610

Probing ID: ~~28-65~~ H2O Depth to top of Sed: _____ Sed Thickness: _____

Description/Comments: (material type, moisture content, color, density, odor, etc.)

Cannot

JC

7/15/12

Date: 7/15/12 Time: 1635

Probing ID: 28-65 H2O Depth to top of Sed: 0' (but H2O infiltrating hole) Sed Thickness: 1'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

sediment

0-0.5' = Silt, some rocks, loose-med. dense, moist, gray and brown, mod. HC odor

0.5-1' = 75% grass/organics, 25% silt, med. dense, moist, brown, strong HC odor

1-1.5' = silt w/ trace peat, med. dense - dense, dry, strong HC odor

1.5-2' = same as 1-1.5' but dense

Date: 7/15/12 Time: 1650

Probing ID: 28-66 H2O Depth to top of Sed: 0' (but H2O infiltrated hole) Sed Thickness: 1.5'

Description/Comments: (material type, moisture content, color, density, odor, etc.)

0-0.5' = Silt, ~~some~~ trace organics (loose), moist, mostly brown, some gray, strong HC/solvent odor

JC

~~0.5-1'~~ = Grass/organics @ 0.5'. Loose-med. dense, moist, brown, strong HC/solvent odor

0.5-1' = Silt w/ trace peat, med. dense, moist, brown, strong HC/solvent odor

1-1.5' = same as 0.5-1', but dry @ 1.5'

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS001 Depth: 0-1'

Date: 7/18/12 Time: 0920

Sample Description: Fine sand & silt, trace grass, wet, loose, dark brown, no odor
(material type, moisture content, color, etc.)

~~Veg mat present? Y/N Thickness:~~ Water Depth: 18"

Sampling instrument: Hand auger Ekman dredge (Other: Clam gun)

Comments:

Sample ID: 12NC28SS002 Depth: 0-1.75'

Date: 7/18/12 Time: 0940

Sample Description: Fine sand & silt, trace grass, wet, loose, dark brown, no odor
(material type, moisture content, color, etc.)

~~Veg mat present? Y/N Thickness:~~ Water Depth: 10"

Sampling instrument: Hand auger Ekman dredge (Other: Clam gun)

Comments:

Sample ID: 12NC28SS003 Depth: 0-1.5'

Date: 7/18/12 Time: 1000

Sample Description: Fine sand, silt, grass/organics, loose, wet, dark brown, no odor
(material type, moisture content, color, etc.)

Veg mat present? Y/N Thickness: Water Depth: 7"

Sampling instrument: Hand auger Ekman dredge (Other: Clam gun)

Comments:

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS004 Depth: 0-1'

Date: 7/18/12 Time: 1010

Sample Description: Fine sand, silt, grass/organics, wet, loose-sand, med. dense-silt, grass/organics, gray-(sand), brown-(silt), black-(grass/organics), no odor

(material type, moisture content, color, etc.)

~~Veg mat present? Y/N~~ ~~Thickness:~~ Water Depth: 13"

Sampling instrument: Hand auger Ekman dredge (Other): Clam gun

Comments:

Sample ID: 12NC28SS005 Depth: 0-1'

Date: 7/18/12 Time: 1030

Sample Description: silty grass/organics w/ sand, wet, loose-(sand), med. dense-(silty grass/organics), gray (sand), dark brown (silty grass/organics), no odor

(material type, moisture content, color, etc.)

~~Veg mat present? Y/N~~ ~~Thickness:~~ Water Depth: 17"

Sampling instrument: Hand auger Ekman dredge Other:

Comments: * DUPLICATE 12NC28SS105 @ 1035

Sample ID: 12NC28SS006 Depth: 0-1'

Date: 7/18/12 Time: 1050

Sample Description: Fine sand and silt, wet, loose, gray (sand) and dark brown (silt)

(material type, moisture content, color, etc.)

~~Veg mat present? Y/N~~ ~~Thickness:~~ Water Depth: 14"

Sampling instrument: Hand auger Ekman dredge (Other): Clam gun

Comments:

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS007 Depth: 0-1.25'

Date: 7/18/12 Time: 1100

Sample Description: Fine sand and silt, thin layer of iron precip. wet,
(material type, moisture content, color, etc.) loose, gray (sand) & dark brown (silt), sl. HC odor, Primarily peat @ ~1.25'

~~Veg mat present? Y/N Thickness:~~ Water Depth: 14"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments: Some sheen (low amount) noted in water of sample.

Sample ID: 12NC28SS008 Depth: 0-1'

Date: 7/18/12 Time: 1115

Sample Description: Mucky Silt w/ trace sand, loose, wet, dark brown, slight
(material type, moisture content, color, etc.) HC odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 10"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments: Low amount of sheen noted in water of sample

Sample ID: 12NC28SS009 Depth: 0-1'

Date: 7/18/12 Time: 1130

Sample Description: Mucky silt, loose, wet, dark brown, no odor
(material type, moisture content, color, etc.)

~~Veg mat present? Y/N Thickness:~~ Water Depth: 5"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments:

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS010 Depth: 0-2'

Date: 7/15/12 Time: 1430

Sample Description: Mucky silt atop sand, some peat, loose, wet, dark brown (silt), gray (sand), sl. to mod. HC odor

(material type, moisture content, color, etc.)

~~Veg mat present? Y/N~~ Thickness: Water Depth: 8"

Sampling instrument: Hand auger Ekman dredge Other: Clam gun

Comments: Extra volume collected for * MS/MSD (triple volume - 6 16 oz. unpres., 3 4oz. MeOH)

Sample ID: 12NC28SS011 Depth: 0-1.75'

Date: 7/18/12 Time: 1450

Sample Description: Silty grass/organics atop sand, loose, wet, dark brown/black (silty organics), gray (sand), slight HC odor in sand

(material type, moisture content, color, etc.)

~~Veg mat present? Y/N Thickness:~~ Water Depth: 11"

Sampling instrument: Hand auger Ekman dredge Other: Clam gun

Comments:

Sample ID: 12NC28SS012 Depth: 0-1.5'

Date: 7/18/12 Time: 1500

Sample Description: clayey silt w/ some organics, wet, loose, dark greenish-brown, slight HC odor

(material type, moisture content, color, etc.)

Veg mat present? Y/N Thickness: Water Depth: 9"

Sampling instrument: Hand auger Ekman dredge Other: Clam gun

Comments:

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS013 Depth: 0-1.5'

Date: 7/18/12 Time: 1520

Sample Description: Silt w/ trace grass/organics, loose, wet, dark greenish-brown, slight HC odor

(material type, moisture content, color, etc.)

~~Veg mat present? Y/N Thickness:~~ Water Depth: 11"

Sampling instrument: Hand auger Ekman dredge (Other: Clam gun)

Comments: Slight sheen in sample material

Sample ID: 12NC28SS014 Depth: 0-1.5'

Date: 7/18/12 Time: 1530

Sample Description: Mucky silt w/ ~~trace~~ ~25% grass/organics, loose, wet, dark brown and black, strong HC odor

(material type, moisture content, color, etc.)

~~Veg mat present? Y/N Thickness:~~ Water Depth: 17"

Sampling instrument: Hand auger Ekman dredge (Other: Clam gun)

Comments: * DUPLICATE 12NC28SS114 @ 1535

Sample ID: 12NC28SS015 Depth: 0-0.75'

Date: 7/18/12 Time: 1550

Sample Description: Mucky silt w/ some grass/organics, loose, wet, dark brown and black, strong HC odor

(material type, moisture content, color, etc.)

~~Veg mat present? Y/N Thickness:~~ Water Depth: 24"

Sampling instrument: Hand auger Ekman dredge (Other: Clam gun)

Comments: Heavy sheen in water and in sample

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS016 Depth: 0-1'

Date: 7/18/12 Time: 1610

Sample Description: 75% silt, 25% grass/organics, wet, loose, dark brown (material type, moisture content, color, etc.) (silt) and black (grass-organics), strong HC odor

~~Veg mat present? Y/N~~ ~~Thickness:~~ Water Depth: 27"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments: Heavy sheen in water at sample location, sheen in sample

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Sample ID: 12NC28SS017 Depth: 0-0.75'

Date: 7/18/12 Time: 1645

Sample Description: Clayey silt, w/ trace organics, wet, loose, dark (material type, moisture content, color, etc.) brown, no odor

~~Veg mat present? Y/N~~ ~~Thickness:~~ Water Depth: 6"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments:

Sample ID: 12NC28SS018 Depth: 0-1'

Date: 7/18/12 Time: 1655

Sample Description: ~75% silt, 25% grass/organics, wet, loose, dark brown (material type, moisture content, color, etc.) (silt) & black (organics), mod. HC odor

~~Veg mat present? Y/N~~ ~~Thickness:~~ Water Depth: 15"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments:

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS019 Depth: 0-~~0.75~~ JC 1'

Date: 7/18/12 Time: 1705

Sample Description: Black Grass/organics atop brown silt w/ trace organics, loose,
(material type, moisture content, color, etc.) wet, strong HC odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 13"

Sampling instrument: Hand auger Ekman dredge (Other: Clam gun)

Comments: Heavy sheen at sample location, and sheen in sample

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Sample ID: 12NC28SS020 Depth: 0-1.5'

Date: 7/19/12 Time: 0945

Sample Description: Mucky silt w/ organics atop thin peat layer, loose, wet,
(material type, moisture content, color, etc.) dark brown, strong HC odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 9"

Sampling instrument: Hand auger Ekman dredge (Other: Clam gun)

Comments: Moderate sheen in water at sample location, and sheen in sample

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Sample ID: 12NC28SS021 Depth: 0-1.5'

Date: 7/19/12 Time: 1000

Sample Description: Grass/organics and peat, very minor silt, med. dense,
(material type, moisture content, color, etc.) wet, dark brown, poss. slight odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 12"

Sampling instrument: Hand auger Ekman dredge (Other: Clam gun)

Comments: Much of this sample was denser (non-loose) material. The sediment boundary by this sample and probe 28-32 may need to be changed - revised inward by cutting off the "arm" where this sample and the probe was located

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS022 Depth: 0-0.75'

Date: 7/19/12 Time: 1020

Sample Description: Very loose mucky silt atop thin layer of sand, grass/organics and then trace wet-dense peat,
(material type, moisture content, color, etc.) ~~loose~~, wet, dark brown and brown, poss. slight odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 11"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments: Mod. Sheen generated at sample location

Sample ID: 12NC28SS023 Depth: 0-0.75'

Date: 7/19/12 Time: 1035

Sample Description: Clayey silt, loose, wet, rust-colored, brown, and some
(material type, moisture content, color, etc.) dark brown, no odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 12"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments:

Sample ID: 12NC28SS024 Depth: 0-2'

Date: 7/19/12 Time: 1055

Sample Description: Thin layer of rust-colored iron precip. on top, silt, some grass ~0.75-1',
(material type, moisture content, color, etc.) brown & dark brown, (grass-black), loose, wet, sl. HC odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 7"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments: * MS/MSD - triple volume collected (6-16 oz. unpres, 3-4 oz. MeOH)

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS025 Depth: 0-2'

Date: 7/19/12 Time: 1115

Sample Description: Loose rust colored iron precip on top, then silt, more grass organics (~25-50%) brown, black organics
(material type, moisture content, color, etc.) beginning around 0.75', loose, wet, sl.-mod. HC odor, especially in organic

~~Veg mat present? Y/N~~ Thickness: Water Depth: 5"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments:

Sample ID: 12NC28SS026 Depth: 0-2'

Date: 7/19/12 Time: 1130

Sample Description: Loose rust-colored iron precip on top. 0-0.5' = Mucky silt, brown, loose, wet
(material type, moisture content, color, etc.) 0.5-1' = 90% grass/organics, 10% silt, loose, wet, black. 1-2' = 60% silt, 40% peat, brown, loose, mod. HC odor

~~Veg mat present? Y/N~~ ~~Thickness:~~ Water Depth: 7"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments: * DUPLICATE 12NC28SS126 @ 1135

Sample ID: 12NC28SS027 Depth: 0-0.75'

Date: 7/19/12 Time: 1150

Sample Description: Mucky silt w/ grass/organics, med. dense, wet
(material type, moisture content, color, etc.) dark brown & black, sl. HC odor

~~Veg mat present? Y/N~~ Thickness: Water Depth: 2"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam Gun

Comments: Had to try a few sample locations in the same area before getting sample because veg. mat - may have to add small pocket of veg mat in this area

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS028 Depth: 0-1'

Date: 7/19/12 Time: 1405

Sample Description: 0-0.5' = Loose, wet, mucky iron precip. and silt, rust-colored and brown

(material type, moisture content, color, etc.) 0.5'-1' = Loose, wet, grass, twigs, & organics. Black. No odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 3"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments:

Sample ID: 12NC28SS029 Depth: 0-~~1.5~~ 1.25' JC

Date: 7/19/12 Time: 1420

Sample Description: 0-0.5' = Loose, wet, mucky iron precip. and silt, rust-colored and brown

(material type, moisture content, color, etc.) 0.5-1.5' = Loose, wet grass/organics, black, strong HC odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 5"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun.

Comments:

Sample ID: 12NC28SS030 Depth: 0-1.5'

Date: 7/19/12 Time: 1435

Sample Description: 0-0.5' = Loose, wet, mucky silt w/ some iron precip., brown & rust colored

(material type, moisture content, color, etc.) 0.5-1.5' = Grass/organics w/ ~25% some silt, loose-med. dense, wet, black, mod. HC odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 4"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments:

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS031 Depth: 0-1.5' JC 1.25'

Date: 7/19/12 Time: 1455

Sample Description: 0-0.5' = Mucky silt, loose, wet, dark brown,

(material type, moisture content, color, etc.) 0.5-1.25' = 50% silt, 50% grass/organics/peat, wet-moist, loose-med. dense, Med. HC odor

~~Veg mat present?~~ Y/N Thickness: Water Depth: 3"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments:

Sample ID: 12NC28SS032 Depth: 0-1'

Date: 7/19/12 Time: 1520

Sample Description: Mucky clayey silt, wet, loose, dark brown, no odor

(material type, moisture content, color, etc.)

~~Veg mat present?~~ Y/N Thickness: Water Depth: 7"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments:

Sample ID: 12NC28SS033 Depth: 0-0.75'

Date: 7/19/12 Time: 1530

Sample Description: 0-0.5' = Mucky clayey silt, loose, wet, dark brown w/ some rust-colored

(material type, moisture content, color, etc.) 0.5-0.75' = Grass/organics, loose getting progressively denser towards 0.75', wet dark brown

~~Veg mat present?~~ Y/N Thickness: Water Depth: 6"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments:

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS034 Depth: 0-0.5'

Date: 7/19/12 Time: 1610

Sample Description: Grass/organics ~50%, 50% silt, wet loose-med. dense,
(material type, moisture content, color, etc.) dark brown, no odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 29"

Sampling instrument: Hand auger Ekman dredge (Other: Clam gun)

Comments:

Sample ID: 12NC28SS035 Depth: 0-0.75'

Date: 7/19/12 Time: 1625

Sample Description: Mucky silt, w/ ~10% grass/organics, wet, loose, dark
(material type, moisture content, color, etc.) brown, mod. HC odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 12"

Sampling instrument: Hand auger Ekman dredge (Other: Clam gun)

Comments:

Sample ID: 12NC28SS036 Depth: 0-0.75'

Date: 7/19/12 Time: 1645

Sample Description: Mucky silt w/ trace grass/organics, wet, loose,
(material type, moisture content, color, etc.) strong HC odor

Veg mat present? Y/N Thickness: Water Depth: 18"

Sampling instrument: Hand auger Ekman dredge Other:

Comments: Moderate sheen at sample location when sediment is disturbed. Some debris near sample location

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS037 Depth: 0-0.5'

Date: 7/19/12 Time: 1710

Sample Description: 0-0.5' = ~75% silt, 25% peat, loose, wet, dark brown, no odor

(material type, moisture content, color, etc.) JC 0.5-0.75' = ~75% peat, 25% silt, mod. dense, moist to wet, dark brown, no odor

~~Veg mat present? Y/N~~ ~~Thickness:~~ Water Depth: 7"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments: NATIVE SILT @ ~1' bgs

Sample ID: 12NC28SS038 Depth: 0-0.75'

Date: 7/20/12 Time: 0855

Sample Description: Mucky silt, w ~10% grass/organics, wet, loose,

(material type, moisture content, color, etc.) dark brown, mod. ltc odor

~~Veg mat present? Y/N~~ ~~Thickness:~~ Water Depth: 24"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments: Mod. sheen at sample location and in sample

* DUPLICATE 12NC28SS138 @ 0900

Sample ID: 12NC28SS039 Depth: 0-0.75'

Date: 7/20/12 Time: 0925

Sample Description: 90% grass/organics, 10% silt, loose, wet, dark brown,

(material type, moisture content, color, etc.) no odor

~~Veg mat present? Y/N~~ ~~Thickness:~~ Water Depth: 12"

Sampling instrument: (Hand auger) Ekman dredge Other:

Comments:

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28550401 Depth: 0-0.75

Date: 7/20/12 Time: 0940

Sample Description: Mostly grass/organics w/ trace silt, loose-med. dense,
(material type, moisture content, color, etc.) dark brown, poss. sl. HC odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 13"

Sampling instrument: (Hand auger) Ekman dredge Other:

Comments:

Sample ID: 12NC28550411 Depth: 0-0.75

Date: 7/20/12 Time: 1010

Sample Description: Mostly grass/organics w/ trace mucky silt, loose-med. dense,
(material type, moisture content, color, etc.) dark brown & black, poss. sl. HC odor

Veg mat present? Y/N Thickness: Water Depth: 12"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun JE

Comments: ~~~60% grass/organics, 40% silt, wet, loose, dark brown, black~~

Sample ID: 12NC28550421 Depth: 0-1'

Date: 7/20/12 Time: 1070

Sample Description: ~60% grass/organics, 40% silt, wet, loose, dark brown,
(material type, moisture content, color, etc.) black, no HC odor

~~Veg mat present? Y/N Thickness:~~ Water Depth:

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments:

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS043 Depth: 0-1'

Date: 7/20/12 Time: 1040

Sample Description: Grass/organics w/ trace silt, wet, loose-med. dense, dark brown, no odor
(material type, moisture content, color, etc.)

~~Veg mat present? Y/N Thickness:~~ Water Depth:

Sampling instrument: (Hand auger) Ekman dredge Other:

Comments:

Sample ID: 12NC28SS044 Depth: 0-1.5'

Date: 7/20/12 Time: 1140

Sample Description: silt w/ ~ 10% grass organics, wet to dry (gets drier w/ depth), loose-med. dense, brown, strong HC odor
(material type, moisture content, color, etc.)

~~Veg mat present? Y/N Thickness:~~ Water Depth: 0"

Sampling instrument: (Hand auger) Ekman dredge Other:

Comments: *DUPLICATE 12NC28SS144 @ 1145

Sample ID: 12NC28SS045 Depth: 0-1.25'

Date: 7/20/12 Time: 1350

Sample Description: Mucky, silty organics, very loose, wet, dark brown, mod. HC odor
(material type, moisture content, color, etc.)

~~Veg mat present? Y/N Thickness:~~ Water Depth: 21"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments: Sheen in sample, sample so loose, recovery was poor
Sheen generated when sediment disturbed

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS046 Depth: 0-1'

Date: 7/20/12 Time: 1410

Sample Description: 90% grass/organics, 10% mucky silt, loose, wet,
(material type, moisture content, color, etc.) dark brown, mod. HC odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 27"

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments: Sheen in sample. Poor recovery because material is loose.
Sheen generated in pond when sediment disturbed

Sample ID: 12NC28SS047 Depth: 0-1'

Date: 7/20/12 Time: 1425

Sample Description: 75% grass/organics, 25% silt, loose, wet, dark brown,
(material type, moisture content, color, etc.) mod.-strong HC odor.

~~Veg mat present? Y/N~~ Thickness: Water Depth: 32"

Sampling instrument: Hand auger Ekman dredge (Other) Clam gun

Comments: * DUPLICATE 12NC28SS147 @ 1430

Sample ID: 12NC28SS048 Depth: 0-1.5'

Date: 7/20/12 Time: 1455

Sample Description: 75% silt, 25% grass/organics, wet to dry (gets drier w/ depth),
(material type, moisture content, color, etc.) loose-med. dense (density increases w/ depth), gray 0-0.5', brown 0.5-1.5' strong HC odor

~~Veg mat present? Y/N~~ Thickness: Water Depth: 0' (but H_2O infiltrating into auger hole)

Sampling instrument: (Hand auger) Ekman dredge Other:

Comments:

NORTHEAST CAPE SITE 28 FIELD FORM

Sample ID: 12NC28SS049 Depth: 0-1'

Date: 7/20/12 Time: 1510

Sample Description: Gravelly sand w/silt, peat @ 1' bgs, gray, brown, loose-med dense,
(material type, moisture content, color, etc.) wet getting drier toward 1', strong HC odor

Veg mat present? Y/N Thickness: Water Depth: 0' (but H_2O infiltrating auger hole)

Sampling instrument: (Hand auger) Ekman dredge Other:

Comments:

Sample ID: 12NC28SS050 Depth: 0-0.75'

Date: 7/20/12 Time: 1520

Sample Description: 0-0.75' Mucky silt, loose, wet, rust-colored, black, dark brown, strong HC
(material type, moisture content, color, etc.) odor. 0.75'-1' = 75% peat, 25% silt, moist, med. dense, strong HC odor

Veg mat present? Y/N Thickness: Water Depth: 0', but H_2O infiltrating hole

Sampling instrument: Hand auger Ekman dredge (Other:) Clam gun

Comments: * MS/MSD. Triple volume collected

Sample ID: 12NC28SS051 Depth: 0-1'

Date: 7/20/12 Time: 1540

Sample Description: 0-1' = Mucky silt w/ fine sand, loose, wet, gray & brown,
(material type, moisture content, color, etc.) strong HC odor

~~Veg mat present? Y/N Thickness:~~ Water Depth: 6.5"

Sampling instrument: (Hand auger) Ekman dredge Other:

Comments:

APPENDIX C

Sediment Probing Boring Logs

USCS acronym list for Site 28 Boring Logs

ML = silt

PT = peat

MLS = sandy silt

SM = silty sand

MLG = gravely silt

GWS = well-graded sandy gravel

SP-SM = poorly-graded sand with silt

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28-01

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405550.41
	E 1811106.15
Sediment Elevation:	35.59 feet above MSL
Water Elevation:	37.0 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	1.41 ft
Sediment Thickness:	1 ft
Total Depth:	3.41 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 1.41 ft.
2		ML	SEDIMENT. Iron precipitate, very loose, rust-colored, wet.
		ML	SEDIMENT. Loose, 75% grass/organics, 25% silt, brown, wet, no odor.
3		PT	100% peat, brown, moist, dense, no odor.
		MLS	NATIVE SILT. 100% fine sand and silt, gray, moist, very dense, no odor.
4			
5			

Notes:

" = inch or inches
bgs = below ground surface
ft = foot or feet
ID = identification
MSL = mean sea level
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28-02

Site ID: Site 28
Site Location: St. Lawrence Island
Boring Location: N 3405547.72
E 1811103.46
Sediment Elevation: 36.49 feet above MSL
Water Elevation: 37.0 feet above MSL

Logged By: Julie Clark
Drilling Method: Hand Auger
Borehole Diameter: 4 inches
Depth to Sediment: 0.51 ft
Sediment Thickness: 1.5 ft
Total Depth: 3.01 ft
Date Started: 7/13/2012
Date Completed 7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.51 ft.
1		ML	SEDIMENT. Iron precipitate, very loose, rust-colored, wet.
		MLS	SEDIMENT. Very loose, fine sand and silt, dark brown, wet, possible HC odor.
2		MLS	SEDIMENT. Fine sand and silt, trace peat, trace gravel, loose, wet, possible slight HC odor.
		SM	60% fine sand and silt, 40% peat, dense, wet, possible slight HC odor.
3		ML	NATIVE SILT. 100% silt, very dense, gray, moist.
4			
5			

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28-03

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405542.23
	E 1811113.97
Sediment Elevation:	36.56 feet above MSL
Water Elevation:	37.1 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.54 ft
Sediment Thickness:	1.5 ft
Total Depth:	2.54 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.54 ft.
1		MLS	SEDIMENT. Sand and silt, about 20% grass/organics, very loose, wet, dark brown and gray, no odor, 3-6 inches of very loose iron precipitate at the surface.
2		PT	100% peat, dense, wet, dark brown.
		MLS	NATIVE SILT. 100% fine sand and silt, very dense, gray, moist.
3			
4			
5			

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28-04

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405534.56
	E 1811103.2
Sediment Elevation:	36.62 feet above MSL
Water Elevation:	37.1 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.48 ft
Sediment Thickness:	1.75 ft
Total Depth:	2.48 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.48 ft
1		ML	SEDIMENT. Iron precipitate, very loose, rust-colored, wet.
2		MLS	SEDIMENT. Fine sand and silt, loose, dark brown, wet, no odor.
		MLS	SEDIMENT. Fine sand and silt, 25% peat, loose, dark brown, wet, no odor.
		ML	Silt, very dense, brown, moist, no odor.
3			
4			
5			

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28-05

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405494.39
	E 1811112.62
Sediment Elevation:	37.99 feet above MSL
Water Elevation:	38.4 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.41 ft
Sediment Thickness:	1.5 ft
Total Depth:	2.41 ft
Date Started:	7/12/2012
Date Completed	7/12/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.41 ft
		ML	SEDIMENT. Iron precipitate, very loose, rust-colored, wet.
1		MLS	SEDIMENT. Fine sand/silt (with 20% organics 1-1.5 ft), wet, dark brown, medium dense, no odor.
2		PT	60% peat, 40% silt, dense, dark brown, no odor.
3			
4			
5			

Notes:
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28-06

Site ID: Site 28
Site Location: St. Lawrence Island
Boring Location: N 3405486.75
E 1811117.03
Sediment Elevation: 36.91 feet above MSL
Water Elevation: 37.4 feet above MSL

Logged By: Julie Clark
Drilling Method: Hand Auger
Borehole Diameter: 4 inches
Depth to Sediment: 0.49 ft
Sediment Thickness: 1 ft
Total Depth: 2.99 ft
Date Started: 7/12/2012
Date Completed 7/12/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.49 ft
1		ML	SEDIMENT. Iron precipitate, very loose, rust-colored, wet.
		ML	SEDIMENT. Silt, loose, dark brown/black, wet, no odor, grass at 1 ft.
2		PT	50% silt, 50% peat, medium dense, wet, dark brown, no odor.
		SM	75% fine sand and silt, 25% organics, medium dense, wet, dark brown , no odor.
3		SM	Fine sand and silt with trace organics, very dense, moist, brown, no odor.
4			
5			

Notes:
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bgs = below ground surface
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ID = identification
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28-07

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405423.52
	E 1811118.82
Sediment Elevation:	37.67 feet above MSL
Water Elevation:	38.9 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	1.23 ft
Sediment Thickness:	1.25 ft
Total Depth:	2.98 ft
Date Started:	7/12/2012
Date Completed	7/12/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 1.23 ft
2		ML	SEDIMENT. Iron precipitate, very loose, rust-colored, wet.
3		MLS	SEDIMENT. Fine sand/silt, wet, loose, dark brown/black, possible slight HC odor.
		MLS	NATIVE MATERIAL. Fine sand and silt with trace gravel, no organics, dense, moist, brown, no odor.
4			
5			

Notes:

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28-08

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405416.47
	E 1811116.69
Sediment Elevation:	37.99 feet above MSL
Water Elevation:	38.9 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.91 ft
Sediment Thickness:	0.5 ft
Total Depth:	2.41 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.91 ft
1		ML	SEDIMENT. Very loose fine sand and silt with 40% peat (0.25-0.5 ft), wet, dark brown, possible slight HC odor.
		ML	50% grass/organic/peat, 50% fine sand/silt, loose-medium dense, wet, brown (peat) and gray (silt/sand), slight HC odor.
2		SM	Fine sand and silt, dense, moist, dark brown/gray, no odor.
3			
4			
5			

Notes:
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28-09

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405409.38
	E 1811121.62
Sediment Elevation:	37.47 feet above MSL
Water Elevation:	38.9 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	1.43 ft
Sediment Thickness:	0.75 ft
Total Depth:	2.43 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 1.43 ft
		ML	SEDIMENT. Iron precipitate, loose, rust-colored, wet.
2		MLS	SEDIMENT. 50% fine sand/silt, 50% peat, loose, wet, possible slight HC odor.
		ML	NATIVE SILT. Silt, very dense, moist, brown and gray, no odor.
3			
4			
5			

Notes:

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28-10

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405380.99
	E 1811108.34
Sediment Elevation:	38.13 feet above MSL
Water Elevation:	38.9 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.77 ft
Sediment Thickness:	1.25 ft
Total Depth:	2.77 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.77 ft
1		ML	SEDIMENT. Iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. Silt, very loose, wet, dark brown and black, no odor.
2		ML	SEDIMENT. Silt with 50% peat (1.25-1.5 ft), very loose, wet, dark brown and black, no odor.
		SM	Fine sand and silt with trace organics, loose to medium dense, wet, dark gray and dark brown, no odor . NATIVE SILT at 2 ft bgs: silt, very dense, moist, gray and brown, no odor.
3			
4			
5			

Notes:
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ft = foot or feet
ID = identification
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28-11

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405365.53
	E 1811104.42
Sediment Elevation:	38.58 feet above MSL
Water Elevation:	38.9 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.32 ft
Sediment Thickness:	1 ft
Total Depth:	1.82 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.32 ft
		ML	SEDIMENT. Iron precipitate, loose, rust-colored, wet.
1		ML	SEDIMENT. 50% grass/organics, 50% silt, loose, wet, brown (silt) and black (organics), no odor.
		SM	NATIVE SILT. Fine sand and silt, medium dense, wet, gray and brown no odor.
2			
3			
4			
5			

Notes:
" = inch or inches
bgs = below ground surface
ft = foot or feet
ID = identification
MSL = mean sea level
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28-12

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405341.17
	E 1811099.09
Sediment Elevation:	38.58 feet above MSL
Water Elevation:	39.1 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.52 ft
Sediment Thickness:	1.75 ft
Total Depth:	2.52 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.52 ft
		ML	SEDIMENT. Iron precipitate, loose, rust-colored, wet.
1		ML	SEDIMENT. 75% organics, 25% silt, medium dense, wet, brown (silt) and black (organics), no odor.
		MLG	SEDIMENT. 75% sand and small gravel, 25% peat/organics, loose to medium dense, dark brown (gravelly sand) and black (peat), no odor.
2		ML	SEDIMENT. 75% silt, 25% peat, loose to medium dense, wet, brown, no odor.
		ML	NATIVE SILT. Silt, very dense, moist, brown with some gray, no odor.
3			
4			
5			

Notes:
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28-13

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405329.98
	E 1811095.94
Sediment Elevation:	38.47 feet above MSL
Water Elevation:	39.1 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.63 ft
Sediment Thickness:	2 ft
Total Depth:	3.13 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.63 ft
1		ML	SEDIMENT. Iron precipitate, loose, rust-colored, wet.
2		MLS	SEDIMENT. 75% fine sand and silt, 25% organics, very loose, wet, dark brown (sand/silt) and black (organics), no odor.
3		ML	NATIVE SILT. Medium dense, moist-wet, gray and brown, no odor.
4			
5			

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28-14

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405305.14
	E 1811068.08
Sediment Elevation:	38.35 feet above MSL
Water Elevation:	39.4 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	1.05 ft
Sediment Thickness:	1.75 ft
Total Depth:	3.05 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 1.05 ft
1		ML	SEDIMENT. Iron precipitate, loose, rust-colored, wet.
2		MLS	SEDIMENT. 50% fine sand and silt, 50% grass/organics, loose, wet, brown (fine sand/silt) and black (grass/organics), possible slight HC odor.
3		SM	SEDIMENT. Fine sand with some silt, loose, wet, grayish brown, no odor.
4		ML	NATIVE SILT. Silt, dense, moist, gray with some brown, no odor.
5			

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28-15

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405292.94
	E 1811070.14
Sediment Elevation:	38.47 feet above MSL
Water Elevation:	39.4 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.93 ft
Sediment Thickness:	1 ft
Total Depth:	2.93 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.93 ft
1		ML	SEDIMENT. Iron precipitate, loose, rust-colored, wet.
		MLS	SEDIMENT. Fine sand and silt, loose, wet, brown, possible slight HC odor.
2		ML	50% peat, 50% silt, medium dense, wet, brown, no odor.
		ML	NATIVE SILT. Silt, dense, moist, gray and brown, no odor.
3			
4			
5			

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28-16

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405280.96
	E 1811067.33
Sediment Elevation:	38.92 feet above MSL
Water Elevation:	39.4 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.48 ft
Sediment Thickness:	1.5 ft
Total Depth:	2.48 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.48 ft
1		ML	SEDIMENT. Iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. Silt, loose, wet, dark brown, no odor.
2		ML	SEDIMENT. Silt with trace organics, loose, wet, dark brown, no odor.
		ML	NATIVE SILT. Silt, very dense, moist, gray with some brown, no odor.
3			
4			
5			

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28-17

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405101.07
	E 1811033.49
Sediment Elevation:	42.06 feet above MSL
Water Elevation:	42.3 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.24 ft
Sediment Thickness:	1.5 ft
Total Depth:	2.24 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.24 ft
1		ML	SEDIMENT. Iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. Silt, very loose, wet, dark brown.
2		PT	75% peat, 25% silt, medium dense-dense, moist, brown, moderate to strong HC odor.
3			
4			
5			

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28-18

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405076.68
	E 1811032.32
Sediment Elevation:	41.07 feet above MSL
Water Elevation:	42.4 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	1.33 ft
Sediment Thickness:	1.5 ft
Total Depth:	3.33 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 1.33 ft
		ML	SEDIMENT. Iron precipitate, loose, rust-colored, wet.
2		ML	SEDIMENT. Silt, loose, wet, dark brown and black, moderate HC odor.
		ML	SEDIMENT. Silt with trace peat, loose, wet, dark brown, moderate HC odor.
3		PT	100% peat, medium, dense, dark brown, moist, wet, strong HC odor NATIVE SILT. Silt, brown, dense, moist, slight HC odor.
4			
5			

