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PRELIMINARY ASSESSMENT REPORT

NAVAL OCEAN SYSTEMS CENTER
SPECIAL AREAS, ALASKA

EPA IDENTIFICATION: NONE

NEESA 13-205
JULY 1991

INCLUDES:

1. WHITE ALICE SITE, TIN CITY, AK.
2. NAVY FIELD STATION WALES, AK.
3. WHITE ALICE SITE, NE CAPE, ST LAWRENCE IS.
AK



NAVAL ENERGY AND ENVIRONMENTAL
SUPPORT ACTIVITY

Port Hueneme, California 93043-5014

USEPA SF



1168728

SF 1



DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY, NORTHWEST
NAVAL FACILITIES ENGINEERING COMMAND
19917 7TH AVENUE N.E.
POULSBORO, WASHINGTON 98370-7570

5090-St Lawrence
Ser 183LT/7650
October 29, 1996

RESENT : JUN 07, 1999

Loussac Library
Bruce Merrell
3600 Denali St.
Anchorage, AK 99503

BY: *Gerry Rieger, P.E.*
NAVY PROJECT MGR.

Dear Mr. Merrell:

The United States Navy has been accomplishing environmental investigations and cleanup actions at Northeast Cape St. Lawrence Island, Alaska. The details and results of some of those actions are provided in the reports enclosed with this letter.

I recently telephoned your office and you indicated that the Navy could locate documents prepared as a result of investigation and cleanup actions; that the Navy is directly responsible, with those provided by the U.S. Army Corps of Engineers. The Navy will be accomplishing additional actions in the future. Documents related to those actions will also be sent to your office when they are available.

Thank you for your cooperation in this matter. If you have any questions concerning the attached information or Navy environmental cleanup actions, please contact me at (360) 396-0053 or leave a message on 1-800-360-1561.

Sincerely,

Larry J. Tucker
Remedial Project Manager
By direction of the
Commanding Officer

AH

Bruce
Merrell

EEA Northwest

Engineering Field Activity, Northwest
Naval Facilities Engineering Command
19917 7th Avenue NE
Poulsbo, WA 98370-7570

Gerry D. Rieger, P.E.
Environmental Engineer

(360) 396-0063 / DSN 744-0063

FAX: (360) 396-0857

INTERNET: griegerd@nafnw.navy.mil

Encl.:

(1) Removal Action White Alice Site, Northeast Cape, St. Lawrence Island, Alaska. Final Report. May 17, 1991

CTO

#18

(2) Site Inspection White Alice Site, Northeast Cape, St. Lawrence Island, Alaska. Final Report. May 22, 1991

#19

(3) Revised Site Inspection, White Alice Site, Northeast Cape, St. Lawrence Island, Alaska. Final Report. April 27, 1992

#51

ADDED: 07 JUN 99

(4) PRELIMINARY ASSESSMENT REPORT, NAUHL
OCEAN SYSTEM CENTER, SPECIAL AREAS, ALASKA, JULY 1991

SR



June 3, 1992

Reply To
Attn. Of: HW-114

Douglas Thelin, P.E.
Engineering Field Activities Northwest
Naval Facility Engineering Command
3505 N.W. Anderson Hill Road
Silverdale, Wa. 98103

Dear Mr. Thelin,

This letter is to inform you that EPA Region 10 has completed review of the Preliminary Assessment (PA) report for the Northeast Cape, White Alice site located on St. Lawrence Island, Alaska has been evaluated in accordance with 40 CFR Part 300 Appendix A, which is EPA's Hazard Ranking System (HRS) used to evaluate federal facilities for inclusion on the National Priorities List (NPL).

From our evaluation, EPA has determined that this facility does not score high enough to be proposed for inclusion on the NPL. Therefore, a recommendation of no further remedial action planned (NFRAP) on the EPA's part will be included in our Federal Agency Hazardous Waste Compliance Docket tracking system. If new or additional information becomes available that suggests your facility may score high enough to be proposed for the NPL, EPA must reevaluate your facility accordingly.

EPA's NFRAP designation does not relieve your facility from complying with appropriate Alaska state regulations. The Superfund Amendments and Reauthorization Act (SARA) of 1986, Section 120(a) (4) requires federal facilities to comply with state cleanup requirements and standards when not listed on the NPL. EPA recommends that any remaining drums and contaminated soil should be removed to background concentrations and disposed at an approved hazardous waste disposal facility. The removal would substantially reduce the need for EPA to reevaluate the site in the future.

This facility will not be removed from the Federal Agency Hazardous Waste Compliance Docket, but as noted earlier, will be listed for no further action by EPA. If you have any questions regarding EPA's evaluation of this site, please contact me, at (206)553-1808.

Sincerely,

Mark Ader
Federal Facilities
Site Assessment Manager

CC: Marcia Combes, EPA, AOO/A
Karen Prater, HW-074
Monica Rolluda, HW114

Mary Siroky
ADEC
Div. of Spill Prevention and Response
410 Willoughby
Juneau, Alaska 99801-1795



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Reply to
Attn. of: ECL-115

25 November 1996

Captain David F. Walsh, Commanding Officer
Engineering Field Activity, NW
Naval Facilities Engineering Command
U.S. Navy
19917 - 7th Avenue
Poulsbo, WA 98370-7570
Attn: Jack Wynn, Environmental Operations Manager/Alaska

Re: US NAVY Tin City White Alice Site
65°35'2"N, 167°56'26"W
1.25 mi N of Tin City Airport
Tin City, AK 99783
AK0001626662

Dear Captain Walsh:

This letter is to inform you that EPA Region 10 has completed the review of reports submitted by the Navy and the Air Force in lieu of a Preliminary Assessment Report (PA), as well as all other documents contained in the Regional files for the US Navy Tin City White Alice site, located at Tin City, AK. The reports have been evaluated in accordance with 40 CFR Part 300 Appendix A, which is EPA's Hazard Ranking System (HRS) used to evaluate federal facilities for inclusion on the National Priorities List (NPL).

From our completed evaluation, the EPA has determined that the facility will not score high enough to be proposed for inclusion on the NPL. Therefore, a recommendation of No Further Remedial Action Planned (NFRAP) on EPA's part will be included in our Federal Agency Hazardous Waste Compliance Docket (Docket) tracking system, once the site is added to the Docket. If new or additional information becomes available that suggests the facility may score high enough to be proposed for the NPL, EPA must reevaluate your facility accordingly.

EPA's NFRAP designation does not relieve your facility from complying with appropriate Alaska state regulations. The Superfund Amendments and Reauthorization Act (SARA) of 1986, Section 120(a)(4) requires federal facilities to comply with state cleanup requirements and standards when not listed on the NPL. The U.S. Navy should contact the Alaska Department of Environmental Conservation to determine if levels of contamination remaining in soils at the site need to be removed, including elevated levels of PCBs and Asbestos remaining at the site.



This facility will not be removed from the Federal Agency Hazardous Waste Compliance Docket, but as noted earlier, will be listed for no further action by EPA. If you have any questions regarding EPA's evaluation of this site, please contact me, at (206) 553-1808.

Sincerely,



Mark Ader
Federal Facilities
Site Assessment Manager

sites\tn1125.AK

cc: David Carpenter, NAVY, Head of Environment Department, EFA/NW
Dianne Soderlund, EPA, AOO/A
Rich Cormack, ADEC
Dawn Musgrove, EPA Region 10 HQ, ECL-076



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

June 28, 1996

Reply to
Attn. of: ECL-115

Jack Wynne
Environmental Operations Manager - Alaska
Naval Facilities Engineering Command
Poulsbo, Washington 98370-7570

RE: **Cape Prince of Wales Naval Field Station**

Dear Mr. Wynne:

The September 1993 Site Inspection Report and the December 9, 1994 Removal Action Final report for the Naval Field Station, Cape Prince of Wales has been reviewed in accordance with 40 CFR Part 300 Appendix A, which is EPA's Hazard Ranking System (HRS) used to evaluate Federal facilities for inclusion on the National Priorities List (NPL).

From our evaluation, EPA has determined that the facility does not score high enough to be proposed for inclusion on the NPL. Therefore, a recommendation of no further remedial action planned (NFRAP) will be included in our Federal Agency Hazardous Waste Compliance Docket tracking system. If new or additional information becomes available that suggests the facility may score high enough to be proposed for the NPL, EPA must reevaluate your facility accordingly.

EPA's NFRAP designation does not relieve your facility from complying with appropriate Alaska state regulations. The Superfund Amendments and Reauthorization Act (SARA) of 1986, Section 120(a) (4) requires federal facilities to comply with state cleanup requirements and standards when not listed on the NPL. EPA encourages the Navy to continue with the Removal Action and to work with the State of Alaska.

This facility will not be removed from the Federal Agency Hazardous Waste Compliance Docket, but as noted earlier, will be listed for no further action by EPA. If you have any questions regarding EPA's evaluation of this site, please contact me, at (206)553-1808.

Sincerely,

Mark Ader
Federal Facilities
Site Assessment Manager

CC: Diane Soderland, EPA, AOO/A
Dawn Musgrove, HW-070
Monica Tonel, HW-114
Bill Janes, ADEC

PRELIMINARY ASSESSMENT REPORT

NAVAL OCEAN SYSTEMS CENTER
SPECIAL AREAS, ALASKA

EPA IDENTIFICATION: NONE

NEESA 13-205
JULY 1991



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NA

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) White Alice Site, Tin City		02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER NA			
03 CITY Tin City	04 STATE AK	05 ZIP CODE --	06 COUNTY Nome	07 COUNTY CODE 200	08 CONG DIST 36
09 COORDINATES LATITUDE 65°35'02"N		LONGITUDE 167°56'26"W			

10 DIRECTIONS TO SITE (Starting from nearest public road)

Follow gravel road north of airfield and Air Force Base at Tin City. Tin City is located about 100 miles north of Nome.

III. RESPONSIBLE PARTIES

01 OWNER (If known) Naval Ocean Systems Center		02 STREET (Business, mailing, residential) Arctic Submarine Lab Code 19			
03 CITY San Diego	04 STATE CA	05 ZIP CODE 92152-5000	06 TELEPHONE NUMBER 619-553-7458		
07 OPERATOR (If known and different from owner) Same		08 STREET (Business, mailing, residential)			
09 CITY Same	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER ()		

13 TYPE OF OWNERSHIP (Check one)

☐ A. PRIVATE ☒ B. FEDERAL U.S. Navy ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
(Agency name)
☐ F. OTHER: (Specify) ☐ G. UNKNOWN

14 OWNER OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3001 DATE RECEIVED: 7/16/89 ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: 7/16/89 ☒ C. NONE
MONTH DAY YEAR MONTH DAY YEAR

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION ☒ YES DATE <u>7/16-22/89</u> ☐ NO MONTH DAY YEAR		BY (Check all that apply) ☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR ☐ E. LOCAL HEALTH OFFICIAL ☒ F. OTHER: <u>Naval Energy & Environmental Support Activity</u> CONTRACTOR NAME(S):			
02 SITE STATUS (Check one) ☐ A. ACTIVE ☒ B. INACTIVE ☐ C. UNKNOWN		03 YEARS OF OPERATION <u>1954</u> <u>1975</u> ☐ UNKNOWN BEGINNING YEAR ENDING YEAR			

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

In the substation of Building 1001, the floor is contaminated with PCBs.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND OR POPULATION

PCBs could migrate from the building to the soils outside the building.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one: If high or medium is checked, complete Part 2 - Waste information and Part 3 - Description of Hazardous Conditions and incidents)

☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT Michael Hacking		02 OF (Agency Organization) Naval Ocean Systems Center Arctic Submarine Lab		03 TELEPHONE NUMBER '619' 553-7458	
04 PERSON RESPONSIBLE FOR ASSESSMENT Sherry Van Duyn/Joe Vogel		05 AGENCY Navy	06 ORGANIZATION NEESA Port Hueneme, CA	07 TELEPHONE NUMBER (805) 982-2634	08 DATE <u>3/12/90</u> MONTH DAY YEAR

White Alice Site, Tin City, AK



POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER NA
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II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES <i>(Check all that apply)</i> A SOLID E SLURRY B POWDER, FINES X F LIQUID C SLUDGE G GAS D OTHER _____ <i>(Specify)</i>	02 WASTE QUANTITY AT SITE <i>(Measures of waste quantities must be independent)</i> TONS <u>unknown</u> CUBIC YARDS <u>unknown</u> NO OF DRUMS <u>unknown</u>	03 WASTE CHARACTERISTICS <i>(Check all that apply)</i> - X A TOXIC - B CORROSIVE - C RADIOACTIVE - X D PERSISTENT - E SOLUBLE - F INFECTIOUS - G FLAMMABLE - H IGNITABLE - I HIGHLY VOLATILE - J EXPLOSIVE - K REACTIVE - L INCOMPATIBLE - M NOT APPLICABLE
--	---	---

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	unknown		PCBs
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

[illegible]

V. FEEDSTOCKS See Appendix for CAS Numbers.

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references e.g. state/ies sample analysis reports.)

Base records, interviews, sampling results. See PA report.


**POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT**
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS
I. IDENTIFICATION

01 STATE	02 SITE NUMBER
	NA

II. HAZARDOUS CONDITIONS AND INCIDENTS
01 ☒ A. GROUNDWATER CONTAMINATION03 POPULATION POTENTIALLY AFFECTED 1102 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☒ POTENTIAL☐ ALLEGED

A very small potential exists for migration of PCBs to groundwater.

01 ☒ B. SURFACE WATER CONTAMINATION03 POPULATION POTENTIALLY AFFECTED 1202 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☒ POTENTIAL☐ ALLEGED

PCBs could migrate from the building and transported via erosion and sediment transport to Cape Creek. The Bering Strait is 1.7 miles from the facility.

01 ☐ C. CONTAMINATION OF AIR

03 POPULATION POTENTIALLY AFFECTED _____

02 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL☐ ALLEGED

NA

01 ☐ D. FIRE-EXPLOSIVE CONDITIONS

03 POPULATION POTENTIALLY AFFECTED _____

02 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL☐ ALLEGED

NA

01 ☒ E. DIRECT CONTACT03 POPULATION POTENTIALLY AFFECTED 2-302 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☒ POTENTIAL☐ ALLEGED

A very small potential exists for direct contact with PCBs. There are very few people in the area.

01 ☒ F. CONTAMINATION OF SOIL03 AREA POTENTIALLY AFFECTED 0.02

(Acres)

02 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☒ POTENTIAL☐ ALLEGED

Contaminants could migrate from the building or may have been disposed outside the building in the past.

01 ☒ G. DRINKING WATER CONTAMINATION03 POPULATION POTENTIALLY AFFECTED 2302 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☒ POTENTIAL☐ ALLEGED

The miners sometime drink water out of Cape Creek. The Air Force drinks water from a well next to their base.

01 ☐ H. WORKER EXPOSURE INJURY

03 WORKERS POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL☐ ALLEGED

NA

01 ☐ I. POPULATION EXPOSURE INJURY

03 POPULATION POTENTIALLY AFFECTED _____

02 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL☐ ALLEGED

NA

White Alice Site, Tin City, AK



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NA

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☒ J. DAMAGE TO FLORA 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Migration of contaminants could potentially affect the sparse vegetation in the area.

01 ☒ K. DAMAGE TO FAUNA 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (include name(s) of species)

Animals could try to seek shelter in the building and come into contact with the PCBs.

01 ☒ L. CONTAMINATION OF FOOD CHAIN 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Very little potential of contamination of food chain. However, if contaminants migrated to surface water could contaminate fish, although unlikely.

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES 02 ☒ OBSERVED (DATE: 7/17/89) ☐ POTENTIAL ☐ ALLEGED
(Spills, runoff, standing liquids, leaking drums)
03 POPULATION POTENTIALLY AFFECTED: 2-3 04 NARRATIVE DESCRIPTION

The water on the floor of the substation was contaminated with PCBs. The doors were open to the room.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

NA

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

NA

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

NA

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

NA

III. TOTAL POPULATION POTENTIALLY AFFECTED: 23

IV. COMMENTS

There is one contaminated site at the facility:
Site 1, Building 1001 PCB Contamination.

V. SOURCES OF INFORMATION (Cite specific references e.g. site files, site interviews, reports)

Base records, interviews, Air Force records. See supporting documentation at the end of PA Report.

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
	NA

01 PHYSICAL STATES (Check all that apply)

☒ A SOLID
☐ B POWDER FINES
☐ C SLUDGE
☐ D OTHER _____

☒ E SLURRY
☒ F LIQUID
☐ G GAS

(Specify)

02 WASTE QUANTITY AT SITE

(Measures of waste quantities must be independent)

TONS unknown

CUBIC YARDS unknown

NO OF DRUMS UNKNOWN

03 WASTE CHARACTERISTICS (CHECK ALL THAT APPLY)

~~X~~ A TOXIC

Xn CORROSIVE

C RADIOACTIVE

D PERSISTENT

X E SOLUBLE

F. INFECTIOUS

L. G. FLAMMABLE

• HIGHLY IGNITABLE

... I HIGHLY VOLATILE

J EXPLOSIVE

K REACTIVE

- L INCOMPATIBLE
- NOT APPROPRIATE

M NOT APPLICABLE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE	unknown		waste oil
SOL	SOLVENTS	unknown		paint thinners
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	unknown		paint
IOC	INORGANIC CHEMICALS			
ACD	ACIDS	unknown		battery acid
BAS	BASES			
MES	HEAVY METALS	unknown		lead from batteries and paint

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/ DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OLW	waste oil	999	OD, burned	unknown	unknown
OL	paint thinners	999	spills, leaks	unknown	unknown
CD	battery acid	999	OD	unknown	unknown
MES	lead from paint	999	OD	unknown	unknown
MES	lead from batteries	999	OD	unknown	unknown
OCC	paint	999	OD	unknown	unknown

V. FEEDSTOCKS See Appendix for CAS Numbers

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state laws, sample analysis reports.)

Base records, interviews. See PA Report.

Navy Field Station, Wales


**POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT**

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
	NA

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION	02 ☐ OBSERVED (DATE _____)	☒ POTENTIAL	☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED <u>0</u>	04 NARRATIVE DESCRIPTION		

Contaminants could potentially migrate to shallow groundwater through the sand matrix.

01 ☒ B. SURFACE WATER CONTAMINATION	02 ☐ OBSERVED (DATE _____)	☒ POTENTIAL	☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED <u>150</u>	04 NARRATIVE DESCRIPTION		

If contaminants migrate to shallow groundwater they could be discharged to the Bering Strait located 500-700 feet away from the facility.

01 ☐ C. CONTAMINATION OF AIR	02 ☐ OBSERVED (DATE _____)	☐ POTENTIAL	☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____	04 NARRATIVE DESCRIPTION		

NA

01 ☐ D. FIRE EXPLOSIVE CONDITIONS	02 ☐ OBSERVED (DATE _____)	☐ POTENTIAL	☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____	04 NARRATIVE DESCRIPTION		

NA

01 ☒ E. DIRECT CONTACT	02 ☐ OBSERVED (DATE _____)	☒ POTENTIAL	☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED <u>150</u>	04 NARRATIVE DESCRIPTION		

The facility has no fence so that access is not restricted.

01 ☒ F. CONTAMINATION OF SOIL	02 ☐ OBSERVED (DATE _____)	☒ POTENTIAL	☐ ALLEGED
03 AREA POTENTIALLY AFFECTED <u>1.2</u> (ACRES)	04 NARRATIVE DESCRIPTION		

Soil could be potentially contaminated from past disposal.

01 ☐ G. DRINKING WATER CONTAMINATION	02 ☐ OBSERVED (DATE _____)	☐ POTENTIAL	☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____	04 NARRATIVE DESCRIPTION		

NA

01 ☐ H. WORKER EXPOSURE INJURY	02 ☐ OBSERVED (DATE _____)	☐ POTENTIAL	☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED _____	04 NARRATIVE DESCRIPTION		

NA

01 ☐ I. POPULATION EXPOSURE INJURY	02 ☐ OBSERVED (DATE _____)	☐ POTENTIAL	☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____	04 NARRATIVE DESCRIPTION		

NA


**POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT**
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS
I. IDENTIFICATION

 01 STATE 02 SITE NUMBER
 NA

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

 01 ☐ J. DAMAGE TO FLORA
 04 NARRATIVE DESCRIPTION

 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

NA

 01 ☒ K. DAMAGE TO FAUNA
 04 NARRATIVE DESCRIPTION *(include names of species)*

 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED

If contaminants are transported to the Bering Strait, several species of whales could potentially be contaminated as well as fish and other sealife.

 01 ☒ L. CONTAMINATION OF FOOD CHAIN
 04 NARRATIVE DESCRIPTION

 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED

Potential migration of contaminants to surface water could contaminate the fish,

 01 ☒ M. UNSTABLE CONTAINMENT OF WASTES
(See "Leak" starting below leaking drums.) 2-3
 03 POPULATION POTENTIALLY AFFECTED

 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

Paint thinners have leaked through the floor boards in the paint shed to the sand.

 01 ☐ N. DAMAGE TO OFFSITE PROPERTY
 04 NARRATIVE DESCRIPTION

 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

NA

 01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
 04 NARRATIVE DESCRIPTION

 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

NA

 01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING
 04 NARRATIVE DESCRIPTION

 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

NA

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

NA

III. TOTAL POPULATION POTENTIALLY AFFECTED: 150
IV. COMMENTS

There are three potentially contaminated sites at the facility: Site 2, Paint Shed; Site 3, Burn Area and Battery Disposal and, Site 4, Drum Disposal Area.

V. SOURCES OF INFORMATION *(Cite specific references e.g. state files, sample analysis reports)*

Base Records, interviews. See Preliminary Assessment Supporting Documentation.



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NA

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) White Alice Site		02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER Northeast Cape			
03 CITY St. Lawrence Island	04 STATE AK	05 ZIP CODE --	06 COUNTY Nome	07 COUNTY CODE --	08 CONG DIST --
09 COORDINATES LATITUDE 63°17'30"N		LONGITUDE 168°58'47"W			
10 DIRECTIONS TO SITE (Starting from nearest public road) The facility is located 118 miles west of the Seward Peninsula. The White Alice Site is located on Northeast Cape. Travel is by air or sea only.					

III. RESPONSIBLE PARTIES

01 OWNER (If known) Naval Ocean Systems Center		02 STREET (Business, mailing, residential) Arctic Submarine Lab Code 19			
03 CITY San Diego	04 STATE CA	05 ZIP CODE 92152-5000	06 TELEPHONE NUMBER (619) 553-7458		
07 OPERATOR (If known and different from owner) Same		08 STREET (Business, mailing, residential)			
09 CITY Same	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER ()		

13 TYPE OF OWNERSHIP (Check one)

☐ A. PRIVATE ☒ B. FEDERAL: U.S. Navy ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
(Agency name)
☐ F. OTHER: (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3001 DATE RECEIVED: / / ☐ B. UNCONTROLLED WASTE SITE (RCRA 103(d)) DATE RECEIVED: / / ☒ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON-SITE INSPECTION ☒ YES DATE <u>7/16-22/89</u> ☐ NO MONTH DAY YEAR		BY (Check all that apply) ☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR ☐ E. LOCAL HEALTH OFFICIAL ☒ F. OTHER: <u>Naval Energy & Environmental Support Activity</u> CONTRACTOR NAME(S): <u>(Specify)</u>			
02 SITE STATUS (Check one) ☐ A. ACTIVE ☒ B. INACTIVE ☐ C. UNKNOWN		03 YEARS OF OPERATION BEGINNING YEAR <u>1952</u> ENDING YEAR <u>1975</u> ☐ UNKNOWN			

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN OR ALLEGED
Substances possibly present include PCBs, TCE, and other solvents, jet fuel, asbestos, sulfuric acid, waste oil, fuel oil, ethylene glycol and others.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

Leaking drums pose a threat to surface water and drinking water of seasonal eskimo fisherman, vegetation and wildlife. Bulging drums pose a potential fire and explosion hazard.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)

☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Inspection time available based) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT Michael Hacking		02 OF (Agency Organization) Naval Ocean Systems Center Arctic Submarine Lab		03 TELEPHONE NUMBER (619) 553-7458	
04 PERSON RESPONSIBLE FOR ASSESSMENT Sherry Van Duyn/Joe Vogel		05 AGENCY Navy	06 ORGANIZATION NEESA Port Hueneme, CA	07 TELEPHONE NUMBER (805) 982-2634	08 DATE <u>3</u> / <u>12</u> / <u>90</u> MONTH DAY YEAR



I. IDENTIFICATION

01 STATE	02 SITE NUMBER
	NA

01 PHYSICAL STATES (Check all that apply)

☐ A SOLID E SLURRY
☐ B POWDER, FINES ☒ F LIQUID
☐ C SLUDGE ☒ G GAS

☒ D OTHER fibers

(Specify)

02 WASTE QUANTITY AT SITE
(Measures of waste quantities must be independent)

TONS	unknown
CUBIC YARDS	unknown
NO OF DRUMS	1000

03 WASTE CHARACTERISTICS (Check all that apply)

☒ A TOXIC	☒ E SOLUBLE	☒ I HIGHLY VOLATILE
☒ B CORROSIVE	☐ F INFECTIOUS	☒ J EXPLOSIVE
☐ C RADIOACTIVE	☒ G FLAMMABLE	☐ K REACTIVE
☒ D PERSISTENT	☒ H IGNITABLE	☐ L INCOMPATIBLE
		☐ M NOT APPLICABLE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE	unknown		Aviation fuel, diesel, waste oil
SOL	SOLVENTS	unknown		TCE, carbon tetrachloride
PSD	PESTICIDES	unknown		DDT
OCC	OTHER ORGANIC CHEMICALS	unknown		PCBs, antifreeze, leaded gas
IOC	INORGANIC CHEMICALS	unknown		Asbestos (Friable and nonfriable)
ACD	ACIDS	unknown		Sulfuric acid
BAS	BASES			
MES	HEAVY METALS	unknown		Leaded gasoline

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
IOC	Chrysotile asbestos	999		0.62-1.47	mgm/kgm
OC	Amosite asbestos	999		0.62-1.47	mgm/kgm
CC	PCBs	1336-36-3		unknown	
OLW	Waste oil	999	DR	unknown	
OLW	Turbine aviation fuel	999	DR	unknown	
OLW	Fuel oil diesel	999	DR	unknown	
OLW	Engine oil crankcase	999	DR	unknown	
OCC	Antifreeze arctic grade	999	DR	unknown	
OCC	Leaded gasoline	999	DR	unknown	
OCC	Deicing fluid	999	DR	unknown	
SOL	TCE	79-01-6	DR	unknown	
OCC	Ethyleneglycol	628-96-6	unknown	unknown	
OCC	Dibenzofuran	999	unknown	unknown	
SOL	Carbon tetrachloride	56-23-5	unknown	unknown	
PSD	DDT	50-29-3	unknown	unknown	
ACD	Sulfuric Acid	7664-93-9	unknown	unknown	

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		



I. IDENTIFICATION

01 STATE	02 SITE NUMBER
	NA

01 PHYSICAL STATES (CHECK ALL THAT APPLY)

- ☐ A SOLID ☐ E SLURRY
☐ B POWDER, FINES ☐ F LIQUID
☐ C SLUDGE ☐ G GAS
☐ D OTHER _____ (Specify)

02 WASTE QUANTITY AT SITE

(Measures of waste quantity)
- must be verifiable

TONS _____

CUBIC YARDS _____

NO OF DRUMS _____

03 WASTE CHARACTERISTICS (CHECK IF NOT APPLY)

- | | | |
|---|--|---|
| ☐ A. TOXIC | ☐ E. SOLUBLE | ☐ I. HIGHLY VOLATILE |
| ☐ B. CORROSIVE | ☐ F. INFECTIOUS | ☐ J. EXPLOSIVE |
| ☐ C. RADIOACTIVE | ☐ G. FLAMMABLE | ☐ K. REACTIVE |
| ☐ D. PERSISTENT | ☐ H. IGNITABLE | ☐ L. INCOMPATIBLE |
| | | ☐ M. NOT APPLICABLE |

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			Alcohols
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			2, 4, 5-T, Sulfuric acid
BAS	BASES			
MES	HEAVY METALS			

[illegible]

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

Base records, interviews, sampling results. See PA Report.

White Alice Site, Northeast Cape, St. Lawrence Island, AK



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NA

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 0 04 NARRATIVE DESCRIPTION

Little information is known about the groundwater. The potential for migration is probably low for groundwater and high for surface water.

01 ☒ B. SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 10-20 04 NARRATIVE DESCRIPTION

Surface water run off could potentially carry contaminants off site and to small ponds, lakes or to the Bering Sea 1.5 miles away from the facility.

01 ☒ C. CONTAMINATION OF AIR 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 10-20 04 NARRATIVE DESCRIPTION

Wind transport could potentially allow asbestos particles to migrate. However, only seasonal eskimo fisherman occupy an area 1.5 miles away from the facility.

01 ☒ D. FIRE EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 10-20 04 NARRATIVE DESCRIPTION

There is a potential for fire/explosion hazards due to jet fuel, solvents and compressed gas cylinders.

01 ☒ E. DIRECT CONTACT 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 2-3 04 NARRATIVE DESCRIPTION

There is a potential for direct contact if the eskimos go to the area contaminated.

01 ☒ F. CONTAMINATION OF SOIL 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED 15 04 NARRATIVE DESCRIPTION

Soil is sparse in the area. The terrain is mostly mountainous, however soil in the area could be potentially contaminated.

01 ☒ G. DRINKING WATER CONTAMINATION 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 10-20 04 NARRATIVE DESCRIPTION

Surface water run off in the streams and ponds are used as the primary source of drinking water by the seasonal tenants of the eskimo fishing village located 1.5 miles away.

01 ☐ H. WORKER EXPOSURE INJURY 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

NA

01 ☒ I. POPULATION EXPOSURE INJURY 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 10-20 04 NARRATIVE DESCRIPTION

The only population affected is the seasonal eskimo fishing camp.

White Alice Site, Northeast Cape, St. Lawrence Island, AK



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NA

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☒ J. DAMAGE TO FLORA

02 ☐ OBSERVED (DATE: _____)

☒ POTENTIAL

☐ ALLEGED

04 NARRATIVE DESCRIPTION

Surface water is critical for vegetation in the area. A Category 2 candidate taxa, the few flowered primula Primula tschuktschorum could potentially be in the area.

01 ☒ K. DAMAGE TO FAUNA

02 ☐ OBSERVED (DATE: _____)

☒ POTENTIAL

☐ ALLEGED

04 NARRATIVE DESCRIPTION (include names of species)

Sightings of peregrine falcons have been observed on the island, however it is not considered a critical habitat. Other animals that are in the area included foxes, squirrels, shrew, weasels, etc.

01 ☒ L. CONTAMINATION OF FOOD CHAIN

02 ☐ OBSERVED (DATE: _____)

☒ POTENTIAL

☐ ALLEGED

04 NARRATIVE DESCRIPTION

This fish and animals of the Bering Sea are commercially harvested by the eskimos.

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES

02 ☒ OBSERVED (DATE: 7/16-22/89)

☐ POTENTIAL

☐ ALLEGED

(Spills runoff standing liquids leaking drums)

03 POPULATION POTENTIALLY AFFECTED 10-20

04 NARRATIVE DESCRIPTION

There are leaking drums that contain TCE, arctic grade antifreeze, waste oil, fuel oil, diesel, and deicing fluid exposed to the environment.

01 ☒ N. DAMAGE TO OFFSITE PROPERTY

02 ☐ OBSERVED (DATE: _____)

☒ POTENTIAL

☐ ALLEGED

NARRATIVE DESCRIPTION

If contaminants migrate off-site they could contaminate off-site property.

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

04 NARRATIVE DESCRIPTION

NA

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

04 NARRATIVE DESCRIPTION

NA

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 10-20

IV. COMMENTS

There are four potentially contaminated sites at the facility: Site 5, Asbestos hazard; Site 6, Abandoned electrical system; Site 7, Storage drums, and Site 8, Main transmitter area storage building.

V. SOURCES OF INFORMATION (Cite any references e.g. site files, sample analysis reports)

Base records, interviews. See Preliminary Assessment Supporting Documentation.

**PRELIMINARY ASSESSMENT
REPORT**

Activity Names: Naval Ocean Systems Center (NOSC)
Special Areas, Alaska including:
White Alice Site, Tin City, AK
Navy Field Station, Cape Prince of Wales, AK
White Alice Site, Northeast Cape,
St. Lawrence Island (SLI), AK

Address: NOSC Arctic Submarine Lab, San Diego, CA 92152
UIC: N66001

EPA Region: 10 **EPA Identification:** None

Activity Location:	Latitude:	Longitude:
Tin City	65° 35' 02" N	167° 56' 26" W
Wales	65° 36' 30" N	168° 03' 50" W
Northeast Cape	63° 17' 30" N	168° 58' 47" W

Preliminary Assessment Team Members

Sherry K. Van Duyn, Environmental Engineer
Joseph E. Vogel, P.E., Environmental Engineer
Kevin L. Coons, Environmental Engineer
Ronald E. Tickle, P.E., Environmental Engineer
Jai L. Jeffery, Environmental Engineer

Prepared By:

Naval Energy and Environmental Support Activity
Port Hueneme, CA 93043-5014
NEESA 13-205PA
July 1991

Priority for Site Inspection: Low

Eight potential hazardous waste disposal sites were investigated during the Preliminary Assessment. A Site Inspection is required for the following sites:

- White Alice Site, Tin City
 - Site 1, Building 1001 PCB Contamination (Tin City)
- Navy Field Station, Cape Prince of Wales
 - Site 2, Paint Shed (Wales)
 - Site 3, Burn Area and Battery Disposal (Wales)
 - Site 4, Drum Disposal Area (Wales)
- White Alice Site, Northeast Cape, St. Lawrence Island
 - Site 5, Asbestos Hazards (SLI)
 - Site 6, Abandoned Electrical System (SLI)
 - Site 7, Storage Drums (SLI)
 - Site 8, Main Transmitter Area Storage Building (SLI)

A removal action was conducted in July and August, 1990 at sites 6, 7, and 8 to remove electrical equipment, storage drums, and gas cylinders.

1. INTRODUCTION.

1.1 ACTIVITY DESCRIPTION AND LOCATION.

1.1.1 White Alice Site, Tin City. The Tin City White Alice Radio Relay Site is located about 7,000 feet northeast of the Tin City Airport, and about two miles north of the Bering Sea (Figure 1). The White Alice Site is about 50 miles southeast of Mys Uelen (Cape Chaplin), Siberia. There are no roads leading to the area so access is either by sea or air, weather permitting.

The White Alice Radio Relay Site covers 6.3 acres on the south side of Cape mountain and overlooks the Bering Sea. The site consists of two abandoned buildings, four abandoned radio antennas, and four abandoned fuel tanks.

1.1.2 Navy Field Station, Cape Prince of Wales. The Navy Field Station is located on the Cape Prince of Wales of the Seward Peninsula bounded by the Bering Sea to the south, the Bering Strait to the west and the Chukotsk [Chukchi] Sea to the north. It is located on the north side of Cape mountain on flat marshy land as shown in Figure 2. The Navy Field Station is on the north side of the city of Wales and 200 yards east of the Bering Strait. The Navy Field Station is about seven miles northwest of Tin City, and like Tin City, access is either by sea or air.

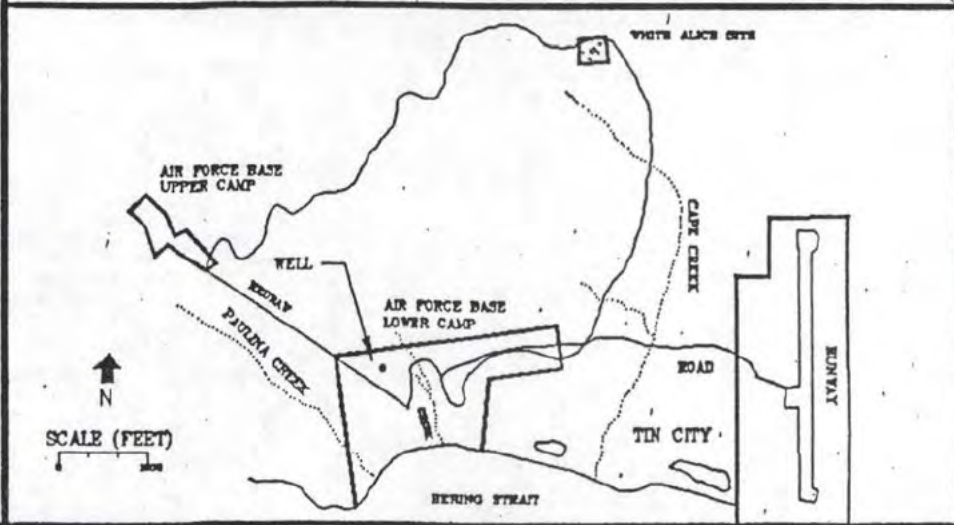
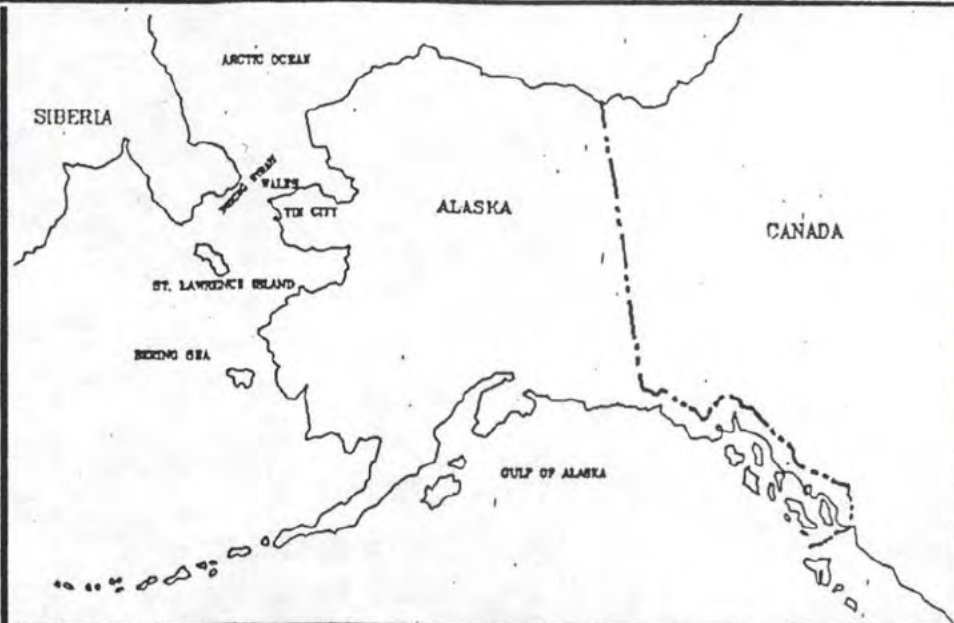
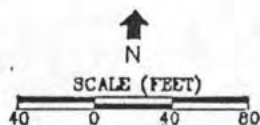
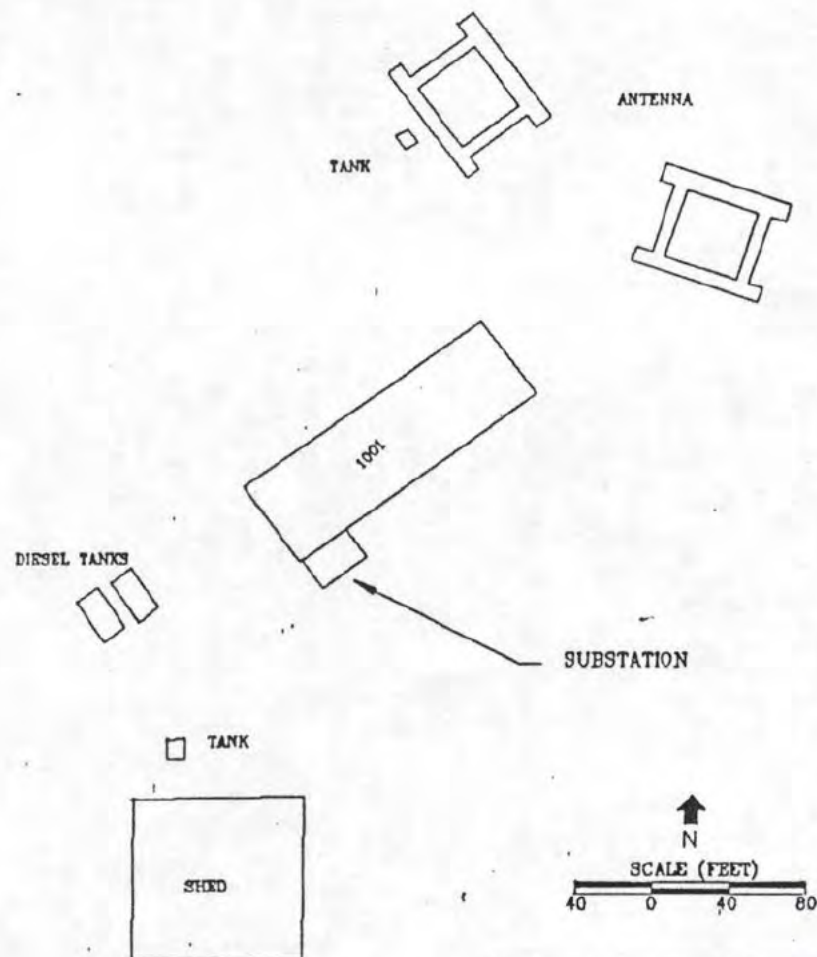
The Navy Field Station covers approximately 5 acres and consists of two housing quarters, one large vehicle and miscellaneous storage buildings, generator/weather building, four small storage sheds, 13 large diesel fuel storage tanks, and two small gasoline tanks as shown in Figure 2.

The land that the Navy Field Station resides on is leased property owned by the Wales Native Corporation.

1.1.3 White Alice Site, Northeast Cape, St. Lawrence Island. The White Alice Site at Northeast Cape is located on Saint Lawrence Island (SLI), Alaska. The island is approximately 100 miles in length and averages about 20 miles in width. The distance to the nearest point in Siberia, Cape Chaplin, is about 40 miles, while the distance to the nearest point on the Alaskan mainland at Cape Rodney on the Seward Peninsula is 118 miles. All travel to or from the area is accomplished by either sea or air if weather permits. Figure 3 shows the general location of the navy facilities at Northeast Cape.

The White Alice Site encompasses approximately 26 acres and consists of seven abandoned buildings, four abandoned radio antennas, an abandoned tramway leading up Kangukhsam Mountain, and four abandoned above-ground fuel tanks as shown in Figure 4.

WHITE ALICE SITE

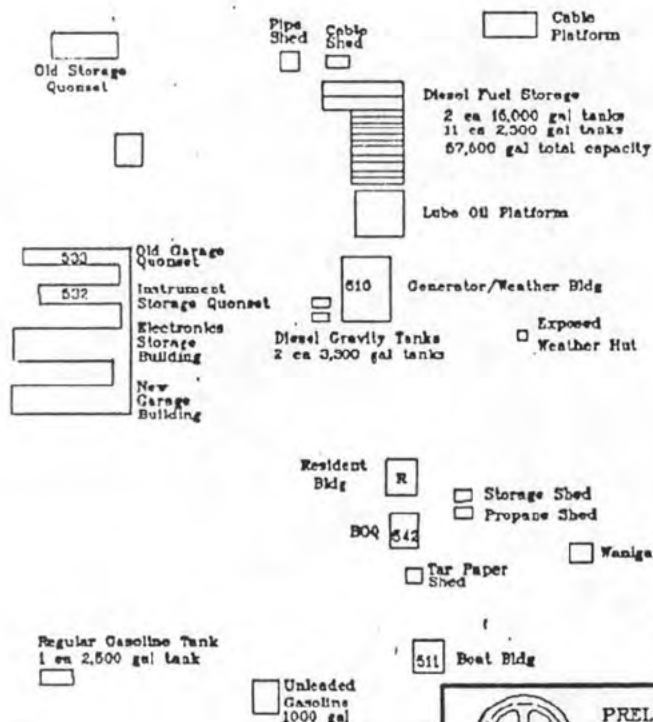


PRELIMINARY ASSESSMENT
NAVAL OCEAN SYSTEMS CENTER PROPERTY
WHITE ALICE SITE, TIN CITY
ALASKA

FIGURE 1
GENERAL LOCATION MAP OF TIN CITY,

Eskimo Cemetery

Fence — x — x — x — x — x — x — x —



INSET A



PRELIMINARY ASSESSMENT
NAVAL OCEAN SYSTEMS CENTER
NAVY FIELD STATION, CAPE PRINCE OF WALES
ALASKA

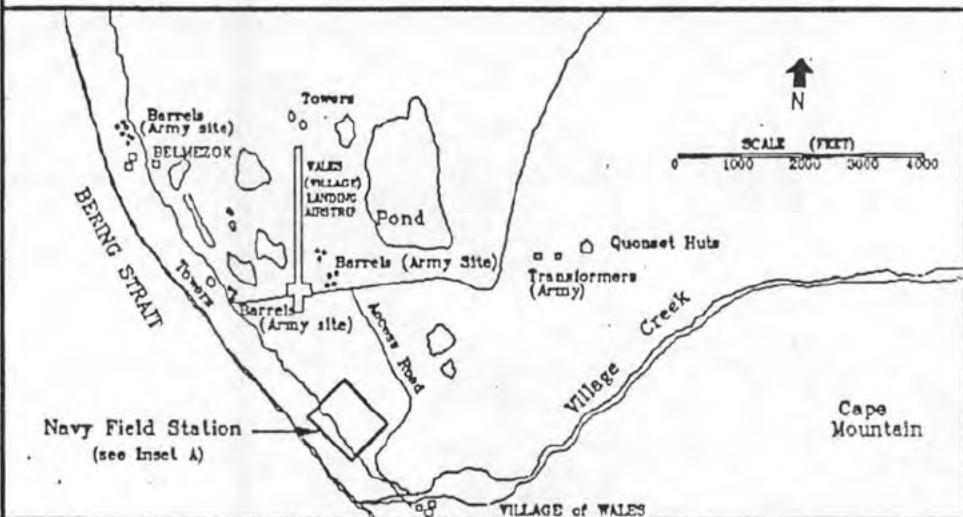
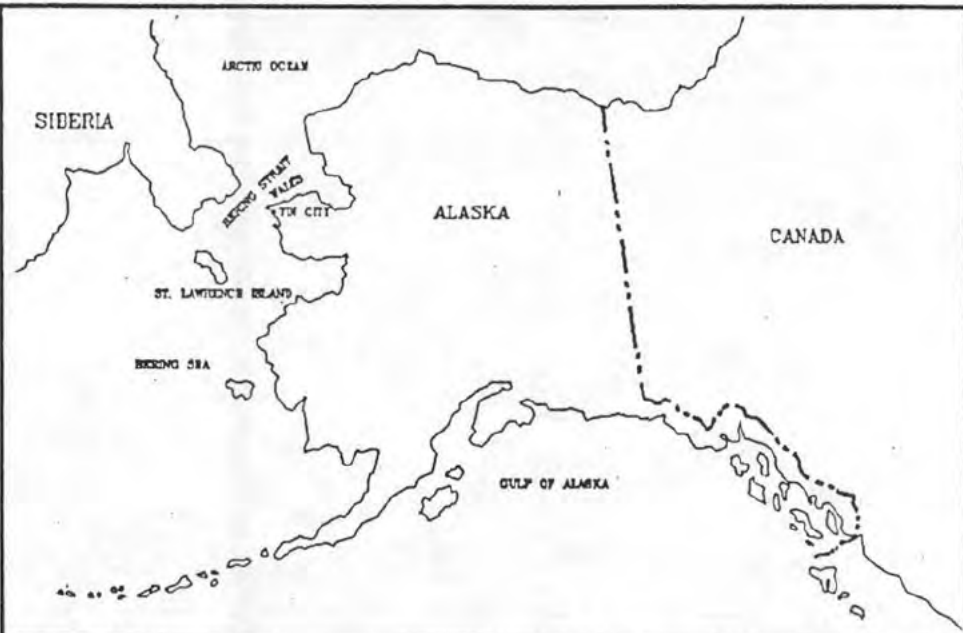
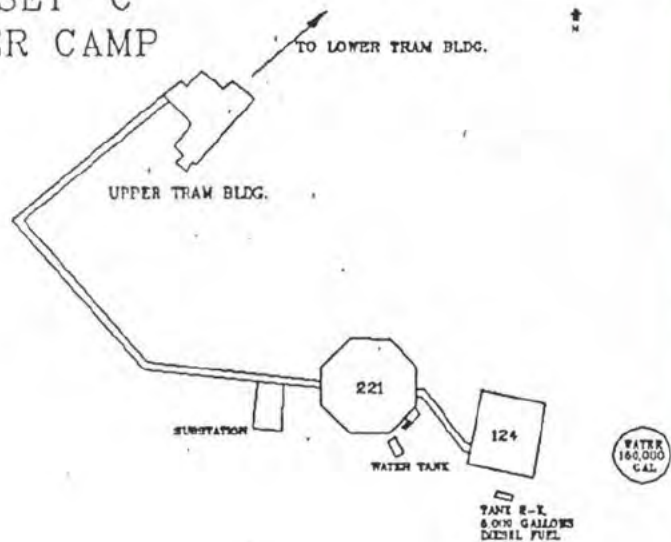
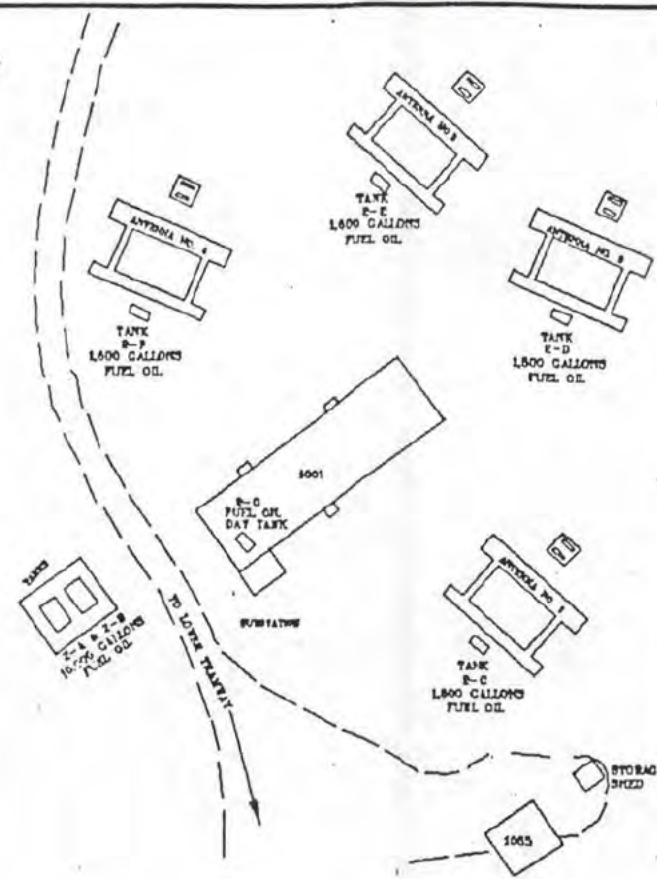
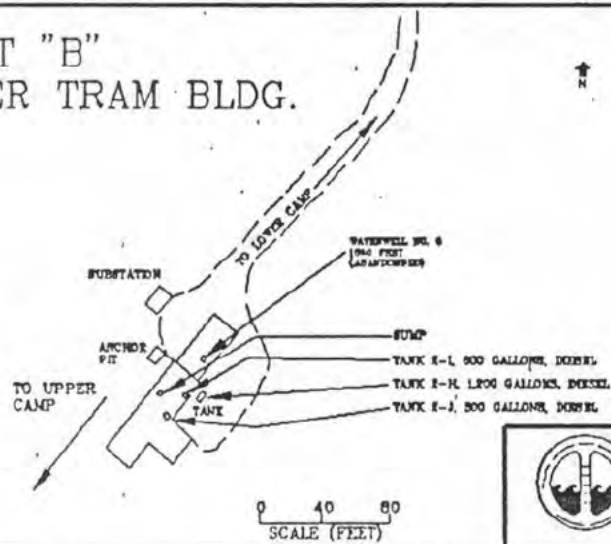


FIGURE 2
GENERAL LOCATION MAP
CAPE PRINCE OF WALES

INSET "C" UPPER CAMP



INSET "B" LOWER TRAM BLDG.



1.2 ACTIVITY HISTORY AND MISSION.

1.2.1 White Alice Site, Tin City. Construction on the White Alice site began in 1952 on land that was transferred from the Bureau of Land Management (BLM) to the Air Force. The White Alice Site was completed by Air Force contractors in 1954. During the construction of the Tin City White Alice Site, other White Alice sites were being built by the Air Force throughout Alaska and nearby islands. The White Alice Sites were used for tropospheric scatter sites operating on high power pulse systems for communication purposes in desolate parts of Alaska.

Before the Air Force built the White Alice Site and the Tin City Air Force base, the surrounding land belonged to the Bureau of Land Management (BLM) or local mining companies. The Tin City White Alice Site went into operation in 1954. While in operation the Tin City White Alice Site was operated by seven to twelve civil service and contractor personnel. Personnel who worked at the White Alice Site were stationed about one mile south at the Tin City Air Force base. In 1975, the White Alice sites were decommissioned and replaced by satellite communications.

In February 1979, the Air Force transferred ownership of the 6.3 acre White Alice Site to the Navy, but control of the area was not accepted by the Navy until 1982. The Navy originally planned to use the old White Alice Site for arctic experiments, but to this date the Navy has never used the facility. In 1984, the Air Force removed the majority of electrical equipment and drained all of the fuel tanks. Since then, the facility has been vacant.

1.2.2 Navy Field Station, Cape Prince of Wales. The exact date that the village of Wales was founded is unknown, but archaeological evidence from house pits and middens in the area date back to as far as 500 A.D. More recent reports by the Russian Navy in 1827 cited the village of "Eidamoo", and in 1880 Captain Smith of the U.S. Revenue Cutter Service reported "Kingigamute", a village with 400 inhabitants. In 1890 the American Missionary Association established a mission and in 1902 the Wales post office was opened (Native Health Service, 1983).

Wales was a major center for whaling due to its strategic location along the migratory path of whales. The whaling culture was destroyed in 1918 by an influenza epidemic which claimed the lives of Wales "finest whalers" (Native Health Service, 1983).

The Army established a post in Wales in the 1940s to help supply the Russian Army during WWII. In 1947 the National Weather Service built a small weather station consisting of two houses for families who worked there. The weather station was turned over to the Navy Electronics Laboratory (NEL) in 1951 for use in conducting arctic experiments. NEL has since changed its name to

the Arctic Submarine Lab (ASL) under the Naval Ocean Systems Center (NOSC).

The Station was transferred to the Polar Research Lab in July of 1977 and returned to ASL in August of 1979. During the period of time that PRL was at the station the climatological records were discontinued. As of March 1987, the location of the instruments remain unchanged from the time they were set up in April 1947, with the exception of the anemometer, which is no longer located atop the engine-generator building because it was blown down by severe winds during the winter of 1984-1985.

The main objective of the field station has always been to conduct arctic experiments and gather weather information.

1.2.3 White Alice Site, Northeast Cape, St. Lawrence Island.

The facilities on St. Lawrence Island were constructed in 1952 for the Department of the Air Force and used as part of the high energy pulse system tropospheric scatter sites located throughout coastal Alaska. Excess property of the original Air Force base, 16,213 acres, was relinquished to BLM on 14 March 1958 and conveyed to the native corporations; Sivugaq' Inc. of the village of Gamble and Savoonga Inc. of the village of Savoonga, on June 27, 1979. Northeast Cape was used by the Air Force until it was closed in 1975 when the White Alice sites became obsolete with the introduction of communication satellites. After its closure, 4854.93 acres, were relinquished to BLM on 20 August 1975, and then conveyed to Sivugaq' Inc. (Gamble) and Savoonga Inc. (Savoonga) on June 27, 1979. Together, the two corporations own St. Lawrence Island.

On July 12, 1982, 25.96 acres of property were transferred from the Department of Air Force to the Department of Navy. The Navy property consisted of the White Alice Site, the lower tram terminal, the tramway up Mount Kangukhsam, and the upper tram complex as shown in Figure 4.

On July 29, 1982 the Naval Ocean Systems Center (NOSC) accepted control of the 26 acres of property. NOSC originally planned to use the facilities at Northeast Cape as part of experiments run by the Arctic Submarine Laboratory; however, to date no Navy use of the property has occurred.

1.3 SURROUNDING AREA.

1.3.1 White Alice Site, Tin City. The White Alice Site is on the west side of Cape mountain which is an area characterized as tundra. In the surrounding area there is a mining camp, the Tin City trading post, and the Tin City Air Force Base. The mining camp, located 1.75 miles south, is a temporary summer residence for a dozen miners. In Tin City, there is only one permanent

resident, living at the trading post located about 1.25 miles from the facility. Six to ten temporary personnel live at the Tin City Air Force Base during the summer months. Wales, an Eskimo village with 150 residents is about six miles to the northwest. Nome is about 100 miles to the south.

1.3.2 Navy Field Station, Cape Prince of Wales. The Navy Field Station is located in Wales, which is on the north side of Cape Mountain and south of Lopp Lagoon. The facility is operated by three Navy personnel. Wales has a population of approximately 130, and is situated on coastal sand on the east shore of the Bering Strait. About 80% of the residents live within a half mile of the facility, and all are within a one mile radius. There are no commercial or industrial facilities in Wales, but there is a small school located approximately a quarter mile from the facility. Tin City is located about six miles southeast, and Nome is about 100 miles to the south.

1.3.3 White Alice Site, Northeast Cape, St. Lawrence Island. The White Alice Site at Northeast Cape is located on St. Lawrence Island at the northern base of Mount Kangukhsam. Of the 21,504 acres that encompassed the original Air Force base, 25.96 acres are under Department of Navy jurisdiction. The remaining property has been conveyed to the Savigaq' and Savoonga Native Corporations. The area surrounding the Navy property is characterized by isolated tundra-like wilderness. The nearest permanently inhabited village, Savoonga, is approximately 57 miles to the northwest. An Eskimo fishing camp, located approximately 2.5 miles north of the White Alice Site, is not permanently inhabited and reported to be used infrequently during the summer months.

1.4 BIOLOGICAL FEATURES.

1.4.1 White Alice Site, Tin City, and Navy Field Station, Cape Prince of Wales.

Flora. This area is characterized by a wet and moist tundra biome, especially wet tundra in the low land areas of Wales. The wet tundra area is typified by little topographic relief, with standing water and numerous shallow lakes present during the summer (U.S. Army, 1989). Moss, grasses, and occasional scrub willows are found from sea level up to about 800 feet, but the mountains are bare, and no trees are found in the area (Mulligan, 1964). In Wales, the important plant types of the wet tundra community include shrubs, herbs, grasses and sedges, lichens, mosses and liverworts (Native Health Service, 1983).

Fauna.

Terrestrial Mammals. Arctic fox range far out on pack ice during

the winter and may be found considerable distances inland year around. The area is within the known range of the gray wolf, grizzly bear, moose, wolverine, red fox, lynx, mink, short-tailed and least weasel, land otter, muskrat, arctic ground squirrel, tundra and snowshoe hare. The inland area is also part of the musk ox summer range (U.S. Army, 1989).

Fish. Arctic char/Dolly Varden, grayling and whitefish occur or may occur in nearshore waters in this area during the summer. They winter in streams and lakes. Five species of Pacific salmon also are found in this area, but coho, sockeye, and chinook salmon are less common. The general timing of spawning runs are July through September. Herring spawn in shallow bays, beaches or slough areas where eelgrass is common and the bottom is mud and/or sand, usually in water depths of less than two meters (U.S. Army, 1989).

Avifauna. Bering Strait and nearby coastal areas are major spring and fall migratory bird routes. Lopp Lagoon, located northeast of the Cape is a major area for nesting, molting, and staging waterfowl during the summer and fall. Pintails comprise more than three-quarters of the dabbling ducks and scaups are the most numerous diving ducks which use the area. The marine waters are a major seabird concentration and foraging area. There are two seabird colonies located in the area; one at Tin City and the other at Cape Mountain. The Tin City colony supports pelagic cormorants while Kittlitz's murrelet nests at Cape Mountain. Willow and rock ptarmigan are present throughout the area (U.S. Army, 1989).

A Peregrine Falcon nesting area was observed by an Air Force contractor (no date given for the sighting), approximately one mile southeast of the Tin City Air Force Base (Upper Camp), at a point located on the southward-facing cliffs overlooking the Bering Sea. Therefore, it is assumed that the falcon could be a transient in the Tin City area at any time. These conclusions are based on a records search conducted at the offices of the Endangered Species Section, U.S. Fish and Wildlife Service, Region 7, Anchorage, Alaska (U.S. Air Force, 1985).

Marine Mammals. Twenty-four species of marine mammals range, or may range into or near the Cape Prince of Wales area. Several of these, including Stellar sea lion, harbor seal, walrus, beluga and gray whales appear at predictable times and places. Bowhead, beluga and gray whales migrate through the area following breakup of ice in spring (April-May) and prior to freezeup in the fall (November-December). Fin, humpback, sei, and right whales may be present occasionally in the summer. Bearded, harbor, ribbon and ringed seals are present with floating sea ice. Ringed seals breed and pup on shorefast ice, late winter (March-April). Polar bears are likely to be present in winter on pack ice. Walrus are

present on pack ice from approximately November-December through May (U.S. Army, 1989).

Endangered Species. Six species of whales (gray, right, sei, bowhead, humpback, and fin) may occur to varying extent in or near the waters of Cape Prince of Wales. Peregrine falcons occur in the spring and summer throughout the area. Cape Prince of Wales is in an area classified as "Peregrine historical occurrence/potential habitat". Prior to any activity in this area an evaluation under the Endangered Species Act would be required. Three rare plant taxa (Category 2) are known to occur in or adjacent to the Cape, including the primula, Primula tschuktschorum; and an arctic sorrel, Rumex krausei. The following are endemic to Alaska, vulnerable but not currently threatened (Category 2, Part 2) which occur in the Cape Prince of Wales area: Artemisia senjavinensis; Colpodium wrightii; Papaver walpolei; and Primula anvilensis. Formal listing of Category 2 species could occur at any time (U.S. Army, 1989).

1.4.2 White Alice Site, Northeast Cape, St. Lawrence Island.

Flora. The vegetation of the Northeast Cape area is classified as alpine tundra. This type of vegetation is dominated by white mountain avens, mat forming herbs, grasses, and sedges. Indigenous shrubs include; alpine bearberry, dwarf birch, Labrador tea, willows, heaths, and cassiopes. The lowland area is mainly wet tundra with lakes, bogs, and generally poorly drained soils. Vegetation at higher, drier areas become sparse to almost nonexistent. Steep slopes, lack of soils, and harsh climate make plant populations and densities low (U.S. Army, 1989).

Fauna.

Terrestrial Mammals. Arctic fox are found at sea on pack ice during the winter and are present on St. Lawrence Island year-around. Red fox are occasionally present. Short-tailed weasels (ermine) and arctic ground squirrels are permanent residents. Smaller mammals are numerous and provide the primary spring diet to migratory raptors, foxes, and jaegers when the snow first begins to leave the tundra. These small mammals include; the tundra shrew, Greenland collared lemming, the red-backed vole, and the tundra vole (U.S. Army, 1989).

Marine Mammals. Walrus, sea lion, minke, beluga and killer whales, harbor porpoise, bearded seals, and possibly ribbon seals are present during open water (July - September). Walrus frequently haul out at Northeast Cape which is also a minor hauling out area for sea lions. Ringed seals breed and pup on shorefast ice during late winter (March - April) at Northeast Cape between Kangighsak Point and Apvawook Cape. Polar bears are likely to be present in winter on ice pack and/or on shore.

There is a minor bowhead whale (April - May) and gray whale (May - June) northern migrations off the eastern coast of St. Lawrence Island. A Gray Whale summer feeding area is located northeast of the island. Walrus and bearded, ringed, and spotted seals are harvested in this area (U.S. Army, 1989).

Avifauna. Most of St. Lawrence Island provides important summer/fall nesting and molting habitat for migratory waterfowl. It also provides habitat for a major part of the seabird population in the northern Bering Sea. The marine waters surrounding the island are major seabird concentration and foraging areas. The seabird colonies at the Northeast Cape area are limited. Three seabird colonies (Kinipaghulghat Mountain, Punuk Island, and Seevookhan Mountain) each support only a few pairs of a handful of species (U.S. Army, 1989).

Endangered Species. There have been sightings of peregrine falcons on St. Lawrence Island and it is listed as an irregular visitant and an accidental on the island. There is no known nesting of peregrines on the island and the habitat is not considered to be critical for their well being (U.S. Army, 1989).

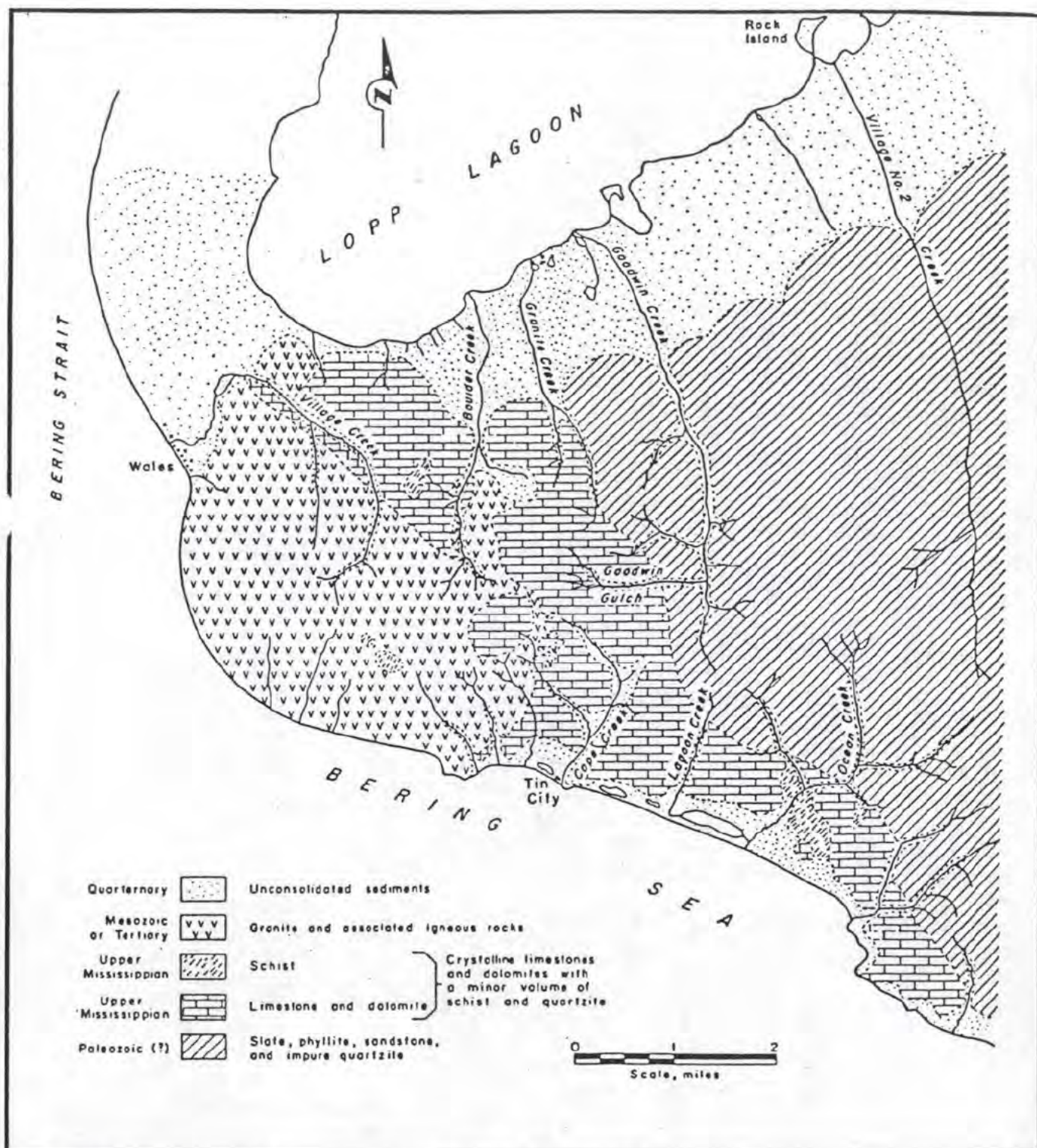
A small, few-flowered primula (Primula tschuktschorum) restricted to the Chukchi and Seward peninsulas and St. Lawrence Island is listed as a Category 2 candidate taxa. Category 2 includes those taxa for which current knowledge suggests that proposals for listing as threatened or endangered are appropriate, although data to fully support the proposals are not yet available (U.S. Army, 1989).

1.5 GEOLOGY AND SOILS.

1.5.1 White Alice Site, Tin City, and Navy Field Station, Cape Prince of Wales. The oldest rocks in the Tin City, Wales area are the metasedimentary series of early Paleozoic or pre-Paleozoic shales, fealties, schists, quartzites, and limy shales commonly referred to as "black slates" (Figure 5). The Black slates are overlain by a series of gray middle to late Paleozoic metalimestone and marbles that either include or are overlain by relatively thin schist and quartzite beds (Mulligan, 1964).

Also, three distinct periods of igneous activity are present. The first is represented by mafic dikes, sills, and stocks, locally termed "greenstones" that intrude the black slates but apparently do not intrude the limestones. The greenstones are abundant a few miles east of Cape mountain. The second period of igneous activity is represented by granitic stocks, sills, and dikes that intruded both the slate and limestones. Being more resistant to erosion than the surrounding rocks, the granitic stocks and the associated halo of dikes, sills, and contact metamorphosed sediments tend to form mountains with an exposed

granitic core. Cape mountain is a prominent and typical example. The third period of igneous activity is represented by hard black mafic dikes, up to 10 feet in width, that cut both the limestone



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FIGURE 5
GEOLOGICAL FORMATIONS
OF TIN CITY AND WALES

SOURCE: MULLIGAN, 1964

and the granite near the head of cape creek. These mafic dikes do not appear to be either abundant or of great linear extent (Mulligan, 1964).

The Tin City area is mainly comprised of Precambrian volcanic and metamorphic bedrock. Gold, tin, beryllium, copper, lead, silver, antimony, zinc, bismuth, mercury, and molybdenum mines are widespread in the area. Approximately 2,000 tons of tin are mined from Cape Mountain and the Lost River areas. Fluorite, a nonmetallic mineral is mined in the Tin City/Lost Creek area (U.S. Army, 1989). The soils at Tin City are typified as silt, gravel, sand and loam that comprise steep ridges and knolls. The soils are poorly drained with moderate permeability. Permafrost occurs at shallow depths (U.S. Air Force, 1985).

Cape Prince of Wales is divided into unconsolidated deposits to the north and bedrock to the south. The unconsolidated deposits are classified as coastal plain. These are older deposits of interstratified marine and alluvial sediments with some local glacial materials. These formations were laid down in shallow, nearshore shelf environments where frequent sea level changes alternately exposed and submerged portions of the gently sloping terrain. A thin layer of poorly drained surface peat layers or soil mantles comprise most of these deposits. The extreme tip of the Seward Peninsula (the southern portion of Cape Prince of Wales) is characterized by intrusive granitic rock (U.S. Army, 1989).

Soils in the Wales township are generally well drained sandy or gravelly loams. Well logs reveal that the city is underlain by 25 to 45 feet of beach and dune sand; coarse gravel and clay underlie the sand. Bedrock in the area is limestone. Permafrost is continuous in the Wales area with an active layer from four to six feet in most areas (Native Health Service, 1983).

1.5.2 White Alice Site, Northeast Cape, St. Lawrence Island.

The eastern part of St. Lawrence Island is a broad, wave-cut bedrock platform now elevated a few feet to nearly 100 feet above sea level. The surface of the platform is dotted with countless small shallow lakes and blanketed by a thin veneer of water-soaked mossy turf and peat. Several isolated groups of talus-covered hills, which are bounded by ancient sea cliffs and probably represent former islands, rise 1,000 to 2,000 feet above the surface platform.

Preliminary geologic investigations in the eastern part of St. Lawrence Island indicate the presence of a heretofore unreported sedimentary sequence possibly as much as 8,000 feet thick. The oldest strata are a thick sequence of Devonian dolomite and dolomitic limestone exposed along the Seknak River. On the Ongoveyuk River these strata appear to be succeeded

disconformably by at least 1,000 feet of Upper Mississippian limestone and cherty limestone which in turn are overlain disconformably by a 400 foot shaly sequence that is definitely of Middle to Late Triassic age in the upper part and probably of Early Triassic or Permian age in the lower part. The youngest sedimentary rocks appear to be a thick section of Graywacke and mudstone along the Ongoveyuk River, tentatively assigned a Jurassic or Cretaceous age. The Paleozoic and Mesozoic sequences show strong lithologic and faunal similarities to coeval rocks in the Brooks Range; and some counterparts appear also to be present on the Seward and Chukotsky Peninsulas. Table 1 gives the suggested correlation of Paleozoic and Mesozoic sequences on eastern St. Lawrence Island, western Alaska, and the Chukotsky Peninsula in the USSR. Figure 6 shows the location of geologic units on the eastern part of St. Lawrence Island.

Soils at the eastern part of St. Lawrence Island consist of loose, well rounded, medium course granitic sand and gravel. Sand, silt and peat are found at lower elevations and along the coast. In the higher elevations, the Kangukhsam and Kinipaghulghat Mountains, quartz monzonite is present, and some small areas of undifferentiated volcanic rocks exist around Northeast Cape.

1.6 TOPOGRAPHY AND HYDROLOGY.

1.6.1 White Alice Site, Tin City.

1.6.1.1 Topography. Regional topography generally consists of steep rolling hills, intensifying into steep mountainous terrain approaching Cape Mountain as shown in Figure 7.