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28-19

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405054.05
	E 1811038.89
Sediment Elevation:	41.10 feet above MSL
Water Elevation:	42.4 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	1.30 ft
Sediment Thickness:	1 ft
Total Depth:	2.3 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 1.3 ft
		ML	SEDIMENT. 50% grass/organics, 50% silt, loose-medium dense, black (organics), brown (silt), wet, slight HC odor.
2		ML	SEDIMENT. Silt with peat increasing with depth, 100% peat at 1 ft bgs. Medium dense, brown, wet to moist, moderate HC odor with strong HC odor in peat.
3			
4			
5			

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28-20

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405056.48
	E 1811023.43
Sediment Elevation:	40.27 feet above MSL
Water Elevation:	42.4 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	2.13 ft
Sediment Thickness:	1 ft
Total Depth:	4.13 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 2.13 ft
2		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
3		ML	SEDIMENT. 75% silt, 25% grass/organics, medium dense (halfway frozen, would likely be loose if not frozen, wet, dark brown (silt) and black (grass/organics), strong HC odor.
		PT	50% peat, 50% silt, medium dense, moist, brown, strong HC odor.
		PT	100% peat, dense, moist, brown, strong HC odor.
4		ML	NATIVE SILT. Silt, moist, brown, dense, strong HC odor.
5			

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28-21

Site ID: Site 28
Site Location: St. Lawrence Island
Boring Location: N 3405036.94
E 1811018.53
Sediment Elevation: 40.72 feet above MSL
Water Elevation: 42.4 feet above MSL

Logged By: Julie Clark
Drilling Method: Hand Auger
Borehole Diameter: 4 inches
Depth to Sediment: 1.68 ft
Sediment Thickness: 1.75 ft
Total Depth: 4.18 ft
Date Started: 7/13/2012
Date Completed 7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 1.68 ft
2		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. Silt, loose, wet, dark brown, modern HC odor.
3		ML	SEDIMENT. Silt, very loose, brown, wet, moderate HC odor.
		PT	90% peat, 10% silt, medium dense, brown, moist to wet, strong HC odor.
4		ML	NATIVE SILT. Silt, dense, moist, brown, moderate HC odor, sheen generated when augering.
5			

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28-22

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3405056.58
	E 1811006.61
Sediment Elevation:	40.95 feet above MSL
Water Elevation:	42.4 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	1.45 ft
Sediment Thickness:	1 ft
Total Depth:	3.45 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 1.45 ft
2		ML	SEDIMENT. Silt with trace grass/organics, loose to medium dense, wet, dark brown/black, moderate HC odor.
		ML	SEDIMENT. 75% silt with 25% peat, loose to medium dense, wet, brown, strong HC odor.
3		PT	50% peat, 50% silt, medium dense, brown, strong HC odor.
		ML	NATIVE SILT. Silt, trace peat, dense, moist, brown, moderate HC odor.
4			
5			

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28-23

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404981.04
	E 1811002.6
Sediment Elevation:	43.08 feet above MSL
Water Elevation:	43.7 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.62 ft
Sediment Thickness:	0.75 ft
Total Depth:	2.62 ft
Date Started:	7/13/2012
Date Completed	7/13/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.62 ft
1		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. Silt, loose, dark brown and black, wet, no odor.
		PT	50% peat, 50% silt, loose-medium dense, moist-wet, brown, slight HC odor.
2		ML	NATIVE SILT. 90% silt, 10% peat, medium dense, moist, brown, slight HC odor.
3			
4			
5			

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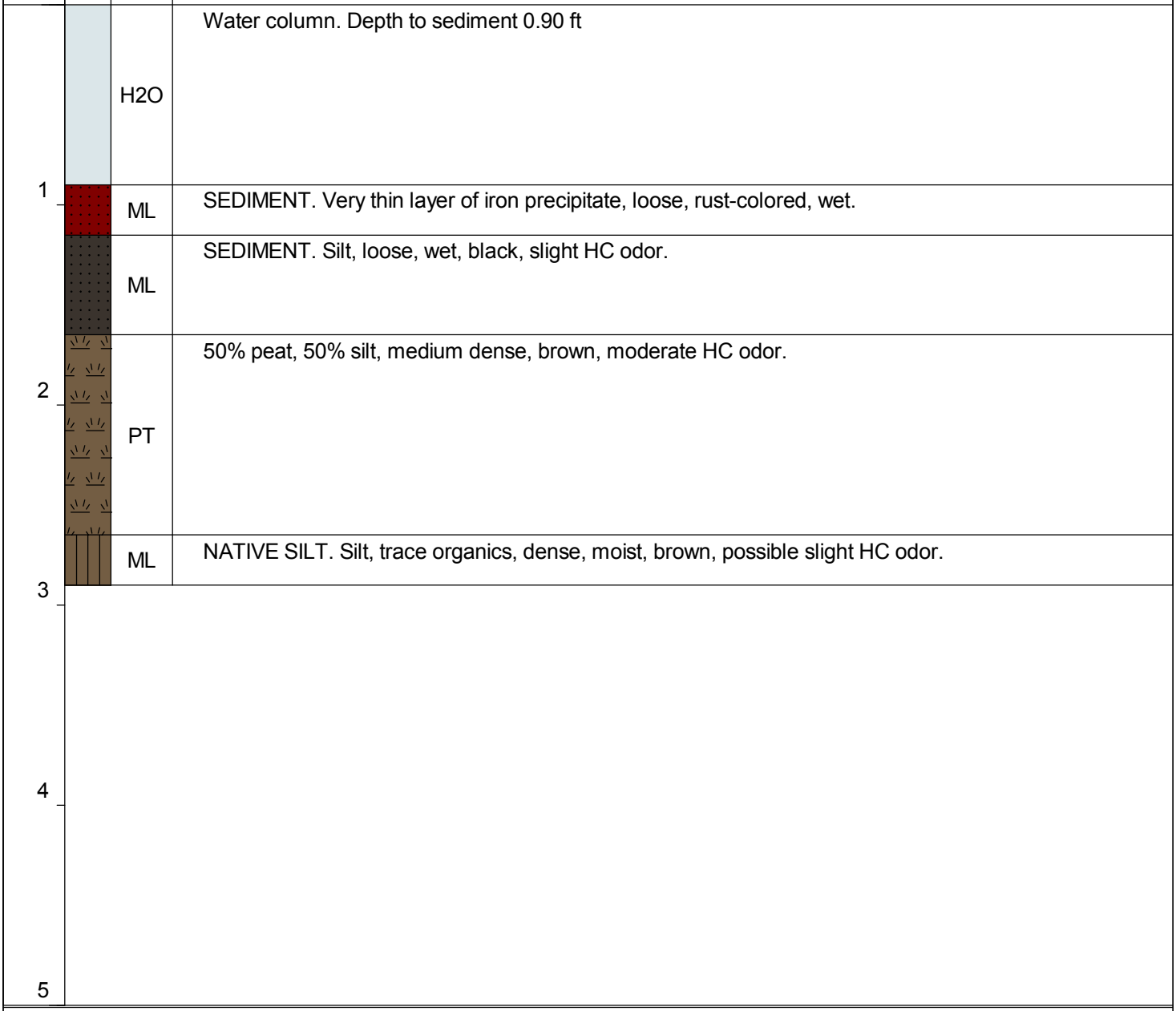
28-24

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404966.11
	E 1810987.32
Sediment Elevation:	42.70 feet above MSL
Water Elevation:	43.6 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.90 ft
Sediment Thickness:	0.75 ft
Total Depth:	2.9 ft
Date Started:	7/13/2012
Date Completed	7/13/2012



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28-25

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404947.21
	E 1810971.23
Sediment Elevation:	42.45 feet above MSL
Water Elevation:	43.6 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	1.15 ft
Sediment Thickness:	1.25 ft
Total Depth:	3.65 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 1.25 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
2		ML	SEDIMENT. Silt with trace grass/organics, loose, wet, brown and black, slight HC odor.
		ML	SEDIMENT. Silt with trace grass/organics, medium dense, wet-moist, brown and black, moderate HC odor.
		ML	75% silt, 25% peat, moderate dense, moist, brown, moderate HC odor.
3		PT	75% peat, 25% silt, moist, medium dense, brown, moderate HC odor.
		ML	NATIVE SILT. Silt with trace organics, dense, moist, brown, moderate HC odor. Sheen in water at probing location.
4			
5			

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28-26

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404921.93 E 1810984
Sediment Elevation:	42.54 feet above MSL
Water Elevation:	43.6 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	1.06 ft
Sediment Thickness:	1 ft
Total Depth:	3.56 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 1.06 ft
1		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. 75% silt, 25% grass/organics, loose, wet, brown (silt) and black (grass/organics), moderate HC odor.
2		PT	60% peat, 40% silt, medium dense, moist, brown, moderate HC odor.
		PT	75% peat, 25% silt, medium dense, moist, brown, moderate-strong HC odor.
3		ML	NATIVE SILT. Silt with trace peat, dense, moist, brown, moderate-strong HC odor. Sheen in water at probing location.
4			
5			

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28-27

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404890.49
	E 1810983.44
Sediment Elevation:	43.17 feet above MSL
Water Elevation:	43.6 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.53 ft
Sediment Thickness:	1.5 ft
Total Depth:	2.53 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sedimet 0.53 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
1		ML	SEDIMENT. Silt with trace fine sand and trace grass/organics, loose, wet, dark brown and black, moderate HC odor.
		ML	SEDIMENT. Silt with trace fine sand and trace grass/organics, loose, wet, dark brown and black, moderate HC odor.
2		PT	90% peat, 10% silt, medium dense, moist, stained black, strong HC odor.
		ML	NATIVE SILT. 90% silt, 10% peat, dense, moist, brown, strong HC odor.
3			
4			
5			

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28-28

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404888.4
	E 1810963.76
Sediment Elevation:	42.96 feet above MSL
Water Elevation:	43.7 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.74 ft
Sediment Thickness:	1.25 ft
Total Depth:	2.74 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.74 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
1		ML	SEDIMENT. Fine sand, loose, wet, dark olive gray, moderate HC odor.
		ML	SEDIMENT. Silt with trace grass/organics, wet to moist, loose to medium dense, brown, moderate HC odor.
		GWS	SEDIMENT. 75% gravel, 25% sand, loose to medium dense, wet, black, moderate HC odor.
2		PT	Peat, medium dense, moist, brown, moderate to strong HC odor. Piece of string at 1.5 ft bgs.
		ML	NATIVE SILT. 90% silt, 10% peat, moist, medium dense, brown, slight HC odor.
3			
4			
5			

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28-29

Site ID: Site 28
Site Location: St. Lawrence Island
Boring Location: N 3404879.8
E 1810939.57
Sediment Elevation: 43.01 feet above MSL
Water Elevation: 43.7 feet above MSL

Logged By: Julie Clark
Drilling Method: Hand Auger
Borehole Diameter: 4 inches
Depth to Sediment: 0.69 ft
Sediment Thickness: 0.75 ft
Total Depth: 2.69 ft
Date Started: 7/14/2012
Date Completed 7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.69 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
1		ML	SEDIMENT. 90% silt, 10% grass/organics, dark brown/black, loose, wet, no odor.
		PT	90% peat, 10% silt, loose to medium dense, wet, brown, no odor.
2		PT	60% peat, 40% silt, medium dense, moist, brown, possible slight HC odor.
		ML	NATIVE SILT. Silt with trace peat, medium dense to dense, moist, brown, poissilbe slight HC odor.
3			
4			
5			

Notes:
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28-30

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404855.48
	E 1810943.13
Sediment Elevation:	42.85 feet above MSL
Water Elevation:	43.7 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.85 ft
Sediment Thickness:	0.5 ft
Total Depth:	2.85 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.85 ft
1		ML	SEDIMENT. Silt, loose, wet, brown and black, possible slight HC odor. Loose, wet, black grass/organics at 0.5 ft bgs.
2		ML	50% silt, 50% peat, loose to medium dense, wet, brown, no odor.
3		ML	NATIVE SILT. Silt with trace organics, medium dense to dense, moist, brown, possible slight HC odor.
4			
5			

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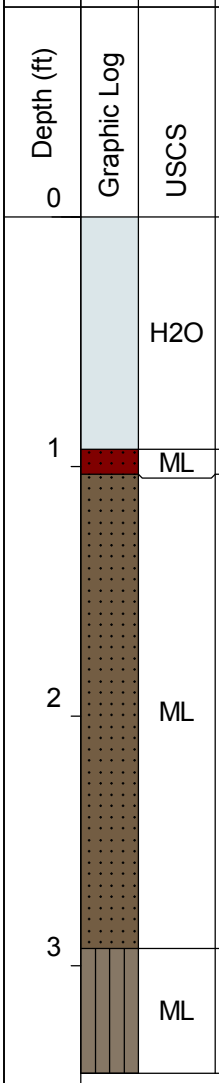
US Army Corps of Engineers
NE Cape HTRW AK District

Job No. 34120057

28-31

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404831.66
	E 1810940.14
Sediment Elevation:	42.77 feet above MSL
Water Elevation:	43.7 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.93 ft
Sediment Thickness:	1.5 ft
Total Depth:	3.43 ft
Date Started:	7/14/2012
Date Completed	7/14/2012



Lithology Description

Water column. Depth to sediment 0.93 ft

SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.

SEDIMENT. Thin layer of iron precipitate, very loose, wet, rust colored. Silt, loose, wet, brown, black grass/organics at 1.5 bgs, slight-moderate HC odor.

NATIVE SILT. Silt, dense, brown and gray, moist, no odor.

Notes:

" = inch or inches
bgs = below ground surface
ft = foot or feet
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Job No. 34120057

28-32

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404912.09
	E 1810933.18
Sediment Elevation:	42.88 feet above MSL
Water Elevation:	43.7 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.82 ft
Sediment Thickness:	1.5 ft
Total Depth:	2.82 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.82 ft
1		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
2		ML	SEDIMENT. Thin layer of iron precipitate at surface, very loose, wet, rust colored. Silt and organics, loose, wet, dark brown/black, no odor.
		PT	Peat, medium dense, moist, brown, no HC odor.
3		ML	NATIVE SILT. Silt, dense, moist, brown, no odor.
4			
5			

Notes:

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28-33

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404822.27
	E 1810950.5
Sediment Elevation:	42.96 feet above MSL
Water Elevation:	43.7 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.74 ft
Sediment Thickness:	1.75 ft
Total Depth:	3.24 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to 0.74 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
1		ML	SEDIMENT. Silt, loose, wet, dark brown and black, slight HC ordor.
2		ML	SEDIMENT. 75% organics, 25% silt, loose, wet, black (organics), dark brown (silt), moderate HC odor.
		ML	SEDIMENT. Silt, loose, wet, dark brown and black with some rust color (iron precipitate), slight HC ordor.
3		ML	Silt with trace organics, loose-medium dense, moist, brown, slight HC odor.
		ML	NATIVE SILT. Silt, dense, moist, gray, no odor.
4			
5			

Notes:

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Job No. 34120057

28-34

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404805.28
	E 1810954.42
Sediment Elevation:	43.38 feet above MSL
Water Elevation:	43.7 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.32 ft
Sediment Thickness:	2 ft
Total Depth:	2.82 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Deptht to sediment 0.32 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
1		ML	SEDIMENT. Silt, very loose, wet, dark brown and rust colored, possilbe slight HC odor.
		ML	SEDIMENT. 100% grass/organics, loose to medium dense, wet, black, slight HC odor.
		ML	SEDIMENT. 90% silt, 10% peat, loose, wet to moist, dark brown, slight HC odor.
2		ML	SEDIMENT. Silt with trace peat, loose-medium dense (probably frozen to medium dense material is very cold), brown, possilbe slight HC odor.
		ML	NATIVE SILT. Silt, dense, moist, gray, no odor.
3			
4			
5			

Notes:
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28-35

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404791.17
	E 1810948.91
Sediment Elevation:	43.57 feet above MSL
Water Elevation:	43.9 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.33 ft
Sediment Thickness:	1.75 ft
Total Depth:	2.33 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.33 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
1		ML	SEDIMENT. Silt, loose, wet, dark brown, slight HC odor.
		ML	SEDIMENT. 100% grass/organics, loose, wet, black, slight HC odor.
2		ML	SEDIMENT. Silt with trace organics, loose, wet, brown, slight HC odor.
		ML	NATIVE SILT. Silt, dense, moist, gray, no odor.
3			
4			
5			

Notes:

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28-36

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404780.47
	E 1810939.75
Sediment Elevation:	44.13 feet above MSL
Water Elevation:	44.2 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.07 ft
Sediment Thickness:	1 ft
Total Depth:	1.57 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.07 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. 75% grass/organics, 25% silt, loose, wet, black (organics), and brown (silt), slight HC odor.
1		ML	SEDIMENT. 50% silt, 50% grass/organics, medium dense, wet to moist, black (organics), and brown (silt), slight to moderate HC odor.
		PT	75% peat, 25% silt, medium dense, dry to moist, brown, moderate HC odor.
2			
3			
4			
5			

Notes:
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28-37

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404764.69
	E 1810930.85
Sediment Elevation:	44.76 feet above MSL
Water Elevation:	44.8 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.04 ft
Sediment Thickness:	1.5 ft
Total Depth:	2.04 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.4 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. Grass/organics with trace silt, loose, wet, black, slight HC odor.
1		ML	SEDIMENT. Grass/organics with trace silt, medium dense, wet, black, slight HC odor.
		ML	90% silt, 10% organics, wet, loose to medium dense, brown, slight HC odor.
2		ML	90% silt, 10% organics, moist, dense, brown, slight HC odor.
3			
4			
5			

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28-38

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404751.13
	E 1810915.97
Sediment Elevation:	45.43 feet above MSL
Water Elevation:	45.6 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.17 ft
Sediment Thickness:	2 ft
Total Depth:	2.67 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.17 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. Silt with trace grass/organics, loose, wet, brown and black, moderate HC odor.
1		ML	SEDIMENT. 60% organics, 40% silt, loose, wet, black, slight to moderate HC odor.
		ML	SEDIMENT. 75% silt, 25% organics, wet, loose, dark brown and black, slight HC odor.
2		PT	Peat with trace silt, moist, medium dense, black and dark brown, moderate HC odor.
		ML	NATIVE SILT. Clayey silt, dense, moist, gray, no odor.
3			
4			
5			

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28-39

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404735.05
	E 1810899.44
Sediment Elevation:	45.67 feet above MSL
Water Elevation:	45.8 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.13 ft
Sediment Thickness:	1 ft
Total Depth:	2.13 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.13 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. 90% grass/organics, loose, wet, black/dark brown, slight HC odor.
1		ML	SEDIMENT. 50% silt, 50% peat, loose, wet, dark brown, slight HC odor.
		PT	Peat with trace silt, medium dense, brown, strong HC odor.
		ML	75% silt, 25% peat, brown, medium dense, moist, moderate HC odor.
2		ML	NATIVE SILT. Silt, dense, moist, brown, moderate HC odor.
3			
4			
5			

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28-40

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404705.94
	E 1810890.11
Sediment Elevation:	46.20 feet above MSL
Water Elevation:	46.3 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.10 ft
Sediment Thickness:	1.5 ft
Total Depth:	2.1 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.10 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. Silt, loose, wet, brown, possible slight HC odor.
1		ML	SEDIMENT. 50% silt, 50% grass/organics, loose-medium dense, dark brown (silt) and black, slight HC odor (0.75-1 ft bgs), moderate HC odor (1-1.5 ft bgs).
		ML	75% silt, 25% peat, moist, medium dense, brown. Insulation at 1.5 ft bgs.
2		ML	Silt with trace organics, dense, moist, brown.
3			
4			
5			

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28-41

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404679.62
	E 1810879.59
Sediment Elevation:	47.87 feet above MSL
Water Elevation:	48.1 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.23 ft
Sediment Thickness:	1.5 ft
Total Depth:	2.23 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.23 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. 75% grass/organics, 25% silt, black (organics) and brown (silt), loose, wet, no odor.
1		ML	SEDIMENT. 50% silt, 50% grass/organics, loose, wet, brown (silt) and black (organics), no odor.
		ML	SEDIMENT. 50% silt, 50% grass/organics, medium dense, wet, brown (silt) and black (organics), slight HC odor.
2		ML	NATIVE SILT. Silt with trace organics, dense, moist, brown, moderate HC odor.
3			
4			
5			

Notes:

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28-42

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404672.29
	E 1810909.14
Sediment Elevation:	48.38 feet above MSL
Water Elevation:	48.7 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.32 ft
Sediment Thickness:	1 ft
Total Depth:	2.82 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.32 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
1		ML	SEDIMENT. 75% grass/organics, 25% silt, black (organics), and dark brown (silt), loose, wet, moderate HC odor.
		ML	Grass/organics with trace silt, wet, medium dense, black, moderate to strong HC odor.
2		ML	90% silt, 10% peat, medium dense, dark brown, moist to wet, moderate to strong HC odor.
		ML	90% silt, 10% peat, dense, dark brown, moist to wet, moderate to strong HC odor.
3			
4			
5			

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28-43

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404650.69
	E 1810895.28
Sediment Elevation:	49.46 feet above MSL
Water Elevation:	49.9 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.44 ft
Sediment Thickness:	1 ft
Total Depth:	2.19 ft
Date Started:	7/14/2012
Date Completed	7/14/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.44 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		MLG	SEDIMENT. Silt with trace gravel, wet, loose, black, moderate HC odor.
1		ML	SEDIMENT. Silt with trace organics, wet, loose, black, strong HC odor.
		ML	Silt with trace organics, moist, medium dense, dark brown, strong HC odor, Refusal at 1.75 ft bgs, rocks (or insulation).
2			
3			
4			
5			

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28-44

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404629.68
	E 1810894.25
Sediment Elevation:	50.68 feet above MSL
Water Elevation:	51.0 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.32 ft
Sediment Thickness:	1.5 ft
Total Depth:	2.82 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.32 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
1		ML	SEDIMENT. 50% silt, 50% grass/organics, loose, wet, black, slight HC odor.
		ML	SEDIMENT. 75% silt, 25% peat, wet to moist, loose to medium dense, brown, moderate HC odor.
2		ML	75% silt, 25% peat, moist, medium dense, moderate HC odor.
		ML	75% silt, 25% peat, moist, medium dense, moderate HC odor. NATIVE SILT at 2.5 ft bgs, very dense, moist to dry, gray, slight HC odor.
3			
4			
5			

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28-45

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404618.75
	E 1810883.15
Sediment Elevation:	50.97 feet above MSL
Water Elevation:	51.1 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.13 ft
Sediment Thickness:	1.25 ft
Total Depth:	1.63 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water colum. Depth to sediment 0.13 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. Silt, loose, wet, brown and rust colored.
1		ML	SEDIMENT. 50% silt, 50% grass/organics, loose, wet, brown and black, moderate HC odor.
		ML	SEDIMENT. 75% silt, 25% peat, loose to medium dense, moist-wet, brown, moderate HC odor.
		ML	NATIVE SILT. Silt, dense, moist, gray, slight HC odor.
2			
3			
4			
5			

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28-46

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404601.97
	E 1810880.59
Sediment Elevation:	51.56 feet above MSL
Water Elevation:	51.8 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.24 ft
Sediment Thickness:	1 ft
Total Depth:	1.74 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.24 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. Silt, loose, wet, brown and rust colored.
1		ML	SEDIMENT. Grass/organics with trace silt, loose, wet, black, slight HC odor.
		ML	50% silt, 50% peat, loose to medium dense, brown, wet to moist, slight HC odor.
		ML	NATIVE SILT. Silt, dense, moist, gray, slight HC odor.
2			
3			
4			
5			

Notes:
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28-47

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404591.39
	E 1810877.83
Sediment Elevation:	51.39 feet above MSL
Water Elevation:	51.9 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.51 ft
Sediment Thickness:	1 ft
Total Depth:	2.01 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.51 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
1		ML	SEDIMENT. Thin layer of iron precipitate at surface, loose, wet, rust colored. Fine sand and silt, loose, wet, brown.
		MLS	SEDIMENT. 75% grass/organics, 25% fine sand and silt, loose, wet, black, moderate HC odor.
		ML	SEDIMENT. 90% silt, 10% organics, loose, wet, brown, slight HC odor.
		ML	50% silt, 50% peat, loose to medium dense, moist to wet, brown, slight HC odor.
2		ML	NAVITE SILT. Silt, medium dense to dense, moist, gray and brown, slight HC odor.
3			
4			
5			

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28-48

Site ID: Site 28
Site Location: St. Lawrence Island
Boring Location: N 3404580.91
E 1810870.98
Sediment Elevation: 52.26 feet above MSL
Water Elevation: 52.4 feet above MSL

Logged By: Julie Clark
Drilling Method: Hand Auger
Borehole Diameter: 4 inches
Depth to Sediment: 0.14 ft
Sediment Thickness: 1.25 ft
Total Depth: 2.14 ft
Date Started: 7/15/2012
Date Completed 7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.14 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
1		ML	SEDIMENT. Fine sand and silt with 25% grass/organics, loose, wet, dark brown/black, moderate HC odor.
		ML	SEDIMENT. 75% silt, 25% grass/organics, loose, wet, dark brown/black, moderate HC odor.
2		ML	SEDIMENT. 75% silt, 25% peat, loose to medium dense, wet to moist, brown, moderate HC odor.
		ML	NATIVE SILT. Silt, dense, moist, brown with some gray, slight HC odor. Sheen generated at probe location.
3			
4			
5			

Notes:
" = inch or inches
bgs = below ground surface
ft = foot or feet
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28-49

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404566.65
	E 1810865.32
Sediment Elevation:	52.37 feet above MSL
Water Elevation:	52.9 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.53 ft
Sediment Thickness:	1 ft
Total Depth:	2.03 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.53 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
1		ML	SEDIMENT. Fine sand and gravel, very loose, wet, black, moderate HC odor.
		ML	SEDIMENT. Silt, loose, wet to moist, brown, slight HC odor.
2		ML	50% silt, 50% peat, medium dense, moist, brown, slight HC odor. Auger cannot get past obstruction at 1.5 ft bgs-insulation. Sheen generated at probe location.
3			
4			
5			

Notes:

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28-50

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404562.13
	E 1810862.09
Sediment Elevation:	53.15 feet above MSL
Water Elevation:	52.9 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.05 ft
Sediment Thickness:	0.75 ft
Total Depth:	1.8 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.05 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. Fine sand and gravel, wet, loose, dark gray.
		MLS	SEDIMENT. 75% grass/organics, 25% fine sand and silt, loose, wet, black, moderate HC odor.
1	insulation		0.75-1 ft bgs Hard piece of insulation.
		ML	50% silt, 50% peat, medium dense, moist, reddish-brown, no odor.
		PT	100% peat, medium dense, moist to wet, reddish-brown, no odor. Obstruction at 1/75 ft bgs, probably another piece of insulation.
2			
3			
4			
5			

Notes:

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28-51

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404560.58
	E 1810874.93
Sediment Elevation:	53.40 feet above MSL
Water Elevation:	53.2 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.60 ft
Sediment Thickness:	0.75 ft
Total Depth:	1.85 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.60 ft
1		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. 50% silt and 50% grass/organics, loose, wet, rust colored, dark brown, and black, slight HC odor.
2		PT	75% grass/organics, peat with 25% silt, black and dark brown, wet, loose to medium dense, slight HC odor. Obstruction at 1.5 ft bgs, probable insulation.
3			
4			
5			

Notes:

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28-52

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404544.4
	E 1810868.28
Sediment Elevation:	54.17 feet above MSL
Water Elevation:	54.5 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.33 ft
Sediment Thickness:	1.25 ft
Total Depth:	1.83 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.33 ft
		ML	SEDIMENT. Very thin layer of iron precipitate, loose, rust-colored, wet.
		ML	SEDIMENT. 90% grass/organics, 10% silt, wet, loose, brown and black, no odor.
1		ML	SEDIMENT. 50% silt, 50% grass/organics and peat, loose to medium dense, wet, slight HC odor.
		Ml	NATIVE SILT. Silt, medium dense to dense, wet to moist, gray, slight HC odor.
2			
3			
4			
5			

Notes:
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28-53

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404419.66
	E 1810840.72
Sediment Elevation:	56.05 feet above MSL
Water Elevation:	56.6 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.55 ft
Sediment Thickness:	1.5 ft
Total Depth:	2.55 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.55 ft
1		ML	SEDIMENT. 75% grass/organics, 25% silt, loose, wet, dark brown/black, no odor.
2		ML	SEDIMENT. Grass/organics with trace silt, loose, wet, dark brown, possible slight HC odor.
		ML	NATIVE SILT. Silt, medium dense to dense, moist, gray with some brown, moderate HC odor.
3			
4			
5			

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28-54

Site ID: Site 28
Site Location: St. Lawrence Island
Boring Location: N 3404303.1
E 1810821.95
Sediment Elevation: 55.12 feet above MSL
Water Elevation: 57.8 feet above MSL

Logged By: Julie Clark
Drilling Method: Hand Auger
Borehole Diameter: 4 inches
Depth to Sediment: 2.68 ft
Sediment Thickness: 1.25 ft
Total Depth: 4.68 ft
Date Started: 7/15/2012
Date Completed 7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 2.68
2			
3		ML	SEDIMENT. 60% silt, 40% organics/peat, loose to medium dense, wet, dark brown, slight HC odor.
4		ML	SEDIMENT. 90% silt, 10% peat, loose, wet, brown, slight HC odor.
		PT	60% peat, 40% silt, medium dense, moist, brown, no odor.
		ML	NATIVE SILT. Silt, dense, moist, brown, no odor.
5			

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28-55

Site ID: Site 28
Site Location: St. Lawrence Island
Boring Location: N 3404296.46
E 1810814.02
Sediment Elevation: 56.21 feet above MSL
Water Elevation: 57.8 feet above MSL

Logged By: Julie Clark
Drilling Method: Hand Auger
Borehole Diameter: 4 inches
Depth to Sediment: 1.59 ft
Sediment Thickness: 1 ft
Total Depth: 3.09 ft
Date Started: 7/15/2012
Date Completed 7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 1.59 ft
2		ML	SEDIMENT. 50% grass/organics, 50% silt, loose, wet, black (organics) and brown (silt), moderate HC odor.
		ML	SEDIMENT. 90% silt, 10% peat/organics, loose to medium dense, brown, wet, moderate HC odor.
3		ML	NATIVE SILT. Silt, dense, moist, brown, slight HC odor.
4			
5			

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28-56

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404274.1
	E 1810821.78
Sediment Elevation:	57.09 feet above MSL
Water Elevation:	57.8 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.71 ft
Sediment Thickness:	0.75 ft
Total Depth:	2.21 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.71 ft
1		ML	SEDIMENT. Silt, very loose, wet, dark brown/black, strong HC odor.
2		PT	60% peat, 40% silt, wet, medium dense, brown, strong HC odor.
		ML	NATIVE SILT. 90% silt, 10% peat, moist, dense, brown, moderate HC odor. Sheen generated at probing location.
3			
4			
5			

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28-57

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404341.52
	E 1811025.13
Sediment Elevation:	56.27 feet above MSL
Water Elevation:	57.0 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.73 ft
Sediment Thickness:	1.5 ft
Total Depth:	2.23 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.73 ft
1		ML	SEDIMENT. 90% grass/organics, 10% silt, (75% grass/organics and 25% silt at 1-1.5 ft bgs) very loose, wet, no odor. Refusal at 1.5 ft bgs. Possible roofing matrerial.
2			
3			
4			
5			

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28-58

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404365.43
	E 1811026.42
Sediment Elevation:	55.67 feet above MSL
Water Elevation:	57.0 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	1.33 ft
Sediment Thickness:	1 ft
Total Depth:	2.33 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 1.33 ft
2		ML	SEDIMENT. Grass/organics with some silt, very loose, wet, dark brown. Refusal at 1 ft bgs, possible roofing material.
3			
4			
5			

Notes:
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28-59

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404343.09
	E 1811039.67
Sediment Elevation:	56.49 feet above MSL
Water Elevation:	57.0 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.51 ft
Sediment Thickness:	2 ft
Total Depth:	2.51 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.51 ft
1		ML	SEDIMENT. Grass/organics with trace silt, very loose, wet, dark brown and black, no odor.
2		SP-SM	SEDIMENT. 75% fine sand and silt, 25% grass/organics, very loose, wet, dark brown, possible slight HC odor. Refusal at 2 ft bgs, possible roofing material.
3			
4			
5			

Notes:
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28-60

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404283.59
	E 1811085.97
Sediment Elevation:	56.99 feet above MSL
Water Elevation:	58.0 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	1.01 ft
Sediment Thickness:	1 ft
Total Depth:	2.51 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 1.01 ft
		ML	SEDIMENT. 60% grass/organics, 40% silt, very loose, wet, dark brown/black, possible slight HC odor.
2		ML	SEDIMENT. 90% grass/organics, 10% silt, loose to medium dense, dark brown/black, possible slight HC odor.
		ML	NATIVE SILT. Silt, dense, moist, gray and brown, no odor.
3			
4			
5			

Notes:
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28-61

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404293.89
	E 1811102.34
Sediment Elevation:	57.52 feet above MSL
Water Elevation:	58.0 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.48 ft
Sediment Thickness:	0.75 ft
Total Depth:	1.48 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		H2O	Water column. Depth to sediment 0.48 ft
1		ML	SEDIMENT. Grass/organics with some silt, loose, wet, dark brown and black, possible slight HC odor.
		ML	NATIVE SILT. Silt, dense, moist, gray, no odor.
2			
3			
4			
5			

Notes:
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ft = foot or feet
ID = identification
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28-62

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404261.44
	E 1811109.62
Sediment Elevation:	56.48 feet above MSL
Water Elevation:	58.0 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	1.52 ft
Sediment Thickness:	1 ft
Total Depth:	3.02 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 1.52 ft
2		ML	SEDIMENT. Grass/organics with trace silt, loose, wet, dark brown and black, possible slight HC odor.
3		ML	NATIVE SILT. Silt, dense, moist, brown and gray, possible slight HC odor.
4			
5			

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28-63

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404124.08
	E 1810996.73
Sediment Elevation:	58.30 feet above MSL
Water Elevation:	58.0 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	1.70 ft
Sediment Thickness:	1 ft
Total Depth:	3.2 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 1.70 ft
2		ML	SEDIMENT. 60% silt, 40% grass/organics, loose, wet, dark brown and black, moderate HC odor.
3		ML	NATIVE SILT. Silt with trace peat, dense, moist, brown, moderate HC odor.
4			
5			

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28-64

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404117.3
	E 1811007.16
Sediment Elevation:	57.75 feet above MSL
Water Elevation:	60.0 feet above MSL

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	2.25 ft
Sediment Thickness:	1.25 ft
Total Depth:	3.75 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
1		H2O	Water column. Depth to sediment 2.25 ft
2			
3		ML	SEDIMENT. 60% silt, 40% grass/organics, loose, wet, dark brown and black, moderate HC odor.
		ML	SEDIMENT. 75% grass/organics, 25% silt, loose, wet, black and dark brown, moderate HC odor.
		ML	NATIVE SILT. Silt with trace peat, dense, moist, brown, moderate HC odor.
4			
5			

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28-65

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404054.02
	E 1810792.87
Sediment Elevation:	Not Surveyed
Water Elevation:	Not Surveyed

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.0 ft
Sediment Thickness:	1 ft
Total Depth:	2 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0			
		ML	SEDIMENT. Silt with some rocks, loose to medium dense, moist, gray and brown, moderate HC odor.
		ML	SEDIMENT. 75% grass/organics, 25% silt, medium dense, moist, brown, strong HC odor.
1		ML	Silt with trace peat, medium dense to dense, dry, strong HC odor.
		ML	Silt with trace peat, dense, dry, strong HC odor.
2			
3			
4			
5			

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28-66

Site ID:	Site 28
Site Location:	St. Lawrence Island
Boring Location:	N 3404072.54
	E 1810792.09
Sediment Elevation:	Not Surveyed
Water Elevation:	Not Surveyed

Logged By:	Julie Clark
Drilling Method:	Hand Auger
Borehole Diameter:	4 inches
Depth to Sediment:	0.0 ft
Sediment Thickness:	1.5 ft
Total Depth:	1.5 ft
Date Started:	7/15/2012
Date Completed	7/15/2012

Depth (ft)	Graphic Log	USCS	Lithology Description
0		ML	Silt with trace organics, loose, moist, mostly brown, some gray, strong HC/solvent odor.
1		ML	Silt with trace peat, medium dense, moist, brown, strong HC/solvent odor.
		ML	Silt with trace peat, medium dense, moist, dry at 1.5 ft bgs, brown, strong HC/solvent odor.
2			
3			
4			
5			

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APPENDIX D

ADEC Laboratory Data Review Checklist,
Chemical Data Verification Report, and Sample Summary Table

Laboratory Data Review Checklist

Completed by: Emily Conway and Marty Hannah

Title: Geologist/Chemist Date: December 20, 2012

CS Report Name: NE Cape HTRW Report Date: 08/03/2012

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: Test America Tacoma Laboratory Report Number: 580-34102-1 Rev. 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 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:

   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:

Both 16oz jars for sample 12NC28SS029 were received with cracked lids, sample volume was not compromised.

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 container labels for several samples did not match info on the COC. Container labels had date of 7/20/2012; COC had date of 07/19/2012. Samples were logged in according to date on COC, which was incorrect. All samples with incorrect collection date were collected on 7/20/12. The report and EDDs have been revised with the correct date.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualifications.

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:

There were several minor QC failures for surrogate recoveries, method blank contamination and failed MS/MSDs that are discussed further in the following sections. No results were rejected.

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:

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:

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 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:

Phenanthrene was detected in method blank MB 580-116204/1-A and pyrene was detected in MB 580-116308/1-A at concentrations less than half the LOQ for PAH analyses. Pyrene results less than 10 times the MB concentrations are B flagged and are considered estimates with high bias. DRO was detected in the method blanks for batches 580-116205 and 580-116486 at concentrations less than ½ the LOQ.

      iii. If above PQL, what samples are affected?

Sample 12NC28SS010 was B flagged for Phenanthrene and samples 12NC28SS023, -25, -126, -028, -032 and -033were B flagged for Pyrene because the sample concentrations were reported at less than 10 times the concentration detected in the method blank. Only sample 12NC28SS042 had a DRO result less than 10 times the concentration of the applicable method blank and it is B flagged.

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:

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable with some qualifications. Nearly all results were already J flagged for being reported below the LOQ.

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:

All LCS/LCSD recoveries were in control. MS/MSD recoveries were outside acceptance criteria as follows:

PAHs

The MS for spiked sample 12NC28SS024 (prep batch 580-116526) had recoveries for naphthalene, 1-methylnaphthalene, acenaphthene, and fluorene outside of acceptance limits. Results for that sample are flagged MH or ML to indicate matrix inference with directional bias.

PCBs

PCB spike recoveries of Aroclor 1016 in the MS on sample 12NC28SS024 were greater than the acceptance limit along with a high RPD. Results were not detected and qualification was not required.

PCB spike recoveries of Aroclor 1016 in the MS on sample 12NC28SS050 were greater than the acceptance limit along with a high RPD. Results were not detected and qualification was not required.

PCB spike recoveries of Aroclor 1260 in the MSD on sample 12NC28SS050 were below the acceptance limit along with a high RPD. Results are flagged ML for matrix interference with low bias.

RRO

For RRO MS/MSD results, two out the three MS/MSDs showed recovery exceedances; therefore, all associated samples were qualified. Associated samples were those collected in the same day. Results associated with low recoveries were ML qualified and detected results associated with high recoveries were MH qualified.

For RRO with silica gel cleanup, one of the three MS/MSDs was recovered outside acceptance criteria. Results were MN qualified, since both high and low recoveries were observed for sample 12NC28SS050. Qualification was limited to the spiked sample since two of the three MS/MSDs were in control.

Metals

MS and or MSD recoveries were high for chromium for sample 12NC28SS010 and for barium, chromium, nickel, vanadium and zinc for sample 12NC28SS050. Spiked sample results and associated sample results (those included in the same analytical preparation batch) were MH 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)

□Yes X No □NA (Please explain.) Comments:

BTEX
The BTEX MS/MSD had high RPDs for sample 12NC28SS050 for all analytes. Detected results were MN qualified.
GRO
The GRO result for sample 12NC28SS050 had a high MS/MSD RPD; this sample had been qualified ML since the surrogate recovery was low.
PCBs
MS/MSDs RPDs for Aroclor 1016 were outside control limits for two MS/MSD pairs. Aroclor 1016 results were not detected and qualification was not required. The MS/MSD RPD for Aroclor 1260 was outside control limits for spiked sample 12NC28SS050. Sample results were qualified due to a low MSD recovery and further qualification was not required.
Metals
MS/MSD RPDs were outside criteria for chromium for sample 12NC28SS010 and for 10 metals for sample 12NC28SS050. Results were not qualified due to high MS/MSD RPDs since laboratory duplicate RPDs were in control.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Noted in iii and iv of 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:

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable with qualification 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)

GRO
56 sediment samples submitted for GRO had trifluorotoluene (field surrogate) recoveries below acceptance limits. BFB, which is added at the laboratory during preparation, was within limits for all samples. Matrix interference is suspected due to the acceptable BFB recoveries and the trip blank field surrogate recoveries meeting acceptance limits. 56 GRO sediment results are flagged ML to indicate matrix interference with low bias.
PCBs
Samples 12NC28SS036, -042, -043, -045, -046, -047, -48, and -147 had TCMX recoveries exceed recovery criteria. The decachlorobiphenyl (surrogate) recoveries were within acceptance limits for these samples. Detected PCB results associated with high recoveries were MH qualified to indicate the potential for high bias. Samples 12NC28SS114 and -015 had decachlorobiphenyl recoveries less than the acceptance limit. Matrix interference during sulfuric acid cleanup was noted in the case narrative of the report. Results are flagged ML to indicate matrix interference with low bias. The TCMX recoveries were within acceptance limits for these samples.
PAHs
Sample 12NC28SS051 had high recovery of terphenyl-d14 for PAH analyses. Matrix interference is suspected. Detected PAH results for -SS051 are flagged QH and are considered estimates with a high bias
RRO
Six RRO results and one RRO result with silica gel were qualified QL due to low n-triacontane-d62 surrogate recoveries.

□Yes X 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?

X Yes □ No □NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Results are usable for project purposes with the above noted qualifications. The matrix is sediment with high organics as indicated by TOC concentrations averaging greater than 150,000 mg/kg and the surrogate outliers are considered to be due to sample matrix.

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.)

Three trip blanks were shipped with one per cooler. Trip blank 072312Tripblank1 had 1.8 mg/kg of GRO and -TripBlank3 reported GRO at 1.0 mg/kg. All GRO results had already been flagged ML due to low surrogate recoveries so no flags were added for the trip blank contamination. The majority of results were non-detect for GRO.

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:

A sample sheet listing which samples were placed in which cooler was provided to the laboratory with the CoC and the Sample Cooler Login sheet prepared by the laboratory also indicated which samples were transported in which cooler and the associated trip blanks.

iii. All results less than PQL?

X Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

GRO results for 3 samples with concentrations less than 10x the highest associated trip blank concentration were B qualified to indicate potential contamination during shipping due to positive GRO results in trip blank 1 and trip blank3.

v. Data quality or usability affected? (Please explain.)

Comments:

Data are usable as qualified

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:

Field duplicates are highlighted purple in the Sediment Results table except for results that exceed cleanup level, which are highlighted red. Field duplicates with RPDs greater than 50% are flagged QN and are considered estimates with no bias direction.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable with some qualifications.

f. Decontamination or Equipment Blank (If not used explain why).

X Yes □ No □NA (Please explain.) Comments:

i. All results less than PQL?

X Yes □ No □NA (Please explain.) Comments:

ii. If above PQL, what samples are affected?

Comments:

DRO was detected at 0.049-J mg/L, RRO at 0.052-J mg/L, barium at 0.0038-J mg/L, lead at 0.00017-J mg/L and zinc at 0.024-J mg/L. All project sample results were much greater than 10 times the concentration reported in the equipment blank so no results were qualified based on equipment blank analyses.

iii. Data quality or usability affected? (Please explain.)

Comments:

Results are usable without qualification due to such low reported results for the equipment blank analyses.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are defined on the data tables and are also discussed in the CDQR on Table 2-11.

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TABLES

ACRONYMS AND ABBREVIATIONS

%R	percent recovery
µg/kg	micrograms per kilogram
ADEC	Alaska Department of Environmental Conservation
AK	Alaska Test Method
Bristol	Bristol Environmental Remediation Services, LLC
BTEX	benzene, toluene, ethylbenzene, and xylenes
CoC	chain-of-custody
DL	detection limit
DQO	data quality objective
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
GRO	gasoline range organics
HTRW	hazardous, toxic, and radioactive waste
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
Loc ID	location ID
LOD	limit of detection
LOQ	limit of quantitation
MB	method blank
MS	matrix spike
MSD	matrix spike duplicate
NE Cape	Northeast Cape
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
QAPP	Quality Assurance Project Plan
QC	quality control
Report	Data Verification Report
RPD	relative percent difference
RRO	residual range organics
SIM	selective ion monitoring
SW	EPA Solid Waste Test Method
TestAmerica	TestAmerica Laboratories, Inc.
TOC	total organic carbon
USACE	US Army Corps of Engineers

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1.0 INTRODUCTION

This Data Verification Report (Report) has been completed by AECOM on the submitted data packages in accordance with an agreement between Bristol Environmental Remediation Services, LLC (Bristol), and the US Army Corps of Engineers (USACE), Alaska District. Per this agreement, all laboratory results were generated as part of work on the Remedial Actions at Northeast Cape (NE Cape), St. Lawrence Island, Alaska. The USACE assigned this project to Bristol under Contract Nos. W911KB-06-D-0007/ W911KB-12-C-0003.

Data verification for this report was performed by Bristol's subcontractor AECOM on the data collected as part of the Remedial Actions at Site 28 at NE Cape in 2012. Data verification is a process for evaluating the completeness, correctness, consistency, and compliance with method procedures and quality control (QC) requirements and for identifying anomalous data. The reported project sample values were reviewed, as well as any method laboratory control samples (LCSs) extracted or prepared with the project samples. Specifically, the following items were reviewed in this data verification:

- 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)
  - LCSs/laboratory control sample duplicates (LCSDs)
  - Matrix spike (MS)/matrix spike duplicate (MSD)
  - Duplicate samples
  - Surrogate recoveries

- Sampling procedures:
  - Trip blanks
  - Equipment blanks
  - Field duplicate samples
- Correspondence to method criteria and project data quality objectives (DQOs)

Unless otherwise discussed in this document, the above parameters were within control limits specified in the NE Cape HTRW (hazardous, toxic, and radioactive waste) Remedial Actions Quality Assurance Project Plan (QAPP) dated August 2012. If control limits were not specified in the QAPP, laboratory control limits were used for review. In some instances, QC information beyond QAPP specifications was reported (e.g., additional surrogates). This information was not used for data review unless specifically noted.

No information on internal standards, calibrations, instrument tunes, chromatograms, quantitation reports, spectra, summaries identifying any analytical irregularities and the subsequent corrective action taken by the laboratories, or results from any other analytical procedures other than those listed above were reviewed and are not included in this Report. Laboratory narratives were examined, and any documented calibration or other QC outliers were included as appropriate in this Report. However, narratives were not included for inorganics.

Data verification was performed in accordance with:

- *NE Cape HTRW Remedial Actions Northeast Cape, St. Lawrence Island, Alaska Quality Assurance Project Plan (QAPP), Revision 2,* (August, 2012)
- *Department of Defense (DoD) Quality Systems Manual*, Version 4.2 (2010)
- Alaska Department of Environmental Conservation (ADEC) Technical Memorandum: *Environmental Laboratory and Quality Assurance Requirements* (updated March 2009)

Precision and accuracy were assessed by comparing surrogate, MS/MSD, and LCS/LCSD recoveries and relative percent differences (RPDs) to the QAPP-specified control limits.

The frequency of QC samples was compared to the frequency specified in the QAPP. The MSs/MSDs performed on non-project samples are not applicable and were not evaluated.

The reviewed data sets include data from samples collected in July 2012, which were analyzed by TestAmerica Laboratories, Inc. (TestAmerica), Tacoma, Washington, by the following methods:

- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by U.S. Environmental Protection Agency (EPA) Solid Waste Test Methods (SW-846) 5035/8260B (soil) or 5030B/8260B (water)
- Gasoline range organics (GRO) by Alaska Test Method AK101
- Diesel range organics (DRO) and residual range organics (RRO) by ADEC methods AK102/103
- DRO and RRO by ADEC methods AK102/103 with silica gel cleanup
- Polynuclear aromatic hydrocarbons (PAHs) by SW-846 method 3550B/8270C (soil) and 3520C/8270C (water), using selected ion mode (SIM)
- Polychlorinated biphenyls (PCBs) by SW-846 method 3550B/8082 (soils) and 3510C/8082 (water)
- Total organic carbon (TOC)Quad by SW-846 9060
- Metals by SW-846 method 3050B/6020 (soils) and 3005A/6020 (water)
- Mercury by SW-846 method 7471A/7470A

The water methods listed above were used to analyze the rinsate blank.

The sampling event and laboratory work order numbers are presented in Table 1-1.

Table 1-1 Laboratory Work Order Numbers

Sampling Event	Sample Matrix	Work Order Number	Revision No	Date
Site 28	Sediment	580-34102-1	3	1/09/2013

The sediment analytical results table, which includes qualifiers assigned during data review, is presented in the Tables section following the body of the Technical Memorandum Addendum. The table includes sample IDs, which reference the year (12),

the project (NC) for NE Cape, the site (28 for site 28), the matrix (SS for surface sediment), and the sample location ID (LocID). The LocID indicates the specific site at NE Cape, as well as a specific location within the site.

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 – Analyte result is considered an estimated value because the level is below the laboratory limit of quantitation (LOQ) but above the detection limit (DL) (formerly the method detection limit).
- ND (LOD) – Analyte result is less than the DL. The non-detected result has the limit of detection (LOD) in parentheses.
- R – Analyte result is rejected – result is not usable. Note that R replaces the chemical result (no result will be reported with an R flag).
- B – Analyte result is considered a high estimated value due to contamination present in the method 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, low, uncertain) due to matrix effects.
- QH, QL, QN – Analyte result is considered an estimated value biased (high, low, uncertain) due to a quality control failure.
- NP – Analyte result is not preferred. Another, more technically accurate, result is preferred. These results are not to be used for reporting.

2.0 DATA VERIFICATION

Sixty-one sediment samples, which included five field duplicates, volume for MS/MSD pairs, one rinsate blank and four trip blanks were collected in July 2012 and submitted to the laboratory for analysis. Field sample numbers and corresponding laboratory numbers are presented in Table 2-1.

Table 2-1 Sample Identification and Analysis

Field Sample ID	Laboratory Sample Number	Location ID	GRO (AK101)	BTEX (SW8260B)	DRO/RRO (AK102/103)	DRO/RRO with Silica Gel (AK102/103)	PCB (SW8082)	PAHs (8270C SIM)	Total Metals* (SW6020/7471A/7470A)	TOC (9060)	Remarks
12NC28SS001	580-34102-1	028-01	X	X	X	X	X	X	X	X	
12NC28SS002	580-34102-2	028-02	X	X	X	X	X	X	X	X	
12NC28SS003	580-34102-3	028-03	X	X	X	X	X	X	X	X	
12NC28SS004	580-34102-4	028-04	X	X	X	X	X	X	X	X	
12NC28SS005	580-34102-5	028-05	X	X	X	X	X	X	X	X	
12NC28SS006	580-34102-7	028-06	X	X	X	X	X	X	X	X	
12NC28SS007	580-34102-8	028-07	X	X	X	X	X	X	X	X	
12NC28SS008	580-34102-9	028-08	X	X	X	X	X	X	X	X	
12NC28SS009	580-34102-10	028-09	X	X	X	X	X	X	X	X	
12NC28SS010	580-34102-11	028-010	X	X	X	X	X	X	X	X	MS/MSD for GRO, BTEX, DRO/RRO, DRO/RRO with silica gel, PCBs, PAHs, metals, TOC
12NC28SS011	580-34102-12	028-011	X	X	X	X	X	X	X	X	
12NC28SS012	580-34102-13	028-012	X	X	X	X	X	X	X	X	

Table 2-1 Sample Identification and Analysis (continued)

Field Sample ID	Laboratory Sample Number	Location ID	GRO (AK101)	BTEX (SW8260B)	DRO/RRO (AK102/103)	DRO/RRO with Silica Gel (AK102/103)	PCB (SW8082)	PAHs (8270C SIM)	Total Metals* (SW6020/7471A/7470A)	TOC (9060)	Remarks
12NC28SS013	580-34102-14	028-013	X	X	X	X	X	X	X	X	
12NC28SS014	580-34102-15	028-014	X	X	X	X	X	X	X	X	
12NC28SS015	580-34102-17	028-015	X	X	X	X	X	X	X	X	
12NC28SS016	580-34102-18	028-016	X	X	X	X	X	X	X	X	
12NC28SS017	580-34102-19	028-017	X	X	X	X	X	X	X	X	
12NC28SS018	580-34102-20	028-018	X	X	X	X	X	X	X	X	
12NC28SS019	580-34102-21	028-019	X	X	X	X	X	X	X	X	
12NC28SS020	580-34102-22	028-020	X	X	X	X	X	X	X	X	
12NC28SS021	580-34102-23	028-021	X	X	X	X	X	X	X	X	
12NC28SS022	580-34102-24	028-022	X	X	X	X	X	X	X	X	
12NC28SS023	580-34102-25	028-023	X	X	X	X	X	X	X	X	

Table 2-1 Sample Identification and Analysis (continued)

Field Sample ID	Laboratory Sample Number	Location ID	GRO (AK101)	BTEX (SW8260B)	DRO/RRO (AK102/103)	DRO/RRO with Silica Gel (AK102/103)	PCB (SW8082)	PAHs (8270C SIM)	Total Metals* (SW6020/7471A/7470A)	TOC (9060)	Remarks
12NC28SS024	580-34102-26	028-024	X	X	X	X	X	X	X	X	MS/MSD for GRO, BTEX, DRO/RRO, DRO/RRO with silica gel, PCBs, PAHs, metals, TOC
12NC28SS025	580-34102-27	028-025	X	X	X	X	X	X	X	X	
12NC28SS026	580-34102-28	028-026	X	X	X	X	X	X	X	X	
12NC28SS027	580-34102-30	028-027	X	X	X	X	X	X	X	X	
12NC28SS028	580-34102-31	028-028	X	X	X	X	X	X	X	X	
12NC28SS029	580-34102-32	028-029	X	X	X	X	X	X	X	X	
12NC28SS030	580-34102-33	028-030	X	X	X	X	X	X	X	X	
12NC28SS031	580-34102-34	028-031	X	X	X	X	X	X	X	X	
12NC28SS032	580-34102-35	028-032	X	X	X	X	X	X	X	X	
12NC28SS033	580-34102-36	028-033	X	X	X	X	X	X	X	X	
12NC28SS034	580-34102-37	028-034	X	X	X	X	X	X	X	X	
12NC28SS035	580-34102-38	028-035	X	X	X	X	X	X	X	X	

Table 2-1 Sample Identification and Analysis (continued)

Field Sample ID	Laboratory Sample Number	Location ID	GRO (AK101)	BTEX (SW8260B)	DRO/RRO (AK102/103)	DRO/RRO with Silica Gel (AK102/103)	PCB (SW8082)	PAHs (8270C SIM)	Total Metals* (SW6020/7471A/7470A)	TOC (9060)	Remarks
12NC28SS036	580-34102-39	028-036	X	X	X	X	X	X	X	X	
12NC28SS037	580-34102-40	028-037	X	X	X	X	X	X	X	X	
12NC28SS038	580-34102-41	028-038	X	X	X	X	X	X	X	X	
12NC28SS039	580-34102-43	028-039	X	X	X	X	X	X	X	X	
12NC28SS040	580-34102-44	028-040	X	X	X	X	X	X	X	X	
12NC28SS041	580-34102-45	028-041	X	X	X	X	X	X	X	X	
12NC28SS042	580-34102-46	028-042	X	X	X	X	X	X	X	X	
12NC28SS043	580-34102-47	028-043	X	X	X	X	X	X	X	X	
12NC28SS044	580-34102-48	028-044	X	X	X	X	X	X	X	X	
12NC28SS045	580-34102-50	028-045	X	X	X	X	X	X	X	X	
12NC28SS046	580-34102-51	028-046	X	X	X	X	X	X	X	X	
12NC28SS047	580-34102-52	028-047	X	X	X	X	X	X	X	X	
12NC28SS048	580-34102-54	028-048	X	X	X	X	X	X	X	X	
12NC28SS049	580-34102-55	028-049	X	X	X	X	X	X	X	X	

Table 2-1 Sample Identification and Analysis (continued)

Field Sample ID	Laboratory Sample Number	Location ID	GRO (AK101)	BTEX (SW8260B)	DRO/RRO (AK102/103)	DRO/RRO with Silica Gel (AK102/103)	PCB (SW8082)	PAHs (8270C SIM)	Total Metals* (SW6020/7471A/7470A)	TOC (9060)	Remarks
12NC28SS050	580-34102-56	028-050	X	X	X	X	X	X	X	X	MS/MSD for GRO, BTEX, DRO/RRO, DRO/RRO with silica gel, PCBs, PAHs, metals, TOC
12NC28SS051	580-34102-57	028-051	X	X	X	X	X	X	X	X	
12NC28SS105	580-34102-6	028-05	X	X	X	X	X	X	X	X	FD of 12NC28SS005
12NC28SS114	580-34102-16	028-014	X	X	X	X	X	X	X	X	FD of 12NC28SS014
12NC28SS126	580-34102-29	028-026	X	X	X	X	X	X	X	X	FD of 12NC28SS026
12NC28SS138	580-34102-42	028-038	X	X	X	X	X	X	X	X	FD of 12NC28SS038
12NC28SS147	580-34102-53	028-047	X	X	X	X	X	X	X	X	FD of 12NC28SS047
12NC28Rinsate	580-34102-58		X	X	X	X	X	X	X		
072312TripBlank1	580-34102-59		X	X							
072312TripBlank2	580-34102-60		X	X							
072312TripBlank3	580-34102-61		X	X							
072312TripBlank4	580-34102-62		X	X							

Notes:

*EPA Method SW6020 metals include arsenic, barium, cadmium, chromium, lead, nickel selenium, silver, vanadium, and zinc. Method 7471A/7470A metals include mercury.

AK = Alaska Test Method
BTEX = benzene, toluene, ethylbenzene, and xylenes
DRO = diesel range organics
FD = field duplicate
GRO = gasoline range organics
MS = matrix spike
MSD = matrix spike duplicate
PAH = polynuclear aromatic hydrocarbon
PCB = polychlorinated biphenyl
RRO = residual range organics
SIM = selective ion monitoring
TOC = total organic carbon

2.1 SAMPLE RECEIPT CONDITIONS

Samples were received within 0–6 degrees Celsius and in good condition, except as noted below.

Both 16-ounce jars for sample 12NC28SS029 were received with cracked lids; however, the sample volume inside these jars was not compromised.

The sample dates on the container labels for four samples did not match the dates on the CoC. Container labels had a date of 7/20/2012, while the CoC had a date of 07/19/2012. Samples were logged in according to date on the CoC, which was incorrect. All samples with incorrect collection dates were collected on 7/20/12. The report and electronic data deliverables have been revised with the correct date.

2.2 BTEX ANALYSES

TestAmerica analyzed samples for BTEX by SW-846 method 8260B. The sample QC batches are summarized in Table 2-2.

Table 2-2 BTEX QC Batches

Laboratory Work Order	QC Batch	QC Batch Date	Matrix
580-34102-1	580-116174	7/25/2012	Solid
	580-116252	7/26/2012	Solid
	580-116278	7/26/2012	Solid
	580-116284	7/27/2012	Solid
	580-116653	8/1/2012	Solid
	580-116453	7/30/2012	Water

Notes:
BTEX = benzene, toluene, ethylbenzene, and xylenes
QC = quality control

Required QC for an analytical batch of up to 20 samples includes an MB, LCS, and MS/MSD pair. An MB and LCS/LCSD were analyzed with each batch. Additionally, per the QAPP specified frequency, project MS/MSD pairs were extracted and analyzed with

each extraction batch, except for the equipment rinsate sample, which is a water matrix; and trip blank 0723TripBlank4, which is part of the project QC. The laboratory reported two extra method blanks for batch 580-116278 and one extra LCS/LCSD for batch 580-116653.

The following items were reviewed and met QAPP criteria: holding times, MB, surrogate recoveries, LCS/LCSD recoveries and RPDs, and MS/MSD recoveries.

Surrogate recoveries for trifluorotoluene were outside laboratory control limits for most samples. However, the trifluorotoluene surrogate was not specified in the QAPP and was not used during data review. Trifluorotoluene is the method-specific field surrogate for AK101 (GRO) analysis and is not specified for EPA 8260 BTEX analysis. The data review was performed using surrogates and control limits provided in QAPP Table 12-5 (i.e., 4-bromofluorobenzene and toluene-d_8). The QAPP surrogates were in control.

MSs/MSDs analyzed are listed below. Recoveries were in control; however, RPDs outside the QAPP Table 12-5 control limit are noted below.

Spiked Sample	Analyte	RPD	Control Limits (RPD)	Comments
12NC28SS010 (580-34102-11)	All in control			
12NC28SS024 (580-34102-26)	All in control			
12NC28SS050 (580-34102-56)	Benzene	48	<30	Not detected, not qualified
	Ethylbenzene	49	<30	Not detected, not qualified
	m,p-Xylene	49	<30	MN Qualified
	o-Xylene	50	<30	MN Qualified
	Toluene	49	<30	MN Qualified

The majority of MS/MSD results were in control, and qualification due to MS/MSD outliers was limited to the spiked sample. For the RPD outliers identified in the table

above, results were MN qualified to indicate that bias could not be determined. It should be noted that the percent recoveries for the BTEX analytes in 12NC28SS050 were within 2 percent for the MS/MSD, but due to the RPD calculation being performed on the sample concentrations and not the percent recoveries, the RPD is shown as being out of control.

The results reported for sample 12NC28SS045 (580-34102-50) were from reanalysis since the original analysis was mostly likely contaminated from carryover of a previously analyzed, heavily contaminated sample.

Analytes o-Xylene and m,p-xylene were reported from both 1x and 10x dilutions for sample 12NC28SS049 (580-34102-55). The higher dilutions were required to bring the concentration within the calibration range on the instrument. Results for the higher dilution are preferred, while the results for the lower dilution are not preferred. Results for the lower dilution were qualified "NP."

The laboratory indicated in the case narrative that ion 50 results for three of the 4-bromofluoro-benzene (BFB) tunes were slightly less than criteria. Since the values round to the acceptable tune criteria, the results are acceptable and do not require qualification.

2.3 GRO ANALYSES

TestAmerica analyzed samples for GRO by ADEC method AK101. The sample QC batches are summarized in Table 2-3.

Table 2-3 GRO QC Batches

Laboratory Work Order	QC Batch	QC Batch Date	Matrix
580-34102-1	580-116174	7/25/2012	Solid
	580-116252	7/26/2012	Solid
	580-116278	7/26/2012	Solid
	580-116284	7/27/2012	Solid
	580-116206	7/27/2012	Water

Notes:
GRO = gasoline range organics
QC = quality control

Required QC for an analytical batch of up to 20 samples includes an MB, LCS, and MS/MSD pair. An MB and LCS/LCSD were analyzed with each batch. Additionally, per the QAPP specified frequency, project MS/MSD pairs were extracted and analyzed with every extraction batch, except for the equipment rinsate sample, which is a water matrix; and trip blank 0723TripBlank4, which is part of the project QC.

The following items were reviewed and met QAPP criteria: holding times, MB, LCS/LCSD recoveries and RPDs, and MS/MSD recoveries.

Surrogates were outside QAPP control limits as shown below:

Sample No.	Laboratory ID	Surrogate	%R	Control Limits
12NC28SS001	580-34102-1	Trifluorotoluene	16	50–150
12NC28SS002	580-34102-2	Trifluorotoluene	39	50–150
12NC28SS003	580-34102-3	Trifluorotoluene	25	50–150
12NC28SS004	580-34102-4	Trifluorotoluene	17	50–150
12NC28SS005	580-34102-5	Trifluorotoluene	18	50–150
12NC28SS006	580-34102-7	Trifluorotoluene	33	50–150
12NC28SS007	580-34102-8	Trifluorotoluene	41	50–150
12NC28SS008	580-34102-9	Trifluorotoluene	28	50–150
12NC28SS009	580-34102-10	Trifluorotoluene	27	50–150
12NC28SS010	580-34102-11	Trifluorotoluene	40	50–150
12NC28SS011	580-34102-12	Trifluorotoluene	39	50–150

Sample No.	Laboratory ID	Surrogate	%R	Control Limits
12NC28SS012	580-34102-13	Trifluorotoluene	33	50–150
12NC28SS013	580-34102-14	Trifluorotoluene	39	50–150
12NC28SS014	580-34102-15	Trifluorotoluene	18	50–150
12NC28SS015	580-34102-17	Trifluorotoluene	13	50–150
12NC28SS016	580-34102-18	Trifluorotoluene	17	50–150
12NC28SS017	580-34102-19	Trifluorotoluene	28	50–150
12NC28SS018	580-34102-20	Trifluorotoluene	38	50–150
12NC28SS019	580-34102-21	Trifluorotoluene	19	50–150
12NC28SS020	580-34102-22	Trifluorotoluene	27	50–150
12NC28SS021	580-34102-23	Trifluorotoluene	13	50–150
12NC28SS022	580-34102-24	Trifluorotoluene	14	50–150
12NC28SS023	580-34102-25	Trifluorotoluene	24	50–150
12NC28SS024	580-34102-26	Trifluorotoluene	30	50–150
12NC28SS025	580-34102-27	Trifluorotoluene	28	50–150
12NC28SS026	580-34102-28	Trifluorotoluene	37	50–150
12NC28SS027	580-34102-30	Trifluorotoluene	17	50–150
12NC28SS028	580-34102-31	Trifluorotoluene	18	50–150
12NC28SS029	580-34102-32	Trifluorotoluene	6	50–150
12NC28SS030	580-34102-33	Trifluorotoluene	27	50–150
12NC28SS031	580-34102-34	Trifluorotoluene	12	50–150
12NC28SS032	580-34102-35	Trifluorotoluene	24	50–150
12NC28SS033	580-34102-36	Trifluorotoluene	20	50–150
12NC28SS034	580-34102-37	Trifluorotoluene	14	50–150
12NC28SS035	580-34102-38	Trifluorotoluene	24	50–150
12NC28SS036	580-34102-39	Trifluorotoluene	11	50–150
12NC28SS037	580-34102-40	Trifluorotoluene	15	50–150
12NC28SS038	580-34102-41	Trifluorotoluene	43	50–150
12NC28SS039	580-34102-43	Trifluorotoluene	42	50–150
12NC28SS040	580-34102-44	Trifluorotoluene	29	50–150
12NC28SS041	580-34102-45	Trifluorotoluene	41	50–150
12NC28SS042	580-34102-46	Trifluorotoluene	46	50–150
12NC28SS043	580-34102-47	Trifluorotoluene	42	50–150
12NC28SS044	580-34102-48	Trifluorotoluene	41	50–150

Sample No.	Laboratory ID	Surrogate	%R	Control Limits
12NC28SS045	580-34102-50	Trifluorotoluene	49	50–150
12NC28SS046	580-34102-51	Trifluorotoluene	12	50–150
12NC28SS047	580-34102-52	Trifluorotoluene	24	50–150
12NC28SS048	580-34102-54	Trifluorotoluene	49	50–150
12NC28SS050	580-34102-56	Trifluorotoluene	38	50–150
12NC28SS051	580-34102-57	Trifluorotoluene	45	50–150
12NC28SS105	580-34102-6	Trifluorotoluene	16	50–150
12NC28SS114	580-34102-16	Trifluorotoluene	21	50–150
12NC28SS126	580-34102-29	Trifluorotoluene	34	50–150
12NC28SS138	580-34102-42	Trifluorotoluene	36	50–150
12NC28SS144	580-34102-49	Trifluorotoluene	45	50–150
12NC28SS147	580-34102-53	Trifluorotoluene	42	50–150

Note:
%R = percent recovery

Results associated with low recoveries were ML qualified to indicate the potential for low bias. The laboratory narrative indicates that the low recoveries were due to matrix inferference, which was sediment that contained high percent moisture. The percent moisture is presented in the analytical results table.