Cape Mountain is an isolated peak that rises 2,289 feet from sea level to form a prominent landmark on the east side of the Bering Strait (Mulligan, 1964).

1.6.1.2 Surface Water. Cape Mountain is drained by a number of small creeks that flow a few miles to the Bering Sea or Lopp Lagoon on the Wales side of the mountain (Mulligan, 1964).

During the summer, surface water is present on the slopes of Cape Mountain almost to the summit. The water usually is not visible on the surface but trickles through the frost broken detritus in the bottom of gulches and gullies (Mulligan, 1964).

The White Alice Site at Tin City is located at the top of a hill, and is therefore neither located in standing water nor a floodplain. Surface water drainage from the facility flows approximately 1000 feet at a 20% grade into the Cape Creek, which discharges into the Bering Strait about 11,500 feet downstream. The Bering Strait is used for subsistence fishing by the local

SYSTEM	SERIES	EASTERN ST. LAWRENCE IS ¹	WESTERN AND CENTRAL BROOKS RANGE ²	SEWARD PENINSULA AND ADJACENT PARTS OF YUKON-KOYUKUK BASIN ³	CHUKOTSKY PENINSULA (U.S.S.R.) ⁴
JURASSIC AND CRETACEOUS	undivided	Graywacke and mudstone	Fortress Mountain, Towok, and Oki-kruak For- mations (graywacke and mudstone)	Graywacke, mudstone and andesitic volcanic rocks in the Yukon- Koyukuk basin	Sandstone and shale; vol- canic rocks of acid and intermediate compo- sition
TRASSIC	U	Shale, limestone and chert	Shublik Fm		Ss., sls., cgl., and coquina
	M	?-?-?-?-?			Clay sh., sls., ss., and cgl.
	L	Siltstone and chert			Clay shale, siltstone, sandstone, conglomer- ate and limestone
PERMIAN	undivided		Siksikpuk Formation (shale, siltstone, and chert)		Sandstone, clay shale, siltstone and conglom- erate
MISSISSIPPIAN	Upper	Limestone and chert	Lisburne Gp.	Limestone near Cape Prince of Wales	Limestone, siltstone shale, and sandstone
	Lower			Alapah Ls. (ls., chert)	
				Wachsmuth Ls. (ls., dol., ch.)	
			Kayak Shale (sh., ls., ss.)		
DEVONIAN	undivided	Dolomite and dolomitic limestone	Baird Group (dolomite, dolomitic limestone, and limestone)	Dolomite, limestone and black slate near Coun- cil and Kougarok River	Limestone, dolomite, phyllitic carbonaceous shale, siltstone, sand- stone, and calcareous, chloritic and sericitic slates

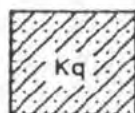


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ST. LAWRENCE ISLAND
ALASKA

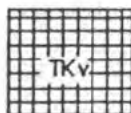
TABLE 1
GEOLOGICAL FORMATIONS
OF NORTH EAST CAPE

SOURCE: PATTON AND DUTRO, 1969

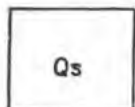
EXPLANATION:



CRETACEOUS QUARTZ
MONZONITE



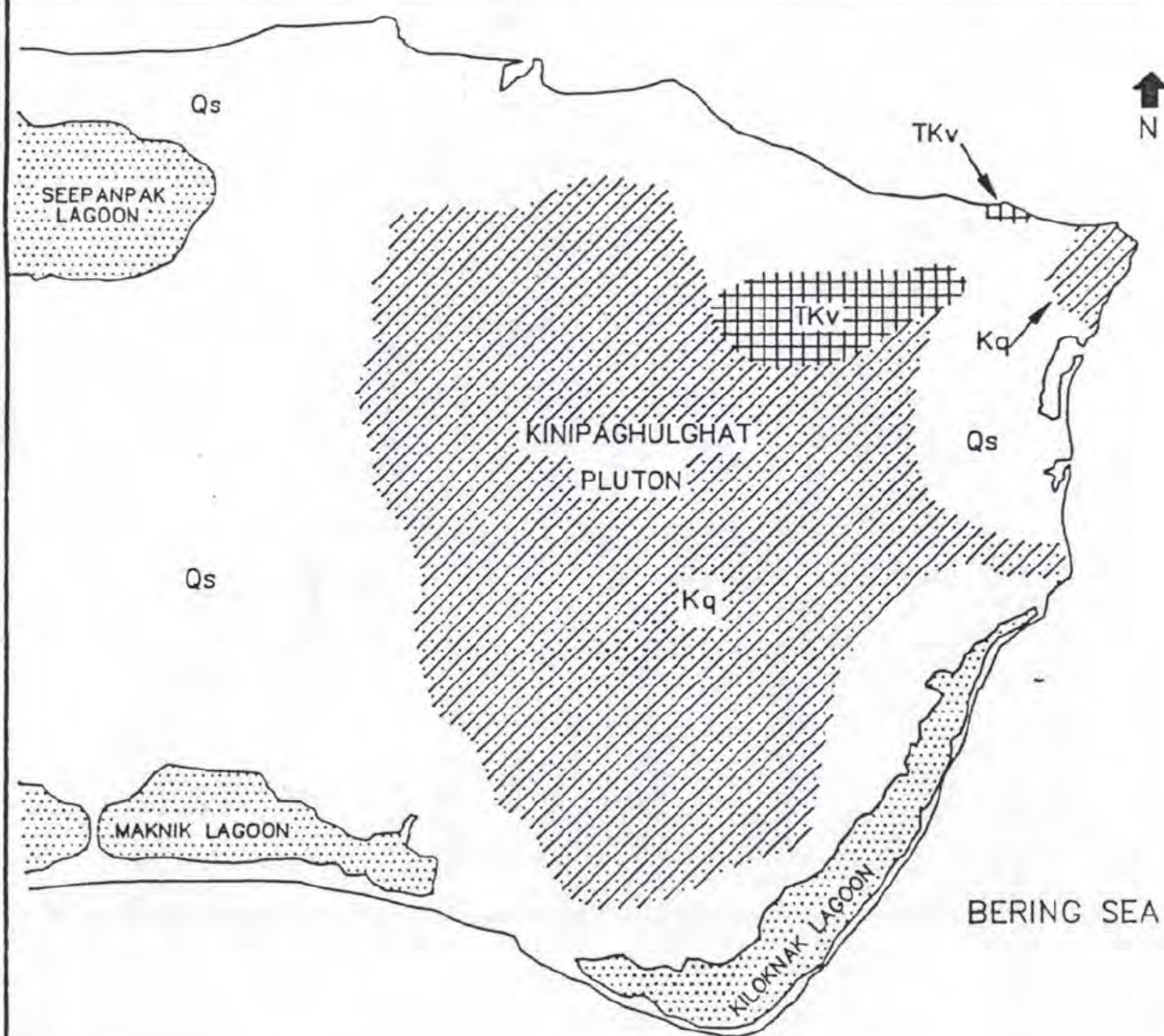
TERTIARY/CRETACEOUS
UNDIFFERENTIATED VOLCANIC
ROCKS



QUATERNARY SURFICIAL
DEPOSITS



INLAND WATER



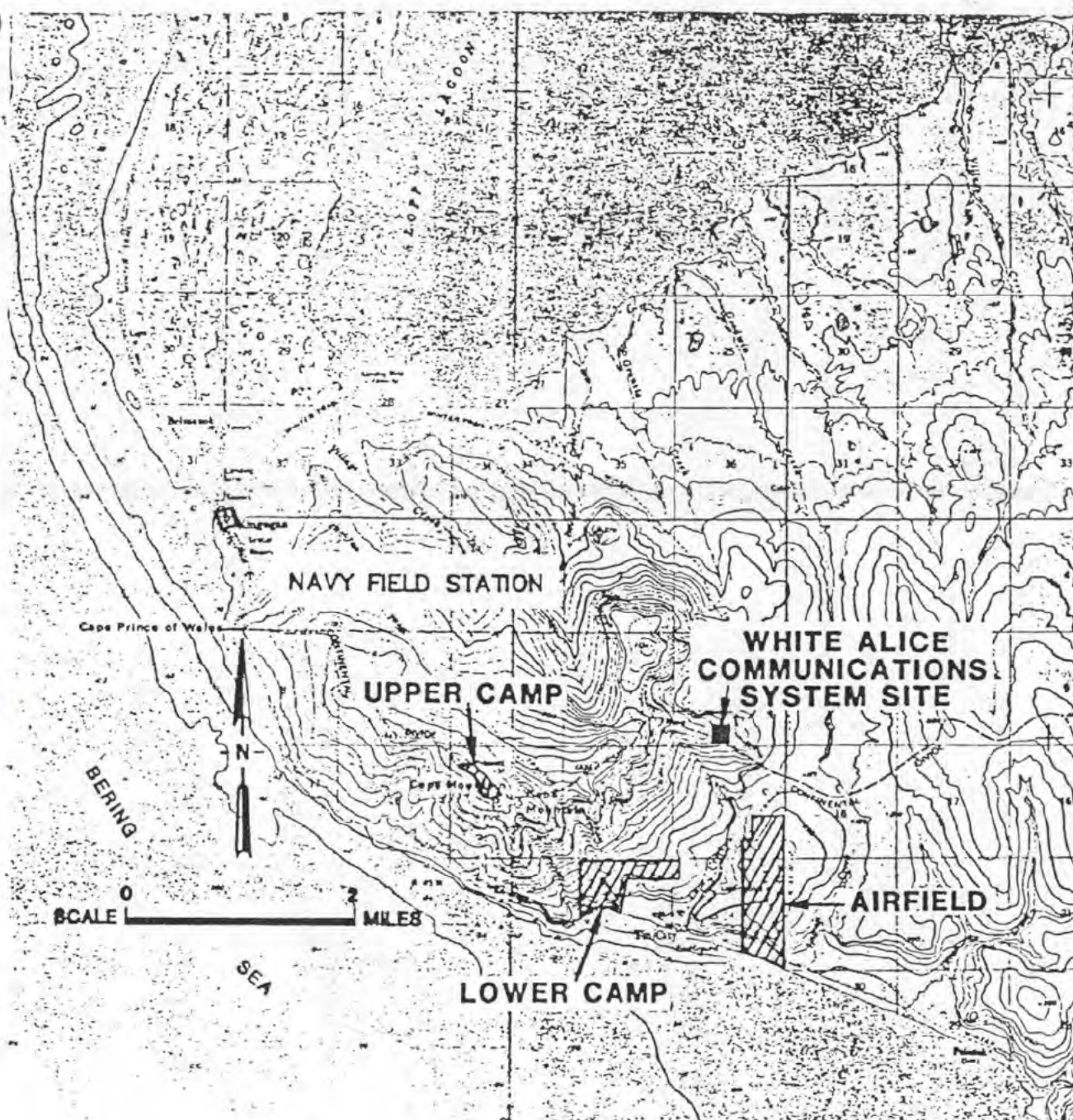
NO SCALE

(FROM: USGS MISCELLANEOUS INVESTIGATIONS SERIES, MAP 1-1203)



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FIGURE 6
GEOLOGICAL FORMATIONS
OF NORTHEAST CAPE



SOURCE: USGS TOPOGRAPHIC MAPS 1:63,360 SERIES TELLER C-6 AND C-7, ALASKA, 1950 (C-6 REVISED 1973 AND C-7 REVISED 1974) AND INSTALLATION DOCUMENTS.



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FIGURE 7
TOPOGRAPHY
OF TIN CITY AND WALES

residents (National Marine Fisheries Service, 1990).

1.6.1.3 Ground Water. The hydrogeology of the Air Force's Lower Camp consists of a thin layer of mixed talus and alluvium overlying bedrock at relatively shallow depths. Virtually all the materials present are silt, sand, gravel, cobbles and boulders that have been deposited downslope from Cape Mountain. The Upper Camp area is underlain by a thin veneer of residuum including sand, gravel and cobbles and bedrock (Feulner, 1966). See Figure 1 for location of the Air Force's Upper and Lower Camps.

Subsequent discharge from the shallow aquifer to the local surface waters (Bering Strait) is considered probable. The community of Tin City is located approximately 2000 feet southeast of the Air Force's installation (U.S. Air Force, 1985).

1.6.2 Navy Field Station, Cape Prince of Wales.

1.6.2.1 Topography. The area is typically a flat, coastal plain with well drained loamy to gravelly gray soils, and a shallow to deep permafrost layer. The immediate habitat is beach adjoining wet tundra (U.S. Army, 1986). Figure 7 illustrates the topography of the area. The U.S. Army Corps of Engineers considers flood hazards at Wales to be low. Storm-driven waves are the major cause of coastal flooding at Wales. Major floods in 1933 and 1969 submerged low areas such as the Village Creek estuary and some homes on the south end of the village.

1.6.2.2 Surface Water. Surface water in the area includes Village Creek which flows from Cape Mountain and also the Lopp Lagoon and the various ponds and lakes adjacent to the lagoon. Wales is bordered on the west by the Bering Strait.

1.6.2.3 Ground Water. No information was found on the ground water in Wales. It is assumed because of the proximity to surface water that the ground water would be very shallow in the area. More investigation should be conducted.

The Indian Health Service attempted to drill a well; however, no successful well has ever been established. There is an old shallow (33 foot) well constructed by the Bureau of Indian Affairs, however its condition does not appear to be economical or reliable (Native Health Service, 1983).

1.6.3 White Alice Site, Northeast Cape, St. Lawrence Island.

1.6.3.1 Topography. The topography of Northeast Cape begins with a coastal plain at the Bering Sea. A transition of rolling terrain leads to the Kinipaghulghat Mountains with Kanguksham Mountain at 1,820 feet above sea level as the highest local peak.

The mountain side is steep, highly exposed and weathered talus slopes. The topographic features of Northeast Cape are shown in Figure 8.

1.6.3.2 Surface Water. The principle surface water feature of St. Lawrence Island is the Bering Sea, located approximately 1.5 miles to the north and east of the Transmitter Building.

All surface water run-off from the area investigated in this report is expected to discharge to the Bering Sea. Flooding of potentially contaminated areas is unlikely, since they do not lie in a floodplain, and it is improbable that storm-driven waves would reach that far inland.

The lowland areas of Northeast Cape are typical of a subarctic coastal plain where flat topography, frozen soils, and wet tundra have created numerous shallow thaw lake basins and peat-filled thaw lake basins. These lakes are clear and tanic in appearance. In addition, there are numerous glacial run-off streams traversing the area. They have vegetated, incised banks, sandy gravelly streambeds, and are clear. The streams range from a few feet in width to streams 20 to 30 feet wide. These streams are beaded in the lowlands in contrast to high velocity streams in the mountainous areas.

1.6.3.3 Ground Water. No information was found concerning the ground water at Northeast Cape. In Section 2.4.3, there is some information pertaining to wells in the area. Additional investigation for information concerning ground water will be required.

1.7 CLIMATE.

1.7.1 White Alice Site, Tin City, and Navy Field Station, Cape Prince of Wales. Tin City and Wales are located in a transitional climatic zone which is characterized by fewer days of cloudiness, less precipitation and humidity, and a more pronounced temperature variation than found in local maritime climatic zones. Table 2 lists the average monthly temperature, precipitation and snow fall for Tin City and Wales.

1.7.2 White Alice Site, Northeast Cape, St. Lawrence Island. The weather on St. Lawrence Island is characterized by typical arctic maritime climate, with a relatively milder winter than arctic continental areas and a relatively cooler summer. Precipitation as rain or snow is recorded on 300 days out of the year. The greatest precipitation is recorded during the months of August and September. The means for these months are 1.82 and

TABLE 2
Mean monthly amounts for Tin City and Wales

	<u>Tin City</u>			<u>Wales</u>		
	Temp.	Precip.	Snow	Temp.	Precip.	Snow
Jan	2.7	0.56	5.7	2.0	0.46	5.2
Feb	-5.3	0.29	2.6	-4.1	0.40	4.5
Mar	-1.0	0.36	3.4	-1.5	0.32	4.3
Apr	8.5	0.41	4.0	9.9	0.28	3.5
May	26.8	0.33	2.4	27.2	0.46	2.1
June	38.5	0.65	0.7	38.4	0.67	0.3
July	45.9	1.78	0.2	46.3	1.43	0.2
Aug	45.6	2.41	0.3	46.3	2.73	0.0
Sept	39.8	1.50	1.7	40.2	2.26	1.2
Oct	27.6	1.86	13.4	29.0	1.23	6.3
Nov	15.7	1.42	15.4	17.2	0.61	6.9
Dec	3.0	0.51	4.9	3.7	0.39	5.3
TOTAL	20.6	12.07	54.8	21.2	11.23	39.8

Temperature is in Degrees F, Precipitation and snow are in inches

Source: Arctic Environmental Information and Data Center,
University of Alaska. For periods (Tin City, 1966-1985), (Wales,
1925-1929 and 1944-1987).

1.63 inches, respectively. The months with the lowest mean precipitation are November, March, and April with means of 0.31, 0.34, and 0.43 inches respectively. Mean annual precipitation is estimated at approximately 11 inches.

Winter temperatures seldom fall below -10° Fahrenheit (F), and summer temperatures above 55° F are infrequent and of short duration. The record minimum temperature for the villages of Gamble and Savoonga is -31° F recorded in February, and the maximum is 65° F recorded in July.

Lying in a stormy sea that varies only a few degrees from 32° F. throughout the year, the island is characterized by cold winds of gale and occasionally hurricane force. Commonly, the chill factor caused by high winds, up to 100 miles per hour (mph), produce effective temperatures of 70° below zero, and severe winter blizzards cause whiteout conditions. Prevailing winds are southwest and northwest in summer and northerly in winter. The average annual hourly wind velocity is 17.8 mph. The average velocity in January is 19.4 mph and in July the average is 11.0 mph.

The growing season extends from early June through late August, but there may be snow and freezing temperatures in any month. The first autumnal snowfall and formation of fresh-water ice generally occurs in October and sea ice usually forms in late November. The spring icepack breakup occurs in the first two weeks of June, and some ice and snow may remain until July or later in certain localities (Fay and Cade, 1959).

1.8 ARCHAEOLOGICAL SIGNIFICANCE.

1.8.1 White Alice Site, Tin City. The record search did not reveal any archaeological significance at Tin City.

1.8.2 Navy Field Station, Cape Prince of Wales. There is a (b)(3)

Health Service, 1983)." A survey of the area will be required prior to sampling or construction.

In addition, (b)(3)

1.8.3 White Alice Site, Northeast Cape, St. Lawrence Island.
(b)(3)

(U.S. Army, 1989).

2. FINDINGS.

2.1 GENERAL. Naval Ocean Systems Center, San Diego, California requested NEESA to perform a Preliminary Assessment at the White Alice Sites at Northeast Cape and at Tin City, and the Navy Field Station at Cape Prince of Wales by Commander, Naval Ocean Systems Center letter Ser 19/105 of 17 November 1988.

The Preliminary Assessment team visited the White Alice Sites and Navy Field Station on July 16 through 22, 1989.

2.2 PERMITS.

2.2.1 White Alice Site, Tin City. The White Alice Site at Tin City is an inactive facility and has no working population. The base has no permits.

2.2.2 Navy Field Station, Cape Prince of Wales. The facility generates only very small quantities of hazardous waste, so they are not required to have a permit for hazardous waste. The facility does not have any permits.

2.2.3 White Alice Site, Northeast Cape, St. Lawrence Island. The White Alice Site at Northeast Cape is an inactive facility and has no working population. The base has no permits.

2.3 STORAGE TANKS AND FUEL SPILLS.

2.3.1 White Alice Site, Tin City. The White Alice Site has two above ground 25,000 gallon diesel tanks that were used for heating fuel and for the generator in case of a power outage at the Air Force Base. Occasionally the fuel was used for vehicles while at the White Alice Site. There were also two above ground 1000 gallon diesel fuel tanks each located at an antennae, although since the site visit one tank has been removed.

In 1980, a valve failure on one of the tanks caused 850 gallons of diesel fuel to spill onto the ground at the White Alice Site. It is unknown whether the spill was cleaned up or not. During the site visit, there was no evidence of a spill. In addition, since diesel fuel is not considered a hazardous waste in Alaska no further action is required.

2.3.2 Navy Field Station, Cape Prince of Wales. The Navy Field Station has a total of 17 above ground storage tanks as shown in Figure 2. The following is a list of the capacity and contents of the tanks: two 15,000-gallon diesel fuel tanks, eleven 2,500-gallon diesel fuel tanks, two 3,300-gallon diesel gravity tanks, one 2,500-gallon regular gasoline tank and one 1000-gallon unleaded gasoline tank.

On March 21, 1989, during the routine monthly transfer of arctic grade diesel fuel (DFA), there was an apparent failure in an underground transfer pipe resulting in the loss of approximately 3,800 gallons of fuel. The transfer was from fuel storage tanks to gravity feed tanks for the field station's diesel-driven generators and the residence furnaces. The fuel oil spill was under about 40 inches of snow (U.S. Navy, 1989). The National Response Center and the State of Alaska, Environmental Conservation, Fairbanks area office were notified of the spill. The spill was cleaned up as soon as weather permitted. All contaminated sand was removed and replaced with clean sand. All contaminated soil and oil was properly disposed of according to applicable State of Alaska and Federal Regulations. For additional information on the spill see Appendix A.

2.3.3 White Alice Site, Northeast Cape, St. Lawrence Island. Eleven above ground fuel tanks were identified on the present Navy property during the site visit and from drawings obtained from the Army Corps of Engineers. Table 3 summarizes the current available information regarding each tank. A sump was located on Riblet Tramway Company drawing number 8837 of the lower tram terminal as shown in Figure 4. The sump was not located by the NEESA site visit team. It is assumed this sump received oil and diesel fuel waste from the motor room of the building. The presence of the sump and any possible outfall from the sump should be investigated.

2.4 DRINKING WATER, SEWER, AND SOLID WASTE.

2.4.1 White Alice Site, Tin City. The Air Force's water supply consists of one supply well that is 67 feet deep. The well has been installed into fractured zones of the granitic bedrock. The gallery has been constructed to intercept ground water flowing along a fault zone (Feulner, 1966). Water is pumped from the well to storage and later used as required (U.S. Air Force, 1985). The one permanent resident gets his water from the Air Force Base. See Figure 1 for the location of the well.

The miners of Tin City obtain their water supply from one of the creeks in the area. They have been known to get their water from

White Alice Site, Northeast Cape, St. Lawrence Island.

TABLE 3
SUMMARY OF STORAGE TANK SURVEY

TANK ID NUMBER	LOCATION	CONTENTS	CONSTRUCTION INFORMATION	ESTIMATED AGE	COMMENTS AND CURRENT TANK CONDITION
2-A	Transmitter Area	Fuel Oil	Steel-10,000 gallons	38 years	Tank is currently empty and in good condition. See Figure 4 for exact location.
2-B	Transmitter Area	Fuel Oil	Steel-10,000 gallons	38 years	Tank is currently empty and in good condition. See Figure 4 for exact location.
2-C	Transmitter Area	Fuel Oil	Steel-1,500 gallons	38 years	Tank is currently empty and in good condition. See Figure 4 for exact location.
2-D	Transmitter Area	Fuel Oil	Steel-1,500 gallons	38 years	Tank is currently empty and in good condition. See Figure 4 for exact location.
2-E	Transmitter Area	Fuel Oil	Steel-1,500 gallons	38 years	Tank is currently empty and in good condition. See Figure 4 for exact location.
2-F	Transmitter Area	Fuel Oil	Steel-1,500 gallons	38 years	Tank is currently empty and in good condition. See Figure 4 for exact location.
2-G	Transmitter Area	unknown	unknown (day tank)	unknown	Tank was not located during the site visit. Tank is specified as "day tank" in Army Corps drawing somewhere inside of Bldg. 1001.
2-H	Lower Tram Terminal	Diesel Fuel	Steel-1,200 gallons	38 years	Tank is currently empty and in good condition. See Figure 4 for exact location.
2-I	Lower Tram Terminal	Diesel Fuel	Steel-600 gallons	38 years	The tank is located inside Tram terminal bldg. See Figure 4 for exact location.
2-J	Lower Tram Terminal	Diesel Fuel	Steel-300 gallons	38 years	The tank is located inside Tram terminal bldg. See Figure 4 for exact location.
2-K	Upper Camp	Diesel Fuel	Steel-5,000	38 years	The tank is in good condition and located south of Bldg 124. See Figure 4 for exact location.

the Cape Creek or an unnamed creek located next to the Air Force Base. Streamflow is expected to be greatest in the springtime, in contrast to the winter months, when no water flows in the area streams. Snow could be considered as an alternative winter water supply source.

Domestic sewage is discharged to septic leachfields. There is also a domestic sewage leachfield located at the White Alice Site. Solid waste from the Air Force Base and residents of Tin City is disposed in the landfill located east of the airfield.

2.4.2 Navy Field Station, Cape Prince of Wales. Gilbert Creek, located one half mile south of town, and an unnamed, spring-fed creek, located two miles from town on the Razorback mountain, supply the community with a summer source of water. Gilbert Creek has a low but steady flow of good quality water (Native Health Service, 1983). The Eskimos melt snow and ice for water in the winter, when streamflow ceases.

The Eskimos dispose of domestic sewage either through septic leachfields, outhouses or on the ice of the Bering Strait during the winter. The Navy facility treats solid sewage by incineration with a Destroilet and liquid sewage is discharged to a leachfield. Solid waste is disposed in the city landfill north of Wales.

2.4.3 White Alice Site, Northeast Cape, St. Lawrence Island. Northeast Cape's water needs were provided by five wells located on the original Air Force facility. Only one of these wells is located on present Navy property as shown in Figure 4. Well No. 5 is emplaced in the northern end of the Lower Tram Terminal at a depth of 1,550 feet. All of the wells have been abandoned since the facility was closed in the late 1970s. It is possible to obtain drinking water from snow in the winter.

There was no wastewater treatment facility at Northeast Cape. All domestic sewage went to individual building septic tanks or was incinerated. All domestic solid wastes were hauled to a landfill located on excessed Air Force property.

2.5 HAZARDOUS WASTE GENERATION.

2.5.1 White Alice Site, Tin City. Since the mid 1970s, no generation of hazardous waste has taken place at the Tin City White Alice Site. In addition, there were no industrial operations at the White Alice Site prior to the mid 1970s. All industrial operations or operations dealing with hazardous waste were located at the Air Force Base one mile downhill from the White Alice Site.

2.5.2 Navy Field Station, Cape Prince of Wales. The Navy Field

station generates about 240 gallons of waste oil per year and about 2 car batteries per year.

All transformers containing polychlorinated biphenyls (PCBs) have been removed from the activity. No spills of PCBs are known or suspected to have occurred.

2.5.3 White Alice Site, Northeast Cape, St. Lawrence Island.

Since Northeast Cape was abandoned in the late 1970s, there has been no hazardous waste generation.

3. SITE SPECIFIC FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

3.1 INTRODUCTION. This chapter summarizes the Preliminary Assessment team's significant findings, conclusions, and recommendations on potential contaminant migration pathways, the potential contaminant receptors, and characteristics of past disposal sites identified at the Navy Field Station and the White Alice Sites at Tin City and Northeast Cape. The general location of the areas under study is shown in Figure 1, 2 and 3.

3.2 POTENTIAL FOR CONTAMINANT MIGRATION.

3.2.1 White Alice Site, Tin City. Contaminants at the White Alice Site at Tin City may potentially migrate in the surface water and possibly in the shallow ground water, although there is no evidence at this time to suggest that such migration has occurred. The Bering Strait is located about 1.7 miles from the White Alice Site and the Air Force Base is located about 1.4 miles. Erosion and sediment transport in the surface water has the greatest potential to transport contaminants off the facility. However, the main contaminant of concern is polychlorinated biphenyls (PCBs). PCBs tend to bind to the soil matrix and are generally not very mobile.

3.2.2 Navy Field Station, Cape Prince of Wales. Contaminants at the Navy Field Station may potentially migrate to the shallow ground water and possibly discharge to the Bering Strait due to the close proximity of the facility to the surface water (about 500 to 700 feet). The sand matrix will allow contaminants to move faster to the shallow ground water and eventually to the Bering Strait. There is no evidence that any such migration of contaminants to the ground water has occurred. Area ground water is not used for any purpose.

The drinking water supply, Gilbert Creek, is located about one-half mile upgradient of the facility and there is no potential of this becoming contaminated from the Navy Field Station. It is estimated that there are approximately 160 acres of drainage area upgradient of the facility. Any surface runoff from the site

would likely travel approximately 600 feet at a grade of 1% to the Bering Sea. There is no evidence of surface water contamination at this time.

3.2.3 White Alice Site, Northeast Cape, St. Lawrence Island.

Contaminants at the White Alice Site on St. Lawrence Island may potentially migrate in the surface water, ground water, and air. Of the three, erosion and sediment transport in the surface water has the greatest potential to transport contaminants off-site.

3.2.3.1 Surface Water. At Northeast Cape, numerous natural drainage channels receive rapid flow from snow melt and summer storms. In the winter, these channels carry no running water. The surface water run-off from the area investigated in this report potentially could carry hazardous materials off-site where the contaminants have been exposed and/or released to the environment.

The drainage channels either discharge to multiple, seasonal small ponds and lakes in the low-lying coastal plain where the water evaporates or percolates down to the ground water or to the Bering Sea approximately 1.5 miles north of the White Alice Site.

3.2.3.2 Ground Water. Little is known about the ground water in the Northeast Cape area. Further investigations need to be conducted. There is no evidence at this time to suggest that a contaminant release to area ground water has occurred.

3.2.3.3 Air. Wind transport potentially could move contaminants off-site at locations where they are exposed to open air. Friable asbestos thermal system insulation and siding shingles were noted throughout the area and potentially could release fibers to the environment.

3.3 POTENTIAL CONTAMINANT RECEPTORS.

3.3.1 White Alice Site, Tin City.

3.3.1.1 Receptors of Surface Water. Any contaminants reaching the Bering Strait from surface water run-off potentially could contaminate the food chain. The Eskimos of Wales harvest the fish and animals in the Bering Strait for subsistence. The Bering Sea is fished commercially, but not in the vicinity of Wales (National Marine Fisheries Service, 1990). About a dozen temporary miners work and live in Tin City and sometimes drink water from Cape Creek. Contaminants reaching the creek could possibly contaminate the drinking water of the miners.

By 1980 Official U.S. Census, 133 people reside in the village of Wales, located approximately 4.5 miles northwest of the facility.

The residents obtain their drinking water from surface supplies, but it is highly unlikely that these waters would receive contaminants from the White Alice Site at Tin City.

There are no commercial or industrial uses of the area surface waters within 15 miles.

3.3.1.2 Receptors of Ground Water. A maximum of about 11 people, one permanent resident and six to ten temporary base personnel, drink water from the Air Force Base supply well. It is unknown if the ground water under the White Alice Site is continuous with the ground water that is used for drinking purposes. Any contaminants that reach the ground water could potentially contaminate the drinking water. Fractures in the bedrock may allow much faster transport of contaminants. It is unknown if the fracture zone that supplies the well at the Air Force Base is connected in any way to the bedrock below the White Alice Site.

3.3.2 Navy Field Station, Cape Prince of Wales.

3.3.2.1 Receptors of Surface Water. All residents of Wales (approximately 130) receive drinking water from surface supplies. It is unlikely that these supplies could become contaminated from the Navy Field Station or the White Alice Site at Tin City. The temporary miners living about five miles southeast, near Tin City, also use surface water as a drinking supply, but it is highly unlikely that contaminants from the Field Station would reach this supply.

However, the fish and animals of the Bering Strait are harvested as the primary source of food and livelihood for the Eskimos of Wales. Any contaminants reaching the sea from surface water run-off could contaminate the food chain.

Surface water in the area is not used for any commercial or industrial purpose.

3.3.2.2 Receptors of Ground Water. Any contaminants reaching the Bering Strait from shallow ground water discharge potentially could contaminate the food chain from fish and animals that are harvested by the Eskimos of Wales.

3.3.3 White Alice Site, Northeast Cape, St. Lawrence Island.

3.3.3.1 Receptors of Surface Water. Users of surface water at Northeast Cape include several species of vegetation and indigenous animals. Surface water run-off in the streams and ponds are used as the primary source of drinking water by the seasonal tenants of the Eskimo fishing village located about 1.5 miles north of the White Alice Site on the coast of the Bering

Sea.

The fish and animals of the Bering Sea are commercially harvested and are the primary source of food and livelihood for the Eskimos of St. Lawrence Island. Any contaminants reaching the sea from surface water run-off potentially could contaminate the food chain.

3.3.3.2 Receptors of Ground Water. Ground water is not utilized as a potable source within a sixty mile radius of Northeast Cape.

3.3.3.3 Receptors of the Air Exposure Route. The White Alice Site at Northeast Cape has no permanent base personnel; however, there is evidence that the island natives may be conducting salvaging operations on abandoned equipment. Anyone entering the buildings would be a possible receptor of known asbestos contamination.

3.4 SITE SPECIFIC FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS FOR WHITE ALICE SITE, TIN CITY. Discussions and correspondence with Air Force personnel indicate that the sampling and cleanup of potentially hazardous waste sites at the White Alice Site in Tin City could be accomplished under the Air Force's Installation Restoration program during the sampling and cleanup of the Air Force Base at Tin City. Further discussions should be conducted to facilitate this opportunity.

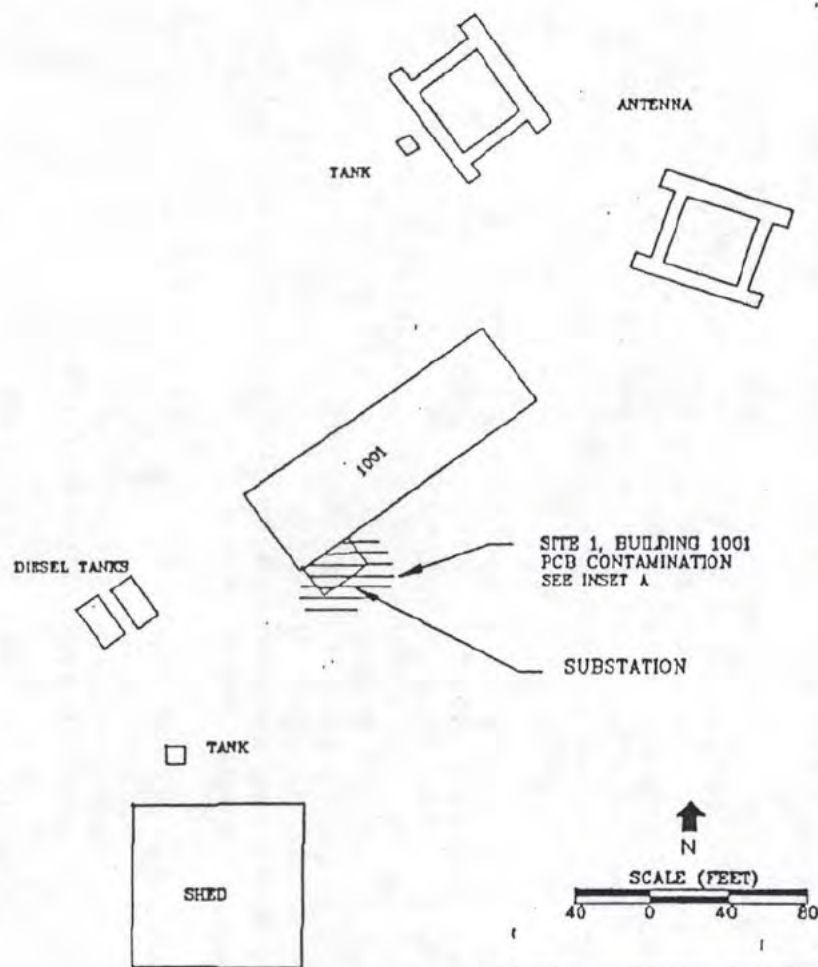
3.4.1 Site 1, Building 1001 PCB Contamination (Tin City).

3.4.1.1 Findings. In June 1984, the Air Force removed the majority of electrical equipment including the transformers in the substation attached to Building 1001. The dielectric fluid in the transformers contained polychlorinated biphenyls (PCBs). They also removed fuel from the storage tanks. However, few records of this cleanup are available and little is known as to the extent of cleanup.

In August 1988, a visual inspection of the facility was conducted by NOSC personnel. This inspection revealed that most of the doors were off the hinges and most of the plywood covering the doors and windows were gone. All of the transformers, switchboxes and oil fused disconnects had been removed. Although a handmade sign in the transformer room warned that the area was "PCB Contaminated Area" and noted "(Ran out of Freon)." The origin of the sign is unknown and according to NOSC personnel and Air Force personnel the area supposedly was cleaned up.

During the site visit three samples were taken inside the substation of Building 1001 along with a field blank for quality control. The samples were taken in the locations shown on Figure 9. An area of 10 square centimeters was taped off and a

WHITE ALICE SITE



PRELIMINARY ASSESSMENT
NAVAL OCEAN SYSTEMS CENTER PROPERTY
WHITE ALICE SITE, TIN CITY
ALASKA

SITE 1, BUILDING 1001 PCB CONTAMINATION

INSET A

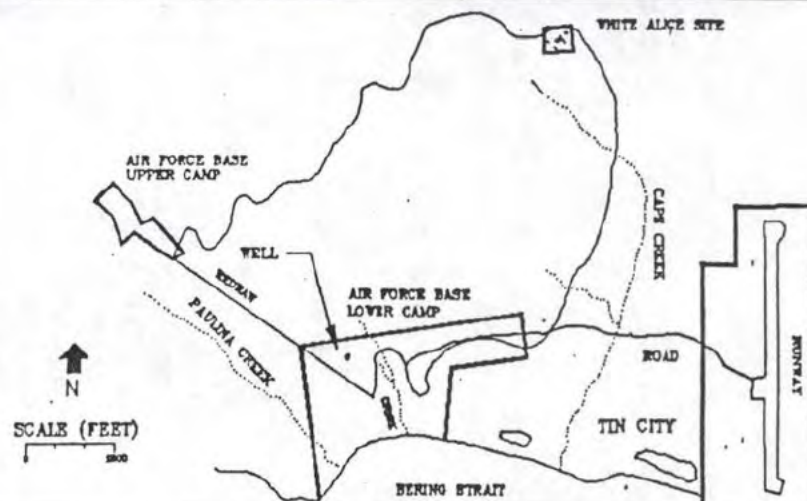
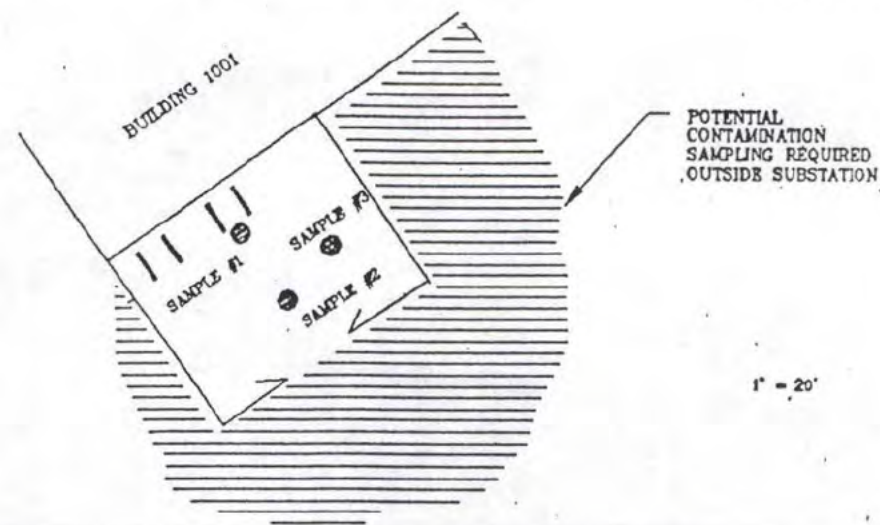


FIGURE 9
SITE 1, BUILDING 1001
PCB CONTAMINATION

wipe sample was collected and analyzed for total extractable PCBs. Sample #1 was taken next to the location of marks indicating the location of the transformer. Sample #2 was taken from the exposed cable post. Sample #3 was taken towards the corner of the room nearest the doorway. Sample #4 was the field blank. The results revealed PCB 1260 in all samples except for the field blank. The results are shown below in Table 4 and Appendix B.

**Table 4. Sampling Results for PCBs
White Alice Site, Tin City**

Sample #	Results (mg/100cm ²)	Federal Cleanup Standard ^a (mg/100cm ²)
1	1.535 ^b	0.01
2	0.141	
3	1.205	
4	Not detected	

^a Toxic Substance Control Act (TSCA) 40CFR761.125

^b Sample #1 needed to be recalculated because the sample was taken over a 12 by 12 centimeter area rather than the recommended 10 by 10 cm area.

There also was no door on the substation room, which increases the potential for exposure to the PCB contamination. The floor of the substation was about three feet above ground level. The concrete appeared to be free of cracks except for the cable post in the center of the room.

In addition, White Alice Sites were high power pulse systems. Reportedly, the systems would occasionally overheat or a transformer fire would occur. When this would happen, the burned dielectric fluid was disposed onto the ground outside the building. Other than this testimony, however, there is no evidence of this type of disposal occurring at this site. See Figure 9 for the estimated location of disposal.

During the site visit the condition of the building was considered unsafe due to aging equipment. There were no doors on the building, so people or animals could enter the building. Equipment was hanging from its structural supports, and ceiling panels were falling due to exposure to the environment. In addition, the piping insulation and ceiling tiles could possibly contain friable asbestos.

3.4.1.2 Conclusions. Federal law mandates PCB compounds are prohibited in any discharge from any manufacturer of PCBs, electrical capacitors or electrical transformers. PCBs are designated hazardous substances, and the United States Environmental Protection Agency (EPA) considers PCBs to be a Class 2B carcinogen (U.S. Air Force, 1989).

Aroclor (PCB) 1260 is expected to be highly immobile in the soil/ground water system due to rapid and strong sorption, although pathways of concern include migration to the ground water drinking water supply and migration to surface water and contamination of fish and the food chain (U.S. Air Force, 1989).

Site 1, Building 1001 PCB Contamination (Tin City) is recommended for further action under the Navy Installation Restoration program due to PCB contamination from the transformers and possible PCB releases to the environment at Tin City.

3.4.1.3 Recommendations. The floor of the substation must be cleaned and all cables that contain PCBs must be removed. Two to three soil samples should be taken in the area just outside the building to determine if the PCBs migrated from the building due to disposing of PCB oil on the ground or from storms or thawing of snow that may have transported the contaminants. The samples should be taken at depths of zero to six inches, two to three feet and at five feet.

The building should be checked for capacitors or other electrical equipment that may contain PCBs. If any PCB equipment is discovered it should be removed. Asbestos should also be removed and the building should be boarded up or demolished due to its unsafe condition. See Sections 3.6.1.2 and 3.6.1.3 for regulations and recommendations for asbestos removal. See also Section 3.6.2 for additional discussions on PCBs.

3.5 SITE SPECIFIC FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS FOR NAVY FIELD STATION, CAPE PRINCE OF WALES. Discussions and correspondence with Army personnel indicate that the sampling and cleanup of the potentially hazardous waste sites located at the Navy Field Station, Cape Prince of Wales could be accomplished under the Army's Installation Restoration Program during the sampling and cleanup of the Army facility in Wales. Further discussions should be conducted to facilitate this opportunity.

3.5.1 Site 2, Paint Shed (Wales).

3.5.1.1 Findings. A small paint shed, not more than six feet by six feet has containers of paint thinners leaking through the floor of the shed into the sand. The shed is located about 700 feet from the Bering Strait as shown in **Figure 10**. The shed is made of wood with wood floor boards. The floor boards are rotting away either from spilled chemicals or from the adverse weather conditions of the tundra.

During the site visit, there were leaking cans, mostly paint thinners. The solvent smell when entering the shed was obvious. There was also about ten 1-gallon paint cans, twenty 5-gallon paint thinner containers, sulfuric acid, mineral spirits, adhesives, about twenty 5-gallon containers of grease and two 5-gallon containers of transformer oil stored in the shed. It is unknown if the oil is PCB contaminated. To the north side of the shed there are about 20 empty compressed propane cylinders. There are also about 3 oxygen cylinders and 2 acetylene cylinders. There may be others buried under the sand beneath the other cylinders.

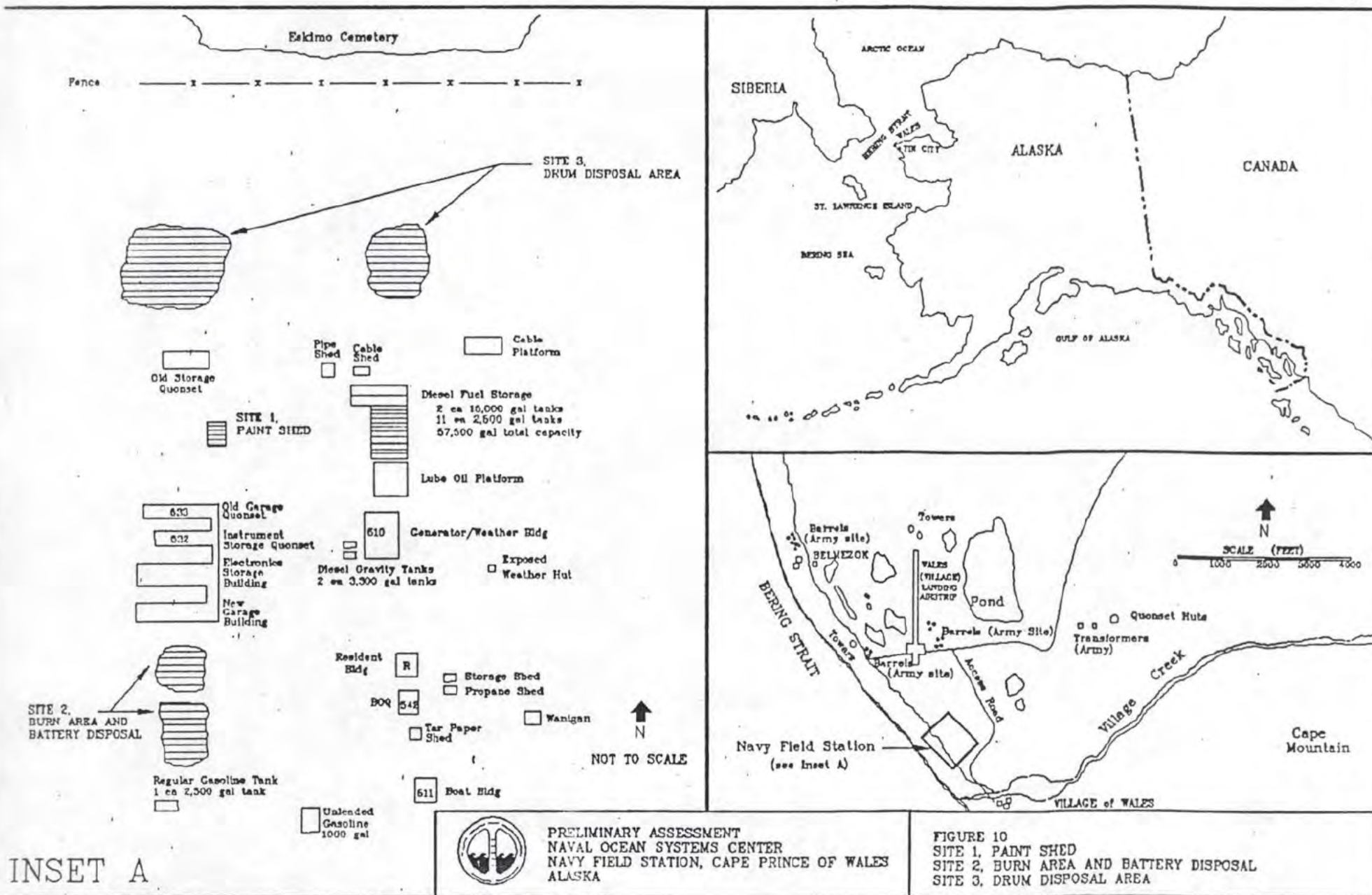
3.5.1.2 Conclusions. The sand matrix allows chemicals to be transported much faster and could potentially have contaminated the shallow ground water which due to proximity probably discharges to the Bering Strait. Although shallow ground water is not used for drinking water, if contaminants migrate to the Bering Strait the potential is present that fish, sea life and the food chain could become contaminated. The Eskimos also eat the fish.

The soil under Site 2, Paint Shed (Wales) is recommended for further action under the Navy Installation Restoration program. No evidence of soil contamination exists, but the opportunity for the release of paint thinners and other contaminants to the environment is evident.

3.5.1.3 Recommendations. All chemicals in the cans and containers should be identified and either disposed of in accordance with State of Alaska and Federal Regulations or stored in a proper facility. All containers should be checked for signs of deterioration before transporting them. Soil and ground water samples should be taken in this area for volatile organic compounds, semivolatile organics compounds, and lead. In addition, all compressed gas cylinders should be disposed of properly.

3.5.2 Site 3, Burn Area and Battery Disposal (Wales).

3.5.2.1 Findings. Since the 1940s, household trash has been



INSET A

burned with waste oil in two small areas in the sand dunes in between the new garage building and the gasoline tank as shown in Figure 10. There were also empty paint cans, batteries and an empty acetylene cylinder in the burn areas. There are two burn areas. The north burn area is approximately 20 feet by 20 feet and the south burn area is about 50 feet by 50 feet.

3.5.2.2 Conclusions. Site 3, Burn Area and Battery Disposal (Wales) is recommended for further action under the Navy Installation Restoration program due to the release of waste oil and possible lead contamination from the paint and batteries.

3.5.2.3 Recommendations. Soil samples should be taken in the two burn areas and analyzed for total petroleum hydrocarbons and priority pollutant metals. Soil samples should be taken down to a depth of 10 feet or down to the water table.

3.5.3 Site 4, Drum Disposal Area (Wales).

3.5.3.1 Findings. There are two locations where empty drums were disposed at the facility as shown in Figure 10. Disposal took place from early to late 1950s until the facility put in the fuel storage tanks. In the smaller disposal area there are about 100 empty 55-gallon drums, a few paint cans and some batteries. West of the smaller disposal area is another area where about 200 empty drums were disposed of as well as some batteries. The drums at one time contained diesel fuel, gasoline--both leaded and unleaded and lubricating oil. The drums are empty.

The empty drum disposal areas are only about 200 feet from an Eskimo cemetery in the sand dunes. The cemetery is about 60 feet from the fence line.

3.5.3.2 Conclusions. Site 4, Drum Disposal Area (Wales) is recommended for further action under the Navy Installation Restoration program due to the potential release of oils, lead from paints and batteries and any other residual contaminants that might have leaked from the drums.

3.5.3.3 Recommendations. Soil samples should be taken and analyzed for total petroleum hydrocarbons, priority pollutant metals, and volatile and semivolatile organic compounds. The drums should be properly disposed of in accordance with State of Alaska and Federal Regulations.

Special precautions will need to be taken during investigations so as not to disturb the burial ground.

3.6 SITE SPECIFIC FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS FOR WHITE ALICE SITE, NORTHEAST CAPE, ST. LAWRENCE ISLAND.

Discussions and correspondence with Army personnel indicate that

the sampling and cleanup of the potentially hazardous waste sites located at the White Alice Site, Northeast Cape, St. Lawrence Island could be accomplished under the Army's Installation Restoration program during the sampling and cleanup of the Air Force Base at Northeast Cape, St. Lawrence Island. Further discussions should be conducted to facilitate this opportunity.

3.6.1 Site 5, Asbestos Hazards (SLI).

3.6.1.1 Findings. Due to harsh year-round environmental conditions experienced at Northeast Cape, most of the buildings at the White Alice Site were insulated. The current facilities at Northeast Cape were constructed in 1952 for the United States Air Force.

Friable and nonfriable asbestos containing materials (ACM) were located throughout the base facilities during the site visit. Six of the nine buildings located on Navy property contain possible asbestos hazards. The Automobile Maintenance Shop (Building 1055), the Lower Tram Terminal Transformer Building, the Upper Camp Transformer Building, and the Upper Camp Tram Building contain no asbestos.

Possible sources of asbestos include thermal system insulation (TSI) on the steam and hot water lines, asbestos mud on the steam and hot water pipe elbows, transite wall board, ceiling tiles, asphalt-asbestos floor tiles, floor glue, batt insulation in the ceiling and walls, fire doors, cement-asbestos siding shingles, flooring felts, and heating, ventilation and air-conditioning (HVAC) system insulation.

On 22 September 1988, Naval Ocean Systems Center (NOSC) personnel obtained samples from the TSI on the steam pipes in Building 1001, the Main Transmitter Building. The samples were analyzed by a Navy laboratory by polarized light microscopy (PLM) and were determined to be positive for chrysotile and amosite. A copy of these results are included in **Appendix C**.

Due to safety, time, and equipment constraints no samples were collected during the NEESA site visit. The majority of the suspected ACM was matrix bonded composite surfacing materials and was nonfriable. However, severe water damage observed on the asbestos TSI has created a potentially dangerous situation inside buildings 1001, 124, and 221. Some of the buildings appear to have been forcibly entered by unknown parties. Reportedly, island natives conduct salvaging operations on the abandoned facilities and would expose themselves to the carcinogenic effects of asbestos upon entering any buildings containing friable ACM.

3.6.1.2 Conclusions. Any Naval building containing asbestos

building materials is regulated by the Occupational Health and Safety Administration, 29 CFR 1910.1001 and OPNAV 5100.23V. This also includes possible exposure to occupants of buildings which contain ACM. Site 5 is recommended for further action under the Navy Installation Restoration program due to the possible exposure of trespassers to airborne asbestos fibers at the White Alice Site on Northeast Cape.

At present most of the suspected asbestos identified is nonfriable matrix bonded composite surfacing materials and therefore, is not a direct hazard to human health or the environment. However, if the buildings are demolished or the asbestos is disturbed or physically damaged, it will become friable and an environmental hazard. The National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR 61 Part M mandates the removal of friable ACM before a building may be demolished. Under NESHAP, no visible emissions of dust to the outside environment are permitted during removal, renovation, demolition, collection, transportation, or deposition of ACM waste.

3.6.1.3 Recommendations. With special approval from the Environmental Protection Agency (EPA) dry removal of ACM is permitted under certain circumstances. Due to the relative isolation of the facilities at Northeast Cape and the large cost savings associated with dry removal, this option should be investigated. The specific recommendations include the following:

- 1) Due to the significant and continuing water damage to the TSI on all exposed steam and hot water lines in Buildings 1001, 124, and 221, immediate removal or encapsulation is recommended to effectively prevent further exposure to trespassers entering the building.

- 2) Seal all openings from all buildings to the outside environment, restrict access, and post signs warning of asbestos contamination hazards. The signs should be posted so that they can be easily seen and read from all directions around all buildings.

- 3) Random sampling of suspected "homogeneous" ACM to determine the extent of the contamination. A homogeneous area contains asbestos material that is uniform in texture and color and appears identical in every other respect. The number of samples to be collected depends on the size of the area to be sampled.

Size of Area

Number of Asbestos Samples
to be Collected

Less than 1000 square feet
Between 1000 & 5000 square feet
Greater than 5000 square feet

3
5
7

The number of samples and sample location for TSI will depend on the local circumstances of the insulation. At least three samples must be taken in each sample area. For long pipe runs or risers, more samples should be taken. All sampling must be done in accordance with the appropriate OSHA and OPNAV regulations.

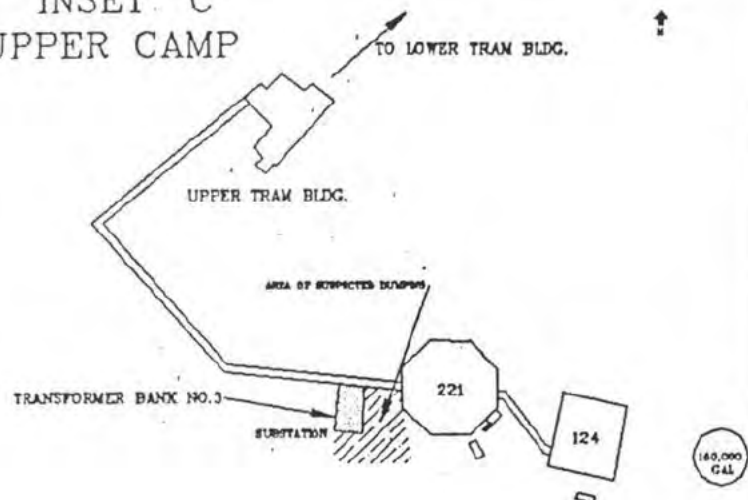
4) The cement-asbestos shingles on the outside walls and those lying on the ground should be collected and disposed of in accordance with 29 CFR 1910.1001 and 40 CFR 61 Part M.

3.6.2 Site 6, Abandoned Electrical System (SLI).

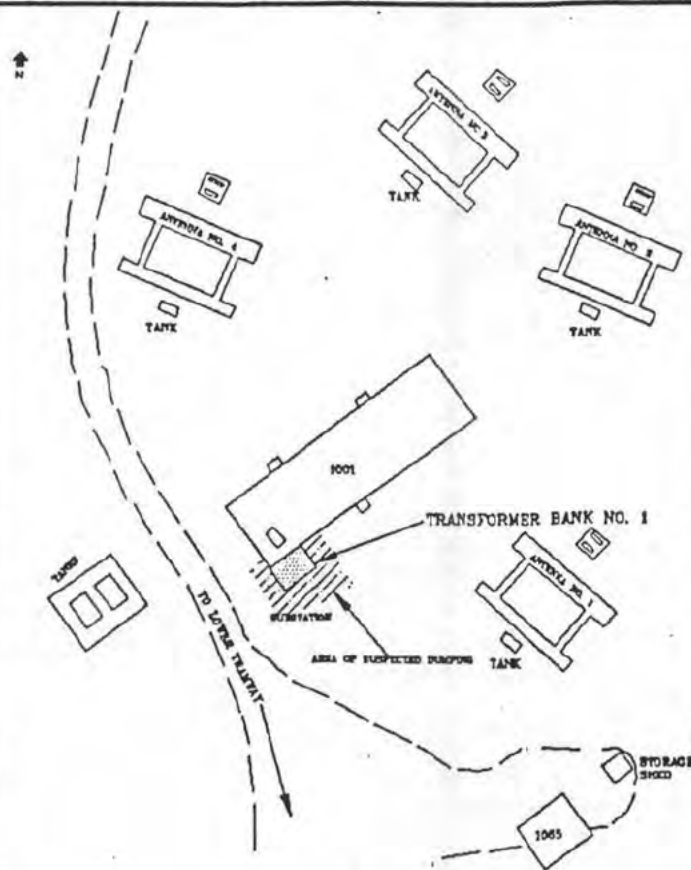
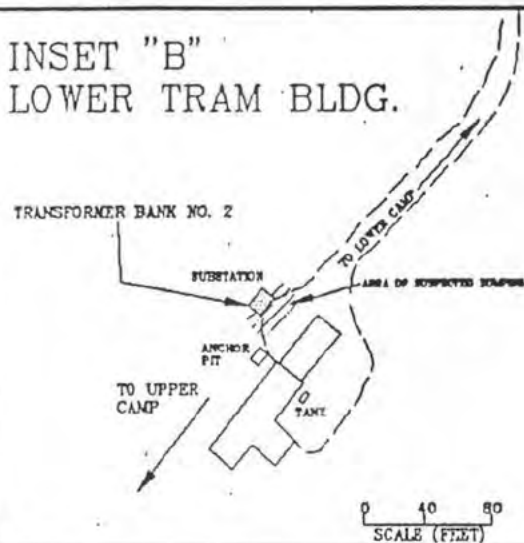
3.6.2.1 Findings. A relatively simple electrical system was installed when the White Alice facilities at Northeast Cape were constructed for the Air Force in 1952. A drawing indicating the primary distribution of electrical services (Department of the Air Force, 1963) shows that a total of fourteen transformers were installed on the present Navy property during the establishment of the base. All transformers were mounted inside of permanent structures on concrete floors to protect them from the outside environment. Additionally, it was indicated by a NOSC representative that there were oil-filled capacitors located in the buildings which may contain PCBs.

Electricity for the White Alice Site was obtained from the main power plant located in the housing and operations area on excessed government property. On the present Navy property, power was delivered to three separate transformer banks located in the substation of Building 1001, the Lower Tram Transformer Building, and the Upper Camp Transformer Building as shown in Figure 11. For emergency service in case of normal power source failure there were two diesel-engine-driven emergency alternators located near each of the transformer banks. The electrical system was abandoned in place in 1975 when the Air Force ceased operations at Northeast Cape. Table 5 details the different transformer banks, their supporting dielectric fluid-filled equipment, and their condition during the NEESA site visit.

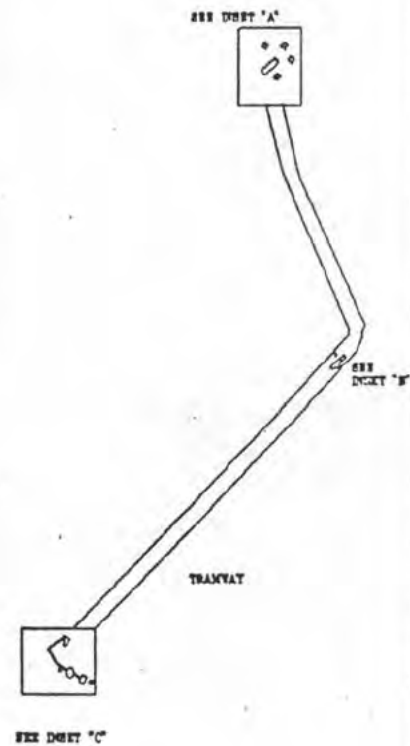
INSET "C" UPPER CAMP



INSET "B" LOWER TRAM BLDG.



INSET "A" WHITE ALICE SITE



NAVY PROPERTY AT NORTHEAST CAPE



PRELIMINARY ASSESSMENT
NAVAL OCEAN SYSTEMS CENTER PROPERTY
NORTHEAST CAPE, ST. LAWRENCE ISLAND
ALASKA

FIGURE 11
SITE 2 - LOCATION OF TRANSFORMER
BANKS

TABLE 5
TRANSFORMER DATA
FROM

NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA

Transformer Bank No. 1, White Alice Substation Site

3 ea Transformers:

SER NUM:	142525, 142524, 1425290	Hill Transformer Co.
KVA:	100 KVA (Single Phase)	San Carlos, CA
TYPE:	DA 2	
FORM:	S-1	
IMP:	75 Deg 3.3	
OIL:	62 gals	
WEIGHT:	1960 lb.	

1 ea Oil Fused Disconnects:

CAT NUM:	FC61BK-FC	G&W Electric Speciality Co.
SER NUM:	6-57	3500 W. 127th Street
VOLTS:	8000 VAC	Blue Island, IL
AMP:	1000 Amps	

1 Set Pot Heads:

CAT NUM:	3BXFC61B-EC-T	G&W Electric Speciality Co.
SER NUM:	C8096-293	
VOLTS:	8000 VAC	
AMPS:	100 Amps	

Transformer Bank No. 2, Lower Tram Terminal

3 ea Transformers:

SER NUM:	9730748, ?, ?	G.E. Spirakore Transformers
KVA:	37.5 KVA	
TYPE:	HS	
WEIGHT:	850 lb.	
OIL:	?	

1 ea Transformer:

SER NUM:	?	Moloney Electric
KVA	15 KVA	
TYPE:	CL-2	
WEIGHT:	335 lb.	
OIL:	12.5 gal M-2I oil	

1 ea G&W Oil Fused Disconnect and set of Pot Heads as described for Transformer Bank No. 1.

TABLE 5 (cont.)
TRANSFORMER DATA
FROM
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA

Transformer Bank No. 3, Upper Camp

3 ea Transformers: G.E. Spirakore Transformers
SER NUM: B 511418A, ?, ?
KVA: 37.5 KVA
TYPE: HS
WEIGHT: 850 lb.
OIL: ?

4 ea Transformers: G.E. Spirakore Transformers
SER NUM: 9669460, ?, ?, ?
KVA: 75 KVA
TYPE: HS
WEIGHT: 1400 lb.
OIL: ?

2 ea G&W Oil Fused Disconnects and two sets of Pot Heads as described for Transformer Bank No. 1.

The White Alice Sites were high power pulse systems. Reportedly, the system would occasionally overheat or a transformer fire would occur. When this would happen, the burned dielectric fluid was "dumped onto the ground outside the building" and the transformer was flushed with a solvent (trichloroethylene) and refilled with oil. It is not known if any of the dielectric fluid contained polychlorinated biphenyls (PCBs) or the amount(s) or location(s) of these reported releases.

PCBs are inert, thermally and chemically stable compounds with dielectric properties. In 1974, use of PCBs in the United States was limited to closed systems with approximately seventy percent of the PCBs produced used in capacitors and the remaining thirty percent were utilized in transformers (U.S. Air Force, 1989).

The environmental behavior of PCB mixtures is a direct function of their relative composition with respect to the individual chlorinated biphenyl species. In general, as chlorine content increases, sorption increases while transport and transformation processes decrease. Absorption into soils and sediments is the major fate process affecting PCBs in the environment. In general, the rate of absorption in soil materials is rapid. Soil material absorption capacity was highly correlated with organic content, surface area, and clay content (U.S. Air Force, 1989).

Trichloroethylene (TCE) was widely used as an industrial solvent.

It is highly volatile in aqueous solutions, moderately soluble in water, and not strongly absorbed or bioaccumulated. TCE on the soil surface is likely to volatilize, but that portion not removed by volatilization is likely to become mobile in ground water.

3.6.2.2 Conclusions. Federal law mandates PCB compounds are prohibited in any discharge from any manufacturer of PCBs, electrical capacitors or electrical transformers. Both PCBs and TCE are designated hazardous substances, and the United States Environmental Protection Agency (EPA) considers PCBs to be a Class 2B carcinogen (U.S. Air Force, 1989). Site 6 is recommended for further action under the Navy Installation Restoration program due to the possible PCB contamination from leaking transformers and capacitors and possible PCB and TCE releases to the environment at Northeast Cape.

3.6.2.3 Recommendations. A grid coordinate should be established over the areas indicated in **Figure 11** to allow for the random selection of sampling points. No specific regions were designated as the areas where burned dielectric fluid and solvents were disposed. Therefore, areas were chosen where oil could have been easily disposed of from the transformer rooms.

Once the grid is established a statistically viable number, eighty percent confidence level, of soil core samples should be collected at the 0 to 6 inch and 6 to 12 inch levels. Variation can only be accounted for with random sampling since most wastes are heterogeneous with regards to chemical composition and their on-site distribution (EPA SW846, 1982). This method is appropriate when the area to be sampled is large, contamination is evenly dispersed, or when there is no information to indicate where the areas of contamination might be located.

Care should be exercised to prevent losses during sample collection and storage. Samples should be collected in glass containers; extraction of samples should be completed within seven days of sampling and analysis completed within 40 days for PCBs. In addition to targeted samples, field blanks and duplicates should be obtained for Quality Assurance/Quality Control (QA/QC) purposes. At a minimum, the samples collected from Site 6 should be analyzed for PCBs, EPA Method 8080 and 8250, and TCE, EPA Methods 8010 and 8240.

The dielectric equipment and the surrounding concrete located in Building 1001, the Lower Tram Transformer Building, and the Upper Camp Transformer Building should be sampled for PCBs by the appropriate EPA methods, drained, and disposed of in accordance with applicable State of Alaska and Federal Laws.

Also see section 4.0, Removal Action.

3.6.3 Site 7, Storage Drums (SLI).

3.6.3.1 Findings. Due to the remote and isolated location of Northeast Cape, virtually all supplies were shipped to the base in 55 gallon drums. When the base was closed in 1975 it was abandoned in place and all storage and waste disposal drums were left behind. Site 7, Storage Drums (SLI), consists of four separate areas as shown in **Figure 12**.

Area 1 is located in Building 1001, Main Transmitter Building, and consists of 132 55-gallon drums. All of the drums are full of product and stored on their sides. The drums were marked turbine fuel aviation, fuel oil diesel, engine oil crankcase, and antifreeze arctic grade. None of the drums were leaking; however, five were bulging and show signs of corrosion damage.

Area 2 is located in the rear of Building 1055, Automobile Maintenance Shop, and embodies ten 55-gallon drums labeled engine oil crankcase, and two 55-gallon drums marked leaded gasoline. Both of the gasoline storage drums and eight of the crankcase oil drums were full of product. All of the drums are in good condition and show no signs of leaking.

Area 3 is defined as the Navy property beneath the tramway leading up the mountain. During the NEESA site visit, greater than two hundred 55-gallon storage drums were noted littering the entire length of the tramway. Based on the location of these drums, it is probable that they originated from the top of the hill. All of the drums were severely damaged and bullet holes were observed in some of the drums. Approximately forty percent of the storage drums investigated still contained liquid, and fifteen of the drums showed signs of bulging and rupturing. A majority of the drums were rusted and the labels could not be read to determine the contents; however, labels that could be read were trichloroethylene, arctic grade antifreeze, fuel oil diesel, and de-icing fluid.

Area 4 is positioned eighty feet southwest of Building 221 and 224 in the Upper Camp Complex as shown in **Figure 12**. Greater than six hundred 55-gallon drums are scattered or stacked in an area encompassing approximately 60,000 square feet. A majority of the drums examined contained product, but were too rusted to read the labels. Labels that could be read were fuel oil diesel, trichloroethylene, antifreeze arctic grade, and waste oil. Some of the drums appear to have ruptured, and others have bullet holes in them.

In addition to the above mentioned chemicals, the station also reportedly handled PCB dielectric fluids, dibenzofuran, carbon tetrachloride, DDT, Trichlorophenoxy acetic acid (2,4,5-T), alcohols, and sulfuric acid. No drums or containers were noted

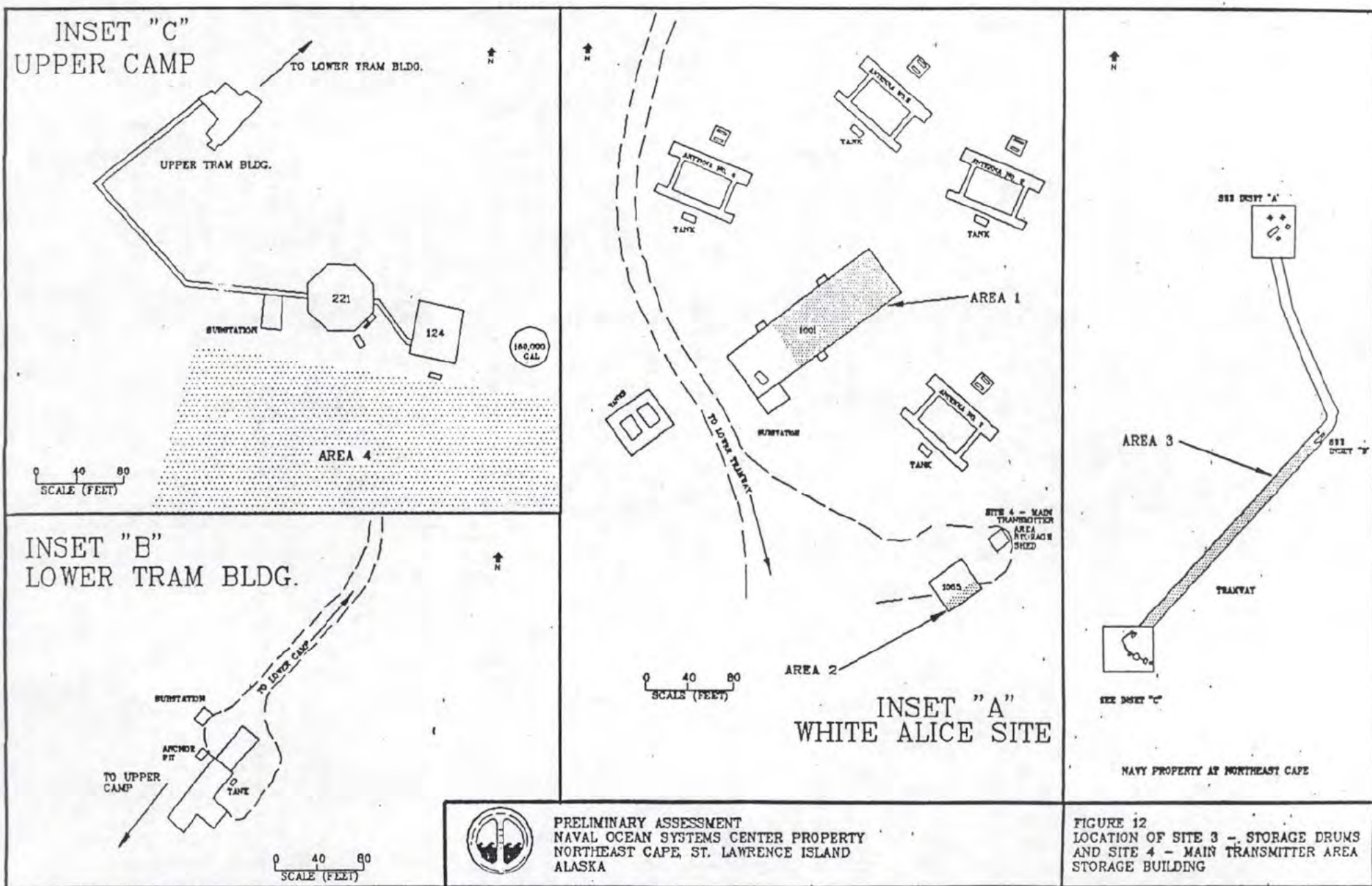


FIGURE 12
LOCATION OF SITE 3 - STORAGE DRUMS
AND SITE 4 - MAIN TRANSMITTER AREA
STORAGE BUILDING

that were labeled as such. However, with the exception of Area 1, a majority (greater than ninety percent) of the drums were too rusted to read their labels and determine the contents.