MS/MSDs analyzed are listed below. Note that MS/MSD control limits provided by the laboratory were not those specified in the QAPP. Recoveries were in control; however, one RPD was outside the QAPP Table 12-5 control limit, as noted below. The percent recoveries were similar with the MS/MSD for 12NC28SS050; however, the laboratory calculates the RPD based on the sample concentrations and not on the percent recoveries.

Spiked Sample	Analyte	RPD	Control Limits (RPD)	Comments
12NC28SS010 (580-34102-11)	All in control			
12NC28SS024 (580-34102-26)	All in control			
12NC28SS050 (580-34102-56)	GRO	49	<20	MN Qualified

The majority of MS/MSD results were in control, and qualification due to MS/MSD outliers was limited to the spiked sample. For the RPD outliers identified above, results were MN qualified to indicate bias could not be determined.

The results reported for sample 12NC28SS050 (580-34102-56) were from reanalysis, since the original analysis was mostly likely contaminated from carryover of a previously analyzed, heavily contaminated sample.

2.4 PCB ANALYSES

TestAmerica analyzed samples for PCBs by method SW-846 8082. The extraction batches are summarized in Table 2-4.

Table 2-4 PCB QC Batches

Laboratory Work Order	QC Batch	QC Batch Dates	Matrix
580-34102-1	580-116250	7/26/2012	Solid
	580-116353	7/27/2012	Solid
	580-116419	7/30/2012	Solid
	580-116215	7/26/2012	Water

Notes:
PCB = polychlorinated biphenyl
QC = quality control

Required QC for an analytical batch of up to 20 samples includes an MB, LCS, and MS/MSD pair. An MB and LCS/LCSD were analyzed with each batch. Additionally, per the QAPP specified frequency, project MS/MSD pairs were extracted and analyzed with each extraction batch, except for the equipment rinsate sample, which is a water matrix.

The following items were reviewed and met QAPP criteria: holding times, MB, and LCS/LCSD recoveries and RPDs.

Surrogates were outside QAPP control limits as shown below.

Sample No.	Affected Analyte	Surrogate	%R	Control Limits
12NC28SS015	All PCBs	Decachlorobiphenyl	51	60–125
12NC28SS036	Detected PCBs	Tetrachloro-m-xylene	479	45–155
12NC28SS042	Detected PCBs	Tetrachloro-m-xylene	272	45–155
12NC28SS043	Detected PCBs	Tetrachloro-m-xylene	172	45–155
12NC28SS045	Detected PCBs	Tetrachloro-m-xylene	174	45–155
12NC28SS046	Detected PCBs	Tetrachloro-m-xylene	357	45–155
12NC28SS047	Detected PCBs	Tetrachloro-m-xylene	191	45–155
12NC28SS048	Detected PCBs	Tetrachloro-m-xylene	213	45–155
12NC28SS114	All PCBs	Decachlorobiphenyl	53	60–125
12NC28SS147	Detected PCBs	Tetrachloro-m-xylene	181	45–155

Detected PCB results associated with high recoveries were MH qualified to indicate the potential for high bias, and all PCB results associated with low recoveries were ML qualified to indicate the potential for low bias.

LCS/LCSD RPD and MS/MSD RPD control limits provided by the laboratory were not those specified in the QAPP. LCS/LCSD RPDs were within QAPP Table 12-4 control limits.

MS/MSDs analyzed are listed below. Recoveries and RPDs outside the QAPP Table 12-4 control limits are noted below:

Spiked Sample	Laboratory ID	Analyte	%R	Control Limits (%R)	RPD	Control Limits (RPD)
12NC28SS010	580-34102-11	PCBs	All in control			
12NC28SS024	580-34102-26	PCB-1016	223/--	40-140	56	<20
12NC28SS050	580-34102-56	PCB-1016	150/--	40-140	53	<20
12NC28SS050	580-34102-56	PCB-1260	--/50	60-130	40	<20

Note:
-- = within control limits

The majority of MS/MSD results were in control, and qualification due to MS/MSD outliers was limited to the spiked sample, with the exception of PCB-1016. For PCB-1016, two of the three matrix spikes had high recoveries; however, all PCB-1016 results were not detected and qualification was not required. When recovery outliers were associated with high RPDs, recoveries were considered the overriding outlier and qualification was based on the recovery information. Since only one PCB-1260 matrix spike was outside criteria, qualification was limited to the spiked sample (12NC28SS050) and was qualified ML.

2.5 PAH ANALYSES

TestAmerica analyzed samples by SW-846 method 8270C SIM for PAHs. The extraction batches are summarized in Table 2-5.

Table 2-5 PAH QC Batches

Laboratory Work Order	QC Batch	QC Batch Dates	Matrix
580-34102-1	580-116204	7/26/2012	Solid
	580-116308	7/27/2012	Solid
	580-116467	7/30/2012	Solid
	580-116235	7/26/2012	Water

Notes:
PAH = polynuclear aromatic hydrocarbons
QC = quality control

Required QC for an analytical batch of up to 20 samples includes an MB, LCS, and MS/MSD pair. An MB and LCS/LCSD were analyzed with each batch. Additionally, per the QAPP specified frequency, project MS/MSD pairs were extracted and analyzed with each extraction batch, except for the equipment rinsate sample, which is a water matrix.

The following items were reviewed and met QAPP criteria: holding times, LCS/LCSD recoveries and RPDs, and MS/MSD RPDs.

The terphenyl-d_{14} surrogate recovery for sample 12NC28SS051 (580-34102-57) was high. The laboratory reported a recovery of 130 percent, while the acceptable recovery range is 30 to 125 percent. Positive PAH results for sample 12NC28SS051 were MH qualified to indicate the potential for a high bias.

Phenanthrene and pyrene were detected in the method blanks for batches 580-116204 and 580-116308 at concentrations of 2.20 J and 2.47 J micrograms per kilogram (µg/kg), respectively. Associated results detected at concentrations less than 10x the blank concentration were B qualified to indicate the potential for a high bias.

MS/MSDs analyzed are listed below. Recoveries outside the QAPP Table 12-6 control limits are noted below. RPDs were within the QAPP control limit.

Spiked Sample	Laboratory ID	Analyte	%R	Control Limits (%R)
12NC28SS010	580-34102-11	PAHs	All in control	
12NC28SS024	580-34102-26	1-Methylnaphthalene	183/--	50–150
		Naphthalene	145/113	40–105
		Acenaphthene	--/44	45–110
		Fluorene	--/31	50–110
12NC28SS050	580-34102-56	PAHs	All in control	

Note:
-- = within control limits

The majority of MS/MSD results were in control, and qualification due to MS/MSD outliers was limited to the spiked sample. Results associated with high recoveries were MH qualified and results associated with low recoveries were ML qualified to indicate bias due to matrix effects.

The analytes listed below were further diluted to bring the sample concentrations within the calibration range of the instrument. Results from the high dilution should be used, and the lower dilution results were "NP" qualified to indicate they are "not preferred" and

a more technically accurate result is available. Only results for analytes that exceeded the instrument calibration range were reported at dilution.

Sample No.	Laboratory ID	Analyte	Dilution
12NC28SS015	580-34102-17	2-Methylnaphthalene	1x & 5x
12NC28SS016	580-34102-18	2-Methylnaphthalene	10x & 100x
12NC28SS018	580-34102-20	1-Methylnaphthalene	1x & 10x
12NC28SS018	580-34102-20	2-Methylnaphthalene	1x & 10x
12NC28SS018	580-34102-20	Naphthalene	1x & 10x
12NC28SS019	580-34102-21	1-Methylnaphthalene	2x & 50x
12NC28SS019	580-34102-21	2-Methylnaphthalene	2x & 50x
12NC28SS019	580-34102-21	Naphthalene	2x & 50x
12NC28SS020	580-34102-22	1-Methylnaphthalene	1x & 10x
12NC28SS020	580-34102-22	2-Methylnaphthalene	1x & 10x
12NC28SS025	580-34102-27	2-Methylnaphthalene	1x & 10x
12NC28SS029	580-34102-32	1-Methylnaphthalene	10x & 100x
12NC28SS029	580-34102-32	2-Methylnaphthalene	10x & 100x
12NC28SS035	580-34102-38	1-Methylnaphthalene	1x & 5x
12NC28SS035	580-34102-38	2-Methylnaphthalene	1x & 5x
12NC28SS036	580-34102-39	1-Methylnaphthalene	10x & 100x
12NC28SS036	580-34102-39	2-Methylnaphthalene	10x & 100x
12NC28SS044	580-34102-48	1-Methylnaphthalene	10x & 100x
12NC28SS044	580-34102-48	2-Methylnaphthalene	10x & 100x
12NC28SS048	580-34102-54	1-Methylnaphthalene	10x & 100x
12NC28SS048	580-34102-54	2-Methylnaphthalene	10x & 100x
12NC28SS049	580-34102-55	1-Methylnaphthalene	10x & 100x
12NC28SS049	580-34102-55	2-Methylnaphthalene	10x & 100x
12NC28SS051	580-34102-57	2-Methylnaphthalene	1x & 10x
12NC28SS144	580-34102-49	1-Methylnaphthalene	10x & 100x
12NC28SS144	580-34102-49	2-Methylnaphthalene	10x & 100x

2.6 DRO/RRO ANALYSES

TestAmerica analyzed samples for DRO/RRO following ADEC methods AK102/103. Both DRO/RRO and DRO/RRO after silica gel cleanup were reported for each sample. Preparation batches were the same for both DRO/RRO and DRO/RRO with silica gel cleanup. However, different analytical batches were used for the silica gel cleanup. Both the preparation batches and the analysis batches are summarized in Table 2-6.

Table 2-6 DRO/RRO QC Batches

Laboratory Work Order	Analyses	Prep Batch	Prep Date	Analysis Batch	Analysis Date	Matrix
580-34102-1	DRO/RRO	580-116205	7/26/2012	580-116432	7/31/2012	Solid
	DRO	580-116205	7/26/2012	580-116754	8/2/2012	Solid
	DRO/RRO	580-116234	7/26/2012	580-116757	8/2/2012	Water
	DRO/RRO	580-116271	7/26/2012	580-116351	7/27/2012	Solid
	DRO	580-116271	7/26/2012	580-116432	7/30/2012	Solid
	DRO/RRO	580-116486	7/30/2012	580-116633	8/1/2012	Solid
	DRO	580-116486	7/30/2012	580-116754	8/2/2012	Solid
	DRO/RRO w/Silica Gel	580-116205	7/26/2012	580-116429	7/31/2012	Solid
	DRO w/Silica Gel	580-116205	7/26/2012	580-116630	8/1/2012	Solid
	DRO/RRO w/Silica Gel	580-116271	7/26/2012	580-116429	7/30/2012	Solid
	DRO/RRO w/Silica Gel	580-116271	7/26/2012	580-116630	7/31/2012 and 8/1/2012	Solid
	DRO/RRO w/Silica Gel	580-116486	7/30/2012	580-116630	8/1/2012	Solid

Notes:
DRO = diesel range organics
QC = quality control
RRO = residual range organics

Required QC for a batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. An MB and LCS/LCSD were analyzed with each batch. Additionally, per the QAPP

specified frequency, project MS/MSD pairs were extracted and analyzed with each extraction batch, except for the equipment rinsate sample, which is a water matrix.

The following items were reviewed and met QAPP/method criteria: hold times and LCS/LCSD recoveries and RPDs.

Surrogate recoveries were outside control limits specified in QAPP tables 12-2 and 12-3 as follows:

Sample No.	Laboratory ID	Surrogate	%R	Control Limits
Affected Analyte: RRO				
12NC28SS014	580-34102-15	n-Triacontane-d62	5	50–150
12NC28SS114	580-34102-16	n-Triacontane-d62	6	50–150
12NC28SS015	580-34102-17	n-Triacontane-d62	8	50–150
12NC28SS016	580-34102-18	n-Triacontane-d62	13	50–150
12NC28SS018	580-34102-20	n-Triacontane-d62	5	50–150
12NC28SS036	580-34102-39	n-Triacontane-d62	22	50–150
Affected Analyte: RRO with Silica Gel Cleanup				
12NC28SS036	580-34102-39	n-Triacontane-d62	10	50–150

Results associated with a low recovery were ML qualified to indicate the potential for a low bias. Results associated with recoveries less than 10 percent were positive values and were ML qualified.

Analytes were detected in the method blanks as follows:

Analyte	Concentration (mg/kg)	Analysis Batch	Comments
DRO	3.81	580-116754	Associated results >10x blank concentration
DRO	4.66	580-116754	Associated results >10x blank concentration
DRO with silica gel cleanup	4.95	580-116630	Associated results >10x blank concentration

The DRO result for one sample (12NC28SS042) was within 10 times the associated method blank concentration and qualified B.

MSs/MSDs analyzed are listed below. MS/MSD recovery limits listed in the laboratory reports were different from those listed in QAPP tables 12-2 and 12-3. Recovery and RPD criteria specified in the QAPP were used during data review. Recoveries and RPDs outside QAPP tables 12-2 and 12-3 control limits are noted below:

Spiked Sample	Laboratory ID	%R	Control Limits (%R)	RPD	Control Limits (RPD)	Comments
DRO						
12NC28SS010	580-34102-11	--/--	72–128	--	≤20%	
12NC28SS024	580-34102-26	607/207	72–128	--	≤20%	Sample concentration>4x spike concentration
12NC28SS050	580-34102-56	-314/56	72–128	78	≤20%	Sample concentration>4x spike concentration
DRO with Silica Gel Cleanup						
12NC28SS010	580-34102-11	--/--	72–128	--	≤20%	
12NC28SS024	580-34102-26	490/206	72–128	--	≤20%	Sample concentration>4x spike concentration
12NC28SS050	580-34102-56	-139/221	72–128	79	≤20%	Sample concentration>4x spike concentration
RRO						
12NC28SS010	580-34102-11	--/--	53–116	--	≤20%	
12NC28SS024	580-34102-26	269/--	53–116	--	≤20%	
12NC28SS050	580-34102-56	-63/--	53–116	60	≤20%	
RRO with Silica Gel Cleanup						
12NC28SS010	580-34102-11	--/--	72–128	--	≤20%	
12NC28SS024	580-34102-26	--/--	72–128	--	≤20%	
12NC28SS050	580-34102-56	27/124	53–116	54	≤20%	

Notes:
-- = within control limits

DRO results and DRO with silica gel cleanup results were not qualified, since all exceedances were associated with sample concentrations that were greater than four times the spike concentration, and the spike addition is negligible in relation to the sample concentration.

For RRO MS/MSD results, two out of the three MS/MSD pair showed exceedances; therefore, the associated samples were qualified. Associated samples were those collected in the same day. Results associated with low recoveries were ML qualified, and detected results associated with high recoveries were MH qualified. When recovery outliers were associated with high RPDs, recoveries were considered the overriding outlier and qualification was based on the recovery information. For the single sample with a negative MS recovery, an ML qualifier was considered adequate, since the sample concentration was 2.2x the spike concentration.

For RRO with silica gel cleanup, qualification was limited to the spiked sample, since only one of the three MS/MSD pairs was outside criteria. Results were MN qualified, since both high and low recoveries were observed for sample 12NC28SS050.

The case narrative provided qualitative information with regard to the type of petroleum identified, whether the pattern appeared weathered or degraded, or whether it was possible biogenic interference.

2.7 TOC ANALYSES

TestAmerica analyzed samples for TOC-Quad by SW-846 method 9060. The QC batches are summarized in Table 2-7.

Table 2-7 TOC QC Batches

Laboratory Work Order	QC Batch	QC Batch Date
580-34102-1	580-116589	7/30/2012
	580-116599	7/30/2012
	580-116617	7/31/2012

Notes:
QC = quality control
TOC = total organic carbon

Required QC for a batch of up to 20 samples includes an MB, LCS/LCSD pair, and MS/MSD pair. An MB, LCS/LCSD pair, MS/MSD pair, and a laboratory duplicate were analyzed per extraction-analytical batch.

The following items were reviewed and met QAPP criteria: hold times, LCS/LCSD %Rs and RPDs, MS/MSD %Rs and RPDs, and laboratory duplicate RPDs.

It should be noted that the LCS/LCSD recovery and RPD limits listed in the laboratory reports were different from those specified in QAPP Table 12-9. The LCS/LCSD recoveries and RPDs were within QAPP limits.

TOC was detected in the method blank for batch 580-116617 at a concentration of 925 mg/kg. Associated results were detected at concentrations greater than 10x the blank concentration and did not require qualification.

2.8 METALS ANALYSES

TestAmerica analyzed samples by SW-846 method 6020. The QC batches are summarized in Table 2-8.

Table 2-8 Metals QC Batches

Laboratory Work Order	QC Batch	QC Batch Date	
580-34102-1	580-116165	7/25/2012	Solid
	580-116200	7/26/2012	Solid
	580-116209	7/26/2012	Solid
	580-116276	7/26/2012	Water

Note:
QC = quality control

Required QC for a batch of up to 20 samples includes an MB, LCS/LCSD pair, and an MS/MSD pair. An MB, LCS/LCSD pair, and a laboratory duplicate were analyzed per batch. Additionally, per the QAPP specified frequency, project MS/MSD pairs were

extracted and analyzed with each extraction batch, except for the equipment rinsate sample, which is a water matrix.

The following items were reviewed and met QAPP criteria: holding times, MB, LCS/LCSD %Rs and RPDs, and laboratory duplicate RPDs.

MSs/MSDs analyzed are listed below. Recoveries and RPDs are noted when they were outside QAPP Table 12-7 control limits.

Spiked Sample	Analyte	%R	%R Control Limits	RPD	RPD Control Limits	Comments
12NC28SS010 (580-34102-11)	Chromium	--/121	80–120	--	<20	No qualifiers due to RPD; laboratory duplicate on the same sample had RPDs in control (<20% RPD)
12NC28SS024 (580-34102-26)	All in control					
12NC28SS050 (580-34102-56)	Arsenic	--/--	80–120	31	<20	
	Barium	--/123	80–120	31	<20	No qualifiers due to RPD; laboratory duplicate on the same sample had RPDs in control (<20% RPD)
	Cadmium	--/--	80–120	31	<20	
	Chromium	--/136	80–120	33	<20	
	Lead	--/--	80–120	31	<20	
	Nickel	--/121	80–120	31	<20	
	Selenium	--/--	80–120	32	<20	
	Silver	--/--	80–120	32	<20	
	Vanadium	--/124	80–120	30	<20	
	Zinc	129/149	80–120	24	<20	

Note:
-- = within control limits

Detected results associated with high spike recoveries were MH qualified to indicate bias due to a matrix effect. Associated samples were those samples from the same analytical preparation batch. The RPD calculation is based on sample concentrations and not

percent recoveries. The RPDs based on percent spike recoveries were in control, with the exception of chromium.

2.9 MERCURY ANALYSES

TestAmerica analyzed samples for mercury by SW-846 methods 7471A and 7470A. The QC batches are summarized in Table 2-9.

Table 2-9 Mercury QC Batches

Laboratory Work Order	QC Batch	QC Batch Date	Matrix
580-34102-1	580-116470	7/30/2012	Water
	580-116173	7/25/2012	Solid
	580-116237	7/26/2012	Solid
	580-116253	7/26/2012	Solid

Note:
QC = quality control

Required QC for a batch of up to 20 samples includes an MB, LCS/LCSD pair, and an MS/MSD pair. One MB, LCS/LCSD pair, and laboratory duplicate were analyzed per batch. Additionally, per the QAPP specified frequency, project MS/MSD pairs were extracted and analyzed with each extraction batch, except for the equipment rinsate sample, which is a water matrix.

The following items were reviewed and met QAPP criteria: hold time, MB, LCS/LCSD %Rs and RPDs, and MS/MSD %Rs and RPDs.

MS/MSDs analyzed are identified in Table 2-1. Recoveries and RPDs were within QAPP Table 12-8 control limits.

Laboratory duplicates analyzed are listed below. RPDs are noted when they were outside QAPP Table 12-8 control limits.

Laboratory Duplicate	Laboratory ID	RPD	RPD Control Limit: <20%
12NC28SS010	580-34102-11	30	20
12NC28SS024	580-34102-26	68	20
12NC28SS050	580-34102-56	34	20

The RPD outliers were associated with acceptable MS/MSD RPDs, and no data qualifiers were assigned due to laboratory duplicate results.

2.10 FIELD QA/QC

Field QC samples included field duplicate pairs, MS/MSD pairs, equipment blanks, and trip blanks. The same methods used to analyze the investigative samples were used to analyze the field QC samples.

2.10.1 Field Sample Duplicates

Comparison of field sample duplicate results to the associated parent sample results provides precision 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. 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 that is J flagged was detected between the LOQ and the DL. The RPD assessment criterion in the QAPP of ≤50 percent for soils was used to evaluate the field duplicates.

Field Duplicate Frequencies

Field sample duplicate pairs are required by the QAPP at a rate of 10 percent. Field duplicates were collected at the following frequencies per method:

Five field duplicate pairs were collected for 51 samples at a frequency of 10 percent for BTEX, GRO, DRO/RRO, DRO/RRO with silica gel cleanup, PCBs, PAHs, metals, and TOC.

Field Duplicate RPDs

Table 2-10 lists the RPDs calculated between the field duplicate and parent sample results for target analytes that were detected above the LOQ in both the parent and field duplicate sample.

Table 2-10 Field Sample Duplicate Pair Results

Parent Field ID Location (Laboratory ID)	FD ID Location (Laboratory ID)	Target Analytes	Units	Screen Level[1]	Parent Result	FD Result	RPD (%)
12NC28SS014 028-014 (580-34102-15)	12NC28SS114 028-014 (580-34102-16)	Arsenic	mg/kg	93	19	17	11
		Barium	mg/kg	--	130	130	0
		Cadmium	mg/kg	--	0.64	0.61	5
		Chromium	mg/kg	270	21	22	5
		Lead	mg/kg	530	31	31	0
		Nickel	mg/kg	--	14	15	7
		Selenium	mg/kg	--	1.3 J	1.2 J	nc
		Silver	mg/kg	--	0.14 J	0.15 J	nc
		Vanadium	mg/kg	--	32	34	6
		Zinc	mg/kg	96	**150**	**150**	0
		Mercury	mg/kg	--	0.13	0.13	0
		PCB-1260	mg/kg	0.7	0.29	0.23	23
		PCBs-Total	mg/kg	0.7	0.29	0.23	23
		Ethylbenzene	µg/kg	--	150	180	18
		m,p-Xylene	µg/kg	--	590	730	21
		o-Xylene	µg/kg	--	430	530	21
		Total Xylene	µg/kg	--	1020	1260	21
		1-Methylnaphthalene	µg/kg	--	20000	17000	16
		2-Methylnaphthalene	µg/kg	600	**20000**	**16000**	22
		Acenaphthene	µg/kg	500	**1300**	**1100**	17
		Acenaphthylene	µg/kg	--	400	490	20
		Anthracene	µg/kg	--	200	220	10
		Benzo(a)anthracene	µg/kg	--	150	120	22
		Benzo(a)pyrene	µg/kg	--	47	ND (13)	nc
		Benzo(b)fluoranthene	µg/kg	--	190	200	5
		Benzo(g,h,i)perylene	µg/kg	1,700	54	57	5
		Benzo[k]fluoranthene	µg/kg	--	48	49	2
		Chrysene	µg/kg	--	350	270	26
		Fluoranthene	µg/kg	2,000	830	680	20
		Fluorene	µg/kg	800	**3100**	**2500**	21

Table 2-10 Field Sample Duplicate Pair Results (continued)

Parent Field ID Location (Laboratory ID)	FD ID Location (Laboratory ID)	Target Analytes	Units	Screen Level[1]	Parent Result	FD Result	RPD (%)
12NC28SS014 028-014 (580-34102-15)	12NC28SS114 028-014 (580-34102-16)	Indeno(1,2,3-cd)pyrene	µg/kg	3,200	58	55	5
		Naphthalene	µg/kg	1,700	**5800**	**5300**	9
		Phenanthrene	µg/kg	4,800	2800	2600	7
		Pyrene	µg/kg	--	1000	880	13
		TOC	mg/kg	--	140000	150000	7
		GRO	mg/kg	3500	6.2	7.4	18
		RRO	mg/kg	3500	**14000**	**15000**	7
		DRO	mg/kg	3500	**45000**	**48000**	6
		RRO w/SG	mg/kg	3500	**13000**	**13000**	0
		DRO w/SG	mg/kg	3500	**41000**	**47000**	14
		Percent Moisture	%	--	61	61	0
12NC28SS026 028-026 (580-34102-28)	12NC28SS126 028-026 (580-34102-29)	Arsenic	mg/kg	93	8.5	43	**134**
		Barium	mg/kg	--	73	130	**56**
		Cadmium	mg/kg	--	0.12 J	0.086 J	nc
		Chromium	mg/kg	270	5.3	8.9	**51**
		Lead	mg/kg	530	4.6	6.9	40
		Nickel	mg/kg	--	4.8	5.3	10
		Selenium	mg/kg	--	1.1 J	1.3 J	nc
		Vanadium	mg/kg	--	11	17	43
		Zinc	mg/kg	96	22	22	0
		Mercury	mg/kg	--	0.092	0.075	20
12NC28SS026 028-026 (580-34102-28)	12NC28SS126 028-026 (580-34102-29)	Ethylbenzene	µg/kg	--	270	230	16
		m,p-Xylene	µg/kg	--	910	730	22
		o-Xylene	µg/kg	--	290	240	19
		Total Xylene	µg/kg	--	1200	970	21
		1-Methylnaphthalene	µg/kg	--	9500	7400	25
		2-Methylnaphthalene	µg/kg	600	**13000**	**10000**	26
		Acenaphthene	µg/kg	500	160	130	21
		Acenaphthylene	µg/kg	--	110	66	50

Table 2-10 Field Sample Duplicate Pair Results (continued)

Parent Field ID Location (Laboratory ID)	FD ID Location (Laboratory ID)	Target Analytes	Units	Screen Level[1]	Parent Result	FD Result	RPD (%)
12NC28SS026 028-026 (580-34102-28)	12NC28SS126 028-026 (580-34102-29)	Fluoranthene	µg/kg	2,000	27	6.2 J	**125**
		Fluorene	µg/kg	800	410	250	48
		Naphthalene	µg/kg	1,700	**4800**	**6700**	33
		Phenanthrene	µg/kg	4,800	120	61	**65**
		Pyrene	µg/kg	--	27	8.5 J	**104**
		TOC	mg/kg	--	230000	210000	9
		GRO	mg/kg	--	14 J	11 J	24
		DRO	mg/kg	3500	**11000**	**12000**	9
		RRO	mg/kg	3500	**3900**	**4000**	3
		DRO w/SG	mg/kg	3500	**9300**	**9500**	2
		RRO w/SG	mg/kg	3500	1100	1200	9
		Percent Moisture	%	--	78	75	4
12NC28SS038 028-038 (580-34102-41)	12NC28SS138 028-038 (580-34102-42)	Arsenic	mg/kg	93	45	33	31
		Barium	mg/kg	--	110	100	10
		Cadmium	mg/kg	--	0.11 J	0.13 J	nc
		Chromium	mg/kg	270	8.8	8.3	6
		Lead	mg/kg	530	7.9	7.5	5
		Nickel	mg/kg	--	5.6	5.3	6
		Selenium	mg/kg	--	1.4 J	1.1 J	nc
		Silver	mg/kg	--	ND (0.1)	0.048 J	nc
		Vanadium	mg/kg	--	18	17	6
		Zinc	mg/kg	96	53	45	16
		Mercury	mg/kg	--	0.057 J	0.052 J	nc
		PCB-1260	mg/kg	0.7	0.018 J	ND (0.024)	nc
		PCB-Total	mg/kg	0.7	0.018 J	ND (0.024)	nc
		Ethylbenzene	µg/kg	--	150	100 J	40
		m,p-Xylene	µg/kg	--	580	420	32
		o-Xylene	µg/kg	--	420	300	33
		Total Xylene	µg/kg	--	1000	720	33

Table 2-10 Field Sample Duplicate Pair Results (continued)

Parent Field ID Location (Laboratory ID)	FD ID Location (Laboratory ID)	Target Analytes	Units	Screen Level[1]	Parent Result	FD Result	RPD (%)
12NC28SS038 028-038 (580-34102-41)	12NC28SS138 028-038 (580-34102-42)	1-Methylnaphthalene	µg/kg	--	2200	810	**92**
		2-Methylnaphthalene	µg/kg	600	**2500**	**940**	**91**
		Acenaphthene	µg/kg	500	170	51	**108**
		Acenaphthylene	µg/kg	--	89	23 J	**118**
		Anthracene	µg/kg	--	17 J	ND (12)	nc
		Benzo[a]anthracene	µg/kg	--	10 J	ND (12)	nc
		Benzo[b]fluoranthene	µg/kg	--	30	ND (12)	nc
		Chrysene	µg/kg	--	23 J	ND (12)	nc
		Fluoranthene	µg/kg	2,000	68	19 J	**113**
		Fluorene	µg/kg	800	270	95	**96**
		Naphthalene	µg/kg	1,700	760	330	**79**
		Phenanthrene	µg/kg	4,800	270	80	**109**
		Pyrene	µg/kg	--	70	27	**89**
		TOC	mg/kg	--	150000	140000	7
		GRO	mg/kg	--	20	13	42
		DRO	mg/kg	3500	2700	**4500**	50
		RRO	mg/kg	3500	480	890	**60**
		DRO w/ SG	mg/kg	3500	2600	**3900**	40
		RRO w/ SG	mg/kg	3500	360	550	42
		Percent Moisture	%	--	83	80	4
12NC28SS047 028-047 (580-34102-52)	12NC28SS147 028-047 (580-34102-53)	Arsenic	mg/kg	93	9.1	19	**70**
		Barium	mg/kg	--	65	150	**79**
		Cadmium	mg/kg	--	0.41 J	0.94 J	nc
		Chromium	mg/kg	270	14	31	**76**
		Lead	mg/kg	530	33	76	**79**
		Nickel	mg/kg	--	10	22	**75**
		Selenium	mg/kg	--	1.2 J	2.5 J	nc
		Silver	mg/kg	--	0.13 J	0.28 J	nc
		Vanadium	mg/kg	--	20	44	**75**
		Zinc	mg/kg	96	**120**	**270**	**77**

Table 2-10 Field Sample Duplicate Pair Results (continued)

Parent Field ID Location (Laboratory ID)	FD ID Location (Laboratory ID)	Target Analytes	Units	Screen Level[1]	Parent Result	FD Result	RPD (%)
12NC28SS047 028-047 (580-34102-52)	12NC28SS147 028-047 (580-34102-53)	Mercury	mg/kg	--	0.059	0.24	**121**
		PCB-1260	mg/kg	0.7	0.27	0.63	**80**
		PCB-Total	mg/kg	0.7	0.27	0.63	**80**
		Ethylbenzene	µg/kg	--	400	1600	**120**
		m,p-Xylene	µg/kg	--	1400	5500	**119**
		o-Xylene	µg/kg	--	710	2700	**117**
		Total Xylene	µg/kg	--	2110	820	**88**
		1-Methylnaphthalene	µg/kg	--	3400	11000	**106**
		2-Methylnaphthalene	µg/kg	600	**3300**	**11000**	**108**
		Acenaphthene	µg/kg	500	170	650	**117**
		Acenaphthylene	µg/kg	--	97	300	**102**
		Anthracene	µg/kg	--	39	140	**113**
		Benzo(a)anthracene	µg/kg	--	17	64	**116**
		Benzo(a)pyrene	µg/kg	--	15 J	ND (20)	nc
		Benzo(b)fluoranthene	µg/kg	--	34	120	**112**
		Benzo(g,h,i)perylene	µg/kg	1,700	18	57	**104**
		Benzo(k)fluoranthene	µg/kg	--	8.4 J	23 J	nc
		Chrysene	µg/kg	--	52	210	**121**
		Fluoranthene	µg/kg	2,000	59	220	**115**
		Fluorene	µg/kg	800	360	**1400**	**118**
		Indeno(1,2,3-cd)pyrene	µg/kg	3,200	22	58	**90**
		Naphthalene	µg/kg	1,700	**2100**	**6600**	**103**
		Phenanthrene	µg/kg	4,800	320	1000	**103**
		Pyrene	µg/kg	--	62	260	**123**
		TOC	mg/kg	--	130000	130000	0
		GRO	mg/kg	--	16	64	**120**
		DRO	mg/kg	3500	3400	**14000**	**122**
		RRO	mg/kg	3500	1100	**4900**	**127**
		DRO w/SG	mg/kg	3500	2900	**13000**	**127**

Table 2-10 Field Sample Duplicate Pair Results (continued)

Parent Field ID Location (Laboratory ID)	FD ID Location (Laboratory ID)	Target Analytes	Units	Screen Level[1]	Parent Result	FD Result	RPD (%)
12NC28SS047 028-047 (580-34102-52)	12NC28SS147 028-047 (580-34102-53)	RRO w/SG	mg/kg	3500	870	**4200**	**131**
		Percent Moisture	%	--	72	88	20
12NC28SS005 028-005 (580-34102-5)	12NC28SS105 028-005 (580-34102-6)	Arsenic	mg/kg	93	11	12	9
		Barium	mg/kg	--	75	69	8
		Cadmium	mg/kg	--	0.13 J	0.12 J	nc
		Chromium	mg/kg	270	10	9.6	4
		Lead	mg/kg	530	9.5	7.7	21
		Nickel	mg/kg	--	7.7	6.4	18
		Selenium	mg/kg	--	1 J	0.99 J	nc
		Silver	mg/kg	--	0.055 J	0.053 J	nc
		Vanadium	mg/kg	--	21	19	10
		Zinc	mg/kg	96	37	31	18
		Mercury	mg/kg	--	0.065	0.063	3
		PCB-1260	mg/kg	0.7	0.025 J	0.023 J	nc
		PCB-Total	mg/kg	0.7	0.025 J	0.023 J	nc
		1-Methylnaphthalene	µg/kg	--	ND (18)	200	nc
		Acenaphthylene	µg/kg	500	150	100	40
		Anthracene	µg/kg	--	14 J	16 J	13
		Benzo(a)anthracene	µg/kg	--	17 J	17	0
		Benzo(b)]fluoranthene	µg/kg	--	ND (18)	31	nc
		Chrysene	µg/kg	--	67	46	37
		Fluoranthene	µg/kg	2,000	130	99	27
		Fluorene	µg/kg	800	69	61	12
		Naphthalene	µg/kg	1,700	49	47	4
		Phenanthrene	µg/kg	4,800	230	200	14
		Pyrene	µg/kg	--	110	93	17
		TOC	mg/kg	--	150000	120000	22
		DRO	mg/kg	3500	**8900**	**6500**	31
		RRO	mg/kg	3500	**2600**	**2500**	4

Table 2-10 Field Sample Duplicate Pair Results (continued)

Parent Field ID Location (Laboratory ID)	FD ID Location (Laboratory ID)	Target Analytes	Units	Screen Level[1]	Parent Result	FD Result	RPD (%)
12NC28SS005 028-005 (580-34102-5)	12NC28SS105 028-005 (580-34102-6)	DRO w/SG	mg/kg	3500	**9000**	**6500**	32
		RRO w/SG	mg/kg	3500	1700	2000	16
		Percent Moisture	%	--	72	71	1

Notes:

[1]Site-specific cleanup levels established in 2009 Decision Document (US Army Corps of Engineers [USACE], Alaska District. 2009 Decision Document Hazardous, Toxic, and Radioactive Waste [HTRW] Project #F10AK096903 Northeast Cape Formerly Used Defense Site [FUDS] St. Lawrence Island, Alaska. January)

Bold = Exceeds RPD acceptance criteria or cleanup level

J = the analyte was positively identified at a concentration below the LOQ and is considered estimated

-- = not applicable
% = percent
µg/kg = micrograms per kilogram
DRO = diesel range organics
FD = field duplicate
GRO = gasoline range organics
LOQ = limit of quantitation
mg/kg = milligrams per kilogram
nc = not calculated, one or more concentrations below the LOQ
ND = Not detected, limit of detection in parenthesis
PCB = polychlorinated biphenyl
RPD = relative percent difference
RRO = residual range organics
TOC = total organic carbon
SG = silica gel cleanup

Project screening criteria were included in Table 2-10 to aid in the evaluation of duplicate results.