The environmental behavior of the chemicals known to be at North East Cape (crankcase oil, TCE, ethyleneglycol, leaded gasoline, diesel fuel, and aviation fuel) are discussed below.

Crankcase oils are expected to be highly immobile in the soil/ground water environment. Bulk quantities of the oil from a spill or improper disposal might be carried slowly through the unsaturated zone to the top of the water table, but the high viscosity and low water solubility would mitigate this. Most likely, at least with moderate to small spills, the oil would remain entrained in the pores of the soil near the surface. This would be more likely for low porosity and high organic carbon content soils, and less likely for sandy, porous soils (U.S. Air Force, 1989).

Trichloroethylene (TCE) is highly volatile in aqueous solutions, moderately soluble in water, and not strongly absorbed or bioaccumulated. TCE on the soil surface is likely to volatilize, but that portion not removed by volatilization is likely to become mobile in ground water (U.S. Air Force, 1989).

Ethylene glycol is expected to be highly mobile in the soil/ground water system when present at relatively low concentrations or as a separate organic phase resulting from a spill of significant quantities of the chemical. Data on ethylene glycol volatilization from soils is not available. Ethylene glycol is not strongly sorbed to soil and is highly soluble in water. Although some volatilization may occur at the surface, it is suggested that vapor concentrations in soil will be low whenever water is present and volatilization will be minimal (U.S. Air Force, 1989).

The environmental behavior of petroleum based fuels (gasoline, diesel fuel, and aviation fuel) will be limited to a discussion of the major hydrocarbon components and not to the many trace elements and diverse additives. The relative concentrations of constituents of the fuel will vary with time and distance from the site of contamination. This effect known as weathering is used to describe the changes following spills where differential volatilization, dissolution, and degradation are all involved. Lateral spreading along the surface increases the initial contaminated area while facilitating evaporative removal of the low molecular weight hydrocarbons. Vertical penetration mediated by gravitation and capillary forces decreases evaporation, reduces the importance of some transformation pathways, and may lead to ground water contamination (U.S. Air Force, 1989).

3.6.3.2 Conclusions. Site 7 is recommended for further action under the Navy Installation Restoration program due to the unknown nature of the majority of the substances stored in the drum areas.

3.6.3.3 Recommendations. A staging area should be established in an open region near each of the four drum storage areas. A fork-lift should be used to transfer the drums on pallets from where they are stored to the staging areas via a bermed corridor lined with plywood and plastic (Visqueen). The plywood will help protect the plastic from breakage due to rocks on the ground. The plastic will cover the plywood and protect against potential spills onto unprotected ground. The staging area should also be bermed and protected from potential spills.

Following rearrangement of the drums to allow unrestricted access to each drum, trained personnel should label each drum, open and monitor the headspace for volatile vapors, visually classify the contents, and collect a representative sample for later categorization. After sampling, each drum should be closed until analytical results have been reviewed and the proper disposal method has been determined. Additionally, the Hazardous Material Categorization (Hazcat) analysis will attempt to characterize the wastes for consolidation into bulk storage containers for disposal, recycling, or for other options identified during hazcatting operations.

In addition to the tasks associated with drum sampling and waste categorization, a grid should be established to allow for the random sampling of soil cores in Area 4 where the drums were stored. Surface water samples should be obtained in snow run-off directly below the tramway and Area 3. At a minimum, samples should be analyzed for the compounds determined to be present at the sites upon review of Hazcat results.

Also see section 4.0, Removal Action.

3.6.4 Site 8, Main Transmitter Area Storage Building (SLI).

3.6.4.1 Findings. Site 8, Main Transmitter Area Storage Building (SLI), is an eight foot by twelve foot structure located approximately 160 feet southeast of Building 1001, Main Transmitter Building, and 30 feet east of Building 1055, Automobile Shop, in the White Alice antenna area as shown in Figure 4.

The structure was constructed in 1952 for the United States Air Force and used to store various small containers of supplies for use in buildings 1001 and 1055. The door to the building is missing, allowing easy access to the contents inside.

Fifteen compressed gas cylinders were observed inside the structure and all are in good condition. The contents of the gas cylinders are unknown. Other potentially hazardous materials stored in the building include seven lead-acid type automobile batteries, two 5-gallon containers of creosote "C", five 5-gallon containers of grease, one 15-gallon drum of an unknown substance, and possible asbestos wallboard (see Site 5). All containers are in good shape and show no signs of leaking or damage. The possible asbestos wallboard is in poor condition and is falling apart.

3.6.4.2 Conclusions. Site 8 is recommended for further action under the Navy Installation Restoration program due to the unknown contents and associated explosive hazard of the compressed gas cylinders, and the easy accessibility to trespassers of other known hazardous materials stored in the building.

3.6.4.3 Recommendations. The compressed gas cylinders and all containers housed in the Main Transmitter Area Storage Building should be removed and disposed of in accordance with applicable State of Alaska and Federal regulations. The possible asbestos wallboard should be sampled in accordance with procedures outlined in Site 5 and disposed of properly depending on analytical results. The door to the structure should be replaced and secured to prevent entry by trespassers.

Also see section 4.0, Removal Action.

4.0 REMOVAL ACTION. During the course of preparation of this Preliminary Assessment, a removal action at the White Alice Site, Northeast Cape, St. Lawrence Island has taken place. This removal action, conducted in July and August of 1990, encompassed sites 6, 7, and 8. Electrical equipment, storage drums, gas cylinders, and other potentially hazardous materials were removed under the direction of Engineering Field Activity (EFA) Northwest. Asbestos materials were not removed from the facility. Samples of surface water and soils in the area were taken. See SI Report, White Alice Site, N.E. Cape, St. Lawrence Island, Alaska, EFA Northwest, (not yet released) for further information on testing conducted here. Also see Removal Action Report, White Alice Site, N.E. Cape, St. Lawrence Island, Alaska, EFA Northwest, (not yet released) for more detailed information on the materials removed from sites 6, 7, and 8.

5.0 AUTHORITY AND SCOPE.

Section 211 of the Superfund Amendments and Reauthorization Act of 1986 (SARA 211) provides continued authority for the

Department of Defense Environmental Restoration Program (DERP) and the Defense Environmental Restoration Account (DERA). The Navy Installation Restoration (IR) program is authorized by Chief of Naval Operations instruction (OPNAVINST) 5090.1 of 26 May 1983. The Naval Facilities Engineering Command (NAVFACENGCOM) manages the Navy program. NAVFACENGCOM tasked the Naval Energy and Environmental Support Activity (NEESA) to conduct a preliminary assessment (PA) for each Navy and Marine Corps facility listed on the Federal Agency Hazardous Waste Compliance Docket as required by SARA 120. NAVFACENGCOM may also request NEESA to conduct PAs at certain facilities not listed on the docket.

PAs are conducted in accordance with Environmental Protection Agency (EPA) draft guidance on "Pre-Remedial Activities at Federal Facilities" forwarded by EPA memorandum of 08 September 1987. PA recommendations are consistent with the National Contingency Plan (NCP).

Appendix D contains a completed Federal Facilities Checklist in accordance with EPA memorandum of 14 February 1990. This checklist will assist EPA's review of the Preliminary Assessment.

The PA begins with investigation and review of available records at NEESA and the cognizant NAVFACENGCOM Engineering Field Division. After the record search, the PA team visits the activity to complete documentation of past and present operations and disposal practices. With the assistance of the activity point of contact, the team tours the activity and interviews long term employees. If a potential threat to human health or the environment is suspected, further appropriate action is recommended.

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Supporting Documentation available at:

Naval Energy and Environmental Support Activity
Environmental Protection Department Code 112E
Port Hueneme, CA 93043

APPENDIX A



DEPARTMENT OF THE NAVY
NAVAL OCEAN SYSTEMS CENTER
SAN DIEGO, CALIFORNIA 92152-5000

IN REPLY REFER TO:
5090
Ser 006/67
1 JUN 1989

State of Alaska
Department of Environmental Conservation
Northern Regional Office
Attn: Thor Cutler
1001 Noble Street, Suite 350
Fairbanks, AK 99701

Gentlemen:

The initial notification of the fuel spill of 21 March 1989 was accomplished on 9 May 1989 in a telephone conversation between Mr. Thor Cutler of your office and Mr. T. D. Thielen, Environment Engineer, Code 0065, Naval Ocean Systems Center. The following is an interim report as is called for in the State of Alaska Oil Pollution Regulations 18 AAC 75, Articles 75.090, 75.100 and 75.110.

On 21 March 1989, at our Cape Prince of Wales field station during the routine monthly transfer of arctic grade diesel fuel (DFA), there was an apparent failure in an underground transfer pipe resulting in the loss of approximately 3,800 gallons of fuel. Dr. Loyd Hampton, the Resident Scientist in charge of the field station, discovered the loss of fuel while monitoring the levels in the tanks during the transfer.

The transfer was from fuel storage tanks to gravity feed tanks for the field station's diesel-driven generators and the residence furnaces. The fuel transfer system was secured and the ruptured underground fuel line was isolated to prevent further leakage. The one-inch fuel line suspected of failing is buried six to ten inches underground, and at the time of the spill was under approximately forty inches of snow.

The exact cause of the failure is still being investigated. The snow cover and frozen ground prevent a thorough inspection of the fuel transfer system. The system has been in use for many years without ever having a similar mishap. The timing of the incident, just after the extreme intense cold spell that the region experienced earlier this year, may suggest that these extended cold temperatures could have contributed to what is suspected to have been a mechanical failure of the underground fuel transfer line.

The general area of the spill was located by coring down through the snow to the sand level and sampling the snow and ice at the snow/sand interface. It was discovered that the spill occupies an area believed to be about sixty feet long and forty feet wide directly east of the fuel storage tanks in a natural depression in the sand. The location of the fuel represents no threat to either the village's potable water sources or to the water used by the field station. The site on the creek used by the village of Wales, Alaska as a winter source of water is located approximately one mile to the east and is elevated above the level of the field station. During the summer, the village uses a spring located due south of the village, over a mile away and elevated well above the

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1 JUN 1989

field station as a water supply. The field station uses water stored in storage tanks during the winter and uses the creek to the east during the summer.

The area is bounded on the east by a set of sand dunes preventing drainage out onto the tundra, on the north by a man-made dune, on the south by a man-made sand dune, and on the west by the fuel storage tanks, preventing any draining to the ocean. The level of the sand in the area of the spill is approximately two feet below the level of the fuel storage tanks, two to three feet below the level of the natural sand dunes on the east, and about a foot below the level of the man-made dunes on the north and south.

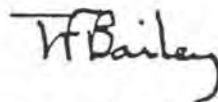
The fuel is trapped in a layer of ice, approximately four to six inches thick at the snow/sand interface. The sand is presently frozen solid, and therefore the immediate threat of fuel migrating from the area is minimal. Attempts have been made to create a sump in the sand to pool the fuel and pump it into an unused storage tank, but the fuel is effectively trapped in the ice layer. No natural draining has occurred. Because this was a spill of DFA, a very clean fuel, evaporation is anticipated as the surface area is exposed to the air and direct sunlight.

Our objective is to remove the sand from the affected area as soon as is practical and thus prevent the migration of any fuel. It is assumed that we will have to remove an area of sand, as was described above, down to a level of six inches (the estimated level that the ground should be thawed at the time of removal). This works out to a volume of sand equaling forty-five cubic yards. Once the contaminated sand has been removed, it will be replaced with clean sand to preserve the "lay of the land".

To accomplish this removal of the contaminated sand, we intend to transfer the sand to leak-proof metal storage containers already located on-site. The metal containers represent a significant storage capacity. The external dimensions of the containers are ten feet wide, twenty-eight feet long, and seven and one-half feet high. Assuming an internal storage capacity fifty percent of that volume, each container represents thirty-eight yards of storage area. We have six on hand representing a total of 228 yards of storage space. This insures complete containment of the sand.

The need for any further action will be assessed as soon as a complete inspection of the fuel transfer system can be completed.

Sincerely,



T. F. BAILEY
Captain, U. S. Navy
Acting Commander

5090
Ser 006/67
1 JUN 1989

Copy to:

001

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0065

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1901

192

Central Files (2)

Prepared by: M. R. Hacking, Code 19, x37458

Typed by: L. J. Ross, Code 006, 5/31/89

Reviewed by: 006

1901

[Handwritten signatures and initials over the review lines]

APPENDIX B

From: Navy Public Works Center, Environmental Engineering Laboratory, Code 614
Naval Air Station, North Island, Building 728, San Diego, CA 92135
(619) ~~434-3337~~ 545-8431

[illegible]

REMARKS: ND= NONE DETECTED
DETECTION LIMIT= 0.001mg

REPORTED BY: Patricia C.
Laboratory Supervisor

DATE: 1 AUG 89

NAVY PUBLIC WORKS CENTER
ENVIRONMENTAL ENGINEERING LABORATORY
QUALITY CONTROL DATA

LABORATORY LOG NUMBER: 90738-4

ACTIVITY: NEESA

TYPE OF SAMPLE: WIPE

DATE OF ANALYSIS: 31 JUL 89

TYPE OF ANALYSIS: TOTAL EXTRACTABLE PCB

CALIBRATION STANDARD: PCB 1260

RELATIVE STANDARD DEVIATION: 3.69

CONTINUING CALIBRATION CURVE VERIFICATION

EXPECTED CONCENTRATION: 4.0 ng/ul

RECOVERED: 3.77 ng/ul

% RECOVERY: 94%

MATRIX(WIPE) RECOVERY

SPIKE AMOUNT: 200ng

RECOVERED: 191ng

% RECOVERY: 96%

PRECISION DATA

FIRST VALUE(SAMPLE #3): 1.205mg

DUPLICATE VALUE(SAMPLE #3): 1.264mg

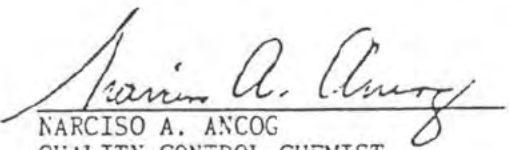
% DIFFERENCE: 4.8%

CHECK SAMPLE DATA

STANDARD: PCB 1260

RECOVERED: 489 ppm

EXPECTED VALUE RANGE: 398-634 ppm


NARCISO A. ANCOG
QUALITY CONTROL CHEMIST

APPENDIX C

REQUEST FOR AND RESULTS OF TESTS					PAGE NO.	NO. OF PAGES
SECTION A-REQUEST FOR TEST						
1. TO: NORTH HAVEN FIVE NAVAL STATION, BOX 143 SAN DIEGO, CAL. 92160-5147			2. FROM: NOSC Code 19 San Diego 92152-5000			
3. PRIME CONTRACTOR AND ADDRESS CONTRACT NUMBER			4. MANUFACTURING PLANT NAME AND ADDRESS P. O. NUMBER			
5. END ITEM AND/OR PROJECT		6. SAMPLE NUMBER 3	7. LOT NO.	8. REASON FOR SUBMITTAL P.O. ASBESTOS		9. DATE SUBMITTED
10. MATERIAL TO BE TESTED	10a. QUANTITY SUBMITTED	11. QUANTITY REPRESENTED		12. SPEC. & AMEND AND/OR DRAWING NO. & REV. FOR SAMPLE & DATE ASBESTOS 11		
13. PURCHASED FROM OR SOURCE		14. SHIPMENT METHOD SHIP COMPACT		15. DATE SAMPLED AND SUBMITTED BY 7 Nov 88 LCDR Carl Wales		
16. REMARKS AND/OR SPECIAL INSTRUCTIONS AND/OR WAIVERS. 1 1 - NOSC Facility, NorthHaven site, S. Lawrence Island, Guam, Sa. A. 1988 2 10 - NOSC Bldg, 371 3 11 - NOSC Bldg, 371 THIS DOCUMENT CONTAINS INFORMATION THAT IS UNCLASSIFIED DATE 11/15/88 BY 1045 JAW/STW						
17. SEND REPORT OF TEST TO NOSC						
SECTION B-RESULTS OF TEST (Continue on plain white paper if more space is required)						
1. DATE SAMPLE RECEIVED 07 Nov 88		2. DATE RESULTS REPORTED 07 Nov 88		3. LAB REPORT NUMBER 03-379-88		
4. TEST PERFORMED 1. SAMPLED FOR ASBESTOS 2. ANALYZED FOR ASBESTOS		RESULTS OF TEST		SAMPLE RESULT		REQUIREMENTS
		1 Positive for chrysotile and amosite asbestos 2 Negative for asbestos. Positive for mineral wool 3 Positive for chrysotile and amosite asbestos				
DATE 07 Nov 88	TYPED NAME AND TITLE OF PERSON CONDUCTING TEST NAVAL STATION, BOX 143 SAN DIEGO, CAL. 92160-5147			SIGNATURE J. A. Mair Ray V. Baur E. J. B. USN		

SAMPLES TAKEN FROM WHITE ALICE SITE
AT
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA

Sample
Number

Description/Location

1

Lagging sample taken from material which had fallen off of a pipe running thru the transformer room.

RESULTS: Positive for chrysotile and amosite asbestos

2

Surface water just outside the transformer room.

RESULTS: 0.0039 mgm/liter

3

Suspected fuel sample taken from leak in line leading into building.

RESULTS: None Detected

4

Soil sample taken inside the garage building next to the furnace with possible fuel oil.

RESULTS: 1.24 mgm/kgm **

5

Soil sample taken in front outside the garage building.

RESULTS: 0.6168 mgm/kgm **

6

Water sample taken inside the Propane building.

RESULTS: None detected

7

Soil sample taken outside main building on NE corner.

RESULTS: 1.47 mgm/kgm **

8

Oil taken from leaky capacitor located in transmitters.

RESULTS: Not measured

9

Drippings from insulator feedthrough in the transmitter cabinets.

RESULTS: Not measured

** Level at which concentration considered hazardous is 5 mgm/kgm

APPENDIX D

WHITE ALICE, TIN CITY

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

I. SITE BACKGROUND INFORMATION

- ☐ Site name
- ☐ Site number
- ☐ Address
- ☐ Coordinates (latitude and longitude in degrees, minutes, seconds, or township and range numbers)
- ☐ Directions to site (starting from nearest public road)

Form 2070
NA
NA
Form 2070
- 11 -

II. RESPONSIBLE PARTIES

- ☐ Owner
- ☐ Address (current and past, if available)
- ☐ Telephone number
- ☐ Operator
- ☐ Operator's address
- ☐ Operator's telephone number
- ☐ Type of ownership (specify private, Federal, state, county, municipal)

- 11 -
- 11 -
- 11 -
- 11 -
- 11 -
- 11 -
- 11 -

III. OVERVIEW/SITE HISTORY

- ☐ Site operations
 - ~~history~~ years of operation
 - ~~nature~~ of operations (manufacturing, waste disposal, storage, etc.)
- ☐ Description of any emergency or remedial actions that have occurred at the site

1,2,1
1,2,1
3,4,1,1
2,3,1

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Description of any prior spills
- Description of relevant permits
- Description of existing sampling and analytic data and brief summary of data quality
- Evaluate the data quality for the following:
 - sample objectives
 - age/comparability
 - analytical methods
 - detection limits
 - QA/QC

2.3.1

2.2.1

3.4.1.1

3.4.1.1 & APPENDIX B

- " -

- " -

- " -

- " -

IV. WASTE CONTAINMENT/HAZARDOUS SUBSTANCE IDENTIFICATION

- Describe as specifically as possible the methods of hazardous substance disposal, storage, or handling.
- Describe the condition/integrity of each storage disposal feature or structure. Evaluate from the perspective of each migration pathway (e.g., ground water pathway - nonexistent natural or synthetic liner, corroding underground storage tank; surface water - inadequate freeboard, corroding bulk tanks; air - unstabilized slag piles, leaking drums, etc.).
- Describe any secondary containment features/structures (such as run-on diversion system, leachate collection systems).
- Describe size/volume of all features/structures that contain hazardous substances or volume of previously reported spills.
- Describe as precisely as possible existing permits and the types of hazardous substances handled on site.

3.4.1.1

3.4.1.1

- NA -

2.3.1, 3.4.1.1

2.2.1, 2.3.1,
2.5.1

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Discuss any records or manifests which provide data on volume of hazardous substances handled/disposed/released on site.

-NA-

V. GROUND WATER PATHWAY

- Determine if ground water within four¹ miles of the site is used for any of the following purposes (if the answer to this is "unusable," then it is not necessary to answer the following questions).
 - private or public drinking water source
 - commercial
 - irrigation (5-acre minimum)
 - industrial
 - not used, but usable
 - unusable
- Determine the population drinking ground water drawn from wells within four¹ miles of the site.
- Identify nearest well within four¹ miles that is a source of drinking water.
- As precisely as possible, describe the geology and hydrogeology of the area (including names, thickness, types of material and depth from surface, including soils).
- Discuss any evidence of discontinuities between aquifers/aquitards within four¹ miles of the site.
- Discuss any evidence of interconnections between aquifers within two¹ miles of the site.
- Estimate annual net precipitation (by summing monthly values).

2.4.1

2H.1

NO

NO

NO

NA

NA

3.3.1.2

2.4.1 & FIG. 1

1.5.1, 1.6.1.3, FIG 5, & FIG 7

*

*

TABLE 2

¹Distance based on proposed revisions to the HRS.

* : TO BE ADDRESSED IN SITE RIFS STUDIES

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Discuss soil or geological conditions that might inhibit or facilitate ground water migration. 1.6.1.3
- Discuss, if possible, alternative water supply sources that are readily available. 2.4.1
- Discuss any qualitative, quantitative, or circumstantial (e.g., closure of a well) evidence of a release to ground water. 32.1

VI. ADDITIONAL FACTORS BASED ON PROPOSED REVISIONS TO THE HRS FOR THE GROUND WATER PATHWAY

- Identify if any sources lie within a Wellhead Protection Area as designated according to Section 1428 of the Safe Drinking Water Act.¹ *
- Determine if the site is located in an area of karst terrain. *

VII. SURFACE WATER PATHWAY

- Discuss the probable surface runoff patterns from the site to surface waters. 1.6.1.2
- Discuss whether the facility is located in surface water (e.g., marsh, swamp) or a floodplain. 1.6.1.2
- From a topographic map, calculate and discuss the slope between the point where hazardous substances begin to migrate and the probable point of entry into the surface water body. 1.6.1.2
- Describe surface water bodies of concern within the 152-mile target distance limit. 1.6.1.2

¹Factor based on proposed revisions to the HRS.

²Distance based on proposed revisions to the HRS.

* TO BE ADDRESSED IN SI OR RI/FS STUDIES

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Identify if surface water drawn from intakes within 15¹ miles from the probable point of entry is used for any of the following purposes:

- irrigation of commercial food or forage crops (5-acre minimum)
- commercial livestock watering
- commercial food preparation
- commercial/industrial purposes other than drinking water, recreation, or fishery uses

(NO)
(NO)
(NO)
3.3.1.1

- Identify and discuss the nature and size of any of the following targets within the 15¹-mile target distance limit:

- population served by intakes drawing drinking water
 - population associated with recreational use²
 - sensitive environments (including fresh water or coastal wetlands [5-acre minimum] and critical habitats of a federally-designated endangered species)
 - economically important resources (e.g., shellfish)²
- Discuss any qualitative, quantitative, or circumstantial (e.g., contaminated surface water downstream of the site) evidence of a release to surface water.

3.3.1.1
3.3.1.1
1.4.1
3.3.1.1
3.2.1

VIII. ~~ADDITIONAL~~ FACTORS BASED ON PROPOSED REVISIONS TO THE HRS FOR THE SURFACE WATER PATHWAY

- From a topographic map, estimate the size (in acres) of the upgradient drainage area from the site.

(none)
1.6.1.2
§ FIG. 7

¹Distance based on proposed revisions to the HRS.

²Factor based on proposed revisions to the HRS.

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Discuss the average annual stream-flow in the vicinity of the site.
- Discuss any biological sampling that might assess the food chain and recreational impacts.
- If fisheries (recreational or commercial) exist within the 15-mile target distance limit, assess each of the following:
 - acreage of oceans, large lakes, or rivers
 - acreage of ponds or lakes fed by low-volume streams

2.4.1

NA

3.3.1.1

NA

IX. ADDITIONAL FACTORS BASED ON PROPOSED REVISIONS
TO THE HRS FOR THE AIR PATHWAY

- Determine the population within a four-mile radius of the site (allocated in 1/4, 1/2, 1, 2, 3, 4-mile ring distances).
- Determine the distance to the nearest residence or regularly occupied building as measured from any onsite emission source. If onsite, determine how many residents or workers occupy the building.
- Determine the distance to the following land uses within a four-mile radius:
 - commercial/industrial
 - residential
 - schools
 - parks
 - agricultural
- Identify, locate, and discuss any nearby fresh water or coastal wetlands (5-acre minimum) or critical habitats of federally-designated endangered species that could be affected by a release.

1.3.1 & Fig. 1

1.3.1

NA, 1.3.1

- " -

- " -

- " -

- " -

1.4.1

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Discuss any quantitative or qualitative evidence of a release to air.
- Determine particulate source mobility value (see Figure 2-3 in the proposed rule).

3.4.1.1

*

X. **ADDITIONAL FACTORS BASED ON PROPOSED REVISIONS TO THE HRS FOR THE ONSITE EXPOSURE PATHWAY**

- Discuss any qualitative or quantitative evidence of onsite soil contamination. If there is no evidence of onsite soil contamination, then it is not necessary to answer the following questions.
- Determine the onsite population (i.e., people living or attending school or day care on contaminated property).
- Determine the population within one mile of the site (i.e., individuals who live or go to school within one mile of the site).
- Describe any restrictions/barriers on accessibility to onsite waste materials.
- Identify and discuss any onsite terrestrial sensitive environments.
- Describe the area of surface contamination (both on and off site).

2.3.1, 3.4.1.1,
Fig. 9

1.3.1

1.3.1

-na-

1.4.1

1.6.1.1, 3.2.1,
3.4.1.1

* To be addressed in SI OR RI/FS studies

NAVY FIELD STATION, WALES

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

I. SITE BACKGROUND INFORMATION

- ☐ Site name
- ☐ Site number
- ☐ Address
- ☐ Coordinates (latitude and longitude in degrees, minutes, seconds, or township and range numbers)
- ☐ Directions to site (starting from nearest public road)

Form 2070

NA

Form 2070

- " -

- " -

II. RESPONSIBLE PARTIES

- ☐ Owner
- ☐ Address (current and past, if available)
- ☐ Telephone number
- ☐ Operator
- ☐ Operator's address
- ☐ Operator's telephone number
- ☐ Type of ownership (specify private, Federal, state, county, municipal)

- " -

- " -

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- " -

III. OVERVIEW/SITE HISTORY

- ☐ Site operations
 - ~~history~~ years of operation
 - ~~nature~~ of operations (manufacturing, waste disposal, storage, etc.)
- ☐ Description of any emergency or remedial actions that have occurred at the site

1.2.2

1.2.2

2.3.2

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- ☐ Description of any prior spills
- ☐ Description of relevant permits
- ☐ Description of existing sampling and analytic data and brief summary of data quality
- ☐ Evaluate the data quality for the following:
 - ☐ sample objectives
 - ☐ age/comparability
 - ☐ analytical methods
 - ☐ detection limits
 - ☐ QA/QC

2,3,2
3.5
2,2,2
-NA-
-NA-
-"-
-"-
-"-
-"-

IV. WASTE CONTAINMENT/HAZARDOUS SUBSTANCE IDENTIFICATION

- ☐ Describe as specifically as possible the methods of hazardous substance disposal, storage, or handling.
- ☐ Describe the condition/integrity of each storage disposal feature or structure. Evaluate from the perspective of each migration pathway (e.g., ground water pathway - nonexistent natural or synthetic liner, corroding underground storage tank; surface water - inadequate freeboard, corroding bulk tanks; air - unstabilized slag piles, leaking drums, etc.).
- ☐ Describe any secondary containment features/structures (such as run-on diversion system, leachate collection systems).
- ☐ Describe size/volume of all features/structures that contain hazardous substances or volume of previously reported spills.
- ☐ Describe as precisely as possible existing permits and the types of hazardous substances handled on site.

3,5,1,1 (SITE 2)
2,4,2
3,5,1,1 } (SITE
3,5,1,2 }
NA
3,5,1,1 (SITE 2)
3,5,2,1 (SITE 3)
3,5,3,1 (SITE 4)
2,2,2, 2,5,2 (GEN)
2,2,2, 2,5,2

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Discuss any records or manifests which provide data on volume of hazardous substances handled/disposed/released on site.

2.3.2 & APPENDIX A

V. GROUND WATER PATHWAY

- Determine if ground water within four¹ miles of the site is used for any of the following purposes (if the answer to this is "unusable," then it is not necessary to answer the following questions).
 - private or public drinking water source
 - commercial
 - irrigation (5-acre minimum)
 - industrial
 - not used, but usable
 - unusable
- Determine the population drinking ground water drawn from wells within four¹ miles of the site.
- Identify nearest well within four¹ miles that is a source of drinking water.
- As precisely as possible, describe the geology and hydrogeology of the area (including names, thickness, types of material and depth from surface, including soils).
- Discuss any evidence of discontinuities between aquifers/aquitards within four¹ miles of the site.
- Discuss any evidence of interconnections between aquifers within two¹ miles of the site.
- Estimate annual net precipitation (by summing monthly values).

3.2.2

3.2.2

3.2.2

FIG 5, FIG 7,
1, 6, 2, 3,
& 1.5.1'

~~FIG 2~~ TABLE 2

¹Distance based on proposed revisions to the HRS.

* TO BE ADDRESSED IN SI OR RI/F S

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Discuss soil or geological conditions that might inhibit or facilitate ground water migration.
- Discuss, if possible, alternative water supply sources that are readily available.
- Discuss any qualitative, quantitative, or circumstantial (e.g., closure of a well) evidence of a release to ground water.

1, 6, 2, 3

2, 4, 2

3, 2, 2

VI. ADDITIONAL FACTORS BASED ON PROPOSED REVISIONS TO THE HRS FOR THE GROUND WATER PATHWAY

- Identify if any sources lie within a Wellhead Protection Area as designated according to Section 1428 of the Safe Drinking Water Act.¹
- Determine if the site is located in an area of karst terrain. *most likely Not*

- NA -

*

VII. SURFACE WATER PATHWAY

- Discuss the probable surface runoff patterns from the site to surface waters.
- Discuss whether the facility is located in surface water (e.g., marsh, swamp) or a floodplain.
- From a topographic map, calculate and discuss the slope between the point where hazardous substances begin to migrate and the probable point of entry into the surface water body.
- Describe surface water bodies of concern within the 152-mile target distance limit.

3, 2, 2

1, 6, 2, 1

3, 2, 2

3, 3, 1, 1

3, 3, 2, 1

¹Factor based on proposed revisions to the HRS.

²Distance based on proposed revisions to the HRS.

* To be addressed in SI or RI/FS Studies

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Identify if surface water drawn from intakes within 15¹ miles from the probable point of entry is used for any of the following purposes:

- irrigation of commercial food or forage crops (5-acre minimum)
- commercial livestock watering
- commercial food preparation
- commercial/industrial purposes other than drinking water, recreation, or fishery uses

3.3.2.1
- 11 -
- 11 -
- 11 -

- Identify and discuss the nature and size of any of the following targets within the 15¹-mile target distance limit:

- population served by intakes drawing drinking water
 - population associated with recreational use²
 - sensitive environments (including fresh water or coastal wetlands [5-acre minimum] and critical habitats of a federally-designated endangered species)
 - economically important resources (e.g., shellfish)²
- Discuss any qualitative, quantitative, or circumstantial (e.g., contaminated surface water downstream of the site) evidence of a release to surface water.

3.3.2.1
NA
1, 4, 1
NA
3.2.2

VIII. ~~ADDITIONAL~~ FACTORS BASED ON PROPOSED REVISIONS TO THE HRS FOR THE SURFACE WATER PATHWAY

- From a topographic map, estimate the size (in acres) of the upgradient drainage area from the site.

3.2.2
~~3.2.3~~

¹Distance based on proposed revisions to the HRS.

²Factor based on proposed revisions to the HRS.

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Discuss the average annual stream-flow in the vicinity of the site.
- Discuss any biological sampling that might assess the food chain and recreational impacts.
- If fisheries (recreational or commercial) exist within the 15-mile target distance limit, assess each of the following:
 - acreage of oceans, large lakes, or rivers
 - acreage of ponds or lakes fed by low-volume streams

2.4.2

NA

NA, 3.3.1.1

X

IX. ADDITIONAL FACTORS BASED ON PROPOSED REVISIONS TO THE HRS FOR THE AIR PATHWAY

- Determine the population within a four-mile radius of the site (allocated in 1/4, 1/2, 1, 2, 3, 4-mile ring distances).
- Determine the distance to the nearest residence or regularly occupied building as measured from any onsite emission source. If onsite, determine how many residents or workers occupy the building.
- Determine the distance to the following land uses within a four-mile radius:
 - commercial/industrial
 - residential
 - schools
 - parks
 - agricultural
- Identify, locate, and discuss any nearby fresh water or coastal wetlands (5-acre minimum) or critical habitats of federally-designated endangered species that could be affected by a release.

1.3.2

NA

NO

1.3.2

1.3.2

NO

NO

1.4.1

* To be addressed in SI OR RI/FS reports

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Discuss any quantitative or qualitative evidence of a release to air.
- Determine particulate source mobility value (see Figure 2-3 in the proposed rule).

3.5.1.1
*

X. ADDITIONAL FACTORS BASED ON PROPOSED REVISIONS TO THE HRS FOR THE ONSITE EXPOSURE PATHWAY

- Discuss any qualitative or quantitative evidence of onsite soil contamination. If there is no evidence of onsite soil contamination, then it is not necessary to answer the following questions.
- Determine the onsite population (i.e., people living or attending school or day care on contaminated property).
- Determine the population within one mile of the site (i.e., individuals who live or go to school within one mile of the site).
- Describe any restrictions/barriers on accessibility to onsite waste materials.
- Identify and discuss any onsite terrestrial sensitive environments.
- Describe the area of surface contamination (both on and off site).

3.5.1.2
3.5.2.1
1.3.2
1.3.2
*
1.8.2 & 3.5.3.1
3.5.1 3.5.2,
& 3.5.3

* To be addressed in SI or RIFS studies.

White Alice Site, Northeast Cape,
St. Lawrence Island, AK

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

I. SITE BACKGROUND INFORMATION

- ☐ Site name
- ☐ Site number
- ☐ Address
- ☐ Coordinates (latitude and longitude in degrees, minutes, seconds, or township and range numbers)
- ☐ Directions to site (starting from nearest public road)

Form 2070
NA
Form 2070
- 11 -
- 11 -

II. RESPONSIBLE PARTIES

- ☐ Owner
- ☐ Address (current and past, if available)
- ☐ Telephone number
- ☐ Operator
- ☐ Operator's address
- ☐ Operator's telephone number
- ☐ Type of ownership (specify private, Federal, state, county, municipal)

- 11 -
- 11 -
- 11 -
- 11 -
- 4 -
- 11 -
- 11 -

III. OVERVIEW/SITE HISTORY

- ☐ Site operations
 - ~~history~~ years of operation
 - ~~nature~~ of operations (manufacturing, waste disposal, storage, etc.)
- ☐ Description of any emergency or remedial actions that have occurred at the site

1, 2, 3
1, 2, 3
4, 0

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.).

- Description of any prior spills
- Description of relevant permits
- Description of existing sampling and analytic data and brief summary of data quality
- Evaluate the data quality for the following:
 - sample objectives
 - age/comparability
 - analytical methods
 - detection limits
 - QA/QC

3.6
2.2.3
APPENDIX C
- " -
- " -
- " -
- " -
- " -

IV. WASTE CONTAINMENT/HAZARDOUS SUBSTANCE IDENTIFICATION

- Describe as specifically as possible the methods of hazardous substance disposal, storage, or handling.
- Describe the condition/integrity of each storage disposal feature or structure. Evaluate from the perspective of each migration pathway (e.g., ground water pathway - nonexistent natural or synthetic liner, corroding underground storage tank; surface water - inadequate freeboard, corroding bulk tanks; air - unstabilized slag piles, leaking drums, etc.).
- Describe any secondary containment features/structures (such as run-on diversion system, leachate collection systems).
- Describe size/volume of all features/structures that contain hazardous substances or volume of previously reported spills.
- Describe as precisely as possible existing permits and the types of hazardous substances handled on site.

2.4.3, 2.3.3,
FIG. 4, 3.6
3.6.2.1
3.6.3.1
NA
2.4.3

3.6.1.1 (SITE 5)
3.6.2.1 (SITE 6)
3.6.3.1 (SITE 7)
3.6.4.1 (SITE 8)
2.3.3
TABLE 3, TABLE 5

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Discuss any records or manifests which provide data on volume of hazardous substances handled/disposed/released on site.

NDCE

V. GROUND WATER PATHWAY

- Determine if ground water within four¹ miles of the site is used for any of the following purposes (if the answer to this is "unusable," then it is not necessary to answer the following questions).
 - private or public drinking water source
 - commercial
 - irrigation (5-acre minimum)
 - industrial
 - not used, but usable
 - unusable
- Determine the population drinking ground water drawn from wells within four¹ miles of the site.
- Identify nearest well within four¹ miles that is a source of drinking water.
- As precisely as possible, describe the geology and hydrogeology of the area (including names, thickness, types of material and depth from surface, including soils).
- Discuss any evidence of discontinuities between aquifers/aquitards within four¹ miles of the site.
- Discuss any evidence of interconnections between aquifers within two¹ miles of the site.
- Estimate annual net precipitation (by summing monthly values).

2,4,3
3,3,3,2

- 11 -

- 11 -

- 11 -

- 11 -

- 11 -

- 11 -

- 11 -

- 11 -

1,5,2
Fig 6

*

*

1,7,2

¹Distance based on proposed revisions to the HRS.

* TO BE ADDRESSED IN SITE R/F/S

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Discuss soil or geological conditions that might inhibit or facilitate ground water migration.
- Discuss, if possible, alternative water supply sources that are readily available.
- Discuss any qualitative, quantitative, or circumstantial (e.g., closure of a well) evidence of a release to ground water.

3.2.3. (1 & 2)
§ 1.6.3.3

24.3

3.2.3.2

VI. ADDITIONAL FACTORS BASED ON PROPOSED REVISIONS TO THE HRS FOR THE GROUND WATER PATHWAY

- Identify if any sources lie within a Wellhead Protection Area as designated according to Section 1428 of the Safe Drinking Water Act.¹
- Determine if the site is located in an area of karst terrain.

*

*

VII. SURFACE WATER PATHWAY

- Discuss the probable surface runoff patterns from the site to surface waters.
- Discuss whether the facility is located in surface water (e.g., marsh, swamp) or a floodplain.
- From a topographic map, calculate and discuss the slope between the point where hazardous substances begin to migrate and the probable point of entry into the surface water body.
- Describe surface water bodies of concern within the 152-mile target distance limit.

3.2.3.1
§ 1.6.3.2

1.6.3.2
§ FIG 8

VARIABLE, FIG 8

1.6.3.2

¹Factor based on proposed revisions to the HRS.

²Distance based on proposed revisions to the HRS.

* To be addressed in SI OR RI/FS reports

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Identify if surface water drawn from intakes within 15¹ miles from the probable point of entry is used for any of the following purposes:

- irrigation of commercial food or forage crops (5-acre minimum)
- commercial livestock watering
- commercial food preparation
- commercial/industrial purposes other than drinking water, recreation, or fishery uses

NA

NA

NA

NA

- Identify and discuss the nature and size of any of the following targets within the 15¹-mile target distance limit:

- population served by intakes drawing drinking water
- population associated with recreational use²
- sensitive environments (including fresh water or coastal wetlands [5-acre minimum] and critical habitats of a federally-designated endangered species)
- economically important resources (e.g., shellfish)²

3.3.3.1

DOE

1.4.2

3.3.3.1

- Discuss any qualitative, quantitative, or circumstantial (e.g., contaminated surface water downstream of the site) evidence of a release to surface water.

4.0

VIII. ~~ADDITIONAL~~ FACTORS BASED ON PROPOSED REVISIONS TO THE HRS FOR THE SURFACE WATER PATHWAY

- From a topographic map, estimate the size (in acres) of the upgradient drainage area from the site.

VARIABLE, FIG 8

¹Distance based on proposed revisions to the HRS.

²Factor based on proposed revisions to the HRS.

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Discuss the average annual stream-flow in the vicinity of the site.
- Discuss any biological sampling that might assess the food chain and recreational impacts.
- If fisheries (recreational or commercial) exist within the 15-mile target distance limit, assess each of the following:
 - acreage of oceans, large lakes, or rivers
 - acreage of ponds or lakes fed by low-volume streams

3 2.3.1

X

X

X

IX. ADDITIONAL FACTORS BASED ON PROPOSED REVISIONS TO THE HRS FOR THE AIR PATHWAY

- Determine the population within a four-mile radius of the site (allocated in 1/4, 1/2, 1, 2, 3, 4-mile ring distances).
- Determine the distance to the nearest residence or regularly occupied building as measured from any onsite emission source. If onsite, determine how many residents or workers occupy the building.
- Determine the distance to the following land uses within a four-mile radius:
 - commercial/industrial
 - residential
 - schools
 - parks
 - agricultural
- Identify, locate, and discuss any nearby fresh water or coastal wetlands (5-acre minimum) or critical habitats of federally-designated endangered species that could be affected by a release.

NA

NA 1.3.3

NOVE 1.3.3

-11-

-11-

-11-

-11-

1, 4, 2

5. FGD 20.70

* T. A addressed in SI or RI/FS reports.

9345.0-01
OSWER DIRECTIVE
PA CHECKLIST

REFERENCE (PAGE NO.)

- Discuss any quantitative or qualitative evidence of a release to air.
- Determine particulate source mobility value (see Figure 2-3 in the proposed rule).

36.1.2

*

X. ADDITIONAL FACTORS BASED ON PROPOSED REVISIONS TO THE HRS FOR THE ONSITE EXPOSURE PATHWAY

- Discuss any qualitative or quantitative evidence of onsite soil contamination. If there is no evidence of onsite soil contamination, then it is not necessary to answer the following questions.
- Determine the onsite population (i.e., people living or attending school or day care on contaminated property).
- Determine the population within one mile of the site (i.e., individuals who live or go to school within one mile of the site).
- Describe any restrictions/barriers on accessibility to onsite waste materials.
- Identify and discuss any onsite terrestrial sensitive environments.
- Describe the area of surface contamination (both on and off site).

4.0

NA

-"-

3.6

*

36.1.1
36.1.3

* To be addressed in SI OR RI/FS Studies.

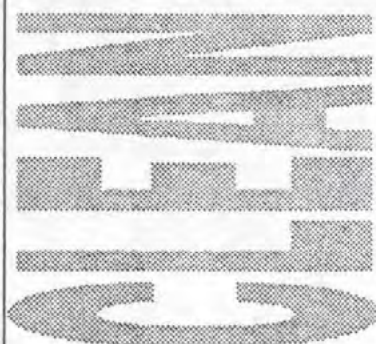
CTO-0018
Removal Action
White Alice Site, Northeast Cape
St. Lawrence Island, Alaska

Final Report

May 17, 1991

NORTHWEST AREA

**COMPREHENSIVE
LONG-TERM
ENVIRONMENTAL
ACTION NAVY**



**ENGINEERING FIELD ACTIVITY
NORTHWEST, NAVAL FACILITIES
ENGINEERING COMMAND
CONTRACT #N62474-89-D-9295**



THE URS TEAM

URS Consultants

**Science Applications
International Corp.**

**B&V Waste Science and
Technology Corp.**

Shannon & Wilson, Inc.

**FINAL
REMOVAL ACTION REPORT
FOR THE
COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY
(CLEAN PROGRAM) NORTHWEST AREA**

**WHITE ALICE SITE, NORTHEAST CAPE
ST. LAWRENCE ISLAND, ALASKA
CONTRACT TASK ORDER NO.: 0018**

**PREPARED BY:
URS CONSULTANTS, INC.
ANCHORAGE, ALASKA**

**PREPARED FOR:
ENGINEERING FIELD ACTIVITY, NORTHWEST
WESTERN DIVISION, NAVAL FACILITIES ENGINEERING COMMAND
SILVERDALE, WASHINGTON**

MAY 17, 1991

REMOVAL ACTION REPORT TITLE PAGE

Document Title: Removal Action Report
U.S. Navy - CLEAN Program, Northwest Area

Site Name: White Alice Site, Northeast Cape

Site Location: St. Lawrence Island, Alaska

Contract Task Order No.: CTO #0018

Document Control No.: 9105.040

Plan Coverage: This report covers removal action and quality assurance tasks as a part of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Program under Contract No. N62474-89-D-9295 for the Engineering Field Activity, Northwest, of the Western Division, Naval Facilities Engineering Command. These services are provided by URS Consultants, Inc. as Prime Contractor for the site indicated above and described within this plan.

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EXECUTIVE SUMMARY

This report documents specific actions and logistics necessary in performing a Removal Action at the White Alice site, Northeast Cape, St. Lawrence Island, Alaska. The report is divided into a general description of the project and its four areas of concern, relative technical actions and project critique.

Naval Ocean Systems Center in San Diego, California, the owner of the White Alice site, requested a Preliminary Assessment (PA) of the site from Naval Energy and Environmental Support Activity of Port Hueneme, California in November 1988. The PA was performed in July 1989 and revealed an assortment of debris and buildings, including abandoned drums and transformers, potentially hazardous to human health and the environment. Further investigation of possible hazardous conditions at this site was recommended.

In March 1990, the Engineering Field Activity, Northwest, Naval Facilities Engineering Command requested that URS Consultants perform a Removal Action for the four sites studied in the PA. The Removal Action was performed under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62474-89-D-9295, Task Order No. 0018.

The project site is located at Northeast Cape on St. Lawrence Island, Alaska. This island is approximately 100 miles in length and 20 miles wide and its western edge lies 40 miles east of Cape Chaplin, Siberia. Northeast Cape lies 118 miles southwest of Cape Rodney on the Seward Peninsula on mainland, Alaska. The facilities at this site were constructed in 1952 and were used in the Air Force communications network. The area was abandoned in 1975 and the 26 acre White Alice site was transferred to the Navy in 1982. The Naval Ocean Systems Command planned to use the site in conjunction with the Arctic Submarine Laboratory. However, it has never been used and remains abandoned.

The White Alice site on St. Lawrence Island consists of four large antennas and a large electronics building at the foot of a 1,820 foot high mountain, an abandoned tramway up the mountain and an upper camp at the top of the mountain. Surrounding the abandoned facilities was assorted debris, rusted drums and potentially contaminated soil which was the result of the drums leaking unknown but suspected contaminated materials. In close proximity to the abandoned structures were dielectric-filled transformers.

The successful accomplishment of this Removal Action required the concurrence of the St. Lawrence Island residents since the use of Native owned land was required for project logistics. This approval was obtained on May 5, 1990 and project planning proceeded immediately after that date. Over 100 separate procurements for equipment, supplies, materials and services were required to be obtained prior to mobilization. The project planning activities were completed prior to the July 4, 1990 mobilization date. The actual Removal Action commenced on July 4 and was completed by mid-August. Final demobilization and hazardous waste disposal was accomplished by early October.

Specific removal activities included drum and transformer removal and subsequent sampling of potentially contaminated soils at four separate sites. Labeled products were packaged for removal and unknown products were collected and screened for classification and appropriate disposal. Materials known to contain PCBs and other hazardous wastes were disposed of in accordance with Federal guidelines. Areas surrounding suspected spill locations were surveyed and grids laid out to facilitate soil sampling under a separate contract task order, CTO #0019/Site Inspection. The unknown products, screened and classified in the island on-site laboratory, were consistent with the historical information obtained concerning the products used and the activities performed when the White Alice site was active. The transformers and associated switch boxes were disconnected from the abandoned electrical system, drained and triple wrapped for appropriate disposal. The dielectric cooling fluid and the diesel fuel used to rinse the drained containers were also disposed of according to regulations affecting the disposal of PCBs.

The actual removal of more than 1,000 rusted drums, strewn over the 26 acre site, was impacted on a daily and occasionally, an hourly basis from extremes created by the arctic maritime weather patterns. The climatic changes varied between sunshine and torrential rain accompanied by 97 mile per hour winds. Because three transformers and the majority of the drums to be removed were situated on top of an 1,800 foot mountain, which was accessed by project helicopters, the weather was a consistent factor in daily project coordination.

The remoteness of this site, the lack of usable facilities, the unusual and harsh weather conditions, the lack of adequate time for project planning and the difficult topography of the site all combined to make this removal project difficult and challenging. In retrospect, this project served to prove that removal actions can successfully be performed in remote areas, given the resources and time necessary.

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ACRONYMS

ACM	Asbestos Containing Material
ARAR	Applicable or Relevant and Appropriate Requirements
BLM	Bureau of Land Management (Federal)
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-term Environmental Action Navy
CPR	Cardiopulmonary Resuscitation
CTO	Contract Task Order
DERP	Defense Environmental Restoration Program
DECON	Decontamination
DLA	Defense Logistics Agency
DOT	Department of Transportation
DRMO	Defense Reutilization and Marketing Service
EFA	Engineering Field Activity, Northwest
EPA	Environmental Protection Agency
FAR	Federal Acquisition Regulations
FID	Flame Ionization Detector
HEPA	High Efficiency Particulate Air
mg/L	Milligrams per Liter
OSHA	Occupational Safety and Health Administration

ACRONYMS (continued)

ORM	Other Regulated Materials
NAVY	Engineering Field Activity, Northwest of the Western Division, Naval Facilities Engineering Command
NEESA	Naval Energy and Environmental Support Activity
NFEC	Naval Facilities Engineering Command
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyl
POL	Petroleum, Oil, Lubricants
PPE	Personal Protective Equipment
ppm	Parts Per Million
PVC	Polyvinyl Chloride
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act of 1976
SI	Site Inspection
TSCA	Toxic Substance Control Act
TSD	Treatment, Storage and Disposal Facility
URS	URS Consultants, Inc.
WASNC	White Alice Site Northeast Cape

1.0 INTRODUCTION

The Engineering Field Activity (EFA), Northwest, Naval Facilities Engineering Command has requested that engineering services be provided by URS Consultants (URS) to perform a Removal Action for four sites on the Navy property at Northeast Cape, St. Lawrence Island, Alaska. The project was performed under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62474-89-D-9295, Task Order No. 0018 (CTO #0018).

Naval Ocean Systems Center in San Diego, California, initially requested a PA of the site from Naval Energy and Environmental Support Activity of Port Hueneme, California in November, 1988. The PA was performed in July, 1989 at the designated area and revealed an assortment of debris and buildings, potentially hazardous to human health and the environment.

This document describes the Removal Action performed at the White Alice site, an abandoned Air Force base, at Northeast Cape, St. Lawrence Island, Alaska.

2.0 PURPOSE

The purpose of this report is to document a Removal Action of potentially hazardous materials from a remote site.

The primary Removal Action objective was to remove drums, transformers and assorted debris, at the four sites which may have posed a threat to human health and/or the environment. This action was performed in compliance with all Federal and State Applicable or Relevant and Appropriate Requirements (ARARs).

A secondary objective, which complemented the Removal Action, was to survey and establish grids encompassing potential contaminant migration zones and distinct barrel locations. This allowed for site specific sampling under CTO #0019 Site Inspection (SI).

3.0 ISLAND DESCRIPTION

3.1 PHYSIOGRAPHY

The White Alice Site (WASNC) is located at Northeast Cape on St. Lawrence Island, Alaska. The island lies in the Bering Sea between 168 degrees 30 minutes and 172 degrees 00 minutes west longitude with its southern and northern limits marked by 62 degrees 52 minutes and 63 degrees 52 minutes north latitude, respectively. The island is approximately 100 miles in length and averages about 20 miles in width. The distance to the nearest point in Siberia, Cape Chaplin, is about 40 miles, while the distance to the nearest point on the Alaskan mainland at Cape Rodney on the Seward Peninsula is 118 miles. All travel to or from the area is accomplished by either sea or air if weather permits. Figure 3-1 shows the general location of the Navy facilities at Northeast Cape.

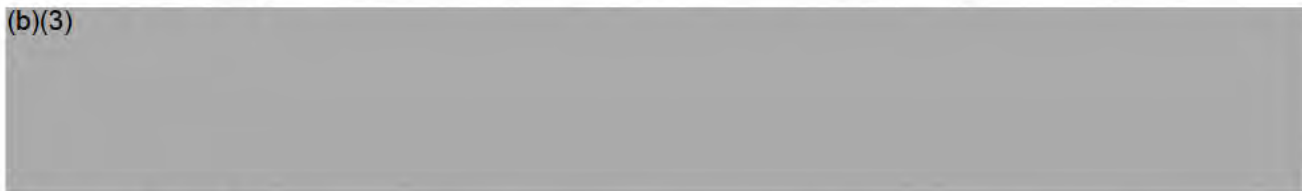
3.2 ISLAND HISTORY

St. Lawrence Island is currently occupied by the descendants of the original Russian Yupik (pronounced U-Pik) Eskimos who apparently traversed the Bering Land Bridge approximately 12,000 - 14,000 years ago. The Yupiks survive in a subsistence life style of hunting and fishing as well as selling of ivory carvings to tourists.

During the winter months, the permanent population of approximately 1,200 Eskimos and a small minority of non-natives, reside in the village towns of Gambell and Savoonga. However, in the warmer hunting and fishing months, many residents (and complete families) travel to the coastal areas, as well as the Punuk Islands off the Northeast Cape, and reside in their summer "fish camps".

3.2.1 Prehistory

(b)(3)



3.3 ECOLOGY

The harsh, year round climate and limited soil is consistent with a low density plant and animal population. In the winter months, polar bears are frequent visitors to the island,

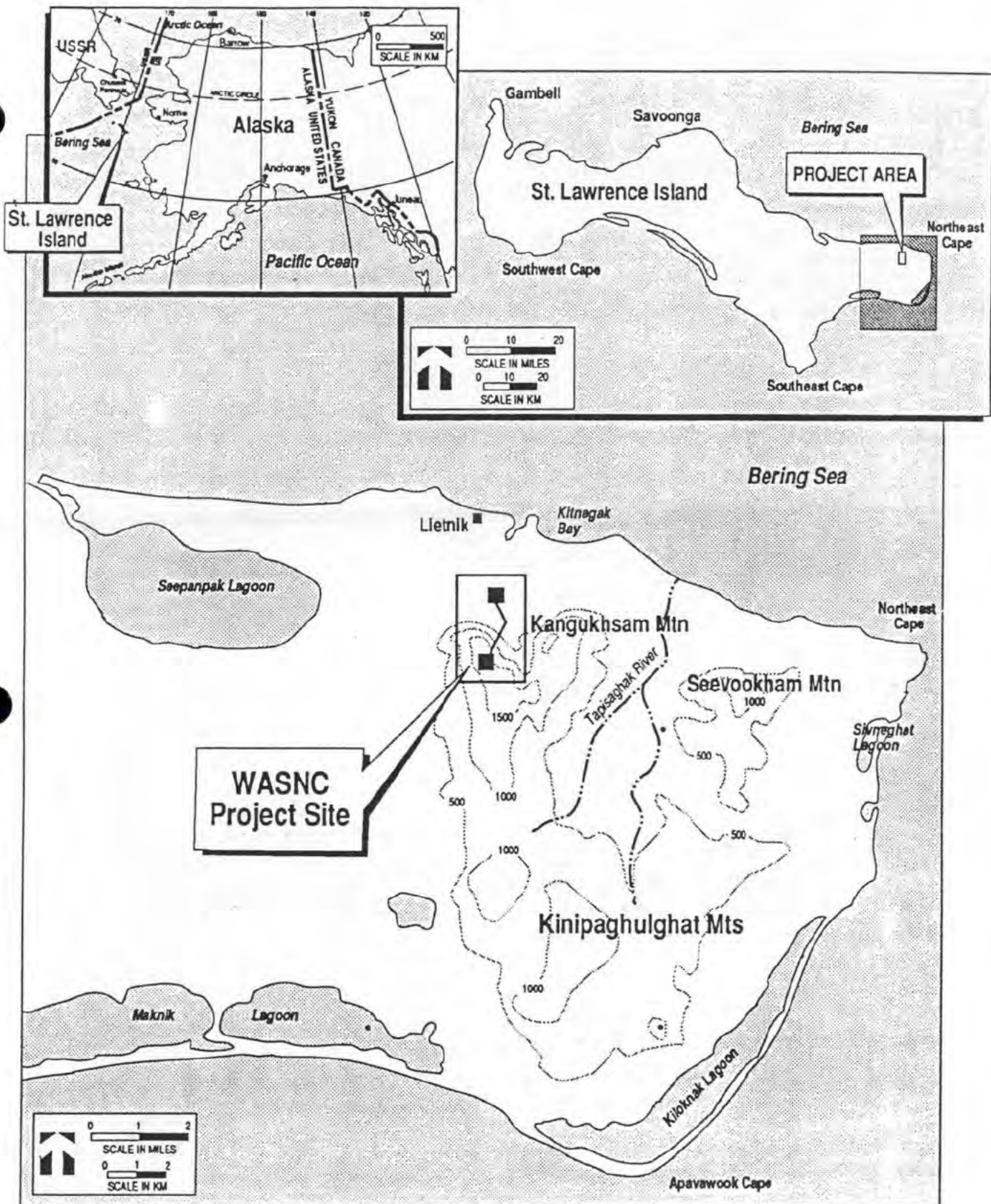


Figure 3-1
St. Lawrence Island
Location Map

Source: (USGS, 1974 and NEESA, 1990)

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CTO 0018
St. Lawrence Island
Alaska

arriving on the ice pack. Various whales, walrus and seals visit the island and surrounding waters and are legally harvested by the Natives. During the course of the project field activities, the largest mammals present at Northeast Cape were a herd of approximately 200 reindeer. The camp was persistently visited by arctic fox and arctic ground squirrels. Sandhill cranes, jaegers, swans and loons were common as well as the singular spotting of a soaring eagle.

3.4 TOPOGRAPHY

The topography of Northeast Cape begins with a coastal plain at the Bering Sea (Figure 3-1). A transition of rolling terrain leads to the Kinipaghulghat Mountains with Kangukhsam Mountain at 1,820 feet above sea level as the highest local peak. The mountain side is steep, highly exposed with weathered talus slopes (NEESA 1990).

3.5 GEOLOGY

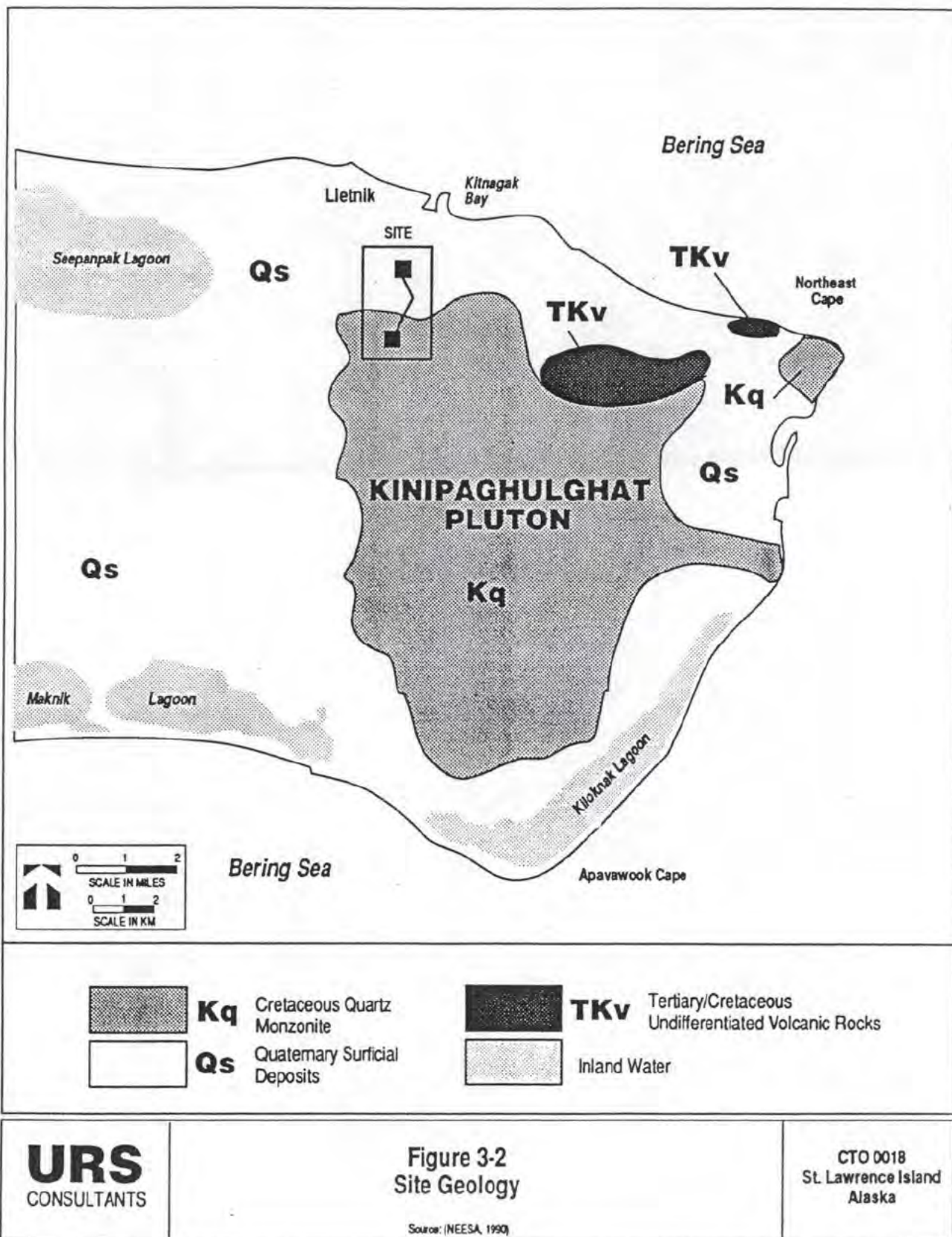
The eastern part of St. Lawrence Island is a broad, wave-cut bedrock platform nearly 100 feet above sea level. The surface of the platform is dotted with countless small shallow lakes and blanketed by a thin veneer of water-soaked mossy turf and peat. Several isolated groups of talus-covered hills, which are bounded by ancient sea cliffs, rise 1,000 to 2,000 feet above the surface platform.

Soils at the eastern part of St. Lawrence consist of loose, well rounded, medium coarse granitic sand and gravel. Sand, silt and peat are found at lower elevations and along the coast. In the higher elevations, the Kangukhsam and Kinipaghulghat Mountains, quartz monzonite is present, and some small areas of undifferentiated volcanic rocks (Figure 3-2) exist around Northeast Cape (NEESA 1990).

3.6 HYDROLOGY

The principle surface water feature of St. Lawrence Island is the Bering Sea. The sea is located approximately 1.5 miles to the north and east of the project site. All surface water runoff from the project area ultimately discharges to the Bering Sea. There are numerous glacial runoff streams running through the area. They have vegetated, incised banks, sandy gravelly streambeds, and are clear. The streams range from a few feet in width to streams twenty to thirty feet wide. These streams are beaded in the lowlands in contrast to high velocity streams in the mountainous areas.

The lowland areas of Northeast Cape are typical of a subarctic coastal plain where flat topography, frozen soils, and wet tundra have created numerous shallow thaw lake basins



and peat-filled thaw lake basins. These lakes are clear and tannic in appearance (URS 1990A).

3.7 CLIMATE

The island is characterized by a typical arctic maritime climate with cold winds of gale and occasionally hurricane force. Precipitation as rain or snow is recorded on 300 days out of the year. The greatest precipitation is recorded during the months of August and September. The mean precipitation for these months are 1.82 and 1.63 inches, respectively. Summer temperatures above 55 degrees Fahrenheit are infrequent and of short duration, and winter temperatures seldom fall below -10 degrees Fahrenheit (URS 1990A).

4.0 SITE DESCRIPTION

4.1 SITE HISTORY

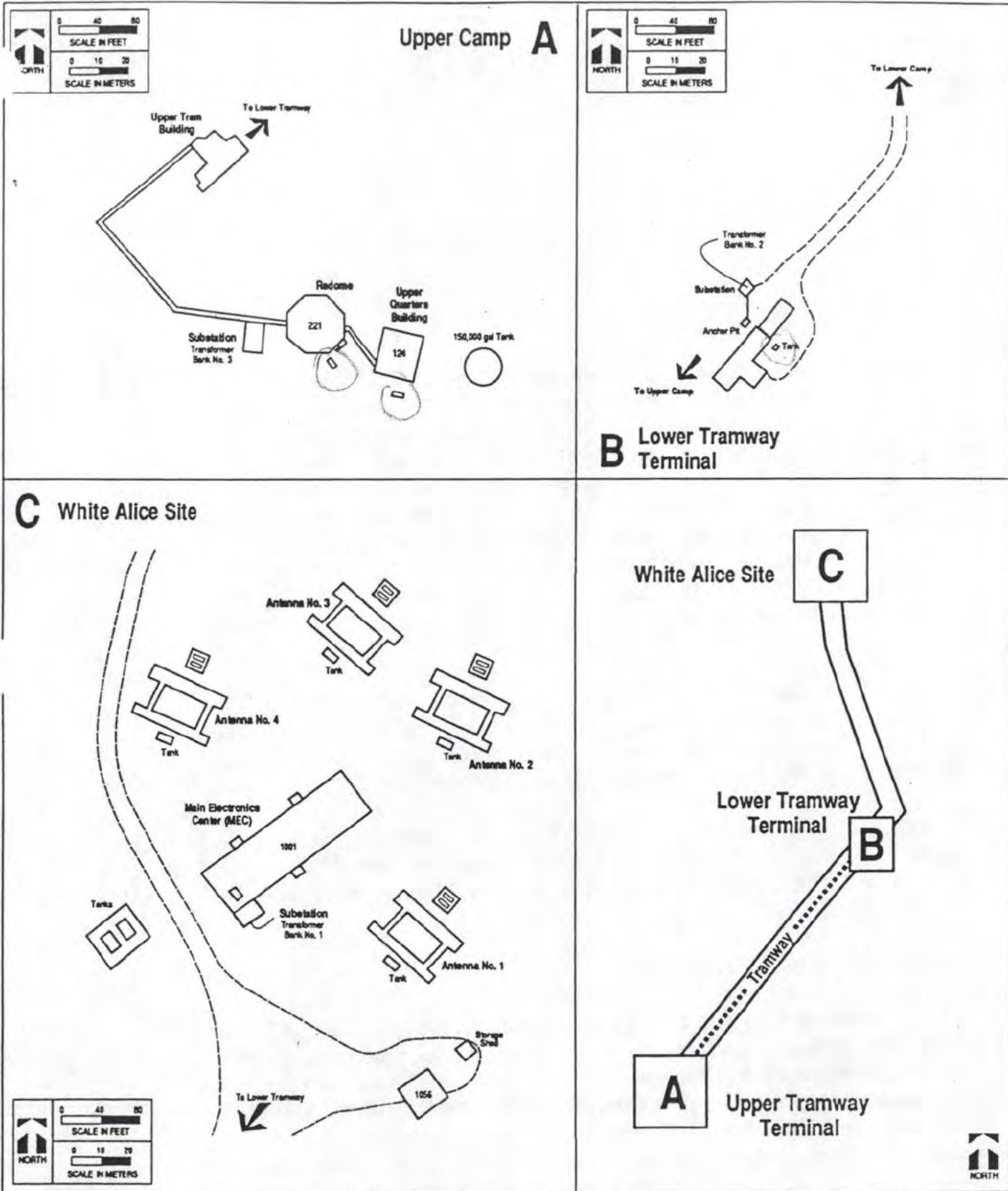
The facilities on St. Lawrence Island were constructed in 1952 for the Department of the Air Force and used as part of the high energy pulse tropospheric scatter sites (White Alice) located throughout coastal Alaska. Excess property of the original Air Force base, 16,213 acres, was relinquished to Bureau of Land Management (BLM) on March 14, 1958 and conveyed to both the Gambell Native Corporation (Sivunqaq, Inc.) and the Savoonga Native Corporation on June 27, 1979. Northeast Cape was used by the Air Force until it was closed in 1975 when the White Alice communication sites became obsolete with the introduction of communication satellites. After its closure, the majority of the remaining base property, 4,855 acres, was relinquished to BLM on August 20, 1975, and then conveyed to the Gambell and Savoonga Native Corporations on June 27, 1979.

On July 12, 1982, the remaining 26 acres of property were transferred from the Department of Air Force to the Department of Navy. The Navy property presently consists of the White Alice Site, the lower tram terminal, the tramway up Mount Kangukhsam, and the upper camp complex (NEESA 1990).

On July 29, 1982, the Naval Ocean Systems Center accepted control of the 26 acres of property. Originally, the Naval Ocean Systems Center had planned to use the facilities in conjunction with the Arctic Submarine Laboratory, however, the site remains unused (Figure 4-1).

4.2 PREVIOUS INVESTIGATION

In 1989, the Naval Energy and Environmental Support Activity (NEESA) performed a PA. NEESA identified transformers and drums containing product at the White Alice Site on St. Lawrence Island which were suspected of posing a threat to human health and/or the environment. The PA conducted on the island indicated that waste, or contaminated fuels and oil (e.g., aviation fuel, unleaded gasoline, diesel fuel, engine crankcase oil, grease, waste oil, deicing fluid, and arctic grade antifreeze), and chlorinated solvents (e.g., trichloroethylene, and carbon tetrachloride) had been used while the site was active. The site also contained compressed gas cylinders, lead-acid type automobile batteries, containers of creosote "C", asbestos wallboard, asbestos



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Figure 4-1
Site Location Map

Source: (NEESA, 1990)

CTO 0018
St. Lawrence Island
Alaska

insulation, PCB dielectric fluids, dibenzofuran, DDT, trichlorophenoxy acetic acid (2,3,5-T), alcohols, and sulfuric acid. The contaminated areas containing these materials were created by spills, leakage through bullet holes, leaks at storage areas, burial in landfills, and random disposal of drums and other materials at various locations on the site. The buildings presently in existence contain asbestos wallboard, asbestos insulation and asbestos containing material (ACM) and are all in a state of extreme disrepair.

4.3 AREA DESIGNATIONS

For the purpose of this report, the Removal Action was concerned with four specific sites, herein described as Areas 1-4. Area One consists of a tram running up Mount Kangukhsam from bottom camp to upper camp and the Lower Tram Building. Area Two consists of an Abandoned Electrical System consisting of three separate transformer banks and a free-standing platform with transformers that were filled with dielectric fluids. Area Three consists of the White Alice facilities, and Area Four is the Drum Field and the abandoned Upper Camp facilities. These areas are further described in Section 6.1 through 6.1.4.

5.0 PROJECT LOGISTICS

5.1 PROJECT OVERVIEW

The abandoned communications site on St. Lawrence Island consists of four large antennas and a large electronics building at the foot of a 1,820 foot high mountain, an abandoned tramway up the mountain and an upper camp at the top of the mountain.

The contract to perform the Removal Action was awarded to URS in March 1990. However, actual planning could not begin until May when permission was obtained from the Native population to proceed. Thus, in order to begin work by the target-start date, July 4, 1990 (weather conditions prohibited field work prior to that date), the obtaining of all supplies, equipment and services occurred during May and June.

Due to the remoteness of the site, the weather constraints and the rugged terrain, it was decided to barge in a camp and all necessary equipment and supplies. Additionally, it was decided that the use of helicopters for personnel placement and materials handling would be required throughout the field work. All decisions on a plan of action for the project were made without benefit of a reconnaissance trip, since deep snow would not allow landing of aircraft at the existing landing strip.

Over 100 separate purchase orders were awarded for service, equipment and supplies during project mobilization (May and June) and some 60 project personnel were recruited from within the URS organization, from new hires and from subcontractors.

The actual removal of the drums and transformers commenced on July 4, 1990 and was completed on August 10th; 20 days ahead of schedule. Again, due to severe foggy and windy weather, project personnel were occasionally prohibited from performing outdoor activities. However, weather permitting, actual time spent on the removal was 21 days.

More than 1000 used steel drums and 29 transformers were removed and placed on a barge for transfer to Anchorage, Alaska for disposal. During the Removal Action, a separate site inspection (CTO #0019) was made of possible hazardous/toxic materials at the site. Contaminants such as asbestos, petroleum materials, pesticides and PCBs were found to be present.

This entire project, which included the mobilization of a 60 person camp, all transportation vehicles, a satellite communication system and helicopter and barge service, was successfully accomplished ahead of schedule in spite of very poor weather and the remoteness of the site.

5.2 MOBILIZATION

On May 2, 1990, a meeting was held with the Native corporations of Gambell and Savoonga at Gambell, Alaska. Representatives of the Navy, URS and both Native organizations attended. At that meeting, permission was granted by the Native corporations to conduct the Removal Action on St. Lawrence Island during the summer. Permission was also granted to utilize the land owned by the Natives for whatever purposes were necessary, especially for camp facilities access and use of the site landing strip.

Following approval, procurement activities began in order to acquire the needed equipment, supplies, materials and services necessary to perform the Removal Action. As stated, over 100 separate purchase orders amounting to over 3 million dollars were negotiated in accordance with Federal Acquisition Regulations (FAR). It was determined that subcontractors would be required for certain services. Shannon & Wilson, Inc., a major subcontractor on the CLEAN contract, provided sampling and laboratory services. They also supplemented URS personnel in the actual drum removal activities and in camp operation supervision. Subcontractors were also used for the transformer removal and for camp operations. Additionally, all transportation was accomplished by acquired service organizations. These services included helicopter services, barge operations, charter passenger air services and air cargo services.