The field duplicate RPDs were reviewed to determine whether imprecision was observed for any single analyte. The analyte with the highest number of calculated RPDs that exceeded the QAPP specified criteria of <50 percent were fluoranthene, phenanthrene, and pyrene, which all had RPDs >50 percent for three of the five field duplicate samples. Of these, no results were above the screening criteria, or a screening criterion was not available. Since more than half the duplicate pairs had acceptable RPDs or, for the three analytes with more than 50 percent exceedances the values were below screening criteria, the QN qualification for RPDs >50 percent was limited to the duplicate pair.

One of the field duplicate pairs (12NC28SS047/12NC28SS147) had the most RPDs that exceed the 50 percent RPD criterion indicating a possible error during sampling.

For samples with one or both results detected at a concentration below the LOQ (J flagged), RPDs were not calculated (nc). For these results, either the screening levels were well above the uncertainty, or no screening level was established, and results were not qualified.

2.10.2 Matrix Spikes and Matrix Spike Duplicates

The MS/MSD samples are spiked in the laboratory with known concentrations of target analytes. The MS/MSD sample results provide information on possible matrix effects encountered during sample extraction, digestion, and analysis. Analytical results from MS/MSD samples are used to evaluate the sample matrix, method efficiency and applicability, accuracy, and precision. Accuracy was assessed by calculating the percent recovery of the target analytes added to the primary sample; precision was assessed by calculating the RPD for the MS/MSD sample pairs.

The MS/MSD sample pairs are required by the QAPP at a rate of one MS/MSD pair per extraction batch of up to 20 samples per matrix. Three MS/MSD sediment sample pairs were collected at frequency of 6 percent. No MS/MSD was submitted with the equipment rinsate sample, as it is part of the QC and it is not necessary to submit QC for QC samples. No MS/MSD was extracted or analyzed with 0723TripBlank4 for GRO/BTEX analysis.

The MS and MSD recoveries and RPDs are discussed in Sections 2.2 through 2.9.

2.10.3 Equipment Blank

An equipment blank was collected to determine whether field sampling equipment could be a source of contamination to primary samples. An equipment blank is made by pouring organic-free (distilled) water for organic analyses and deionized water for inorganic analyses into or through decontaminated field sampling equipment (bailer, pump tubing, soil sampling equipment, etc.). The water is collected in the same type of sample container, with the same preservative (if applicable), and analyzed by the same

methods as the associated primary samples. QAPP Worksheet #20 requires a collection of one equipment blank for the Site 28 sediment sampling event, and the QAPP frequency requirement was met.

The following analytes were detected in the equipment blank samples (12NC28Rinsate):

Analyte	Equipment Blank (ppm)	Lowest Sample Result (ppm)
Barium	0.0038 J	19
Lead	0.00017 J	4.3
Zinc	0.024	13
DRO	0.049 J	38
RRO	0.052 J	160

Note:
ppm = parts per million

When comparing equipment blank detects to the lowest sample result, all equipment blank results were within the QAPP criterion of less than 1/10 the lowest sample concentration and are considered acceptable.

2.10.4 Trip Blanks

Methanol trip blanks are included in shipments containing soil samples that are submitted to the laboratory for BTEX and GRO analyses. Trip blanks are collected to assess the potential for BTEX or GRO cross-contamination introduced by sample bottles, from sample handling during field operations, shipping, or storage at the laboratory.

Trip blanks were included with shipments containing samples for BTEX and GRO analysis and were free of target analytes, with the exceptions noted below:

- GRO was detected at concentrations greater than the DL but less than the LOQ in two of the four trip blanks shipped with samples on 7/23/12, at concentrations of 1.8 mg/kg (072312TripBlank1) and 1.0 mg/kg (072312TripBlank3). Samples shipped with their associated trip blank with detected results <10 times the trip blank concentration were B qualified to indicate the potential for high bias. No blank qualifiers were assigned to GRO results ≥10 the highest trip blank concentration.

2.11 SAMPLE QUALIFIERS

Sample qualifiers are presented in Table 2-11.

Table 2-11 Sample Qualifiers

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
12NC28SS050	580-34102-56	m&p-Xylene o-Xylene Toluene	MS/MSD RPD	MN	Unknown
12NC28SS049	580-34102-55	m&p-Xylene (1x) o-Xylene (1x)	Lower dilution not preferred	NP	Unknown
12NC28SS001	580-34102-1	GRO	Low surrogate recovery	ML	Low
12NC28SS002	580-34102-2				
12NC28SS003	580-34102-3				
12NC28SS004	580-34102-4				
12NC28SS005	580-34102-5				
12NC28SS006	580-34102-7				
12NC28SS007	580-34102-8				
12NC28SS008	580-34102-9				
12NC28SS009	580-34102-10				
12NC28SS010	580-34102-11				
12NC28SS011	580-34102-12				
12NC28SS012	580-34102-13				
12NC28SS013	580-34102-14				
12NC28SS016	580-34102-18				
12NC28SS017	580-34102-19				
12NC28SS018	580-34102-20				
12NC28SS019	580-34102-21				
12NC28SS023	580-34102-25				
12NC28SS024	580-34102-26				
12NC28SS025	580-34102-27				
12NC28SS028	580-34102-31				
12NC28SS029	580-34102-32				
12NC28SS030	580-34102-33				
12NC28SS033	580-34102-36				
12NC28SS034	580-34102-37				
12NC28SS036	580-34102-39				
12NC28SS037	580-34102-40				
12NC28SS038	580-34102-41				

Table 2-11 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
12NC28SS039 12NC28SS040 12NC28SS041 12NC28SS042 12NC28SS043 12NC28SS044 12NC28SS045 12NC28SS046 12NC28SS048 12NC28SS051 12NC28SS105 12NC28SS144 12NC28SS147 12NC28SS014 12NC28SS015 12NC28SS020 12NC28SS021 12NC28SS022 12NC28SS026 12NC28SS027 12NC28SS031 12NC28SS032 12NC28SS035 12NC28SS126 12NC28SS138	580-34102-43 580-34102-44 580-34102-45 580-34102-46 580-34102-47 580-34102-48 580-34102-50 580-34102-51 580-34102-54 580-34102-57 580-34102-6 580-34102-49 580-34102-53 580-34102-15 580-34102-17 580-34102-22 580-34102-23 580-34102-24 580-34102-28 580-34102-30 580-34102-34 580-34102-35 580-34102-38 580-34102-29 580-34102-42	GRO	Low surrogate recovery	ML	Low
12NC28SS050	580-34102-56	GRO	Low surrogate recovery, high MS/MSD and RPD	ML	Unknown
12NC28SS047 12NC28SS114	580-34102-52 580-34102-16	GRO	Low surrogate recovery and trip blank contamination	B ML	High

Table 2-11 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
12NC28SS036 12NC28SS043 12NC28SS046 12NC28SS047 12NC28SS048 12NC28SS147	580-34102-39 580-34102-47 580-34102-51 580-34102-52 580-34102-54 580-34102-53	Detected PCBs	High surrogate recovery	QH	High
12NC28SS015 12NC28SS114	580-34102-17 580-34102-16	All PCBs	Low surrogate recovery	QL	Low
12NC28SS050	580-34102-56	PCB-1260	Low MSD Recovery and high RPD	ML	Low
12NC28SS010	580-34102-11	Phenanthrene	Method blank contamination	B	High
12NC28SS023 12NC28SS025 12NC28SS126 12NC28SS028 12NC28SS032 12NC28SS033	580-34102-25 580-34102-27 580-34102-29 580-34102-31 580-34102-35 580-34102-36	Pyrene	Method blank contamination	B	High
12NC28SS051	580-34102-57	Detected PAHs	High surrogate recovery	QH	High
12NC28SS024	580-34102-26	1-Methylnaphthalene Naphthalene	High MS and MS/MSD recovery	MH	High
12NC28SS024	580-34102-26	Acenaphthene Fluorene	Low MSD recovery	ML	Low
12NC28SS015	580-34102-17	2-Methylnaphthalene (1x)	Lower dilution not preferred	NP	Unknown
12NC28SS016	580-34102-18	2-Methylnaphthalene (10x)	Lower dilution not preferred	NP	Unknown
12NC28SS018	580-34102-20	1-Methylnaphthalene (1x) 2-Methylnaphthalene (1x) Naphthalene (1x)	Lower dilution not preferred	NP	Unknown
12NC28SS019	580-34102-21	1-Methylnaphthalene (2x) 2-Methylnaphthalene (2x) Naphthalene (2x)	Lower dilution not preferred	NP	Unknown

Table 2-11 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
12NC28SS020	580-34102-22	1-Methylnaphthalene (1x) 2-Methylnaphthalene (1x)	Lower dilution not preferred	NP	Unknown
12NC28SS025	580-34102-27	2-Methylnaphthalene (1x)	Lower dilution not preferred	NP	Unknown
12NC28SS029	580-34102-32	1-Methylnaphthalene (10x) 2-Methylnaphthalene (10x)	Lower dilution not preferred	NP	Unknown
12NC28SS035	580-34102-38	1-Methylnaphthalene (1x) 2-Methylnaphthalene (1x)	Lower dilution not preferred	NP	Unknown
12NC28SS036	580-34102-39	1-Methylnaphthalene (10x) 2-Methylnaphthalene (10x)	Lower dilution not preferred	NP	Unknown
12NC28SS044	580-34102-48	1-Methylnaphthalene (10x) 2-Methylnaphthalene (10x)	Lower dilution not preferred	NP	Unknown
12NC28SS048	580-34102-54	1-Methylnaphthalene (10x) 2-Methylnaphthalene (10x)	Lower dilution not preferred	NP	Unknown
12NC28SS049	580-34102-55	1-Methylnaphthalene (10x) 2-Methylnaphthalene (10x)	Lower dilution not preferred	NP	Unknown
12NC28SS051	580-34102-57	2-Methylnaphthalene (1x)	Lower dilution not preferred	NP	Unknown
12NC28SS144	580-34102-49	1-Methylnaphthalene (10x) 2-Methylnaphthalene (10x)	Lower dilution not preferred	NP	Unknown
12NC28SS014 12NC28SS114 12NC28SS015 12NC28SS016 12NC28SS018	580-34102-15 580-34102-16 580-34102-17 580-34102-18 580-34102-20	RRO	Low surrogate recovery	QL	Low
12NC28SS036	580-34102-39	RRO with silica gel	Low surrogate recovery	QL	Low
12NC28SS042	580-34102-46	DRO	Method blank contamination	B	High

Table 2-11 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
12NC28SS020	580-34102-22	RRO	High MS or MSD recovery	MH	High
12NC28SS021	580-34102-23				
12NC28SS022	580-34102-24				
12NC28SS023	580-34102-25				
12NC28SS024	580-34102-26				
12NC28SS025	580-34102-27				
12NC28SS026	580-34102-28				
12NC28SS027	580-34102-30				
12NC28SS028	580-34102-31				
12NC28SS029	580-34102-32				
12NC28SS030	580-34102-33				
12NC28SS031	580-34102-34				
12NC28SS032	580-34102-35				
12NC28SS033	580-34102-36				
12NC28SS034	580-34102-37				
12NC28SS035	580-34102-38				
12NC28SS037	580-34102-40				
12NC28SS045	580-34102-50				
12NC28SS046	580-34102-51				
12NC28SS047	580-34102-52				
12NC28SS126	580-34102-29				
12NC28SS144	580-34102-49				
12NC28SS038	580-34102-41	RRO	Low MS or MSD recovery	ML	Low
12NC28SS039	580-34102-43				
12NC28SS040	580-34102-44				
12NC28SS041	580-34102-45				
12NC28SS042	580-34102-46				
12NC28SS043	580-34102-47				
12NC28SS044	580-34102-48				
12NC28SS048	580-34102-54				
12NC28SS049	580-34102-55				
12NC28SS050	580-34102-56				
12NC28SS051	580-34102-57				
12NC28SS138	580-34102-42				
12NC28SS147	580-34102-53				

Table 2-11 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
12NC28SS036	580-34102-39	RRO	Low surrogate recovery. Associated with high MS or MSD recovery	MN	Unknown
12NC28SS050	580-34102-56	RRO with silica gel	Low and high MS/MSD recovery	MN	Unknown
12NC28SS001	580-34102-1	Chromium	High MSD recovery	MH	High
12NC28SS002	580-34102-2				
12NC28SS003	580-34102-3				
12NC28SS004	580-34102-4				
12NC28SS005	580-34102-5				
12NC28SS006	580-34102-7				
12NC28SS007	580-34102-8				
12NC28SS008	580-34102-9				
12NC28SS009	580-34102-10				
12NC28SS010	580-34102-11				
12NC28SS011	580-34102-12				
12NC28SS012	580-34102-13				
12NC28SS013	580-34102-14				
12NC28SS014	580-34102-15				
12NC28SS015	580-34102-17				
12NC28SS016	580-34102-18				
12NC28SS017	580-34102-19				
12NC28SS018	580-34102-20				
12NC28SS105	580-34102-6				
12NC28SS114	580-34102-16				

Table 2-11 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
12NC28SS038 12NC28SS138 12NC28SS039 12NC28SS040 12NC28SS041 12NC28SS042 12NC28SS043 12NC28SS044 12NC28SS144 12NC28SS045 12NC28SS046 12NC28SS047 12NC28SS147 12NC28SS048 12NC28SS049 12NC28SS050 12NC28SS051	580-34102-41 580-34102-42 580-34102-43 580-34102-44 580-34102-45 580-34102-46 580-34102-47 580-34102-48 580-34102-49 580-34102-50 580-34102-51 580-34102-52 580-34102-53 580-34102-54 580-34102-55 580-34102-56 580-34102-57	Barium Chromium Nickel Vanadium Zinc	High MS and/or MSD recovery	Detects: MH	High
12NC28SS026 12NC28SS126	580-34102-28 580-34102-29	Arsenic Barium Chromium Fluoranthene Phenanthrene Pyrene	High field duplicate RPD	QN	Unknown
12NC28SS038 12NC28SS138	580-34102-41 580-34102-42	1-Methylnaphthalene 2-Methylnaphthalene Acenaphthene Acenaphthylene Fluoranthene Fluorene Naphthalene Phenanthrene Pyrene RRO	High field duplicate RPD	QN	Unknown

Table 2-11 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
12NC28SS047 12NC28SS147	580-34102-52 580-34102-53	Arsenic Barium Chromium Lead Nickel Vanadium Zinc Mercury PCB-1260 PCB-Total Ethylbenzene m,p-Xylene o-Xylene Total Xylenes 1-Methylnaphthalene 2-Methylnaphthalene Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(g,h,i)perylene Chrysene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene Naphthalene Phenanthrene Pyrene GRO DRO RRO DRO with silica gel RRO with silica gel	High field duplicate RPD	QN	Unknown

Notes:

B = blank contamination

J = analyte was positively identified at a concentration below the LOQ and is considered estimated

ND non-detect, limit of detection in parentheses

NP = not preferred, a second more technically valid result is available

MH, ML, MN – result is an estimate biased (high, low, uncertain) due to matrix effects

QH, QL, QN – result is an estimate biased (high, low, uncertain) due to a quality control failure

DRO = diesel range organics

GRO = gasoline range organics

MS = matrix spike

MSD = matrix spike duplicate

PAH = polynuclear aromatic hydrocarbon

PCB = polychlorihated biphenyl

RPD = relative percent difference

RRO = residual range organics

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3.0 SUMMARY

This Report evaluates the analytical data generated during the NE Cape Remedial Actions conducted at Site 28 during July 2012. 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 following conclusions were drawn based on this assessment of the analytical data:

- Sample receipt conditions were acceptable based on temperatures upon receipt at the laboratory and CoC correspondence to submitted sample sets, with the exception that the sample date on the container label did not match the CoC for four samples. Samples were logged in per the CoC. Both 16-ounce jars for sample 12NC28SS029 were received with cracked lids; the sample volume inside those jars was not compromised.
- Extraction and analytical procedures were acceptable based on holding times, MBs, LCS/LCSDs, MS/MSDs, and surrogates, except as noted below:
  - Detected results were qualified as estimated with a high bias (MH) due to high surrogate recoveries as follows:
    - Detected PAHs in one sample
    - Detected PCBs for six samples
  - Results were qualified as estimated with a low bias (ML) due to low surrogate recoveries as follows:
    - GRO results for 56 samples
    - RRO results for six samples
    - RRO results with silica gel cleanup for one sample
    - PCB results for two samples
  - The following results were B qualified due to associated method blank contamination at a concentration <10x the sample concentration:
    - Phenathrene results in one sample and pyrene results in six samples
    - One DRO result
  - Samples were qualified due to either high (MH) or low (ML) MS/MSD recoveries to indicate potential bias due to a matrix effect. For organic compounds (BTEX, GRO, DRO/RRO, PAHs, and PCBs), qualification was limited to the spiked sample since no trends were observed, with the exception

of RRO. RRO had more than 50 percent of the MS/MSD results outside criteria, and associated samples were qualified. 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. Qualified organic samples are discussed below:

- The m&p-Xylene, o-xylene, and toluene results associated with high RPDs were MN qualified for one sample.
- 1-Methylnaphthalene and naphthalene results for one sample were MH qualified.
- Acenaphthene and fluorene results for one sample were ML qualified.
- The GRO result for one sample was ML qualified (surrogate low and MS/MSD RPD high).
- RRO results were ML qualified in 13 samples and MH qualified in 22 samples.
- One RRO result was MN qualified due to a low surrogate recovery and an associated high MS/MSD recovery.
- RRO results with silica gel cleanup were MN qualified in one sample.
- PCB-1260 was ML qualified in one sample.

– For metals samples when either a low or high MS/MSD recovery was observed, all associated results were qualified to indicate a potential matrix effect. Qualified samples are discussed below:

- Chromium results were MH qualified in 20 samples.
- Detects for barium, chromium, nickel, vanadium, and zinc were MH qualified for 17 samples.

- Multiple sample results were reported for values that exceeded the calibration range of the instrument. The lower dilution results that are "not preferred" were qualified NP for the following samples:
  – m&p-Xylene and o-xylene results for one sample
  – 2-Methylnaphthalene results for four samples
  – 1-Methylnaphthalene and 2-methylnaphthalene results for eight samples
  – 1-Methylnaphthalene, 2-methylnaphthalene, and naphthalene results for two samples
- Field QC results met QAPP criteria, with the following exceptions:
  – Imprecision was observed in field duplicate samples for 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene,

fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, pyrene, ethylbenzene, m,p-xylene, o-xylene, total xylenes, PCB-1260, PCB-total, GRO, DRO, DRO w/silica gel, RRO, RRO w/silica gel, arsenic, barium, chromium, lead, mercury, nickel, vanadium, and zinc in one to three of the five field duplicate pairs. In all cases, the majority of duplicate sample results met the RPD criteria or, for the three analytes that had more than half the RPDs exceeding criteria, the results were below screening level and qualification was limited to the field duplicate pair.

- GRO results for 15 samples were B qualified due to associated trip blank contamination at a concentration <10x the sample concentration.

Based on this review, the analytical data generated during the NE Cape Remedial Action at Site 28 are complete, correct, consistent, and compliant with method procedures and QC requirements and are usable as qualified.

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Site 28 Sample Summary

SDG number	Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth Interval (ft bgs)	Analytical Methods	Laboratory	QC	Location ID	SDG	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34102	580-34102-1	12NC28SS001	Sediment	7/18/2012 9:20	0 - 1	6020	TATW		028-01	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-1	12NC28SS001	Sediment	7/18/2012 9:20	0 - 1	7471A	TATW		028-01	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-1	12NC28SS001	Sediment	7/18/2012 9:20	0 - 1	8082/DOD	TATW		028-01	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-1	12NC28SS001	Sediment	7/18/2012 9:20	0 - 1	8260B/DoD	TATW		028-01	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-1	12NC28SS001	Sediment	7/18/2012 9:20	0 - 1	8270C SIM/DoD	TATW		028-01	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-1	12NC28SS001	Sediment	7/18/2012 9:20	0 - 1	9060	TATW		028-01	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-1	12NC28SS001	Sediment	7/18/2012 9:20	0 - 1	AK101	TATW		028-01	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-1	12NC28SS001	Sediment	7/18/2012 9:20	0 - 1	AK102 & 103	TATW		028-01	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-1	12NC28SS001	Sediment	7/18/2012 9:20	0 - 1	AK102/103	TATW		028-01	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-1	12NC28SS001	Sediment	7/18/2012 9:20	0 - 1	D 2216	TATW		028-01	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-2	12NC28SS002	Sediment	7/18/2012 9:40	0 - 1.75	6020	TATW		028-02	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-2	12NC28SS002	Sediment	7/18/2012 9:40	0 - 1.75	7471A	TATW		028-02	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-2	12NC28SS002	Sediment	7/18/2012 9:40	0 - 1.75	8082/DOD	TATW		028-02	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-2	12NC28SS002	Sediment	7/18/2012 9:40	0 - 1.75	8260B/DoD	TATW		028-02	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-2	12NC28SS002	Sediment	7/18/2012 9:40	0 - 1.75	8270C SIM/DoD	TATW		028-02	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-2	12NC28SS002	Sediment	7/18/2012 9:40	0 - 1.75	9060	TATW		028-02	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-2	12NC28SS002	Sediment	7/18/2012 9:40	0 - 1.75	AK101	TATW		028-02	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-2	12NC28SS002	Sediment	7/18/2012 9:40	0 - 1.75	AK102 & 103	TATW		028-02	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-2	12NC28SS002	Sediment	7/18/2012 9:40	0 - 1.75	AK102/103	TATW		028-02	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-2	12NC28SS002	Sediment	7/18/2012 9:40	0 - 1.75	D 2216	TATW		028-02	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-3	12NC28SS003	Sediment	7/18/2012 10:00	0 - 1.5	6020	TATW		028-03	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-3	12NC28SS003	Sediment	7/18/2012 10:00	0 - 1.5	7471A	TATW		028-03	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-3	12NC28SS003	Sediment	7/18/2012 10:00	0 - 1.5	8082/DOD	TATW		028-03	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-3	12NC28SS003	Sediment	7/18/2012 10:00	0 - 1.5	8260B/DoD	TATW		028-03	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-3	12NC28SS003	Sediment	7/18/2012 10:00	0 - 1.5	8270C SIM/DoD	TATW		028-03	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-3	12NC28SS003	Sediment	7/18/2012 10:00	0 - 1.5	9060	TATW		028-03	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-3	12NC28SS003	Sediment	7/18/2012 10:00	0 - 1.5	AK101	TATW		028-03	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-3	12NC28SS003	Sediment	7/18/2012 10:00	0 - 1.5	AK102 & 103	TATW		028-03	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-3	12NC28SS003	Sediment	7/18/2012 10:00	0 - 1.5	AK102/103	TATW		028-03	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-3	12NC28SS003	Sediment	7/18/2012 10:00	0 - 1.5	D 2216	TATW		028-03	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-4	12NC28SS004	Sediment	7/18/2012 10:10	0 - 1	6020	TATW		028-04	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-4	12NC28SS004	Sediment	7/18/2012 10:10	0 - 1	7471A	TATW		028-04	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-4	12NC28SS004	Sediment	7/18/2012 10:10	0 - 1	8082/DOD	TATW		028-04	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-4	12NC28SS004	Sediment	7/18/2012 10:10	0 - 1	8260B/DoD	TATW		028-04	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-4	12NC28SS004	Sediment	7/18/2012 10:10	0 - 1	8270C SIM/DoD	TATW		028-04	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-4	12NC28SS004	Sediment	7/18/2012 10:10	0 - 1	9060	TATW		028-04	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-4	12NC28SS004	Sediment	7/18/2012 10:10	0 - 1	AK101	TATW		028-04	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-4	12NC28SS004	Sediment	7/18/2012 10:10	0 - 1	AK102 & 103	TATW		028-04	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-4	12NC28SS004	Sediment	7/18/2012 10:10	0 - 1	AK102/103	TATW		028-04	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-4	12NC28SS004	Sediment	7/18/2012 10:10	0 - 1	D 2216	TATW		028-04	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-5	12NC28SS005	Sediment	7/18/2012 10:30	0 - 1	6020	TATW		028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-5	12NC28SS005	Sediment	7/18/2012 10:30	0 - 1	7471A	TATW		028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-5	12NC28SS005	Sediment	7/18/2012 10:30	0 - 1	8082/DOD	TATW		028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-5	12NC28SS005	Sediment	7/18/2012 10:30	0 - 1	8260B/DoD	TATW		028-05	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-5	12NC28SS005	Sediment	7/18/2012 10:30	0 - 1	8270C SIM/DoD	TATW		028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-5	12NC28SS005	Sediment	7/18/2012 10:30	0 - 1	9060	TATW		028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-5	12NC28SS005	Sediment	7/18/2012 10:30	0 - 1	AK101	TATW		028-05	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-5	12NC28SS005	Sediment	7/18/2012 10:30	0 - 1	AK102 & 103	TATW		028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-5	12NC28SS005	Sediment	7/18/2012 10:30	0 - 1	AK102/103	TATW		028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-5	12NC28SS005	Sediment	7/18/2012 10:30	0 - 1	D 2216	TATW		028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-6	12NC28SS105	Sediment	7/18/2012 10:35	0 - 1	6020	TATW	Field Dup of SS005	028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-6	12NC28SS105	Sediment	7/18/2012 10:35	0 - 1	7471A	TATW	Field Dup of SS005	028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-6	12NC28SS105	Sediment	7/18/2012 10:35	0 - 1	8082/DOD	TATW	Field Dup of SS005	028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-6	12NC28SS105	Sediment	7/18/2012 10:35	0 - 1	8260B/DoD	TATW	Field Dup of SS005	028-05	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-6	12NC28SS105	Sediment	7/18/2012 10:35	0 - 1	8270C SIM/DoD	TATW	Field Dup of SS005	028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-6	12NC28SS105	Sediment	7/18/2012 10:35	0 - 1	9060	TATW	Field Dup of SS005	028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-6	12NC28SS105	Sediment	7/18/2012 10:35	0 - 1	AK101	TATW	Field Dup of SS005	028-05	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-6	12NC28SS105	Sediment	7/18/2012 10:35	0 - 1	AK102 & 103	TATW	Field Dup of SS005	028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-6	12NC28SS105	Sediment	7/18/2012 10:35	0 - 1	AK102/103	TATW	Field Dup of SS005	028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-6	12NC28SS105	Sediment	7/18/2012 10:35	0 - 1	D 2216	TATW	Field Dup of SS005	028-05	580-34102	JC	Cool	072312-2	4_Days	Soil jar 16oz
580-34102	580-34102-7	12NC28SS006	Sediment	7/18/2012 10:50	0 - 1	6020	TATW		028-06	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-7	12NC28SS006	Sediment	7/18/2012 10:50	0 - 1	7471A	TATW		028-06	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-7	12NC28SS006	Sediment	7/18/2012 10:50	0 - 1	8082/DOD	TATW		028-06	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-7	12NC28SS006	Sediment	7/18/2012 10:50	0 - 1	8260B/DoD	TATW		028-06	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol

Site 28 Sample Summary (continued)

SDG number	Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth Interval (ft bgs)	Analytical Methods	Laboratory	QC	Location ID	SDG	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34102	580-34102-7	12NC28SS006	Sediment	7/18/2012 10:50	0 - 1	8270C SIM/DoD	TATW		028-06	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-7	12NC28SS006	Sediment	7/18/2012 10:50	0 - 1	9060	TATW		028-06	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-7	12NC28SS006	Sediment	7/18/2012 10:50	0 - 1	AK101	TATW		028-06	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-7	12NC28SS006	Sediment	7/18/2012 10:50	0 - 1	AK102 & 103	TATW		028-06	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-7	12NC28SS006	Sediment	7/18/2012 10:50	0 - 1	AK102/103	TATW		028-06	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-7	12NC28SS006	Sediment	7/18/2012 10:50	0 - 1	D 2216	TATW		028-06	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-8	12NC28SS007	Sediment	7/18/2012 11:00	0 - 1.25	6020	TATW		028-07	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-8	12NC28SS007	Sediment	7/18/2012 11:00	0 - 1.25	7471A	TATW		028-07	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-8	12NC28SS007	Sediment	7/18/2012 11:00	0 - 1.25	8082/DOD	TATW		028-07	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-8	12NC28SS007	Sediment	7/18/2012 11:00	0 - 1.25	8260B/DoD	TATW		028-07	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-8	12NC28SS007	Sediment	7/18/2012 11:00	0 - 1.25	8270C SIM/DoD	TATW		028-07	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-8	12NC28SS007	Sediment	7/18/2012 11:00	0 - 1.25	9060	TATW		028-07	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-8	12NC28SS007	Sediment	7/18/2012 11:00	0 - 1.25	AK101	TATW		028-07	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-8	12NC28SS007	Sediment	7/18/2012 11:00	0 - 1.25	AK102 & 103	TATW		028-07	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-8	12NC28SS007	Sediment	7/18/2012 11:00	0 - 1.25	AK102/103	TATW		028-07	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-8	12NC28SS007	Sediment	7/18/2012 11:00	0 - 1.25	D 2216	TATW		028-07	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-9	12NC28SS008	Sediment	7/18/2012 11:15	0 - 1	6020	TATW		028-08	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-9	12NC28SS008	Sediment	7/18/2012 11:15	0 - 1	7471A	TATW		028-08	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-9	12NC28SS008	Sediment	7/18/2012 11:15	0 - 1	8082/DOD	TATW		028-08	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-9	12NC28SS008	Sediment	7/18/2012 11:15	0 - 1	8260B/DoD	TATW		028-08	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-9	12NC28SS008	Sediment	7/18/2012 11:15	0 - 1	8270C SIM/DoD	TATW		028-08	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-9	12NC28SS008	Sediment	7/18/2012 11:15	0 - 1	9060	TATW		028-08	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-9	12NC28SS008	Sediment	7/18/2012 11:15	0 - 1	AK101	TATW		028-08	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-9	12NC28SS008	Sediment	7/18/2012 11:15	0 - 1	AK102 & 103	TATW		028-08	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-9	12NC28SS008	Sediment	7/18/2012 11:15	0 - 1	AK102/103	TATW		028-08	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-9	12NC28SS008	Sediment	7/18/2012 11:15	0 - 1	D 2216	TATW		028-08	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-10	12NC28SS009	Sediment	7/18/2012 11:30	0 - 1	6020	TATW		028-09	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-10	12NC28SS009	Sediment	7/18/2012 11:30	0 - 1	7471A	TATW		028-09	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-10	12NC28SS009	Sediment	7/18/2012 11:30	0 - 1	8082/DOD	TATW		028-09	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-10	12NC28SS009	Sediment	7/18/2012 11:30	0 - 1	8260B/DoD	TATW		028-09	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-10	12NC28SS009	Sediment	7/18/2012 11:30	0 - 1	8270C SIM/DoD	TATW		028-09	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-10	12NC28SS009	Sediment	7/18/2012 11:30	0 - 1	9060	TATW		028-09	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-10	12NC28SS009	Sediment	7/18/2012 11:30	0 - 1	AK101	TATW		028-09	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-10	12NC28SS009	Sediment	7/18/2012 11:30	0 - 1	AK102 & 103	TATW		028-09	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-10	12NC28SS009	Sediment	7/18/2012 11:30	0 - 1	AK102/103	TATW		028-09	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-10	12NC28SS009	Sediment	7/18/2012 11:30	0 - 1	D 2216	TATW		028-09	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-11	12NC28SS010	Sediment	7/18/2012 14:30	0 - 2	6020	TATW	MS/MSD	028-010	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-11	12NC28SS010	Sediment	7/18/2012 14:30	0 - 2	7471A	TATW	MS/MSD	028-010	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-11	12NC28SS010	Sediment	7/18/2012 14:30	0 - 2	8082/DOD	TATW	MS/MSD	028-010	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-11	12NC28SS010	Sediment	7/18/2012 14:30	0 - 2	8260B/DoD	TATW	MS/MSD	028-010	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-11	12NC28SS010	Sediment	7/18/2012 14:30	0 - 2	8270C SIM/DoD	TATW	MS/MSD	028-010	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-11	12NC28SS010	Sediment	7/18/2012 14:30	0 - 2	9060	TATW	MS/MSD	028-010	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-11	12NC28SS010	Sediment	7/18/2012 14:30	0 - 2	AK101	TATW	MS/MSD	028-010	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-11	12NC28SS010	Sediment	7/18/2012 14:30	0 - 2	AK102 & 103	TATW	MS/MSD	028-010	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-11	12NC28SS010	Sediment	7/18/2012 14:30	0 - 2	AK102/103	TATW	MS/MSD	028-010	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-11	12NC28SS010	Sediment	7/18/2012 14:30	0 - 2	D 2216	TATW		028-010	580-34102	JC	Cool	072312-3	4_Days	Soil jar 16oz
580-34102	580-34102-12	12NC28SS011	Sediment	7/18/2012 14:50	0 - 1.75	6020	TATW		028-011	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-12	12NC28SS011	Sediment	7/18/2012 14:50	0 - 1.75	7471A	TATW		028-011	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-12	12NC28SS011	Sediment	7/18/2012 14:50	0 - 1.75	8082/DOD	TATW		028-011	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-12	12NC28SS011	Sediment	7/18/2012 14:50	0 - 1.75	8260B/DoD	TATW		028-011	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-12	12NC28SS011	Sediment	7/18/2012 14:50	0 - 1.75	8270C SIM/DoD	TATW		028-011	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-12	12NC28SS011	Sediment	7/18/2012 14:50	0 - 1.75	9060	TATW		028-011	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-12	12NC28SS011	Sediment	7/18/2012 14:50	0 - 1.75	AK101	TATW		028-011	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-12	12NC28SS011	Sediment	7/18/2012 14:50	0 - 1.75	AK102 & 103	TATW		028-011	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-12	12NC28SS011	Sediment	7/18/2012 14:50	0 - 1.75	AK102/103	TATW		028-011	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-12	12NC28SS011	Sediment	7/18/2012 14:50	0 - 1.75	D 2216	TATW		028-011	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-13	12NC28SS012	Sediment	7/18/2012 15:00	0 - 1.5	6020	TATW		028-012	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-13	12NC28SS012	Sediment	7/18/2012 15:00	0 - 1.5	7471A	TATW		028-012	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-13	12NC28SS012	Sediment	7/18/2012 15:00	0 - 1.5	8082/DOD	TATW		028-012	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-13	12NC28SS012	Sediment	7/18/2012 15:00	0 - 1.5	8260B/DoD	TATW		028-012	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-13	12NC28SS012	Sediment	7/18/2012 15:00	0 - 1.5	8270C SIM/DoD	TATW		028-012	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-13	12NC28SS012	Sediment	7/18/2012 15:00	0 - 1.5	9060	TATW		028-012	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-13	12NC28SS012	Sediment	7/18/2012 15:00	0 - 1.5	AK101	TATW		028-012	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-13	12NC28SS012	Sediment	7/18/2012 15:00	0 - 1.5	AK102 & 103	TATW		028-012	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz

Site 28 Sample Summary (continued)

SDG number	Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth Interval (ft bgs)	Analytical Methods	Laboratory	QC	Location ID	SDG	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34102	580-34102-13	12NC28SS012	Sediment	7/18/2012 15:00	0 - 1.5	AK102/103	TATW		028-012	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-13	12NC28SS012	Sediment	7/18/2012 15:00	0 - 1.5	D 2216	TATW		028-012	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-14	12NC28SS013	Sediment	7/18/2012 15:20	0 - 1.5	6020	TATW		028-013	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-14	12NC28SS013	Sediment	7/18/2012 15:20	0 - 1.5	7471A	TATW		028-013	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-14	12NC28SS013	Sediment	7/18/2012 15:20	0 - 1.5	8082/DOD	TATW		028-013	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-14	12NC28SS013	Sediment	7/18/2012 15:20	0 - 1.5	8260B/DoD	TATW		028-013	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-14	12NC28SS013	Sediment	7/18/2012 15:20	0 - 1.5	8270C SIM/DoD	TATW		028-013	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-14	12NC28SS013	Sediment	7/18/2012 15:20	0 - 1.5	9060	TATW		028-013	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-14	12NC28SS013	Sediment	7/18/2012 15:20	0 - 1.5	AK101	TATW		028-013	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-14	12NC28SS013	Sediment	7/18/2012 15:20	0 - 1.5	AK102 & 103	TATW		028-013	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-14	12NC28SS013	Sediment	7/18/2012 15:20	0 - 1.5	AK102/103	TATW		028-013	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-14	12NC28SS013	Sediment	7/18/2012 15:20	0 - 1.5	D 2216	TATW		028-013	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-15	12NC28SS014	Sediment	7/18/2012 15:30	0 - 1.5	6020	TATW		028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-15	12NC28SS014	Sediment	7/18/2012 15:30	0 - 1.5	7471A	TATW		028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-15	12NC28SS014	Sediment	7/18/2012 15:30	0 - 1.5	8082/DOD	TATW		028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-15	12NC28SS014	Sediment	7/18/2012 15:30	0 - 1.5	8260B/DoD	TATW		028-014	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-15	12NC28SS014	Sediment	7/18/2012 15:30	0 - 1.5	8270C SIM/DoD	TATW		028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-15	12NC28SS014	Sediment	7/18/2012 15:30	0 - 1.5	9060	TATW		028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-15	12NC28SS014	Sediment	7/18/2012 15:30	0 - 1.5	AK101	TATW		028-014	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-15	12NC28SS014	Sediment	7/18/2012 15:30	0 - 1.5	AK102 & 103	TATW		028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-15	12NC28SS014	Sediment	7/18/2012 15:30	0 - 1.5	AK102/103	TATW		028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-15	12NC28SS014	Sediment	7/18/2012 15:30	0 - 1.5	D 2216	TATW		028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-16	12NC28SS114	Sediment	7/18/2012 15:35	0 - 1.5	6020	TATW	Field Dup of SS014	028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-16	12NC28SS114	Sediment	7/18/2012 15:35	0 - 1.5	7471A	TATW	Field Dup of SS014	028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-16	12NC28SS114	Sediment	7/18/2012 15:35	0 - 1.5	8082/DOD	TATW	Field Dup of SS014	028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-16	12NC28SS114	Sediment	7/18/2012 15:35	0 - 1.5	8260B/DoD	TATW	Field Dup of SS014	028-014	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-16	12NC28SS114	Sediment	7/18/2012 15:35	0 - 1.5	8270C SIM/DoD	TATW	Field Dup of SS014	028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-16	12NC28SS114	Sediment	7/18/2012 15:35	0 - 1.5	9060	TATW	Field Dup of SS014	028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-16	12NC28SS114	Sediment	7/18/2012 15:35	0 - 1.5	AK101	TATW	Field Dup of SS014	028-014	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-16	12NC28SS114	Sediment	7/18/2012 15:35	0 - 1.5	AK102 & 103	TATW	Field Dup of SS014	028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-16	12NC28SS114	Sediment	7/18/2012 15:35	0 - 1.5	AK102/103	TATW	Field Dup of SS014	028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-16	12NC28SS114	Sediment	7/18/2012 15:35	0 - 1.5	D 2216	TATW	Field Dup of SS014	028-014	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-17	12NC28SS015	Sediment	7/18/2012 15:50	0 - 0.75	6020	TATW		028-015	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-17	12NC28SS015	Sediment	7/18/2012 15:50	0 - 0.75	7471A	TATW		028-015	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-17	12NC28SS015	Sediment	7/18/2012 15:50	0 - 0.75	8082/DOD	TATW		028-015	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-17	12NC28SS015	Sediment	7/18/2012 15:50	0 - 0.75	8260B/DoD	TATW		028-015	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-17	12NC28SS015	Sediment	7/18/2012 15:50	0 - 0.75	8270C SIM/DoD	TATW		028-015	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-17	12NC28SS015	Sediment	7/18/2012 15:50	0 - 0.75	9060	TATW		028-015	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-17	12NC28SS015	Sediment	7/18/2012 15:50	0 - 0.75	AK101	TATW		028-015	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-17	12NC28SS015	Sediment	7/18/2012 15:50	0 - 0.75	AK102 & 103	TATW		028-015	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-17	12NC28SS015	Sediment	7/18/2012 15:50	0 - 0.75	AK102/103	TATW		028-015	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-17	12NC28SS015	Sediment	7/18/2012 15:50	0 - 0.75	D 2216	TATW		028-015	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-18	12NC28SS016	Sediment	7/18/2012 16:10	0 - 1	6020	TATW		028-016	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-18	12NC28SS016	Sediment	7/18/2012 16:10	0 - 1	7471A	TATW		028-016	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-18	12NC28SS016	Sediment	7/18/2012 16:10	0 - 1	8082/DOD	TATW		028-016	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-18	12NC28SS016	Sediment	7/18/2012 16:10	0 - 1	8260B/DoD	TATW		028-016	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-18	12NC28SS016	Sediment	7/18/2012 16:10	0 - 1	8270C SIM/DoD	TATW		028-016	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-18	12NC28SS016	Sediment	7/18/2012 16:10	0 - 1	9060	TATW		028-016	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-18	12NC28SS016	Sediment	7/18/2012 16:10	0 - 1	AK101	TATW		028-016	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-18	12NC28SS016	Sediment	7/18/2012 16:10	0 - 1	AK102 & 103	TATW		028-016	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-18	12NC28SS016	Sediment	7/18/2012 16:10	0 - 1	AK102/103	TATW		028-016	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-18	12NC28SS016	Sediment	7/18/2012 16:10	0 - 1	D 2216	TATW		028-016	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-19	12NC28SS017	Sediment	7/18/2012 16:45	0 - 0.75	6020	TATW		028-017	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-19	12NC28SS017	Sediment	7/18/2012 16:45	0 - 0.75	7471A	TATW		028-017	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-19	12NC28SS017	Sediment	7/18/2012 16:45	0 - 0.75	8082/DOD	TATW		028-017	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-19	12NC28SS017	Sediment	7/18/2012 16:45	0 - 0.75	8260B/DoD	TATW		028-017	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-19	12NC28SS017	Sediment	7/18/2012 16:45	0 - 0.75	8270C SIM/DoD	TATW		028-017	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-19	12NC28SS017	Sediment	7/18/2012 16:45	0 - 0.75	9060	TATW		028-017	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-19	12NC28SS017	Sediment	7/18/2012 16:45	0 - 0.75	AK101	TATW		028-017	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-19	12NC28SS017	Sediment	7/18/2012 16:45	0 - 0.75	AK102 & 103	TATW		028-017	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-19	12NC28SS017	Sediment	7/18/2012 16:45	0 - 0.75	AK102/103	TATW		028-017	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-19	12NC28SS017	Sediment	7/18/2012 16:45	0 - 0.75	D 2216	TATW		028-017	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-20	12NC28SS018	Sediment	7/18/2012 16:55	0 - 1	6020	TATW		028-018	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-20	12NC28SS018	Sediment	7/18/2012 16:55	0 - 1	7471A	TATW		028-018	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz

Site 28 Sample Summary (continued)

SDG number	Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth Interval (ft bgs)	Analytical Methods	Laboratory	QC	Location ID	SDG	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34102	580-34102-20	12NC28SS018	Sediment	7/18/2012 16:55	0 - 1	8082/DOD	TATW		028-018	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-20	12NC28SS018	Sediment	7/18/2012 16:55	0 - 1	8260B/DoD	TATW		028-018	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-20	12NC28SS018	Sediment	7/18/2012 16:55	0 - 1	8270C SIM/DoD	TATW		028-018	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-20	12NC28SS018	Sediment	7/18/2012 16:55	0 - 1	9060	TATW		028-018	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-20	12NC28SS018	Sediment	7/18/2012 16:55	0 - 1	AK101	TATW		028-018	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-20	12NC28SS018	Sediment	7/18/2012 16:55	0 - 1	AK102 & 103	TATW		028-018	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-20	12NC28SS018	Sediment	7/18/2012 16:55	0 - 1	AK102/103	TATW		028-018	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-20	12NC28SS018	Sediment	7/18/2012 16:55	0 - 1	D 2216	TATW		028-018	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-21	12NC28SS019	Sediment	7/18/2012 17:05	0 - 1	6020	TATW		028-019	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-21	12NC28SS019	Sediment	7/18/2012 17:05	0 - 1	7471A	TATW		028-019	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-21	12NC28SS019	Sediment	7/18/2012 17:05	0 - 1	8082/DOD	TATW		028-019	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-21	12NC28SS019	Sediment	7/18/2012 17:05	0 - 1	8260B/DoD	TATW		028-019	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-21	12NC28SS019	Sediment	7/18/2012 17:05	0 - 1	8270C SIM/DoD	TATW		028-019	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-21	12NC28SS019	Sediment	7/18/2012 17:05	0 - 1	9060	TATW		028-019	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-21	12NC28SS019	Sediment	7/18/2012 17:05	0 - 1	AK101	TATW		028-019	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-21	12NC28SS019	Sediment	7/18/2012 17:05	0 - 1	AK102 & 103	TATW		028-019	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-21	12NC28SS019	Sediment	7/18/2012 17:05	0 - 1	AK102/103	TATW		028-019	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-21	12NC28SS019	Sediment	7/18/2012 17:05	0 - 1	D 2216	TATW		028-019	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-22	12NC28SS020	Sediment	7/19/2012 9:45	0 - 1.5	6020	TATW		028-020	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-22	12NC28SS020	Sediment	7/19/2012 9:45	0 - 1.5	7471A	TATW		028-020	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-22	12NC28SS020	Sediment	7/19/2012 9:45	0 - 1.5	8082/DOD	TATW		028-020	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-22	12NC28SS020	Sediment	7/19/2012 9:45	0 - 1.5	8260B/DoD	TATW		028-020	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-22	12NC28SS020	Sediment	7/19/2012 9:45	0 - 1.5	8270C SIM/DoD	TATW		028-020	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-22	12NC28SS020	Sediment	7/19/2012 9:45	0 - 1.5	9060	TATW		028-020	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-22	12NC28SS020	Sediment	7/19/2012 9:45	0 - 1.5	AK101	TATW		028-020	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-22	12NC28SS020	Sediment	7/19/2012 9:45	0 - 1.5	AK102 & 103	TATW		028-020	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-22	12NC28SS020	Sediment	7/19/2012 9:45	0 - 1.5	AK102/103	TATW		028-020	580-34102	JC	Cool	072312-4	4_Days	Soil jar 16oz
580-34102	580-34102-22	12NC28SS020	Sediment	7/19/2012 9:45	0 - 1.5	D 2216	TATW		028-020	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-23	12NC28SS021	Sediment	7/19/2012 10:00	0 - 1.5	6020	TATW		028-021	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-23	12NC28SS021	Sediment	7/19/2012 10:00	0 - 1.5	7471A	TATW		028-021	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-23	12NC28SS021	Sediment	7/19/2012 10:00	0 - 1.5	8082/DOD	TATW		028-021	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-23	12NC28SS021	Sediment	7/19/2012 10:00	0 - 1.5	8260B/DoD	TATW		028-021	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-23	12NC28SS021	Sediment	7/19/2012 10:00	0 - 1.5	8270C SIM/DoD	TATW		028-021	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-23	12NC28SS021	Sediment	7/19/2012 10:00	0 - 1.5	9060	TATW		028-021	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-23	12NC28SS021	Sediment	7/19/2012 10:00	0 - 1.5	AK101	TATW		028-021	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-23	12NC28SS021	Sediment	7/19/2012 10:00	0 - 1.5	AK102 & 103	TATW		028-021	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-23	12NC28SS021	Sediment	7/19/2012 10:00	0 - 1.5	AK102/103	TATW		028-021	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-23	12NC28SS021	Sediment	7/19/2012 10:00	0 - 1.5	D 2216	TATW		028-021	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-24	12NC28SS022	Sediment	7/19/2012 10:20	0 - 0.75	6020	TATW		028-022	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-24	12NC28SS022	Sediment	7/19/2012 10:20	0 - 0.75	7471A	TATW		028-022	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-24	12NC28SS022	Sediment	7/19/2012 10:20	0 - 0.75	8082/DOD	TATW		028-022	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-24	12NC28SS022	Sediment	7/19/2012 10:20	0 - 0.75	8260B/DoD	TATW		028-022	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-24	12NC28SS022	Sediment	7/19/2012 10:20	0 - 0.75	8270C SIM/DoD	TATW		028-022	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-24	12NC28SS022	Sediment	7/19/2012 10:20	0 - 0.75	9060	TATW		028-022	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-24	12NC28SS022	Sediment	7/19/2012 10:20	0 - 0.75	AK101	TATW		028-022	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-24	12NC28SS022	Sediment	7/19/2012 10:20	0 - 0.75	AK102 & 103	TATW		028-022	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-24	12NC28SS022	Sediment	7/19/2012 10:20	0 - 0.75	AK102/103	TATW		028-022	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-24	12NC28SS022	Sediment	7/19/2012 10:20	0 - 0.75	D 2216	TATW		028-022	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-25	12NC28SS023	Sediment	7/19/2012 10:35	0 - 0.75	6020	TATW		028-023	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-25	12NC28SS023	Sediment	7/19/2012 10:35	0 - 0.75	7471A	TATW		028-023	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-25	12NC28SS023	Sediment	7/19/2012 10:35	0 - 0.75	8082/DOD	TATW		028-023	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-25	12NC28SS023	Sediment	7/19/2012 10:35	0 - 0.75	8260B/DoD	TATW		028-023	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-25	12NC28SS023	Sediment	7/19/2012 10:35	0 - 0.75	8270C SIM/DoD	TATW		028-023	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-25	12NC28SS023	Sediment	7/19/2012 10:35	0 - 0.75	9060	TATW		028-023	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-25	12NC28SS023	Sediment	7/19/2012 10:35	0 - 0.75	AK101	TATW		028-023	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-25	12NC28SS023	Sediment	7/19/2012 10:35	0 - 0.75	AK102 & 103	TATW		028-023	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-25	12NC28SS023	Sediment	7/19/2012 10:35	0 - 0.75	AK102/103	TATW		028-023	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-25	12NC28SS023	Sediment	7/19/2012 10:35	0 - 0.75	D 2216	TATW	Lab Dup	028-023	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-26	12NC28SS024	Sediment	7/19/2012 10:55	0 - 2	6020	TATW	MS/MSD	028-024	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-26	12NC28SS024	Sediment	7/19/2012 10:55	0 - 2	7471A	TATW	MS/MSD	028-024	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-26	12NC28SS024	Sediment	7/19/2012 10:55	0 - 2	8082/DOD	TATW	MS/MSD	028-024	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-26	12NC28SS024	Sediment	7/19/2012 10:55	0 - 2	8260B/DoD	TATW	MS/MSD	028-024	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-26	12NC28SS024	Sediment	7/19/2012 10:55	0 - 2	8270C SIM/DoD	TATW	MS/MSD	028-024	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-26	12NC28SS024	Sediment	7/19/2012 10:55	0 - 2	9060	TATW	MS/MSD	028-024	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz

Site 28 Sample Summary (continued)

SDG number	Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth Interval (ft bgs)	Analytical Methods	Laboratory	QC	Location ID	SDG	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34102	580-34102-26	12NC28SS024	Sediment	7/19/2012 10:55	0 - 2	AK101	TATW	MS/MSD	028-024	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-26	12NC28SS024	Sediment	7/19/2012 10:55	0 - 2	AK102 & 103	TATW	MS/MSD	028-024	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-26	12NC28SS024	Sediment	7/19/2012 10:55	0 - 2	AK102/103	TATW	MS/MSD	028-024	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-26	12NC28SS024	Sediment	7/19/2012 10:55	0 - 2	D 2216	TATW		028-024	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-27	12NC28SS025	Sediment	7/19/2012 11:15	0 - 2	6020	TATW		028-025	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-27	12NC28SS025	Sediment	7/19/2012 11:15	0 - 2	7471A	TATW		028-025	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-27	12NC28SS025	Sediment	7/19/2012 11:15	0 - 2	8082/DOD	TATW		028-025	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-27	12NC28SS025	Sediment	7/19/2012 11:15	0 - 2	8260B/DoD	TATW		028-025	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-27	12NC28SS025	Sediment	7/19/2012 11:15	0 - 2	8270C SIM/DoD	TATW		028-025	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-27	12NC28SS025	Sediment	7/19/2012 11:15	0 - 2	9060	TATW		028-025	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-27	12NC28SS025	Sediment	7/19/2012 11:15	0 - 2	AK101	TATW		028-025	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-27	12NC28SS025	Sediment	7/19/2012 11:15	0 - 2	AK102 & 103	TATW		028-025	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-27	12NC28SS025	Sediment	7/19/2012 11:15	0 - 2	AK102/103	TATW		028-025	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-27	12NC28SS025	Sediment	7/19/2012 11:15	0 - 2	D 2216	TATW		028-025	580-34102	JC	Cool	072312-5	4_Days	Soil jar 16oz
580-34102	580-34102-28	12NC28SS026	Sediment	7/19/2012 11:30	0 - 2	6020	TATW		028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-28	12NC28SS026	Sediment	7/19/2012 11:30	0 - 2	7471A	TATW		028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-28	12NC28SS026	Sediment	7/19/2012 11:30	0 - 2	8082/DOD	TATW		028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-28	12NC28SS026	Sediment	7/19/2012 11:30	0 - 2	8260B/DoD	TATW		028-026	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-28	12NC28SS026	Sediment	7/19/2012 11:30	0 - 2	8270C SIM/DoD	TATW		028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-28	12NC28SS026	Sediment	7/19/2012 11:30	0 - 2	9060	TATW		028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-28	12NC28SS026	Sediment	7/19/2012 11:30	0 - 2	AK101	TATW		028-026	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-28	12NC28SS026	Sediment	7/19/2012 11:30	0 - 2	AK102 & 103	TATW		028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-28	12NC28SS026	Sediment	7/19/2012 11:30	0 - 2	AK102/103	TATW		028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-28	12NC28SS026	Sediment	7/19/2012 11:30	0 - 2	D 2216	TATW		028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-29	12NC28SS126	Sediment	7/19/2012 11:35	0 - 2	6020	TATW	Field Dup of SS026	028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-29	12NC28SS126	Sediment	7/19/2012 11:35	0 - 2	7471A	TATW	Field Dup of SS026	028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-29	12NC28SS126	Sediment	7/19/2012 11:35	0 - 2	8082/DOD	TATW	Field Dup of SS026	028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-29	12NC28SS126	Sediment	7/19/2012 11:35	0 - 2	8260B/DoD	TATW	Field Dup of SS026	028-026	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-29	12NC28SS126	Sediment	7/19/2012 11:35	0 - 2	8270C SIM/DoD	TATW	Field Dup of SS026	028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-29	12NC28SS126	Sediment	7/19/2012 11:35	0 - 2	9060	TATW	Field Dup of SS026	028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-29	12NC28SS126	Sediment	7/19/2012 11:35	0 - 2	AK101	TATW	Field Dup of SS026	028-026	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-29	12NC28SS126	Sediment	7/19/2012 11:35	0 - 2	AK102 & 103	TATW	Field Dup of SS026	028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-29	12NC28SS126	Sediment	7/19/2012 11:35	0 - 2	AK102/103	TATW	Field Dup of SS026	028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-29	12NC28SS126	Sediment	7/19/2012 11:35	0 - 2	D 2216	TATW	Field Dup of SS026	028-026	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-30	12NC28SS027	Sediment	7/19/2012 11:50	0 - 0.75	6020	TATW		028-027	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-30	12NC28SS027	Sediment	7/19/2012 11:50	0 - 0.75	7471A	TATW		028-027	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-30	12NC28SS027	Sediment	7/19/2012 11:50	0 - 0.75	8082/DOD	TATW		028-027	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-30	12NC28SS027	Sediment	7/19/2012 11:50	0 - 0.75	8260B/DoD	TATW		028-027	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-30	12NC28SS027	Sediment	7/19/2012 11:50	0 - 0.75	8270C SIM/DoD	TATW		028-027	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-30	12NC28SS027	Sediment	7/19/2012 11:50	0 - 0.75	9060	TATW		028-027	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-30	12NC28SS027	Sediment	7/19/2012 11:50	0 - 0.75	AK101	TATW		028-027	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-30	12NC28SS027	Sediment	7/19/2012 11:50	0 - 0.75	AK102 & 103	TATW		028-027	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-30	12NC28SS027	Sediment	7/19/2012 11:50	0 - 0.75	AK102/103	TATW		028-027	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-30	12NC28SS027	Sediment	7/19/2012 11:50	0 - 0.75	D 2216	TATW		028-027	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-31	12NC28SS028	Sediment	7/19/2012 14:05	0 - 1	6020	TATW		028-028	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-31	12NC28SS028	Sediment	7/19/2012 14:05	0 - 1	7471A	TATW		028-028	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-31	12NC28SS028	Sediment	7/19/2012 14:05	0 - 1	8082/DOD	TATW		028-028	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-31	12NC28SS028	Sediment	7/19/2012 14:05	0 - 1	8260B/DoD	TATW		028-028	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-31	12NC28SS028	Sediment	7/19/2012 14:05	0 - 1	8270C SIM/DoD	TATW		028-028	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-31	12NC28SS028	Sediment	7/19/2012 14:05	0 - 1	9060	TATW		028-028	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-31	12NC28SS028	Sediment	7/19/2012 14:05	0 - 1	AK101	TATW		028-028	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-31	12NC28SS028	Sediment	7/19/2012 14:05	0 - 1	AK102 & 103	TATW		028-028	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-31	12NC28SS028	Sediment	7/19/2012 14:05	0 - 1	AK102/103	TATW		028-028	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-31	12NC28SS028	Sediment	7/19/2012 14:05	0 - 1	D 2216	TATW		028-028	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-32	12NC28SS029	Sediment	7/19/2012 14:20	0 - 1.25	6020	TATW		028-029	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-32	12NC28SS029	Sediment	7/19/2012 14:20	0 - 1.25	7471A	TATW		028-029	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-32	12NC28SS029	Sediment	7/19/2012 14:20	0 - 1.25	8082/DOD	TATW		028-029	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-32	12NC28SS029	Sediment	7/19/2012 14:20	0 - 1.25	8260B/DoD	TATW		028-029	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-32	12NC28SS029	Sediment	7/19/2012 14:20	0 - 1.25	8270C SIM/DoD	TATW		028-029	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-32	12NC28SS029	Sediment	7/19/2012 14:20	0 - 1.25	9060	TATW		028-029	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-32	12NC28SS029	Sediment	7/19/2012 14:20	0 - 1.25	AK101	TATW		028-029	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-32	12NC28SS029	Sediment	7/19/2012 14:20	0 - 1.25	AK102 & 103	TATW		028-029	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-32	12NC28SS029	Sediment	7/19/2012 14:20	0 - 1.25	AK102/103	TATW		028-029	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-32	12NC28SS029	Sediment	7/19/2012 14:20	0 - 1.25	D 2216	TATW		028-029	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz

Site 28 Sample Summary (continued)

SDG number	Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth Interval (ft bgs)	Analytical Methods	Laboratory	QC	Location ID	SDG	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34102	580-34102-33	12NC28SS030	Sediment	7/19/2012 14:35	0 - 1.5	6020	TATW		028-030	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-33	12NC28SS030	Sediment	7/19/2012 14:35	0 - 1.5	7471A	TATW		028-030	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-33	12NC28SS030	Sediment	7/19/2012 14:35	0 - 1.5	8082/DOD	TATW		028-030	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-33	12NC28SS030	Sediment	7/19/2012 14:35	0 - 1.5	8260B/DoD	TATW		028-030	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-33	12NC28SS030	Sediment	7/19/2012 14:35	0 - 1.5	8270C SIM/DoD	TATW		028-030	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-33	12NC28SS030	Sediment	7/19/2012 14:35	0 - 1.5	9060	TATW		028-030	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-33	12NC28SS030	Sediment	7/19/2012 14:35	0 - 1.5	AK101	TATW		028-030	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-33	12NC28SS030	Sediment	7/19/2012 14:35	0 - 1.5	AK102 & 103	TATW		028-030	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-33	12NC28SS030	Sediment	7/19/2012 14:35	0 - 1.5	AK102/103	TATW		028-030	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-33	12NC28SS030	Sediment	7/19/2012 14:35	0 - 1.5	D 2216	TATW		028-030	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-34	12NC28SS031	Sediment	7/19/2012 14:55	0 - 1.25	6020	TATW		028-031	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-34	12NC28SS031	Sediment	7/19/2012 14:55	0 - 1.25	7471A	TATW		028-031	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-34	12NC28SS031	Sediment	7/19/2012 14:55	0 - 1.25	8082/DOD	TATW		028-031	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-34	12NC28SS031	Sediment	7/19/2012 14:55	0 - 1.25	8260B/DoD	TATW		028-031	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-34	12NC28SS031	Sediment	7/19/2012 14:55	0 - 1.25	8270C SIM/DoD	TATW		028-031	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-34	12NC28SS031	Sediment	7/19/2012 14:55	0 - 1.25	9060	TATW		028-031	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-34	12NC28SS031	Sediment	7/19/2012 14:55	0 - 1.25	AK101	TATW		028-031	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-34	12NC28SS031	Sediment	7/19/2012 14:55	0 - 1.25	AK102 & 103	TATW		028-031	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-34	12NC28SS031	Sediment	7/19/2012 14:55	0 - 1.25	AK102/103	TATW		028-031	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-34	12NC28SS031	Sediment	7/19/2012 14:55	0 - 1.25	D 2216	TATW		028-031	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-35	12NC28SS032	Sediment	7/19/2012 15:20	0 - 1	6020	TATW		028-032	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-35	12NC28SS032	Sediment	7/19/2012 15:20	0 - 1	7471A	TATW		028-032	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-35	12NC28SS032	Sediment	7/19/2012 15:20	0 - 1	8082/DOD	TATW		028-032	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-35	12NC28SS032	Sediment	7/19/2012 15:20	0 - 1	8260B/DoD	TATW		028-032	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-35	12NC28SS032	Sediment	7/19/2012 15:20	0 - 1	8270C SIM/DoD	TATW		028-032	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-35	12NC28SS032	Sediment	7/19/2012 15:20	0 - 1	9060	TATW		028-032	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-35	12NC28SS032	Sediment	7/19/2012 15:20	0 - 1	AK101	TATW		028-032	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-35	12NC28SS032	Sediment	7/19/2012 15:20	0 - 1	AK102 & 103	TATW		028-032	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-35	12NC28SS032	Sediment	7/19/2012 15:20	0 - 1	AK102/103	TATW		028-032	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-35	12NC28SS032	Sediment	7/19/2012 15:20	0 - 1	D 2216	TATW		028-032	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-36	12NC28SS033	Sediment	7/19/2012 15:30	0 - 0.75	6020	TATW		028-033	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-36	12NC28SS033	Sediment	7/19/2012 15:30	0 - 0.75	7471A	TATW		028-033	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-36	12NC28SS033	Sediment	7/19/2012 15:30	0 - 0.75	8082/DOD	TATW		028-033	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-36	12NC28SS033	Sediment	7/19/2012 15:30	0 - 0.75	8260B/DoD	TATW		028-033	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-36	12NC28SS033	Sediment	7/19/2012 15:30	0 - 0.75	8270C SIM/DoD	TATW		028-033	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-36	12NC28SS033	Sediment	7/19/2012 15:30	0 - 0.75	9060	TATW		028-033	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-36	12NC28SS033	Sediment	7/19/2012 15:30	0 - 0.75	AK101	TATW		028-033	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-36	12NC28SS033	Sediment	7/19/2012 15:30	0 - 0.75	AK102 & 103	TATW		028-033	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-36	12NC28SS033	Sediment	7/19/2012 15:30	0 - 0.75	AK102/103	TATW		028-033	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-36	12NC28SS033	Sediment	7/19/2012 15:30	0 - 0.75	D 2216	TATW		028-033	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-37	12NC28SS034	Sediment	7/19/2012 16:10	0 - 0.5	6020	TATW		028-034	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-37	12NC28SS034	Sediment	7/19/2012 16:10	0 - 0.5	7471A	TATW		028-034	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-37	12NC28SS034	Sediment	7/19/2012 16:10	0 - 0.5	8082/DOD	TATW		028-034	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-37	12NC28SS034	Sediment	7/19/2012 16:10	0 - 0.5	8260B/DoD	TATW		028-034	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-37	12NC28SS034	Sediment	7/19/2012 16:10	0 - 0.5	8270C SIM/DoD	TATW		028-034	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-37	12NC28SS034	Sediment	7/19/2012 16:10	0 - 0.5	9060	TATW		028-034	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-37	12NC28SS034	Sediment	7/19/2012 16:10	0 - 0.5	AK101	TATW		028-034	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-37	12NC28SS034	Sediment	7/19/2012 16:10	0 - 0.5	AK102 & 103	TATW		028-034	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-37	12NC28SS034	Sediment	7/19/2012 16:10	0 - 0.5	AK102/103	TATW		028-034	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-37	12NC28SS034	Sediment	7/19/2012 16:10	0 - 0.5	D 2216	TATW		028-034	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-38	12NC28SS035	Sediment	7/19/2012 16:25	0 - 0.75	6020	TATW		028-035	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-38	12NC28SS035	Sediment	7/19/2012 16:25	0 - 0.75	7471A	TATW		028-035	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-38	12NC28SS035	Sediment	7/19/2012 16:25	0 - 0.75	8082/DOD	TATW		028-035	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-38	12NC28SS035	Sediment	7/19/2012 16:25	0 - 0.75	8260B/DoD	TATW		028-035	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-38	12NC28SS035	Sediment	7/19/2012 16:25	0 - 0.75	8270C SIM/DoD	TATW		028-035	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-38	12NC28SS035	Sediment	7/19/2012 16:25	0 - 0.75	9060	TATW		028-035	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-38	12NC28SS035	Sediment	7/19/2012 16:25	0 - 0.75	AK101	TATW		028-035	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-38	12NC28SS035	Sediment	7/19/2012 16:25	0 - 0.75	AK102 & 103	TATW		028-035	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-38	12NC28SS035	Sediment	7/19/2012 16:25	0 - 0.75	AK102/103	TATW		028-035	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-38	12NC28SS035	Sediment	7/19/2012 16:25	0 - 0.75	D 2216	TATW		028-035	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-39	12NC28SS036	Sediment	7/19/2012 16:45	0 - 0.75	6020	TATW		028-036	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-39	12NC28SS036	Sediment	7/19/2012 16:45	0 - 0.75	7471A	TATW		028-036	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-39	12NC28SS036	Sediment	7/19/2012 16:45	0 - 0.75	8082/DOD	TATW		028-036	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-39	12NC28SS036	Sediment	7/19/2012 16:45	0 - 0.75	8260B/DoD	TATW		028-036	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol

Site 28 Sample Summary (continued)