The barge and mobile camp acquired for this project was based in Juneau, Alaska. The barge and camp traveled from Juneau to Anchorage in June and docked in Anchorage long enough to load all equipment, supplies and material which would be needed at St. Lawrence. The barge left Anchorage, Alaska on June 17, 1990 and arrived at Northeast Cape, St. Lawrence Island on June 26, 1990. However, on arrival the barge encountered rocks and shallow water conditions offshore preventing its approach. It was, therefore, anchored one-quarter to one-half mile off shore. Total travel time from Juneau to the site was 23 days. Actual mobilization time (clearing the barge and setting up camp) equaled seven (7) days occurring in the time frame of June 26, 1990 and July 4, 1990.

One of the first items unloaded, using an on-board 100 ton mobile crane, was a sixty-five (65) foot lightering craft powered by three (3) 200 hp outboards. This craft was the transporting/carrying vehicle throughout the unloading process. The process involved

placing a semi-flatbed truck loaded with a fifty-six (56) foot ATCO trailer, on the lightering craft and transporting them to the beach.

Camp supplies and vehicles were containerized in eight-by eight-by twenty-foot connex boxes. This method of containerization is standard barge practice. Items not properly secured to the barge deck can be swept off the barge surface during dangerous seas and resulting high waves. Sixty-four (64) connexes were placed on semi-flatbed trucks, lightered to shore, and transported to the camp. Items not requiring containerization were the ATCO trailers, sewage treatment plant, water storage trailer, fuel iso-tanks, a 966 loader (front end loader), and two generator stations.

The camp buildings (ATCO units and individual items) were transported to a soil pad approximately two-hundred by three-hundred feet in size located southwest of the abandoned Air Force complex. All connexes and fuel iso-tanks were transported to the staging area soil pad located southeast of the abandoned Air Force complex. The connexes were placed in a "U" formation to facilitate unloading their contents and to create a large semi-protected work area. The fuel iso-tanks were placed adjacent to the helicopter pad.

An eight by twenty-eight foot ATCO unit was used as an office/communications facility. It was necessary to locate this satellite dish 3/4 of a mile from the main camp due to the geosynchronous alignment requirements of the satellite communications receiver.

Personnel were flown to the island from Nome by charter aircraft. All arrived by July 4, 1990 and operations were at full strength beginning that date.

5.3 ISLAND FACILITIES

Prior to arrival on St. Lawrence, the only usable facilities consisted of the landing strip and the road system from the landing strip and from the beach to the camp site. At one time, a road existed to the top of the mountain, but upper portions had been destroyed by washouts.

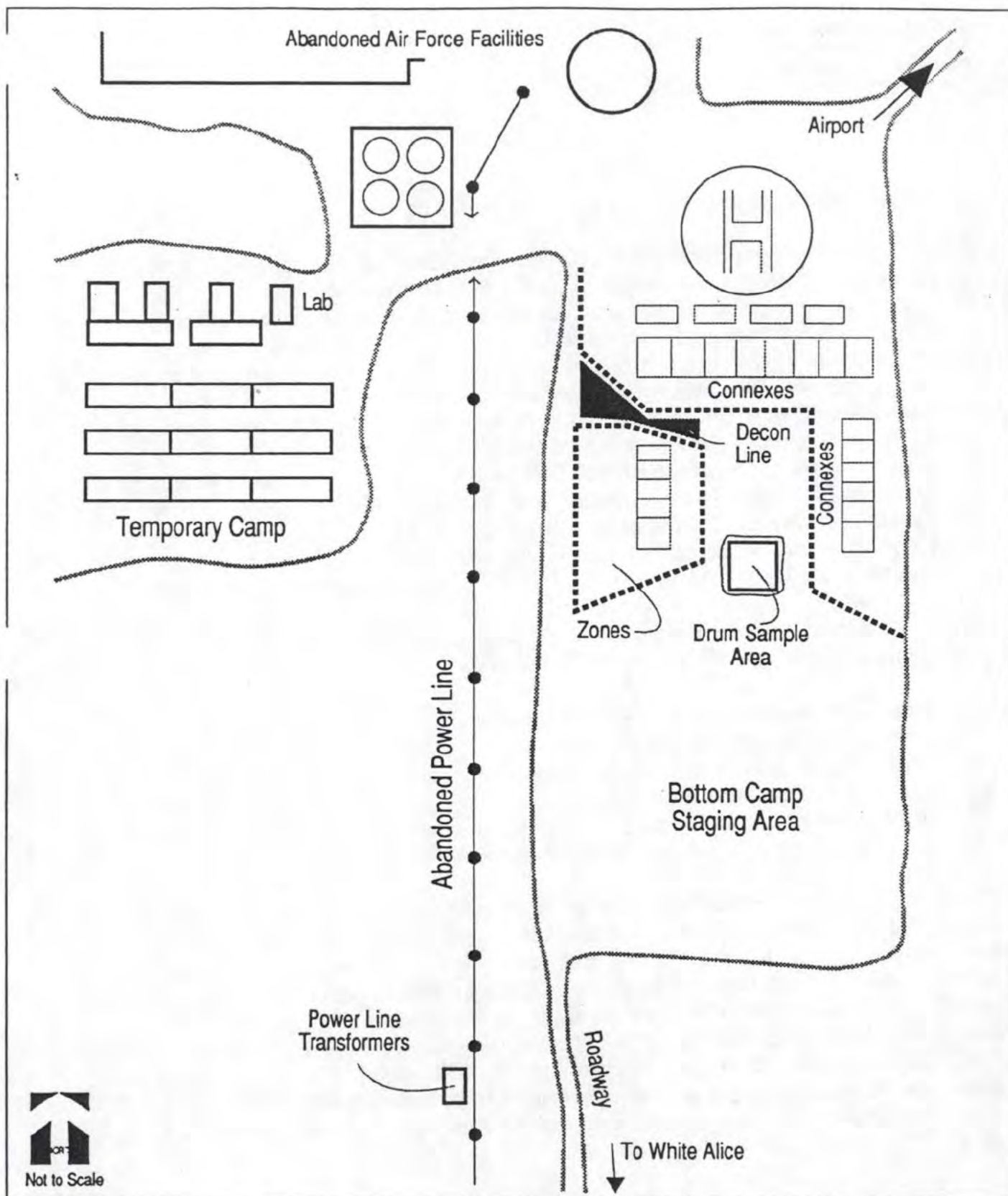
Since no facilities existed on the island, all living quarters and other facilities needed for execution of the work were brought in for the project's duration. The camp consisted of the following: nine (9) 56 foot long sleeping units consisting of four rooms each with two beds per room, a dining hall and kitchen, a recreational facility for viewing movies and playing games; sanitary facilities with showers, lavatories and toilets; a laboratory/office complex; a sewage treatment facility; a water treatment facility; an electrical generator which supplied 250 kw of power; and a communication/office complex. Two units of

one sleeping compartment were used as a medical facility.

Near the camp, a staging area was established which consisted of a soil pad, approximately one acre in size, bordered on the west by the road to the White Alice complex. The southern half of this area was an open space, allowing helicopters adequate room to maneuver and dispatch sling loaded cargo nets containing overpacks. The northern part of the staging area was open except for a "U" shaped wall of connexes lining the perimeter of the staging area. At the northwest corner of the "U", a contamination reduction corridor entered from the road into the center zone (courtyard) created by the connexes. A support zone extended around the inside of the "U" for fifteen feet to allow access to the connexes. Two cubic yards of beach sand were used to form a four-by four-foot diked containment area in the center of the exclusion zone. The containment dike was lined with two sheets of 6 ml plastic and all drum sampling was performed in this area. All other areas within the central courtyard were marked as an exclusion zone. Upon arrival, all overpacks containing drums were immediately unpacked from the cargo net, uprighted and contents noted. Each overpack was then sorted by content into waste streams according to combustibility, flammability, corrosiveness, pesticide or PCB content (Figure 5-1).

Due to the unusual weather conditions at Northeast Cape, it was apparent that helicopter transport to and from upper camp would be very unpredictable. During the course of this project, winds at upper camp often exceeded forty mph. Because of these high winds and sudden weather changes, i.e. ascending fog banks, helicopter transport could be curtailed with little warning. Therefore, an emergency route off the mountain was deemed necessary and the road to upper camp was re-opened.

The majority of the two mile road from the lower tram building to upper camp had been washed out over the years. The washed out areas were littered with rocks and water runoff debris. The switch-back portion of the road, below the upper camp summit, was entirely missing for a distance of eighty feet. The road was reopened in a two phase project. Phase one involved the clearing of the road of large rocks. In order to not disturb the vegetation outside of the road boundaries, the work was done by hand; rather than heavy equipment. Phase two involved the use of fill gravel to bridge the eighty foot gap below the summit. The road was completed and passable utilizing ATVs and 4-wheel drive vehicles. However, daily road maintenance was necessary to keep the road open.



5.4 COMMUNITY RELATIONS

The uniqueness of the White Alice site, an abandoned AFB on the corner of an Eskimo-owned island, required special considerations as alluded to in the following text.

Although Native permission to perform the removal had been acquired and hiring practices agreed upon, Native support throughout the duration of the Removal Action was promoted. This support translated into the hiring of a Yupik Eskimo from Savoonga to perform the role of coordinator between project personnel and both Native corporations and a Yupik Eskimo from Gambell as a heavy equipment operator.

When crew members were not on assignment, one or both of the Native employees would accompany personnel off-site. In this manner, personnel adhered to an original Native corporation request concerning accompaniment of project personnel when off-site. The off-site accompaniment also allowed the Natives to act as field guides.

In addition to the hiring practices, three all terrain vehicles were leased for the project from residents of Savoonga. These leases served the purpose of providing transportation for project personnel as well as facilitating the Native/project relationship.

One expression of the Native support for the project and its personnel was demonstrated in their extending of an invitation to project personnel to attend a celebration in Savoonga involving visiting Russian Yupik dancers. This event had not occurred in many years, apparently due to travel restraints imposed by both countries. URS personnel and visiting Navy personnel were honored by this invitation.

The Native population appeared to be very comfortable visiting the site as they often "dropped in" when traveling between Gambell or Savoonga and various fish camps.

5.5 DEMOBILIZATION

Following completion of the Removal Action and the SI CTO #0019, all camp facilities and products were reloaded onto the barge in a reversal of the original offloading. Other than weather delays, no problems were encountered during the reloading process. The major problem during demobilization was the wind. It contributed to creating twelve-foot seas that sank the lightering craft. However, the craft was salvaged and returned with the barge.

As a portion of the overall project, a requirement was made to remove all facilities, supplies, equipment and debris from the island. After everything was reloaded onto the barge, the camp facility area was inspected by URS and found to be acceptable (as in prior to camp set-up). The barge returned to Anchorage where all products, equipment and excess supplies were unloaded and either processed, returned to the owners or stored in a warehouse obtained especially for this purpose. The barge then returned to Juneau 34 1/2 days after arriving at St. Lawrence to commence demobilization.

6.0 REMOVAL ACTIONS

6.1 SITE SPECIFIC AREAS

The objective of the Removal Action was to remove, containerize, and transport approximately one-thousand (1,000) used steel drums, electrical components, transformers, roofing compounds, Petroleum Oil Lubricant (POL) products, pesticides, acids, and other removal-derived waste contained within four specific areas of the project. The four areas addressed are as follows:

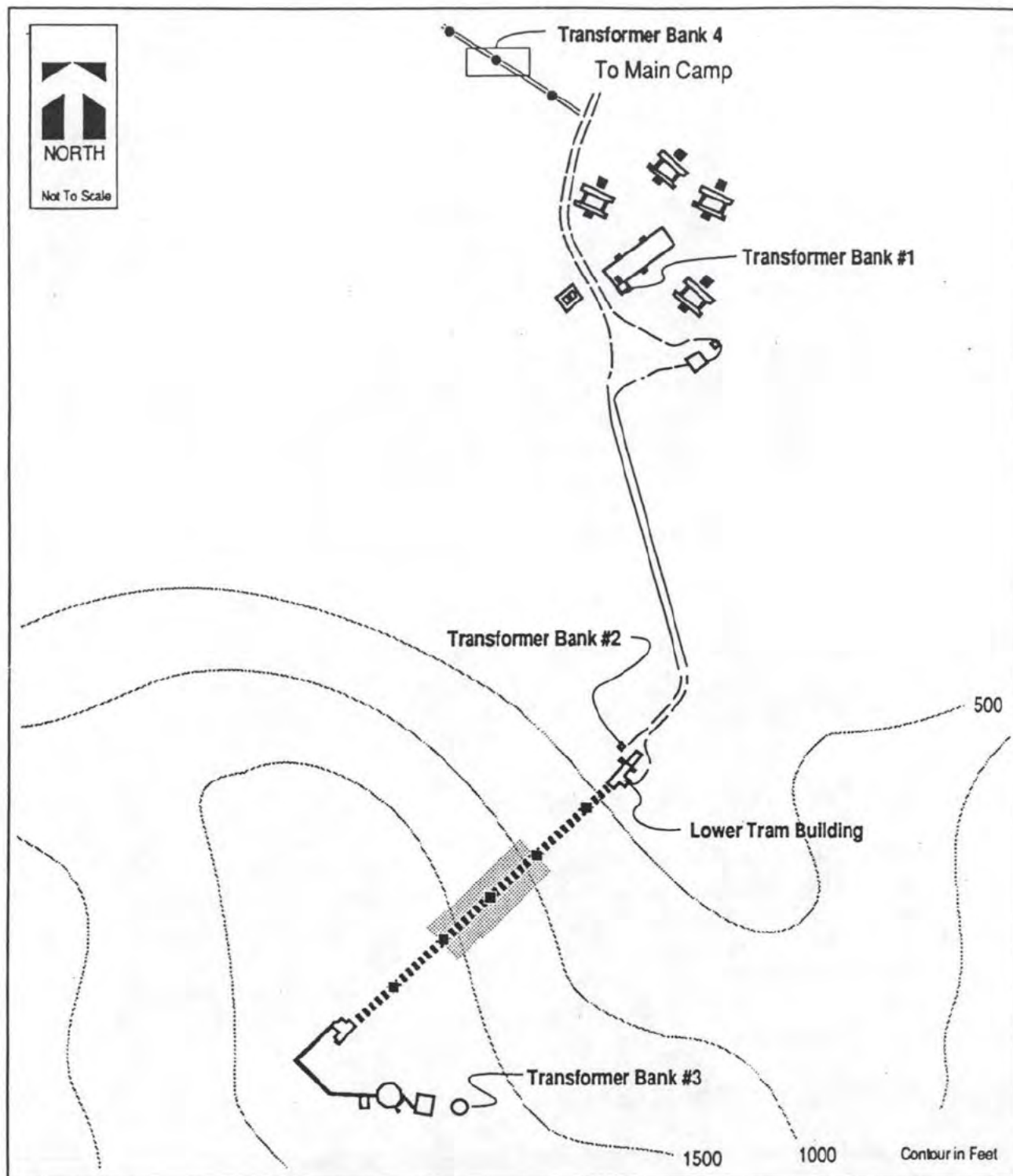
- Area 1 - Tram Slope and Lower Tram Building (Figure 6-1)
- Area 2 - Abandoned Electrical System (Figure 6-1)
- Area 3 - White Alice Transmitter Facilities (Figure 6-2)
- Area 4 - Upper Camp Drum Field and Facilities (Figure 6-3)

6.1.1 Area 1 - Tram Slope and Lower Tram Building

The Lower Tram Building contained one metal garbage can filled with POL saturated rags and ten (10) 55-gallon drums, containing rocks that were used by the Air Force as snow markers during the winter months. Prior to drum removal, two visual surveys on foot and from the air, were performed on the Tram Slope. Forty-six (46) 55-gallon storage drums were located between towers two and four, counting up the hill from the Lower Tram Building. These drums were either rusted out, crushed or damaged and the majority did not contain product.

6.1.2 Area 2 - Abandoned Electrical Systems

The substations of Building 1001, the Lower Tram Transformer Building, and the Upper Camp Transformer Building, as shown in Figure 6-1, revealed three separate large size transformer banks. Midway between the White Alice transmitter facilities and the abandoned AFB facility, under the main electric power line (Figure 5-1), a fourth bank of transformers was located on an unprotected platform. Details of each transformer bank are found in Appendix A and the following text:



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Figure 6-1
Tram Slope and Abandoned
Electrical System

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Alaska

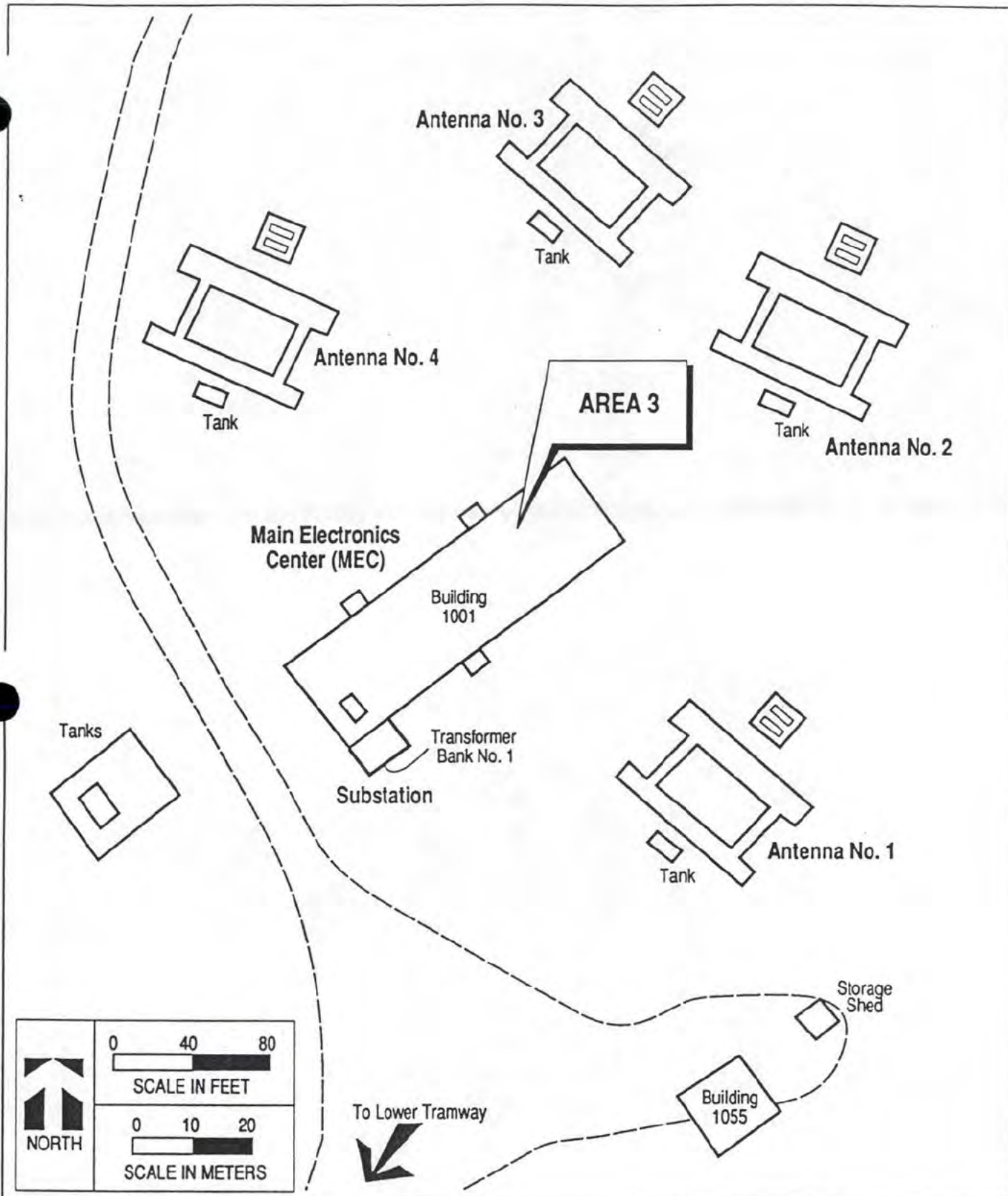
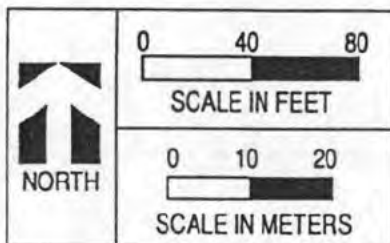
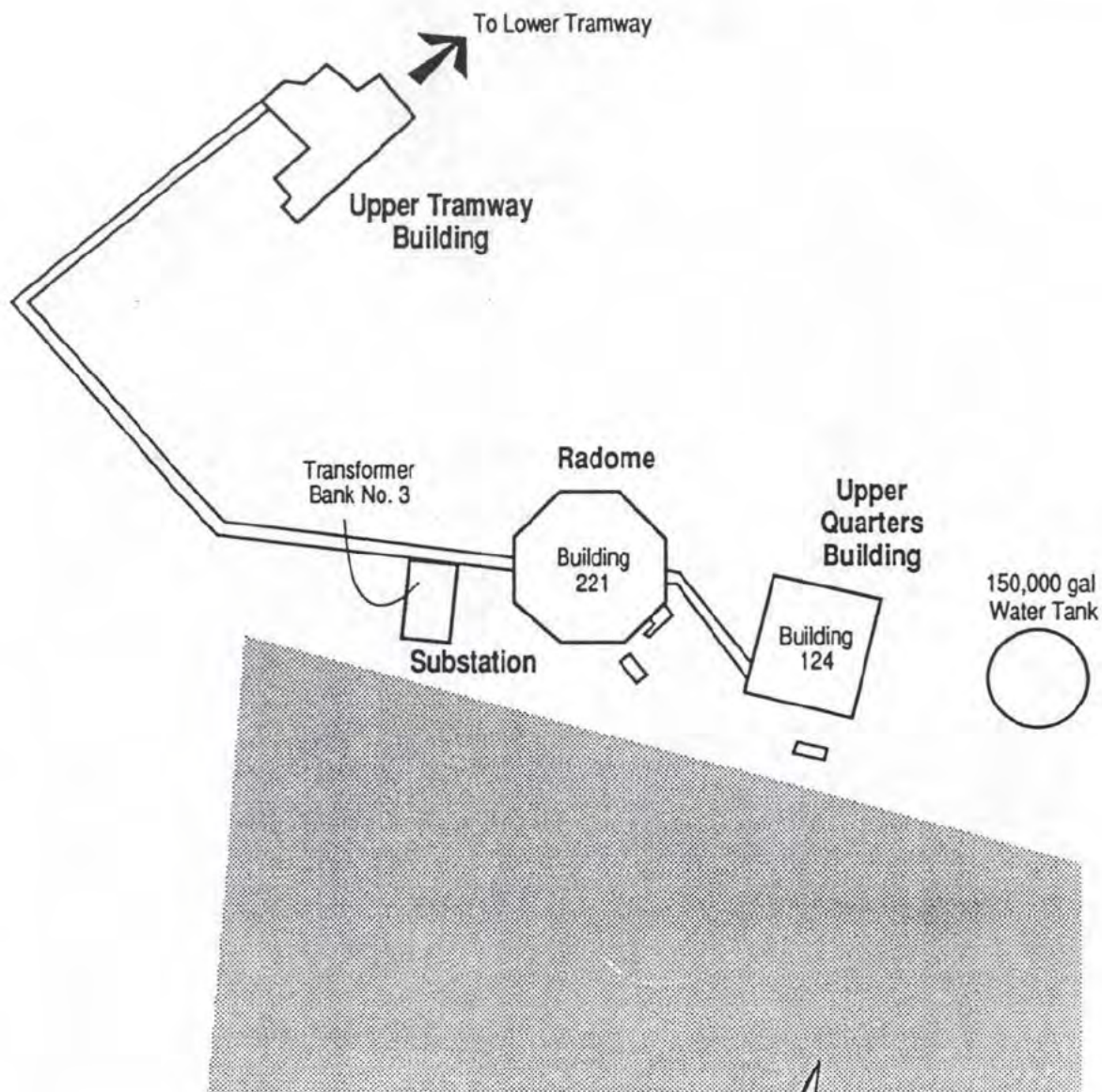


Figure 6-2
White Alice Transmitter Facilities

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 Alaska



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Figure 6-3
Upper Camp Facilities and Drum Field

CTO 0018
St. Lawrence Island
Alaska

The transformers within the White Alice transmitter building (Building 1001) were located within a bank of radio cabinets. The bank, bolted to a concrete pad, contained two (2) 200-pound, four (4) 300-pound, one (1) 700-pound, and five (5) 800-pound transformers. An electrical substation, connected to the White Alice Building, contained two (2) 1000-pound transformers. These two transformers were bolted to the pad and there was no evidence of dielectric oil leakage or damage to any of the equipment.

The survey of the lower tram transformer building revealed a thirty by forty foot wood frame structure, partially destroyed by weathering, placed on a concrete pad. Situated in the center of the concrete pad was one (1) 1000-pound switch box, and one (1) 700-pound transformer. All of the electrical components were bolted to the pad and there was no evidence of dielectric oil leakage or damage to any of the equipment. Standing on soil, off the concrete pad in the southeast corner of the building, a 55-gallon steel drum labeled "Fuel Oil" had burst and considerable soil staining was evident.

The upper camp transformer building revealed a thirty by forty foot wood frame structure, partially destroyed by weathering, and similarly placed over a concrete pad. The building contained two (2) 500-pound switch boxes, four (4) 400-pound transformers, four (4) 700-pound transformers and two (2) 800-pound transformers. All of the electrical components were bolted to a concrete pad and there was no evidence of dielectric oil leakage or damage to any of the equipment. The building entry doorway contained one (1) 800-pound previously drained transformer. Soil staining was evident around the base of this transformer.

A transformer platform located under the main power line and halfway between the abandoned Air Force complex and White Alice facilities, contained three (3) 500-pound transformers. Two of the transformers were intact; however, the third transformer was damaged about three-quarters of the way up the unit. An apparent high caliber bullet had pierced the unit allowing the dielectric fluid to leak onto the wooden platform. There was evidence of soil staining under the platform and it was estimated that ten (10) gallons of dielectric fluid may have leaked from the damaged transformer.

6.1.3 Area 3 - White Alice Transmitter Facilities

The area surrounding Building 1001 was littered with seven (7) empty POL tanks, carbon dioxide (CO₂) and Dry Chemical fire extinguishers, transite asbestos tiles, three (3) empty 55-gallon drums and wood debris. The interior of Building 1001 contained one hundred thirty eight (138) 55-gallon drums stored in various locations throughout the entire building. This included one (1) full drum of antifreeze, fifteen (15) empty drums, twenty-six (26) full drums of aviation fuel, seventy-five (75) full drums of stove oil, one

(1) partial drum of waste oil, and twenty (20) drums of waste fuel oil. Although none of the drums were leaking, five (5) were bulging and showed signs of corrosion damage. The majority of the drums were factory sealed (i.e. both bungs sealed and intact). The manufacturers' data printed on most drum heads was legible. Building 1001 also contained (labeled) one (1) box of sulfuric acid, one (1) gallon of liquid diazinon, ten (10) 5-gallon cans of roofing compound, one (1) 5-gallon can of creosote, three (3) tubes of grease, fifteen (15) CO₂ and ten (10) dry chemical fire extinguishers, and approximately 150 pounds of miscellaneous waste enamel paint.

Four tropospheric antennas surround the structures that make up the White Alice complex. Miscellaneous debris was found in and around the structures, but all of the antennas were devoid of hazardous materials.

The storage shed at the White Alice facility is an eight foot by twelve foot structure located approximately 160 feet southeast of Building 1001, and 30 feet east of Building 1055, (the automobile shop). This structure contained one (1) 5 gallon can of creosote, five (5) spools of coaxial cable, four (4) lead weights, fourteen (14) partially filled 100-pound propane bottles, and one (1) full box of sulfuric acid apparently for wet cell batteries. All of these items were marked for removal.

In addition to the above items, a metal box marked "Class A Explosives" was noted in the rear of the storage shed. Closer inspection revealed a closed, steel-banded box marked "80 pounds TNT", on each end. The area was evacuated and cordoned off. A Navy ordinance disposal team was dispatched to the site and the container was found to only contain "Class C" road flares.

Building 1055, the automobile maintenance shop, is located approximately 200 feet south of Building 1001. The shop contained eight (8) empty 55-gallon drums, one (1) full 55-gallon drum marked leaded gasoline and one (1) full 55-gallon drum of aviation gas. Both of the drums containing product were in good condition and showed no signs of leakage.

An aerial survey of the road and of the adjacent runoff stream, which runs from upper camp to bottom camp, was performed to locate any drums or questionable debris. A closer inspection revealed five (5) empty rusted drums in the stream bed and thirty-six (36) empty drums adjacent to the road right-of-way beginning at Building 1001 and continuing to upper camp.

6.1.4 Area 4 - Upper Camp Drum Field and Facilities

Area four consists of a FPS-90 radar tower (Building 221), living quarters (Building 124), the Upper Tram Building, and the Upper Camp Drum Field which is approximately one mile in circumference. Building 221 and 124 were inspected and deemed totally devoid of hazardous materials. The survey team removed several empty, rusted 5-gallon containers that had been used to store POL products.

The Upper Tram Building contained one (1) 22-gallon drum of creosote, two (2) 55-gallon drums of antifreeze, twenty (20) one-gallon cans of dielectric fluid, and twenty-four (24) empty POL drums. All drums were factory sealed other than the empty POL drums and the manufacturers' data was legible on these. Braced against the south side of the upper tram building were twenty-five (25) 55-gallon drums full of gravel. Upon consultation with the Navy, these drums were left in place.

The Upper Camp Drum Field contained five hundred and fifty-five (555) empty 55-gallon drums, sixty-seven (67) crushed 55-gallon drums, ten (10) 55-gallon drums containing waste fuel oil, and one (1) 55-gallon drum of gasoline. Empty and crushed drums were distributed randomly throughout the drum field with major concentrations occurring approximately 100 and 275 feet downslope and southwest of the sewage outflow pipe. The drum of gasoline and the waste fuel drums were stacked on their sides approximately 175 feet downslope from the sewage outflow pipe, on the north side of a Cat trail that bisects the drum field from the lower road to a point midway between the Upper Transformer Building and the sewage outfall pipe. The drums containing gasoline and waste fuel oil were all rusted, in fair condition, and were all partially full. The crushed drums on the slope were generally partially buried due to Cat operations. Empty drums located west of the lower road surrounding the base of the Upper Camp Facilities were all empty and appeared to have been deposited in their locations by extreme wind conditions.

6.2 REMOVAL ACTIVITIES

Prior to any drum removal activities, twelve shipping containers of empty 95-gallon poly-overpacks (overpacks) were unloaded and distributed by helicopter to each of the four previously described areas. Three complete decontamination lines consisting of staged Alconox detergent washes and followed by fresh water rinses were established at White Alice, upper camp, and the bottom camp staging area to decontaminate all personal protective equipment (PPE), tools and overpacks.

6.2.1 Area 1 - Tram Slope and Lower Tram Building

Ten (10) empty 5-gallon POL containers, six (6) CO₂ fire extinguishers, and one (1) metal trash can full of apparent POL saturated rags were removed from the lower tram building. All fire extinguishers were vented and all wastes were separated by waste stream type and placed into overpacks. All overpacks were decontaminated and transported to the White Alice staging area.

Eight (8) crushed and empty and thirty-eight (38) empty, (all rusted) 55-gallon storage drums were located between towers two and four on the tram slope. The majority of the drums were extracted in bulk bags by helicopter from the slope location and transported to the bottom camp staging area. An area of soil staining approximately twenty five foot in diameter was evident between towers two and three. The soil stains appeared to be POL products of an unknown variety and were sampled during the SI of CTO #0019.

The slope removal activity did not require overpacks and cargo nets except for two barrels with product that required overpacking and transport to the staging area. Overpacks, if not anchored, would roll or be blown down the tram slope by hovering helicopters. Therefore, drums and debris were packed into bulk bags prior to transport by helicopter to the bottom camp staging area. The drums and debris were then placed in overpacks.

6.2.2 Area 2 - Abandoned Electrical Systems

Prior to any transformer removal activities, two layers of 6 mil plastic sheeting were placed under the transformers in case of an unexpected spill.

All electrical equipment was surveyed and faceplate information recorded. Prior to disassembling the electrical equipment, each electrical lead was tested with a high voltage grounding rod. This ensured that no voltage sources were present due to capacitors connected in series or parallel with the transformers. After appropriate grounding, all related cables and wires leading to each transformer was severed using hacksaws, flexible wire saws and cable cutters. The bolts securing each transformer to its concrete pad were then sheared with cold chisels. Attempts to use a socket set to release the bolts failed due to rust and deterioration of the nuts.

Dielectric fluid was pumped from each transformer by inserting a flexible rubber hose into each access port. The hose was then connected to a twelve gallon per minute pump which in turn was powered by a 1.5 kw portable generator. The fluid from each

transformer was pumped into Department of Transportation (DOT) approved 17-E bung drums.

Transformer faceplate information on all of the transformer labels read "Askarel". This is a trade name dielectric cooling fluid and implies a 90% PCB concentration. Accordingly, the contents were assumed to contain PCBs in excess of 500 parts per million (ppm) and were handled and disposed of as such. Samples were not required prior to disposal as directed by the Defense Reutilization and Marketing Service (DRMO).

Each drained transformer was filled with diesel fuel for a 24 hour time period. At the end of this period, the diesel fuel was pumped from each transformer into DOT 17-E bung drums. The dry carcasses were then partially filled with vermiculite to absorb any residual diesel fuel. Each transformer was resealed and the outer surfaces were wiped down with diesel fuel to remove any dielectric oil residue. The transformers were then diapered in three layers of 6 mil plastic, placed on wooden pallets, and secured with steel banding material.

Twenty-two (22) sealed capacitors were removed from the radio cabinets in Building 1001. These capacitors were manufacturers' sealed units and contained no access valves or sample ports. Pursuant to 40 CFR 761.3, these capacitors were bulked into one waste stream comprised of large capacitors (i.e., units greater than nine (9) pounds), diapered in polyethylene and placed into poly-lined DOT 17-H drums.

A staging area was established adjacent to the road at the White Alice complex. This area was lined with two layers of 6 mil plastic sheeting for ground protection and all transformers, capacitors, switch gear, PCB fluids and debris were staged at this location prior to containerization.

6.2.3 Area 3 - White Alice Transmitter Facilities

Prior to removal activity in Building 1001, all factory sealed drums were visually inspected for damage. Pertinent manufacturer information was noted, and each drum was positioned so that the bung would face upward when placed into the overpack. Drums that were not factory sealed were sealed with PVC patches or wooden bung plugs. Miscellaneous debris including wet cell automobile batteries, and boxes labelled "sulfuric acid" were placed into poly-lined DOT 17-H drums and nested with sorbent materials. All fire extinguishers were removed, vented and overpacked. Grease, oil, Liquid Wrench, WD-40, rubber sealant, roofing tar, Coleman fuel, and paint were separated by waste stream and overpacked. All overpacked materials were transported

through the west exit door to the White Alice staging area.

The following contents were removed from the White Alice storage shed: one (1) 5-gallon can of creosote and one (1) twenty pound steel container of road flares. Each item was separated by waste stream, overpacked, and moved to the White Alice staging area. One (1) full box of sulfuric acid was removed and packaged with the sulfuric acid from Building 1001. Fourteen (14) propane bottles were removed to an outside location and slowly vented for thirty-six hours. The empty bottles were then transported to the bottom camp staging area and chained to the inside of a shipping container for off-island shipment.

In Building 1055, eight (8) empty 55-gallon POL drums, and one (1) drum each of leaded and aviation gasoline were overpacked and moved to the staging area. The leaded and aviation gasoline drums were factory sealed, in good condition, with legible manufacturers' labels.

Forty-one (41) drums full of rocks, used as road markers, were removed from the road right-of-way to upper camp and from the creek. These drums were rusted and in poor condition. The drums were emptied and placed into overpacks for removal.

6.2.4 Area 4 - Upper Camp Drum Field and Facilities

The overpacking process at Upper Camp began with the empty drums. Drum crew members visually inspected each drum ensuring there was no product evident prior to overpacking. There were five hundred and fifty-five (555) empty drums and sixty-seven (67) crushed drums. One (1) factory sealed drum labeled "leaded gasoline" was handled in the same manner as at Building 1001. Twenty-eight (28) drums containing product were sealed with polyvinyl chloride (PVC) patches or wooden bung plugs. None of the drums containing product required pumping into another container (HNu testing demonstrated action levels within safety limits) prior to overpacking and transport to the bottom camp staging area.

From the Upper Camp Tram Building fifteen (15) empty five-gallon cans, non-PCB electrical switch gear, one (1) 22-gallon drum of creosote, two (2) 55-gallon drums of antifreeze, twenty (20) sealed, one-gallon cans of dielectric oil, and twenty-four (24) empty drums were separated into waste streams and packed into overpacks. All overpacked drums removed from the Upper Camp Tram Building were staged on the road leading to the building prior to transport to the Bottom Camp staging area.

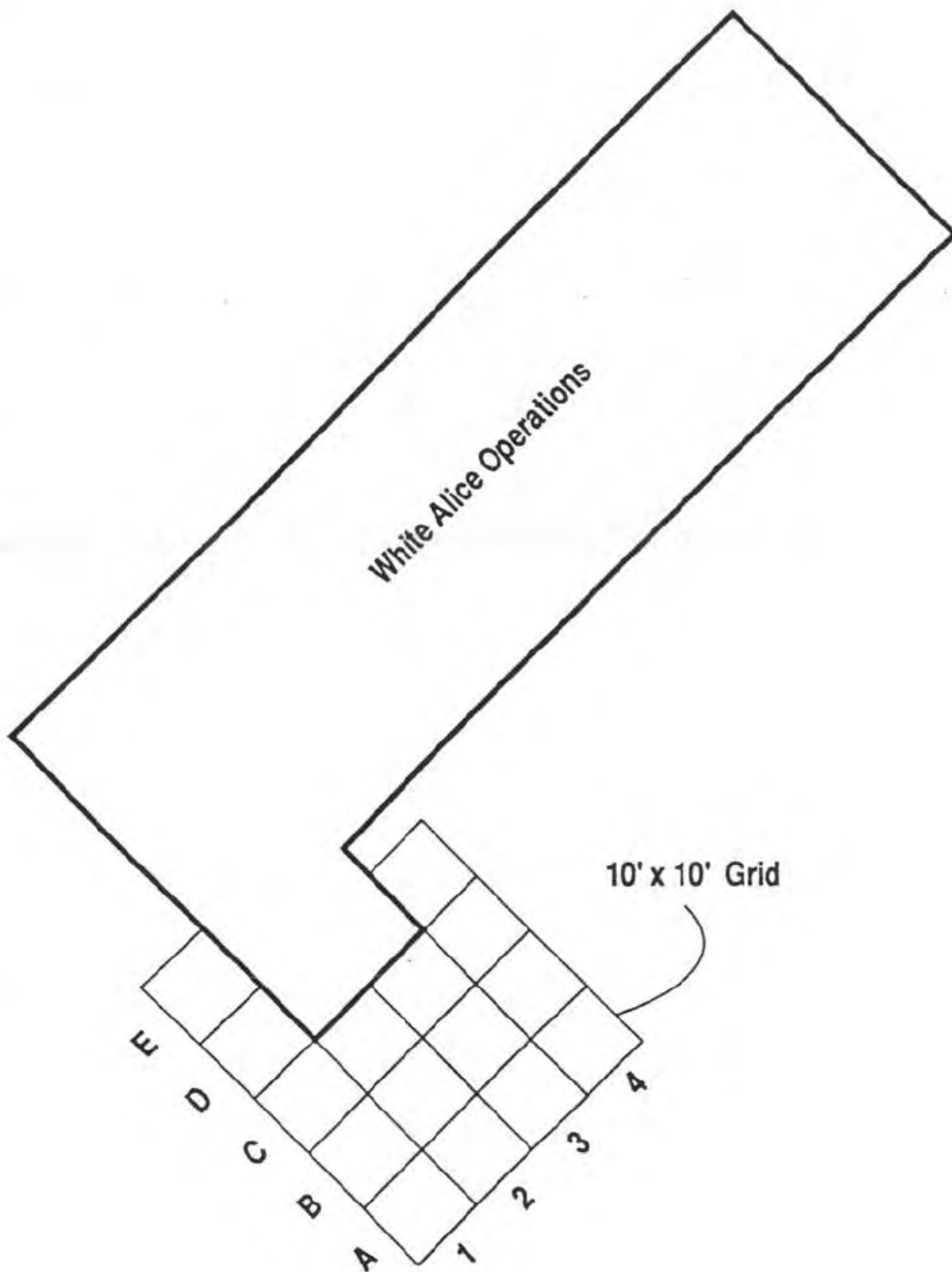
6.3 GRID SURVEY

Upon the completion of the Removal Action, a survey was conducted to determine the location of the drums. A twenty-five by twenty-five foot grid system was laid out at the upper camp drum field, located below buildings 124 and 221 (Figure 6-7), to assist in the drum location. Following removal of the drums, survey stakes were placed to mark each drum's location (Figure 6-8). Three additional grids, each ten feet by ten feet were established to assist in sampling locations. These grids were located at the White Alice substation (Figure 6-4), the lower transformer building (Figure 6-5) and the upper transformer building (Figure 6-6).

6.4 WEATHER

As previously noted, the weather was a constant factor impacting the work schedule. In summary, the following list demonstrates the weather at Northeast Cape and its effects during the Removal Action.

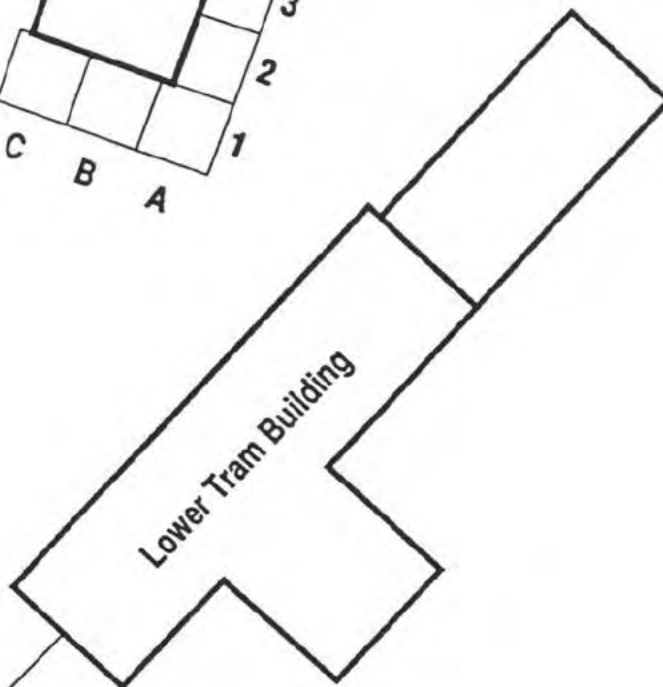
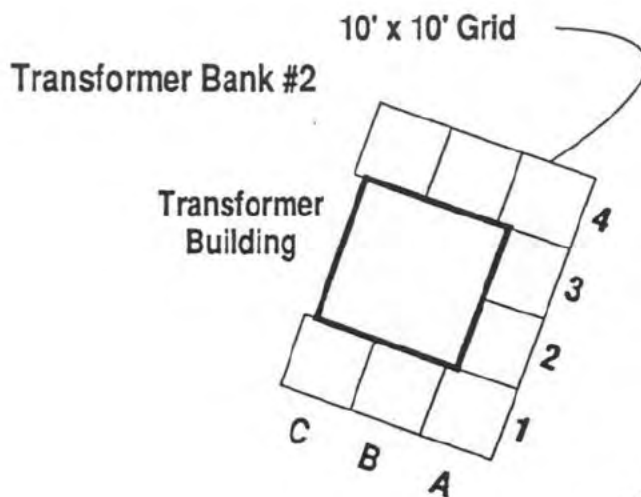
<u>Conditions</u>	<u>Days</u>
Clear	19 days
Rain	13 days
Fog	18 days
Cloudy	3 days
Wind > 20 mph	11 days
Wind < 20 mph	12 days
 <u>Effects</u>	 <u>Days</u>
Work Delays	2 days
Work Stoppages	7 days



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Figure 6-4
Sample Grid

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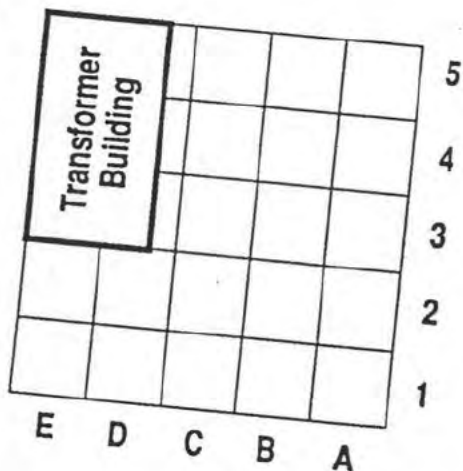
Tram



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Figure 6-5
Lower Tram Transformer Building
Sample Grid

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St. Lawrence Island
Alaska



○ CP-7



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Figure 6-6
Upper Camp Transformer Building
Sample Grid

CTO 0018
St. Lawrence Island
Alaska

Transformer
Building

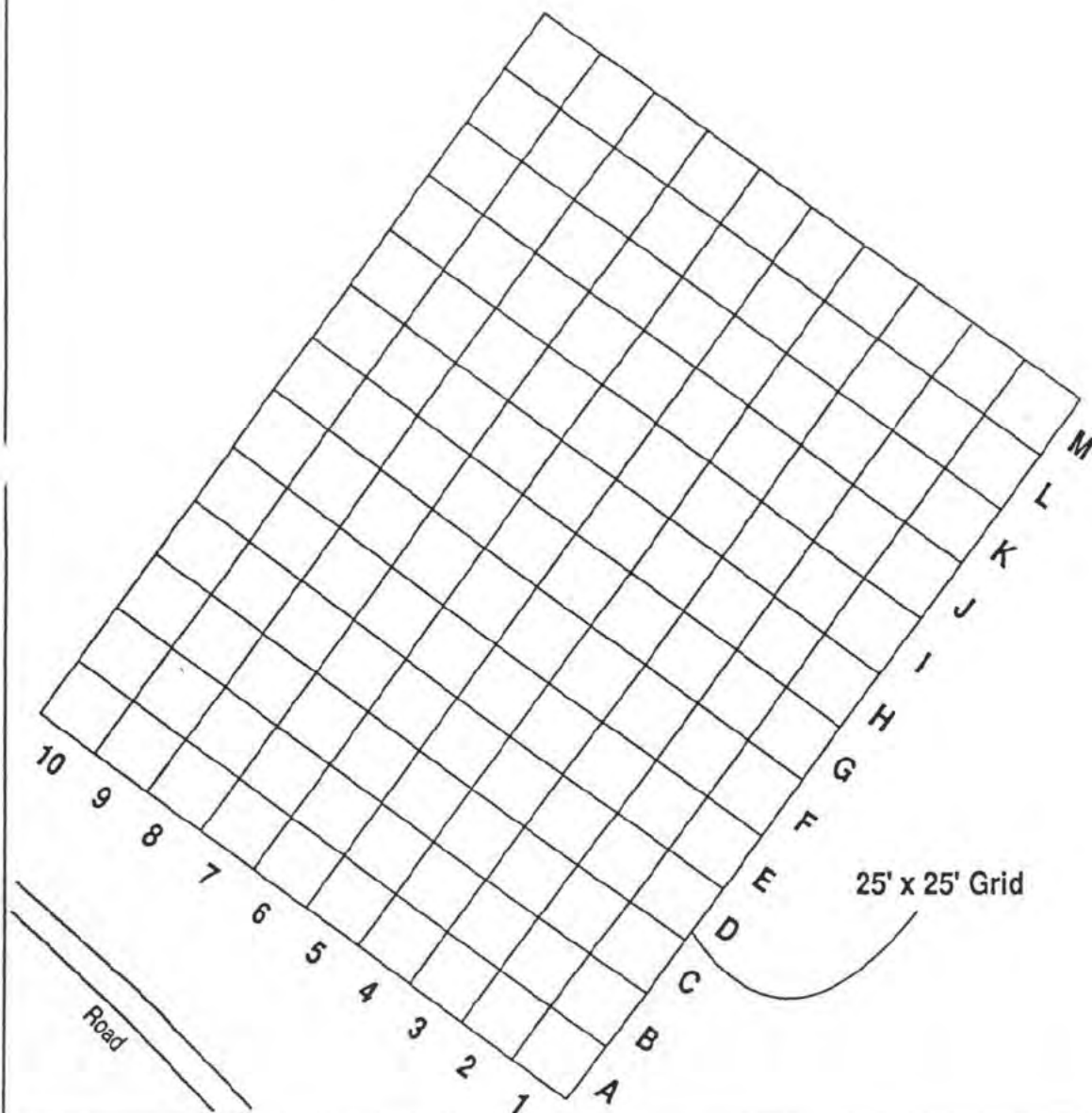


Building 124



Road to
Lower Camp

CP-7



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Figure 6-7
Upper Camp Drum Field
Sample Grid

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St. Lawrence Island
Alaska

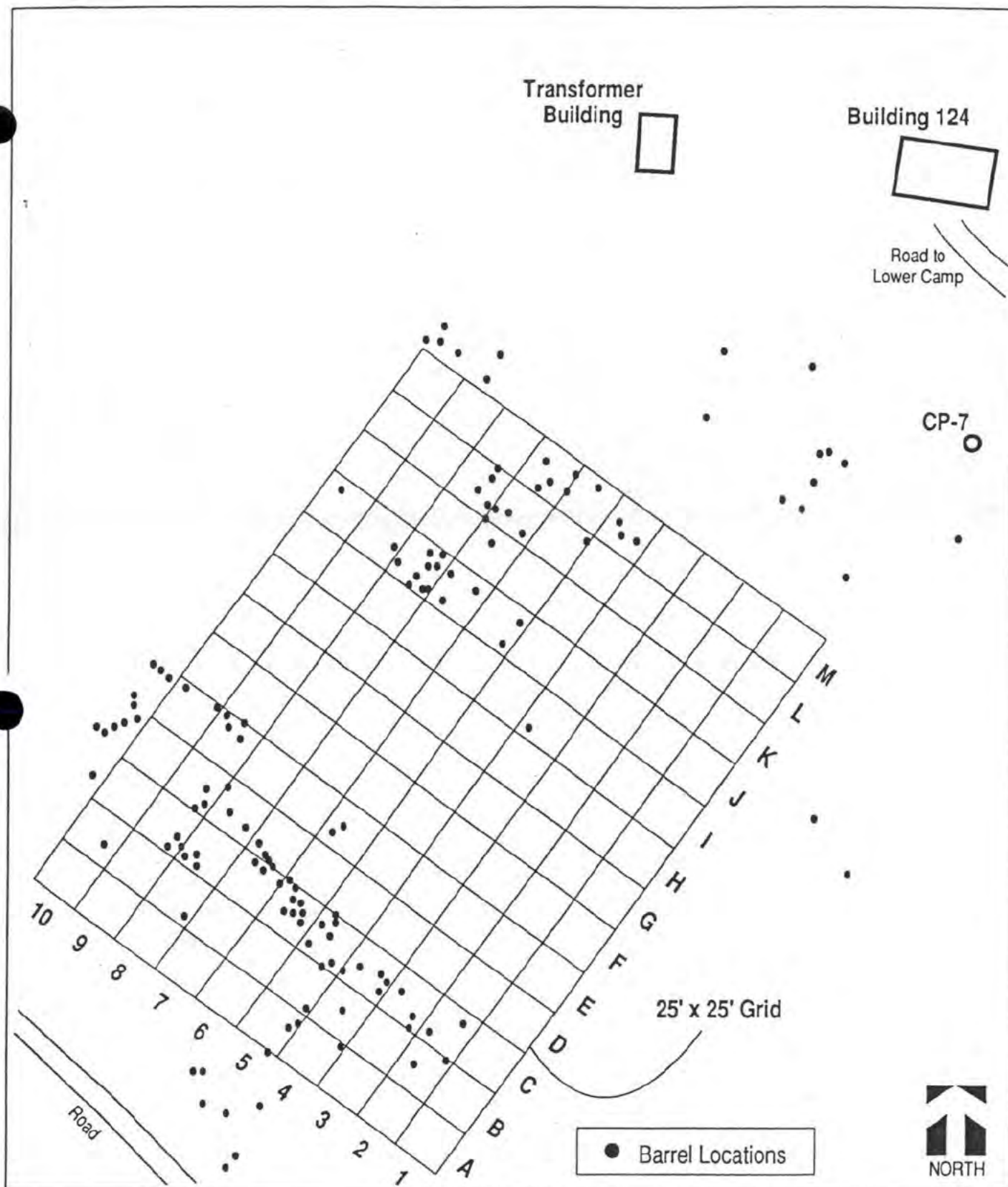


Figure 6-8
Upper Camp Drum Field
Barrel Locations

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St. Lawrence Island
Alaska

7.0 SAMPLING AND ANALYSIS

7.1 DRUM SAMPLING

All drums were sampled following the method outlined in the Field Sampling Plan (URS 1990B). The drums were opened at the bottom camp staging area. All drum sampling was performed in the containment area using a non-sparking chisel to punch a hole in the drum, or by opening the bung on the drum. The top of each drum was cleaned to prevent contamination and an 11 mm glass tube collected the sample. The collected sample was then placed into a sample jar; labeled with the drum number, the sample volume, client name, date and collection time.

A chain-of-custody form was completed and the samples stored in a portable storage container (Appendix B). All samples and the chain of custody forms were immediately transported to the on-site laboratory. The on-site chemist received and logged in the samples. Travel time from the staging area to the laboratory was approximately one minute and icing of samples was not required. The samples were kept in refrigerators in the laboratory while awaiting analysis.

7.2 LABORATORY RESULTS

The field screen completed on St. Lawrence Island was designed to identify and classify unknowns into groups of known wastes for shipment. The test procedure used for this purpose was the Hazcat Chemical Identification System (Hazcat) as produced by Haztech System, Inc. This application enabled the project to utilize a cost-effective method of classifying unknown wastes according to DOT regulations.

However, sixteen (16) samples and three (3) composite samples were collected and shipped off-site at the request of DRMO to be analyzed for PCBs and metals. This specific request related to disposal methods employed by the disposal facility. Although time constraints precluded the off-site analysis to be completed prior to project completion, the PCB and metals analysis was combined in the Quality Assurance/Quality Control (QA/QC) requirement described in Section 7.3.

The laboratory results are presented in Appendix C. Appendix C-I lists all of the results in order of ascending drum number. Appendix C-II presents the data in groups according to the classification of unknowns. The two tables are divided into background data and analytical results. The background data lists the sample number (which is the same as the drum number), the dates the samples were collected, the date the tests were performed, the location where the drums were found, and the page number in the two laboratory notebooks where the results were recorded. The analytical section lists the tests performed and the results of the classification. The first eight tests shown in the tables were the primary classifying tests of unknowns. The tests were:

- Water Solubility - Used to determine if an unknown is an acid or base, a solvent, oil/fuel, or alcohol/antifreeze by observing if the sample reacted with the water; sunk, floated or dissolved.
- Combustibility Test - This test demonstrates the type of oil, fuel, solvents in that the sample is flammable, combustible, or non-flammable.
- Chlorine Hot Wire Test - The color of the flame demonstrates whether the unknown contains amines, chlorinated solvents or nitrates.
- Iodine Crystal Test - An indicative test for solvent classification.
- Water Test - This test determines if more than one percent water is present.
- Chlor-D-Test Test - This is a test for PCBs and determines if halogens are present in 50 mg/l or 1000 mg/l concentrations.
- Iron Test - This is a confirming test for the presence of iron.
- pH Test - This test is used to determine if a waste is reactive or corrosive.

Additional tests, including specific gravity, flash point and boiling point were also used to further classify the waste.

Prior to the removal of drums containing known (labeled) and unknown liquids, contents were sampled and analyzed in conjunction with Federal Guidelines. The analysis determined the proper DOT, EPA and DRMO classifications for shipment and final disposition of waste.

Of the over one-thousand (1000) drums and other containers found on the project site, one-hundred seventy-four (174) contained an unknown product and were sampled for classification prior to shipment off St. Lawrence Island for disposal. The unknowns included water, fuel oil, antifreeze, aviation fuel, various kinds of oils and soap. Table 7-1 lists the number of containers for each type of unknown product found.

7.3 QUALITY CONTROL

Several methods of providing QA/QC for the project were implemented. The Field Sampling Plan (URS 1990B) specified splitting five (5) percent of the samples and collecting ten (10) percent duplicate samples for testing at an off-site laboratory. Nine (9) samples were split which are flagged in Appendix C-III. In all cases the classification of the unknowns are the same.

Sixteen (16) duplicate samples and three (3) composite samples of fuel oil were taken and sent to Chemical & Geological Laboratories of Alaska for comparative testing (Appendices C-IV and C-V). Two samples (Drum 641 and 404) analyzed in the on-site laboratory indicated the possible presence of halogenated hydrocarbons, whereas Chem-Geo did not detect PCBs. The waste in these two samples apparently contain some type of chlorinated solvent or inorganic salt which is appearing as halogenated hydrocarbon and the two drums do not contain PCBs. However, two drums (Drums 1017 and 144) do show the presence of PCBs in the off-site laboratory analysis which is lower than the detectable limit of the field tests which show no detectable PCBs.

In addition, the sixteen (16) duplicate samples and three (3) composite samples were analyzed for metals. Drum number 1017 revealed an elevated level of barium and drum numbers 642 and 904 revealed levels of arsenic; although well below the maximum allowable OSHA exposure limit of 0.010 mg/m^3 for arsenic, and 0.5 mg/m^3 for barium.

7.4 CONCLUSIONS

The sampled drums and containers found at Northeast Cape, St. Lawrence Island contained materials common to what was used at the site while it was in operation. Most of the drums appeared to have been empty and had collected rain water over the years the site was not in use. Some of the drums containing product appeared to have been diluted or contaminated with rain water.

TABLE 7-1
CONTENTS AND QUANTITY OF DRUMS SAMPLED

Contents	No. of Containers
Water (probably rain water)	124
Fuel oil	30
Fuel oil with water	6
Gasoline (leaded)	2
Graphite Grease	3
Graphite Grease with water	2
Oil	4
Oil with water	4
Oil with PCB contamination	1
Oil and water with PCB contamination	1
Aviation Fuel	3
Antifreeze	6
Creosote	3
Soap	1

Using the Hazcat test kit to classify the unknowns proved to be cost efficient and an effective method to classify the type of waste for disposal. The nine split samples (approximately five percent of the samples analyzed) gave the same results. The classification of the waste was identical to each split sample. In addition, the results of the split analyses verified that proper QA/QC procedures were being followed in the St. Lawrence Island on-site laboratory.

8.0 SITE SAFETY

During CTO #0018 Removal Action tasks, all health and safety guidelines outlined in the Health and Safety Plan were implemented (URS 1990C). A brief summary of safety issues is presented below.

8.1 TRAINING

Training courses were conducted as required under 29 CFR Part 1910.120, Occupational Safety and Health Administration (OSHA), Hazardous Waste Operations and Emergency Response, Final Rule. Courses included Hazardous Waste Worker Training (40 hours), Supervisor Course (8 hour), Hazardous Waste Worker Training (8 hour refresher), and Site Specific Training for Support Personnel (24 hours). Other regulatory agency requirements included baseline physical examinations, first aid and CPR training and DOT manifesting.

8.2 WORK ZONES (AREAS 1-4)

Safe work zones were established around all of the hazardous waste areas in accordance with 29 CFR 1910.120. Support, contamination reduction and exclusion zones were established around the airport control tower, White Alice complex, and the lower tram building. Zones were also established at upper camp and adjacent to the remaining abandoned Air Force facilities. All work zones consisted of staking, fluorescent barrier tape and warning signs to alert site personnel to the potential hazards on-site. Ten (10) POL storage tanks were zoned as exclusion areas to prevent confined-space entry by personnel. Contamination reduction corridors were extended from each exclusion zone and were utilized during decontamination.

8.3 ASBESTOS SAMPLING

Prior to any drum removal activities, bulk and air asbestos samples were collected from each area within the scope of the project. These sampling efforts were authorized under CTO #0019 which was accomplished concurrently with CTO #0018. All laboratory summary data for asbestos sampling is referenced in the CTO #0019 Site Inspection Final Report (URS 1990D).

8.4 AIR MONITORING

Before and during drum removal activities, ambient air monitoring was conducted, using an ultraviolet photoionization detector (HNU), a flame ionization detector (FID), and a combination oxygen explosimeter (H_2S/O_2). In all cases, monitoring results were below established action levels.

8.5 PERSONAL PROTECTIVE EQUIPMENT

During all removal activities, disposable and nondisposable PPE were utilized. Level C PPE consisted of PVC or Tyvek suits, inner and outer gloves, boot covers and full face air-purifying respirators with organic vapor and high efficiency particulate air (HEPA) canisters.

8.6 DECONTAMINATION METHODS

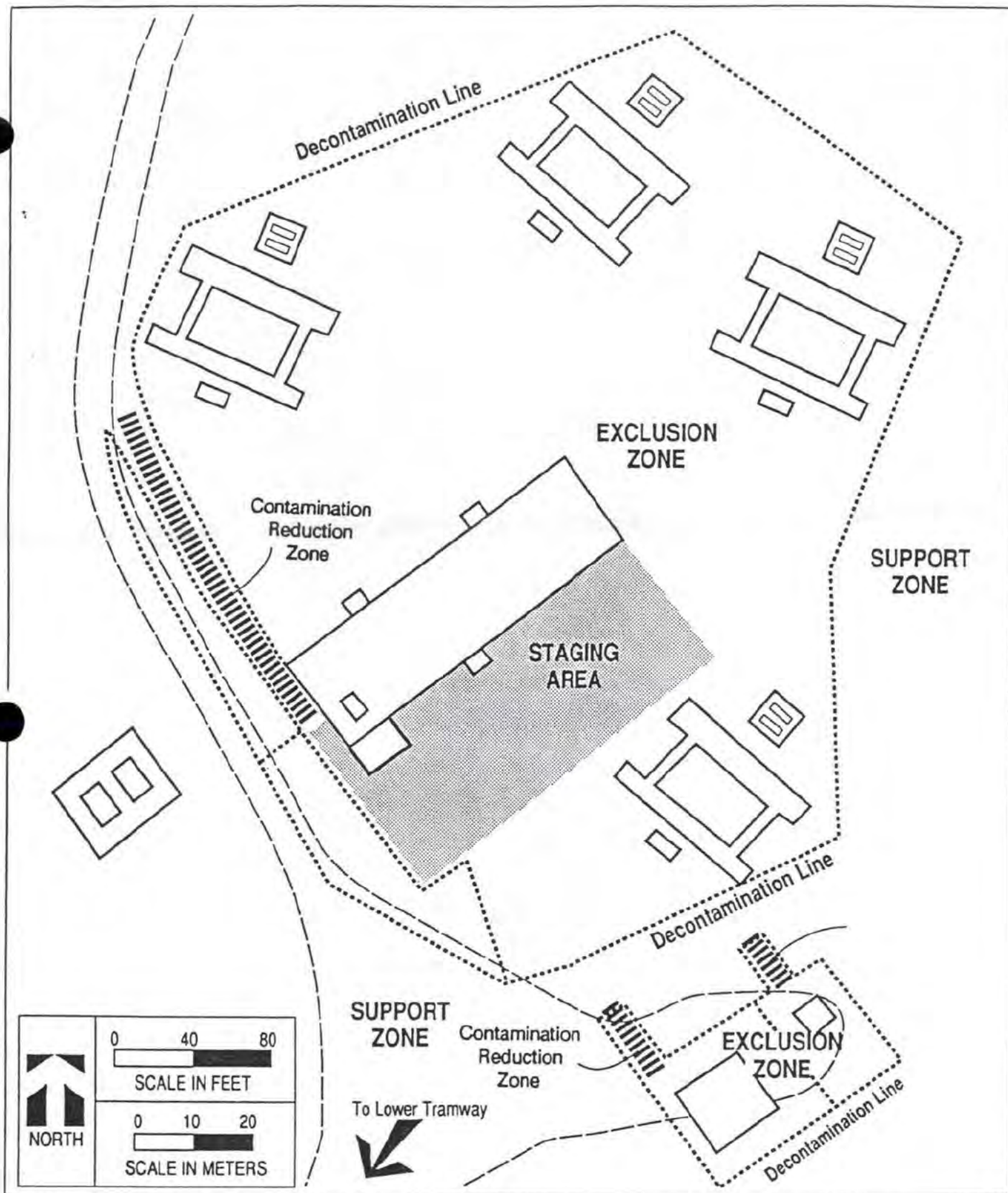
Separate decontamination (decon) lines were established at White Alice facilities, upper camp, and at bottom camp staging areas. Each decon line consisted of staged Alconox detergent washes, followed by fresh water rinses for all PPE. All overpacks were decontaminated using the same methodologies utilized for PPE (Figures 8-1, 8-2, 8-3).

8.7 HELICOPTER SAFETY

To ensure safe helicopter operations during drum removal activities, each of the tram towers and the cables suspended between the towers were marked with fluorescent orange surveyor tape. Wind socks were erected in each support zone to aid the pilots, and all drum crews maintained VHF radio contact with both helicopters while performing work tasks. All personnel were required to wear full-face respirators while working near helicopters for protection from flying debris.

8.8 TRAM SLOPE OPERATIONS

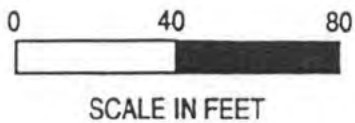
During the initial descent of the tram slope, crew members wore mountain climbing harnesses and ropes for stability and safety of the team. Due to the steep slope gradient, hiking boots were worn during slope tasks. Outer boot covers were not worn on the slope to prevent potential injury from slipping.



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Figure 8-1
White Alice Site Decontamination Areas

CTO 0018
St. Lawrence Island
Alaska



To Lower Camp



SUPPORT
ZONE

HOT ZONE

Decontamination
Line



Substation



Tank



To Upper Camp



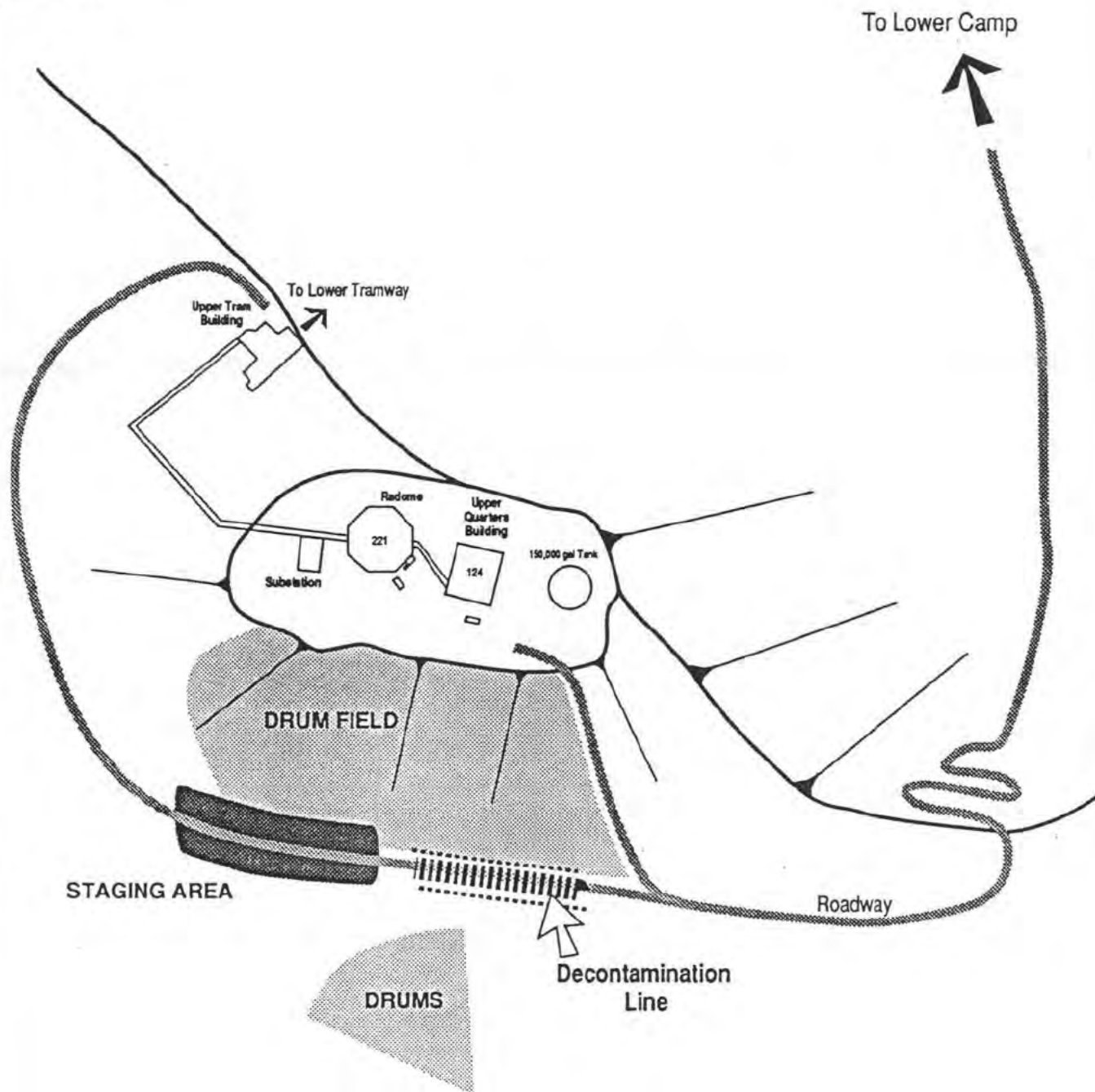
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Figure 8-2
Lower Tram Building Decontamination Line

CTO 0018
St. Lawrence Island
Alaska



NORTH
Not To Scale



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Figure 8-3
Upper Camp Decontamination Line

CTO 0018
St. Lawrence Island
Alaska

9.0 FINAL DISPOSITION

9.1 HAZARDOUS WASTE MANIFESTING

All hazardous waste and materials from St. Lawrence Island were manifested in accordance with Department of Transportation regulations as set forth in 49 CFR Parts 100-177.

Removal Action derived waste was containerized into drums and/or overpacks for off-site removal. All solid wastes including used PPE, soiled paper towels, absorbent pads, polyethylene sheeting, cargo nets, etc., were containerized into overpacks or DOT 17-H drums. Liquid wastes including diesel fuel transformer rinsate, waste oil, and water was containerized into DOT 17-E drums. All DOT approved steel drums containing solid or liquid products were overpacked prior to barge shipment.

As indicated in Appendix D, a total of one-hundred-twenty-nine (129) drums, four (4) switch gear units, and twenty-seven (27) pallets of PCB contaminated materials were generated during the Removal Action. All PCB drums, pallets, and switch gear units were identified with a large format PCB identification label and ORM-E stickers as described in 40 CFR 761.45. Seventy-four (74) drums contained solid PCB contaminated materials which included used PPE, one (1) small, empty, dry, capacitor-sized transformer, small capacitors, large capacitors and fluorescent light ballasts. Fifty-nine (59) drums contained liquid PCB materials which included dielectric fluids drained from the transformers, dielectric fluid in original shipping containers, and PCB contaminated diesel rinsate and decontamination solutions.

Other DOT manifested materials included one (1) drum containing corrosive materials (batteries/acids), thirty-three (33) drums containing combustible liquids, one (1) drum containing pesticide, and eight drums (8) containing flammable liquids. As required, each drum was identified with either large PCB, Corrosive, Combustible Liquid, Poison, Flammable Liquid or Hazardous Waste labels. All drums, except for the drum containing pesticides, were labeled with ORM-E stickers. The pesticide drum was labeled with an ORM-A sticker. (ORM-E and ORM-A refer to "Other Regulated Materials" and a specific relevance to either hazardous waste or toxicity).

Non-DOT regulated materials included two (2) drums of antifreeze and four (4) drums of waste oil. These drums were labeled with large Non-Regulated Waste and Non-

Hazardous Waste labels. Seven-hundred-seventy-six (776) drums were empty and required no labels.

9.2 BARGE SHIPMENT

The barge departed Northeast Cape carrying thirty (30) connexes of hazardous waste materials. Due to limited shipping space, the drums were not separated into empty, solid, or liquid waste streams. The entire shipment was manifested as a bulk shipment. All drums were separated by hazard class as required by Department of Transportation (Appendix E).

9.3 SECOND SHIPPER MANIFEST

Following arrival in Anchorage, Alaska, the barge was unloaded of all materials on September 19, 1990. The Defense Reutilization and Marketing Service (DRMO) operates two hazardous waste receiving sites at Elmendorf AFB. Site One accepted all overpacks containing empty, factory sealed drums, and the transformer carcasses (i.e., the Toxic Substance Control Act [TSCA] wastes). Site Two accepted all overpacks that contained hazardous waste (i.e., the Resource Conservation and Recovery Act of 1976 [RCRA] wastes).

Prior to transport to DRMO, each connex was repacked to comply with the DOT regulations concerning motor transport of hazardous wastes. Ten new hazardous waste manifests were generated for truck transport with each manifest representing a single connex of hazardous waste. Overpacks that contained empty drums were considered non-hazardous and were shipped on a Standard Bill of Lading (Appendix F).

The Defense Logistics Agency (DLA) representatives at DRMO required all hazardous waste and hazardous materials to be manifested in accordance with Form DD1348-1 (Appendix G).

10.0 PROJECT CRITIQUE

10.1 PROJECT PLANNING

Due to various factors, the two month time frame available for procurement of services, equipment and supplies and general project planning was insufficient. In remote areas of Alaska where no local infrastructure or services exist, sufficient time should be allotted to allow efficient, economical and safe project planning.

10.2 SITE VISITS

Since heavy snow covered the St. Lawrence site during the project planning process, a site visit was not possible prior to field work commencement. This lack of a site visit required assumptions to be made which were not as efficient or economical as hoped. A site visit to such remote sites is a necessity for proper project planning and should be required in future projects.

10.3 COMMUNITY RELATIONS PROGRAM

An effective community relations program is necessary if a project of this magnitude is to be successful. Early efforts in obtaining the St. Lawrence Islanders' approval of this project proved to be a major positive factor in successfully accomplishing the project. The local community must be kept informed as to the status of such projects and their positive acceptance should be required.

10.4 EXPERIENCED PERSONNEL

A joint decision of URS, Shannon & Wilson and the Navy to hire college students who were in the Environmental Studies field for temporary summer drum removal crews was made early in the project planning process. Although many of these inexperienced employees were very satisfactory, some were less than adaptable to the work, the hostile climate and the isolated and spartan living conditions. It is recommended that work crews on future projects be composed of more experienced people. This experience should include both technical and remote working experience.

10.5 COMMUNICATION SYSTEM

An effective communication system is a necessity for a successful project in remote Alaska. The satellite telephone system complete with fax capabilities, complemented with an effective local radio system was established for this project. The system worked well to begin with, but developed problems as the project progressed due to a number of factors. It is recommended that in future projects, major importance be placed on a properly operating communications system. On-site communications maintenance personnel should be considered necessary.

10.6 HELICOPTER USAGE

Due to the rugged mountainous terrain at this site, it was necessary to use helicopters for the transportation of personnel, supplies and debris to and from the top of the mountain. Since planning for this project was accomplished without a site visit, a conservative attitude was assumed and it was deemed desirable to have two helicopters available for the entire length of the project. In retrospect, one helicopter would have sufficed.

10.7 WASTE DISPOSAL

Many problems developed in delivery of the waste products from St. Lawrence Island to the DRMO at Elmendorf AFB in Anchorage. These problems proved costly and created less than friendly relationships among all concerned. In the future it is recommended that all hazardous wastes and hazardous materials be barged directly to a Treatment Storage Disposal (TSD) facility (in Washington or Oregon). Significant cost savings would occur by eliminating intermediate handling of hazardous wastes which cannot legally be disposed of in Alaska.

10.8 LIAISON EFFORTS

All future CTO projects at Northeast Cape, St. Lawrence Island, should be coordinated with any remedial efforts of the Army Corps of Engineers Defense Environmental Restoration Program (DERP). Joint cleanup efforts would result in significant cost savings to Navy CLEAN and the Corps of Engineers DERP program.

If joint cleanup efforts are undertaken by the Navy and the Corps of Engineers, a project duration camp facility should be erected on site. In addition, the dockage location and access road need to be upgraded.

11.0 REFERENCES

- Naval Energy and Environment Support Activity. January 1990. Preliminary Assessment Report, White Alice Site, Northeast Cape, Saint Lawrence Island, AK, NEESA 13-205.
- URS Consultants, Inc. 1990A. URS CLEAN Work Plan for CTO #0018/#0019, SI/RA. Seattle, Washington.
- URS Consultants, Inc. 1990B. URS Clean Draft Field Sampling Plan for CTO #0019 SI. Seattle, Washington.
- URS Consultants, Inc. 1990C. URS CLEAN Health and Safety Plan for CTO #0018/#0019, RA/SI. Anchorage, Alaska.
- URS Consultants, Inc. 1990D. URS Clean Final Report for CTO #0019 SI (Pending). Anchorage, Alaska.

APPENDIX A

TRANSFORMER INFORMATION

APPENDIX A

FACE PLATE INFORMATION

<u>ITEM</u>	<u>AS-FOUND LOCATION</u>
Molony Elect. Ser. #1953123 Type LL-2 1 phase 60 cycle KVA 15 Volt 2400/4160 y x 7200/12470 y 120-240	Lower Tram Substation
G.E. Ser. #9730747 KVA 37 1/2 Rate 7200/12470 y - 240/480	Lower Tram Substation
G.E. Ser. #9730748 KVA 37 1/2 Rate 720/12470 y - 240/480	Lower Tram Substation
G.E. Ser. #9730749 KVA 37 1/2 Rate 7200/12470 y - 240/480	Lower Tram Substation
G&W Elec. Specialty Co. Type (RAL-FCR) Volt 7.5 kv Cat #RALFC62B4 Ser. #D9062-54	Lower Tram Substation
Magnatron, Inc. Type AISC 30 Ohm Volt 20 kva Ser. #8186 Spec. #1293 Diag. #90-2750	White Alice Communication Building
Magnatron, Inc. Type AISC 30 ohm Volt 20 kva Ser. #8233 Spec #1293 Diag. #90-2750	White Alice Communication Building

Appendix A (continued)

ITEM

AS-FOUND LOCATION

Magnatron, Inc.
Type AISC 30 ohm Volt 20 kva
Ser. #8221 Spec #1293
Diag. #90-2750

White Alice Communication Building

Magnatron, Inc.
Spec. #1295 kva .44
Ser. #8267
Type HI-REACT Cycle 50/60 Phase 1

White Alice Communication Building

Magnatron, Inc.
Spec. #1295 kva .44
Ser. #8268
Type HI-REACT Cycle 50/60 Phase 1

White Alice Communication Building

Magnatron, Inc.
Spec. #1295 kva .44
Ser. #8286
Type HI-REACT Cycle 50/60 Phase 1

White Alice Communication Building

Magnatron, Inc. Unitized Rectifier
Spec. #1366-A-01 Ser #8153
Diag. #A-91-3441 kw 1.7 kva 3.76
Volts 208 cycle 50/60 Phase 1

White Alice Communication Building

Magnatron, Inc. Unitized Rectifier
Spec. #1366-A-01 Ser #8129
Diag. #A-91-3441 kw 1.7 kva 3.76
Volts 208 cycle 50/60 Phase 1

White Alice Communication Building

Magnatron, Inc. Unitized Rectifier
Spec. #1366-A-01 Ser. #8158
Diag. #A-91-3441 kw 1.7 kva 3.76
Volts 208 cycle 50/60 Phase 1

White Alice Communication Building

Appendix A (continued)

ITEM

AS-FOUND LOCATION

Magnatron, Inc.
Spec. #1294 Ser. #8092
Diag. #B-90-2751 kw 34 kva 39
Cycle 50/60 1 phase- 208 V 3 phase-208 V

White Alice Communication Building

Magnatron, Inc.
Spec. #1294 Ser. #8095
Diag. #B-90-2751 kw 34 KVA 39
Cycle 50/60 1 phase- 208 V 3 phase-208 V

White Alice Communication Building

Magnatron, Inc.
Spec. #1294 Ser. #8109
Diag. #B-90-2751 kw 34 kva 39
Cycle 50/60 1 phase- 208 V 3 phase-208 V

White Alice Communication Building

Hill Transformer Co.
Ser. #142524 kva 100 type DAZ
V7200/12470 y - 120/240

White Alice Communication Building

Hill Transformer Co.
Ser. #142525 kva 100 type DAZ
V7200/12470 y - 120/240

White Alice Communication Building

Hill Transformer Co.
Ser. #142529 KVA 100 Type DAZ
V7200/12470 y - 120/240

White Alice Communication Building

G&W Elec. Spec. Co.
Ser. #(8096-293)
Type FCBX V 8000 Amp 1000
Cat #3BXC61B-EC-T

White Alice Communication Building

Appendix A (continued)

ITEM

AS-FOUND LOCATION

Standard Tranx Co.
Ser. #109042
60 cycle 25 KVA Type A
Type HV Volts 7200/12470 y - 120/240

Transformer Bank No. 4

Standard Tranx Co.
Ser. #109049
60 cycle 25 KVA Type A
Type HV Volts 7200/12470 y - 120/240

Transformer Bank No. 4

Standard Tranx Co.
Ser. #109047
60 cycle 25 KVA Type A
Type HV Volts 7200/12470 y - 120/240

Transformer Bank No. 4

G&W Elec. Specialty Co.
Type - (RAL-FCBX) Volts 7.5 kv Amps 200
Ser. #D9062-54
Cat. #RALFC62BX

Transformer Bank No. 3

G&W Elec. Specialty Co.
Type - (RAL-FCBX) Volts 7.5 kv Amps 200
Cat. #RALFC62BX

Transformer Bank No. 3

General Electric
Type HS KVA 37.5 60 cycle 1 phase
Ser. #B368542
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

G.E.
Type HS KVA 37.5 60 cycle 1 phase
Ser. #B511418A
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

Appendix A (continued)

ITEM

AS-FOUND LOCATION

G.E.
Type HS KVA 37.5 60 cycle 1 phase
Ser. #B286616A
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

G.E.
Type HS KVA 37.5 60 cycle 1 phase
Ser. #8686044A
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

G.E.
Type HS KVA 37.5 60 cycle 1 phase
Ser. #9668788
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

G.E.
Type HS KVA 37.5 60 cycle 1 phase
Ser. #9669458
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

G.E.
Type HS KVA 37.5 60 cycle 1 phase
Ser. #9669460
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

APPENDIX B

CHAIN OF CUSTODY FORMS

U.S Consultants

1100 Olive Way, Suite 200
Seattle, WA 98101
(206) 623-1800

Chain of Custody

Project Number
CTO-18

Project Name
U.S. NAVY - ST LAWRENCE ISL AK

Sampling Team
GARY WILKINS

Sample Number	Date (mm/dd/yy)	Time (2400 hr)	Sample Location/Identification	Matrix	Number of Containers	Remarks
561 ✓	08/06/90	0830	Lab/ANTIFREEZE Drum# 561	0/X	1	
39 ✓	08/06/90		Lab/oil Drum# 39	0	1	
171 ✓	08/06/90		Lab/oil Drum# 171	0	1	
899 ✓	08/06/90		Lab/oil Drum# 899	0	1	informed Gary Wilkins
1017 ✓	08/06/90		Lab/oil Drum# 1017	0	1	
641 ✓	08/06/90		Lab/oil Drum# 641	0	1	
153 ✓	08/06/90		Lab/oil Drum# 153	0	1	
404 ✓	08/06/90		Lab/oil Drum# 404	0	1	
144 ✓	08/06/90	0830	Lab/oil Drum# 144	0	1	
* 899 missing						

Relinquished by: (Signature) Phil Smith	Date 8/6/90	Time 0900	Received by: (Signature) Tom Z. Clark	Name of Laboratory:
Relinquished by: (Signature) Tom Z. Clark	Date 8/7/90	Time 1540	Received by: (Signature) Shonda K. David	Samples Disposed of by:
Relinquished by: (Signature) Tom Z. Clark	Date 8/7/90	Time 1610	Received by: (Signature) Shonda K. David	Date

Matrix: W = Water, S = Soil/Sediment, O = Oil, X = Other

Distribution: White = Accompanying Shipment; Green = Disposal Receipt; Canary = Lab Copy; Pink = Field Copy; Goldendrod = U.S. Sample Control Copy

will call up any discrepancies COC + Samples p.c.

U.S Consultants

1100 Olive Way, Suite 2
Seattle, WA 98101
(206) 623-1800

Shipping Record and Analytical Request Form

Date Shipped 8-6-90		Shipped by GARY WILSON SHAMMUR/WILSON		Checked by Date		Air Bill Number		Carrier		Date Received		Received by	
Ship to: CITEM-GEO Labs 5633 "B" STREET ANCHORAGE, AK 99518						Project Number		Project Name					
Attention:						Laboratory Samples Transferred to				Date Received 8/7/10		Received by Rhonda Davis	
						ANALYSES REQUIRED							
Sample Number	Matrix	Est. Conc.	Special Instructions	Test Method	VOA	BNA	PPCB	LISTED METALS	PCB				
39	✓ O	L	LISTED METALS and PCB ANALYSIS					X	X				
171	✓ O	L	LISTED METALS and PCB ANALYSIS					X	X				
899	* O	L	LISTED METALS and PCB ANALYSIS	informed Gary of Sample Missing									
1017	✓ O	L	LISTED METALS and PCB ANALYSIS					X	X				
641	✓ O	L	LISTED METALS and PCB ANALYSIS					X	X				
153	✓ O	L	LISTED METALS and PCB ANALYSIS					X	X				
404	✓ O	L	LISTED METALS and PCB ANALYSIS					X	X				
144	✓ O	L	LISTED METALS and PCB ANALYSIS					X	X				
* MISSING													

Triple volume required for matrix spike/duplicate aqueous samples

Matrix: W = Water; S = Soil/Sediment; O = Oil; X = Other

Concentration: L = Low; M = Medium; H = High

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy

UnS Consultants

1100 Olive way, Suite 200
Seattle, WA 98101
(206) 623-1800

Chain of Custody

Project Number
CTO-18

Project Name
U.S. NAVY ST. LAWRENCE ISL AK

Sampling Team
GARY WILGUS

Number of Containers

Sample Number	Date (mm/dd/yyyy)	Time (2400 hr)	Sample Location/Identification	Matrix													Remarks
159 ✓	08/06/90	0830	CREOSOTE Drum# 159	O	1												
238 ✓	08/06/90		CREOSOTE Drum# 238	O	1												
591 ✓	08/06/90		CREOSOTE Drum# 591	O	1												
FO-1 ✓	08/06/90		COMPOSITE FUEL OILS	O	1												
FO-2 ✓	08/06/90		COMPOSITE FUEL OILS	O	1												
FO-3 ✓	08/06/90		COMPOSITE FUEL OILS	O	1												
261 ✓	08/06/90		GASOLINE Drum# 261	X	1												
1103 ✓	08/06/90		ANTIFREEZE Drum# 1103		1												
905 ✓	08/06/90		ANTIFREEZE Drum# 905		1												
904 ✓	08/06/90	✓	ANTIFREEZE Drum# 904		1												
642 ✓	08/06/90	0830	ANTIFREEZE Drum# 642		1												

Relinquished by: (Signature) Rich Smith	Date 8/6/90	Time 0900	Received by: (Signature)	Name of Laboratory:
Relinquished by: (Signature)	8/7/90	1540	Received by: (Signature) R. T. Clark	Samples Disposed of by:
Relinquished by: (Signature) R. T. Clark	8/7/90	1610	Received for Lab by: (Signature) R. T. Clark	Date
				Time

Matrix: W = Water; S = Soil/Sediment; O = Oil; X = Other

Distribution: White = Accompanies Shipment; Green = Disposal Receipt; Canary = Lab Copy; Pink = Field Copy; Colored/rod = URS Sample Control Copy

will call up any discrepancies in COC & samples - g.c.

URS Consultants

1100 Olive Way, Suite 200
Seattle, WA 98101
(206) 623-1800

Shipping Record and Analytical Request Form

Date Shipped 8-6-90		Shipped by GARY WILSON SHANNON-WILSON		Checked by Date		Air Bill Number		Carrier		Date Received		Received by	
Ship to: CHEM - GEO Labs 5633 "B" STREET ANCHORAGE, AK 99518						Project Number		Project Name					
Attention:						Laboratory Samples Transferred to				Date Received 8/7/1990		Received by Rhonda K. [Signature]	
						ANALYSES REQUIRED							
Sample Number	Matrix	Est. Conc.	Special Instructions	Test Method	VOA	BNA	PCB						
159 ✓	O	100%	CREOSOTE				PCB X						
238 ✓	O	100%	CREOSOTE				PCB X						
591 ✓	O	100%	CREOSOTE				PCB X						

Triple volume required for matrix spike/duplicate aqueous samples

Matrix: W = Water; S = Soil/Sediment; O = Oil; X = Other

Concentration: L = Low; M = Medium; H = High

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy

Un's Consultants

1100 Olive Way, Suite 200
Seattle, WA 98101
(206) 623-1800

Shipping Record and Analytical Request Form

Date Shipped 8-6-90		Shipped by GARY WILSON Shannon/WILSON		Checked by Date		Air Bill Number		Carrier		Date Received		Received by	
Ship to CHEM - GEO LABS 5633 "B" STREET Anchorage, AK 99518						Project Number		Project Name					
Attention:						Laboratory Samples Transferred to				Date Received 8/7 1610		Received by Rhonda Christ	
						ANALYSES REQUIRED							
Sample Number	Matrix	Est. Conc.	Special Instructions	Test Method	VOA	BNA	P/PCB	LEAD	Cadmium				
FO-1	O	100%	FUEL OIL (UNUSED) CONFIRM				X		X				
FO-2	O	100%	FUEL OIL (UNUSED) CONFIRM				X		X				
FO-3	O	100%	FUEL OIL (UNUSED) CONFIRM				X		X				
D261	X	100%	GASOLINE CONFIRM ABOVE ANALYSIS					X	X				

Triple volume required for matrix spike/duplicate aqueous samples
Matrix: W = Water; S = Soil/Sediment; O = Oil; X = Other
Concentration: L = Low; M = Medium; H = High

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldenrod = LPS Sample Control Copy

URS Consultants

1100 Olive Way, Suite 200
Seattle, WA 98101
(206) 623-1800

Shipping Record and Analytical Request Form

Date Shipped 8-6-90		Shipped by GARY WILGUS <i>SHAWMUT/MSJ</i>		Checked by Date		Air Bill Number		Carrier		Date Received		Received by	
Ship to: CHEM-GEO LABS 5633 "B" STREET ANCHORAGE, AK 99518						Project Number CTO-18		Project Name U.S. NAVY 1ST LAWRENCE ISLAND					
Attention:						Laboratory Samples Transferred to				Date Received 8/7/1990		Received by <i>Rhonda Davis</i>	
						ANALYSES REQUIRED							
Sample Number	Matrix	Est. Conc.	Special Instructions	Test Method	VOA	BNA	PPCB	LEAD METALS	Cadmium				
102 1103	✓ X	100%	ANTIFREEZE - METAL ANALYSIS, Cadmium					X	X				
104 905	✓ X	100%	ANTIFREEZE Cadmium Antifreeze					X	X				
304 904	✓ X	100%	ANTIFREEZE Cadmium Antifreeze					X	X				
106 642	✓ X	100%	ANTIFREEZE Cadmium Antifreeze					X	X				
108 561	✓ X	100%	ANTIFREEZE Cadmium Antifreeze					X	X				

Triple volume required for matrix spike/duplicate aqueous samples
Matrix: W = Water; S = Soil/Sediment; O = Oil; X = Other
Concentration: L = Low; M = Medium; H = High

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldendrod = URS Sample Control Copy

APPENDIX C

(Appendix C-I, C-II, C-III, C-IV, C-V)

DRUM ANALYSIS DATA

Field Laboratory Results of Sampled Drums

Sample No.	Date Taken	Analysis Date	Location	Lab. Book & Pg. No.	TESTS											Results
					H2O Solubility	Combustibility	Chlorine Hot Wire	Iodine Crystal	Water Test (effervesces)	Chlor-d-test 1000	Iron	Ph	Specific Gravity	Flash Point	Boiling Point	
1	7/30/90	8/2/90	Base Camp	B-19	dissolves	no	no-green	-	yes	-	-	6.55	1.00	-	-	Water
2	7/30/90	8/2/90	Base Camp	B-22	dissolves	no	no-green	-	yes	-	-	6.59	1.00	-	-	Water
5	7/28/90	7/31/90	Upper Camp	A-24	-	no	yellow	-	yes	-	-	5.90	1.00	-	-	Water
17	7/29/90	8/3/90	Upper Camp	B-64	floats	yes	no-green	red/bwn	-	-	-	-	0.88	90°C	-	Fuel Oil
22	7/29/90	8/3/90	Upper Camp	B-53	floats	yes	no-green	red/bwn	-	-	-	-	0.87	74°C	-	Fuel Oil
24	7/28/90	7/31/90	Upper Camp	A-45	dissolves	no	orange	-	yes	-	-	5.45	1.01	-	-	Water
38A(1)	7/29/90	8/5/90	Upper Camp	A-82	dissolves	no	orange	-	yes	-	-	5.24	1.00	-	99°C	Water
38	7/29/90	8/1/90	Upper Camp	A-82	dissolves	no	orange	-	yes	-	-	5.17	1.00	-	-	Water
39	7/30/90	8/2/90	Upper Camp	B-33	dissolves	yes	no-green	red-brn	-	no	-	-	-	-	-	Oil
40	7/30/90	8/2/90	Upper Camp	B-12	dissolves	no	no-green	-	yes	-	-	6.10	1.00	-	-	Water
57	7/29/90	8/1/90	Upper Camp	A-83	dissolves	no	no-green	-	yes	-	-	5.98	1.00	-	-	Water
58(4)	7/31/90	8/3/90	Upper Camp	B-68	floats	yes	no-green	dk. bwn	-	-	-	-	(3)	(3)	-	Fuel Oil/Water
58(5)	7/31/90	8/3/90	Upper Camp	B-68	dissolves	no	no-green	-	yes	-	-	5.12	1.00	(3)	(3)	Fuel Oil/Water
61	7/29/90	8/3/90	Upper Camp	B-44	dissolves	no	no-green	-	yes	-	-	5.44	1.00	-	-	Water
64	7/30/90	8/1/90	Upper Camp	A-95	floats	yes	no-green	red/bwn	-	-	-	-	0.87	72°C	-	Fuel Oil
66	7/30/90	8/3/90	Upper Camp	B-40	dissolves	no	no-green	-	yes	-	-	6.23	1.00	-	-	Water
72	7/30/90	8/1/90	Upper Camp	A-73	dissolves	no	no-green	-	yes	-	-	5.00	1.00	-	-	Water
76	7/28/90	7/29/90	Upper Camp	A-11	dissolves	no	yellow	-	yes	-	-	7.13	1.02	-	-	Water
79	7/28/90	7/31/90	Upper Camp	A-46	dissolves	no	yellow	-	yes	-	-	5.34	1.00	-	-	Water
82	7/30/90	8/2/90	Upper Camp	B-29	dissolves	no	no-green	-	yes	-	-	5.19	1.00	-	-	Water
83	7/29/90	7/31/90	Upper Camp	A-65	dissolves	no	no color	-	yes	-	-	6.32	1.00	-	-	Water
89	7/28/90	7/29/90	Upper Camp	A-13	dissolves	no	yellow	-	yes	-	-	6.88	1.00	-	-	Water
92	7/28/90	7/29/90	Upper Camp	A-5	dissolves	no	yellow	-	yes	-	orange	4.74	1.01	-	-	Water
96	7/28/90	7/31/90	Upper Camp	A-41	dissolves	no	yellow	-	yes	-	-	5.44	1.00	-	-	Water
103	7/28/90	7/31/90	Upper Camp	A-39	dissolves	no	yellow	-	yes	-	-	6.84	1.00	-	-	Water
106	7/29/90	8/2/90	Upper Camp	B-6	dissolves	no	no-green	-	yes	-	-	4.23	1.00	-	-	Water
135	7/29/90	7/31/90	Upper Camp	A-27	dissolves	no	yellow	-	yes	-	-	6.88	1.00	-	-	Water
137	7/28/90	8/1/90	Upper Camp	A-84	dissolves	no	no-green	-	yes	-	-	4.06	1.00	-	-	Water
140	7/30/90	8/3/90	Upper Camp	B-47	dissolves	no	no-green	-	yes	-	-	6.53	1.00	-	99° C	Water
140A(1)	7/30/90	8/3/90	Upper Camp	B-47	dissolves	no	no-green	-	yes	-	-	6.48	1.00	-	99° C	Water
142	7/30/90	8/2/90	Upper Camp	B-8	dissolves	no	no-green	-	yes	-	-	5.19	1.00	-	-	Water
144(4)	7/30/90	8/1/90	Upper Camp	B-27	floats	no	no-green	-	-	(3)	-	-	-	-	-	Oil/Water
144(5)	7/30/90	8/1/90	Upper Camp	B-27	dissolves	no	no-green	-	yes	-	-	3.84	1.00	-	-	Oil/Water
144	7/29/90	8/1/90	Upper Camp	A-89	dissolves	no	no-green	-	yes	-	-	5.80	1.00	-	-	Water
151	7/30/90	8/1/90	White Alice	A-77	dissolves	no	orange	-	yes	-	-	5.83	1.00	-	-	Water

Field Laboratory Results of Sampled Drums

Sample No.	Date Taken	Analysis Date	Location	Lab. Book & Pg. No.	TESTS											Results
					H2O Solubility	Combustibility	Chlorine Hot Wire	Iodine Crystal	Water Test (effervesces)	Chlor-d-lect 1000	Iron	Ph	Specific Gravity	Flash Point	Boiling Point	
153(4)	7/30/90	8/4/90	White Alice	B-77	floats	yes	no-green	-	-	negative	-	-	-	-	-	Oil/Water
153(5)	7/30/90	8/4/90	White Alice	B-77	dissolves	no	-	-	yes	-	-	7-8.	-	-	-	Oil/Water
156	7/30/90	7/31/90	Creek	A-69	dissolves	no	no color	-	yes	-	-	6.41	1.00	-	-	Water
158	7/30/90	8/1/90	B/C Road	A-79	dissolves	no	no-green	-	yes	-	-	6.03	1.00	-	-	Water
159	7/30/90	8/3/90	White Alice	B-78	floats	yes	no-green	no red	-	-	-	-	-	-	-	Creosote
163	7/30/90	8/3/90	White Alice	B-43	floats	yes	no-green	red/bwn	-	-	-	-	(3)	52°C	-	Fuel Oil
170	7/30/90	8/3/90	White Alice	B-48	floats	yes	no-green	red/bwn	-	-	-	-	0.81	40°C	-	Fuel Oil
170A(1)	7/30/90	8/3/90	White Alice	B-48	floats	yes	no-green	red/bwn	-	-	-	-	0.81	41°C	-	Fuel Oil
171	7/30/90	8/3/90	White Alice	B-74	floats	yes	no-green	-	-	purple	-	-	-	-	-	Oil
172	7/29/90	7/31/90	White Alice	A-61	floats	yes	orange	red/bwn	-	-	-	-	0.81	52°C	-	Fuel Oil
173	7/29/90	7/31/90	White Alice	A-56	floats	yes	orange	red/bwn	-	-	-	-	0.81	59°C	-	Fuel Oil
181	7/29/90	7/31/90	White Alice	A-62	floats	yes	orange	red/bwn	-	-	-	-	(3)	40°C	-	Fuel Oil
182	7/29/90	7/31/90	White Alice	A-53	floats	yes	orange	red/bwn	-	-	-	-	0.81	39°C	-	Fuel Oil
184	7/29/90	7/31/90	White Alice	A-54	floats	yes	orange	red/bwn	-	-	-	-	0.81	47°C	-	Fuel Oil
199	7/29/90	8/2/90	White Alice	B-34	floats	yes	no-green	red/bwn	-	-	-	-	0.81	52°C	-	Fuel Oil
217	7/30/90	8/2/90	White Alice	B-37	floats	yes	no-green	red/bwn	-	-	-	-	0.81	30°C	-	Aviation Fuel
224	7/29/90	7/31/90	White Alice	A-60	floats	yes	orange	red/bwn	-	-	-	-	0.81	60°C	-	Fuel Oil
225	7/30/90	8/3/90	White Alice	B-56	floats	yes	no-green	red/bwn	-	-	-	-	0.81	43°C	-	Fuel Oil
228	7/29/90	7/31/90	White Alice	A-57	floats	yes	orange	orange/bwn	-	-	-	-	(3)	28°C	-	Aviation Fuel
230	7/29/90	7/31/90	White Alice	A-58	floats	yes	orange	red/bwn	-	-	-	-	0.81	56°C	-	Fuel Oil
238	7/29/90	8/3/90	White Alice	B-69	floats	yes	no-green	no red	no	negative	-	5.34	-	-	-	Creosote
239	7/29/90	7/31/90	White Alice	A-55	floats	yes	orange	red/bwn	-	-	-	-	0.81	40°C	-	Fuel Oil
1136	7/30/90	8/1/90	Staging Area	A-90	floats	yes	no-green	red/bwn	-	-	-	-	0.81	50°C	-	Fuel Oil
256	7/30/90	8/2/90	Garage/WA	B-31	dissolves	no	no-green	-	yes	-	-	7.44	1.01	-	-	Water
261	7/29/90	7/31/90	Garage/WA	A-59	floats	yes	orange	brown	-	-	-	-	<0.8	-	-	Gasoline-Leaded
277	7/30/90	8/1/90	Upper Camp	A-76	dissolves	no	no-green	-	yes	-	-	5.82	1.00	-	-	Water
279	7/28/90	7/29/90	Upper Camp	A-15	dissolves	no	yellow	-	yes	-	-	7.00	1.01	-	-	Water
280	7/28/90	7/31/90	Upper Camp	A-19	dissolves	no	yellow	-	yes	-	-	6.43	1.00	-	-	Water
284	7/28/90	8/4/90	Upper Camp	B-79	dissolves	no	no-green	-	yes	-	-	5.86	1.00	-	-	Water
288	7/28/90	7/31/90	Upper Camp	A-21	dissolves	no	yellow	-	yes	-	-	5.81	1.00	-	-	Water
289	7/28/90	7/29/90	Upper Camp	A-6	dissolves	no	yellow	-	yes	-	-	6.77	1.00	-	-	Water
289A(1)	7/28/90	7/29/90	Upper Camp	A-6	dissolves	no	no-green	-	yes	-	-	6.83	1.02	-	100C	Water
295	8/2/90	8/3/90	Upper Camp	B-46	dissolves	no	no-green	-	yes	-	-	6.39	1.00	-	-	Water
296	7/30/90	8/3/90	Upper Camp	B-50	dissolves	no	no-green	-	yes	-	-	6.40	1.00	-	-	Water
307	7/29/90	7/31/90	Upper Camp	A-50	dissolves	no	yellow	-	yes	-	-	6.37	0.99	-	-	Water

Field Laboratory Results of Sampled Drums

Sample No.	Date Taken	Analysis Date	Location	Lab. Book & Pg. No.	TESTS											Results
					H2O Solubility	Combustibility	Chlorine Hot Wire	Iodine Crystal	Water Test (effervesces)	Chlor-d-lect 1000	Iron	Ph	Specific Gravity	Flash Point	Boiling Point	
308	7/29/90	8/2/90	Upper Camp	B-5	dissolves	no	no-green	-	yes	-	-	5.19	1.02	-	-	Water
309	7/29/90	7/31/90	Upper Camp	A-40	dissolves	no	yellow	-	yes	-	-	6.08	1.00	-	-	Water
310	7/28/90	7/31/90	Upper Camp	A-30	dissolves	no	yellow	-	yes	-	-	6.26	1.00	-	-	Water
312	7/30/90	8/3/90	Upper Camp	B-39	dissolves	no	no-green	-	yes	-	-	5.50	1.00	-	-	Water
315	7/28/90	7/31/90	Upper Camp	A-25	dissolves	no	yellow	-	yes	-	-	5.83	1.00	-	-	Water
316	7/29/90	7/31/90	Upper Camp	A-70	dissolves	no	no/color	-	yes	-	-	6.88	1.00	-	-	Water
317	7/30/90	8/2/90	Upper Camp	B-11	dissolves	no	no-green	-	yes	-	-	6.12	1.01	-	-	Water
324	7/30/90	8/3/90	Upper Camp	B-57	dissolves	no	no-green	-	yes	-	-	5.29	1.00	-	-	Water
329	7/28/90	7/31/90	Upper Camp	A-42	dissolves	no	yellow	-	yes	-	-	6.08	1.00	-	-	Water
333	7/28/90	7/29/90	Upper Camp	A-9	dissolves	no	yellow	-	yes	-	no	6.22	1.01	-	-	Water
336	7/28/90	7/31/90	Upper Camp	A-26	dissolves	no	yellow	-	yes	-	-	6.95	1.00	-	-	Water
341	7/28/90	7/31/90	Upper Camp	A-43	dissolves	no	yellow	-	yes	-	-	5.95	1.00	-	-	Water
344	7/28/90	7/31/90	Upper Camp	A-28	dissolves	no	yellow	-	yes	-	-	7.13	1.00	-	-	Water
346	7/28/90	7/31/90	Upper Camp	A-47	dissolves	no	yellow	-	yes	-	-	5.12	1.00	-	-	Water
347	7/29/90	8/3/90	Upper Camp	B-52	dissolves	no	no-green	-	yes	-	-	4.60	1.00	-	-	Water
348	7/28/90	7/31/90	Upper Camp	A-34	dissolves	no	yellow	-	yes	-	-	5.58	1.00	-	-	Water
350	7/29/90	7/31/90	Upper Camp	A-64	dissolves	no	orange	-	yes	-	-	6.12	1.00	-	-	Water
351	7/28/90	7/31/90	Upper Camp	A-33	dissolves	no	yellow	-	yes	-	-	5.08	1.01	-	-	Water
354	7/28/90	7/31/90	Upper Camp	A-16	dissolves	no	no/color	-	yes	-	-	6.58	1.00	-	-	Water
366	7/30/90	8/3/90	Upper Camp	B-55	dissolves	no	no-green	-	yes	-	-	4.94	1.00	-	-	Water
369	7/28/90	7/29/90	Upper Camp	A-8	dissolves	no	yellow	-	yes	-	orange	6.41	1.01	-	-	Water
384(4)	7/29/90	8/2/90	Upper Camp	A-100	floats	yes	no-green	red/bwn	-	-	-	-	-	(3)	-	Fuel Oil/Water
384(5)	7/29/90	8/2/90	Upper Camp	A-100	dissolves	no	no-green	-	yes	-	-	-	(3)	-	-	Fuel Oil/Water
389	7/28/90	7/31/90	Upper Camp	A-18	dissolves	no	no/color	-	yes	-	-	6.66	1.00	-	-	Water
392	7/30/90	8/2/90	Upper Camp	B-20	dissolves	no	no-green	-	yes	-	-	5.61	1.00	-	-	Water
394	7/28/90	7/29/90	Upper Camp	A-10	dissolves	no	yellow	-	yes	-	-	4.68	1.02	-	-	Water
397	7/30/90	8/1/90	Upper Camp	A-87	dissolves	no	no-green	-	yes	-	-	5.13	1.00	-	-	Water
400	7/30/90	8/2/90	Upper Camp	A-98	dissolves	no	no-green	-	yes	-	-	5.10	1.01	-	-	Water
402	7/30/90	8/2/90	Upper Camp	B-16	dissolves	no	no-green	-	yes	-	-	6.34	1.00	-	-	Water
404	7/30/90	8/2/90	Upper Camp	B-32	floats	yes	-	red-brn	-	negative	-	-	-	-	-	Oil/Water PCB?
405	7/30/90	8/1/90	Upper Camp	A-93	dissolves	no	no-green	-	yes	-	-	6.21	1.00	-	-	Water
405A(1)	7/30/90	8/1/90	Upper Camp	A-93	dissolves	no	no-green	-	yes	-	-	6.17	1.00	-	-	Water
406	7/30/90	8/2/90	Upper Camp	B-24	dissolves	no	no-green	-	yes	-	-	6.41	1.00	-	-	Water
410	7/30/90	8/3/90	Upper Camp	B-38	dissolves	no	no-green	-	yes	-	-	4.98	1.00	-	-	Water

Field Laboratory Results of Sampled Drums

Sample No.	Date Taken	Analysis Date	Location	Lab. Book & Pg. No.	TESTS											Results
					H2O Solubility	Combustibility	Chlorine Hot Wire	Iodine Crystal	Water Test (effervesces)	Chlor-d-tert 1000	Iron	Ph	Specific Gravity	Flash Point	Boiling Point	
413	7/30/90	8/2/90	Upper Camp	B-15	dissolves	no	no-green	-	yes	-	-	6.06	1.00	-	-	Water
416	7/30/90	8/2/90	Upper Camp	B-18	dissolves	no	no-green	-	yes	-	-	5.18	1.00	-	-	Water
427	7/29/90	7/31/90	Upper Camp	A-71	dissolves	no	no/color	-	yes	-	-	6.54	1.00	-	-	Water
432	7/28/90	7/29/90	Upper Camp	A-12	dissolves	no	yellow	-	yes	-	-	7.15	1.04	-	-	Water
437	7/28/90	7/31/90	Upper Camp	A-31	dissolves	no	yellow	-	yes	-	-	6.17	1.00	-	-	Water
444	7/28/90	7/31/90	Upper Camp	A-22	dissolves	no	yellow	-	yes	-	-	6.17	1.00	-	-	Water
455	7/30/90	8/1/90	Upper Camp	A-92	dissolves	no	no-green	-	yes	-	-	6.43	1.00	-	-	Water
459	7/28/90	7/29/90	Upper Camp	A-7	dissolves	no	yellow	-	yes	-	orange	5.21	1.02	-	-	Water
461	7/28/90	7/31/90	Upper Camp	A-36	dissolves	no	yellow	-	yes	-	-	6.42	1.00	-	-	Water
470	7/28/90	7/31/90	Upper Camp	A-35	dissolves	no	yellow	-	yes	-	-	6.20	1.00	-	-	Water
472	7/28/90	7/31/90	Upper Camp	A-48	dissolves	no	yellow	-	yes	-	-	4.78	1.00	-	-	Water
474	7/28/90	7/29/90	Upper Camp	A-14	dissolves	no	yellow	-	yes	-	-	6.31	1.03	-	-	Water
477	7/28/90	7/31/90	Upper Camp	A-29	dissolves	no	yellow	-	yes	-	-	6.11	1.00	-	-	Water
486	7/28/90	7/31/90	Upper Camp	A-17	dissolves	no	no/color	-	yes	-	-	6.45	1.02	-	-	Water
487	7/28/90	7/31/90	Upper Camp	A-20	dissolves	no	yellow	-	yes	-	-	7.12	1.00	-	-	Water
509	7/28/90	8/3/90	Upper Camp	B-60	dissolves	no	no-green	-	yes	-	-	5.07	1.00	-	-	Water
517	7/30/90	8/1/90	Creek	A-75	dissolves	no	no-green	-	yes	-	-	5.11	1.00	-	-	Water
520	-	8/1/90	Staging Area	B-7	dissolves	no	no-green	-	yes	-	-	6.58	1.00	-	-	Water
522	7/30/90	8/2/90	Upper Camp	B-35	dissolves	no	no-green	-	yes	-	-	6.78	1.00	-	-	Water
523	7/30/90	8/3/90	Upper Camp	B-49	dissolves	no	no-green	-	yes	-	-	4.62	1.02	-	-	Water
527	7/28/90	7/31/90	Upper Camp	A-67	dissolves	no	no/flamm	-	yes	-	-	6.82	1.00	-	-	Water
537	7/30/90	8/1/90	Upper Camp	A-81	dissolves	no	no-green	-	yes	-	-	6.34	1.00	-	-	Water
554	7/29/90	8/1/90	Upper Camp	A-85	dissolves	no	no-green	-	yes	-	-	6.16	1.00	-	-	Water
558	7/30/90	8/1/90	White Alice	A-94	dissolves	no	no-green	-	yes	-	-	6.64	1.00	-	-	Water
561	7/30/90	8/2/90	Lower Tram	B-36	dissolves	no	no-green	-	slowly	-	-	7.71	1.05	-	102°C	Antifreeze
561A(1)	7/30/90	8/2/90	Lower Tram	B-36	floats	flash	no-green	-	slightly	-	-	7.80	1.05	-	103°C	Antifreeze
575	7/28/90	7/31/90	Upper Camp	A-32	dissolves	no	yellow	-	yes	-	-	5.23	1.00	-	-	Water
578	7/29/90	8/3/90	Upper Camp	B-66	floats	yes	no-green	red/bwn	-	-	-	-	0.86	84°C	-	Fuel Oil
580	7/30/90	8/1/90	Power Line	A-80	dissolves	no	no-green	-	yes	-	-	5.24	1.00	-	-	Graphite Grease
581	7/30/90	8/2/90	Power Line	B-21	dissolves	no	no-green	-	yes	-	-	6.20	1.00	-	-	Water
591	7/28/90	8/3/90	Upper Camp	B-75	floats	yes	no-green	-	-	-	-	-	-	-	-	Cresote
599(6)	7/30/90	8/1/90	Upper Camp	A-78	dissolves	no	no-color	-	yes	-	-	6.09	1.00	-	-	Graphite Grease
599(7)	7/30/90	8/1/90	Upper Camp	A-78(8)	sinks	-	no-color	-	-	-	-	6.8	-	-	-	Graphite Grease
602	7/28/90	7/31/90	Upper Camp	A-38	dissolves	no	orange	-	yes	-	-	3.77	1.00	-	-	Water
632	7/28/90	7/31/90	White Alice	A-37	dissolves	no	yellow	-	yes	-	-	6.31	1.00	-	-	Water

Field Laboratory Results of Sampled Drums

Sample No.	Date Taken	Analysis Date	Location	Lab. Book & Pg. No.	TESTS											Results
					H2O Solubility	Combustibility	Chlorine Hot Wire	Iodine Crystal	Water Test (effervesces)	Chlor-d-lect 1000	Iron	Ph	Specific Gravity	Flash Point	Boiling Point	
635	7/30/90	8/1/90	Upper Camp	A-88	dissolves	no	no-green	-	yes	-	-	5.19	1.00	-	-	Water
641	8/2/90	8/3/90	U/C Tram	B-70	floats	no	-	-	-	positive	-	-	-	-	-	Oil - PCB
642	8/2/90	8/3/90	U/C Tram	B-65	dissolves	flash-out(2)	no-green	-	no	-	-	6.66	±1.1	-	>130°C	Antifreeze
649	7/30/90	8/2/90	Upper Camp	B-17	dissolves	no	no-green	-	yes	-	-	5.01	1.00	-	-	Water
651	-	8/2/90	Staging Area	B-45	dissolves	no	no-green	-	yes	-	-	5.68	1.00	-	-	Water
652	7/30/90	8/2/90	Upper Camp	B-28	dissolves	no	no-green	-	yes	-	-	6.28	1.00	-	-	Water
655	7/30/90	7/31/90	Upper Camp	A-68	dissolves	no	no-color	-	yes	-	-	6.30	1.00	-	-	Water
659	7/31/90	7/31/90	White Alice	A-66(9)	dissolves	-	no-yellow	-	-	-	-	10.06	-	-	-	Soap
663	7/28/90	7/31/90	Upper Camp	A-23	dissolves	no	yellow	-	yes	-	-	5.73	1.00	-	-	Water
664	7/30/90	8/3/90	Upper Camp	B-63	floats	yes	no-green	red/bwn	-	-	-	-	0.85	60°C	-	Fuel Oil
665	7/30/90	8/3/90	Upper Camp	B-42	dissolves	no	no-green	-	yes	-	-	5.03	1.00	-	-	Water
680	7/30/90	8/1/90	White Alice	A-91	floats	yes	no-green	red/bwn	-	-	-	-	0.81	38°C	-	Fuel Oil
681	7/30/90	8/3/90	White Alice	B-54	floats	yes	no-green	red/bwn	-	-	-	-	0.81	40°C	-	Fuel Oil
687	7/29/90	7/31/90	White Alice	A-63	floats	yes	orange	red/bwn	-	-	-	-	(3)	58°C	-	Fuel Oil
688	7/30/90	8/3/90	White Alice	B-58	floats	yes	no-green	red/bwn	-	-	-	-	0.81	36°C	-	Aviation Fuel
698	7/30/90	8/2/90	White Alice	A-97	floats	yes	no-green	red/bwn	-	-	-	-	0.81	50°C	-	Fuel Oil
707	7/29/90	7/31/90	White Alice	A-52	floats	yes	no-green	rd/orange	-	-	-	-	0.80	48°C	-	Fuel Oil
720	-	8/1/90	White Alice	B-23	dissolves	no	no-green	-	yes	-	-	6.50	1.00	-	-	Water
732	7/30/90	8/2/90	Staging Area	B-13	dissolves	no	no-green	-	yes	-	-	6.45	1.01	-	-	Water
734(4)	7/31/90	8/4/90	White Alice	B-76	floats	yes	-	-	-	positive	-	8.21	-	-	-	Diazinon/Oil/H2O
734A(5)	7/31/90	8/4/90	White Alice	B-76	dissolves	no	-	-	yes	-	-	8.00	-	-	-	Diazinon/Oil/H2O
735	7/30/90	8/1/90	White Alice	A-86	dissolves	no	no-green	-	yes	-	-	5.92	1.00	-	-	Water
736	7/30/90	8/2/90	White Alice	B-30	floats	yes	no-green	red/bwn	-	-	-	-	0.81	38°C	-	Fuel Oil
842	7/30/90	7/31/90	Upper Camp	A-72	dissolves	no	no-color	-	yes	-	-	6.74	1.00	-	-	Water
847	8/1/90	8/2/90	Upper Camp	A-99	floats	yes	no-green	red/bwn	-	-	-	-	0.87	76°C	-	Fuel Oil
851(4)	7/29/90	8/3/90	Upper Camp	B-67	floats	Yes	no-green	Rust	-	purple	-	-	(3)	(3)	-	Fuel Oil/Water
851(5)	7/29/90	8/3/90	Upper Camp	B-67	dissolves	no	no-green	-	yes	-	-	5.00	(3)	-	-	Fuel Oil/Water
860	7/29/90	8/2/90	Upper Camp	B-10	dissolves	no	no-green	-	yes	-	-	4.94	1.01	-	-	Water
861	7/29/90	7/31/90	Upper Camp	A-51	dissolves	no	yellow	-	yes	-	-	6.34	1.00	-	-	Water
862	7/29/90	7/31/90	Upper Camp	A-49	dissolves	no	yellow	-	yes	-	-	6.34	1.00	-	-	Water
891	7/29/90	8/3/90	U/C Tram	B-51	dissolves	no	no-green	-	yes	-	-	5.59	1.00	-	-	Water
899	8/2/90	8/3/90	U/C Tram	B-62	floats	yes	no-green	no-red	-	negative	-	-	-	-	-	Oil
900	7/30/90	8/1/90	Upper Camp	A-74	dissolves	no	no-green	-	yes	-	-	5.98	1.00	-	-	Water
904	8/2/90	8/3/90	U/C Tram	B-71	dissolves	flash-out(2)	no-green	-	no	-	-	6.73	>1.	-	120°C	Antifreeze
905	8/2/90	8/3/90	U/C Tram	B-61	dissolves	flash-out(2)	no-green	-	no	-	-	7.56	1.1.1	-	114°C	Antifreeze

Field Laboratory Results of Sampled Drums

Sample No.	Date Taken	Analysis Date	Location	Lab. Book & Pg. No.	TESTS											Results
					H2O Solubility	Combustibility	Chlorine Hot Wire	Iodine Crystal	Water Test (effervesces)	Chlor-d-test 1000	Iron	Ph	Specific Gravity	Flash Point	Boiling Point	
906	7/28/90	7/31/90	U/C Tram	A-44	dissolves	no	yellow	-	yes	-	-	6.06	1.00	-	-	Water
909	7/29/90	8/2/90	U/C Tram	B-9	dissolves	no	no-green	-	yes	-	-	5.46	1.00	-	-	Water
915	7/29/92	8/3/90	U/C Tram	B-41	dissolves	no	no-green	-	yes	-	-	4.93	1.00	-	-	Water
916	7/30/90	8/2/90	U/C Tram	B-14	dissolves	no	no-green	-	yes	-	-	6.44	1.00	-	-	Water
923	7/30/90	8/3/90	Upper Camp	B-59	dissolves	no	no-green	-	yes	-	-	5.07	1.00	-	-	Water
924	7/30/90	8/3/90	Upper Camp	B-73	floats	yes	no-green	red/bwn	-	-	-	-	0.87	74°C	-	Fuel Oil
991	7/31/90	8/2/90	Upper Camp	B-26	dissolves	no	no-green	-	yes	-	-	6.34	1.00	-	-	Water
1001	7/30/90	8/1/90	Upper Camp	A-96	floats	yes	no-green	red-bwn	-	-	-	-	<0.8	-	-	Gasoline/Leaded
1017	7/30/90	8/3/90	Upper Camp	B-72	floats	yes	no-green	no-red	-	negative	-	-	-	-	-	Oil
1103	7/31/90	8/2/90	White Alice	B-25	dissolves	flash-out(2)	no-green	-	no	-	-	7.15	1.10	-	106°C	Antifreeze
1154	8/6/90	8/6/90	Road to T/C	B-80	dissolves	no	no-green	-	yes	-	-	5.74	1.00	-	100°C	H2O/Graphite
1154A(1)	8/6/90	8/6/90	Road to T/C	B-80	dissolves	no	no-green	-	yes	-	-	5.82	1.00	-	-	H2O/Graphite
1155	8/6/90	8/6/90	Road to T/C	B-81	dissolves	no	no-green	-	yes	-	-	6.43	1.00	-	100°C	Water
1155A(1)	8/6/90	8/6/90	Road to T/C	B-81	dissolves	no	no-green	-	yes	-	-	6.47	1.00	-	-	Water
1156	8/6/90	8/3/90	White Alice	B-82	floats	yes	no-green	red/bwn	-	-	-	-	0.87	76°C	-	Fuel Oil
1156A(1)	8/6/90	8/3/90	White Alice	B-82	floats	yes	no-green	red/bwn	-	-	-	-	0.87	-	-	Fuel Oil

- NOTES: (1) Not enough sample to run test
 (2) Match flashed then went out
 (3) Not enough sample to run test
 (4) Top layer of sample
 (5) Bottom layer of sample
 (6) Liquid layer of sample
 (7) Sludge layer of sample
 (8) Sample #599 had an Acid Test run on the bottom layer, the results were "no rxn".
 (9) Sample #659 had a Hexane and Alcohol Solubility Test run on it, the results were, "no emulsification; orangic".

Classification of Unknowns

Sample No.	Date Taken	Analysis Date	Location	Lab. Book & Pg. No.	TESTS											Results
					H2O Solubility	Combustibility	Chlorine Hot Wire	Iodine Crystal	Water Test (effervesce)	Chlor-d-lect 1000	Iron	Ph	Specific Gravity	Flash Point	Boiling Point	
5	7/28/90	7/31/90	Upper Camp	A-24	-	no	yellow	-	yes	-	-	5.90	1.00	-	-	Water
24	7/28/90	7/31/90	Upper Camp	A-45	dissolves	no	orange	-	yes	-	-	5.45	1.01	-	-	Water
38	7/29/90	8/1/90	Upper Camp	A-82	dissolves	no	orange	-	yes	-	-	5.17	1.00	-	-	Water
38A(1)	7/29/90	8/5/90	Upper Camp	A-82	dissolves	no	orange	-	yes	-	-	5.24	1.00	-	99°C	Water
40	7/30/90	8/2/90	Upper Camp	B-12	dissolves	no	no-green	-	yes	-	-	6.10	1.00	-	-	Water
57	7/29/90	8/1/90	Upper Camp	A-83	dissolves	no	no-green	-	yes	-	-	5.98	1.00	-	-	Water
61	7/29/90	8/3/90	Upper Camp	B-44	dissolves	no	no-green	-	yes	-	-	5.44	1.00	-	-	Water
66	7/30/90	8/3/90	Upper Camp	B-40	dissolves	no	no-green	-	yes	-	-	6.23	1.00	-	-	Water
72	7/30/90	8/1/90	Upper Camp	A-73	dissolves	no	no-green	-	yes	-	-	5.00	1.00	-	-	Water
76	7/28/90	7/29/90	Upper Camp	A-11	dissolves	no	yellow	-	yes	-	-	7.13	1.02	-	-	Water
79	7/28/90	7/31/90	Upper Camp	A-46	dissolves	no	yellow	-	yes	-	-	5.34	1.00	-	-	Water
82	7/30/90	8/2/90	Upper Camp	B-29	dissolves	no	no-green	-	yes	-	-	5.19	1.00	-	-	Water
83	7/29/90	7/31/90	Upper Camp	A-65	dissolves	no	no color	-	yes	-	-	6.32	1.00	-	-	Water
89	7/28/90	7/29/90	Upper Camp	A-13	dissolves	no	yellow	-	yes	-	-	6.88	1.00	-	-	Water
92	7/28/90	7/29/90	Upper Camp	A-5	dissolves	no	yellow	-	yes	-	orange	4.74	1.01	-	-	Water
96	7/28/90	7/31/90	Upper Camp	A-41	dissolves	no	yellow	-	yes	-	-	5.44	1.00	-	-	Water
103	7/28/90	7/31/90	Upper Camp	A-39	dissolves	no	yellow	-	yes	-	-	6.84	1.00	-	-	Water
106	7/29/90	8/2/90	Upper Camp	B-6	dissolves	no	no-green	-	yes	-	-	4.23	1.00	-	-	Water
135	7/29/90	7/31/90	Upper Camp	A-27	dissolves	no	yellow	-	yes	-	-	6.88	1.00	-	-	Water
137	7/28/90	8/1/90	Upper Camp	A-84	dissolves	no	no-green	-	yes	-	-	4.06	1.00	-	-	Water
140	7/30/90	8/3/90	Upper Camp	B-47	dissolves	no	no-green	-	yes	-	-	6.53	1.00	-	99° C	Water
140A(1)	7/30/90	8/3/90	Upper Camp	B-47	dissolves	no	no-green	-	yes	-	-	6.48	1.00	-	99° C	Water
142	7/30/90	8/2/90	Upper Camp	B-8	dissolves	no	no-green	-	yes	-	-	5.19	1.00	-	-	Water
148	7/29/90	8/1/90	Upper Camp	A-89	dissolves	no	no-green	-	yes	-	-	5.80	1.00	-	-	Water
151	7/30/90	8/1/90	White Alice	A-77	dissolves	no	orange	-	yes	-	-	5.83	1.00	-	-	Water
156	7/30/90	7/31/90	Creek	A-69	dissolves	no	no color	-	yes	-	-	6.41	1.00	-	-	Water
158	7/30/90	8/1/90	B/C Road	A-79	dissolves	no	no-green	-	yes	-	-	6.03	1.00	-	-	Water
256	7/30/90	8/2/90	Garage/WA	B-31	dissolves	no	no-green	-	yes	-	-	7.44	1.01	-	-	Water
277	7/30/90	8/1/90	Upper Camp	A-76	dissolves	no	no-green	-	yes	-	-	5.82	1.00	-	-	Water
279	7/28/90	7/29/90	Upper Camp	A-15	dissolves	no	yellow	-	yes	-	-	7.00	1.01	-	-	Water
280	7/28/90	7/31/90	Upper Camp	A-19	dissolves	no	yellow	-	yes	-	-	6.43	1.00	-	-	Water
284	7/28/90	8/4/90	Upper Camp	B-79	dissolves	no	no-green	-	yes	-	-	5.86	1.00	-	-	Water
288	7/28/90	7/31/90	Upper Camp	A-21	dissolves	no	yellow	-	yes	-	-	5.81	1.00	-	-	Water
289	7/28/90	7/29/90	Upper Camp	A-6	dissolves	no	yellow	-	yes	-	-	6.77	1.00	-	-	Water
289A(1)	7/28/90	7/29/90	Upper Camp	A-6	dissolves	no	no-green	-	yes	-	-	6.83	1.02	-	100C	Water

Classification of Unknowns

Sample No.	Date Taken	Analysis Date	Location	Lab. Book & Pg. No.	TESTS											Results
					H2O Solubility	Combustibility	Chlorine Hot Wire	Iodine Crystal	Water Test (effervesce)	Chlor-d-test 1000	Iron	Ph	Specific Gravity	Flash Point	Boiling Point	
295	8/2/90	8/3/90	Upper Camp	B-46	dissolves	no	no-green	-	yes	-	-	6.39	1.00	-	-	Water
296	7/30/90	8/3/90	Upper Camp	B-50	dissolves	no	no-green	-	yes	-	-	6.20	1.00	-	-	Water
307	7/29/90	7/31/90	Upper Camp	A-50	dissolves	no	yellow	-	yes	-	-	6.37	0.99	-	-	Water
308	7/29/90	8/2/90	Upper Camp	B-5	dissolves	no	no-green	-	yes	-	-	5.19	1.02	-	-	Water
309	7/29/90	7/31/90	Upper Camp	A-40	dissolves	no	yellow	-	yes	-	-	6.08	1.00	-	-	Water
310	7/28/90	7/31/90	Upper Camp	A-30	dissolves	no	yellow	-	yes	-	-	6.26	1.00	-	-	Water
312	7/30/90	8/3/90	Upper Camp	B-39	dissolves	no	no-green	-	yes	-	-	5.50	1.00	-	-	Water
315	7/28/90	7/31/90	Upper Camp	A-25	dissolves	no	yellow	-	yes	-	-	5.83	1.00	-	-	Water
316	7/29/90	7/31/90	Upper Camp	A-70	dissolves	no	no/color	-	yes	-	-	6.88	1.00	-	-	Water
317	7/30/90	8/2/90	Upper Camp	B-11	dissolves	no	no-green	-	yes	-	-	6.12	1.01	-	-	Water
324	7/30/90	8/3/90	Upper Camp	B-57	dissolves	no	no-green	-	yes	-	-	5.29	1.00	-	-	Water
329	7/28/90	7/31/90	Upper Camp	A-42	dissolves	no	yellow	-	yes	-	-	6.08	1.00	-	-	Water
333	7/28/90	7/29/90	Upper Camp	A-9	dissolves	no	yellow	-	yes	-	no	6.22	1.01	-	-	Water
336	7/28/90	7/31/90	Upper Camp	A-26	dissolves	no	yellow	-	yes	-	-	6.95	1.00	-	-	Water
341	7/28/90	7/31/90	Upper Camp	A-43	dissolves	no	yellow	-	yes	-	-	5.95	1.00	-	-	Water
344	7/28/90	7/31/90	Upper Camp	A-28	dissolves	no	yellow	-	yes	-	-	7.13	1.00	-	-	Water
346	7/28/90	7/31/90	Upper Camp	A-47	dissolves	no	yellow	-	yes	-	-	5.12	1.00	-	-	Water
347	7/29/90	8/3/90	Upper Camp	B-52	dissolves	no	no-green	-	yes	-	-	4.60	1.00	-	-	Water
348	7/28/90	7/31/90	Upper Camp	A-34	dissolves	no	yellow	-	yes	-	-	5.58	1.00	-	-	Water
350	7/29/90	7/31/90	Upper Camp	A-64	dissolves	no	orange	-	yes	-	-	6.12	1.00	-	-	Water
351	7/28/90	7/31/90	Upper Camp	A-33	dissolves	no	yellow	-	yes	-	-	5.08	1.01	-	-	Water
354	7/28/90	7/31/90	Upper Camp	A-16	dissolves	no	no/color	-	yes	-	-	6.58	1.00	-	-	Water
366	7/30/90	8/3/90	Upper Camp	B-55	dissolves	no	no-green	-	yes	-	-	4.94	1.00	-	-	Water
369	7/28/90	7/29/90	Upper Camp	A-8	dissolves	no	yellow	-	yes	-	orange	6.41	1.01	-	-	Water
389	7/28/90	7/31/90	Upper Camp	A-18	dissolves	no	no/color	-	yes	-	-	6.66	1.00	-	-	Water
392	7/30/90	8/2/90	Upper Camp	B-20	dissolves	no	no-green	-	yes	-	-	5.61	1.00	-	-	Water
394	7/28/90	7/29/90	Upper Camp	A-10	dissolves	no	yellow	-	yes	-	-	4.68	1.02	-	-	Water
397	7/30/90	8/1/90	Upper Camp	A-87	dissolves	no	no-green	-	yes	-	-	5.13	1.00	-	-	Water
400	7/30/90	8/2/90	Upper Camp	A-98	dissolves	no	no-green	-	yes	-	-	5.10	1.01	-	-	Water
402	7/30/90	8/2/90	Upper Camp	B-16	dissolves	no	no-green	-	yes	-	-	6.34	1.00	-	-	Water
405	7/30/90	8/1/90	Upper Camp	A-93	dissolves	no	no-green	-	yes	-	-	6.21	1.00	-	-	Water
405A(1)	7/30/90	8/1/90	Upper Camp	A-93	dissolves	no	no-green	-	yes	-	-	6.17	1.00	-	-	Water
406	7/30/90	8/2/90	Upper Camp	B-24	dissolves	no	no-green	-	yes	-	-	6.41	1.00	-	-	Water
410	7/30/90	8/3/90	Upper Camp	B-38	dissolves	no	no-green	-	yes	-	-	4.98	1.00	-	-	Water
413	7/30/90	8/2/90	Upper Camp	B-15	dissolves	no	no-green	-	yes	-	-	6.06	1.00	-	-	Water

Classification of Unknowns

Sample No.	Date Taken	Analysis Date	Location	Lab. Book & Pg. No.	TESTS											Results
					H2O Solubility	Combustibility	Chlorine Hot Wire	Iodine Crystal	Water Test (effervesce)	Chlor-d-test 1000	Iron	Ph	Specific Gravity	Flash Point	Boiling Point	
416	7/30/90	8/2/90	Upper Camp	B-18	dissolves	no	no-green	-	yes	-	-	5.18	1.00	-	-	Water
427	7/29/90	7/31/90	Upper Camp	A-71	dissolves	no	no/color	-	yes	-	-	6.54	1.00	-	-	Water
432	7/28/90	7/29/90	Upper Camp	A-12	dissolves	no	yellow	-	yes	-	-	7.15	1.04	-	-	Water
437	7/28/90	7/31/90	Upper Camp	A-31	dissolves	no	yellow	-	yes	-	-	6.17	1.00	-	-	Water
444	7/28/90	7/31/90	Upper Camp	A-22	dissolves	no	yellow	-	yes	-	-	6.17	1.00	-	-	Water
455	7/30/90	8/1/90	Upper Camp	A-92	dissolves	no	no-green	-	yes	-	-	6.43	1.00	-	-	Water
459	7/28/90	7/29/90	Upper Camp	A-7	dissolves	no	yellow	-	yes	-	orange	5.21	1.02	-	-	Water
461	7/28/90	7/31/90	Upper Camp	A-36	dissolves	no	yellow	-	yes	-	-	6.42	1.00	-	-	Water
470	7/28/90	7/31/90	Upper Camp	A-35	dissolves	no	yellow	-	yes	-	-	6.20	1.00	-	-	Water
472	7/28/90	7/31/90	Upper Camp	A-48	dissolves	no	yellow	-	yes	-	-	4.78	1.00	-	-	Water
474	7/28/90	7/29/90	Upper Camp	A-14	dissolves	no	yellow	-	yes	-	-	6.31	1.03	-	-	Water
477	7/28/90	7/31/90	Upper Camp	A-29	dissolves	no	yellow	-	yes	-	-	6.11	1.00	-	-	Water
486	7/28/90	7/31/90	Upper Camp	A-17	dissolves	no	no/color	-	yes	-	-	6.45	1.02	-	-	Water
487	7/28/90	7/31/90	Upper Camp	A-20	dissolves	no	yellow	-	yes	-	-	7.12	1.00	-	-	Water
509	7/28/90	8/3/90	Upper Camp	B-60	dissolves	no	no-green	-	yes	-	-	5.07	1.00	-	-	Water
517	7/30/90	8/1/90	Creek	A-75	dissolves	no	no-green	-	yes	-	-	5.11	1.00	-	-	Water
520	-	8/1/90	Staging Area	B-7	dissolves	no	no-green	-	yes	-	-	6.58	1.00	-	-	Water
522	7/30/90	8/2/90	Upper Camp	B-35	dissolves	no	no-green	-	yes	-	-	6.78	1.00	-	-	Water
523	7/30/90	8/3/90	Upper Camp	B-49	dissolves	no	no-green	-	yes	-	-	4.62	1.02	-	-	Water
527	7/28/90	7/31/90	Upper Camp	A-67	dissolves	no	no/flame	-	yes	-	-	6.82	1.00	-	-	Water
537	7/30/90	8/1/90	Upper Camp	A-81	dissolves	no	no-green	-	yes	-	-	6.34	1.00	-	-	Water
554	7/29/90	8/1/90	Upper Camp	A-85	dissolves	no	no-green	-	yes	-	-	6.16	1.00	-	-	Water
558	7/30/90	8/1/90	White Alice	A-94	dissolves	no	no-green	-	yes	-	-	6.64	1.00	-	-	Water
575	7/28/90	7/31/90	Upper Camp	A-32	dissolves	no	yellow	-	yes	-	-	5.23	1.00	-	-	Water
581	7/30/90	8/2/90	Power Line	B-21	dissolves	no	no-green	-	yes	-	-	6.20	1.00	-	-	Water
602	7/28/90	7/31/90	Upper Camp	A-38	dissolves	no	orange	-	yes	-	-	3.77	1.00	-	-	Water
632	7/28/90	7/31/90	White Alice	A-37	dissolves	no	yellow	-	yes	-	-	6.31	1.00	-	-	Water
635	7/30/90	8/1/90	Upper Camp	A-88	dissolves	no	no-green	-	yes	-	-	5.19	1.00	-	-	Water
649	7/30/90	8/2/90	Upper Camp	B-17	dissolves	no	no-green	-	yes	-	-	5.01	1.00	-	-	Water
651	-	8/2/90	Staging Area	B-45	dissolves	no	no-green	-	yes	-	-	5.68	1.00	-	-	Water
652	7/30/90	8/2/90	Upper Camp	B-28	dissolves	no	no-green	-	yes	-	-	6.28	1.00	-	-	Water
655	7/30/90	7/31/90	Upper Camp	A-68	dissolves	no	no-color	-	yes	-	-	6.30	1.00	-	-	Water
663	7/28/90	7/31/90	Upper Camp	A-23	dissolves	no	yellow	-	yes	-	-	5.73	1.00	-	-	Water
665	7/30/90	8/3/90	Upper Camp	B-42	dissolves	no	no-green	-	yes	-	-	5.03	1.00	-	-	Water
720	-	8/1/90	White Alice	B-23	dissolves	no	no-green	-	yes	-	-	6.50	1.00	-	-	Water

Classification of Unknowns

Sample No.	Date Taken	Analysis Date	Location	Lab. Book & Pg. No.	TESTS											Results
					H2O Solubility	Combustibility	Chlorine Hot Wire	Iodine Crystal	Water Test (effervesce)	Chlor-d-test 1000	Iron	Ph	Specific Gravity	Flash Point	Boiling Point	
561	7/30/90	8/2/90	Lower Tram	B-36	dissolves	no	no-green	-	slowly	-	-	7.71	1.05	-	102°C	Antifreeze
561A(1)	7/30/90	8/2/90	Lower Tram	B-36	floats	flash	no-green	-	slightly	-	-	7.80	1.05	-	103°C	Antifreeze
642	8/2/90	8/3/90	U/C Tram	B-65	dissolves	flash-out(2)	no-green	-	no	-	-	6.66	±1.1	-	>130°C	Antifreeze
904	8/2/90	8/3/90	U/C Tram	B-71	dissolves	flash-out(2)	no-green	-	no	-	-	6.73	>1	-	120°C	Antifreeze
905	8/2/90	8/3/90	U/C Tram	B-61	dissolves	flash-out(2)	no-green	-	no	-	-	7.56	1.-1.1	-	114°C	Antifreeze
1103	7/31/90	8/2/90	White Alice	B-25	dissolves	flash-out(2)	no-green	-	no	-	-	7.15	1.10	-	106°C	Antifreeze
217	7/30/90	8/2/90	White Alice	B-37	floats	yes	no-green	red/bwn	-	-	-	-	0.81	30°C	-	Aviation Fuel
228	7/29/90	7/31/90	White Alice	A-57	floats	yes	orange	orange/bwn	-	-	-	-	(3)	28°C	-	Aviation Fuel
688	7/30/90	8/3/90	White Alice	B-58	floats	yes	no-green	red/bwn	-	-	-	-	0.81	36°C	-	Aviation Fuel
159	7/30/90	8/3/90	White Alice	B-78	floats	yes	no-green	no red	-	-	-	-	-	-	-	Cresote
238	7/29/90	8/3/90	White Alice	B-69	floats	yes	no-green	no red	no	negative	-	5.34	-	-	-	Cresote
591	7/28/90	8/3/90	Upper Camp	B-75	floats	yes	no-green	-	-	-	-	-	-	-	-	Cresote
734(4)	7/31/90	8/4/90	White Alice	B-76	floats	yes	-	-	-	positive	-	8.21	-	-	-	Diazinon/Oil/H2O
734A(5)	7/31/90	8/4/90	White Alice	B-76	dissolves	no	-	-	yes	-	-	8.00	-	-	-	Diazinon/Oil/H2O
17	7/29/90	8/3/90	Upper Camp	B-64	floats	yes	no-green	red/bwn	-	-	-	-	0.88	90°C	-	Fuel Oil
22	7/29/90	8/3/90	Upper Camp	B-53	floats	yes	no-green	red/bwn	-	-	-	-	0.87	74°C	-	Fuel Oil
64	7/30/90	8/1/90	Upper Camp	A-95	floats	yes	no-green	red/bwn	-	-	-	-	0.87	72°C	-	Fuel Oil
163	7/30/90	8/3/90	White Alice	B-43	floats	yes	no-green	red/bwn	-	-	-	-	(3)	52°C	-	Fuel Oil
170	7/30/90	8/3/90	White Alice	B-48	floats	yes	no-green	red/bwn	-	-	-	-	0.81	40°C	-	Fuel Oil
170A(1)	7/30/90	8/3/90	White Alice	B-48	floats	yes	no-green	red/bwn	-	-	-	-	0.81	41°C	-	Fuel Oil
172	7/29/90	7/31/90	White Alice	A-61	floats	yes	orange	red/bwn	-	-	-	-	0.81	52°C	-	Fuel Oil
173	7/29/90	7/31/90	White Alice	A-56	floats	yes	orange	red/bwn	-	-	-	-	0.81	59°C	-	Fuel Oil
181	7/29/90	7/31/90	White Alice	A-62	floats	yes	orange	red/bwn	-	-	-	-	(3)	40°C	-	Fuel Oil
182	7/29/90	7/31/90	White Alice	A-53	floats	yes	orange	red/bwn	-	-	-	-	0.81	39°C	-	Fuel Oil
184	7/29/90	7/31/90	White Alice	A-54	floats	yes	orange	red/bwn	-	-	-	-	0.81	47°C	-	Fuel Oil
199	7/29/90	8/2/90	White Alice	B-34	floats	yes	no-green	red/bwn	-	-	-	-	0.81	52°C	-	Fuel Oil
224	7/29/90	7/31/90	White Alice	A-60	floats	yes	orange	red/bwn	-	-	-	-	0.81	60°C	-	Fuel Oil
225	7/30/90	8/3/90	White Alice	B-56	floats	yes	no-green	red/bwn	-	-	-	-	0.81	43°C	-	Fuel Oil
230	7/29/90	7/31/90	White Alice	A-58	floats	yes	orange	red/bwn	-	-	-	-	0.81	56°C	-	Fuel Oil
239	7/29/90	7/31/90	White Alice	A-55	floats	yes	orange	red/bwn	-	-	-	-	0.81	40°C	-	Fuel Oil
1136	7/30/90	8/1/90	Staging Area	A-90	floats	yes	no-green	red/bwn	-	-	-	-	0.81	50°C	-	Fuel Oil
578	7/29/90	8/3/90	Upper Camp	B-66	floats	yes	no-green	red/bwn	-	-	-	-	0.86	84°C	-	Fuel Oil
664	7/30/90	8/3/90	Upper Camp	B-63	floats	yes	no-green	red/bwn	-	-	-	-	0.85	60°C	-	Fuel Oil
680	7/30/90	8/1/90	White Alice	A-91	floats	yes	no-green	red/bwn	-	-	-	-	0.81	38°C	-	Fuel Oil
681	7/30/90	8/3/90	White Alice	B-54	floats	yes	no-green	red/bwn	-	-	-	-	0.81	40°C	-	Fuel Oil

Classification of Unknowns

Sample No.	Date Taken	Analysis Date	Location	Lab. Book & Pg. No.	TESTS											Results
					H2O Solubility	Combustibility	Chlorine Hot Wire	Iodine Crystal	Water Test (effervesce)	Chlor-d-test 1000	Iron	Ph	Specific Gravity	Flash Point	Boiling Point	
687	7/29/90	7/31/90	White Alice	A-63	floats	yes	orange	red/bwn	-	-	-	-	(3)	58°C	-	Fuel Oil
698	7/30/90	8/2/90	White Alice	A-97	floats	yes	no-green	red/bwn	-	-	-	-	0.81	50°C	-	Fuel Oil
707	7/29/90	7/31/90	White Alice	A-52	floats	yes	no-green	rd/orange	-	-	-	-	0.80	48°C	-	Fuel Oil
736	7/30/90	8/2/90	White Alice	B-30	floats	yes	no-green	red/bwn	-	-	-	-	0.81	38°C	-	Fuel Oil
847	8/1/90	8/2/90	Upper Camp	A-99	floats	yes	no-green	red/bwn	-	-	-	-	0.87	76°C	-	Fuel Oil
924	7/30/90	8/3/90	Upper Camp	B-73	floats	yes	no-green	red/bwn	-	-	-	-	0.87	74°C	-	Fuel Oil
1156	8/6/90	8/6/90	White Alice	B-82	floats	yes	no-green	red/bwn	-	-	-	-	0.87	76°C	-	Fuel Oil
1156A(1)	8/6/90	8/6/90	White Alice	B-82	floats	yes	no-green	red/bwn	-	-	-	-	0.87	-	-	Fuel Oil
58(4)	7/31/90	8/3/90	Upper Camp	B-68	floats	yes	no-green	dk. bwn	-	-	-	-	(3)	(3)	-	Fuel Oil/Water
58(5)	7/31/90	8/3/90	Upper Camp	B-68	dissolves	no	no-green	-	yes	-	-	5.12	1.00	(3)	-	Fuel Oil/Water
384(4)	7/29/90	8/2/90	Upper Camp	A-100	floats	yes	no-green	red/bwn	-	-	-	-	-	(3)	-	Fuel Oil/Water
384(5)	7/29/90	8/2/90	Upper Camp	A-100	dissolves	no	no-green	-	yes	-	-	-	(3)	-	-	Fuel Oil/Water
851(4)	7/29/90	8/3/90	Upper Camp	B-67	floats	Yes	no-green	Rust	-	purple	-	-	(3)	(3)	-	Fuel Oil/Water
851(5)	7/29/90	8/3/90	Upper Camp	B-67	dissolves	no	no-green	-	yes	-	-	5.00	(3)	-	-	Fuel Oil/Water
261	7/29/90	7/31/90	Garage/WA	A-59	floats	no	orange	brown	-	-	-	-	<0.8	-	-	Gasoline-Leaded
1001	7/30/90	8/1/90	Upper Camp	A-96	floats	yes	no-green	red-bwn	-	-	-	-	<0.8	-	-	Gasoline/Leaded
580	7/30/90	8/1/90	Power Line	A-80	dissolves	no	no-green	-	yes	-	-	5.24	1.00	-	-	Graphite Grease
599(6)	7/30/90	8/1/90	Upper Camp	A-78	dissolves	no	no-color	-	yes	-	-	6.09	1.00	-	-	Graphite Grease
599(7)	7/30/90	8/1/90	Upper Camp	A-78(8)	sinks	-	no-color	-	-	-	-	6-8.	-	-	-	Graphite Grease
1154	8/6/90	8/6/90	Road to T/C	B-80	dissolves	no	no-green	-	yes	-	-	5.74	1.00	-	100°C	H2O/Graphite
1154A(1)	8/6/90	8/6/90	Road to T/C	B-80	dissolves	no	no-green	-	yes	-	-	5.82	1.00	-	-	H2O/Graphite
39	7/30/90	8/2/90	Upper Camp	B-33	dissolves	yes	no-green	red-brn	-	negative	-	-	-	-	-	Oil
171	7/30/90	8/3/90	White Alice	B-74	floats	yes	no-green	-	-	purple	-	-	-	-	-	Oil
899	8/2/90	8/3/90	U/C Tram	B-62	floats	yes	no-green	no-red	-	-	-	-	-	-	-	Oil
1017	7/30/90	8/3/90	Upper Camp	B-72	floats	yes	no-green	no-red	-	negative	-	-	-	-	-	Oil
641	8/2/90	8/3/90	U/C Tram	B-70	floats	no	-	-	-	positive	-	-	-	-	-	Oil - PCB
144(4)	7/30/90	8/1/90	Upper Camp	B-27	floats	no	no-green	-	-	(3)	-	-	-	-	-	Oil/Water
144(5)	7/30/90	8/1/90	Upper Camp	B-27	dissolves	no	no-green	-	yes	-	-	3.84	1.00	-	-	Oil/Water
153(4)	7/30/90	8/4/90	White Alice	B-77	floats	yes	no-green	-	-	negative	-	-	-	-	-	Oil/Water
153(5)	7/30/90	8/4/90	White Alice	B-77	dissolves	no	-	-	yes	-	-	7-8.	-	-	-	Oil/Water
404	7/30/90	8/2/90	Upper Camp	B-32	floats	yes	-	red-brn	-	negative	-	-	-	-	-	Oil/Water PCB?
659	7/31/90	7/31/90	White Alice	A-66(9)	slowly	-	no-yellow	-	-	-	-	10.06	-	-	-	Soap
1	7/30/90	8/2/90	Base Camp	B-19	dissolves	no	no-green	-	yes	-	-	6.55	1.00	-	-	Water
2	7/30/90	8/2/90	Base Camp	B-22	dissolves	no	no-green	-	yes	-	-	6.59	1.00	-	-	Water

Classification of Unknowns

Sample No.	Date Taken	Analysis Date	Location	Lab. Book & Pg. No.	TESTS											Results
					H2O Solubility	Combustibility	Chlorine Hot Wire	Iodine Crystal	Water Test (effervesce)	Chlor-d-lect 1000	Iron	Ph	Specific Gravity	Flash Point	Boiling Point	
732	7/30/90	8/2/90	Staging Area	B-13	dissolves	no	no-green	-	yes	-	-	6.45	1.01	-	-	Water
735	7/30/90	8/1/90	White Alice	A-86	dissolves	no	no-green	-	yes	-	-	5.92	1.00	-	-	Water
842	7/30/90	7/31/90	Upper Camp	A-72	dissolves	no	no-color	-	yes	-	-	6.74	1.00	-	-	Water
860	7/29/90	8/2/90	Upper Camp	B-10	dissolves	no	no-green	-	yes	-	-	4.94	1.01	-	-	Water
861	7/29/90	7/31/90	Upper Camp	A-51	dissolves	no	yellow	-	yes	-	-	6.34	1.00	-	-	Water
862	7/29/90	7/31/90	Upper Camp	A-49	dissolves	no	yellow	-	yes	-	-	6.34	1.00	-	-	Water
891	7/29/90	8/3/90	U/C Tram	B-51	dissolves	no	no-green	-	yes	-	-	5.59	1.00	-	-	Water
900	7/30/90	8/1/90	Upper Camp	A-74	dissolves	no	no-green	-	yes	-	-	5.98	1.00	-	-	Water
906	7/28/90	7/31/90	U/C Tram	A-44	dissolves	no	yellow	-	yes	-	-	6.06	1.00	-	-	Water
909	7/29/90	8/2/90	U/C Tram	B-9	dissolves	no	no-green	-	yes	-	-	5.46	1.00	-	-	Water
915	7/29/92	8/3/90	U/C Tram	B-41	dissolves	no	no-green	-	yes	-	-	4.93	1.00	-	-	Water
916	7/30/90	8/2/90	U/C Tram	B-14	dissolves	no	no-green	-	yes	-	-	6.44	1.00	-	-	Water
923	7/30/90	8/3/90	Upper Camp	B-59	dissolves	no	no-green	-	yes	-	-	5.07	1.00	-	-	Water
991	7/31/90	8/2/90	Upper Camp	B-26	dissolves	no	no-green	-	yes	-	-	6.34	1.00	-	-	Water
1155	8/6/90	8/6/90	Road to T/C	B-81	dissolves	no	no-green	-	yes	-	-	6.43	1.00	-	100°C	Water
1155A(1)	8/6/90	8/6/90	Road to T/C	B-81	dissolves	no	no-green	-	yes	-	-	6.47	1.00	-	-	Water

NOTES:

- (1) Split Sample
- (2) Match flashed then went out
- (3) Not enough sample to run test
- (4) Top layer of sample
- (5) Bottom layer of sample
- (6) Liquid layer of sample
- (7) Sludge layer of sample
- (8) Sample #599 had an Acid Test run on the bottom layer, the results were "no rxn".
- (9) Sample #659 had a Hexane and Alcohol Solubility Test run on it, the results were, "no emulsification; orange".