SDG number	Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth Interval (ft bgs)	Analytical Methods	Laboratory	QC	Location ID	SDG	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34102	580-34102-39	12NC28SS036	Sediment	7/19/2012 16:45	0 - 0.75	8270C SIM/DoD	TATW		028-036	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-39	12NC28SS036	Sediment	7/19/2012 16:45	0 - 0.75	9060	TATW		028-036	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-39	12NC28SS036	Sediment	7/19/2012 16:45	0 - 0.75	AK101	TATW		028-036	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-39	12NC28SS036	Sediment	7/19/2012 16:45	0 - 0.75	AK102 & 103	TATW		028-036	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-39	12NC28SS036	Sediment	7/19/2012 16:45	0 - 0.75	AK102/103	TATW		028-036	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-39	12NC28SS036	Sediment	7/19/2012 16:45	0 - 0.75	D 2216	TATW	Lab Dup	028-036	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-40	12NC28SS037	Sediment	7/19/2012 17:10	0 - 0.5	6020	TATW		028-037	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-40	12NC28SS037	Sediment	7/19/2012 17:10	0 - 0.5	7471A	TATW		028-037	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-40	12NC28SS037	Sediment	7/19/2012 17:10	0 - 0.5	8082/DOD	TATW		028-037	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-40	12NC28SS037	Sediment	7/19/2012 17:10	0 - 0.5	8260B/DoD	TATW		028-037	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-40	12NC28SS037	Sediment	7/19/2012 17:10	0 - 0.5	8270C SIM/DoD	TATW		028-037	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-40	12NC28SS037	Sediment	7/19/2012 17:10	0 - 0.5	9060	TATW		028-037	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-40	12NC28SS037	Sediment	7/19/2012 17:10	0 - 0.5	AK101	TATW		028-037	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-40	12NC28SS037	Sediment	7/19/2012 17:10	0 - 0.5	AK102 & 103	TATW		028-037	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-40	12NC28SS037	Sediment	7/19/2012 17:10	0 - 0.5	AK102/103	TATW		028-037	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-40	12NC28SS037	Sediment	7/19/2012 17:10	0 - 0.5	D 2216	TATW		028-037	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-41	12NC28SS038	Sediment	7/20/2012 8:55	0 - 0.75	6020	TATW		028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-41	12NC28SS038	Sediment	7/20/2012 8:55	0 - 0.75	7471A	TATW		028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-41	12NC28SS038	Sediment	7/20/2012 8:55	0 - 0.75	8082/DOD	TATW		028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-41	12NC28SS038	Sediment	7/20/2012 8:55	0 - 0.75	8260B/DoD	TATW		028-038	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-41	12NC28SS038	Sediment	7/20/2012 8:55	0 - 0.75	8270C SIM/DoD	TATW		028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-41	12NC28SS038	Sediment	7/20/2012 8:55	0 - 0.75	9060	TATW		028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-41	12NC28SS038	Sediment	7/20/2012 8:55	0 - 0.75	AK101	TATW		028-038	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-41	12NC28SS038	Sediment	7/20/2012 8:55	0 - 0.75	AK102 & 103	TATW		028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-41	12NC28SS038	Sediment	7/20/2012 8:55	0 - 0.75	AK102/103	TATW		028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-41	12NC28SS038	Sediment	7/20/2012 8:55	0 - 0.75	D 2216	TATW		028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-42	12NC28SS138	Sediment	7/20/2012 9:00	0 - 0.75	6020	TATW	Field Dup of SS038	028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-42	12NC28SS138	Sediment	7/20/2012 9:00	0 - 0.75	7471A	TATW	Field Dup of SS038	028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-42	12NC28SS138	Sediment	7/20/2012 9:00	0 - 0.75	8082/DOD	TATW	Field Dup of SS038	028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-42	12NC28SS138	Sediment	7/20/2012 9:00	0 - 0.75	8260B/DoD	TATW	Field Dup of SS038	028-038	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-42	12NC28SS138	Sediment	7/20/2012 9:00	0 - 0.75	8270C SIM/DoD	TATW	Field Dup of SS038	028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-42	12NC28SS138	Sediment	7/20/2012 9:00	0 - 0.75	9060	TATW	Field Dup of SS038	028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-42	12NC28SS138	Sediment	7/20/2012 9:00	0 - 0.75	AK101	TATW	Field Dup of SS038	028-038	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-42	12NC28SS138	Sediment	7/20/2012 9:00	0 - 0.75	AK102 & 103	TATW	Field Dup of SS038	028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-42	12NC28SS138	Sediment	7/20/2012 9:00	0 - 0.75	AK102/103	TATW	Field Dup of SS038	028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-42	12NC28SS138	Sediment	7/20/2012 9:00	0 - 0.75	D 2216	TATW	Field Dup of SS038	028-038	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-43	12NC28SS039	Sediment	7/20/2012 9:25	0 - 0.75	6020	TATW		028-039	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-43	12NC28SS039	Sediment	7/20/2012 9:25	0 - 0.75	7471A	TATW		028-039	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-43	12NC28SS039	Sediment	7/20/2012 9:25	0 - 0.75	8082/DOD	TATW		028-039	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-43	12NC28SS039	Sediment	7/20/2012 9:25	0 - 0.75	8260B/DoD	TATW		028-039	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-43	12NC28SS039	Sediment	7/20/2012 9:25	0 - 0.75	8270C SIM/DoD	TATW		028-039	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-43	12NC28SS039	Sediment	7/20/2012 9:25	0 - 0.75	9060	TATW		028-039	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-43	12NC28SS039	Sediment	7/20/2012 9:25	0 - 0.75	AK101	TATW		028-039	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-43	12NC28SS039	Sediment	7/20/2012 9:25	0 - 0.75	AK102 & 103	TATW		028-039	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-43	12NC28SS039	Sediment	7/20/2012 9:25	0 - 0.75	AK102/103	TATW		028-039	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-43	12NC28SS039	Sediment	7/20/2012 9:25	0 - 0.75	D 2216	TATW		028-039	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-44	12NC28SS040	Sediment	7/20/2012 9:40	0 - 0.75	6020	TATW		028-040	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-44	12NC28SS040	Sediment	7/20/2012 9:40	0 - 0.75	7471A	TATW		028-040	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-44	12NC28SS040	Sediment	7/20/2012 9:40	0 - 0.75	8082/DOD	TATW		028-040	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-44	12NC28SS040	Sediment	7/20/2012 9:40	0 - 0.75	8260B/DoD	TATW		028-040	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-44	12NC28SS040	Sediment	7/20/2012 9:40	0 - 0.75	8270C SIM/DoD	TATW		028-040	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-44	12NC28SS040	Sediment	7/20/2012 9:40	0 - 0.75	9060	TATW		028-040	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-44	12NC28SS040	Sediment	7/20/2012 9:40	0 - 0.75	AK101	TATW		028-040	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-44	12NC28SS040	Sediment	7/20/2012 9:40	0 - 0.75	AK102 & 103	TATW		028-040	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-44	12NC28SS040	Sediment	7/20/2012 9:40	0 - 0.75	AK102/103	TATW		028-040	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-44	12NC28SS040	Sediment	7/20/2012 9:40	0 - 0.75	D 2216	TATW		028-040	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-45	12NC28SS041	Sediment	7/20/2012 10:10	0 - 0.75	6020	TATW		028-041	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-45	12NC28SS041	Sediment	7/20/2012 10:10	0 - 0.75	7471A	TATW		028-041	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-45	12NC28SS041	Sediment	7/20/2012 10:10	0 - 0.75	8082/DOD	TATW		028-041	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-45	12NC28SS041	Sediment	7/20/2012 10:10	0 - 0.75	8260B/DoD	TATW		028-041	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-45	12NC28SS041	Sediment	7/20/2012 10:10	0 - 0.75	8270C SIM/DoD	TATW		028-041	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-45	12NC28SS041	Sediment	7/20/2012 10:10	0 - 0.75	9060	TATW		028-041	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-45	12NC28SS041	Sediment	7/20/2012 10:10	0 - 0.75	AK101	TATW		028-041	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-45	12NC28SS041	Sediment	7/20/2012 10:10	0 - 0.75	AK102 & 103	TATW		028-041	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz

Site 28 Sample Summary (continued)

SDG number	Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth Interval (ft bgs)	Analytical Methods	Laboratory	QC	Location ID	SDG	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34102	580-34102-45	12NC28SS041	Sediment	7/20/2012 10:10	0 - 0.75	AK102/103	TATW		028-041	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-45	12NC28SS041	Sediment	7/20/2012 10:10	0 - 0.75	D 2216	TATW		028-041	580-34102	JC	Cool	072312-6	4_Days	Soil jar 16oz
580-34102	580-34102-46	12NC28SS042	Sediment	7/20/2012 10:20	0 - 1	6020	TATW		028-042	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-46	12NC28SS042	Sediment	7/20/2012 10:20	0 - 1	7471A	TATW		028-042	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-46	12NC28SS042	Sediment	7/20/2012 10:20	0 - 1	8082/DOD	TATW		028-042	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-46	12NC28SS042	Sediment	7/20/2012 10:20	0 - 1	8260B/DoD	TATW		028-042	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-46	12NC28SS042	Sediment	7/20/2012 10:20	0 - 1	8270C SIM/DoD	TATW		028-042	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-46	12NC28SS042	Sediment	7/20/2012 10:20	0 - 1	9060	TATW		028-042	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-46	12NC28SS042	Sediment	7/20/2012 10:20	0 - 1	AK101	TATW		028-042	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-46	12NC28SS042	Sediment	7/20/2012 10:20	0 - 1	AK102 & 103	TATW		028-042	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-46	12NC28SS042	Sediment	7/20/2012 10:20	0 - 1	AK102/103	TATW		028-042	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-46	12NC28SS042	Sediment	7/20/2012 10:20	0 - 1	D 2216	TATW		028-042	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-47	12NC28SS043	Sediment	7/20/2012 10:40	0 - 1	6020	TATW		028-043	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-47	12NC28SS043	Sediment	7/20/2012 10:40	0 - 1	7471A	TATW		028-043	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-47	12NC28SS043	Sediment	7/20/2012 10:40	0 - 1	8082/DOD	TATW		028-043	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-47	12NC28SS043	Sediment	7/20/2012 10:40	0 - 1	8260B/DoD	TATW		028-043	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-47	12NC28SS043	Sediment	7/20/2012 10:40	0 - 1	8270C SIM/DoD	TATW		028-043	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-47	12NC28SS043	Sediment	7/20/2012 10:40	0 - 1	9060	TATW		028-043	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-47	12NC28SS043	Sediment	7/20/2012 10:40	0 - 1	AK101	TATW		028-043	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-47	12NC28SS043	Sediment	7/20/2012 10:40	0 - 1	AK102 & 103	TATW		028-043	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-47	12NC28SS043	Sediment	7/20/2012 10:40	0 - 1	AK102/103	TATW		028-043	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-47	12NC28SS043	Sediment	7/20/2012 10:40	0 - 1	D 2216	TATW		028-043	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-48	12NC28SS044	Sediment	7/20/2012 11:40	0 - 1.5	6020	TATW		028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-48	12NC28SS044	Sediment	7/20/2012 11:40	0 - 1.5	7471A	TATW		028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-48	12NC28SS044	Sediment	7/20/2012 11:40	0 - 1.5	8082/DOD	TATW		028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-48	12NC28SS044	Sediment	7/20/2012 11:40	0 - 1.5	8260B/DoD	TATW		028-044	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-48	12NC28SS044	Sediment	7/20/2012 11:40	0 - 1.5	8270C SIM/DoD	TATW		028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-48	12NC28SS044	Sediment	7/20/2012 11:40	0 - 1.5	9060	TATW		028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-48	12NC28SS044	Sediment	7/20/2012 11:40	0 - 1.5	AK101	TATW		028-044	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-48	12NC28SS044	Sediment	7/20/2012 11:40	0 - 1.5	AK102 & 103	TATW		028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-48	12NC28SS044	Sediment	7/20/2012 11:40	0 - 1.5	AK102/103	TATW		028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-48	12NC28SS044	Sediment	7/20/2012 11:40	0 - 1.5	D 2216	TATW		028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-49	12NC28SS144	Sediment	7/20/2012 11:45	0 - 1.5	6020	TATW	Field dup of SS044	028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-49	12NC28SS144	Sediment	7/20/2012 11:45	0 - 1.5	7471A	TATW	Field dup of SS044	028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-49	12NC28SS144	Sediment	7/20/2012 11:45	0 - 1.5	8082/DOD	TATW	Field dup of SS044	028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-49	12NC28SS144	Sediment	7/20/2012 11:45	0 - 1.5	8260B/DoD	TATW	Field dup of SS044	028-044	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-49	12NC28SS144	Sediment	7/20/2012 11:45	0 - 1.5	8270C SIM/DoD	TATW	Field dup of SS044	028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-49	12NC28SS144	Sediment	7/20/2012 11:45	0 - 1.5	9060	TATW	Field dup of SS044	028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-49	12NC28SS144	Sediment	7/20/2012 11:45	0 - 1.5	AK101	TATW	Field dup of SS044	028-044	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-49	12NC28SS144	Sediment	7/20/2012 11:45	0 - 1.5	AK102 & 103	TATW	Field dup of SS044	028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-49	12NC28SS144	Sediment	7/20/2012 11:45	0 - 1.5	AK102/103	TATW	Field dup of SS044	028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-49	12NC28SS144	Sediment	7/20/2012 11:45	0 - 1.5	D 2216	TATW	Field dup of SS044	028-044	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-50	12NC28SS045	Sediment	7/20/2012 13:50	0 - 1.25	6020	TATW		028-045	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-50	12NC28SS045	Sediment	7/20/2012 13:50	0 - 1.25	7471A	TATW		028-045	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-50	12NC28SS045	Sediment	7/20/2012 13:50	0 - 1.25	8082/DOD	TATW		028-045	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-50	12NC28SS045	Sediment	7/20/2012 13:50	0 - 1.25	8260B/DoD	TATW		028-045	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-50	12NC28SS045	Sediment	7/20/2012 13:50	0 - 1.25	8270C SIM/DoD	TATW		028-045	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-50	12NC28SS045	Sediment	7/20/2012 13:50	0 - 1.25	9060	TATW		028-045	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-50	12NC28SS045	Sediment	7/20/2012 13:50	0 - 1.25	AK101	TATW		028-045	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-50	12NC28SS045	Sediment	7/20/2012 13:50	0 - 1.25	AK102 & 103	TATW		028-045	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-50	12NC28SS045	Sediment	7/20/2012 13:50	0 - 1.25	AK102/103	TATW		028-045	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-50	12NC28SS045	Sediment	7/20/2012 13:50	0 - 1.25	D 2216	TATW		028-045	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-51	12NC28SS046	Sediment	7/20/2012 14:10	0 - 1	6020	TATW		028-046	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-51	12NC28SS046	Sediment	7/20/2012 14:10	0 - 1	7471A	TATW		028-046	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-51	12NC28SS046	Sediment	7/20/2012 14:10	0 - 1	8082/DOD	TATW		028-046	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-51	12NC28SS046	Sediment	7/20/2012 14:10	0 - 1	8260B/DoD	TATW		028-046	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-51	12NC28SS046	Sediment	7/20/2012 14:10	0 - 1	8270C SIM/DoD	TATW		028-046	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-51	12NC28SS046	Sediment	7/20/2012 14:10	0 - 1	9060	TATW		028-046	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-51	12NC28SS046	Sediment	7/20/2012 14:10	0 - 1	AK101	TATW		028-046	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-51	12NC28SS046	Sediment	7/20/2012 14:10	0 - 1	AK102 & 103	TATW		028-046	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-51	12NC28SS046	Sediment	7/20/2012 14:10	0 - 1	AK102/103	TATW		028-046	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-51	12NC28SS046	Sediment	7/20/2012 14:10	0 - 1	D 2216	TATW		028-046	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-52	12NC28SS047	Sediment	7/20/2012 14:25	0 - 1	6020	TATW		028-047	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-52	12NC28SS047	Sediment	7/20/2012 14:25	0 - 1	7471A	TATW		028-047	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz

Site 28 Sample Summary (continued)

SDG number	Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth Interval (ft bgs)	Analytical Methods	Laboratory	QC	Location ID	SDG	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34102	580-34102-52	12NC28SS047	Sediment	7/20/2012 14:25	0 - 1	8082/DOD	TATW		028-047	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-52	12NC28SS047	Sediment	7/20/2012 14:25	0 - 1	8260B/DoD	TATW		028-047	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-52	12NC28SS047	Sediment	7/20/2012 14:25	0 - 1	8270C SIM/DoD	TATW		028-047	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-52	12NC28SS047	Sediment	7/20/2012 14:25	0 - 1	9060	TATW		028-047	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-52	12NC28SS047	Sediment	7/20/2012 14:25	0 - 1	AK101	TATW		028-047	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-52	12NC28SS047	Sediment	7/20/2012 14:25	0 - 1	AK102 & 103	TATW		028-047	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-52	12NC28SS047	Sediment	7/20/2012 14:25	0 - 1	AK102/103	TATW		028-047	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-52	12NC28SS047	Sediment	7/20/2012 14:25	0 - 1	D 2216	TATW		028-047	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-53	12NC28SS147	Sediment	7/20/2012 14:30	0 - 1	6020	TATW	Field Dup of SS047	028-047	580-34102		Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-53	12NC28SS147	Sediment	7/20/2012 14:30	0 - 1	7471A	TATW	Field Dup of SS047	028-047	580-34102		Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-53	12NC28SS147	Sediment	7/20/2012 14:30	0 - 1	8082/DOD	TATW	Field Dup of SS047	028-047	580-34102		Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-53	12NC28SS147	Sediment	7/20/2012 14:30	0 - 1	8260B/DoD	TATW	Field Dup of SS047	028-047	580-34102		Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-53	12NC28SS147	Sediment	7/20/2012 14:30	0 - 1	8270C SIM/DoD	TATW	Field Dup of SS047	028-047	580-34102		Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-53	12NC28SS147	Sediment	7/20/2012 14:30	0 - 1	9060	TATW	Field Dup of SS047	028-047	580-34102		Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-53	12NC28SS147	Sediment	7/20/2012 14:30	0 - 1	AK101	TATW	Field Dup of SS047	028-047	580-34102		Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-53	12NC28SS147	Sediment	7/20/2012 14:30	0 - 1	AK102 & 103	TATW	Field Dup of SS047	028-047	580-34102		Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-53	12NC28SS147	Sediment	7/20/2012 14:30	0 - 1	AK102/103	TATW	Field Dup of SS047	028-047	580-34102		Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-53	12NC28SS147	Sediment	7/20/2012 14:30	0 - 1	D 2216	TATW	Field Dup of SS047	028-047	580-34102		Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-54	12NC28SS048	Sediment	7/20/2012 14:55	0 - 1.5	6020	TATW		028-048	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-54	12NC28SS048	Sediment	7/20/2012 14:55	0 - 1.5	7471A	TATW		028-048	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-54	12NC28SS048	Sediment	7/20/2012 14:55	0 - 1.5	8082/DOD	TATW		028-048	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-54	12NC28SS048	Sediment	7/20/2012 14:55	0 - 1.5	8260B/DoD	TATW		028-048	580-34102	JC	Methanol	072312-5	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-54	12NC28SS048	Sediment	7/20/2012 14:55	0 - 1.5	8270C SIM/DoD	TATW		028-048	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-54	12NC28SS048	Sediment	7/20/2012 14:55	0 - 1.5	9060	TATW		028-048	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-54	12NC28SS048	Sediment	7/20/2012 14:55	0 - 1.5	AK101	TATW		028-048	580-34102	JC	Methanol	072312-5	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-54	12NC28SS048	Sediment	7/20/2012 14:55	0 - 1.5	AK102 & 103	TATW		028-048	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-54	12NC28SS048	Sediment	7/20/2012 14:55	0 - 1.5	AK102/103	TATW		028-048	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-54	12NC28SS048	Sediment	7/20/2012 14:55	0 - 1.5	D 2216	TATW		028-048	580-34102	JC	Cool	072312-7	4_Days	Soil jar 16oz
580-34102	580-34102-55	12NC28SS049	Sediment	7/20/2012 15:10	0 - 1	6020	TATW		028-049	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-55	12NC28SS049	Sediment	7/20/2012 15:10	0 - 1	7471A	TATW		028-049	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-55	12NC28SS049	Sediment	7/20/2012 15:10	0 - 1	8082/DOD	TATW		028-049	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-55	12NC28SS049	Sediment	7/20/2012 15:10	0 - 1	8260B/DoD	TATW		028-049	580-34102	JC	Methanol	072312-5	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-55	12NC28SS049	Sediment	7/20/2012 15:10	0 - 1	8270C SIM/DoD	TATW		028-049	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-55	12NC28SS049	Sediment	7/20/2012 15:10	0 - 1	9060	TATW		028-049	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-55	12NC28SS049	Sediment	7/20/2012 15:10	0 - 1	AK101	TATW		028-049	580-34102	JC	Methanol	072312-5	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-55	12NC28SS049	Sediment	7/20/2012 15:10	0 - 1	AK102 & 103	TATW		028-049	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-55	12NC28SS049	Sediment	7/20/2012 15:10	0 - 1	AK102/103	TATW		028-049	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-55	12NC28SS049	Sediment	7/20/2012 15:10	0 - 1	D 2216	TATW		028-049	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-56	12NC28SS050	Sediment	7/20/2012 15:20	0 - 0.75	6020	TATW	MS/MSD	028-050	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-56	12NC28SS050	Sediment	7/20/2012 15:20	0 - 0.75	7471A	TATW	MS/MSD	028-050	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-56	12NC28SS050	Sediment	7/20/2012 15:20	0 - 0.75	8082/DOD	TATW	MS/MSD	028-050	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-56	12NC28SS050	Sediment	7/20/2012 15:20	0 - 0.75	8260B/DoD	TATW	MS/MSD	028-050	580-34102	JC	Methanol	072312-5	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-56	12NC28SS050	Sediment	7/20/2012 15:20	0 - 0.75	8270C SIM/DoD	TATW	MS/MSD	028-050	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-56	12NC28SS050	Sediment	7/20/2012 15:20	0 - 0.75	9060	TATW	MS/MSD	028-050	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-56	12NC28SS050	Sediment	7/20/2012 15:20	0 - 0.75	AK101	TATW	MS/MSD	028-050	580-34102	JC	Methanol	072312-5	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-56	12NC28SS050	Sediment	7/20/2012 15:20	0 - 0.75	AK102 & 103	TATW	MS/MSD	028-050	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-56	12NC28SS050	Sediment	7/20/2012 15:20	0 - 0.75	AK102/103	TATW	MS/MSD	028-050	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-56	12NC28SS050	Sediment	7/20/2012 15:20	0 - 0.75	D 2216	TATW		028-050	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-57	12NC28SS051	Sediment	7/20/2012 15:40	0 - 1	6020	TATW		028-051	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-57	12NC28SS051	Sediment	7/20/2012 15:40	0 - 1	7471A	TATW		028-051	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-57	12NC28SS051	Sediment	7/20/2012 15:40	0 - 1	8082/DOD	TATW		028-051	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-57	12NC28SS051	Sediment	7/20/2012 15:40	0 - 1	8260B/DoD	TATW		028-051	580-34102	JC	Methanol	072312-5	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-57	12NC28SS051	Sediment	7/20/2012 15:40	0 - 1	8270C SIM/DoD	TATW		028-051	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-57	12NC28SS051	Sediment	7/20/2012 15:40	0 - 1	9060	TATW		028-051	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-57	12NC28SS051	Sediment	7/20/2012 15:40	0 - 1	AK101	TATW		028-051	580-34102	JC	Methanol	072312-5	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-57	12NC28SS051	Sediment	7/20/2012 15:40	0 - 1	AK102 & 103	TATW		028-051	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-57	12NC28SS051	Sediment	7/20/2012 15:40	0 - 1	AK102/103	TATW		028-051	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-57	12NC28SS051	Sediment	7/20/2012 15:40	0 - 1	D 2216	TATW		028-051	580-34102	JC	Cool	072312-8	4_Days	Soil jar 16oz
580-34102	580-34102-58	12NC28Rinsate	Water	7/20/2012 17:00		6020	TATW	Equip Blank	28Rinsate	580-34102	JC	Nitric Acid	072312-8	4_Days	Plastic 250ml - with Nitric Acid
580-34102	580-34102-58	12NC28Rinsate	Water	7/20/2012 17:00		7470A	TATW	Equip Blank	28Rinsate	580-34102	JC	Nitric Acid	072312-8	4_Days	Plastic 250ml - with Nitric Acid
580-34102	580-34102-58	12NC28Rinsate	Water	7/20/2012 17:00		8082	TATW	Equip Blank	28Rinsate	580-34102	JC	Cool	072312-8	4_Days	Amber Glass 1 liter - unpreserv
580-34102	580-34102-58	12NC28Rinsate	Water	7/20/2012 17:00		8260B/DoD	TATW	Equip Blank	28Rinsate	580-34102	JC	Hydrochloric Acid	072312-7	4_Days	Voa Vial 40ml - Hydrochloric Ac
580-34102	580-34102-58	12NC28Rinsate	Water	7/20/2012 17:00		8270C SIM/DoD	TATW	Equip Blank	28Rinsate	580-34102	JC	Cool	072312-8	4_Days	Amber Glass 1 liter - unpreserv
580-34102	580-34102-58	12NC28Rinsate	Water	7/20/2012 17:00		AK101	TATW	Equip Blank	28Rinsate	580-34102	JC	Hydrochloric Acid	072312-8	4_Days	Voa Vial 40ml - Hydrochloric Ac

Site 28 Sample Summary (continued)

SDG number	Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth Interval (ft bgs)	Analytical Methods	Laboratory	QC	Location ID	SDG	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34102	580-34102-58	12NC28Rinsate	Water	7/20/2012 17:00		AK102 & 103	TATW	Equip Blank	28Rinsate	580-34102	JC	Hydrochloric Acid	072312-8	4_Days	Amber Glass 1 liter - Hydrochlo
580-34102	580-34102-59	072312TripBlank1	Solid	7/23/2012 8:00		8260B/DoD	TATW	Trip Blank	TripBlank1	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-59	072312TripBlank1	Solid	7/23/2012 8:00		AK101	TATW	Trip Blank	TripBlank1	580-34102	JC	Methanol	072312-2	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-60	072312TripBlank2	Solid	7/23/2012 8:00		8260B/DoD	TATW	Trip Blank	TripBlank2	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-60	072312TripBlank2	Solid	7/23/2012 8:00		AK101	TATW	Trip Blank	TripBlank2	580-34102	JC	Methanol	072312-3	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-61	072312TripBlank3	Solid	7/23/2012 8:00		8260B/DoD	TATW	Trip Blank	TripBlank3	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-61	072312TripBlank3	Solid	7/23/2012 8:00		AK101	TATW	Trip Blank	TripBlank3	580-34102	JC	Methanol	072312-4	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-62	072312TripBlank4	Solid	7/23/2012 8:00		8260B/DoD	TATW	Trip Blank	TripBlank4	580-34102	JC	Methanol	072312-5	4_Days	Soil jar 4oz - with Methanol
580-34102	580-34102-62	072312TripBlank4	Solid	7/23/2012 8:00		AK101	TATW	Trip Blank	TripBlank4	580-34102	JC	Methanol	072312-5	4_Days	Soil jar 4oz - with Methanol

APPENDIX E

Site 28 Phase I Sediment Removal Action,
Minutes of September 7, 2012, Teleconference,
ADEC Email Granting Tentative Approval to
Implement the Phase I Sediment Removal Actions

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

111 W. 16th Avenue, Third Floor
Anchorage, AK 99501
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NE Cape Site 28 Phase I Sediment Removal Action
Minutes of Teleconference
September 7, 2012 – 2:30 p.m.

Participants:

USACE: Carey Cossaboom, Aaron Shewman
ADEC: Curtis Dunkin
Bristol: Greg Jarrell, Steve Johnson, Julie Clark

- Purpose of teleconference is to address some of ADEC's comments on the Site 28 Technical Memorandum (Tech Memo) Addendum and the Phase I sediment removal action. The comments need to be resolved before proceeding with the sediment removal action.
- **ADEC Comment 1:** The sediment mitigation control(s) referenced in section 5.0 (stated in the May 2012 NEC SWPPP as being a silt fence, is not adequate for the Phase I removal. Due to the large amounts of potential contaminated sediment migration, a more extensive sediment control/settling system should be proposed (incl. absorbent booms). Because it may not be feasible/practical to obtain in situ sampling results, the sediment and contaminant migration monitoring and mitigation measures need to be adequate. While the proposed three surface water samples (pre/during/and post removal activities) are necessary, they provide no mitigation. More water samples should be collected at intervals during removal to determine what concentrations of contaminants (if any) may have migrated off site.

  Discussion:
  - Bristol describes the construction of the sediment trap for sediment mitigation. The trap is an in-stream device consisting of a metal box that sits on the bottom of the creek. The box will be filled with straw wattles and connect with other filtration such as booms, to prevent downstream migration of sediment during active removal operations.
  - The following text will be added to Section 5 of the Tech Memo Addendum: "The sediment trap will consist of a metal box placed across the stream channel that contains straw wattles and other filtration material such as sorbent boom."
  - Regarding surface water samples to be collected during the removal effort, Curtis would like to have more samples collected during active sediment removal.
  - Carey says USACE is amenable to adding more samples and would work on a contract modification for the additional samples.
  - Greg says that everyone agrees on the pre- and post-removal surface water samples (pre-removal samples collected once at three different locations downstream of the sediment trap, and post-removal samples collected once at the same three locations), but we need to determine at what frequency surface water samples will be collected during active removal. Greg proposes two per day.
  - Curtis thinks more samples may be needed, depending on the duration of disturbance.
  - Steve suggests a goal of one surface water sample collected per every 1-2 hours of disturbance.
  - Curtis would like to see one sample collected every hour, though if visual observations suggested that contaminants were not migrating off-site, the frequency could be reduced.
  - Carey thinks a sample frequency of one per hour is overkill, and would like to limit the samples to a maximum of three per day.
  - Project team agrees. The following text will be added to Section 5 of the Tech Memo Addendum: "During active sediment removal operations, surface water samples will be

collected at one location immediately downstream of the sediment trap to confirm that the operations are not adversely affecting water quality downstream of the sediment trap. The field team will visually observe and document water conditions (such as turbidity) downstream of the sediment trap during active sediment removal. One surface water sample will be collected per every 1-2 hours of disturbance based on the visual observations, with samples collected at a higher frequency if disturbances downstream of the sediment trap are observed. A maximum of 3 surface water samples will be collected per day."

- **ADEC Comment 2:** Section 4.3.1.2 re: the discussion about the use of the Silica Gel cleanup method to determine whether cleanup goals are met will require revision; ADEC did not approve the SG method to be utilized for confirmation sampling for this removal action.

  Discussion:
  - The text will be revised to make it clear that the silica gel-treated results will not be used unless the ADEC agrees that it is appropriate.
- **ADEC Comment 3:** Re: the proposal in section 5.0 that states that depth of sediment removal will not exceed 2 ft. in any removal area, based on documentation provided in the draft 2012 TM, there were no areas where mapped sediment depth exceeded 2ft; therefore this should not be a concern. However, ADEC requests that all contaminated material that is defined for the purposes of this project as sediment, be removed from the areas where the project team agrees to remove sediment; i.e. if 2.5 ft. of sediment is encountered then removal should not stop at 2 ft.

  Discussion:
  - Bristol does not have a problem with removal deeper than 2 feet, but there is the potential issue of headcutting. Carey added that contamination typically does not exceed 2 feet in historical sediment sampling so going deeper is not warranted. We would prefer to have sediment to use for confirmation samples. Bristol will add text to the Tech Memo Addendum text stating that we don't want to create more damage to the site by headcutting and that sediment removal shouldn't extend beyond 2 feet.
  - Aaron is still concerned about headcutting, particularly in the stream bed area. Discretion will need to be used in the field to avoid headcutting.
  - If any problems such as headcutting are observed during the sediment removal, the field crew will stop operations and discuss the problem with the project team.
  - Discussion about confirmation sampling following sediment removal. Confirmation sampling is an option that has not yet been awarded.
  - Curtis says that if all sediment has been removed from an area, there is no need for any confirmation samples to be collected since the matrix has been removed. Confirmation samples will only be collected sediment remains in an area after the sediment removal operations.
  - Carey will exercise the confirmation sampling option in case confirmation samples need to be collected this year.
- **ADEC Comment 4:** What are the general components of the two methods being proposed to evaluate for the sediment removal discussed in section 5.0? Are excavation w/ equipment and suction dredging considered the two different proposed methods?

  Discussion:
  - Excavation and dredging are considered the two different methods.
  - Carey mentions his comment regarding dewatering sediments removed by excavator, how will that be done?
  - Sediments removed by excavator will be dewatered as much as possible at the time of removal by allowing water to naturally flow out of the excavator bucket via gravity. If further dewatering is needed, the sediment will be placed in a lined area separate from the Geotubes.

  - Curtis asks where this dewatering area would be located.
  - Due to the dynamic nature of activities at the MOC, it is uncertain where this dewatering area would be located at this time. Text will be added to the Tech Memo Addendum stating that if a lined dewatering area for the sediment removed by excavator is necessary, the location of the dewatering area will be discussed and agreed upon by the project team.

- **ADEC Comment 5:** Section 5.0 states possible use of flocculants - confirm whether or not these will be used since they can cause problems with sample analyses. Previous communication w/ Bristol confirmed to ADEC that no flocculants or other chemicals or additives would be applied to the sediment and water throughout the process; except for treatment of water in the impoundments prior to discharge per the water quality requirements outlined in the permit.

  Discussion:
  - Bristol emphasizes that flocculants will not be used during the Phase I sediment removal.
- **ADEC Comment 6:** What will be the estimated volumes of the impoundments and how often will sampling occur; i.e. once per day regardless or frequency/gallons? What is the actual treatment process proposed and which location is proposed to discharge the treated water? Will the water impoundment areas be deconstructed or overwintered? Will soil samples be collected preconstruction and post deconstruction of the water processing area?