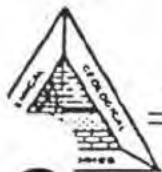
Comparison of Split Samples

Sample No.	Date Taken	Analysis Date	Location	Lab. Book & Pg. No.	TESTS											Results
					H2O Solubility	Combustibility	Chlorine Hot Wire	Iodine Crystal	Water Test (effervesces)	Chlor-d-lect 1000	Iron	Ph	Specific Gravity	Flash Point	Boiling Point	
561	7/30/90	8/2/90	Lower Tram	B-36	dissolves	no	no-green	-	slowly	-	-	7.71	1.05	-	102°C	Antifreeze
561A(1)	7/30/90	8/2/90	Lower Tram	B-36	floats	flash	no-green	-	slightly	-	-	7.80	1.05	-	103°C	Antifreeze
170	7/30/90	8/3/90	White Alice	B-48	floats	yes	no-green	red/bwn	-	-	-	-	0.81	40°C	-	Fuel Oil
170A(1)	7/30/90	8/3/90	White Alice	B-48	floats	yes	no-green	red/bwn	-	-	-	-	0.81	41°C	-	Fuel Oil
1156	8/6/90	8/3/90	White Alice	B-82	floats	yes	no-green	red/bwn	-	-	-	-	0.87	76°C	-	Fuel Oil
1156A(1)	8/6/90	8/3/90	White Alice	B-82	floats	yes	no-green	red/bwn	-	-	-	-	0.87	-	-	Fuel Oil
1154	8/6/90	8/6/90	Road to T/C	B-80	dissolves	no	no-green	-	yes	-	-	5.74	1.00	-	100°C	H2O/Graphite
1154A(1)	8/6/90	8/6/90	Road to T/C	B-80	dissolves	sinks	no-green	-	yes	-	-	5.82	1.00	-	100°C	H2O/Graphite
38	7/29/90	8/1/90	Upper Camp	A-82	dissolves	no	orange	-	yes	-	-	5.17	1.00	-	-	Water
38A(1)	7/29/90	8/5/90	Upper Camp	A-82	dissolves	no	orange	-	yes	-	-	5.24	1.00	-	99°C	Water
140	7/30/90	8/3/90	Upper Camp	B-47	dissolves	no	no-green	-	yes	-	-	6.53	1.00	-	99° C	Water
140A(1)	7/30/90	8/3/90	Upper Camp	B-47	dissolves	no	no-green	-	yes	-	-	6.48	1.00	-	99° C	Water
289	7/28/90	7/29/90	Upper Camp	A-6	dissolves	no	yellow	-	yes	-	-	6.77	1.00	-	-	Water
289A(1)	7/28/90	7/29/90	Upper Camp	A-6	dissolves	no	no-green	-	yes	-	-	6.83	1.02	-	100C	Water
405	7/30/90	8/1/90	Upper Camp	A-93	dissolves	no	no-green	-	yes	-	-	6.21	1.00	-	-	Water
405A(1)	7/30/90	8/1/90	Upper Camp	A-93	dissolves	no	no-green	-	yes	-	-	6.17	1.00	-	-	Water
1155	8/6/90	8/6/90	Road to T/C	B-81	dissolves	no	no-green	-	yes	-	-	6.43	1.00	-	100°C	Water
1155A(1)	8/6/90	8/6/90	Road to T/C	B-81	dissolves	no	no-green	-	yes	-	-	6.47	1.00	-	-	Water

NOTES: (1) Split Sample

Results of Duplicate Samples

Sample No.	Field Results	Arsenic mg/l	Barium mg/l	Cadmium mg/l	Chromium mg/l	Lead mg/l	Mercury mg/l	Selenium mg/l	Silver mg/l	Glycol		Polychlor Biphenyls	PCB Aroclor No.	Flash Point Deg. F	Boiling Pt	
										Ethylene %	Propylene %				Start Deg. F	End Deg. F
561	Antifreeze	ND (0.1)	ND (0.5)	ND (0.5)	ND (0.5)	0.7	0.004	ND (0.1)	ND (0.5)	30.4	1.01	-	-	-	-	-
39	Oil	ND (0.5)	ND (1)	ND (0.5)	ND (1)	ND (1)	ND (0.2)	ND (0.5)	ND (1)	-	-	ND(1.0)	-	-	-	-
171	Oil	ND (0.5)	ND (1.7)	ND (0.5)	ND (1)	ND (1)	ND (0.2)	ND (0.5)	ND (1)	-	-	ND(1.0)	-	-	-	-
1017	Oil	ND (0.5)	827	ND (0.5)	ND (1)	ND (7.3)	ND (0.2)	ND (0.5)	ND (1)	-	-	11.3	1243	-	-	-
641	Oil,PCB	ND (0.5)	ND(1)	ND (0.5)	ND (1)	ND (1)	ND (0.2)	ND (0.5)	ND (1)	-	-	ND(1.0)	-	-	-	-
153	Oil	ND (0.1)	ND(1)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.004)	ND (0.1)	ND (0.5)	-	-	ND(1.0)	-	-	-	-
404	Oil, PCB	ND (0.1)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.004)	ND (0.1)	ND (0.5)	-	-	ND(1.0)	-	-	-	-
144	Oil	ND (0.1)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.004)	ND (0.1)	ND (0.5)	-	-	8.11	1242	-	-	-
159	Creosote	-	-	-	-	-	-	-	-	-	-	ND(1.0)	-	-	-	-
238	Creosote	-	-	-	-	-	-	-	-	-	-	ND(1.0)	-	-	-	-
591	Creosote	-	-	-	-	-	-	-	-	-	-	ND(1.0)	-	-	-	-
FO-1	Comp. Fuel	ND (0.5)	ND (1)	ND (0.5)	ND (1)	ND (1)	ND (0.2)	ND (0.5)	ND (1)	-	-	ND(1.0)	-	125	342	505
FO-2	Comp. Fuel	ND (0.5)	ND (1)	ND (0.5)	ND (1)	ND (1)	ND (0.2)	ND (0.5)	ND (1)	-	-	ND(1.0)	-	119	325	520
FO-3	Comp. Fuel	ND (0.5)	ND (1)	ND (0.5)	ND (1)	ND (1)	ND (0.2)	ND (0.5)	ND (1)	-	-	ND(1.0)	-	128	314	605
261	Gasoline	-	-	-	-	0.9	-	-	-	-	-	-	-	<70	89	426
1103	Antifreeze	ND (0.1)	ND (0.5)	ND (0.5)	ND (0.5)	0.6	ND (0.02)	ND (0.1)	ND (0.5)	47.9	-	-	-	-	-	-
905	Antifreeze	ND (0.1)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.02)	ND (0.1)	ND (0.5)	37.4	-	-	-	-	-	-
904	Antifreeze	2.52	ND (0.5)	ND (0.5)	ND (0.5)	0.7	ND (0.004)	ND (0.1)	ND (0.5)	61.4	3.68	-	-	-	-	-
642	Antifreeze	1.11	ND (0.5)	ND (0.5)	ND (0.5)	0.7	ND (0.02)	ND (0.1)	ND (0.5)	84.2	3.68	-	-	-	-	-

**CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.**

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FEDERAL TAX I.D. # (b)(6)

ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:24

Client Sample ID: LAB ANTIFREEZE DRUM #561

PWSID :UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hr..

Preserved with :AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed :SEP 20 90

Laboratory Supervisor :STEPHEN C. EDE

Released By : *[Signature]*

Send Reports to:

1)URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 1

Matrix: LIQUID

Parameter Tested	Result	Units	Method	Allowable Limits
EP TOXICITY*METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC	ND(0.1)	mg/l	EP SW846	5.0 maximum
BARIUM	ND(0.5)	mg/l	EP SW846	100.0 maximum
CADMIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
CHROMIUM	ND(0.5)	mg/l	EP SW846	5.0 maximum
LEAD	0.7	mg/l	EP SW846	5.0 maximum
MERCURY	0.0040	mg/l	EP SW846	0.2 maximum
SELENIUM	ND(0.1)	mg/l	EP SW846	1.0 maximum
SILVER	ND(0.5)	mg/l	EP SW846	5.0 maximum
GLICOL	**30.4 + 1.01	%	GC	

Sample SAMPLE #899 WAS NOT RECEIVED.

Remarks: MATRIX - AQUEOUS.

**GLICOL RESULTS- % ETHYLENE/PROPYLENE 30.4 + 1.01.

10 Tests Performed

ND- None Detected

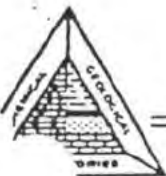
NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:25

Client Sample ID: 39 LAB OIL DRUM #39

PWSID :UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with :AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed :SEP 20 90

Laboratory Supervisor :STEPHEN C. EDE

Released By :

Send Reports to:

1)URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Sapl ID: 2

Matrix: OIL

Parameter Tested	Result	Units	Method	Allowable Limits
EP TOXICITY METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC	ND(0.5)	mg/l	EPSW846	5.0 maximum
BARIUM	ND(1)	mg/l	EPSW846	100.0 maximum
CADMIUM	ND(0.5)	mg/l	EPSW846	1.0 maximum
CHROMIUM	ND(1)	mg/l	EPSW846	5.0 maximum
LEAD	ND(1)	mg/l	EPSW846	5.0 maximum
MERCURY	ND(0.2)	mg/l	EPSW846	0.2 maximum
SELENIUM	ND(0.5)	mg/l	EPSW846	1.0 maximum
SILVER	ND(1)	mg/l	EPSW846	5.0 maximum
POLYCHLORINATED BIPHENYLS-OIL	ND(1.0)	ppm	EPA 8080	
-----AROCLOR				

Sample SAMPLE #899 WAS NOT RECEIVED. MATRIX -OIL

Remarks:

11 Tests Performed

ND- None Detected

A- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LI-Less Than, GI-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:25

Client Sample ID: 171 LAB OIL DRUM #171

PWSID : UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with : AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O. # NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed : SEP 20 90

Laboratory Supervisor : STEPHEN C. ZDE

Released By : *[Signature]* C. Zde

Send Reports to:

1) URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 3

Matrix: OIL

Parameter Tested	Result	Units	Method	Allowable Limits
EP TOXICITY*METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC	ND(0.5)	mg/l	EP SW846	5.0 maximum
BARIUM	ND(1.7)	mg/l	EP SW846	100.0 maximum
CADMIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
CHROMIUM	ND(1)	mg/l	EP SW846	5.0 maximum
LEAD	ND(1)	mg/l	EP SW846	5.0 maximum
MERCURY	ND(0.2)	mg/l	EP SW846	0.2 maximum
SELENIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
SILVER	ND(1)	mg/l	EP SW846	5.0 maximum
POLYCHLORINATED BIPHENYLS-OIL	ND(1.0)	ppm	EPA 8080	
-----AROCLOR	----			

Sample SAMPLE #899 WAS NOT RECEIVED. MATRIX -OIL.

Remarks:

11 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 27 90 @ 09:03

Client Sample ID: 1017 LAB OIL DRUM #1017

PWSID :UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with :AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed :SEP 20 90

Laboratory Supervisor :STEPHEN C. EDE

Released By : *Stephen C. Ede*

Send Reports to:

1)URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 4

Matrix: OIL

Parameter Tested	Result	Units	Method	Allowable Limits
EP TOXICITY*METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC .	ND(0.5)	mg/l	EP SW846	5.0 maximum
BARIUM	827	mg/l	EP SW846	100.0 maxin
CADMIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
CHROMIUM	ND(1)	mg/l	EP SW846	5.0 maximum
LEAD	ND(7.3)	mg/l	EP SW846	5.0 maximum
MERCURY	ND(0.2)	mg/l	EP SW846	0.2 maximum
SELENIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
SILVER	ND(1)	mg/l	EP SW846	5.0 maximum
POLYCHLORINATED BIPHENYLS-OIL	11.3	ppm	EPA 8080	
-----AROCLOR	1242			

Sample SAMPLE #899 WAS NOT RECEIVED.

Remarks: MATRIX - OIL.

11 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:27

Client Sample ID: 641 LAB OIL DRUM #641

PWSID : OA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with : AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O. # NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed : SEP 20 90

Laboratory Supervisor : STEPHEN C. EDE

Released By : *[Signature]*

Send Reports to:

1) URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Snpl ID: 5

Matrix: OIL

Parameter Tested	Result	Units	Method	Allowable Limits
EP TOXICITY*METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC	ND(0.5)	mg/l	EP SW846	5.0 maximum
BARIUM	ND(1)	mg/l	EP SW846	100.0 maximum
CADMIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
CHROMIUM	ND(1)	mg/l	EP SW846	5.0 maximum
LEAD	ND(1)	mg/l	EP SW846	5.0 maximum
MERCURY	ND(0.2)	mg/l	EP SW846	0.2 maximum
SELENIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
SILVER	ND(1)	mg/l	EP SW846	5.0 maximum
POLYCHLORINATED BIPHENYLS-OIL	ND(1.0)	ppm	EPA 8080	
-----AROCLO	----			

Sample SAMPLE #899 WAS NOT RECEIVED.

Remarks: MATRIX - OIL

11 Tests Performed

ND- None Detected

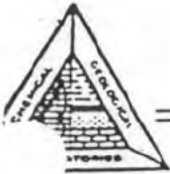
NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 27 90 @ 09:18

Client Sample ID: 153 LAB OIL DRUM #153

PWSID :UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 15:10 hrs.

Preserved with :AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

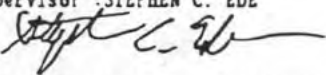
P.O.# NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed :SEP 20 90

Laboratory Supervisor :STEPHEN C. EDE

Released By : 

Send Reports to:

1)URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 6

Matrix: OTHER

Parameter Tested	Result	Units	Method	Allowable Limits
EP TOXICITY*METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC	ND(0.1)	ng/l	EPSW846	5.0 maximum
BARIUM	ND(1.0)	ng/l	EPSW846	100.0 maxim
CADMIUM	ND(0.5)	ng/l	EPSW846	1.0 maximum
CHROMIUM	ND(0.5)	ng/l	EPSW846	5.0 maximum
LEAD	ND(0.5)	ng/l	EPSW846	5.0 maximum
MERCURY	ND(0.0040)	ng/l	EPSW846	0.2 maximum
SELENIUM	ND(0.1)	ng/l	EPSW846	1.0 maximum
SILVER	ND(0.5)	ng/l	EPSW846	5.0 maximum
POLYCHLORINATED BIPHENYLS-OIL	ND(1.0)	ppm	EPA 8080	
-----AROCLO				

Sample SAMPLE #899 WAS NOT RECEIVED.

Remarks: MATRIX - AQUEOUS.

11 Tests Performed

ND- None Detected

MA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26187

Date Report Printed: SEP 27 90 @ 09:21

Client Sample ID: 404 LAB OIL DRUM #404

PWSID :UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 15:10 hrs.

Preserved with :AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered by : JERRY DREWS

Analysis Completed :SEP 20 90

Laboratory Supervisor :STEPHEN C. EDE

Released By :

Send Reports to:

1)URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Snpl ID: 7

Matrix: OTHER

Allowable
Limits

Parameter Tested

Result

Units

Method

EP TOXICITY*METALS ONLY

n/a

n/a

EP SW846

n/a

ARSENIC

ND(0.1)

mg/l

EPSW846

5.0 maximum

BARIUM

ND(0.5)

mg/l

EPSW846

100.0 maximum

CADMIUM

ND(0.5)

mg/l

EPSW846

1.0 maximum

CHROMIUM

ND(0.5)

mg/l

EPSW846

5.0 maximum

LEAD

ND(0.5)

mg/l

EPSW846

5.0 maximum

MERCURY

ND(0.0040)

mg/l

EPSW846

0.2 maximum

SELENIUM

ND(0.1)

mg/l

EPSW846

1.0 maximum

SILVER

ND(0.5)

mg/l

EPSW846

5.0 maximum

POLYCHLORINATED BIPHENYLS-OIL

ND(1.0)

ppm

EPA 8080

-----AROCIOR

Sample SAMPLE #899 WAS NOT RECEIVED.

Remarks: MATRIX - AQUEOUS.

11 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 27 90 @ 09:29

Client Sample ID: 144 LAB OIL DRUM #144

PWSID :UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with :AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed :SEP 20 90

Laboratory Supervisor :STEPHEN C. EDE

Released By : *[Signature]*

Send Reports to:

1)URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 8

Matrix: OTHER

Parameter Tested	Result	Units	Method	Allowable Limits
EP TOXICITY*METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC	ND(0.1)	mg/l	EP SW846	5.0 maximum
BARIUM	ND(0.5)	mg/l	EP SW846	100.0 maximum
CADMIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
CHROMIUM	ND(0.5)	mg/l	EP SW846	5.0 maximum
LEAD	ND(0.5)	mg/l	EP SW846	5.0 maximum
MERCURY	ND(0.0040)	mg/l	EP SW846	0.2 maximum
SELENIUM	ND(0.1)	mg/l	EP SW846	1.0 maximum
SILVER	ND(0.5)	mg/l	EP SW846	5.0 maximum
POLYCHLORINATED BIPHENYLS-OIL	8.11	ppm	EPA 8080	
-----AROCLO	1242			

Sample SAMPLE 1899 WAS NOT RECEIVED.

Remarks: MATRIX - AQUEOUS.

11 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)

ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:30

Client Sample ID: 159 CREOSOTE DRUM #159

PWSID : UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with : AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O. # NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed : SEP 21 90

Laboratory Supervisor : STEPHEN C. EDE

Released By :

Send Reports to:

1) URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 9

Matrix: OIL

Parameter Tested

Result

Units

Method

Allowable
Limits

POLYCHLORINATED BIPHENYLS-OIL

ND(1.0)

ppm

EPA 8080

-----AROCLOR

Sample SAMPLE #899 WAS NOT RECEIVED.

Remarks:

2 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. #(b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:32

Client Sample ID: 591 CREOSOTE DRUM #591

PWSID : UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with : AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O. # NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed : SEP 22 90

Laboratory Supervisor : STEPHEN C. EDE

Released By : *Stephen C. Ede*

Send Reports to:

1) URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 11

Matrix: LIQUID

Parameter Tested	Result	Units	Method	Allowable Limits
POLYCHLORINATED BIPHENYLS-OIL	ND(1.0)	ppm	EPA 8080	
-----AROCLOR				

Sample
Remarks:

2 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:32

Client Sample ID: FO-1 COMPOSITE FUEL OILS

PWSID : UA

Collected AUG 6 90 @ 08:10 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with : AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O. # NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed : SEP 20 90

Laboratory Supervisor : STEPHEN C. EDE

Released By : *Stephen C. Ede*

Send Reports to:

1) URS CONSULTANTS, INC.

2)

Special PROJECT 1CT0-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 12

Matrix: OIL

Parameter Tested	Result	Units	Method	Allowable Limits
POLYCHLORINATED BIPHENYLS-OIL	ND(1.0)	ppa	EPA 8080	
-----AROCLOR	----			
EP TOXICITY*METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC	ND(0.5)	ng/l	EP SW846	5.0 maximum
BARIUM	ND(1)	ng/l	EP SW846	100.0 maximum
CADMIUM	ND(0.5)	ng/l	EP SW846	1.0 maximum
CHROMIUM	ND(1)	ng/l	EP SW846	5.0 maximum
LEAD	ND(1)	ng/l	EP SW846	5.0 maximum
MERCURY	ND(0.2)	ng/l	EP SW846	0.2 maximum
SELENIUM	ND(0.5)	ng/l	EP SW846	1.0 maximum
SILVER	ND(1)	ng/l	EP SW846	5.0 maximum
FLASH POINT	125	degrees F	ASTM D56	+/- 2 degree
ENGLER DISTILLATION	n/a	n/a	ASTM D-86	n/a
INITIAL BOILING POINT	342	degrees F	ASTM D86	
5	362	degrees F	ASTM D86	
10	368	degrees F	ASTM D86	
15	372	degrees F	ASTM D86	
20	380	degrees F	ASTM D86	
25	384	degrees F	ASTM D86	
30	388	degrees F	ASTM D86	
35	386	degrees F	ASTM D86	
40	396	degrees F	ASTM D86	
45	404	degrees F	ASTM D86	
50	408	degrees F	ASTM D86	
55	414	degrees F	ASTM D86	
60	420	degrees F	ASTM D86	
65	426	degrees F	ASTM D86	
70	432	degrees F	ASTM D86	
75	438	degrees F	ASTM D86	
80	446	degrees F	ASTM D86	
85	454	degrees F	ASTM D86	
90	466	degrees F	ASTM D86	



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26187

Date Report Printed: SEP 24 90 @ 18:31

Client Sample ID: 238 CREOSOTE DRUM #238

PWSID : UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with : AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O. # NONE RECEIVED

Req #

Ordered by : JERRY DREWS

Analysis Completed : SEP 22 90

Laboratory Supervisor : STEPHEN C. EDE

Released By : *[Signature]*

Send Reports to:

1) URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 10

Matrix: LIQUID

Parameter Tested	Result	Units	Method	Allowable Limits
POLYCHLORINATED BIPHENYLS-OIL	ND(1.0)	ppm	EPA 8080	
-----AROCLOR				

Sample

Remarks:

2 Tests Performed

ND- None Detected

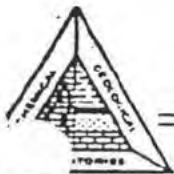
NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:34

Client Sample ID: F0-1 COMPOSITE FUEL OILS

PWSID :UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with :AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed :SEP 20 90

Laboratory Supervisor :STEPHEN C. EDE

Released By : *Stephen C. Ede*

Send Reports to:

1)URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Snpl ID: 12

Matrix: OIL

Parameter Tested	Result	Units	Method	Allowable Limits
95	482	degrees F	ASTM D86	
END POINT	505	degrees F	ASTM D86	
RECOVERY	99.0	%	ASTM D86	
RESIDUE	1.0	%	ASTM D86	
LOSS	ND(0.1)	%	ASTM D86	

Sample MATRIX - OIL. BOILING POINT DISTRIBUTION CONSISTENT WITH

Remarks: A MIDDLE DISTILLATE.

37 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:35

Client Sample ID: FO-2 COMPOSITE FUEL OILS

PWSID : UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:16 hrs.

Preserved with : AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O. # NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed : SEP 22 90

Laboratory Supervisor : STEPHEN C. EDE

Released By : *Stephen C. Ede*

Send Reports to:

1) URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Snpl ID: 13

Matrix: OIL

Parameter Tested	Result	Units	Method	Allowable Limits
POLYCHLORINATED BIPHENYLS-OIL	ND(1.0)	ppm	EPA 8080	
-----AROCLOR	-----			
EP TOXICITY METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC	ND(0.5)	mg/l	EP SW846	5.0 maximum
BARIUM	ND(1)	mg/l	EP SW846	100.0 maximum
CADMIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
CHROMIUM	ND(1)	mg/l	EP SW846	5.0 maximum
LEAD	ND(1)	mg/l	EP SW846	5.0 maximum
MERCURY	ND(0.2)	mg/l	EP SW846	0.2 maximum
SELENIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
SILVER	ND(1)	mg/l	EP SW846	5.0 maximum
FLASH POINT	119	degrees F	ASTM D56	+/- 2 degree
ENGLER DISTILLATION	n/a	n/a	ASTM D-86	n/a
INITIAL BOILING POINT	325	degrees F	ASTM D86	
5	351	degrees F	ASTM D86	
10	365	degrees F	ASTM D86	
15	374	degrees F	ASTM D86	
20	380	degrees F	ASTM D86	
25	384	degrees F	ASTM D86	
30	389	degrees F	ASTM D86	
35	393	degrees F	ASTM D86	
40	398	degrees F	ASTM D86	
45	404	degrees F	ASTM D86	
50	410	degrees F	ASTM D86	
55	415	degrees F	ASTM D86	
60	421	degrees F	ASTM D86	
65	426	degrees F	ASTM D86	
70	432	degrees F	ASTM D86	
75	438	degrees F	ASTM D86	
80	446	degrees F	ASTM D86	
85	455	degrees F	ASTM D86	
90	466	degrees F	ASTM D86	



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:36

Client Sample ID: F0-2 COMPOSITE FUEL OILS

PWSID :UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with :AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed :SEP 22 90

Laboratory Supervisor :STEPHEN C. EDE

Released By : *Stephen C. Ede*

Send Reports to:

1)URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Sapl ID: 13

Matrix: OIL

Parameter Tested	Result	Units	Method	Allowable Limits
95	482	degrees F	ASTM D86	
END POINT	520	degrees F	ASTM D86	
RECOVERY	99.0	%	ASTM D86	
RESIDUE	0.7	%	ASTM D86	
LOSS	0.3	%	ASTM D86	

Sample MATRIX - OIL. BOILING POINT DISTRIBUTION CONSISTENT WITH

Remarks: A MIDDLE DISTILLATE.

37 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:37

Client Sample ID: FG-3 COMPOSITE FUEL OILS

MSID : UA

collected AUG 6 90 @ 08:30 hrs.

received AUG 7 90 @ 16:10 hrs.

reserved with : AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed : SEP 20 90

Laboratory Supervisor : STEPHEN C. EDE

Released By : *[Signature]*

Send Reports to:

1) URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 14

Matrix: OIL

Parameter Tested	Result	Units	Method	Allowable Limits
POLYCHLORINATED BIPHENYLS-OIL	ND(1.0)	ppm	EPA 8080	
-----AROCLOR	----			
EP TOXICITY*METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC	ND(0.5)	mg/l	EP SW846	5.0 maximum
BARIUM	ND(1)	mg/l	EP SW846	100.0 maximum
CADMIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
CHROMIUM	ND(1)	mg/l	EP SW846	5.0 maximum
LEAD	ND(1)	mg/l	EP SW846	5.0 maximum
MERCURY	ND(0.2)	mg/l	EP SW846	0.2 maximum
SELENIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
SILVER	ND(1)	mg/l	EP SW846	5.0 maximum
FLASH POINT	128	degrees F	ASTM D56	+/- 2 degree
ENGLER DISTILLATION	n/a	n/a	ASTM D-86	n/a
INITIAL BOILING POINT	314	degrees F	ASTM D86	
5	360	degrees F	ASTM D86	
10	378	degrees F	ASTM D86	
15	390	degrees F	ASTM D86	
20	402	degrees F	ASTM D86	
25	413	degrees F	ASTM D86	
30	422	degrees F	ASTM D86	
35	431	degrees F	ASTM D86	
40	440	degrees F	ASTM D86	
45	450	degrees F	ASTM D86	
50	460	degrees F	ASTM D86	
55	4168	degrees F	ASTM D86	
60	479	degrees F	ASTM D86	
65	490	degrees F	ASTM D86	
70	500	degrees F	ASTM D86	
75	514	degrees F	ASTM D86	
80	528	degrees F	ASTM D86	
85	543	degrees F	ASTM D86	
90	558	degrees F	ASTM D86	



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:38

Client Sample ID: F0-3 COMPOSITE FUEL OILS

PWSID :UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with :AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed :SEP 20 90

Laboratory Supervisor :STEPHEN C. EDE

Released By : *Stephen C. Ede*

Send Reports to:

1)URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVI ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Snpl ID: 14

Matrix: OIL

Parameter Tested	Result	Units	Method	Allowable Limits
95	580	degrees F	ASTM D86	
END POINT	605	degrees F	ASTM D86	
RECOVERY	99.0	%	ASTM D86	
RESIDUE	0.5	%	ASTM D86	
LOSS	0.5	%	ASTM D86	

Sample MATRIX - OIL. BOILING POINT DISTRIBUTION CONSISTENT WITH

Remarks: A MIDDLE DISTILLATE.

37 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)

ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 25 90 @ 12:48



Client Sample ID: 261 GASOLINE DRUM #261
PWSID : UA
Collected AUG 6 90 @ 08:30 hrs.
Received AUG 7 90 @ 16:10 hrs.
Preserved with : AS REQUIRED

Client Name : URS CONSULTANTS, INC.
Client Acct : URSCONS
P.O. # NONE RECEIVED
Req #
Ordered By : JERRY DREWS

Analysis Completed : SEP 7 90
Laboratory Supervisor : STEPHEN C. EDE
Released By : *[Signature]* C. EDE

Send Reports to:
1) URS CONSULTANTS, INC.
2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.
Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 15

Matrix: OIL

Parameter Tested	Result	Units	Method	Allowable Limits
LEAD	0.9	gm/GAL	AA	
FLASH POINT	LT 70	degrees F	ASTM D56	+/- 2 degree
ENGLER DISTILLATION	n/a	n/a	ASTM D-86	n/a
INITIAL BOILING POINT	89	degrees F	ASTM D86	
5	108	degrees F	ASTM D86	
10	118	degrees F	ASTM D86	
15	128	degrees F	ASTM D86	
20	138	degrees F	ASTM D86	
25	149	degrees F	ASTM D86	
30	160	degrees F	ASTM D86	
35	170	degrees F	ASTM D86	
40	182	degrees F	ASTM D86	
45	194	degrees F	ASTM D86	
50	206	degrees F	ASTM D86	
55	219	degrees F	ASTM D86	
60	233	degrees F	ASTM D86	
65	248	degrees F	ASTM D86	
70	266	degrees F	ASTM D86	
75	288	degrees F	ASTM D86	
80	314	degrees F	ASTM D86	
85	339	degrees F	ASTM D86	
90	354	degrees F	ASTM D86	
95	406	degrees F	ASTM D86	
END POINT	426	degrees F	ASTM D86	
RECOVERY	98.1	%	ASTM D86	
RESIDUE	0.8	%	ASTM D86	
LOSS	1.1	%	ASTM D86	



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FEDERAL TAX I.D. (b)(6)

ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 25 90 @ 12:48

Client Sample ID: 261 GASOLINE DRUM #261

PWSID : UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with : AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed : SEP 7 90

Laboratory Supervisor : STEPHEN C. EDE

Released By : *[Signature]*

Send Reports to:

1) URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 15

Matrix: OIL

Allowable

Parameter Tested

Result

Units

Method

Limits

Sample BOILING POINT DISTRIBUTION CONSISTENT WITH GASOLINE. POS-

Remarks: SIBLY AUTOMOTIVE GASOLINE.

27 Tests Performed

ND- None Detected

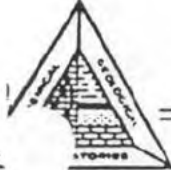
NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)

ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:41

Client Sample ID: 1103 ANTIFREEZE DRUM #1103

PWSID : UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with : AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed : SEP 20 90

Laboratory Supervisor : STEPHEN C. EDE

Released By : *Stephen C. Ede*

Send Reports to:

1) URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 16

Matrix: LIQUID

Parameter Tested	Result	Units	Method	Allowable Limits
EP TOXICITY*METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC	ND(0.1)	mg/l	EP SW846	5.0 maximum
BARIUM	ND(0.5)	mg/l	EP SW846	100.0 maximum
CADMIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
CHROMIUM	ND(0.5)	mg/l	EP SW846	5.0 maximum
LEAD	0.6	mg/l	EP SW846	5.0 maximum
MERCURY	ND(0.02)	mg/l	EP SW846	0.2 maximum
SELENIUM	ND(0.1)	mg/l	EP SW846	1.0 maximum
SILVER	ND(0.5)	mg/l	EP SW846	5.0 maximum
GLYCOL	ETHYLENE 47.9	%	GC	

Sample MATRIX - AQUEOUS.

Remarks:

10 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. #(b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:42

Client Sample ID: 905 ANTIFREEZE DRUM #905

PWSID :UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with :AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed :SEP 20 90

Laboratory Supervisor :STEPHEN C. EDE

Released By : *[Signature]*

Send Reports to:

1)URS CONSULTANTS, INC.

2)

Special PROJECT 1CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 17

Matrix: LIQUID

Parameter Tested	Result	Units	Method	Allowable Limits
EP TOXICITY*METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC	ND(0.1)	mg/l	EPSW846	5.0 maximum
BARIUM	ND(0.5)	mg/l	EPSW846	100.0 maximum
CADMIUM	ND(0.5)	mg/l	EPSW846	1.0 maximum
CHROMIUM	ND(0.5)	mg/l	EPSW846	5.0 maximum
LEAD	ND(0.5)	mg/l	EPSW846	5.0 maximum
MERCURY	ND(0.02)	mg/l	EPSW846	0.2 maximum
SELENIUM	ND(0.1)	mg/l	EPSW846	1.0 maximum
SILVER	ND(0.5)	mg/l	EPSW846	5.0 maximum
GLYCOL	ETHYLENE 37.4	%	GC	

Sample MATRIX - AQUEOUS.

Remarks:

10 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 25 90 @ 12:48

Client Sample ID: 904 ANTIFREEZE DRUM #904

PWSID :UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with :AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered By : JERRY DREWS

Analysis Completed :SEP 20 90

Laboratory Supervisor :STEPHEN C. EDE

Released By :

Send Reports to:

1)URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 18

Matrix: LIQUID

Parameter Tested	Result	Units	Method	Allowable Limits
EP TOXICITY*METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC	2.52	mg/l	EP SW846	5.0 maximum
BARIUM	ND(0.5)	mg/l	EP SW846	100.0 maximum
CADMIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
CHROMIUM	ND(0.5)	mg/l	EP SW846	5.0 maximum
LEAD	0.7	mg/l	EP SW846	5.0 maximum
MERCURY	ND(0.0040)	mg/l	EP SW846	0.2 maximum
SELENIUM	ND(0.1)	mg/l	EP SW846	1.0 maximum
SILVER	ND(0.5)	mg/l	EP SW846	5.0 maximum
GLYCOL	** 61.4 + 3.68	%	GC	

Sample **GLYCOL RESULT - % ETHYLENE + PROPYLENE 61.4 + 3.68.

Remarks:

10 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

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FEDERAL TAX I.D. (b)(6)



ANALYSIS REPORT BY SAMPLE for Work Order # 26387

Date Report Printed: SEP 24 90 @ 18:43

Client Sample ID: 642 ANTIFREEZE DRUM #642

PMSID :UA

Collected AUG 6 90 @ 08:30 hrs.

Received AUG 7 90 @ 16:10 hrs.

Preserved with :AS REQUIRED

Client Name : URS CONSULTANTS, INC.

Client Acct : URSCONS

P.O.# NONE RECEIVED

Req #

Ordered By : JERRY BREWS

Analysis Completed :SEP 20 90

Laboratory Supervisor :STEPHEN C. EDE

Released By : *Stephen C. Ede*

Send Reports to:

1)URS CONSULTANTS, INC.

2)

Special PROJECT #CTO-18 US NAVY ST. LAWRENCE ISLAND, ALASKA.

Instruct:

Chemlab Ref #: 902923 Lab Smpl ID: 19

Matrix: LIQUID

Parameter Tested	Result	Units	Method	Allowable Limits
EP TOXICITY*METALS ONLY	n/a	n/a	EP SW846	n/a
ARSENIC	1.11	mg/l	EP SW846	5.0 maximum
BARIUM	ND(0.5)	mg/l	EP SW846	100.0 maximum
CADMIUM	ND(0.5)	mg/l	EP SW846	1.0 maximum
CHROMIUM	ND(0.5)	mg/l	EP SW846	5.0 maximum
LEAD	0.7	mg/l	EP SW846	5.0 maximum
MERCURY	ND(0.02)	mg/l	EP SW846	0.2 maximum
SELENIUM	ND(0.1)	mg/l	EP SW846	1.0 maximum
SILVER	ND(0.5)	mg/l	EP SW846	5.0 maximum
GLYCOL	** 84.2 + 3.68	%	GC	

Sample ** GLYCOL RESULT - % ETHYLENE + PROPYLENE ** 84.2 + 3.68

Remarks:

10 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable

APPENDIX D

DRUM CONTENTS AND TOTALS

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposal	Hazard Class
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			0				
		Switch Box		1000 lb		DRM0	PCB Solid
		Transformer		1000 lb		DRM0	PCB Solid
		Transformer		1000 lb		DRM0	PCB Solid
				1000 lb			
			3				
		Switch Box		1500 lb		DRM0	PCB Solid
		Switch Box		1500 lb		DRM0	PCB Solid
		Switch Box		1500 lb		DRM0	PCB Solid
				1500 lb			
			3				
		Transformer		200 lb		DRM0	PCB Solid
		Transformer		200 lb		DRM0	PCB Solid
				200 lb			
			2				
		Transformer		300 lb		DRM0	PCB Solid
		Transformer		300 lb		DRM0	PCB Solid
		Transformer		300 lb		DRM0	PCB Solid
		Transformer		300 lb		DRM0	PCB Solid
				300 lb			
			4				
		Transformer		400 lb		DRM0	PCB Solid
		Transformer		400 lb		DRM0	PCB Solid
		Transformer		400 lb		DRM0	PCB Solid
		Transformer		400 lb		DRM0	PCB Solid
				400 lb			
			4				
		Transformer		500 lb		DRM0	PCB Solid
		Transformer		500 lb		DRM0	PCB Solid
		Transformer		500 lb		DRM0	PCB Solid
				500 lb			
			3				
		Transformer		700 lb		DRM0	PCB Solid
		Transformer		700 lb		DRM0	PCB Solid
		Transformer		700 lb		DRM0	PCB Solid
		Transformer		700 lb		DRM0	PCB Solid
		Transformer		700 lb		DRM0	PCB Solid
		Transformer		700 lb		DRM0	PCB Solid
				700 lb			
			6				

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Dispose	Hazard Class
		Transformer		800 lb		DRM0	PCB Solid
		Transformer		800 lb		DRM0	PCB Solid
		Transformer		800 lb		DRM0	PCB Solid
		Transformer		800 lb		DRM0	PCB Solid
		Transformer		800 lb		DRM0	PCB Solid
		Transformer		800 lb		DRM0	PCB Solid
		Transformer		800 lb		DRM0	PCB Solid
		Transformer		800 lb		DRM0	PCB Solid
				800 lb			
				8			
				33			
				33			
158	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
271	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
545	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
560	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
584	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
585	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
604	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
926	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
927	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
928	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
929	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
930	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
969	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
970	B/C Road	Single Drum	Bung	Empty		DRM0	Salvage
				Empty			
				14			
	B/C Road			14			
	14			14			
1	Base Camp	Single Drum	Bung	Empty		DRM0	Salvage
2	Base Camp	Single Drum	Bung	Empty		DRM0	Salvage
1174	Base Camp	Single Drum	Open	Empty		DRM0	Salvage
				Empty			
				3			
	Base Camp	Single Drum	Bung	Non Hazardous Waste		DRM0	Salvage
	Base Camp	Single Drum	Bung	Non Hazardous Waste		DRM0	Salvage
	Base Camp	Single Drum	Bung	Non Hazardous Waste		DRM0	Salvage
	Base Camp	Single Drum	Bung	Non Hazardous Waste		DRM0	Salvage
	Base Camp	Single Drum	Bung	Non Hazardous Waste		DRM0	Salvage
	Base Camp	Single Drum	Bung	Non Hazardous Waste		DRM0	Salvage
				Non Hazardous Waste			

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Dispose	Hazard Class
223	Base Camp	Single Drum	Polypack	6 Sewer Sludge		Sound	Non Hazardous
618	Base Camp	Single Drum	Polypack	Sewer Sludge		Sound	Non Hazardous
619	Base Camp	Single Drum	Polypack	Sewer Sludge		Sound	Non Hazardous
623	Base Camp	Single Drum	Polypack	Sewer Sludge		Sound	Non Hazardous
				Sewer Sludge			
				4			
549	Base Camp	Single Drum	Polypack	Waste, Incinerated/Sound		Sound	Non Hazardous
550	Base Camp	Single Drum	Polypack	Waste, Incinerated/Sound		Sound	Non Hazardous
551	Base Camp	Single Drum	Polypack	Waste, Incinerated/Sound		Sound	Non Hazardous
				Waste, Incinerated/Sound			
				3			
	Base Camp			16			
	16			16			
155	Creek	Single Drum	Bung	Empty		DRMO	Salvage
156	Creek	Single Drum	Bung	Empty		DRMO	Salvage
516	Creek	Single Drum	Bung	Empty		DRMO	Salvage
517	Creek	Single Drum	Bung	Empty		DRMO	Salvage
519	Creek	Single Drum	Bung	Empty		DRMO	Salvage
				Empty			
				5			
	Creek			5			
	5			5			
248	Garage/WA	Single Drum	Bung	Empty		DRMO	Salvage
249	Garage/WA	Single Drum	Bung	Empty		DRMO	Salvage
252	Garage/WA	Single Drum	Bung	Empty		DRMO	Salvage
253	Garage/WA	Single Drum	Bung	Empty		DRMO	Salvage
255	Garage/WA	Single Drum	Bung	Empty		DRMO	Salvage
256	Garage/WA	Single Drum	Bung	Empty		DRMO	Salvage
259	Garage/WA	Single Drum	Bung	Empty		DRMO	Salvage
260	Garage/WA	Single Drum	Bung	Empty		DRMO	Salvage
				Empty			
				8			
254	Garage/WA	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
				Fuel - Aviation			
				1			
261	Garage/WA	Single Drum	Bung	Fuel - Gasoline		TSD	Flammable Liquid
				Fuel - Gasoline			
				1			
	Garage/W			10			
	10			10			
561	Lower Trem	Single Drum	Bung	Antifreeze		TSD	Non Regulated

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Dispose	Hazard Class
				Antifreeze			
				1			
504	Lower Tram	Single Drum	Bung	Empty		DRM0	Salvage
507	Lower Tram	Single Drum	Bung	Empty		DRM0	Salvage
541	Lower Tram	Single Drum	Bung	Empty		DRM0	Salvage
542	Lower Tram	Single Drum	Bung	Empty		DRM0	Salvage
543	Lower Tram	Single Drum	Bung	Empty		DRM0	Salvage
544	Lower Tram	Single Drum	Bung	Empty		DRM0	Salvage
620	Lower Tram	Single Drum	Bung	Empty		DRM0	Salvage
675	Lower Tram	Single Drum	Bung	Empty		DRM0	Salvage
982	Lower Tram	Single Drum	Bung	Empty		DRM0	Salvage
1129	Lower Tram	Single Drum	Bung	Empty		DRM0	Salvage
				Empty			
				10			
622	Lower Tram	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
646	Lower Tram	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
971	Lower Tram	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
972	Lower Tram	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
				PCB Oil			
				4			
552	Lower Tram	Single Drum	Bung	PCB Waste - Solid		TSD	PCB Solid
654	Lower Tram	Single Drum	Bung	PCB Waste - Solid		TSD	PCB Solid
730	Lower Tram	Single Drum	Bung	PCB Waste - Solid		TSD	PCB Solid
1128	Lower Tram	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
				PCB Waste - Solid			
				4			
				Lower Tra			
				19			
				19			
157	Power Line	Single Drum	Bung	Empty		DRM0	Salvage
269	Power Line	Single Drum	Bung	Empty		DRM0	Salvage
270	Power Line	Single Drum	Bung	Empty		DRM0	Salvage
274	Power Line	Single Drum	Bung	Empty		DRM0	Salvage
580	Power Line	Single Drum	Bung	Empty		DRM0	Salvage
581	Power Line	Single Drum	Bung	Empty		DRM0	Salvage
582	Power Line	Single Drum	Bung	Empty		DRM0	Salvage
				Empty			
				7			
				Power Lin			
				7			
				7			
250	Road to T/C	Single Drum	Bung	Empty		DRM0	Salvage
624	Road to T/C	Single Drum	Bung	Empty		DRM0	Salvage
628	Road to T/C	Single Drum	Bung	Empty		DRM0	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
640	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
644	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
676	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
724	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
728	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
919	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
920	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
1152	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
1153	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
1154	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
1155	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
1157	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
1158	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
1159	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
1160	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
1161	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
1162	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
1163	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
1164	Road to T/C	Single Drum	Bung	Empty		DRMO	Salvage
				Empty			
				22			
	Road to T/			22			
	22			22			
772	Slope 2-3	Single Drum	Bung	Crushed		DRMO	Salvage
774	Slope 2-3	Single Drum	Bung	Crushed		DRMO	Salvage
775	Slope 2-3	Single Drum	Bung	Crushed		DRMO	Salvage
776	Slope 2-3	Single Drum	Bung	Crushed		DRMO	Salvage
781	Slope 2-3	Single Drum	Bung	Crushed		DRMO	Salvage
782	Slope 2-3	Single Drum	Bung	Crushed		DRMO	Salvage
845	Slope 2-3	Single Drum	Bung	Crushed		DRMO	Salvage
				Crushed			
				7			
535	Slope 2-3	Single Drum	Bung	Empty		DRMO	Salvage
563	Slope 2-3	Single Drum	Bung	Empty		DRMO	Salvage
566	Slope 2-3	Single Drum	Bung	Empty		DRMO	Salvage
583	Slope 2-3	Single Drum	Bung	Empty		DRMO	Salvage
656	Slope 2-3	Single Drum	Bung	Empty		DRMO	Salvage
741	Slope 2-3	Single Drum	Bung	Empty		DRMO	Salvage
742	Slope 2-3	Single Drum	Bung	Empty		DRMO	Salvage
743	Slope 2-3	Single Drum	Bung	Empty		DRMO	Salvage
744	Slope 2-3	Single Drum	Bung	Empty		DRMO	Salvage
745	Slope 2-3	Single Drum	Bung	Empty		DRMO	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
746	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
748	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
750	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
751	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
752	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
753	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
754	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
755	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
756	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
761	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
762	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
763	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
764	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
765	Slope 2-3	Single Drum	Bung	Empty		DRM0	Salvage
767	Slope 2-3	Single Drum	Bung	Empt		DRM0	Salvage
768	Slope 2-3	Single Drum	Bung	Empt		DRM0	Salvage
769	Slope 2-3	Single Drum	Bung	Empt		DRM0	Salvage
				Emp		DRM0	Salvage
				27			
				34			
				34			
911	Slope 3-4	Single Drum	Bung	Crus		DRM0	Salvage
				Crus d			
				1			
826	Slope 3-4	Single Drum	Bung	Empt		DRM0	Salvage
827	Slope 3-4	Single Drum	Bung	Empt		DRM0	Salvage
830	Slope 3-4	Single Drum	Bung	Empt		DRM0	Salvage
831	Slope 3-4	Single Drum	Bung	Empt		DRM0	Salvage
832	Slope 3-4	Single Drum	Bung	Empt		DRM0	Salvage
834	Slope 3-4	Single Drum	Bung	Empt		DRM0	Salvage
835	Slope 3-4	Single Drum	Bung	Empt		DRM0	Salvage
836	Slope 3-4	Single Drum	Bung	Empt		DRM0	Salvage
839	Slope 3-4	Single Drum	Bung	Empt		DRM0	Salvage
840	Slope 3-4	Single Drum	Bung	Empt		DRM0	Salvage
1130	Slope 3-4	Single Drum	Bung	Empt		DRM0	Salvage
				Emp			
				11			
				12			
				12			
243	Staging Area	Single Drum	Polypack	Decor	olution	Drain	Non Hazardous
520	Staging Area	Single Drum	Polypack	Decor	olution	Drain	Non Hazardous
651	Staging Area	Single Drum	Polypack	Decor	olution	Drain	Non Hazardous

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
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				Decon Solution			
				3			
1146	Staging Area	Single Drum	Polypack	PCB Solid-Cargo Net, Chains	TSD		PCB Solid
				PCB Solid-Cargo Net, Chains			
				1			
244	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
251	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
267	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
518	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
540	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
556	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
616	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
617	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
647	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
657	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
658	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
673	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
716	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
717	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
718	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
719	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
721	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
722	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
723	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
727	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
729	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
731	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
732	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
733	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
740	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
865	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
977	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
983	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
984	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
985	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
986	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
987	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
989	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
990	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
993	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
994	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid
1142	Staging Area	Single Drum	Polypack	PCB Waste - Solid	TSD		PCB Solid

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
1147	Staging Area	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
1148	Staging Area	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
1149	Staging Area	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
1151	Staging Area	Single Drum	Open	PCB Waste - Solid		TSD	PCB Solid
1165	Staging Area	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
1167	Staging Area	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
1168	Staging Area	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
1169	Staging Area	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
1170	Staging Area	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
1171	Staging Area	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
1172	Staging Area	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
1175	Staging Area	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
1176	Staging Area	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
				PCB Waste - Solid			
				50			
				54			
				54			
642	U/C Tram	Single Drum	Bung	Waste Antifreeze		TSD	Non Hazardous
904	U/C Tram	Single Drum	Bung	Waste Antifreeze		TSD	Non Hazardous
				Waste Antifreeze			
				2			
587	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
636	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
637	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
638	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
639	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
878	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
888	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
889	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
890	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
891	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
895	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
896	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
897	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
899	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
902	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
905	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
906	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
907	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
908	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
909	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
915	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
916	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
917	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
918	U/C Tram	Single Drum	Bung	Empty		DRMO	Salvage
				Empty			
				24			
641	U/C Tram	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
				PCB Oil			
				1			
903	U/C Tram	Single Drum	Polypeck	PCB Oil - Cans		TSD	PCB Liquid
				PCB Oil - Cans			
				1			
	U/C Tram			28			
	28			28			
591	Upper Camp	Single Drum	Bung	Creosote		TSD	Combustible Liquid
				Creosote			
				1			
375	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
557	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
567	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
586	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
757	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
773	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
785	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
788	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
790	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
791	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
793	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
795	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
796	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
798	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
799	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
801	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
802	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
803	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
804	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
807	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
808	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
809	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
810	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
814	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
846	Upper Camp	Single Drum	Bung	Crushed		DRMO	Salvage
871	Upper Camp	Single Drum	Open	Crushed		DRMO	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
872	Upper Camp	Single Drum	Open	Crushed		DRM0	Salvage
912	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
913	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
932	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
933	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
934	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
937	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
938	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
940	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
941	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
943	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
944	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
946	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
952	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
953	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
954	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
957	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
959	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
960	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
961	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
962	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
963	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
965	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
966	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
967	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
968	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
969	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
978	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
979	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
980	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
1116	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
1117	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
1121	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
1122	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
1123	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
1127	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
1140	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
1510	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
1511	Upper Camp	Single Drum	Bung	Crushed		DRM0	Salvage
				Crushed			
				65			
942	Upper Camp	Single Drum	Bung	Crushed- 2 Drums		DRM0	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Dispose	Hazard Class
				Crushed- 2 Drums			
				1			
3	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
4	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
5	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
6	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
7	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
8	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
9	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
10	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
11	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
12	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
13	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
14	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
15	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
16	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
18	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
19	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
20	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
21	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
23	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
24	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
25	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
26	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
27	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
28	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
29	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
30	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
31	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
32	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
33	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
34	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
35	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
36	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
37	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
38	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
39	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
40	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
41	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
42	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
43	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	
44	Upper Camp	Single Drum	Bung	Empty	DRM0	Salvage	

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazar d Class
45	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
46	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
47	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
48	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
49	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
50	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
51	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
52	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
53	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
54	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
55	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
56	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
57	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
59	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
60	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
61	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
62	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
63	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
65	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
66	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
67	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
68	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
69	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
70	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
71	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
72	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
73	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
74	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
75	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
76	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
77	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
78	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
79	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
80	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
81	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
82	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
83	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
84	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
85	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
86	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
87	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
88	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
89	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
90	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
91	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
92	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
93	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
94	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
95	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
96	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
97	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
98	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
99	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
100	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
101	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
102	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
103	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
104	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
105	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
106	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
107	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
108	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
109	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
110	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
111	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
112	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
113	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
114	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
115	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
116	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
117	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
118	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
119	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
120	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
121	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
122	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
123	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
124	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
125	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
126	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
127	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
128	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
129	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
130	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
131	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
132	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
133	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
134	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
135	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
136	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
137	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
138	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
139	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
140	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
141	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
142	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
143	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
144	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
145	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
146	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
147	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
148	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
149	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
150	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
211	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
246	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
247	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
277	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
278	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
279	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
280	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
281	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
282	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
283	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
284	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
285	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
286	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
287	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
288	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
289	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
290	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
291	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
292	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
293	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
294	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
295	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Dispose	Hazard Class
296	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
297	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
298	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
299	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
300	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
301	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
302	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
303	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
304	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
305	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
306	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
307	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
308	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
309	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
310	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
311	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
312	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
313	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
314	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
315	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
316	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
317	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
318	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
319	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
320	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
321	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
322	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
323	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
324	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
325	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
326	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
327	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
328	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
329	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
330	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
331	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
332	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
333	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
334	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
335	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
336	Upper Camp	Single Drum	B	Empty		DRM0	Salvage
337	Upper Camp	Single Drum	B	Empty		DRM0	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
338	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
339	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
340	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
341	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
342	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
343	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
344	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
345	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
346	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
348	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
349	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
350	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
351	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
352	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
353	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
354	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
355	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
356	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
357	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
358	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
359	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
360	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
361	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
362	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
363	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
364	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
365	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
366	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
367	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
368	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
369	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
370	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
371	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
372	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
373	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
374	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
376	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
377	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
378	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
379	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
380	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
381	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
382	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
383	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
385	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
386	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
387	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
388	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
389	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
390	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
391	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
392	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
393	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
394	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
395	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
396	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
397	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
398	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
399	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
400	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
401	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
402	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
403	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
405	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
406	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
407	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
408	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
409	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
410	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
411	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
412	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
413	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
414	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
415	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
416	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
417	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
418	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
419	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
420	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
421	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
422	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
423	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
424	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage
425	Upper Camp	Single Drum	Bung	Empt		DRM0	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
426	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
427	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
428	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
429	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
430	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
431	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
432	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
433	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
434	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
435	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
436	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
437	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
437	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
438	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
439	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
440	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
441	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
442	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
443	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
444	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
445	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
446	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
447	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
448	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
449	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
450	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
451	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
452	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
453	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
454	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
455	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
456	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
457	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
458	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
459	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
460	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
461	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
462	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
463	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
464	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
465	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
466	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
467	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
468	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
469	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
470	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
471	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
472	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
473	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
474	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
475	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
476	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
477	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
478	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
479	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
480	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
481	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
482	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
483	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
484	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
485	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
486	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
487	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
488	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
489	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
490	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
491	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
492	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
493	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
494	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
495	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
496	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
497	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
498	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
499	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
500	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
501	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
502	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
503	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
505	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
506	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
508	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
509	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
510	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
511	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
512	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
513	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
514	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
521	Upper Camp	Single Drum	Open	Empty		DRMO	Salvage
522	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
523	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
525	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
526	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
527	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
528	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
529	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
530	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
531	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
532	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
533	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
534	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
536	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
537	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
538	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
539	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
546	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
553	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
554	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
555	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
562	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
568	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
571	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
572	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
573	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
574	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
575	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
576	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
577	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
579	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
588	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
589	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
590	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
595	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
596	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
597	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
598	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
599	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
600	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
601	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
602	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
603	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
608	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
609	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
610	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
611	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
612	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
613	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
614	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
615	Upper Camp	Overpak	Bung	Empty		DRMO	Salvage
621	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
633	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
634	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
635	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
648	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
649	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
650	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
652	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
653	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
655	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
660	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
661	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
662	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
663	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
665	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
666	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
667	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
668	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
669	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
670	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
671	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
726	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
841	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
842	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
843	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
844	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
848	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
849	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage
850	Upper Camp	Single Drum	Bung	Empty		DRMO	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
852	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
853	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
854	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
855	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
856	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
857	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
858	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
859	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
860	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
861	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
862	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
863	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
864	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
866	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
867	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
868	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
869	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
870	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
873	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
874	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
875	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
876	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
877	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
879	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
880	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
881	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
882	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
883	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
884	Upper Camp	Single Drum	Polypack	Empty		DRM0	Salvage
885	Upper Camp	Single Drum	Polypack	Empty		DRM0	Salvage
886	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
887	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
892	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
893	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
894	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
898	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
900	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
901	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
910	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
914	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
922	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
923	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
925	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
988	Upper Camp	Single Drum	Open	Empty		DRM0	Salvage
991	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
992	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1002	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1003	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1004	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1005	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1006	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1009	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1010	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1011	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1012	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1013	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1014	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1016	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1017	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1019	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1021	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1022	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1024	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1026	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1027	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1028	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1029	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1032	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1033	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1035	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1037	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1039	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1040	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1041	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1042	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1043	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1044	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1045	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1046	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1113	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1114	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1131	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1132	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1133	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
1134	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1135	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1137	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1138	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1141	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1166	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1173	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1500	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1501	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1508	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
1509	Upper Camp	Single Drum	Bung	Empty		DRM0	Salvage
				Empty			
				555			
1001	Upper Camp	Single Drum	Bung	Fuel - Gasoline		TSD	Flammable Liquid
				Fuel - Gasoline			
				1			
17	Upper Camp	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
22	Upper Camp	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
58	Upper Camp	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
64	Upper Camp	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
384	Upper Camp	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
578	Upper Camp	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
664	Upper Camp	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
847	Upper Camp	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
851	Upper Camp	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
924	Upper Camp	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
				Fuel - Waste Oil			
				10			
593	Upper Camp	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
594	Upper Camp	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
				PCB Flush			
				2			
404	Upper Camp	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
524	Upper Camp	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
592	Upper Camp	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
605	Upper Camp	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
				PCB Oil			
				4			
547	Upper Camp	Single Drum	Bung	PCB Oil - Cans		TSD	PCB Liquid
				PCB Oil - Cans			
				1			
564	Upper Camp	Single Drum	Polyr	PCB Waste - Solid		TSD	PCB Solid

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
1150	Upper Camp	Single Drum	Open	PCB Waste - Solid PCB Waste - Solid 2		TSD	PCB Solid
565	Upper Camp	Single Drum	Polypack	PCB Waste - Solid/Capacitor PCB Waste - Solid/Capacitor 1		TSD	PCB Solid
	Upper Cam			643			
1103	White Alice	Single Drum	Bung	Waste Antifreeze Waste Antifreeze 1		TSD	Non Hazardous
201	White Alice	Single Drum	Bung	Battery Acid Battery Acid 1		TSD	Corrosive
159	White Alice	Single Drum	Open	Creosote		TSD	Combustible Liquid
238	White Alice	Single Drum	Bung	Creosote Creosote 2		TSD	Combustible Liquid
151	White Alice	Single Drum	Bung	Empty		DRM0	Salvage
152	White Alice	Single Drum	Bung	Empty		DRM0	Salvage
153	White Alice	Single Drum	Bung	Empty		DRM0	Salvage
154	White Alice	Single Drum	Bung	Empty		DRM0	Salvage
245	White Alice	Single Drum	Bung	Empty		DRM0	Salvage
272	White Alice	Single Drum	Bung	Empty		DRM0	Salvage
273	White Alice	Single Drum	Bung	Empty		DRM0	Salvage
558	White Alice	Single Drum	Bung	Empty		DRM0	Salvage
627	White Alice	Single Drum	Bung	Empty		DRM0	Salvage
632	White Alice	Single Drum	Polypack	Empty		DRM0	Salvage
659	White Alice	Single Drum	Bung	Empty		DRM0	Salvage
708	White Alice	Single Drum	Bung	Empty		DRM0	Salvage
735	White Alice	Single Drum	Bung	Empty		DRM0	Salvage
1124	White Alice	Single Drum	Bung	Empty		DRM0	Salvage
1143	White Alice	Single Drum	Bung	Empty Empty 15		DRM0	Salvage
168	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRM0	Flammable Liquid
178	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRM0	Flammable Liquid
190	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRM0	Flammable Liquid
195	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRM0	Flammable Liquid
215	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRM0	Flammable Liquid
217	White Alice	Single Drum	Bung	Fuel - Aviation		TSD	Flammable Liquid
218	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRM0	Flammable Liquid

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
219	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
220	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
226	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
228	White Alice	Single Drum	Bung	Fuel - Aviation		TSD	Flammable Liquid
231	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
232	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
233	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
234	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
236	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
237	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
242	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
264	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
265	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
266	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
688	White Alice	Single Drum	Bung	Fuel - Aviation		TSD	Flammable Liquid
695	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
702	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
712	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
714	White Alice	Single Drum	Bung	Fuel - Aviation	Factory	DRMO	Flammable Liquid
				Fuel - Aviation			
				26			
164	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
165	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
166	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
167	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
169	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
174	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
175	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
176	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
177	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
179	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
180	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
183	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
185	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
186	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
187	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
188	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
189	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
191	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
192	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
193	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid
194	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRMO	Combustible Liquid

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
197	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
198	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
200	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
202	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
203	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
204	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
205	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
206	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
207	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
208	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
209	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
210	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
212	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
213	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
214	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
216	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
221	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
222	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
227	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
229	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
240	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
257	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
258	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
275	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
276	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
677	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
678	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
679	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
682	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
683	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
684	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
685	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
686	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
689	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
690	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
691	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
692	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
693	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
694	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
696	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
697	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
699	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Dispose	Hazard Class
700	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
701	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
703	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
704	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
705	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
706	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
709	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
710	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
711	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
713	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
715	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
1708	White Alice	Single Drum	Bung	Fuel - Stove Oil	Factory	DRM0	Combustible Liquid
Fuel - Stove Oil							
75							
163	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
170	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
172	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
173	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
181	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
182	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
184	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
199	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
224	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
225	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
230	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
239	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
680	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
681	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
687	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
698	White Alice	Single Drum	Bung	Fuel - Waste Oil	Factory	DRM0	Combustible Liquid
707	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
736	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
1136	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
1156	White Alice	Single Drum	Bung	Fuel - Waste Oil		TSD	Not Regulated
Fuel - Waste Oil							
20							
734	White Alice	Single Drum	Bung	Liquid- Diazinon		TSD	Poison
Liquid- Diazinon							
1							
606	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1101	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1104	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
1105	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1106	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1107	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1108	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1109	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1110	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1111	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1112	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1115	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1118	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1119	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1120	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1125	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1126	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
1145	White Alice	Single Drum	Bung	PCB Flush		TSD	PCB Liquid
				PCB Flush			
				18			
268	White Alice	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
569	White Alice	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
570	White Alice	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
629	White Alice	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
645	White Alice	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
725	White Alice	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
973	White Alice	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
974	White Alice	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
975	White Alice	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
976	White Alice	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
1100	White Alice	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
1102	White Alice	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
1144	White Alice	Single Drum	Bung	PCB Oil		TSD	PCB Liquid
				PCB Oil			
				13			
559	White Alice	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
607	White Alice	Single Drum	Bung	PCB Waste - Solid		TSD	PCB Solid
625	White Alice	Single Drum	Open	PCB Waste - Solid		TSD	PCB Solid
626	White Alice	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
672	White Alice	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
674	White Alice	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
720	White Alice	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
737	White Alice	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
738	White Alice	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
739	White Alice	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid

Drum I	Location	Item	Drum Type	Drum Contents	Open/Closed	Disposa	Hazard Class
945	White Alice	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
1139	White Alice	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
1601	White Alice	Single Drum	Polypack	PCB Waste - Solid		TSD	PCB Solid
				PCB Waste - Solid			
				13			
630	White Alice	Single Drum	Polypack	PCB Waste - Solid/10 Capacitor		TSD	PCB Solid
631	White Alice	Single Drum	Polypack	PCB Waste - Solid/10 Capacitor		TSD	PCB Solid
				PCB Waste - Solid/10 Capacitor			
				2			
921	White Alice	Single Drum	Polypack	PCB Waste - Solid/2 Capacitor		TSD	PCB Solid
				PCB Waste - Solid/2 Capacitor			
				1			
235	White Alice	Single Drum	Bung	Roofing Compound-Paint		TSD	Combustible Liquid
241	White Alice	Single Drum	Bung	Roofing Compound-Paint		TSD	Combustible Liquid
				Roofing Compound-Paint			
				2			
160	White Alice	15 Gallon Cans	Open	Waste Grease		DRMO	Not Regulated
161	White Alice	4 Gallon Cans	Open	Waste Grease		DRMO	Not Regulated
162	White Alice	4 Gallon Cans	Open	Waste Grease		DRMO	Not Regulated
				Waste Grease			
				3			
171	White Alice	Single Drum	Bung	Waste Oil		TSD	Not Regulated
				Waste Oil			
				1			
643	White Alice	Single Drum	Bung	Waste Paint		TSD	Flammable Liquid
				Waste Paint			
				1			
	White Alice			195			
	195			195			
	1059			1092			

APPENDIX E

UNIFORM HAZARDOUS WASTE MANIFEST



DEPARTMENT OF THE NAVY

ENGINEERING FIELD ACTIVITY, NORTHWEST
NAVAL FACILITIES ENGINEERING COMMAND
3505 NW ANDERSON HILL ROAD
SILVERDALE, WA 98383-9130

5090-Gen
09ERI/4530
28 Sep 90

Alaska West Express
660 Ocean Dock Road
Anchorage, Alaska 99510

MANIFEST CHANGE

Please note that Manifest 00001 (Generator AK5170000164) was revised in order for each of your trucks to have a manifest outlining specific contents. The previous manifest is now divided up into Manifests 00001-00010 to meet this requirement.

Please sign this acknowledgement of this change and send one copy to each of the following:

Engineering Field Activity, Northwest
3505 NW Anderson Hill Road
Silverdale, WA 98383

URS Consultants, Inc.
3380 "C" Street, Suite 200
Anchorage, AK 99503

You will also need to keep one copy attached to your manifest. Also, a copy of the original manifest is enclosed for your records. If you have any questions, please call me at (206) 476-5775.

Sincerely,

KEVIN W. STIGILE
Head, Installation Restoration Branch
By direction of
the Commanding Officer

Transportation Manager

Encl:

(1) A Copy of the Original Manifest



DEPARTMENT OF THE NAVY

ENGINEERING FIELD ACTIVITY, NORTHWEST
NAVAL FACILITIES ENGINEERING COMMAND
3505 NW ANDERSON HILL ROAD
SILVERDALE, WA 98383-9130

5090-Manifest
09ERI/4535
28 Sep 90

Alaska West Express
660 Ocean Dock Road
Anchorage, Alaska 99510

Dear Sirs:

Elmendorf Air Force Base and Defense Marketing Reutilization and Marketing Office located at Elmendorf Air Force Base, have agreed to receive for temporary storage hazardous and PCB waste under Manifests 00001-00010. Specifically, the Environmental Protection Agency has given written approval to Elmendorf Air Force Base for temporary storage of PCB solids and liquids.

Should you have any questions, please call me at (206) 476-5775.

Sincerely,

A handwritten signature in cursive script, reading "Kevin Stigile", is written over the typed name.

KEVIN STIGILE
Head, Installation Restoration Branch
By direction of
the Commanding Officer

UNIFORM HAZARDOUS
WASTE MANIFEST

Generator: US EPA ID No. AK61700001640000

Manifest
Page 1 of 2 Information in the shaded areas
not required by Federal lawGenerator Name and Address
S. NAVY ENGINEERING FIELD ACTIVITY NW
3505 ANDERSON HILL ROAD NW
SILVERDALE, WA 98383

Generator Phone 206 476-5775

Attn: Dong Thien

A. State Manifest Document Number

3. State Generator ID

5. Transporter 1 Company Name

6. US EPA ID Number

C. State Transporter ID

ALASKA MARINE LINES

WAD070973300

D. Transporter's Phone 206 763 4244

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter ID

F. Transporter's Phone

9. Designated Facility Name and Site Address

10. US EPA ID Number

G. State Facility ID

DRMO

BLDG 22-009

ELMENDORF AFB, AK 99506 AK8570028649

H. Facility's Phone

907-552-4950

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers

13. Total

14. Unit

15. Waste No.

No.	Type	Quantity	Wt/Vol	Waste No.
a. WASTE FUEL OIL COMBUSTABLE LIQUID (KEROSENE, DIESEL) NA1993	30 DF	1500	G (D001)	
b. ✓ RQ PAINT RELATED MATERIAL FLAMMABLE LIQUID (LEAD, MINERAL SPIRITS) NA1263	3 DF	100	G (D001)	(D008)
c. ✓ RQ WASTE BATTERY ELECTRIC STORAGE, WET FILLED WITH ACID CORROSIVE MATERIAL (LEAD, SULFURIC ACID) NA2794	1 DF	200	P (D002)	(D008)
d. ✓ RQ WASTE DIAZINON ORM-A NA2783	1 DF	20	G	

Additional Descriptions for Materials Listed Above

17, 22, 64, 163, 170, 172, 173, 181, 182, 184, 194, 224, 225, 230, 239, 578
664, 660, 681, 687, 698, 707, 736, 847, 924, 1136, 1154, 55,
354, 851

B = 643, 235, 241 C = 201 d = 735

X. Handling Codes for Wastes Listed Above

13. Special Handling Instructions and Additional Information

24 hour Contact phone # 907-563-3559
URS CONSULTANTS

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

X D Thien

Signature

X D Thien

Month Day Year

10/8/90

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

DAVID W. HAUGEN

Month Day Year

10/13/90

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Printed/Typed Name

Signature

Month Day Year

ORIGINAL — RETURN TO GENERATOR

UNIFORM HAZARDOUS
WASTE MANIFEST
(Continuation Sheet)

Generator US EPA ID No

Manifest
Document No

22 Page

Information in the shaded areas is not
required by Federal law

AK6170000164100001

2

Generator's Name
US NAVY ENGINEERING FIELD ACTY N.W
3505 ANDERSON HILL RD. NW
SILVERDALE, WA

L. State Manifest Document Number

M. State Generator's ID

24. Transporter Company Name

25. US EPA ID Number

N. State Transporter's ID

ALASKA MARINE LINES

WAAC 709733.00

O. Transporter's Phone 2067634244

26. Transporter Company Name

27. US EPA ID Number

P. State Transporter's ID

Q. Transporter's Phone

28. US DOT Description (including proper shipping name, hazard class, and D Number)

29. Containers
No Type

30.
Total
Quantity

31.
Unit
Wt./Vol.

R.
Waste No.

a. ✓ WASTE GASOLINE, (LEADED)

FLAMMABLE LIQUID, UN1203

2

D
F

70

G

(D001)
(D008)

b. ✓ WASTE COMBUSTABLE LIQUID, N.O.S.

COMBUSTABLE LIQUID, (CREOSOTE) NA1993

3

D
F

130

G

c. ✓ HAZARDOUS WASTE SUBSTANCE, N.O.S.

ORM-E (ASBESTOS) NA9188 (Solid)

60

D
F

3540

P

d. ✓ WASTE ANTIFREEZE

NOT REGULATED BY DOT

5

D
F

235

G

e. WASTE GREASE

NOT REGULATED BY DOT

3

D
F

140

P

✓ RQ WASTE FUEL, AVIATION, TURBINE

FLAMMABLE LIQUID, UN1863
(KEROSENE, GASOLINE)

3

D
F

150

G

(D001)

g. RQ HAZARDOUS SUBSTANCE, SOLID, N.O.S.

ORM-E (PCBS > 500PPM) NA9188

42

D
F

25000

P

h. RQ HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

ORM-E (PCB > 500PPM) NA9188

50

D
F

2500

G

i. WASTE OIL

NOT REGULATED BY DOT

6

D
F

220

G

5. Additional Descriptions for Materials Listed Above

a = 261, 1001

b = 159, 238, 591

c = SEE ATTACHED

d = 561, 642, 904, 905, 1103

e = 561, 642, 904, 905, 1103

f = 39, 171, 899, 1017, 144, 153

T. Handling Codes for Wastes Listed Above

32. Special Handling Instructions and Additional Information

24 hour Contact phone # 907-563-3559

URS CONSULTANTS

33. Transporter Acknowledgement of Receipt of Materials

Printed/Typed Name

DAVID W. HAUGEN

Signature

David W. Haugen

Date

Month Day Year

08/31/90

34. Transporter Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

35. Discrepancy Indication Space

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.
AK6170000164

Manifest Document No.
0001

2. Page 1 of 1

Information in the shaded areas is not required by Federal law

Generator's Name and Mailing Address

US Navy Engineering Field Activity NW
3505 Anderson Hill Road NW
Silverdale, WA 98383

3. Generator's Phone: 206-476-5775

Attn: Doug Thelin

A. State Manifest Document Number

N/A

B. State Generator's ID

N/A

5. Transporter 1 Company Name

Alaska Marine Lines

6. US EPA ID Number

WA0070973300

C. State Transporter's ID

N/A

D. Transporter's Phone (602) 763-4244

7. Transporter 2 Company Name

Alaska West Express

8. US EPA ID Number

AKD099032682

E. State Transporter's ID

N/A

F. Transporter's Phone (907) 279-4565

9. Designated Facility Name and Site Address

ORMO
Bldg # 22-009
Elmendorf AFB, AK 99506

10. US EPA ID Number

AK9570028649

G. State Facility's ID

N/A

H. Facility's Phone

(907) 552-4950

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

a. WASTE, Fuel Oil
Combustible Liquid
(Kerosene, Diesel)

NA1993

12. Containers

No.

Type

13. Total Quantity

14. Unit Wt/Vol

1. Waste No.

21

DM

1050

G

D-001

Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

KEVIN W. STIGILE

Signature

Kevin W. Stigile

Month Day Year

07 27 90

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

The above named material is properly classified, described, packaged, marked, and labeled, and is proper for transportation according to EPA Regulation (49 CFR Parts 164-165) and DOT Regulation (49 CFR Parts 170-175).

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest

Printed/Typed Name

Signature

Month Day Year

ORIGINAL — RETURN TO GENERATOR

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

AK6170000164

Manifest Document No.

000-2

2. Page 1 of 1

Information in the shaded areas is not required by Federal law

Generator's Name and Mailing Address

US Navy Engineering Field Activity NW
3505 Anderson Hill Road NW
Silverdale, WA 98383

4. Generator's Phone (206) 476-5775

Attn: Doug Thelin

A. State Manifest Document Number

N/A

B. State Generator's ID

N/A

5. Transporter 1 Company Name

Alaska Marine Lines

6. US EPA ID Number

WAD070.973300

C. State Transporter's ID

N/A

D. Transporter's Phone (206) 763-4244

7. Transporter 2 Company Name

Alaska West Express

8. US EPA ID Number

AKD099.032682

E. State Transporter's ID

N/A

F. Transporter's Phone (907) 279-9515

9. Designated Facility Name and Site Address

DRMO
Bldg. # 22-009
Elmendorf AFB, AK 99506

10. US EPA ID Number

AK85.700.28649

G. State Facility's ID

N/A

H. Facility's Phone

(907) 552-4950

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers

13. Total Quantity

14. Unit Wt/Vol

15. Waste No.

HAZ

- a. ☒ WASTE, Fuel Oil
Combustible Liquid (Kerosene, Diesel) NA 1993
- b. ☒ WASTE, Gasoline (Leaded)
Flammable Liquid UN-1203
- c. ☒ WASTE, Paint Related Material
Flammable Liquid (Thinner, Mineral Spirits, Lead) NA 1263
- d. ☒ WASTE, Fuel Aviation, Turbine Engine
Flammable Liquid UN-1863

No.

Type

Quantity

Unit Wt/Vol

Waste No.

9

DM

450

G

D-001

2

DM

100

G

D001
D008

3

DM

150

G

D001
D-005

3

DM

150

G

D-001

Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are packaged, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

KEVIN W. STIGLIE

Signature

Kevin W. Stigle

Month Day Year

09 27 90

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

.

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

.

19. Discrepancy Indication Space

The above named material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to EPA Regulation (40 CFR Parts 260-265) and DOT Regulation (49 CFR Parts 100-175).

Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted on manifest

Printed/Typed Name

Signature

Month Day Year

.

ORIGINAL — RETURN TO GENERATOR

**UNIFORM HAZARDOUS
WASTE MANIFEST
(Continuation Sheet)**

21. Generator's US EPA ID No.

AK6170000164

Manifest
Document No.

0002

22. Page

2 of 2

Information in the shaded areas is not
required by Federal law

23. Generator's Name

US Navy Engineering Field Activity NW
3505 Anderson Hill Road NW
Silverdale, WA 98383

L. State Manifest Document Number

N/A

M. State Generator's ID

N/A

24. Transporter Company Name

Alaska Marine Lines

25. US EPA ID Number

WA0070973300

N. State Transporter's ID

N/A

O. Transporter's Phone (206) 783-4244

26. Transporter Company Name

Alaska West Express

27. US EPA ID Number

AKD099032682

P. State Transporter's ID

N/A

Q. Transporter's Phone (907) 279-9515

28. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)
(H/M)

a. Waste, Combustible Liquid NOS
Combustible Liquid Creosote NA 1993

29. Containers

No Type

3 0M

30.
Total
Quantity

150

31.
Unit
Wt/Vol

G

R.
Waste No.

(U-051)

S. Additional Descriptions for Materials Listed Above

T. Handling Codes for Wastes Listed Above

32. Special Handling Instructions and Additional Information

The above named material is properly identified,
described, packaged, marked and labeled, and is
proper for transportation according to EPA
Regulation (40 CFR Parts 260-267) and DOT
Regulation (49 CFR Parts 100-175).

Signed M. Aubrey Date 9/25/90

33. Transporter Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

34. Transporter Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

Discrepancy Indication Space

ORIGINAL — RETURN TO GENERATOR

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.
AK6170000164

Manifest Document No.
0063

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

Generator's Name and Mailing Address

15 Navy Engineering Field Activity NW
3505 Anderson Hill Road NW
Silverdale, WA 98383
Generator's Phone: 206 476-5775

A. State Manifest Document Number

N/A

B. State Generator's ID

N/A

5. Transporter 1 Company Name

Alaska Marine Lines

6. US EPA ID Number

WA0070973300

C. State Transporter's ID

N/A

D. Transporter's Phone (206) 763-4244

7. Transporter 2 Company Name

Alaska West Express

8. US EPA ID Number

AK0049032682

E. State Transporter's ID

N/A

F. Transporter's Phone (907) 279-9515

9. Designated Facility Name and Site Address

DRMO
Bldg. #22-009
Elmendorf AFB, AK 99506

10. US EPA ID Number

AK8570028649

G. State Facility's ID

N/A

H. Facility's Phone

(907) 552-4950

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

HM

12. Containers

No.

Type

13. Total Quantity

14. Unit Wt/Vol

1. Waste No.

a. ☒ RA Hazardous Substance Solid, NOS
☒ ORM-E (PCB > 500 PPM) NA9188
Contaminated Clothing, Soil, Gloves, Plaster, Chain

28

DM

3010

P

b. ☒ RA Hazardous Substance Liquid, NOS
☒ ORM-E (PCB > 500 PPM) NA9188

2

DM

100

P

c. ☒ RA Hazardous Substance Solid, NOS
☒ ORM-E (PCB > 500 PPM) NA9188
Large Capacitors

4

DM

380

P

d. ☒ RA Waste, Battery Electric Storage Wet
Filled with Acid NA-2794
Corrosive Material (Lead Sulfuric Acid)

1

DM

140

P

(0-002)
(0-008)

Additional Descriptions for Materials Listed Above

20 ea - 1gal cans inside 2 ea 85gal overpack

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

KEVIN W. STIGILE

Signature

Kevin W. Stigile

Month Day Year

10/27/90

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

The above named material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to DOT Regulation (49 CFR Parts 168-265) and DOT Regulation (49 CFR Parts 100-170).

19. Discrepancy Indication Space

Signed M. C. [Signature] Date 9/28/90

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

Signature

Month Day Year

ORIGINAL — RETURN TO GENERATOR

**UNIFORM HAZARDOUS
WASTE MANIFEST
(Continuation Sheet)**

21. Generator's US EPA ID No.

AK6170000164

Manifest
Document No.

0003

22. Page

2/2

Information in the shaded areas is not
required by Federal law

Generator's Name

US Navy Engineering Field Activity NW
3505 Anderson Hill Road NW
Silverdale WA 98383

L. State Manifest Document Number

N/A

M. State Generator's ID

N/A

24. Transporter Company Name

Alaska Marine Lines

25. US EPA ID Number

WAD.070973300

N. State Transporter's ID

N/A

26. Transporter Company Name

Alaska West Express

27. US EPA ID Number

AKD.099032682

O. Transporter's Phone

(206) 763-4244

P. State Transporter's ID

N/A

Q. Transporter's Phone

(907) 279-9515

28. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)
HMI

a. ☒ RQ - WASTE DIAZINON
ORM-A NA 2783

29. Containers

No

Type

30.
Total
Quantity

31.
Unit
Wt/Vol

R.
Waste No.

1

DM

300

P

b. ☒ Waste Antifreeze
☒ Not Regulated by DOT

2

DM

50

G

c. ☒ WASTE Oil
☒ Not Regulated by DOT

4

DM

80

G

d.

e.

f.

h.

i.

5. Additional Descriptions for Materials Listed Above

T. Handling Codes for Wastes Listed Above

32. Special Handling Instructions and Additional Information

The above named material is properly identified,
described, packaged, marked and labeled, and is
proper for transportation according to EPA
Regulation (40 CFR Parts 262-265) and DOT
Regulation (49 CFR Parts 100-175).

33. Transporter Acknowledgement of Receipt of Materials

Signed H. Carley Dated 11/25/88

Printed/Typed Name

Signature

Month Day Year

34. Transporter Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

Discrepancy Indication Space

ORIGINAL — RETURN TO GENERATOR

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

AK6170000164

Manifest Document No. 0004

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

Generator's Name and Mailing Address

us Army Engineering Field Activity NW
3505 Anderson Hill Road NW
Silverdale, WA 98383
Generator's Phone (206) 476-5775 Attn: Doug Thelin

A. State Manifest Document Number

N/A

B. State Generator's ID

N/A

3. Transporter 1 Company Name

Alaska Marine Lines

6. US EPA ID Number

WAD.070973300

C. State Transporter's ID

N/A

7. Transporter 2 Company Name

Alaska West Express

8. US EPA ID Number

AKD049032682

D. Transporter's Phone (206) 763-4244

E. State Transporter's ID

N/A

F. Transporter's Phone (206) 279-9515

9. Designated Facility Name and Site Address

DRMO
Bldg. # 22-009
Elmendorf AFB, Ak 99506

10. US EPA ID Number

AK8570028649

G. State Facility's ID

N/A

H. Facility's Phone

(907) 552-4950

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

HMI
a. Hazardous Substance Solid, NOS
ORM-E (PCB 7500 PPM), NA 9199
Contaminated Clothing, soil, gloves, Tyvek, Plaster, Wood

12. Containers

No. Type

42 DM

13. Total Quantity

8400

14. Unit Wt/Vol

P

1. Waste No.

Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

KEVIN W. STIGILE

Signature

Kevin W. Stigile

Month Day Year

10/27/70

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

.

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

.

19. Discrepancy Indication Space

The above named material is properly identified, described, packaged, marked and labeled and is proper for transportation according to EPA Regulation (40 CFR Parts 264-265) and DOT Regulation (49 CFR Parts 174-175).

Signed M. Curley Dated M. Curley

Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name

Signature

Month Day Year

.

ORIGINAL — RETURN TO GENERATOR

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.
AK617.0000164

Manifest Document No.
0005

2. Page 1 of 1

Information in the shaded areas is not required by Federal law

Generator's Name and Mailing Address

US Navy Engineering Field Activity NW
3505 Anderson Hill Road NW
Bilwade WA 98383
Generator's Phone (206) 476-5775 Attn: Doug Thelin

A. State Manifest Document Number

N/A

B. State Generator's ID

N/A

5. Transporter 1 Company Name

Alaska Marine Lines

6. US EPA ID Number

WAD070973300

C. State Transporter's ID

N/A

D. Transporter's Phone (206) 763-4241

7. Transporter 2 Company Name

Alaska West Express

8. US EPA ID Number

AK0099032682

E. State Transporter's ID

N/A

F. Transporter's Phone (907) 279-9515

9. Designated Facility Name and Site Address

ORMO Bldg. # 22-009
Elmendorf AFB, Alaska 99506
AK85.70028649

10. US EPA ID Number

G. State Facility's ID

N/A

H. Facility's Phone

(907) 552-4950

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

HWM

a. ~~RM~~ Hazardous Substance Liquid, NOS
ORM-E (PCB > 500 ppm) NA 9198
(Transformer Oil and Flushate)

12. Containers

No.

Type

13. Total Quantity

14. Unit Wt/Vol

1. Waste No.

21

DM

12600

P

Additional Descriptions for Materials Listed Above

l. Sea Flush
2 Sea Oil

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

KEVIN STIGILE

Signature

Kevin W. Stigile

Month Day Year

10-9-90

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

The above named material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to EPA Regulation (40 CFR Parts 264-265) and DOT Regulation (49 CFR Parts 174-178).

Signed M. Gaudin Dated 9/25/90

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

Signature

Month Day Year

ORIGINAL — RETURN TO GENERATOR

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

AK6170000164

Manifest Document No. 0006

2. Page 1 of 1

Information in the shaded areas is not required by Federal law

Generator's Name and Mailing Address

US Navy Engineering Field Activity NW
3505 Anderson Hill Road NW
Silverdale, WA 98393
Generator's Phone (206) 476-5775

Attn Doug Thelin

5. Transporter 1 Company Name

Alaska Marine Lines

6. US EPA ID Number

WA0070973300

7. Transporter 2 Company Name

Alaska West Express

8. US EPA ID Number

AKD099032692

9. Designated Facility Name and Site Address

DRMO
Bldg. # 22-009
Eielson AFB, Alaska 99506

10. US EPA ID Number

AK8570029649

A. State Manifest Document Number

N/A

B. State Generator's ID

N/A

C. State Transporter's ID

N/A

D. Transporter's Phone (206) 763-4244

E. State Transporter's ID

N/A

F. Transporter's Phone (407) 279-4515

G. State Facility's ID

N/A

H. Facility's Phone

(907) 552-4750

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

HAZ

a. ~~PG~~ Hazardous Substance Liquid, NOS
X ORM-E (PCB 7500 PPM) NA 9183
(Transformer Oil and Flushate)

12. Containers

No. Type

21 DM

13. Total Quantity

12600

14. Unit Wt/Vol

P

1. Waste No.

Additional Descriptions for Materials Listed Above

u. 15 ea Flush
6 ea Oil

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

KEVIN W. STIGILE

Signature

Kevin W. Stigile

Month Day Year

10/9/27/90

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

- - -

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

The above named material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to EPA Regulation (48 CFR Parts 260-265) and DOT Regulation (49 CFR Parts 180-178).

19. Discrepancy Indication Space

Signed M. C. G. Dated 9/1/90

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

Signature

Month Day Year

- - -

ORIGINAL — RETURN TO GENERATOR

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AK617.0000164		Manifest Document No. 0007		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.					
Generator's Name and Mailing Address US Navy Engineering Field Activity NW 3505 Anderson Hill Road NW Silverdale WA 98393						A. State Manifest Document Number N/A							
4. Generator's Phone (206) 476-5775 Attn: Doug Thelin						B. State Generator's ID N/A							
5. Transporter 1 Company Name Alaska Marine Lines			6. US EPA ID Number WAD07097.3300			C. State Transporter's ID N/A							
7. Transporter 2 Company Name Alaska West Express			8. US EPA ID Number AKD099.032682			D. Transporter's Phone (206) 763-4244							
9. Designated Facility Name and Site Address DRMO Bldg. # 22-009 Elmendorf AFB, Alaska 99506			10. US EPA ID Number AK857002.8649			E. State Transporter's ID N/A							
						F. Transporter's Phone (907) 279-9565							
						G. State Facility's ID N/A							
						H. Facility's Phone (907) 552-4950							
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number) HMI						12. Containers		13. Total Quantity		14. Unit Wt/Vol		15. Waste No.	
a. Hazardous Substance Solid, NOS ORM-E (PCB > 500 PPM) NA 9198 (Transformers and Switches - Disposed & Flashed)						No. Type		Quantity		Unit Wt/Vol		Waste No.	
						6 BA		7000		P			
b.													
c.													
d.													
Additional Descriptions for Materials Listed Above						K. Handling Codes for Wastes Listed Above							
15. Special Handling Instructions and Additional Information													
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.													
Printed/Typed Name KEVIN W. STIGILE						Signature <i>Kevin W. Stigile</i>						Month Day Year 9/27/90	
17. Transporter 1 Acknowledgement of Receipt of Materials													
Printed/Typed Name						Signature						Month Day Year	
18. Transporter 2 Acknowledgement of Receipt of Materials													
Printed/Typed Name						Signature						Month Day Year	
19. Discrepancy Indication Space						The above named material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to EPA Regulation (40 CFR Parts 264-265) and DOT Regulation (49 CFR Parts 174-178). Signed <i>M. Cusley</i> Dated <i>9/28/90</i>							
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.													
Printed/Typed Name						Signature						Month Day Year	

ORIGINAL — RETURN TO GENERATOR

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

AK6170000164

Manifest Document No.
0003

2. Page 1 of 1

Information in the shaded areas is not required by Federal law

Generator's Name and Mailing Address

US Navy Engineering Field Activity NW
3505 Anderson Hill Road NW
Silverdale, WA 98383
Generator's Phone: 206 1 476-5275

Attn: Doug Thelin

5. Transporter 1 Company Name

Alaska Marine Lines

6. US EPA ID Number

WAD070973300

7. Transporter 2 Company Name

Alaska West Express

8. US EPA ID Number

AKD099032682

9. Designated Facility Name and Site Address

DRMO
Bldg # 22-009
Eliendorf AFB AK 99506

10. US EPA ID Number

AK9570028649

A. State Manifest Document Number

N/A

B. State Generator's ID

N/A

C. State Transporter's ID

N/A

D. Transporter's Phone (inc)

763-4244

E. State Transporter's ID

N/A

F. Transporter's Phone (907)

779-9515

G. State Facility's ID

N/A

H. Facility's Phone

(907) 552-4950

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

HM
a. ~~RM~~ Hazardous Substance Solid, NOS
ORM-E (PCB 7500 PPM) NA 9188
(Transformers Drained & Flashed)

12. Containers

No. Type

15 BA

13. Total Quantity

6400

14. Unit Wt/Vol

P

1. Waste No.

Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

KEVIN W. STIGILE

Signature

Kevin W Stigile

Month Day Year

10-9-79

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

The above named material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to DOT Regulations (49 CFR Parts 171-179), and DOT Regulation (49 CFR Parts 101-170).

Signed M. Aubrey dated 9/25/80

Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name

Signature

Month Day Year

ORIGINAL — RETURN TO GENERATOR

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.
AK 6170000164

Manifest Document No.
0009

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

Generator's Name and Mailing Address
US Navy Engineering Field Activity NW
3505 Anderson Hill Road NW
Silverdale, WA 98333

4. Generator's Phone (206) 476-5775 A#N: Doug Thelin

5. Transporter 1 Company Name
Alaska Marine Lines

6. US EPA ID Number
WADO709.73300

7. Transporter 2 Company Name
Alaska West Express

8. US EPA ID Number
AKD 099032.682

9. Designated Facility Name and Site Address
DRMG
Building # 22-009
Elmendorf AFB, Alaska 99506

10. US EPA ID Number
AK9570028649

A. State Manifest Document Number
N/A

B. State Generator's ID
N/A

C. State Transporter's ID
N/A

D. Transporter's Phone (206) 763-4244

E. State Transporter's ID
N/A

F. Transporter's Phone (907) 279-9515

G. State Facility's ID
N/A

H. Facility's Phone
(907) 552-4950

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

a. ☐ HAZ
RQ Hazardous Substance Solid, NOS
ORM-E (PCB 7500 PPM) NA 9188
(Transformers Drained & Flushed)

12. Containers

No. Type

13. Total Quantity

14. Unit Wt/Vol

1. Waste No.

7 BA

5400

P

Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are defined, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

KEVIN W. STIGLIE

Signature

Kevin W. Stigile

Month Day Year

10-9-7190

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

- - -

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

- - -

19. Discrepancy Indication Space

The above named material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to 49 CFR Regulation (48 CFR Parts 263-255) and DOT Regulation (49 CFR Parts 100-175).

Signed M. Curley Dated 9/28/00

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

Signature

Month Day Year

- - -

ORIGINAL — RETURN TO GENERATOR

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

AK 6170000164

Manifest Document No.

0010

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

Generator's Name and Mailing Address

us Way Engineering Field Activity NW
3505 Anderson Hill Road NW
S. Lierdale WA 98333

4. Generator's Phone (206) 476-5775

Attn: Doug Thelin

A. State Manifest Document Number

N/A

B. State Generator's ID

N/A

5. Transporter 1 Company Name

Alaska Marine Lines

6. US EPA ID Number

WA0070973300

C. State Transporter's ID

N/A

D. Transporter's Phone (206) 763-4244

7. Transporter 2 Company Name

Alaska West Express

8. US EPA ID Number

AK.D.09903.2682

E. State Transporter's ID

N/A

F. Transporter's Phone (907) 274-9515

9. Designated Facility Name and Site Address

DRMO
Building # 22-009
Elmendorf AFB Alaska 99506

10. US EPA ID Number

AK.8570028649

G. State Facility's ID

N/A

H. Facility's Phone

(907) 552-4950

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

HM

a. RQ Hazardous Substance Solid, NOS
ORM-E (PCB 7500 PPM) NA9188
(Transformers Drained & Flushed)

12. Containers
No. Type

5 BA

13. Total Quantity

4000

14. Unit Wt/Vol

P

15. Waste No.

b.

c.

d.

Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

KEVIN W. STIGILE

Signature

Kevin W. Stigile

Month Day Year

10-9-12 7:19:0

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

The above listed material is properly described, packaged, marked and labeled, and is proper for transportation according to EPA Regulations (40 CFR Parts 264-265) and DOT Regulations (49 CFR Parts 180-179).

Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest signed by McGee dated 9/25/10

Printed/Typed Name

Signature

Month Day Year

ORIGINAL — RETURN TO GENERATOR

APPENDIX F

BILL OF LADING

AGENT:
TAKIEWICH TRUCKING
168-2152
48 AVENUE
EDMONTON, ALBERTA T6E 5L1

alaska-west
EXPRESS
INCORPORATED

Appendix F
ANCHORAGE - (907) 279-9515
660 OCEAN DOCK ROAD
ANCHORAGE, AK 99510

SEATTLE · (206) 764-5768
5615 W. MARGINAL WAY S.W.
SEATTLE, WA 98106

THIS MEMORANDUM

is an acknowledgement that a Bill of Lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading.

From 1975 Date 1-17 19 77

At

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as shown below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own railroad, water line, highway route or route, or within the territory of its highway operations, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written herein contained, including the conditions of back haul, which are hereby agreed to by the shipper and accepted for himself and his assigns.

Consigned to NY 60

ON COLLECT ON DELIVERY SHIPMENTS, THE LETTERS "C.O.D." MUST APPEAR BEFORE CONSIGNEE'S NAME OR AS OTHERWISE PROVIDED IN ITEM 430, SEC. 1.

Destination EDMONTON, ALB. AIRPORT

Trailer Provided by _____ Date _____ At _____

Looking No. _____ Trailer No. _____ Shipper's No. _____

No. Packages	HM	Description of Articles, Special Marks, and Exceptions	Weight (Sub. to Car.)	Class	Rate	Check Column
						Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.
						(Signature of Consignor)
						If charges are to be prepaid, write or stamp here, "To be Prepaid."
1 SA		30' CONEX # 1297 CONTAINER 42' EXACTLY DEPT	5700			Received \$ to apply in prepayment of the charges on the property described herein.
			5700			Agent or Cashier
						Per (The signature here acknowledges only the amount prepaid.)
						Charges Advanced:
						\$

Mark with "X" to designate Hazardous Material as defined in the Department of Transportation Regulations Governing Transportation of Hazardous Materials. The use of this column is an optional method of designating hazardous materials on bills of lading per Section 172.201 and 172.202(b) of the regulations governing the transportation of such materials.

* If the shipment moves between two ports by a carrier by the law requires that the bill of lading shall state it is "carrier's or shipper's weight."

NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

Shipper, Per

3

Agent, Per

Permanent post-office address of shipper

AIRBANKS - (907) 452-4355
195 SANDURI
AIRBANKS, AK 99701

GENT:
AKIEWICH TRUCKING
18-2152
8 AVENUE
DENTON, ALBERTA T6E 5L1

Alaska-West EXPRESS INCORPORATED

ANCHORAGE - (907) 279-9515
660 OCEAN DOCK ROAD
ANCHORAGE, AK 99510

82667

SEATTLE - (206) 764-5768
5615 W. MARGINAL WAY S.W.
SEATTLE, WA 98106

THIS SHIPPING ORDER Must be legibly filled in, in ink, in Indelible Pencil, or in Carbon, and retained by the Agent.

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading.

From URS CONSULTANTS

Date 9/20 19 80

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as shown below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own railroad, water line, highway route or routes, or within the territory of its highway operations, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written herein contained, including the conditions of back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

Consigned to DEMO

ON COLLECT ON DELIVERY SHIPMENTS, THE LETTERS "C.O.D." MUST APPEAR BEFORE CONSIGNEE'S NAME OR AS OTHERWISE PROVIDED IN ITEM 430, SEC. 1.

Destination 3 MEX 1022 AER ALASKA

Carrier Provided by _____ Date _____ At _____

Booking No.	Trailer No.		Shipper's No.			
No. Packages	HM	Description of Articles, Special Marks, and Exceptions	Weight (Sub. to Car)	Class	Rate	Check Column
						Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.
		20' CONEX # 1673				
		CONTAINING 42 Empty Drums	5000			(Signature of Consignor)
						If charges are to be prepaid, write or stamp here, "To be Prepaid"
1EA		20' CONEX # 1751				
		CONTAINING 42 Empty Drums	5000			Received \$ _____ to apply in prepayment of the charges on the property described hereon.
			10,000			Agent or Cashier
						Per _____ (The signature here acknowledges only the amount prepaid.)
						Charges Advanced:
						\$ _____

Mark with "X" to designate Hazardous Material as defined in the Department of Transportation Regulations Governing Transportation of Hazardous Materials. The use of this column is an optional method of designating hazardous materials on bills of lading per Section 172.201 and 172.202(b) of the regulations governing the transportation of such materials.

If the shipment moves between two ports by a carrier by air, the law requires that the bill of lading shall state the "carrier's or shipper's weight."

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

Shipper, Per _____

2

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

Permanent post-office address of shipper _____

DRENTON, ALBERTA T6E 5L1

82669

SEATTLE, WA 98106

alaska-west EXPRESS

INCORPORATED

THIS SHIPPING ORDER Must be legibly filled in, in ink, in Indelible Pencil, or in Carbon, and retained by the Agent.

CEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading.

[illegible]

Date 4/12/51 19 51

a property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as shown below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own railroad, water line, highway route or routes, or within the territory of its highway routes, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier that it shall carry all said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written herein contained, including the conditions of back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

Assigned to 15-000

ON COLLECT ON DELIVERY SHIPMENTS. THE LETTERS "C.O.D." MUST APPEAR BEFORE CONSIGNEE'S NAME OR AS OTHERWISE PROVIDED IN ITEM 430, SEC. 1

Destination EMMENDORF AFB ALASKA

Printer Provided by

Date _____

At

Working No.

Trailer No. 1805

Shipper's No.

No. Packages	HM	Description of Articles, Special Marks, and Exceptions .	Weight (Prob. to Cor.)	Class	Rate	Check Column
						Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make de- livery of this shipment without payment of freight and all other lawful charges.
						(Signature of Consignor)
						If charges are to be prepaid, write or stamp here "To Be Prepaid."
E.A.		20' COVER # 1614 CONTAINING 42 EMPTY DRUMS	5000			Received \$ _____ to apply in prepayment of the charges on the property described hereon.
			10000			Agents or Cashier
						Per _____ (The signature here acknowledges only the amount prepaid.)
						Charges Advanced:
						\$ _____

*Mark with "X" to designate Hazardous Material as defined in the Department of Transportation Regulations Governing Transportation of Hazardous Materials. The use of this column is an optional method of designating hazardous materials on bills of lading per Section 172.201 and 172.202(b) of the regulations governing the transportation of such materials.

the shipment moves between two ports by a carrier by
ter. "The law requires that the bill of lading shall state
w "carrier's or shipper's weight."

NOTE Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

Shipper, Per

address of shipper

 Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

AIRBANKS (907) 452-4355
95 SANDURI
AIRBANKS, AK 99701

GENT:
KIEWICH TRUCKING
8-2152
48 AVENUE
MONTON, ALBERTA T6E 5L1

alaska-west EXPRESS INCORPORATED

ANCHORAGE - (907) 279-9515
660 OCEAN DOCK ROAD
ANCHORAGE, AK 99510

82664

SEATTLE - (206) 764-5768
5615 W. MARGINAL WAY S.W.
SEATTLE, WA 98106

THIS SHIPPING ORDER Must be legibly filled in, in ink, in Indelible Pencil, or in Carbon, and retained by the Agent.

CEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading.

om 125 CONSULTANTS

Date 9/26 19 77

Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as shown below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own railroad, water line, highway route or routes, or within the territory of its highway operations, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written herein contained, including the conditions of back haul, which are hereby agreed to by the shipper and accepted for himself and his assigns.

Assigned to DEMO

ON COLLECT ON DELIVERY SHIPMENTS, THE LETTERS "C.O.D." MUST APPEAR BEFORE CONSIGNEE'S NAME OR AS OTHERWISE PROVIDED IN ITEM 430, SEC. 1.

Destination ELMENDORF AFB ALASKA

Carrier Provided by Date At

Billing No.		Trailer No.		Shipper's No.		
No. Packages	HM	Description of Articles, Special Marks, and Exceptions		*Weight (Sub. to Car)	Class	Rate
						Check Column
						Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges
						(Signature of Consignor)
						If charges are to be prepaid, write or stamp here "To be Prepaid"
						"TO BE PREPAID"
EA		20' CONEX # 2088				Received \$
		CONTAINS 42 EMPTY DRUMS		5000		to apply in payment of the charges on the property described hereon.
				10,000		Agent or Cashier
						Per (The signature here acknowledges only the amount prepaid.)
						Charges Advanced:
						\$

Mark with "X" to designate Hazardous Material as defined in the Department of Transportation Regulations Governing Transportation of Hazardous Materials. The use of this column is an optional method of designating hazardous materials on bills of lading per Section 172.201 and 172.202(b) of the regulations governing the transportation of such materials.

If the shipment moves between two ports by a carrier by sea, law requires that the bill of lading shall state "carrier's or shipper's weight."

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

Shipper, Per 2 Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

tenant post-office address of shipper

AIRBANKS, AK 99701

AGENT:

AKIEWICH TRUCKING

8-2152

48 AVENUE

EDMONTON, ALBERTA T6E 5L1

ANCHORAGE - (907) 279-9515

660 OCEAN DOCK ROAD

ANCHORAGE, AK 99510

82551

SEATTLE - (206) 764-5768

5615 W. MARGINAL WAY S.W.

SEATTLE, WA 98106

alaska-west EXPRESS

INCORPORATED

THIS SHIPPING ORDER Must be legibly filled in, in ink, in Indelible Pencil, or in Carbon, and retained by the Agent.

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading.

rom IRS Consultants

Date 11-26 19 30

16. If property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as shown below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own railroad, water line, highway route or routes, or within the territory of its highway operations, otherwise to deliver to another carrier as the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written herein contained, including the conditions of back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

nsigned to DRMG

ON COLLECT ON DELIVERY SHIPMENTS, THE LETTERS "C.O.D." MUST APPEAR BEFORE CONSIGNEE'S NAME OR AS OTHERWISE PROVIDED IN ITEM 430, SEC. 1

stination ELMENDORF AFB ALASKA

ailer Provided by

Date _____

Ar.

aking No.

Trailer No.

Shipper's No.

No. Packages	HM	Description of Articles, Special Marks, and Exceptions	Weight (Subl to Cor.)	Class	Rate	Check Column
1 SA		20' CONEX # 1836 CONTAINING 42 DMS STONE OL	252.00			Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.
						(Signature of Consignor)
1 SA		20' CONEX # 1261 CONTAINING 25 DMS JPFUEL 3 DMS GREASE 14 EMPTY DRUMS	116.200			If charges are to be prepaid, write or stamp here "To be Prepaid" TO BE PREPAID
			414.00			Received \$ _____ to apply in prepayment of the charges on the property described herein.
						Agent or Cashier
						Per _____ (The signature here acknowledges only the amount prepaid.)
						Charges Advanced:
						\$ _____

Mark with "X" to designate Hazardous Material as defined in the Department of Transportation Regulations Governing Transportation of Hazardous Materials. The use of this column is an optional method of designating hazardous materials on bills of lading per Section 172.201 and 172.202(b) of the regulations governing the transportation of such materials.

the shipment moves between two ports by a carrier by
 after the law requires that the bill of lading shall state
 "carrier's or shipper's weight."

NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

Shipper, Per

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

variant post-office address of shipper

AE 8 0000 7/87

FAIRBANKS - (907) 452-4355
1095 SANDURI
FAIRBANKS, AK 99701

AGENT:
TAKIEWICH TRUCKING
68-2152
48 AVENUE
EDMONTON, ALBERTA T6E 5L1

alaska-west EXPRESS

INCORPORATED

ANCHORAGE - (907) 279-9515
660 OCEAN DOCK ROAD
ANCHORAGE, AK 99510

SEATTLE - (206) 764-5768
5615 W. MARGINAL WAY S.W.
SEATTLE, WA 98106

THIS MEMORANDUM

is an acknowledgement that a Bill of Lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading.

From _____ Date _____ 19 ____

At _____

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as shown below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own railroad, water line, highway route or routes, or within the territory of its highway operations, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written herein contained, including the conditions of back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

Consigned to _____

ON COLLECT ON DELIVERY SHIPMENTS, THE LETTERS "C.O.D." MUST APPEAR BEFORE CONSIGNEE'S NAME OR AS OTHERWISE PROVIDED IN ITEM 430, SEC. 1

Destination ANCHORAGE AFB ALASKA

Trailer Provided by _____ Date _____ At _____

Booking No.		Trailer No.		Shipper's No.		
No. Packages	HM	Description of Articles, Special Marks, and Exceptions	Weight (Sub to Car)	Class	Rate	Check Column
						Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.
		20' CONEX # 1643				(Signature of Consignor)
		10 REMAINING 32 DMS SIDE OIL	10 200			
		10 EMPTY DMS	1 000			If charges are to be prepaid, write or stamp here "To be Prepaid."
		20' CONEX # 16916				"TO BE PREPAID"
		10 REMAINING 42 EMPTY DMS	4 200			
						Received \$ _____ to apply in prepayment of the charges on the property described hereon.
			24 400			
						Agent or Cashier
						Per _____ (The signature here acknowledges only the amount prepaid.)
						Charges Advanced:
						\$ _____

* Mark with "X" to designate Hazardous Material as defined in the Department of Transportation Regulations Governing Transportation of Hazardous Materials. The use of this column is an optional method of designating hazardous materials on bills of lading per Section 172.201 and 172.202(b) of the regulations governing the transportation of such materials.

If the shipment moves between two ports by a carrier by which the law requires that the bill of lading shall state the carrier's or shipper's weight.

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

Shipper, Per 3 Agent, Per _____

Permanent post-office address of shipper _____

APPENDIX G

DD FORM 1348-1

U.S. GOVERNMENT PRINTING OFFICE: 1985-479-2238

1 MAR 74

DOD SINGLE LINE ITEM RELEASE RECEIPT DOCUMENT

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80																																																																																																																																											
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SUBSTITUTE DATA										ITEM ORIGINALLY REQUESTED										FREIGHT CLASSIFICATION										NOMENCLATURE																																																																																																													
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U.S. GOVERNMENT PRINTING OFFICE: 1985-479-838

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U.S. GOVERNMENT PRINTING OFFICE: 1965-179-838

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The above named material is property USNOSC, described, packaged, marked and delivered, and is proper for transportation according to EPA Regulation (49 CFR Parts 164-175) and DOT Regulation (49 CFR Parts 174-178)

M. Cassley 10/16/90

U.S. GOVERNMENT PRINTING OFFICE: 1985-479-838

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U.S. GOVERNMENT PRINTING OFFICE: 1965-479-828

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U.S. GOVERNMENT PRINTING OFFICE: 1985-479-434

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13 TRANSPORTATION CHARGEABLE TO				14 B/LADING, AWB OR RECEIVER'S SIGNATURE (AND DATE)		15																			

U.S. GOVERNMENT PRINTING OFFICE: 1985-479-838

DD FORM 1348-1
(4 PART)

1 MAR 74

DOD SINGLE LINE ITEM RELEASE, RECEIPT DOCUMENT

The above named material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to EPA Regulation (40 CFR Parts 260-265) and DOT Regulation (49 CFR Parts 100-178).

Signature: *[Handwritten Signature]* Date: *10/11/90*

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DD FORM 1348-1
(4 PART)

1 MAR 74

DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

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SUBSTITUTE DATA ITEM ORIGINALLY REQUESTED										FREIGHT CLASSIFICATION NOMENCLATURE										TOTAL PRICE DOLLARS CTS									
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x Combustible Liquid (Kerosene & Diesel)																													
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DD FORM 1348-1
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DDO SINGLE LINE ITEM RELEASE / RECEIPT DOCUMENT

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PPM										Y										Z										AA										AB										AC										AD										AE										AF										AG										AH										AI										AJ										AK										AL										AM										AN										AO										AP										AQ										AR										AS										AT										AU										AV										AW										AX										AY										AZ										BA										BB										BC										BD										BE										BF										BG										BH										BI										BJ										BK										BL										BM										BN										BO										BP										BQ										BR										BS										BT										BU										BV										BW										BX										BY										BZ										CA										CB										CC										CD										CE										CF										CG										CH										CI										CJ										CK										CL										CM										CN										CO										CP										CQ										CR										CS										CT										CU										CV										CW										CX										CY										CZ										DA										DB										DC										DD										DE										DF										DG										DH										DI										DJ										DK										DL										DM										DN										DO										DP										DQ										DR										DS										DT										DU										DV										DW										DX										DY										DZ										EA										EB										EC										ED										EE										EF										EG										EH										EI										EJ										EK										EL										EM										EN										EO										EP										EQ										ER										ES										ET										EU										EV										EW										EX										EY										EZ										FA										FB										FC										FD										FE										FF										FG										FH										FI										FJ										FK										FL										FM										FN										FO										FP										FQ										FR										FS										FT										FU										FV										FW										FX										FY										FZ										GA										GB										GC										GD										GE										GF										GG										GH										GI										GJ										GK										GL										GM										GN										GO										GP										GQ										GR										GS										GT										GU										GV										GW										GX										GY										GZ										HA										HB										HC										HD										HE										HF										HG										HH										HI										HJ										HK										HL										HM										HN										HO										HP										HQ										HR										HS										HT										HU										HV										HW										HX										HY										HZ										IA										IB										IC										ID										IE										IF										IG										IH										II										IJ										IK										IL										IM										IN										IO										IP										IQ										IR										IS										IT										IU										IV										IW										IX										IY										IZ										JA										JB										JC										JD										JE										JF										JG										JH										JI										JJ										JK										JL										JM										JN										JO										JP										JQ										JR										JS										JT										JU										JV										JW										JX										JY										JZ										KA										KB										KC										KD										KE										KF										KG										KH										KI										KJ										KK										KL										KM										KN										KO										KP										KQ										KR										KS										KT										KU										KV										KW										KX										KY										KZ										LA										LB										LC										LD										LE										LF										LG										LH										LI										LJ										LK										LL										LM										LN										LO										LP										LQ										LR										LS										LT										LU										LV										LW										LX										LY										LZ										MA										MB										MC										MD										ME										MF										MG										MH										MI										MJ										MK										ML										MM										MN										MO										MP										MQ										MR										MS										MT										MU										MV										MW										MX										MY										MZ										NA										NB										NC										ND										NE										NF										NG										NH										NI										NJ										NK										NL										NM										NN										NO										NP										NQ										NR										NS										NT										NU										NV										NW										NX										NY										NZ										OA										OB										OC										OD										OE										OF										OG										OH										OI										OJ										OK										OL										OM										ON										OO										OP										OQ										OR										OS										OT										OU										OV										OW										OX										OY										OZ										PA										PB										PC										PD										PE										PF										PG										PH										PI										PJ										PK										PL										PM										PN										PO										PP										PQ										PR										PS										PT										PU										PV										PW										PX							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SHIP FROM 9999 PHW PCBS USN NOSC NE Cape St. Lawrence Is. AK6170000164										SHIP TO 42 N.660010221007 52362 D DRMO-VSI Bldg. 22-009 Elmendorf AFB, AK 99506 AK8570028649										MARK FOR PROJECT NA H 5.02										TOTAL PRICE DOLLARS CTS																																																																																									
WAREHOUSE LOCATION										TYPE OF CASE										UNIT PACK										UNIT WEIGHT										UNIT CUBE										U F C										N M F C										FREIGHT RATE										DOCUMENT DATE										MAT COND										QUANTITY										S									
SUBSTITUTE DATA ITEM ORIGINALLY REQUESTED										FREIGHT CLASSIFICATION NOMENCLATURE										ITEM NOMENCLATURE										W										X										PCB Solids, Soil, Cleanup (Askarel)										7500 PPM																																																											
SELECTED BY AND DATE										TYPE OF CONTAINERS										TOTAL WEIGHT										RECEIVED BY AND DATE										INSPECTED BY AND DATE																																																																															
PACKED BY AND DATE										NO OF CONTAINERS										TOTAL CUBE										WAREHOUSED BY AND DATE										WAREHOUSE LOCATION																																																																															
REMARKS										AA										BB										CC										DD										The above listed material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to EPA Regulation (40 CFR Parts 268-365) and DOT Regulation (49 CFR Parts 178-179)																																																																					
FIRST OF DESTINATION ADDRESS										11										12										FF										GG																																																																															
13 TRANSPORTATION CHARGEABLE TO										14 BLADING, AWB, OR RECEIVER'S SIGNATURE (AND DATE)										15 RECEIVER'S DOCUMENT NUMBER																																																																																																			

GOVERNMENT PRINTING OFFICE : 1968 O 323-800-000

STOCK FROM										DOCUMENT NUMBER										UNIT OF ISSUE										QUANTITY									
9999 PHWPCBS										3 N660010221 0016																													
USN NO5C										52362D DRMO YSI										MARK FOR										PROJECT									
NE CAPE ST LAWRENCE 161										BLOG 22-009 852-4950										NA										H									
AK 6170600164										ELMENDORF AFB, AK 99506																													
WAREHOUSE LOCATION										UNIT CUBE										FREIGHT RATE										DOCUMENT DATE									
600lb																																							
SUBSTITUTE DATA (ITEM ORIGINALLY REQUESTED)										FREIGHT CLASSIFICATION NOMENCLATURE										ITEM NOMENCLATURE										TOTAL WEIGHT									
T										Waste Hazardous Substance Solid										PCB-CONTAMINATED Soil-DEBIS										1800lb									
W										Y																													
SELECTED BY AND DATE										TYPE OF CONTAINER(S)										TOTAL WEIGHT										RECEIVED BY AND DATE									
										3										1800lb																			
PACKED BY AND DATE										NO OF CONTAINER(S)										TOTAL WEIGHT										WAREHOUSED BY AND DATE									
										55 gal drums										1150																			
REMARKS										S										B										9									
AA FIRST DESTINATION ADDRESS										PB										CC DATE SHIPPED										DD									
11 TRANSPORTATION CHARGEABLE TO										12 B/LADING, AWB, OR RECEIVER'S SIGNATURE (AND DATE)										13 RECEIVER'S DOCUMENT NUMBER																			

DD FORM 1348-1
S/M 010217 013-1040

1 MAR 74

EDITION OF 1 JAN 64 MAY BE USED
UNTIL EXHAUSTED

DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

3 DRUMS
3 SOLIDS
PCB

The above described material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to EPA Regulation (40 CFR Parts 260-265) and DOT Regulation (49 CFR Parts 100-175).

Signature: [Signature] Date: 9/26/90

STOCK NUMBER 9999 PHWPCS										QUANTITY 31										DOCUMENT NUMBER N66001 0221 0018										UNIT PRICE 5.42									
SHIP TO USN NOSC NE CAPE ST Lawrence Is AK 617 0000 164										MARK FOR PROJECT NM										TOTAL PRICE 168.02																			
WAREHOUSE LOCATION										FREIGHT RATE										QUANTITY																			
SUBSTITUTE DATA ITEM ORIGINALLY REQUESTED										FREIGHT CLASSIFICATION NOMENCLATURE										ITEM NOMENCLATURE																			
Waste Hazardous Substance										NA 9188										PCB SOLIDS 5500 PPM ASKARE																			
SELECTED BY AND DATE										TYPE OF CONTAINER										TOTAL WEIGHT																			
PACKED BY AND DATE										NO OF CONTAINERS										TOTAL CUBE																			
RE MARKS										DATE SHIPPED										RECEIVED BY AND DATE																			
FIRST INFORMATION ADDRESS										DATE SHIPPED										INSPECTED BY AND DATE																			
TRANSPORTATION CHARGEABLE TO										14B/LADING, AWD, OR RECEIVER'S SIGNATURE (AND DATE)										15 RECEIVER'S DOCUMENT NUMBER																			

PCB SOLIDS 5500 PPM ASKARE

1

STOCK NUMBER		DOCUMENT NUMBER		MARK FOR PROJECT		TOTAL PRICE	
9999 PHW PCBs		3 N6600 0221 0017		N.A. H 500		DOLLARS CENTS	
USN NO SC		SHIP TO		MARK FOR PROJECT		TOTAL PRICE	
NLE CAPE ST LAURENCE (1)		SE3620 DRMD YSI		HM		DOLLARS CENTS	
AK 6170000164		BLD 22-009 552-4950					
		ELMENDORF AFB AK 99506					
		R AK 8570028649					
WAREHOUSE LOCATION		TYPE OF CARGO		FREIGHT RATE		DOCUMENT RATE	
		UNIT PACK					
		UNIT WEIGHT					
		UNIT CUBE					
		UNIT C					
		UNIT MFC					
		UNIT N MFC					
		UNIT FREIGHT RATE					
		UNIT DOCUMENT RATE					
		UNIT QUANTITY					
		UNIT R					
		UNIT S					
SUBSTITUTE DATA ITEM ORIGINALLY REQUESTED		FREIGHT CLASSIFICATION NOMENCLATURE		ITEM NOMENCLATURE		ITEM NOMENCLATURE	
		Waste Hazardous Substance		Solid NOS ORM-E NA 9188			
		PCB Solids > 500 ppm Askarel					
SELECTED BY AND DATE		TYPE OF CONTAINER(S)		TOTAL WEIGHT		RECEIVED BY AND DATE	
		55 in		1800 lbs			
		85 ampals					
PACKED BY AND DATE		NO. OF CONTAINER(S)		TOTAL CUBE		WAREHOUSED BY AND DATE	
		3		720			
				1151			
				945			
REMARKS		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
FIRST DESTINATION ADDRESS		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
TRANSPORTATION CHARGEABLE TO		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
TRANSPORTATION CHARGEABLE TO		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
TRANSPORTATION CHARGEABLE TO		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
TRANSPORTATION CHARGEABLE TO		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
TRANSPORTATION CHARGEABLE TO		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
TRANSPORTATION CHARGEABLE TO		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
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TRANSPORTATION CHARGEABLE TO		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
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TRANSPORTATION CHARGEABLE TO		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
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TRANSPORTATION CHARGEABLE TO		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
TRANSPORTATION CHARGEABLE TO		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
TRANSPORTATION CHARGEABLE TO		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
TRANSPORTATION CHARGEABLE TO		DATE SHIPPED		DATE		RECEIVER'S SIGNATURE (AND DATE)	
TRANSPORTATION CHARGEABLE TO		DATE SHIPPED					

PCB SOLIDS 3 DRUMS

U.S. GOVERNMENT PRINTING OFFICE: 1964-222-233-0000

STOCK NUMBER 5910 PHW PLOS										QUANTITY 2										DOCUMENT NUMBER N66001 0221 0002										SUPPLEMENTARY ADDRESS										PROJECT										RECEIVED DATE										TOTAL PRICE \$5.00																			
USN NOSC NE CAPE ST LAWRENCE AK617 0000164																				SHIP TO 3262D DRMO YSI BLOG 22-009 552-4950 ELMENDORF AFB AK 99504 AK8520028649																				MARK FOR PROJECT HAM																				TOTAL PRICE \$5.00																			
WAREHOUSE LOCATION										TYPE OF CARGO					UNIT PACK					UNIT WEIGHT					UNIT CUBE					UFC					NMTFC					FREIGHT RATE					DOCUMENT DATE					MAX COND					QUANTITY					R					S														
F										G					H					I					J					K					L					M					N					O					P					Q					R					S									
SUBSTITUTE DATA (ITEM ORIGINALLY REQUESTED)										FREIGHT CLASSIFICATION NOMENCLATURE Waste Hazardous Substance Solid PCB CAPTIONS (LARGE) 550PPM																														NOS ORME NA9188																																							
1 SELF CITED BY AND DATE										2 TYPE OF CONTAINER(S)										3 TOTAL WEIGHT										4 RECEIVED BY AND DATE										5 INSPECTED BY AND DATE																																							
6 PACKED BY AND DATE										7 NO OF CONTAINER(S)										8 TOTAL CUBE 631 630										9 WAREHOUSED BY AND DATE										10 WAREHOUSE LOCATION																																							
11 FIRST OF STATION ADDRESS										12 DATE SHIPPED										13 RECEIVER'S SIGNATURE (AND DATE) Signed [Signature] 3/26/90										14 RECEIVER'S DOCUMENT NUMBER																																																	
15 TRANSPORTATION CHARGEABLE TO										16 B/LADING, AWB, OR RECEIVER'S SIGNATURE (AND DATE)										17 RECEIVER'S DOCUMENT NUMBER																																																											

DD FORM 1340-1
3/M 0107 LP 013 1047

1 MAR 74

EDITION OF 1 JAN 64 MAY BE USED
UNTIL EXHAUSTED

DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

PCB caps 2 Drums

CNC IDENT		BT FROM		V		S		T		U		V		W		X		Y		Z		AA		AB		AC		AD		AE		AF		AG		AH		AI		AJ		AK		AL		AM		AN		AO		AP		AQ		AR		AS		AT		AU		AV		AW		AX		AY		AZ		BA		BB		BC		BD		BE		BF		BG		BH		BI		BJ		BK		BL		BM		BN		BO		BP		BQ		BR		BS		BT		BU		BV		BW		BX		BY		BZ		CA		CB		CC		CD		CE		CF		CG		CH		CI		CJ		CK		CL		CM		CN		CO		CP		CQ		CR		CS		CT		CU		CV		CW		CX		CY		CZ		DA		DB		DC		DD		DE		DF		DG		DH		DI		DJ		DK		DL		DM		DN		DO		DP		DQ		DR		DS		DT		DU		DV		DW		DX		DY		DZ		EA		EB		EC		ED		EE		EF		EG		EH		EI		EJ		EK		EL		EM		EN		EO		EP		EQ		ER		ES		ET		EU		EV		EW		EX		EY		EZ		FA		FB		FC		FD		FE		FF		FG		FH		FI		FJ		FK		FL		FM		FN		FO		FP		FQ		FR		FS		FT		FU		FV		FW		FX		FY		FZ		GA		GB		GC		GD		GE		GF		GG		GH		GI		GJ		GK		GL		GM		GN		GO		GP		GQ		GR		GS		GT		GU		GV		GW		GX		GY		GZ		HA		HB		HC		HD		HE		HF		HG		HH		HI		HJ		HK		HL		HM		HN		HO		HP		HQ		HR		HS		HT		HU		HV		HW		HX		HY		HZ		IA		IB		IC		ID		IE		IF		IG		IH		II		IJ		IK		IL		IM		IN		IO		IP		IQ		IR		IS		IT		IU		IV		IW		IX		IY		IZ		JA		JB		JC		JD		JE		JF		JG		JH		JI		JJ		JK		JL		JM		JN		JO		JP		JQ		JR		JS		JT		JU		JV		JW		JX		JY		JZ		KA		KB		KC		KD		KE		KF		KG		KH		KI		KJ		KK		KL		KM		KN		KO		KP		KQ		KR		KS		KT		KU		KV		KW		KX		KY		KZ		LA		LB		LC		LD		LE		LF		LG		LH		LI		LJ		LK		LL		LM		LN		LO		LP		LQ		LR		LS		LT		LU		LV		LW		LX		LY		LZ		MA		MB		MC		MD		ME		MF		MG		MH		MI		MJ		MK		ML		MN		MO		MP		MQ		MR		MS		MT		MU		MV		MW		MX		MY		MZ		NA		NB		NC		ND		NE		NF		NG		NH		NI		NJ		NK		NL		NM		NN		NO		NP		NQ		NR		NS		NT		NU		NV		NW		NX		NY		NZ		OA		OB		OC		OD		OE		OF		OG		OH		OI		OJ		OK		OL		OM		ON		OO		OP		OQ		OR		OS		OT		OU		OV		OW		OX		OY		OZ		PA		PB		PC		PD	
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PCB SOLIDS 2 Drums

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80									
DEC IDENT FROM 9160 PHW PLS		STOCK NUMBER 3		DOCUMENT NUMBER NG6601 0221 0002		SUPPLEMENTARY ADDRESS NA		UNIT PRICE 5.00	
SHIPPED FROM USN NOSC NE CAPT ST LAWRENCE 1st AK 6170000164		SHIP TO SZ362D DRMO YSI BLDG 22-009 552-4950 ELMENDORF AFB AK 99506 B AK8570028649		MARK FOR PROJECT HM		TOTAL PRICE DOLLARS 5.00			
WAREHOUSE LOCATION F		TYPE OF CARGO G		UNIT PACK H		UNIT WEIGHT I		UNIT CUBE J	
FREIGHT RATE M		DOCUMENT DATE N		WAI COND O		QUANTITY P		R	
FREIGHT CLASSIFICATION NUMERATURE WASTE HAZARDOUS SUBSTANCE LIQUID NOS ORME NA 9155 PCFLUB (DIESEL + ASKAROL) X 5500 ppm		RECEIVED BY AND DATE 55 IN 85 gal		INSPECTED BY AND DATE B		WAREHOUSED BY AND DATE 7		WAREHOUSE LOCATION 8	
EFFECTED BY AND DATE 1		TYPE OF CONTAINERS 2		TOTAL WEIGHT 3		RECEIVED BY AND DATE 4		INSPECTED BY AND DATE 5	
PACKED BY AND DATE 6		NO. OF CONTAINERS 7		TOTAL CUBE 8		RECEIVED BY AND DATE 9		INSPECTED BY AND DATE 10	
FIRST OF SHIPMENT ADDRESS AA		DATE SHIPPED CC		RECEIVED BY AND DATE DD		WAREHOUSED BY AND DATE EE		WAREHOUSE LOCATION FF	
13 TRANSPORTATION CHARGEABLE TO		14 BLADING, AWB, OR RECEIVERS SIGNATURE (AND DATE)		15 RECEIVER'S DOCUMENT NUMBER		16		17	

PCB Kunst 3 Drumm

9160 PHWPLAS										2										N 66001 0221 0007										NA										H										5.00																																																																																									
USN NOSC										SHIP TO										32362 D DRMO YSI										MARK FOR										PROJECT										TOTAL PRICE																																																																																									
NE CAPE ST LAWRENCE AK										BLOG 22-009 552 4950										ELMENDORF AFB AK 99506										HM										D										E																																																																																									
AK 6170000164										AK 8570028649										C										D										E																																																																																																			
WAREHOUSE LOCATION										TYPE OF CARGO										UNIT PACK										UNIT WEIGHT										UNIT CUBE										UNIT C										UNIT MFC										FREIGHT RATE										DOCUMENT DATE										UNIT CORD										QUANTITY										TOTAL PRICE																													
F										G										H										I										J										K										L										M										N										O										P										Q										R										S									
SUBSTITUTE DATA ITEM ORIGINALLY REQUESTED										FREIGHT CLASSIFICATION NOMENCLATURE										U Waste, Hazardous Substance										Liquid NOS ORITE NA9188										Y																																																																																																			
T										X										W										V										U										Y																																																																																									
SELECTED BY AND DATE										TYPE OF CONTAINER(S)										TOTAL WEIGHT										RECEIVED BY AND DATE										INSPECTED BY AND DATE																																																																																																			
1										2 55 m										3 650 lb										4										5																																																																																																			
PACKED BY AND DATE										NO. OF CONTAINER(S)										TOTAL CUBE										7										8																																																																																																			
4										5										6										9										10																																																																																																			
11										12										13										14										15																																																																																																			
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AA FIRST OF DESTINATION ADDRESS										CC DATE SHIPPED										DD										FF																																																																																																													
11										12										13										14										15																																																																																																			
13 TRANSPORTATION CHARGEABLE TO										14 B/LADING, AWB, OR RECEIVER'S SIGNATURE (AND DATE)										15 RECEIVER'S DOCUMENT NUMBER																																																																																																																							

Drum 2 61617 908

1

9160 PHW PCS										66001 0221000										N A H 500									
USN NOS C NE CAPE ST Lawrence k1 AK6170000164										SHIP TO 523620 DRMO 45I MDG 22-609 552-4950 ELMENDORF AFB TX 94504 AK8570028649										MARK FOR PROJECT HM									
WAREHOUSE LOCATION										UNIT WEIGHT 600lb										FREIGHT RATE									
SUBSTITUTE DATA ITEM ORIGINALLY REQUESTED										FREIGHT CLASSIFICATION NOMENCLATURE Waste Hazardous Substance PCB OIL > 500 PPM ASKAREL										LIQUID NOS ORME NA 9188									
SELECTED BY AND DATE										TYPE OF CONTAINER(S) 31										TOTAL WEIGHT 600									
PACKED BY AND DATE										NO OF CONTAINERS(S) 55 gallon ib 85 O.P.										TOTAL CUBE Drum 549									
REMARKS										RECEIVED BY AND DATE										INSPECTED BY AND DATE									
FIRST DESTINATION ADDRESS										DATE SHIPPED										WAREHOUSE LOCATION									
TRANSPORTATION CHARGEABLE TO										BLADING, AWB, OR RECEIVER'S SIGNATURE (AND DATE)										RECEIVER'S DOCUMENT NUMBER									

DD FORM 1348-1
3/74 010717 013 1040

1 MAR 74

EDITION OF 1 JAN 64 MAY BE USED
UNTIL EXHAUSTED

DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

PCB Liquid 1 Drum

The above material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to EPA Regulation (40 CFR Parts 260-265) and DOT Regulation (49 CFR Parts 100-178).

Signed M. Guley Date 02/26/80

5910 PHW PLOS										2 N66001 0221 0001										N/A										5.00									
USN NOSC										5236 2D DRMO YSI										MARK FOR PROJECT										TOTAL PRICE									
NE CAPE St LAWRENCE Is										BLDG 22-009																				DOLLARS CTS									
AK6170000164										EUMENDURF AFB AK 99306 14M																													
WAREHOUSE LOCATION										UNIT WEIGHT										FREIGHT RATE										QUANTITY									
10016																																							
SUBSTITUTE DATA (ITEM ORIGINALLY REQUESTED)										FREIGHT CLASSIFICATION NOMENCLATURE										DOCUMENT DATE										QUANTITY									
										Waste Hazardous Substance Solid NOS O'RME VA 9188																													
										PCB CAPACITORS 500ppm Askare!																													
SELECTED UNIT AND DATE										TYPE OF CONTAINER(S)										RECEIVED BY AND DATE										INSPECTED BY AND DATE									
55 in										20016																													
285																																							
PACKED BY AND DATE										NO. OF CONTAINER(S)										WAREHOUSED BY AND DATE										WAREHOUSE LOCATION									
										2																													
										921,565																													
MARKS										DATE SHIPPED										The above named material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to KPA Regulation (40 CFR Parts 264-265) and DOT Regulation (49 CFR Parts 106-178).																			
FIRST DESTINATION ADDRESS																																							
TRANSPORTATION CHARGEABLE TO										14B/LADING, AWB, OR RECEIVER'S SIGNATURE (AND DATE)										15 RECEIVER'S DOCUMENT NUMBER																			

PCB CAPS - 2 Drums

DD FORM 1348-1 MAR 74 EDITION OF 1 JAN 64 MAY BE USED UNTIL EXHAUSTED

9160 PHW PLOS										EA 3										N6600102210004										NA H										500																													
USN NOSC NE CAPE ST LAWRENCE / AK AK 6170000164										SUPT 52362D DREMO YST CLDG 22-009 552-4950 ELMENDORF AFB AK 99506 HH AK 8570028649										MARK FOR PROJECT										TOTAL PRICE DOLLARS CTS																																							
WAREHOUSE LOCATION										UNIT WEIGHT 400 lb										UNIT CUBE										FREIGHT RATE										DOCUMENT DATE										QUANTITY										TOTAL PRICE DOLLARS CTS									
SUBSTITUTE DATA ITEM ORIGINALLY REQUESTED										FREIGHT CLASSIFICATION NOMENCLATURE										DOCUMENT DATE										UNIT COND										QUANTITY										TOTAL PRICE DOLLARS CTS																			
Waste Hazardous Substance PCB PULVER DIESEL + ASKAREL X 500PPM										Liquid NOS ORM-E NA9188																																																											
SELECTED BY AND DATE										TYPE OF CONTAINER(S) 55 gal IN 85 gal										TOTAL WEIGHT 1200 lb										RECEIVED BY AND DATE										INSPECTED BY AND DATE																													
PACKED BY AND DATE										NO. OF CONTAINER(S) 3										TOTAL WEIGHT 1106 1108 1108										7 WAREHOUSED BY AND DATE										8 WAREHOUSE LOCATION																													
RE MARKS										CC DATE SHIPPED										DD										9										The above named material is accurately identified, described, packaged, marked and labeled, and is proper for transportation according to EPA Regulation (40 CFR Parts 264-265) and DOT Regulation (49 CFR Parts 100-175).																													
AA FIRST DESTINATION ADDRESS										BB										CC										DD										GG																													
13 TRANSPORTATION CHARGEABLE TO										14 B/LADING, AWB, OR RECEIVER'S SIGNATURE (AND DATE)										15 RECEIVER'S DOCUMENT NUMBER																																																	

DD FORM 1348-1
3, N 0102 17 013 1040

1 MAR 74

EDITION OF 1 JAN 64 MAY BE USED
UNTIL EXHAUSTED

DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

1 Drum 3 ASMT 3 PCB

STOCK NUMBER 9160 PHW PCBS										DOCUMENT NUMBER NA 0221 0008										UNIT PRICE 500									
SHIP TO USN NOS C NE CAPE SYLAUWENCE 151 AK6170000164										MARK FOR PROJECT H M										TOTAL PRICE DOLLARS CTS									
WAREHOUSE LOCATION										FREIGHT RATE										QUANTITY									
UNIT WEIGHT 600 lbs										UNIT CUBE										UNIT PRICE									
SUBSTITUTE DATA ITEM ORIGINALLY REQUESTED										FREIGHT CLASSIFICATION NOMENCLATURE										TOTAL PRICE									
PCB OIL 500 PPM ASKAREL										Waste Hazardous Substance Liquid NOS ORME NA 9188										TOTAL PRICE									
RECEIVED BY AND DATE										TOTAL WEIGHT 1800 lbs										INSPECTED BY AND DATE									
PACKED BY AND DATE										NO. OF CONTAINERS 3										WAREHOUSE LOCATION									
DATE SHIPPED										DATE SHIPPED										DATE SHIPPED									
TRANSPORTATION CHARGEABLE TO										RECEIVER'S SIGNATURE (AND DATE)										RECEIVER'S DOCUMENT NUMBER									

PCB Liquid 3 Drums

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80									
9160 PHW PCBs		ER 3		N 66001 62210006		NA		500	
U.S.N. NO SC		SHIP TO		32362D DRMO YSI		MARK FOR PROJECT		TOTAL PRICE	
NE CAPE ST LAWRENCE IS		BLDG 22-009		5524950		HM		DOLLARS CTS	
AK6170000164		ELMENDORF AFB AK		99506		C		E	
WAREHOUSE LOCATION		UNIT OF CARGO		UNIT PACK		UNIT WEIGHT		UNIT CUBE	
F		G		H		I		J	
SUBSTITUTED DATA ITEM ORIGINALLY REQUESTED		FREIGHT CLASSIFICATION NOMENCLATURE		Waste Hazardous Substance		liquid - NOS ORM-E NA9188		Y	
1		2		3		4		5	
SELECTED BY AND DATE		TYPE OF CONTAINER(S)		TOTAL WEIGHT		RECEIVED BY AND DATE		INSPECTED BY AND DATE	
1		2		3		4		5	
PACKED BY AND DATE		NO. OF CONTAINER(S)		TOTAL CUBE		WAREHOUSED BY AND DATE		WAREHOUSE LOCATION	
1		2		3		4		5	
REMARKS		CC		DD		The above named material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to EPA Regulation (49 CFR Parts 268-265) and DOT Regulation (49 CFR Parts 193-178).		Signed <u>M. Guley</u> Dated <u>9/26/80</u>	
AA		BB		CC		DD		GG	
FIRST DESTINATION ADDRESS		DATE SHIPPED		14 B/LADING, AWB, OR RECEIVER'S SIGNATURE (AND DATE)		15 RECEIVER'S DOCUMENT NUMBER		16	
11		12		13		14		15	
TRANSPORTATION CHARGEABLE TO		14 B/LADING, AWB, OR RECEIVER'S SIGNATURE (AND DATE)		15 RECEIVER'S DOCUMENT NUMBER		16		17	

or

PCB Liquid 3 Drums

(Flush)

DD FORM 1348-1 1 MAR 74 EDITION OF 1 JAN 64 MAY BE USED UNTIL EXHAUSTED

DOC IDENT										STOCK NUMBER										DOCUMENT NUMBER										UNIT PRICE																																																																																																													
9160 PHW PCBs										3 N6609 0221 0003										N.A.										500																																																																																																													
SHIP FROM										SHIP TO										MARK FOR										PROJECT																																																																																																													
USN NOSC										52362D DRMO VSI										HM										TOTAL PRICE																																																																																																													
NE CAPE ST LAWRENCE										BOX 22-009 552-4950										AK 9450										DOLLARS CTS																																																																																																													
AK 6170000164										AK 857002864										C										E																																																																																																													
WAREHOUSE LOCATION										TYPE OF CASE										UNIT PACK										UNIT WEIGHT										CUBE																																																																																																			
F										G										H										I										J										K										L										M										N										O										P										Q										R										S									
SUBSTITUTE DATA (ITEM ORIGINALLY REQUESTED)										FREIGHT CLASSIFICATION										HOMENCLATURE										Y																																																																																																													
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W										X										Y										Z																																																																																																													
SELECTED BY AND DATE										TYPE OF CONTAINER(S)										TOTAL WEIGHT										RECEIVED BY AND DATE										INSPECTED BY AND DATE																																																																																																			
1										2										3										4										5																																																																																																			
PACKED BY AND DATE										NO. OF CONTAINER(S)										TOTAL CUBE										WAREHOUSED BY AND DATE										WAREHOUSE LOCATION																																																																																																			
4										5										6										7										8																																																																																																			
REMARKS										CC										DD										EE																																																																																																													
AA										BB										CC										DD																																																																																																													
FIRST DESTINATION ADDRESS										DATE SHIPPED										FF										GG																																																																																																													
11										12										13										14																																																																																																													
TRANSPORTATION CHARGEABLE TO										B/LADING, AWB, OR RECEIVER'S SIGNATURE (AND DATE)										RECEIVER'S DOCUMENT NUMBER																																																																																																																							

DD FORM 1348-1
1/M 010217-013-1040

1 MAR 74

EDITION OF 1 JAN 64 MAY BE USED
UNTIL EXHAUSTED

DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

Drum
PCB Fluid

1

203 GOVERNMENT PRINTING OFFICE: 1968 - O-233-60040

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80																															
IDENT FROM		STOCK NUMBER		QUANTITY		DOCUMENT NUMBER		SUPPLEMENTARY ADDRESS		SIGNAL		TUNE		SYSTEM		PROJECT		PRIORITY		REQ'D DEL DATE		APPROX		RI		UN. PR. CT		DOLLARS		CTS	
9160 PHW PCBs		9160 PHW PCBs		3		N66001 0221 0002																N.A.		H				5.00			
SHIPPER'S NAME		SHIP TO		MARK FOR		PROJECT		TOTAL PRICE		DOLLARS		CTS																			
USN NGSC		52362D DRMO YSI		HM																											
NE CAPE ST LAURENCE ISL		BDG 22-009 552-4650																													
AK 617 0000 164		EUMENDORF AFB AK 99506																													
WAREHOUSE LOCATION		TYPE OF CARGO		UNIT PACK		UNIT WEIGHT		UNIT CUBE		V F C		N M F C		FREIGHT RATE		DOCUMENT DATE		MAT COND		QUANTITY											
F		G		H		I		J		K		L		M		N		O		P		Q		R		S					
SUBSTITUTE DATA ITEM ORIGINALLY REQUESTED		FREIGHT CLASSIFICATION		NOMENCLATURE																											
T		Waste Hazardous Substance Liquid NOS		ORM-E NA 9188																											
W		PCB LIQUIDS 5500PPM		ASKETAL																											
SELECTED BY AND DATE		TYPE OF CONTAINER(S)		TOTAL WEIGHT		RECEIVED BY AND DATE		INSPECTED BY AND DATE																							
1		55 in 85 gal		1500 lb		7		8																							
PACKED BY AND DATE		NO. OF CONTAINERS(S)		TOTAL CUBE		WAREHOUSED BY AND DATE		WAREHOUSE LOCATION																							
4		3		268 534 605		9																									
MARKS		BR		CC		DD																									
FIRST DESTINATION ADDRESS		DATE SHIPPED																													
11		12		FF		GG																									
13 TRANSPORTATION CHARGEABLE TO		14 B/LADING, AWB, OR RECEIVER'S SIGNATURE (AND DATE)		15 RECEIVER'S DOCUMENT NUMBER																											

PCB liquids 3 Drum

SHIP FROM USN NOS C NE CAPE ST LAWRENCE ISL AK 6170000164										SHIP TO 362D Demo Yst BLDG 22-009 552-450 HM ELMENDORF AFB, AK 99506 AK 8570028649										DOCUMENT NUMBER N66001 0221 0003										UNIT PRICE DOLLARS CTS 5.00																																																																																																													
WAREHOUSE LOCATION										TYPE OF CARGO										UNIT WEIGHT										UNIT CUBE										UNIT PRICE																																																																																																			
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SUBSTITUTE DATA (ITEM ORIGINALLY REQUESTED)										FREIGHT CLASSIFICATION NOMENCLATURE										ITEM NOMENCLATURE										MARK FOR PROJECT										TOTAL PRICE																																																																																																			
T										Waste Hazardous Substance liquid VOS NA 9188										Y																																																																																																																							
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SELECTED BY AND DATE										TYPE OF CONTAINER(S)										TOTAL WEIGHT										RECEIVED BY AND DATE										INSPECTED BY AND DATE																																																																																																			
1										55 in 285 gal										1500 lb										7										8																																																																																																			
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4										3										592 971 976										9																																																																																																													
DETAILS										AA										BB										CC										DD										The above listed material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to EPA Regulation (49 CFR Parts 244-245) and DOT Regulation (49 CFR Parts 100-178).																																																																																									
FIRST DESTINATION ADDRESS										DATE SHIPPED										Signed										Dated																																																																																																													
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13 TRANSPORTATION CHARGEABLE TO										14 B/LADING, AWB, OR RECEIVER'S SIGNATURE (AND DATE)										15 RECEIVER'S DOCUMENT NUMBER																																																																																																																							

PCB Liquid 3 Drum

U.S. GOVERNMENT PRINTING OFFICE: 1967-81 800/60004
U.S. GOVERNMENT PRINTING OFFICE: 1968-222 331 600040

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80																																																	
DOC IDENT FROM		FSC		NMIN		AUD		QUANTITY		DOCUMENT NUMBER		DATE		SERIAL		SUPPLEMENTARY ADDRESS		SIGNAL		TUGS		BUTON		PROJ.		ECI		PRIO		ORIT		AID D		DEL DATE		APRCE		HI		UNIT PRICE		DOLLARS		CTS					
9160 PHW DCOS		2		066001		0221		0004		NA		500																																					
SHIPPED FROM USN NOSL NE CPT S LAWRENCE 1st AK6170000164										SHT TO 362D DEMO YSI BUDG 22-009 ELMENDORF AFB AK 9554 HM										MARK FOR PROJECT HM										TOTAL PRICE DOLLARS										CTS									
WAREHOUSE LOCATION										TYPE OF CARGO		UNIT PACK		UNIT WEIGHT		UNIT CUBE		UFC		NMFC		FREIGHT RATE		DOCUMENT DATE		MAT COND		QUANTITY																					
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SUBSTITUTE DATA ITEM ORIGINALLY REQUESTED										FREIGHT CLASSIFICATION NOMENCLATURE																																							
T										Waste Hazardous Substance Liquid WOS ORM-E NA9185																																							
W										ITEM NOMENCLATURE PCB Liquid 5500 ppm ASKMEI																																							
SELECTED BY AND DATE										TYPE OF CONTAINER(S)		TOTAL WEIGHT		RECEIVED BY AND DATE		INSPECTED BY AND DATE																																	
1										55 lb		1000		7		8																																	
PACKED BY AND DATE										NO. OF CONTAINER(S)		TOTAL CUBE		WAREHOUSED BY AND DATE		WAREHOUSE LOCATION																																	
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11										5		974		12		FF																																	
REMARKS:										The above named material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to IATA Regulation (48 CFR Part 266.66) and DOT Regulation (49 CFR Part 176.178).																																							
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FIRST DESTINATION ADDRESS										DATE SHIPPED																																							
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TRANSPORTATION CHARGEABLE TO										BLADING, AWB, OR RECEIVER'S SIGNATURE (AND DATE)		RECEIVER'S DOCUMENT NUMBER																																					

DD FORM 1348-1
S/N 0107-17-013-1040

1 MAR 74

EDITION OF 1 JAN 64 MAY BE USED
UNTIL EXHAUSTED

DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

PCB Liquid 2 Drums

9160 PHW PCBs										EX 2										N66001 0221 0005										NA H 500																																																																																																													
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Oil U
2 Drums
PCB Flush

The above defined material is properly identified, described, packaged, marked and labeled, and is proper for transportation according to EPA Regulation (49 CFR Parts 260-265) and DOT Regulation (49 CFR Parts 140-175).
Signed: [Signature] Dated: 9/26/58

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pcs lignid. 2 drum

1 IDENT										2 FROM										3 STOCK NUMBER										4 QUANTITY										5 DOCUMENT NUMBER										6 SUPPLEMENTARY ADDRESS										7 SERIAL										8 SURF. SER.										9 MARK FOR										10 PROJECT										11 UNIT PRICE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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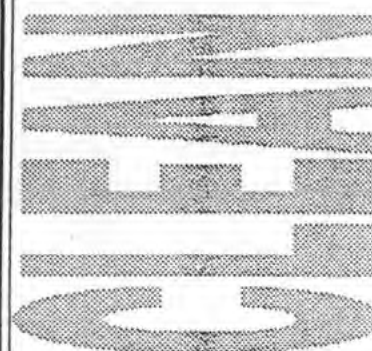
PCB-FLUJ107B 1 Drum Oil ✓

**CTO #0019
Site Inspection
White Alice Site Northeast Cape
St. Lawrence Island, Alaska**

Final Report
May 22, 1991

NORTHWEST AREA

**COMPREHENSIVE
LONG-TERM
ENVIRONMENTAL
ACTION NAVY**



**ENGINEERING FIELD ACTIVITY
NORTHWEST, NAVAL FACILITIES
ENGINEERING COMMAND
CONTRACT #N62474-89-D-9295**



THE URS TEAM

URS Consultants

**Science Applications
International Corp.**

**B&V Waste Science and
Technology Corp.**

Shannon & Wilson, Inc.