  Discussion:
  - Since the impoundments have not been built, it is unknown at this time the estimated volumes of water the impoundments will hold. The size of the impoundments can be adjusted based on conditions observed in the field.
  - Curtis asks if each impoundment was a decision unit, as far as collecting analytical samples from the impoundment water.
  - Bristol says that each impoundment will be a decision unit.
  - Curtis requests that a volume estimate of the impoundment areas be added to the text. Once determined, Bristol will add this information.
  - Curtis asks what analytes the impoundment water will be sampled for. TAH and TAqH only? Bristol responds that the impoundment water will be analyzed for all Site 28 COCs.
  - Bristol will collect one pre-construction MI sample at the water processing area, as well as one post-construction MI sample after the water processing area is removed.
- **ADEC Comment 7:** Re: the proposed overwintering of the geo tube, will the impoundment area be sufficient in the event of tube failure; re: the proposal to overwinter?

  Discussion:
  - The impoundment area will be constructed such that all material can be contained in the impoundment in the event of tube failure.
- **ADEC Comment 7:** ADEC concurs w/ the four areas proposed for the Phase I sediment removal which are stated in section 5.0.

  Discussion:
  - Aaron recommends that "Sediment Removal Area 3" be slightly enlarged to include sediment sample location 12NC28SS028. Bristol will include 12NC28SS028 in Sediment Removal Area 3.
- Curtis will have formal comments back to the project team sometime next week. However, sediment removal field activities can proceed based on the discussion from this teleconference.

Site 28 Phase I Sediment Removal Teleconference adjourned at 3:15 p.m.
Bristol submitted minutes to Carey Cossaboom on 9/19/12

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

October 31, 2012

Carey Cossaboom
US Army Corps of Engineers USACE, AK District
CEPOA-PM-ESP
P.O. Box 6898
JBER, AK 99506-0898

Attn: Mr. Carey Cossaboom

Re: ADEC Review Comments on the Draft August 2012 Northeast Cape Site 28 Technical Memorandum Addendum and the September 07, 2012 Minutes of Teleconference

Dear Mr. Cossaboom;

Thank you for providing the Alaska Department of Environmental Conservation's Contaminated Sites Program (ADEC) with a copy of the Draft Northeast Cape Site 28 Technical Memorandum Addendum which is dated August 2012 and was received by ADEC on August 28, 2012. Thank you also for providing ADEC an electronic copy of the draft addendum and associated files which ADEC received on October 25, 2012. ADEC previously completed its general review of the draft work plan and submitted its initial comments via email (attached with this letter) to the Corps on September 07, 2012 for review. ADEC provided additional comments on the draft addendum and September 07, 2012 Minutes of Teleconference via email to the Corps for review on October 31, 2012. The additional comments are also attached with this letter for the Corps' records.

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

cc: Greg Jarrell and Julie Clark – BERS (via email)

G:\SPAR\SPAR-CS\38 Case Files (Contaminated Sites)\475 West Coast (Other)\475.38.013 Northeast Cape St Lawrence Island FUDS DERP\475 38 013 NEC Draft12 Site 28 TM Comlet 10-31-12.Docx

Clark, Julie

From: Dunkin, Curtis S (DEC) [curtis.dunkin@alaska.gov]
Sent: Friday, September 07, 2012 3:35 PM
To: 'Cossaboom, Carey C POA'; Jarrell, Greg; Clark, Julie; Johnson, Steve
Cc: 'Broyles, Ronald S POA'; 'Shewman, Aaron F POA'
Subject: ADEC's comments on the draft August 2012 Northeast Cape Site 28 Tech Memo and Site 28 Phase I Sediment Removal Work Plan

Carey, and project team, thank you for today's teleconference to discuss the draft 2012 Site 28 TM and Phase I Sediment RA. ADEC submitted the comments in the email below earlier today after reviewing both documents. Please note that the comments below were focused on identifying ADEC's concerns with regards to finalizing the sediment removal action effort. ADEC does have other minor comments on the Site 28 TM which I'll forward as additional comments to the team early next week along with the comments below in a formal template for the Corps' records. Per the teleconference today, the project team discussed oral responses to ADEC's comments below which according to Bristol will be documented early next week. ADEC concurred with all of the oral responses provided during the teleconference and also concurred with the project team's numerous agreements on the best paths forward to implement the 2012 Site 28 Phase I Sediment Removal Action. ADEC looks forward to receiving the formal responses and revisions to the Site 28 TM as discussed today.
This email serves as ADEC's tentative approval to implement the 2012 NEC Site 28 Phase I RA Work Plan in field. ADEC will submit a formal approval letter to the Corps and project team once the work plan is finalized. Please keep ADEC apprised of any changes or unforeseen complications with implementing the removal action at this site as well as the DQCR's being currently provided; which are appreciated by ADEC.
Please contact me if you have any questions.
Thanks and best regards

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

-----Original Message-----
From: Dunkin, Curtis S (DEC)
Sent: Friday, September 07, 2012 1:02 PM
To: 'Cossaboom, Carey C POA'
Cc: Broyles, Ronald S POA; Shewman, Aaron F POA
Subject: RE: Site 28 (UNCLASSIFIED)

Carey, ADEC still has a few general comments on the draft 2012 NEC site 28 tech memo that are not included in the comments below that I'll submit later since they are not critical for review and approval of the sediment removal action. Below are comments and questions which are still unclear from the draft May 2012 RA work plan and the Aug. Site 28 TM. Please contact me if you have any questions. I will be in the office until 5pm and am available anytime the rest of today for a teleconf.
thanks

1. The sediment mitigation control(s) referenced in section 5.0 (stated in the May 2012 NEC SWPPP as being a silt fence, is not adequate for the Phase I removal. Due to the large amounts of potential contaminated sediment migration, a more extensive sediment control/settling system should be proposed (incl. absorbent booms). Because it may not be

feasible/practical to obtain in situ sampling results, the sediment and contaminant migration monitoring and mitigation measures need to be adequate. While the proposed three surface water samples (pre/during/and post removal activities) are necessary, they provide no mitigation. More water samples should be collected at intervals during removal to determine what concentrations of contaminants (if any) may have migrated off site.
2. Section 4.3.1.2 re: the discussion about the use of the Silica Gel cleanup method to determine whether cleanup goals are met will require revision; ADEC did not approve the SG method to be utilized for confirmation sampling for this removal action.
3. Re: the proposal in section 5.0 that states that depth of sediment removal will not exceed 2 ft. in any removal area, based on documentation provided in the draft 2012 TM, there were no areas where mapped sediment depth exceeded 2ft; therefore this should not be a concern. However, ADEC requests that all contaminated material that is defined for the purposes of this project as sediment, be removed from the areas where the project team agrees to remove sediment; i.e. if 2.5 ft. of sediment is encountered then removal should not stop at 2 ft.
4. What are the general components of the two methods being proposed to evaluate for the sediment removal discussed in section 5.0? Are excavation w/ equipment and suction dredging considered the two different proposed methods?
5. Section 5.0 states possible use of flocculants - confirm whether or not these will be used since they can cause problems with sample analyses. Previous communication w/ Bristol confirmed to ADEC that no flocculants or other chemicals or additives would be applied to the sediment and water throughout the process; except for treatment of water in the impoundments prior to discharge per the water quality requirements outlined in the permit.
6. What will be the estimated volumes of the impoundments and how often will sampling occur; i.e. once per day regardless or frequency/gallons? What is the actual treatment process proposed and which location is proposed to discharge the treated water? Will the water impoundment areas be deconstructed or overwintered? Will soil samples be collected preconstruction and post deconstruction of the water processing area?
7. Re: the proposed overwintering of the geo tube, will the impoundment area be sufficient in the event of tube failure; re: the proposal to overwinter?
8. ADEC concurs w/ the four areas proposed for the Phase I sediment removal which are stated in section 5.0.

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

-----Original Message-----
From: Cossaboom, Carey C POA [mailto:Carey.C.Cossaboom@usace.army.mil]
Sent: Friday, September 07, 2012 11:27 AM
To: Dunkin, Curtis S (DEC)
Cc: Broyles, Ronald S POA; Shewman, Aaron F POA
Subject: RE: Site 28 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Curtis,

Sounds good. Can we squeeze in a teleconference with Bristol today to talk about your comments/concerns?

Carey

-----Original Message-----
From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]
Sent: Friday, September 07, 2012 10:39 AM
To: Cossaboom, Carey C POA
Subject: RE: Site 28 (UNCLASSIFIED)

Carey I've completed my review of the TM and have a few questions which I'll email you w/in the hour. Re: your email below, did ADEC-DOW issue anything to the Corps/Bristol re: the water discharge approval under the general permit (i.e. a letter, stipulations)? That was my understanding that they were going to allow the discharge(s) under the general permit but w/ stipulations and were going to generate a letter re: the NOI.
I do have questions and concerns re: the sediment controls (for which the SWPP states a silt fence) - and nothing more. Others include what volume(s) of impounded water will be a decision unit prior to sampling and discharging; I will email these asap. Given we can concur on these today, I don't see any reason why we can't finalize ADEC's approval to implement the project asap. I'll get back w/ you w/in the hour/prior to noon.
thanks

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

-----Original Message-----
From: Cossaboom, Carey C POA [mailto:Carey.C.Cossaboom@usace.army.mil]
Sent: Thursday, September 06, 2012 4:51 PM
To: Dunkin, Curtis S (DEC)
Subject: Site 28 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Curtis,

According to Greg Jarrell at Bristol, they've been given authorization to perform the Site 28 sediment-removal dewatering within the guidelines of their General Permit. That is a major hurdle overcome. With that out of the way, the major obstacle now is the field season time limit. USACE has reviewed the Site 28 Tech Memo Addendum and doesn't have any major issues with their proposal. Can you imagine any issues now that would prevent us from authorizing them to begin? We can always make adjustments on the fly to accommodate concerns. I envisioned this as a mid-summer conference to provide guidance to Bristol, not a full-blown report-review comment process. We can have a teleconference tomorrow if that would help.

Carey Cossaboom
Project Manager
U.S. Army Corps of Engineers
907-753-2689 (ph.)
907-753-2829 (fax)
carey.c.cossaboom@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

APPENDIX F

Comment Response Forms

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

November 16, 2012

US Army Corps of Engineers USACE, AK District
Attn: Mr. Carey Cossaboom
CEPOA-PM-ESP
P.O. Box 6898
JBER, AK 99506-0898

Re: ADEC Review of Responses to Comments (RTCs) On the Draft August 2012 Northeast Cape Site 28 Technical Memorandum Addendum

Dear Mr. Cossaboom;

Thank you for providing the Alaska Department of Environmental Conservation's Contaminated Sites Program (ADEC) with RTCs on the Draft Northeast Cape Site 28 Technical Memorandum Addendum. ADEC has completed its review of the RTCs and determined that all of ADEC's concerns and revision requests have been adequately addressed as noted as ADEC-Accepted in the comment template attached with this letter. The revisions can be incorporated into the document and the final technical memorandum can be submitted to ADEC for review and approval.

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

cc: Greg Jarrell and Julie Clark – BERS (via email)

G:\SPAR\SPAR-CS\38 Case Files (Contaminated Sites)\475 West Coast (Other)\475.38.013 Northeast Cape St Lawrence Island FUDS DERP\475 38 013 draft12 NEC Site28 TM RTCs adecrev comlet 11-16-12.docx

Alaska Department of Environmental Conservation (ADEC)
Contaminated Sites Program
Document Reviewed: Draft August 2012 Northeast Cape Site 28 Technical Memorandum and Minutes of Sept. 7, 2012 Teleconf.
Commenter: Curtis Dunkin-ADEC **Date Submitted:** October 31, 2012; ADEC Reviewed on November 16, 2012

Comment #	Page #	Section	ADEC Comment	Response
1.	11	4.1	The range(s) of shallow and deep sediment observed should be briefly discussed in this sections, as well as section 5.0 for the purposes of evaluating potential head cutting issues associated with the sediment removal actions.	In Section 4.1, the sentence "Sediment thickness ranged from 0.5 foot to 2 feet throughout Site 28, as shown on Figure 5" was added. In Section 5, the range of sediment thicknesses for each area was added to the bulleted list where sediment was recommended to be removed during the Phase I sediment removal action. **ADEC-Accepted(11-16-12)**
2.	11	4.3	State which analytes do not have cleanup levels listed in the Decision Document. State which analytes are/are not COCs.	Text stating that the primary Site 28 COCs are DRO, RRO, select PAH analytes, PCBs, chromium, lead, and zinc has been added. Text stating that GRO, BTEX, several PAH analytes, and several metal analytes do not have sediment cleanup levels listed in the 2009 Decision Document has been added. **ADEC-Accepted(11-16-12)**
3.	12	4.3.1	Later half of the last sentence of second to last paragraph on this page should be omitted; "...suggesting that fuel contamination is not likely to be migrating..". Contaminant concentrations down gradient are not sufficient to determine whether or not fuel contaminants from upgradient sources are migrating to the Suqi River.	Last part of the sentence has been deleted. **ADEC-Accepted(11-16-12)**
4.	13	4.3.1.1	Need to include copies of the silica gel chromatograms in an appendix and reference them in this section. (Chromatograms were not included in the electronic copy of the draft TM which ADEC received from the Corps on Oct. 25, 2012).	Chromatograms were included in the "Supplemental Data" folder, "Laboratory Data" subfolder of the electronic copy of the report. The text "Sample chromatograms are included in the laboratory data reports, which are presented in the supplemental data in the electronic version of this report" has been added to the end of the second paragraph in Section 4.3.1.1. **ADEC-Accepted(11-16-12)**
5.	14	4.3.1.2	This section needs to be revised to more accurately reflect that ADEC has not approved the use of SG cleanup results to determine whether or not cleanup levels have been met in confirmation samples. ADEC requires that a correlation study be approved prior to using this method to determine	Text has been added stating that an ADEC-approved correlation study must be conducted to use SG-treated results to demonstrate that site cleanup goals have been met. The following text has been added to

			cleanup levels. This should be stated in associated with the last sentence of this section. Statement re: 'a qualified person within ADEC will review' should be revised since ADEC requires an approved correlation study to be conducted, which must be ADEC approved prior to utilizing the SG method to determine whether cleanup goals are met. Section should also reference the location(s) of the chromatograms associated with the SG cleanup results. The hardcopy of the draft addendum received by ADEC did not include the chromatograms or their references.	the end of the section: "SG-treated results will only be used after discussion with and concurrence by ADEC. At this time, the ADEC has not approved the use of SG cleanup results to determine whether or not cleanup levels have been met." **ADEC-Accepted(11-16-12)** Chromatograms: see response to Comment #4 above. **ADEC-Accepted(11-16-12)**
6.	19	5.0	This section should be renamed from 'Recommendations' to 'Phase I Removal Action Recommendations' and should define and discuss the changes and amendments to the proposed sediment removal actions as a result of the project team's September 7, 2012 technical planning meeting that are outlined in the Minutes of Teleconference (received by ADEC via email on Sept. 19, 20). A final copy of the minutes should also be included as an appendix. Although ADEC provided tentative approval to implement the sampling per the project team's Sept 07, 2012 technical planning meeting a final SAP for the ADEC-requested surface water samples should be submitted for ADEC review and approval prior to finalizing the tech memo addendum. Section 5.0 should state how the Phase I RA efforts will be documented/reported (i.e. draft 2012 RA report); or will a separate report be generated?	The title of Section 5.0 has been renamed as suggested. **ADEC-Accepted(11-16-12)** Minutes from the September 7, 2012 teleconference will be included in an appendix. **ADEC-Accepted(11-16-12)** Text regarding the frequency of surface water sample collection as summarized in the teleconference meeting minutes (i.e. one surface water sample collected per every 1-2 hours of disturbance based on the visual observations, with samples collected at a higher frequency if disturbances downstream of the sediment trap are observed, and a maximum of 3 surface water samples per day) was added to the section. **ADEC-Accepted(11-16-12)** A separate report for the Phase I removal action will be prepared. The text has been clarified to reflect this. **ADEC-Accepted(11-16-12)**
7.		Tentative Approval Email	A copy of ADEC's Sept. 07,2012 email to the project team (granting tentative approval to implement the Phase I Sediment Removal Actions) should be included in the final TM addendum.	The ADEC email from September 7, 2012 granting tentative approval to implement the Phase I sediment removal action will be included in an appendix. **ADEC-Accepted(11-16-12)**
8.		Figure General	It would be helpful to have a figure that depicts all of the previous site 28 contaminant exceedances which have been observed from previous sampling efforts up through the 2012 mapping effort. This would be helpful in making future removal action decisions. ADEC recognizes that this may not be possible to develop and include in this tech memo addendum, however, it should be included in the 2012 draft RA report.	Previous Site 28 data will be shown on a figure in the draft 2012 RA Report. **ADEC-Accepted(11-16-12)**

9.			Re: the Minutes of the Sept. 07.2012 Teleconf. Stating that the project team agreed that a maximum of 3 surface water samples would be collected daily, ADEC did agree that this may very well be adequate for the proposed actions. However, ADEC did request that the field team use conservative judgment and to collect more than 3 samples if necessary to adequately characterize potential contaminant migration during disturbance activities. This should be spelled out in the SAP for the surface water sampling to be conducted during sediment removal activities. Note also that surface water samples should have been collected for both the suction dredge and the excavation removal methods.	Sediment removal never exceeded 2-3 hours during the 2012 Phase I sediment removal actions, so additional surface water samples beyond the specified maximum of three per day were not collected. Also, based on the field team's visual monitoring during active removal, there was not significant amounts of increased turbidity or other evidence of potential contaminant migration downstream of the sediment trap during disturbance activities. This information will be included in the Site 28 Phase I Sediment Removal Report. **ADEC-Accepted(11-16-12)**
10.			**End of ADEC Comments**	

REVIEW COMMENTS **PROJECT: NE Cape HTRW Remedial Actions W911KB-12-C-0003**
DOCUMENT: Site 28 Tech Memo Addendum Rev 0 – August 2012 **Location: St. Lawrence Island, Alaska**

U.S. ARMY CORPS OF ENGINEERS	DATE: August 31, 2012 REVIEWER: Carey Cossaboom PHONE: 753-2689	Action taken on comment by: Bristol

Item No.	Page No., Spec. Para.	COMMENTS	BRISTOL RESPONSE	COMMENTOR REPLY (A-AGREE) (D-DISAGREE)
1.	General	Very nicely presented information. I don't have any hesitancy in asserting I'm fine to go ahead with this after the ADEC concurs.	Thank you.	
2.	Maps	I also found a way to ease the loosey-goosey maps in their holders! Just pull out the extra fold and bend backwards. The double fold works better! (Just thought I'd throw that in.)	Comment acknowledged.	
3.	iii	Please add the USCS soil type abbreviations. I like the detail provided in the logs.	A page defining the USCS soil type abbreviations will be added to the beginning of the sediment probing boring log appendix (Appendix C).	A
4.	Pg. 12, 2nd par.	When mentioning concentrations of analytes, it is always nice to know what the Cleanup Levels are without having to go look at the table.	The site-specific sediment cleanup levels for DRO, RRO, and 2-methylnaphthalene have been added to Section 4.3.1.	A
5.	Pg. 19, 3rd bullet	I believe you mean thru sample -33, as on the map.	The text has been changed from sample -032 to -033.	A
6.	Pg. 19, 3rd & 4th bullets	I don't have any problems with where you've suggested you would collect the 140 cubic yards. However, it might be easier on you to make your two northernmost areas contiguous, still testing removal from both ponds and streams.	The sediment removal areas were selected based on the areas of highest contamination. In the stream bed, contaminant concentrations were generally higher in the southern portion of the stream.	OK
7.	Pg. 19, last par.	How do you plan to dewater sediments removed by excavator?	Sediment removed by excavator will be dewatered as much as possible at the time of removal by allowing water to naturally flow out of the excavator bucket via gravity. If further	A

U.S. ARMY CORPS OF ENGINEERS	DATE: August 31, 2012 REVIEWER: Carey Cossaboom PHONE: 753-2689	Action taken on comment by: Bristol

Item No.	Page No., Spec. Para.	COMMENTS	BRISTOL RESPONSE	COMMENTOR REPLY (A-AGREE) (D-DISAGREE)
			dewatering is needed, the sediment will be placed in a lined area separate from the Geotubes, similar to the dewatering activities at Site 98. This sediment will be placed into bulk bags before the end of the 2012 field season. Text stating this has been added to the document.	A
8.	Pg. 21, 2nd par.	How do you plan to construct a sediment trap? What does it consist of?	The sediment trap will consist of a metal box placed across the stream channel that contains straw wattles and other filtration material such as sorbent boom. This text has been added to the document.	A
9.	Table 1	Please change the shade of bright red to something a little easier on the eyes. The glare is blinding! (and hard to read).	The bright red shading on the table has been changed to a lighter shade of red.	A
10	Figure 7, et al.	The Veg Mat pattern in the legend doesn't match the map pattern. Neither does the sediment.	The figures will be changed so that the legend and the map patterns match.	A
11	MED & Chem	Can't comment on the MED and chemistry until the electronics are delivered.	Comment acknowledged.	See Med Checklist
12				

REVIEW COMMENTS **PROJECT: NE Cape HTRW Remedial Actions W911KB-12-C-0003**
DOCUMENT: Site 28 Tech Memo Addendum Rev 0 – August 2012 **Location: St. Lawrence Island, Alaska**

U.S. ARMY CORPS OF ENGINEERS	DATE: November 6, 2012 REVIEWER: Teresa Lee PHONE: 753-2788	Action taken on comment by: Bristol

Item No.	Page No., Spec. Para.	COMMENTS	BRISTOL RESPONSE	COMMENTOR REPLY (A-AGREE) (D-DISAGREE)
1.	Chemical Data Review Report	USACE chemist must receive CDQR for review prior to going final, along with adjusted chemical data tables to reflect any assigned qualifiers.	The CDQR and updated data table will be sent to Teresa with this response to comment form.	CDQR and updated comments have been received. Please see Comments #15-19 for comments on the CDQR.
2.	Sample Summary Sheet	Matrix should be sediment, not solid.	The matrix has been changed to sediment in the Sample Summary Sheet.	A
3.	Data Tables	Footnotes are cut off.	Footnotes will be included in the final submittal. They were cut off due to formatting changes.	A
4.	Data Tables	Native files do not include formula for derivation of LPAH an HPAH.	Calculations were added to native files on a second worksheet. NOTE: The LPAH and HPAH values were changed upon further review of WAC cleanup criteria where both non-detect and detected samples were previously summed. WAC 173-204-520 states to only include positive results and not to include 1- or 2-methylnapthalene. The native excel file will have 2 worksheets, one for print and one that shows the calculations, the calculations page will not be printed. Both the printed and calculation worksheets will be submitted as native files in one excel workbook.	A
5.	Data Tables	Must assign any assigned qualifiers from the CDQR into the table tables. There is no CDQR so cannot check tables from completeness at this	The data table was reviewed for completeness and consistency with final qualifiers as assigned in the CDQR.	A Anywhere qualified data is mentioned in the

U.S. ARMY CORPS OF ENGINEERS	DATE: November 6, 2012 REVIEWER: Teresa Lee PHONE: 753-2788	Action taken on comment by: Bristol

Item No.	Page No., Spec. Para.	COMMENTS	BRISTOL RESPONSE	COMMENTOR REPLY (A-AGREE) (D-DISAGREE)
		point.		report, the qualifier must be included as well. Please review report for listed data and add any qualifiers as necessary throughout the body of the report prior to going final. For example, PCB results listed, one is qualified data and the data qualifier will need to follow the result.
6.	Data Tables	Data qualifiers should be defined as specified in the SOW.	Data qualifier definitions will be modified to be consistent with the SOW though not exact. As example, ND is non-detect at the DL (SOW says LOD). The ND result has the LOD in parentheses.	SOW says ND is non detect at the LOD because this is a requirement of the DOD QSM. What is meant by this is that the the ND result must be reported ND (LOD). Please report all non detects ND (LOD) as stated.
7.	Lab report	Lab report case narrative states : "The container labels for the following samples did not match the information listed on the Chain-of-Custody (COC): 12NC28SS144 (580-34102-49). 12NC28SS045 (580-34102-50), 12NC28SS046 (580-34102-51) and 12NC28SS047 (580-34102-52). The container	Lab report, EDDs, ADEC checklist and sample summary sheet have been revised with the correct collection date of 7/20/12. The data table had the	A

U.S. ARMY CORPS OF ENGINEERS	DATE: November 6, 2012 REVIEWER: Teresa Lee PHONE: 753-2788	Action taken on comment by: Bristol

Item No.	Page No., Spec. Para.	COMMENTS	BRISTOL RESPONSE	COMMENTOR REPLY (A-AGREE) (D-DISAGREE)
	EDD Sample Summary Sheet ADEC Check-sheet 3.d	labels list a date of 07/20/2012 for each of these samples; however, the COC lists the sampling date as 07/19/2012 for these samples. The samples were logged in according to the sampling date listed on the COC." According to the field forms, the container date is the correct date, not the date supplied on the CoC as postulated by the laboratory. This renders the hardcopy report incorrect as well as both EDDs. The correct collection date needs to be incorporated for these samples into the hard copy and the EDDs (error free) for this report and resubmitted. In addition, it was noted that the sample summary sheet also has incorrect sample collection dates according to the field forms. Please correct. The error should be noted in the appropriate section of the ADEC checksheet and the required resolution as well as hold times re-reviewed.	correct collection date.	
8.	ADEC Checklist 6 a.	There was no method blank run in lab batch 116234 for AK102. Please discuss this QC failure within this section and the impact to the data.	The method blank was omitted from the original report and EDDs. No change was made to the checklist as the method blank was extracted and analyzed, just omitted from the final report and EDDs. Response part 2 (1-10-13). A revised report has been received and will be submitted with the MB for prep batch 116234. No QC issues with this batch were noted so the CDQR will not require revisions in regards to prep batch 580-116234.	Once received, the method blank results will have to be reviewed for conformance with the QAPP and if any deviations are noted, properly note in the CDQR and qualify as necessary. Please resubmit revised EDDs

U.S. ARMY CORPS OF ENGINEERS	DATE: November 6, 2012 REVIEWER: Teresa Lee PHONE: 753-2788	Action taken on comment by: Bristol

Item No.	Page No., Spec. Para.	COMMENTS	BRISTOL RESPONSE	COMMENTOR REPLY (A-AGREE) (D-DISAGREE)
				and laboratory reports with final report.
9.	ADEC Checklist	It was noted that a geologist completed the ADEC checklist. This is a deviation from the QAPP whereby Martin Hannah (chemist) was responsible for this duty. Was this deviation approved by the KO? Please submit a resume for this person to include education and years of experience performing chemical data review to include DOD projects.	Marty Hannah oversaw the ADEC checklist completion and reviewed the work prior to submittal.	A
10	ADEC Checklist 6a iii	Have pyrene and phenanthrene affected samples mixed up. Please revise.	The checklist was corrected with the affected B flagged samples properly identified.	A
11	ADEC Checklist 6 b. 1	There are several lab batches indicated during the review of the COELT files batching detail with greater than 20 samples run with one set of LCS/LCSD and MS/MSD. Please look into the reason for this, discuss the impact to data quality and usability.	The only instances that were found with more than 20 samples in the prep batch were the AK102/103 which included untreated and silica gel treated samples. The same samples were listed twice to include the silica gel cleanup. The other instance is the 8260/AK101 analysis, which combines both analyses in the same prep/analytical run. Please note any other instances. Response part 2 (1-10-13). Prep batches 116204, 116308 and 116467 still only had 20 or fewer samples. Some samples were listed twice in the prep batch for dilutions and had DL after the Laboratory ID to indicate the samples were diluted to bring certain analytes within the calibration	The USACE Access COELT Database indicates that 8270SIM lab batch 116204 has 23 samples, lab batch 116308 has 26 samples and lab batch 116467 has 22 samples. Response part 2 (1/14/2013): If a review of the lab report indicates 20 per batch, then there is an issue with the COELT EDD.

U.S. ARMY CORPS OF ENGINEERS	DATE: November 6, 2012 REVIEWER: Teresa Lee PHONE: 753-2788	Action taken on comment by: Bristol

Item No.	Page No., Spec. Para.	COMMENTS	BRISTOL RESPONSE	COMMENTOR REPLY (A-AGREE) (D-DISAGREE)
			range. All referenced prep batches were analyzed for PAHs.	Please submit a revised error free COELT EDD for the SDG in question with the final report.
12	ADEC Checklist	Technically, there is no slot in the ADEC Checklist for checking MS/MSD frequency, however there are several batches run without an MS/MSD run with some methods. This should be discussed in the CDQR along with the impact to the data.	The equipment rinsate (water) and trip blank4 were extracted without batch MS/MSDs. The equipment rinsate was a water matrix and no primary water samples were submitted with the equipment blank. While not specified in the QAPP it is generally assumed you do not to submit extra QC with QC samples.	A
13	ADEC Checklist 6b. iv	What about the SW6020 %R failures for MS/MSD? This should be discussed along with the affect on the data, if any.	Metals MS/MSD recoveries and RPD discussion have been added to Section 6b. iv. A revised report has been received and includes metals in the case narrative, which was omitted from the original report.	A
14	ADEC Checklist 6d. ii	What about the surrogate failures for 8260B? Please discuss along with the affect on the data, if any.	Trifluorotoluene, the field surrogate for AK101 (GRO) had recoveries below the acceptance limit for 8260. The 8260 method does not specify field surrogates and it is not listed as a surrogate in the NE Cape QAPP for BTEX. It is for GRO and the GRO results have been flagged ML for low TFT surrogate recovery. All BTEX analyses had surrogates specified in the QAPP in control so no results were flagged for surrogate issues.	A
15	1/7/13	Somewhere in the introduction it should be stated	Text was added to the CDQR stating that AECOM	A

U.S. ARMY CORPS OF ENGINEERS	DATE: November 6, 2012 REVIEWER: Teresa Lee PHONE: 753-2788	Action taken on comment by: Bristol

Item No.	Page No., Spec. Para.	COMMENTS	BRISTOL RESPONSE	COMMENTOR REPLY (A-AGREE) (D-DISAGREE)
	CDQR	who conducted the review.	performed the data review.	
16	1/7/13 CDQR	As stated in comment #6, data qualifiers should be defined as specified in the SOW. In reference to NP, there is no need to reference dilutions. The information is required by the DOD QSM to be included in the laboratory report, however, this information is not subject to qualification for it is not the final reported data.	Agreed. NP does appear in the CDQR on Table 2-11 but any result with NP is not presented in the final data tables. Both sets of results are presented in the lab report hardcopy and the NP helps designate which result is NOT included in the data table.	A Only those qualifiers defined in the SOW should be included in future submittals.
17	1/7/13 CDQR	There are multiple instances where low or high surrogate recoveries are qualified with an ML or MH for matrix interference with no reciprocal MS/MSD %R results outside of control limits. Without empirical data implied by the MS/MSD %R's within a suite to indicate matrix interference, the results should be qualified with a QL or QH instead.	ML flags will remain in place for GRO results only because the high moisture matrix diluted the GRO field surrogate. All other ML or MH flags for surrogates will be changed to QL or QH when no other QC issues would impact the results such as MS/MSD recoveries in the prep batch.	A
18	1/7/13 CDQR 2.10.4	In the bullet, it states that the samples associated with the trip blanks with GRO detections were unclear. How is this unclear? It should be on the sample summary sheet which coolers had which trip blanks along with all other samples traveling with them.	The information regarding which coolers and trip blanks were associated with GRO detections is shown in the sample summary sheet and TestAmerica's Sample Login Confirmation sheet. Samples affected by trip blanks were corrected by Bristol in the CDQR, data tables and ADEC checklist.	A
19	1/17/13	Amend the ADEC Checksheets as necessary to be congruent with the CDQR.	The ADEC checklist, CDQR, data table and report have been reviewed for consistency throughout the documents.	A

U.S. ARMY CORPS OF ENGINEERS	**DATE: November 6, 2012** **REVIEWER: Teresa Lee** **PHONE: 753-2788**	**Action taken on comment by: Bristol**

Item No.	Page No., Spec. Para.	COMMENTS	BRISTOL RESPONSE	COMMENTOR REPLY (A-AGREE) (D-DISAGREE)
20		End of Comments		

REVIEW COMMENTS **PROJECT: NE Cape HTRW Remedial Actions W911KB-12-C-0003**
DOCUMENT: Site 28 Tech Memo Addendum Rev 0 – August 2012 **Location: St. Lawrence Island, Alaska**

U.S. ARMY CORPS OF ENGINEERS	DATE: 28 Nov 2012 REVIEWER: Gordon Osgood PHONE: 753-5599	Action taken on comment by:

Item No.	Page No., Spec. Para.	COMMENTS	BRISTOL RESPONSE	COMMENTOR REPLY (A-AGREE) (D-DISAGREE)
1.	Survey	On quick look the information listed in Section 5.6.1, Page 16 of the 2011 MED was not found with the survey data table. Also a .pdf file of the survey data with that information would be helpful.	The information has been added to the survey folder.	
2.	GIS	On quick look, the chemistry data table for GIS in Section 6.2.3 of the 2011 MED does not appear to be present in the deliverable for the analytical samples.	GIS was not utilized on this project. A note has been added to the MED checklist for clarification.	
3.				
4.		End of Comments		

REVIEW COMMENTS **PROJECT: NE Cape HTRW Remedial Actions W911KB-12-C-0003**
DOCUMENT: Site 28 Tech Memo Addendum Rev 0 – August 2012 **Location: St. Lawrence Island, Alaska**

U.S. ARMY CORPS OF ENGINEERS	DATE: 6 September 2012 REVIEWER: Aaron Shewman PHONE: 753-5558	Action taken on comment by: Bristol

Item No.	Page No., Spec. Para.	COMMENTS	BRISTOL RESPONSE	COMMENTOR REPLY (A-AGREE) (D-DISAGREE)
1.	General	Based on review of Figures 5 and 10, I am concerned about removing sediments from "Sediment Removal Area 3" because headcutting may result upgradient of sediment sample location 12NC28SS033. If the decision is made to proceed with removal in "Sediment Removal Area 3", then extreme care should be taken to ensure the sediment removal depth is limited to the depth of sediment shown in Figure 5. If removal occurs in "Sediment Removal Area 3", then I recommend the area be slightly enlarged to include sediment sample location 12NC28SS028.	During the teleconference with the PDT on 9/7/12, it was agreed that sediment removal will proceed in "Sediment Removal Area 3" (the stream channel) so removal can be tested and evaluated in that type of feature. The field team will be vigilant in observing the removal in the channel to make sure more damage is not being caused by the removal. "Sediment Removal Area 3" will be enlarged to include sediment sample location 12NC28SS028.	A A
2.				
3.				
4.				
5.		End of Comments		