**FINAL REPORT
SITE INSPECTION**

FOR THE

**COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY
(CLEAN PROGRAM) NORTHWEST AREA**

**WHITE ALICE SITE NORTHEAST CAPE
ST. LAWRENCE ISLAND, ALASKA
CONTRACT TASK ORDER NO.: 0019**

**PREPARED BY:
SHANNON & WILSON, INC.
SEATTLE, WASHINGTON**

**AS SUBCONSULTANTS TO:
URS CONSULTANTS, INC.
SEATTLE, WASHINGTON**

**PREPARED FOR:
ENGINEERING FIELD ACTIVITY, NORTHWEST
WESTERN DIVISION, NAVAL FACILITIES ENGINEERING COMMAND
SILVERDALE, WASHINGTON**

MAY 22, 1991

**SITE INSPECTION
TITLE PAGE**

Document Title: Site Inspection
Navy CLEAN Program, Northwest Area

Site Name: White Alice Site Northeast Cape

Site Location: St. Lawrence Island, Alaska

Contract Task Order No.: 0019

Document Control No.: 9105.041

Report Coverage: This report covers field sampling and analytical evaluation as a part of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Program under Contract No. N62474-89-D-9295 for the Engineering Field Activity, Northwest, of the Western Division, Naval Facilities Engineering Command. These services were partially provided by Shannon & Wilson, Inc. as subcontractor to URS Consultants, Inc. for the site indicated above and are described within this Report.

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EXECUTIVE SUMMARY

A Site Inspection was performed by the URS Consultants Contractor's Team at the former White Alice Site, St. Lawrence Island, Alaska, as part of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62474-89-D-9295, Contract Task Order (CTO) #0019. The work was conducted as a follow-up to CTO #0018, which primarily consisted of a drum Removal Action. A sampling and analysis program was implemented to: 1) identify and confirm the presence of asbestos in the facility's buildings; and 2) identify the nature and magnitude of residual contamination in the soils and stream sediments beneath and adjacent to the three transformer banks and the two drum disposal areas. Based upon the results of chemical analyses, past site usage, and observations made at the site, the following conclusions can be drawn:

- Polychlorinated biphenyl (PCB)-1260 was detected in all 15 composite near-surface soil samples collected at Transformer Bank No. 1, to a maximum concentration of 14.1 ppm. The highest concentrations were located at the edges of the sampling grid. Higher concentrations may exist in discrete locations either within or beyond the sampling grid.
- No PCB compounds were detected in the eight composite near-surface soil samples collected from the grid around Transformer Bank No. 2. Low concentrations of 4,4-DDT and endrin aldehyde were detected in one soil sample.
- PCB-1260 was detected at Transformer Bank No. 3 in four of 19 composite near-surface soil samples ranging from 21.7 to 166.0 ppb. Several pesticides, including 4,4-DDE, 4,4-DDT, and 4,4-DDD, and low levels of several dioxin and furan compounds were also detected in the soil.
- All three of the concrete pads located at the transformer banks contained PCB-1260 in both concrete chip and swipe samples. Low levels of pesticides were also detected.
- The two exterior 55-gallon drum locations, the Tramway Drumfield and the Upper Camp drum disposal area, are characterized by a general lack of significant soil development, which could impact remediation and additional investigations.
- At the Tramway Drumfield, Total Petroleum Hydrocarbons (TPH) were detected in all 19 soil samples. Only one sample exceeded 100 ppm, which is the cleanup criteria established by the Alaska Department of Environmental Conservation. PCB-

1242 was detected in two samples and low concentrations of semi-volatile compounds were also detected.

- TPH was detected in 86 of 87 soil samples at the Upper Camp Drumfield, and fifteen of the sample concentrations exceeded 100 ppm. Benzene, toluene, xylenes and methylene chloride were detected in eight soil samples. Generally low concentrations of 17 semivolatile organic compounds were also detected.
- One of five sediment samples collected downgradient from the Tramway Drumfield stream contained low concentrations of eight semivolatile organic compounds.
- No contaminants were detected in five stream water samples collected at the same locations as the sediment samples discussed above.
- Asbestos-containing materials were identified in the Radome Building (221), Building 124, Arctic Walkway, Tram Hallway, Building 1001, and Antennas #2, #3 and #4.

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ACRONYMS

ACM	Asbestos-containing Material
ADEC	Alaska Department of Environmental Conservation
BNA	Base Neutral and Acid Extractable
CLEAN	Comprehensive Long-Term Environmental Action Navy
CTO	Contract Task Order
DDT	Dichlorodiphenyltrichloroethane
EPA	Environmental Protection Agency
HVAC	Heating, Ventilating, and Air Conditioning System
MEC	Main Electronics Center
NEESA	Naval Energy and Environmental Support Activity
NESHAP	National Emission Standards for Hazardous Air Pollutants
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyl
QA	Quality Assurance
SI	Site Inspection
SOP	Standard Operating Procedure
TCE	Trichloroethene
TCL	Target Compound List

ACRONYMS (continued)

TIC	Tentatively Identified Compounds
TPH	Total Petroleum Hydrocarbon
TSI	Thermal System Insulation
USGS	U.S. Geological Survey
VOC	Volatile Organic Compound
WASNC	White Alice Site Northeast Cape

1.0 INTRODUCTION

1.1 PURPOSE

This report presents the results of a Site Inspection (SI) of soil, surface water, concrete, sediment, and building asbestos conditions at the White Alice Site, Northeast Cape (WASNC), St. Lawrence Island, Alaska. The sampling and analysis program was designed to determine the existence of hazardous material released at the site from areas under the jurisdiction of the Navy. The field program was performed as a follow-up to Contract Task Order (CTO) #0018, which was a Removal Action to remove drums, transformers, and gas cylinders located on the site. This work was requested by the Engineering Field Activity, Northwest, of the Western Division Naval Facilities Engineering Command as a follow-up to the U.S. Navy's Preliminary Assessment (PA) Report of 1990 (Naval Energy and Environmental Support Activity [NEESA], 1990). The work was performed under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62474-89-D-9295, CTO #0019.

1.2 SITE LOCATION

The WASNC is located on St. Lawrence Island, Alaska, which lies in the Bering Sea between 168° 30' and 172° 00' west longitude and between 62° 52' and 63° 52' north latitude (Figure 1-1). The distance from the island to the nearest point in Siberia, Cape Chaplin, is about 40 miles, while the distance to the nearest point on the Alaskan mainland at Cape Rodney on the Seward Peninsula is 118 miles. The WASNC facilities are located at the eastern end of the island on top of Kangukhsam Mountain and on the coastal plain that lies to the north of the mountain. The SI was limited to 26 acres of the WASNC that were transferred from the Air Force to the Navy in 1982. The Navy property consists of the lower antenna site (White Alice Site), the lower tramway terminal, the tramway that ascends Mount Kangukhsam, and the upper tramway complex/Radome facility. The general layout of these facilities is presented in Figure 1-2.

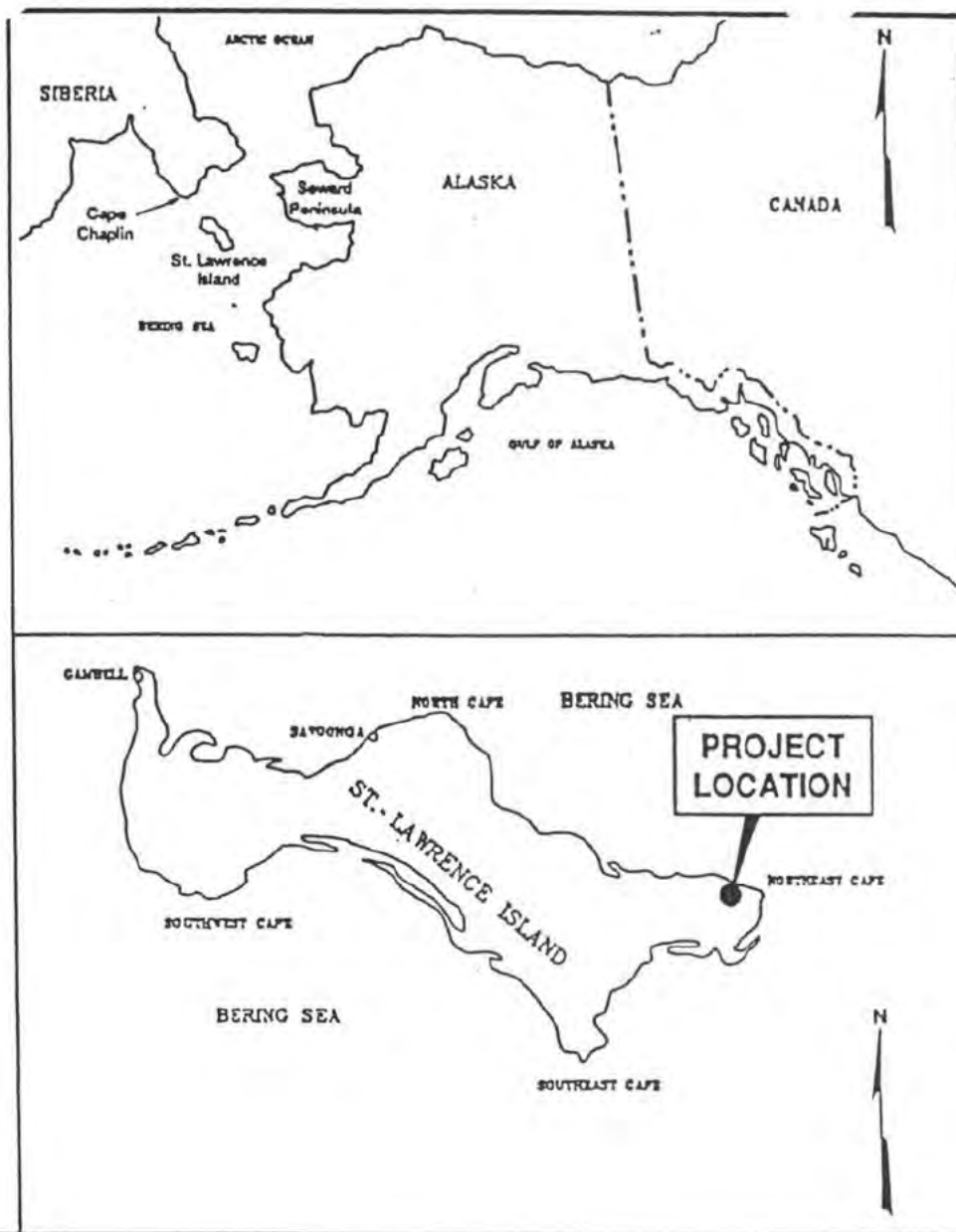
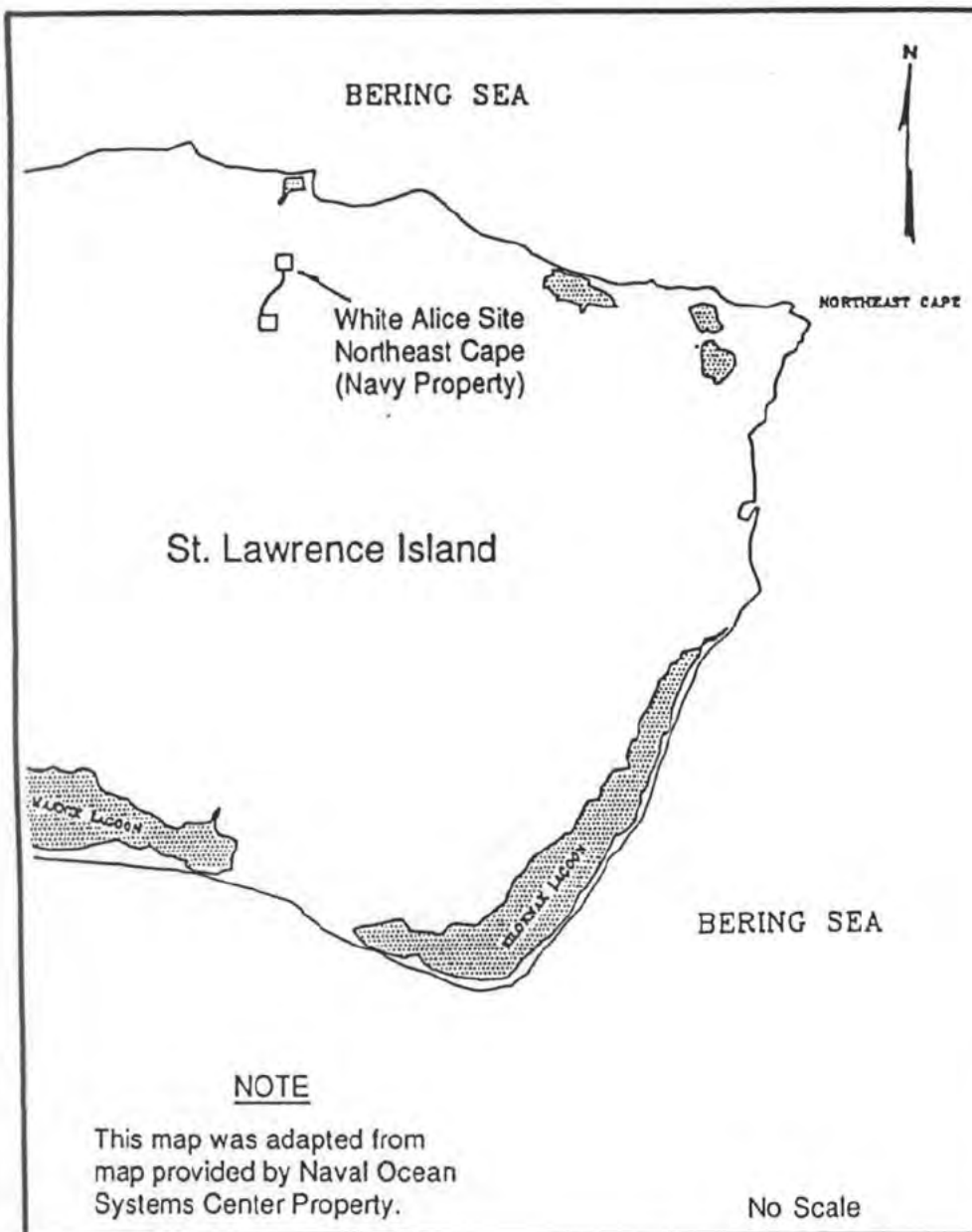
1.3 SITE INSPECTION SUMMARY

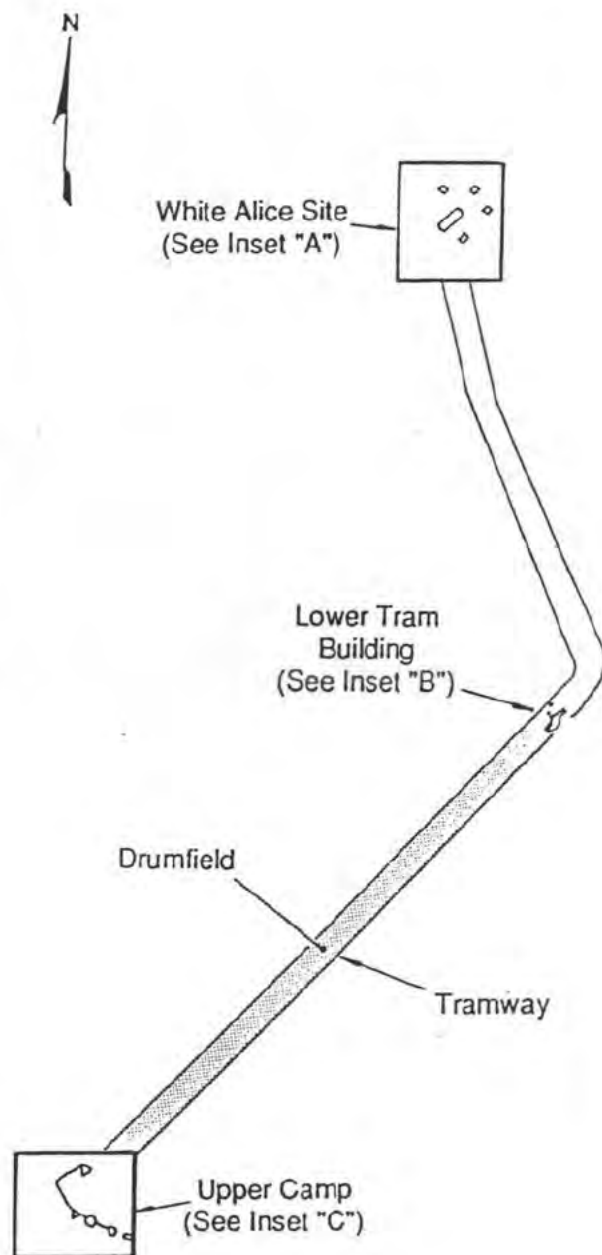
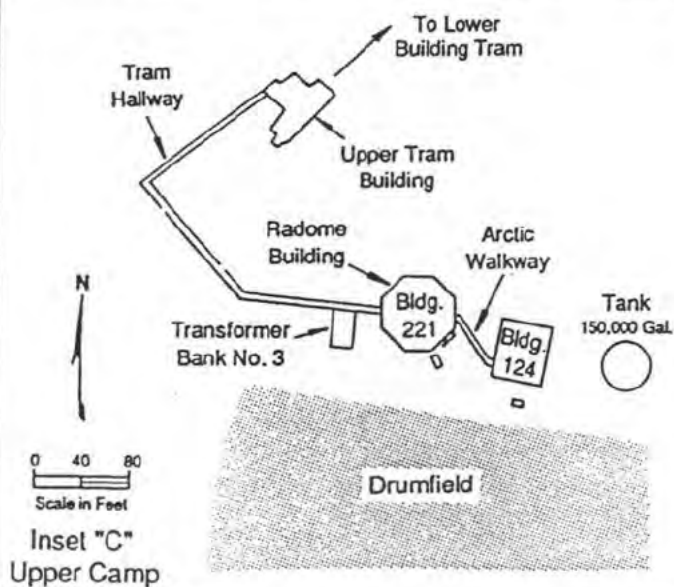
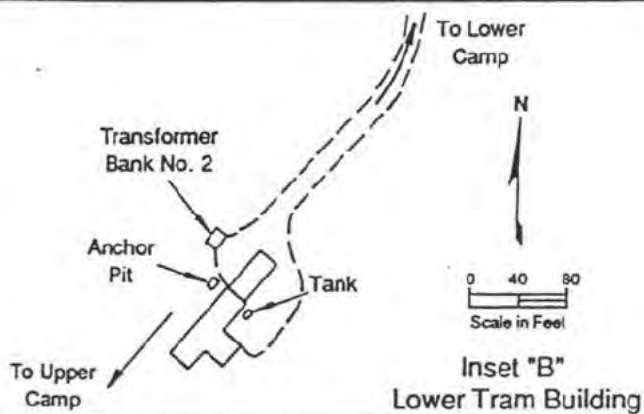
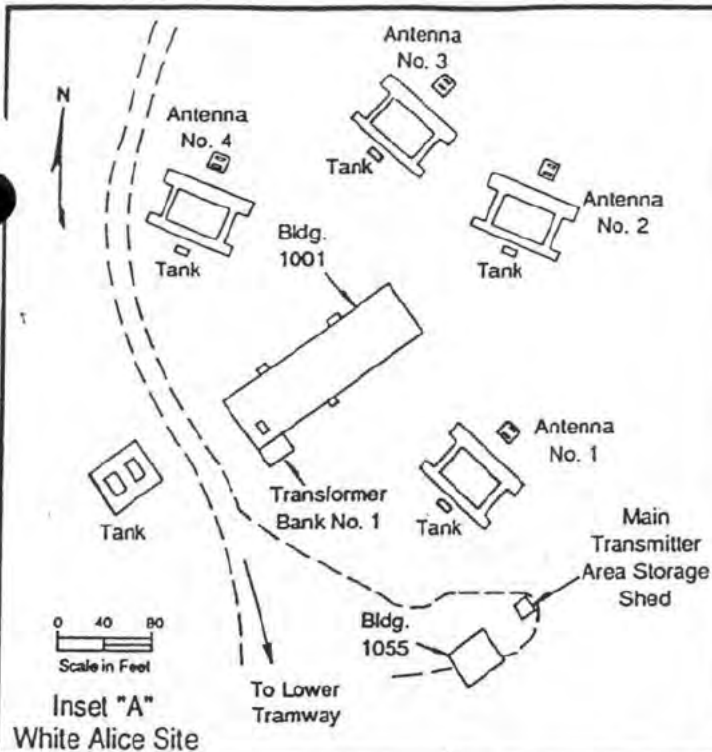
This site inspection consisted of: 1) collection of asbestos-containing materials (ACM) from buildings 221, 124, the arctic walkway, and the tram hallway in the Upper Camp and building 1001 and Antennas #2, #3, and #4 in the White Alice Site (Figure 1-2); 2)

SITE INSPECTION REPORT
Navy CLEAN Program
Engineering Field Activity, Northwest
Contract No. N62474-89-D-9295/CTO #0019

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collection of surface water and sediment samples at five locations downgradient from the tramway; 3) collection of soil, concrete, and concrete swipe samples at three transformer banks; 4) collection of soil samples from the former drum disposal areas under the tramway and near the Upper Camp; and 5) chemical analysis of the collected soil, concrete, concrete swipe, water, and asbestos samples by contract laboratories.





Not to Scale
Navy Property
at Northeast Cape

NOTE

This map was adapted from a map provided
by Naval Ocean Systems Center Property.

2.0 SITE CONDITIONS

2.1 GEOLOGY

The WASNC is located on St. Lawrence Island, Alaska, which is approximately 100 miles long and averages about 20 miles wide (Figure 1-1). The eastern part of the island is a broad, wave-cut bedrock platform now elevated to nearly 100 feet above sea level. The surface of the platform is covered with numerous small shallow lakes and blanketed by a thin veneer of water-saturated mossy turf and peat. Several isolated groups of talus-covered hills rise to elevations of 1,000 to 2,000 feet above sea level. These hills are formed by the Kinipaghulghat Pluton. The pluton is Cretaceous in age and consists predominantly of quartz monzonite and other granitic rock types. Toward the northeast of the pluton, a contact exists with undifferentiated volcanic rocks of Cretaceous and/or Tertiary Age (Figure 2-1). The pluton and volcanic rocks are surrounded by Quaternary Age surficial deposits consisting of gravel, sand, silt, and peat, which overlie the wave cut bedrock platform (Patton and Csejtey, 1980).

2.2 HYDROLOGY

The lowland areas of Northeast Cape are typical of a subarctic coastal plain where flat topography, frozen soils, and wet tundra have created numerous shallow thaw lake basins. These lakes are clear and tannic in appearance. In addition, there are numerous runoff streams throughout the area. The streams have vegetated, incised banks with sandy gravelly streambeds and clear flowing water. The streams range from a few feet to 20 to 30 feet wide. These streams are braided in the lowlands in contrast to high-velocity, single-channel streams in the mountainous areas. All surface water runoff from the area investigated in this report discharges into the Bering Sea, which lies about one mile to the north of the site.

A water supply well was drilled in the lower tramway terminal in September 1962 to a depth of 68 feet. Bedrock consisting of decomposed granitic rock was encountered at a depth of 32 feet, and the primary source of water was a fractured zone from 61 to 65 feet below land surface (bls). The static water level was 25 feet bls, and the well could sustain a yield of 12 gallons per minute for at least seven and one-half hours. Several weeks after the well was tested, the water level dropped to a depth of 58 feet bls, and the well became unusable. It appears that seasonal fluctuations of the water table made the well usable only during the summer and early fall months. The well was eventually abandoned (U.S. Army Corps of Engineers, 1962).

According to files of the U.S. Geological Survey (USGS) Water Resources Division in Anchorage, Alaska, records exist for nine wells drilled on the island. Two of these were drilled by the Air Force in the vicinity of Northeast Cape and have been abandoned. The nearest water supply well to WASNC, according to USGS records, is located approximately 100 miles to the west in Gambell (USGS, 1990).

2.3 CLIMATE

The weather on the island is characterized by typical arctic maritime climate, which has a relatively milder winter and a relatively cooler summer than arctic continental areas. Precipitation as rain or snow is recorded on 300 days of the year. The greatest precipitation is recorded during the months of August and September, with mean values of 1.82 and 1.63 inches, respectively. The months with the lowest mean precipitation are November, March, and April with values of 0.31, 0.34, and 0.43 inches, respectively.

Winter temperatures seldom fall below -10° Fahrenheit (F), and summer temperatures above 55° F are infrequent and of short duration. The record minimum temperature of the villages of Gambell and Savoonga is -31° F recorded in February, and the maximum is 65° F recorded in July.

Located in a stormy sea that varies only a few degrees from 32° F throughout the year, St. Lawrence Island is characterized by cold winds of gale, and occasionally hurricane, force. Commonly, the chill factor caused by high winds up to 100 miles per hour (mph), produce effective temperatures of 70° F below zero, and severe winter blizzards cause whiteout conditions. Prevailing winds are from the southwest and northwest in summer and northerly in winter. The average annual wind velocity is 17.8 mph.

The growing season extends from early June through late August, but there may be snow and freezing temperatures in any month. The first autumnal snowfall and formation of fresh-water ice generally occur in October, and sea ice usually forms in late November. The breakup of the spring ice pack occurs in the first two weeks of June, and some ice and snow may remain until July or later in certain localities (NEESA, 1990).

2.4 POPULATION DISTRIBUTION AND LAND USE

St. Lawrence Island is currently occupied by the descendants of the original Russian Yupik (pronounced U-pik) Eskimos, who apparently traversed the Bering Land Bridge

approximately 12,000-14,000 years ago. The Yupiks survive in a subsistence life-style of hunting and fishing, as well as selling of ivory carvings to tourists.

During the winter months the permanent population, approximately 1,200 Eskimos and a small minority of non-natives, resides in the village towns of Gambell and Savoonga. However, in the warmer hunting and fishing months, many residents (and complete families) travel to the coastal areas as well as to the Punuk Islands off the Northeast Cape, and reside in their summer "fish camps."

(b)(3)

(b)(3) (URS, 1991).

2.5 NATURAL HISTORY AND CRITICAL ENVIRONMENTS

The harsh year-round climate and limited soil results in a low-density plant and animal population. In the winter months, polar bears are frequent visitors to the island, arriving on the ice pack. Various whales, walrus and seals visit the island and surrounding waters, and are legally harvested by the Natives. During the course of the project field activities, the largest mammals present at Northeast Cape were a herd of approximately 200 reindeer. The camp was persistently visited by arctic fox and arctic ground squirrels. Sandhill cranes, jaegers, swans, and loons were common, and there was one sighting of a soaring eagle.

The vegetation of the Northeast Cape is classified as alpine tundra. This type of vegetation is dominated by white mountain avens, mat-forming herbs, grasses, and sedges. Indigenous shrubs include alpine bearberry, dwarf birch, Labrador tea, willows, heaths, and cassipes. The lowland area is mainly wet tundra with lakes, bogs, and generally poorly drained soils. Vegetation at higher, drier areas becomes sparse to almost nonexistent. Steep slopes, lack of soil, and harsh climate make plant populations and densities low.

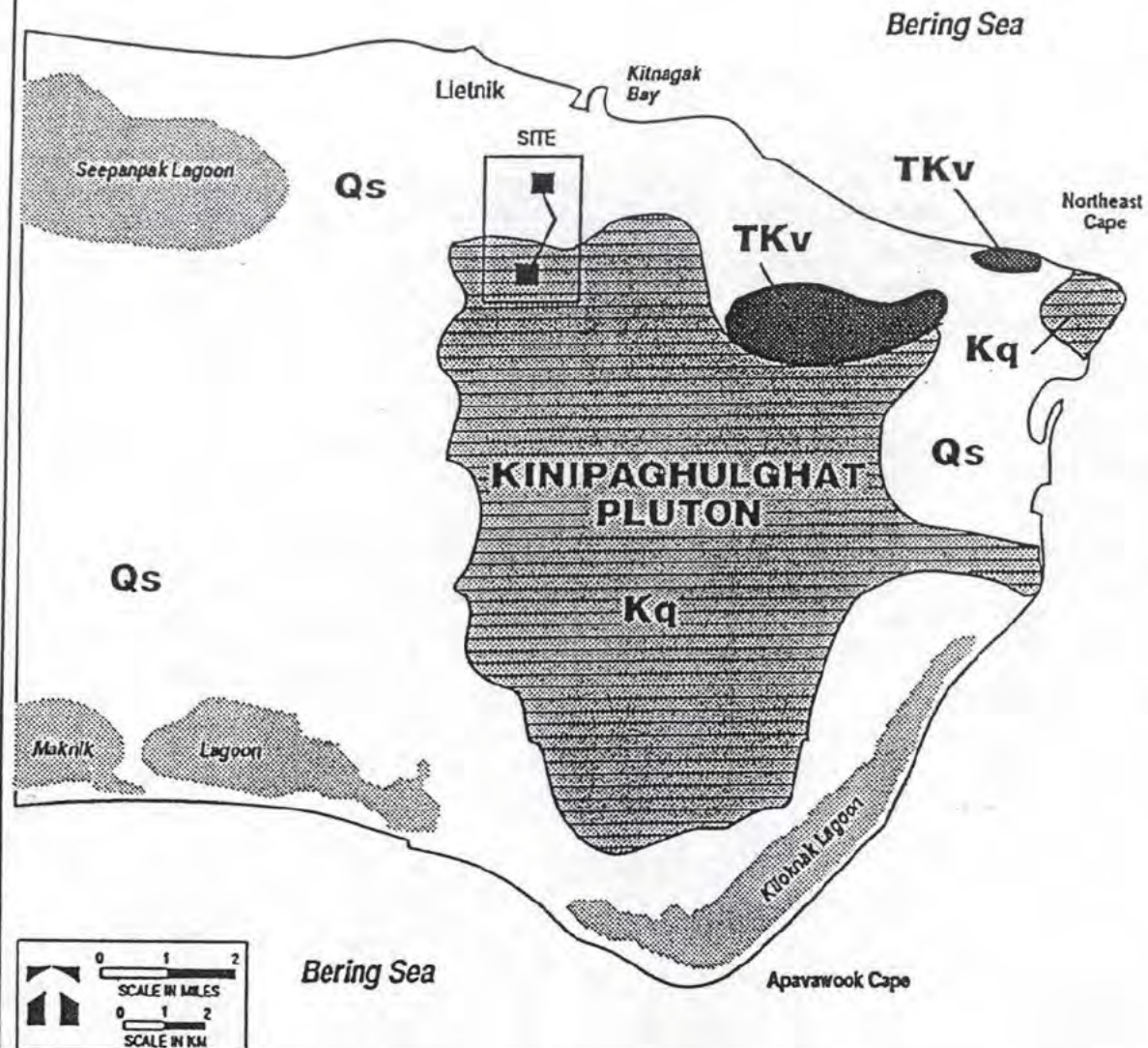
Walrus, sea lion, minke, beluga and killer whales, harbor porpoise, bearded seals and possibly ribbon seals are present during open water (July-September). Walrus frequently haul out at Northeast Cape, which is also a minor hauling-out area for sea lions. Ringed seals breed and pup on shorefast ice during late winter (March-April) at Northeast Cape between Kangighsak Point and Apavawook Cape. Polar bears are likely to be present in winter on ice pack and/or on shore. There is a minor bowhead whale (April-May) and gray whale (May-June) migration off the eastern coast of the island. Gray whale summer feeding

area is located northeast of the island. Walrus and bearded, ringed, and spotted seals are harvested in this area.

Most of the island provides important summer/fall nesting and molting habitat for migratory waterfowl. It also provides habitat for a major part of the seabird population in the northern Bering Sea. The marine water surrounding the island is the major seabird concentration and foraging area. The seabird colonies at the Northeast Cape area are limited. Three seabird colonies—Kinipaghulghat Mountain, Punuk Island, and Seevookhan Mountain—each support only a few pairs of a handful of species.

There have been sightings of peregrine falcons on St. Lawrence Island, but they are listed as an irregular visitant and an accidental on the island.

A small, few-flowered primula (Primula tschuktschorum) restricted to the Chukchi and Seward Peninsulas and St. Lawrence Island is listed as a Category 2 candidate taxa. Category 2 includes those taxa for which current knowledge suggests that proposals for listing as threatened or endangered are appropriate, although data to fully support the proposals are not yet available (NEESA, 1990).



NOTE

This map was adapted from a map provided by Naval Ocean Systems Center Property.

3.0 HAZARDOUS SUBSTANCES

Past material handling and waste disposal at the WASNC have resulted in potential contamination of a variety of areas. The WASNC was in use by the Air Force from 1952 to 1975. There is only limited information on waste generation rates and types. Wastes commonly generated from operations at the site include waste petroleum, oil lubricants, chlorinated and non-chlorinated solvents, and batteries. Pesticides were also used at the facility.

No large-scale industrial operations were conducted at this site. Past industrial operations primarily involved maintenance support for facilities, aircraft, aircraft support equipment, and ground equipment. Most incoming liquid material was shipped in 55-gallon drums. Occasionally, material was shipped in smaller drums and 5-gallon containers.

The drums typically contained petroleum products, dielectric fluids with polychlorinated biphenyls (PCB), cleaning solvents, alcohol, and some non-hazardous substances. Many drums were shipped to the WASNC over the years, but recycling or removal was never performed. The drums were stored throughout the site, and the empty drums were often disposed in the landfill(s).

This section provides a description and summary of the types of waste present for the areas identified on the Navy property that may contain hazardous wastes.

3.1 ASBESTOS HAZARD

Most of the buildings at the WASNC were insulated because of the harsh climate. The current facilities at the Northeast Cape were constructed in 1952 for the U.S. Air Force. Friable and non-friable ACM is located throughout the entire base facility. Possible sources of asbestos include thermal system insulation (TSI) on the steam and hot water lines, asbestos mud on the steam and hot water pipe elbows, transite wall board, ceiling tiles, asphalt asbestos floor tiles, floor glue, batt insulation in the ceiling and walls, fire doors, cement-asbestos siding shingles, flooring felts, and heating, ventilating and air-conditioning system (HVAC) insulation (NEESA, 1990).

On September 22, 1988, Navy personnel obtained samples from the TSI on the steam pipes in Building 1001, the White Alice Site Main Electronics Building. The samples were analyzed by a Navy laboratory by polarized light microscopy and were determined to be

positive for chrysotile and amosite. The majority of the suspected ACM is matrix-bonded, non-friable composite surfacing materials. Severe water damage observed on the asbestos TSI has created a potentially dangerous situation inside Buildings 1001, 124, and 221, since the ACM has become more friable. Certain buildings appear to have been forcibly entered by unknown parties, and reportedly, island residents have frequently conducted salvage operations on the abandoned facilities (NEESA, 1990).

Any Navy building containing ACM is regulated by the Occupational Safety and Health Administration, 29 CFR 1910.1001 and OPNAV 5100.23V. The National Emission Standards for Hazardous Air Pollutants (NESHAP) 30 CFR 61 Part M mandates the removal of friable ACM before a building may be demolished. Under NESHAP, no visible emissions of dust to the environment are permitted during removal, renovation, demolition, collection, transportation, or deposition of ACM waste (NEESA, 1990).

3.2 ELECTRICAL TRANSFORMER BANKS

An electrical system was installed when the WASNC was constructed for the Air Force in 1952. A total of twenty-nine transformers and three switch gear were installed on the present Navy property during the establishment of the base. All but three transformers were mounted inside of permanent structures on concrete pads to protect them from the outside environment. Three transformers were mounted outside on poles. Electricity for the WASNC was obtained from the main power plant located in the housing and operations area. On the present Navy property, power was delivered to three separate transformer banks located in the substation of Building 1001, the Lower Tramway Transformer Building, and the Upper Camp Transformer Building, as shown in Figure 1-2. The concrete pads in the latter two buildings did not cover the entire floor area, but were surrounded by two to three feet of soil along the inside walls of the buildings. The entire floor in the substation of Building 1001 was concrete. A fourth transformer bank was located on an unprotected platform under the main electric power line, north of Building 1001 toward the abandoned Air Force Base facility. Emergency power service could be delivered by two diesel engine-driven emergency alternators located near each of the transformer banks. The electrical system was abandoned in place in 1975 when the Air Force ceased operations at Northeast Cape.

The transformers inside Building 1001 were located within a bank of radio cabinets. The bank, bolted to a concrete pad, contained two 200-pound, four 300-pound, one 700-pound, and five 800-pound transformers. An electrical substation, connected to the White Alice Building, contained two 1000-pound transformers. These two transformers were bolted to

the pad and there was no evidence of dielectric oil leakage or damage to any of the equipment.

The survey of the Lower Tramway Transformer Building revealed a thirty- by forty-foot wood frame structure, partially destroyed by weathering, placed on a concrete pad. Situated in the center of the concrete pad was one 1000-pound switch box, and one 700-pound transformer. All of the electrical components were bolted to the pad and there was no evidence of dielectric oil leakage or damage to any of the equipment. Standing on soil, off the concrete pad in the southeast corner of the building, a 55-gallon steel drum labeled "Fuel Oil" had burst and considerable soil staining was evident.

The Upper Camp Transformer Building revealed a thirty- by forty-foot wood frame structure, partially destroyed by weathering, and similarly placed over a concrete pad. The building contained two 500-pound switch boxes, four 400-pound transformers, four 700-pound transformers and two 800-pound transformers. All of the electrical components were bolted to a concrete pad, and there was no evidence of dielectric oil leakage or damage to any of the equipment. The building entry doorway contained one 800-pound previously drained transformer. Soil staining was evident around the base of this transformer.

A transformer platform located under the main power line, north of the White Alice facilities toward the abandoned Air Force complex, contained three 500-pound transformers. Two of the transformers were intact; however, the third transformer was damaged about three-quarters of the way up the unit. An apparently high caliber bullet had pierced the unit, allowing the dielectric fluid to leak onto the wooden platform. There was evidence of soil staining under the platform, and it was estimated that ten gallons of dielectric fluid may have leaked from the damaged transformer (URS, 1991). Additional information on each transformer bank is found in Appendix A.

The White Alice Sites were high-power pulse systems. These systems would reportedly overheat and on occasion a transformer fire would occur. Following such an event, the burned dielectric fluid was reportedly dumped onto the ground outside the building and the transformer was flushed with the solvent trichloroethene (TCE) and refilled with oil. It is not known if any of the dielectric fluid contained PCBs. The amount(s) and/or location(s) of these reported releases are likewise unknown (NEESA, 1990).

PCBs are inert, thermally and chemically stable compounds with dielectric properties. In 1974, use of PCBs in the United States was limited to closed systems, with approximately 70 percent of the PCBs produced used in capacitors and the remaining 30 percent utilized in transformers. The environmental behavior of a PCB mixture is a direct function of their relative composition with respect to the individual chlorinated biphenyl species. In general,

as chlorine content increases, sorption increases while transport and transformation processes decrease. Adsorption onto soils and sediments is the major fate process affecting PCBs in the environment. Soil material adsorption capacity is highly correlated with organic content, surface area, and clay content (NEESA, 1990).

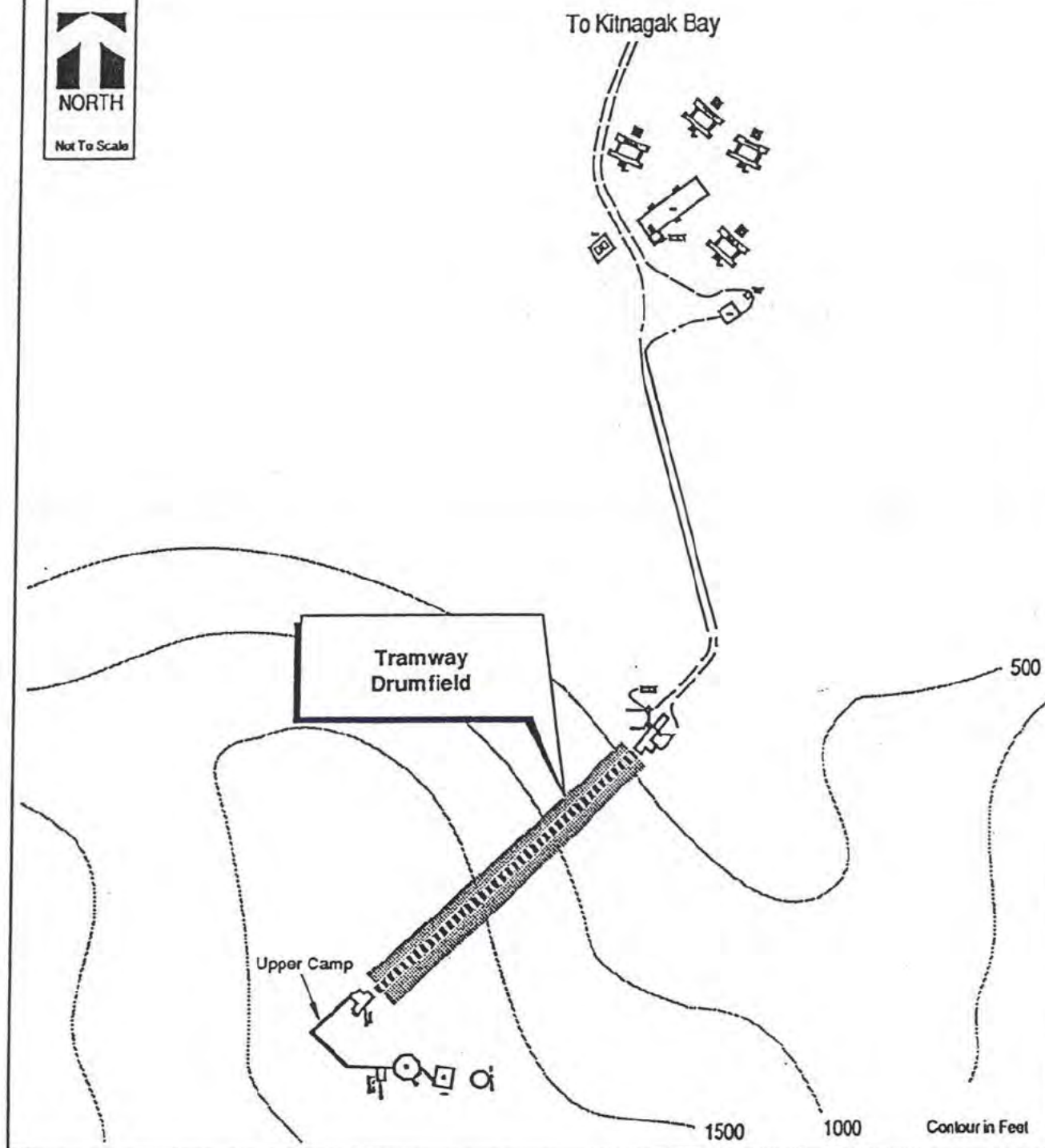
TCE, used as a cleaning solvent, is highly volatile in aqueous solutions, moderately soluble in water, and not strongly adsorbed or bioaccumulated. TCE on the soil surface is likely to volatilize, but that portion not removed by volatilization is likely to become mobile in groundwater.

3.3 DRUM DISPOSAL AREAS

Due to the remote location of Northeast Cape, most liquid supplies were shipped to the base in 55-gallon drums. When the base was closed in 1975, all storage and waste disposal drums were left behind. The drums were left outside in two separate areas, either underneath the tramway or near the Upper Camp, as shown in Figures 3-1 and 3-2.

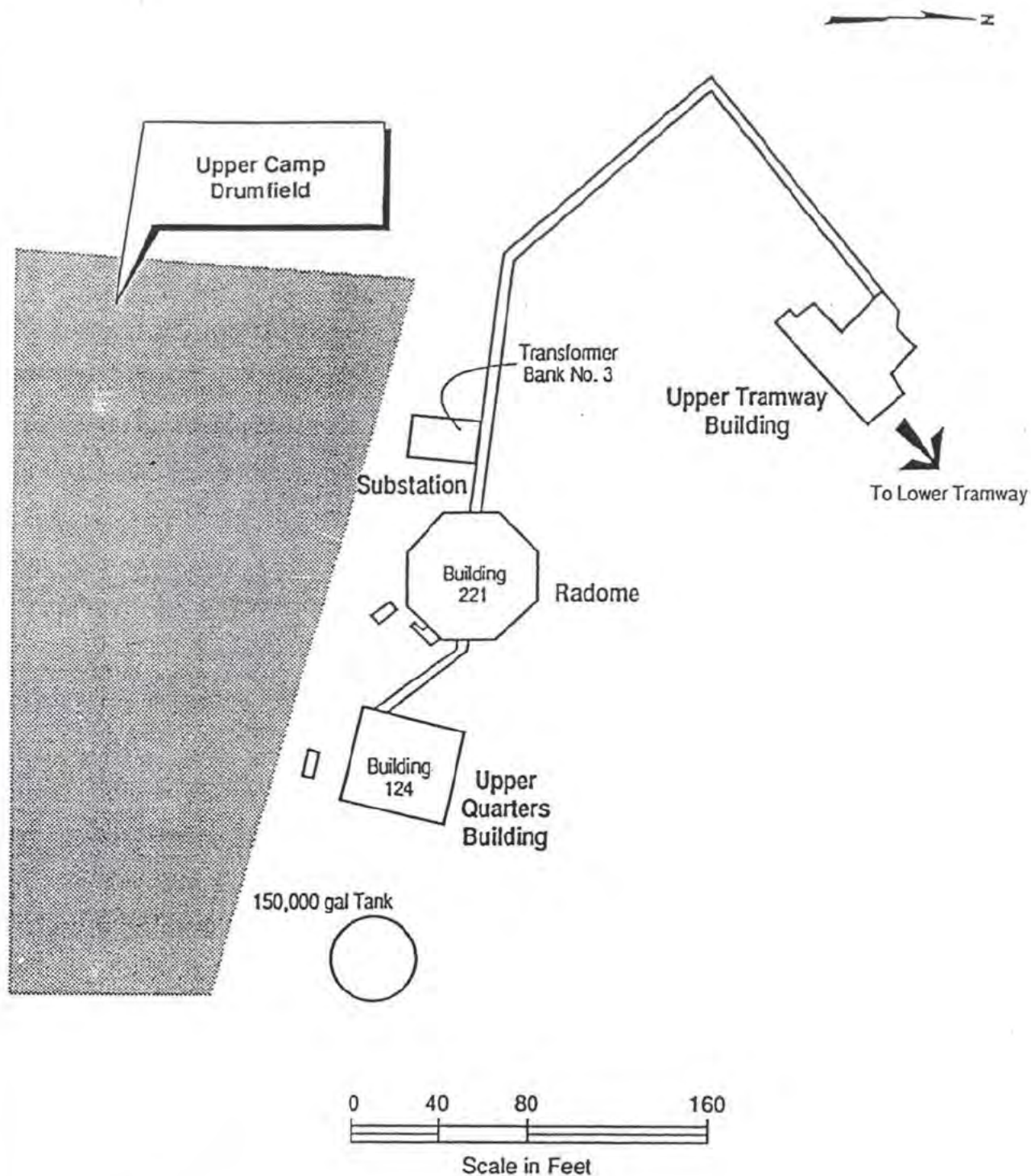
The Tramway Drumfield is defined as the Navy property beneath the tramway (Figure 3-1). During the drum removal action (CTO #0018), forty-six 55-gallon drums were removed from the slope beneath the tramway. Many drums were severely damaged and bullet holes were observed in some of the drums. Approximately 40 percent of the storage drums investigated still contained liquid, and fifteen of the drums showed signs of bulging and rupturing. A majority of the drums were rusted and the labels could not be read to determine the contents; however, labels that could be distinguished included arctic grade antifreeze, fuel oil diesel, and de-icing fluid.

The Upper Camp Drumfield is located immediately south of Buildings 221 and 124 in the Upper Camp Complex (Figure 3-2). More than six hundred 55-gallon drums were located in an area encompassing approximately 60,000 square feet. A majority of the drums contained product, but the labels were too weathered to read. Labels that could be read indicated the presence of fuel oil diesel, arctic grade antifreeze, and waste oil. Some of the drums appeared to have ruptured and others had bullet holes in them. In addition, the WASNC also reportedly handled PCB dielectric fluids, carbon tetrachloride, DDT, trichlorophenoxy acetic acid (2,4,5-T), alcohols, TCE, and sulfuric acid (NEESA, 1990).



NOTE

This map was adapted from a map provided by Naval Ocean Systems Center Property.



NOTE

This map was adapted from map provided by Naval Ocean Systems Center Property.

4.0 ENVIRONMENTAL MONITORING RESULTS

4.1 STUDY AREA INVESTIGATION

The sampling program was designed to establish the existence of hazardous materials released at the site and to identify conditions which may pose a threat to human health or the environment. As such, the sampling program was designed to systematically sample areas where hazardous materials were most likely to have been released, specifically the transformer stations and areas used for drum storage and disposal.

Sampling activities were conducted following the guidelines presented in the Field Sampling Plan (URS, 1990a). Some modification of this plan was required in order to meet the goals of the project because of the encountered site conditions. The following sections describe the sampling program associated with each type of sampling conducted and the results obtained. The sample collection methods are described in Appendices B and C.

As discussed in the Quality Assurance Project Plan, all of the laboratory analytical data was to be validated according to protocol developed by the Environmental Protection Agency (EPA). All of the analyses for Volatile Organic Compounds (VOC), Base Neutral and Acid Extractables (BNA), Total Petroleum Hydrocarbons (TPH), metals and pesticides/PCB were performed by Chemical & Geological Laboratories of Alaska, Inc. (ChemGeo). Most of these data were reviewed by Heartland Environmental Services, Inc. for validation. Significant inconsistencies and/or omissions were identified with respect to holding times, calibrations, sample Target Compound List/Tentatively Identified Compound (TCL/TIC) data, tunes and blanks which made the data insufficient for complete validation. A discussion of the results of the attempted validation and a summary memo providing recommendations for data usage are shown in Appendix D. Based on the data quality objectives for the project, the ChemGeo data should be treated as qualitative and be used only as a site screening tool. The dioxin/furan analyses were performed by ENSECO, Inc., and these data have also been validated by Heartland Environmental Services, Inc. In general, this data package is acceptable, although some of the data will be considered as qualitative and identified as such on the data tables. The results of the dioxin/furan data validation are provided in Appendix E.

4.2 ASBESTOS HAZARD EVALUATION

Sampling for ACM was performed in the Upper Camp area in buildings 221 and 124, and in building 1001 and Antennas #2, #3 and #4 at the White Alice Site. Seventy samples were

analyzed for ACM by Environmental Science & Engineering, Inc. Eight duplicate samples were also submitted to the R.J. Lee Group for Quality Assurance (QA) confirmation. The QA results confirmed the ACM analytical results originally performed by polarized light microscopy with scanning electron microscopy. The results of asbestos analyses are presented in Table 4-1, and the sample locations are shown in the figures found in Appendix C.

In building 221 of the Upper Camp, ACM was detected in each of the three floor tile samples, but not in the wallboard sample. Ten samples were collected from the floor tile in building 124 and all contained asbestos. A wallboard sample was collected in building 124's kitchen and also from the sleeping quarters. The kitchen sample contained no asbestos, and the sleeping quarter sample contained less than 5% chrysotile.

Samples of the black fibrous pipe insulation (lagging) were collected from the bathroom, airmen closet, and sleeping room from building 124. The first two samples each contained less than 5% chrysotile and the third sample indicated no ACM. The pipe elbow sampled in the sleeping room contained less than 5% chrysotile. The arctic walkway located between buildings 124 and 221 was also sampled for ACM. One sample from the cement-coated discharge pipe east of building 124 was collected, and it contained 10 to 20% chrysotile and 10 to 20% crocidolite. Two samples of the gray siding panel were collected from the walkway, and they each contained 40 to 50% chrysotile.

In building 1001, which has been identified as both the Main Electronics Center (MEC) and the Main Transmitter Building, 11 samples of the floor tile were collected and each sample indicated ACM. Ten samples of the sidewall shingles were also collected from the building, and each sample indicated ACM. Two samples of the roofing asphalt, two samples of the lagging, three samples from the vibration damper, and four samples of the duct wrap all indicated ACM. The three wallboard samples did not indicate any ACM.

Samples collected from Antennas #2, #3, and #4 indicated ACM in the black exterior coating and in the white doorway gasket seal.

4.3 ELECTRICAL TRANSFORMER BANKS

Two types of media were sampled at each of the three transformer banks to characterize the residual contamination. These consisted of near-surface soil samples collected adjacent to each transformer bank, and concrete chip and swipe samples collected from each pad. The near-surface soil samples (4 to 8 inches in depth) were collected on a grid pattern adjacent to each transformer building where it was suspected that transformer fluid and solvents were

drained or spilled. Concrete chip and swipe samples were obtained from visibly stained areas which were evident on the surfaces of the concrete pads at each of the three transformer banks. All samples were collected following the procedures described in Appendix B and the URS CLEAN Standard Operating Procedures (SOP) 4.12 (URS, 1990b).

A summary of the results of the sampling and analysis of each of the three transformer banks is presented in the following subsections.

4.3.1 Building 1001 Transformer Bank No. 1

A sampling grid with fifteen 10-foot-square cells was laid out at the southwest corner of the Main Electronics Center (MEC) adjacent to the transformer bank. Each cell was uniquely identified with a letter and number designation. The grid layout and cell designations are shown in Figure 4-1. Four component subsamples on 5-foot centers were collected and combined into one composite sample from each 10-foot-square cell. The sampling area predominantly fell within the bounds of a gravel driveway that circled the MEC building. No stains or unusual soil discolorations were noted. A sample was collected from each cell for pesticides/PCB and VOC analysis. In four of the cells, a sample was also collected for analysis of dioxins and dibenzofurans (furans). These cells were chosen to approximate a random distribution from within the grid. Background samples for pesticides/PCB, VOC, and dioxin and furan analysis were obtained from a site approximately 220 feet to the southeast of the sampling grid.

In concrete pad chip sample TB4.1, PCB-1260 at a concentration of 331,000,000 parts per billion (ppb) was detected. A PCB concentration of 936 ppb was detected in sample TB3.1, and no PCBs were detected in the other two chip samples. Aldrin (165 ppb) and heptachlor (135 ppb) were detected in chip sample TB1.3. Pesticides were not detected in any other samples.

PCB-1260 was detected in three of four swipe samples at concentrations ranging from 386 to 1,780 ng/100 sq. cm. No pesticides were detected in the swipe samples.

PCB-1260 was detected in the soil at all site cells. Concentrations ranged from 244 parts per billion (ppb) in cell E-1 to 14,100 ppb in cell C-1. No other pesticides/PCBs were detected in the soil samples. The pattern of PCB occurrence in the surface soil is shown in Figure 4-1. Dioxins and furans were not detected. Methylene chloride was detected in cell E-1 at 900 ppb. Other volatile organic compounds were not detected. The background sample contained no pesticides/PCB, VOC or dioxins. The results of the soil and cement pad analyses are summarized in Table 4-2.

4.3.2 Lower Tramway Transformer Bank No. 2

Transformer Bank No. 2 is housed in a small building lying a short distance to the north of the lower tramway building. A grid consisting of eight cells was established around three sides of the building (see Figure 4-2 for layout). Each cell was uniquely identified with a letter and number designation. Some soil staining was noted in cell B-4. A sample was collected from each cell for pesticide/PCB and VOC analysis. In two of the cells, a sample was also collected for analysis of dioxins and furans. A dark oily stain was noted on soil inside the building between the door and the concrete transformer pad. Two discrete samples were collected for pesticide/PCB and dioxin/furan analysis from each of two locations within the boundaries of the stained area.

A background sample for pesticide/PCB, VOC, and dioxin and furan analysis was obtained from a site approximately 100 feet to the northwest of the substation building. The sample was composed of four component subsamples on five-foot centers combined into one composite sample.

In the soil, 4,4-DDT and endrin aldehyde were detected in sample C-1, at concentrations of 13.7 and 11.8 ppb, respectively. No PCB compounds were detected in the soil, nor were dioxins and furans detected. Chloroform was detected in sample B-4 at 66.3 ppb, but no other VOCs were detected. The background sample indicated no pesticides/PCBs, VOCs or dioxin/furan.

Inside the transformer building, endosulfan I was detected in the two discrete soil samples TB2-S1.2 and TB2-S2.2 at concentrations of 1,370 and 240 ppb, respectively. PCB-1260 was detected in sample TB2.2-1, a concrete chip sample, at 390,000,000 ppb. 4,4-DDT, endrin aldehyde, and methoxychlor were detected in chip samples TB2-3.5 and TB2-3.6. Dioxins and furans were not detected in any samples collected from the pad or adjacent soil samples collected inside the building.

The results of the soil and concrete pad analyses are summarized in Table 4-3.

4.3.3 Upper Camp Transformer Bank No. 3

The Transformer Bank No. 3 substation is located just to the west of the Radome building. A grid with 19 cells was surveyed along the south and west sides of the building (see Figure 4-3). Each cell was uniquely identified with a letter and number designation. The ground surface generally consisted of 2- to 12-inch-diameter angular blocks of rock (talus). No soil was developed on top of the rock. Sampling consisted of collecting, with a spoon, the fine rock particles and fragments that had accumulated between the larger blocks of rock. Glass

fragments and bits of metal, cardboard and other debris had accumulated between the rock, though no discolorations were noted. In many instances, samples were collected from a depth greater than eight inches in order to gather sufficient material for testing. One sample was collected from each cell for pesticide/PCB and VOC analysis. In five of the cells, a sample was also collected for analysis of dioxins and furans.

Background samples for PCB, VOC, and dioxin and furan analysis were obtained from a site approximately 300 feet to the southeast of the transformer bank. An area was chosen where soil was developed on top of the talus. The sample was composed of four component subsamples on five-foot centers combined into one composite sample.

The results of the soil analysis are shown in Tables 4-4 through 4-6. PCB-1260 was detected in the soil in only four of the 19 cells ranging from 21.7 to 166 ppb (Table 4-4). In a majority of cells, a wide range of organochlorine pesticides were also detected, ranging from 10.8 ppb (Alpha BHC in cell E-1) to 342 ppb 4,4-DDT in cell B-2. The pattern of occurrence of 4,4-DDT is shown in Figure 4-3. Beta BHC at 99.8 ppb was detected in the background sample. Dioxin (OCDD) was detected in four of the six samples analyzed for dioxins and furans ranging from 0.46 ppb to 7.8 ppb (Table 4-5). HpCDD (total and 1,2,3,4,6,7,8) was detected in three of the samples. Furans were detected in three of the samples ranging from 0.14 ppb for HpCDF to 0.89 ppb for OCDF. No dioxins or furans were detected in the background sample.

Three volatile organic compounds were detected in the soils (Table 4-6). TCE and xylenes were detected at 55.6 and 92.2 ppb, respectively (cell E-1). Styrene was detected in cell A-5 at 73.0 ppb. Methylene chloride was detected in both trip blanks. No VOCs were detected in the background sample.

The results of the concrete pad analyses are presented in Table 4-7. PCB-1260 was detected in a single chip sample (TB3-3.3) at 1,210 ppb and in a swipe sample (TB3-1.2) at 311,000 ng/100 sq. cm. A wide range of organochlorine pesticides were also detected in both chip and swipe samples. The pesticides detected in the swipe samples included endosulfan sulfate at 1,660 ng/100 sq. cm.; 4,4-DDT was detected in three samples and ranged from 2,520 to 3,920 ng/100 sq. cm.; endrin aldehyde was detected in four samples and ranged from 3,310 to 6,090 ng/100 sq. cm.; methoxychlor was detected in four samples ranging from 4,240 to 11,600 ng/100 sq. cm. The pesticides detected in the chip samples included endosulfan II at 152 ppb, beta-BHC in two samples at concentrations of 262 and 508 ppb, endrin at 164 ppb, 4,4-DDT in two samples at 57.8 and 224 ppb, and endrin aldehyde in two samples at concentrations of 37.2 and 184 ppb.

4.4 DRUM DISPOSAL AREAS

4.4.1 Tramway Drumfield

As part of the Removal Action of CTO #0018, a total of forty-six 55-gallon storage drums were removed from the slope in the vicinity of the tramway. The location of each drum was marked with a flag or stake for later location. Near-surface soil samples were collected to characterize any contamination from product that may have leaked from the drums. Water and stream sediment samples were obtained from the stream at the base of the tramway slope to determine if any contaminants had been mobilized downgradient of the drum disposal area.

The slope under the tramway is steep and covered with talus. Soil was only rarely developed on top of and between the talus blocks. Because of the sparsity of soil on the slope, the original plan of regular sampling in a grid pattern was altered. Samples were collected from the few areas of soil that existed adjacent to the tramway.

Soil samples were collected from areas adjacent to the fourth and fifth tram tower as counted from the bottom of the tramway. Four discrete spot samples were obtained from soil present in the gully to the southeast of the fifth tram tower. At each of the four locations, samples were obtained for total petroleum hydrocarbons (TPH), VOC, semivolatile organic compounds, and metals analysis. Eight metals, including arsenic, barium, cadmium, chromium, lead, mercury, and selenium, were analyzed. Southeast of tram tower four, sixteen locations were sampled from a linear strip of soil oriented downslope. The sample locations were spaced approximately 10 feet apart. Sixteen soil samples were collected for VOC and TPH analysis, five for PCB analysis, seven for semivolatile organic compound analysis, and ten for metals analysis. The soil sample locations are shown on Figure 4-4.

A background soil sample was collected from a location approximately 300 feet southeast of tram tower 4 on the opposite side of the gully from the disposed drums. One set of rinsate samples were collected during the tram tower sampling. For both the background and rinsate samples, analyses were completed for VOC, PCB, semivolatile organic compounds, TPH, and metals.

Surface water samples were collected at five locations from streams that drain the tramway slope. At each location water samples were collected for metals, VOC, and semivolatile organic compound analysis. Temperature, pH, and conductivity of the water were recorded at each location. Three sets of samples were obtained from Mount Kangukhsam Creek downgradient from the Lower Tramway Building. Two sets of samples were collected above the Lower Tramway Building from a small tributary. This tributary to Mount Kangukhsam

Creek appeared to drain the slope under the tramway and the area containing the Tramway Drumfield. The stream and sediment sample locations are shown on Figure 4-5.

Five sets of sediment samples were collected at the surface water sampling locations described above. Each set consisted of samples for VOC, PCB, metals, and semivolatile organic compound analysis. Background sediment samples were collected from a stream that joins Mount Kangukhsam Creek at a point downslope from the Lower Tramway Building. This tributary did not appear to collect drainage from the Tramway Drumfield nor drain an area containing any drums or other potential sources of contamination. These samples were analyzed for VOC, TPH, PCB, and semivolatile organic compounds.

The results of the soil analyses are summarized in Table 4-8. In the soil beneath the tramway, TPH was detected in all 19 samples, ranging from 9.8 ppm to 137 ppm. Only one TPH sample, TT5.4, exceeded the proposed Alaska Department of Environmental Conservation (ADEC) soil cleanup criteria of 100 ppm (Interim Guidelines for State Cleanup Levels; September 26, 1990). PCB-1242 was also detected in 2 of 8 soil samples; TT4.16 and TT4.12 had concentrations of 92 ppb and 224 ppb, respectively. No other PCB compounds were detected. No VOCs were detected in the soil samples. Barium, lead and mercury were the only metals detected of the eight analyzed. Barium was detected at six locations with concentrations ranging from 0.06 to 0.28 ppm. Lead was detected at locations TT5.1 and TT5.2 with concentrations of 0.066 and 0.12 ppm, respectively. Mercury was detected at 12 locations with concentrations ranging from 0.0002 to 0.0005 ppm. Nine of the analyses were at the detection limit of 0.0002 ppb. In the background soil sample from the tram tower, TT4.17, only TPH was detected, at a concentration of 14 ppm.

Seven semivolatile organic compounds (bis[2-ethylhexyl]phthalate, benzoic acid, di-n-butylphthalate, 4-chloro-3-methylphenol, phenol, diethylphthalate, bis[2-chloroethyl]ether) were detected in the soil, with 4 of the 7 only occurring in one of 15 samples (Table 4-8). Two phthalate compounds were relatively widespread: bis(2-ethylhexyl)phthalate was detected in 8 of 15 samples ranging from 32 ppb to 6,380 ppb; and di-n-butylphthalate was detected in 9 of 15 samples ranging from 16.5 ppb to 2,650 ppb. Benzoic acid was also detected in 5 of 15 samples ranging from 3,490 ppb to 13,900 ppb.

The results of the stream sediment and surface water analyses are summarized in Table 4-9. In the stream sediment, PCB-1260 was detected in sample LT-LS-3 at a concentration of 21.0 ppb. Eight semivolatile organic compounds were also detected (Table 4-9). The detected compounds were similar to those detected in the soil beneath the two drumfields. Three phthalate compounds were detected: diethylphthalate was detected in all five samples at concentrations ranging from 109 ppb to 512 ppb; bis(2-ethylhexyl)phthalate was detected in samples LT-LS-1 and LT-US-2 at concentrations of 440 ppb and 1,220 ppb, respectively;

and di-n-butylphthalate was detected in four samples (LT-US-2, LT-LS-1, LT-LS-2 and LT-LS-3) at concentrations ranging from 703 ppb to 1,650 ppb. Benzoic acid was detected in three of the sediment samples ranging from 7,070 ppb to 10,900 ppb. Phenol was detected in sample LT-US-1 at a concentration of 118 ppb. A background sediment sample was analyzed for VOCs. Xylene and toluene were detected at concentrations of 53.5 and 59.7 ppb, respectively. At location LT-LS-1, 2-nitrophenol was detected at a concentration of 438 ppb. Anthracene and phenanthrene were detected at location LT-US-2 at concentrations of 187 ppb and 184 ppb, respectively. None of the detected contaminants were found to be present in the corresponding stream water samples.

4.4.2 Upper Camp Drumfield

Drums had been disposed of in a large area to the south and southwest of the Upper Camp complex. As discussed previously, the drums were removed from the area prior to the initiation of the SI field work. The location of each drum was marked with flags or stakes and numbers corresponding to those assigned to each drum. Although most drums were concentrated on the slope immediately to the south of the complex, some isolated drums were scattered over a much larger area (see Figure 4-6). The surface of the slope within the drum disposal area was generally covered with 4-inch to 2-foot-diameter cobbles and boulders (talus). Moss and low vegetation was only developed in patchy and scattered locations. Even in areas with vegetation, soil was often limited to an inch-thick root mat. On the flat plain at the bottom of the slope, areas with soil cover were more extensive.

A 10-cell by 13-cell grid was laid out on the slope and the flat plain below with the long axis of the grid trending in a southwesterly direction (see Figure 4-6). Each cell was 25 feet on a side. The grid was located to contain the area where the majority of the drums were found, and initially its size was based upon an area delineated in the PA (NEESA, 1990). Even though only 87 grid sample locations were specified under the Field Sampling Plan, a larger grid consisting of 130 cells was established because of the limited existence of soil. Samples were collected from 81 of the cells, with 6 additional discrete samples collected within the grid. At each of the 87 sample locations, samples were obtained for TPH and VOC analysis. In addition, 42 samples were obtained for semivolatile organic compound analysis and 10 samples were obtained for metal analysis. Five rinsate samples were collected for all contaminant types, except metals, for which three samples were obtained. The background sample was obtained about 450 feet southeast of the sampling grid and analyzed for VOC, TPH, metals and semivolatile organic compounds.

The results of the soil analyses are shown in Tables 4-10 and 4-11. TPH was detected in 86 of 87 samples collected, at concentrations ranging from 14.5 ppm to 1,170 ppm in the 81 composite samples and up to 31,500 ppm in one of the discrete samples (Table 4-10). The

distribution of TPH is shown in Figure 4-7. Four VOCs were also detected. The ADEC has proposed cleanup levels in soil of 500 ppb for benzene and 10,000 ppb for totals of benzene, toluene, ethylbenzene and xylene (ADEC, 1990). Toluene was detected in 7 of 87 samples with concentrations as high as 155 ppb. Benzene and total xylenes were each detected at concentrations of 56.3 and 89.2 ppb, respectively, in one sample at grid location A-8. Methylene chloride was also detected at only one grid location, C-3, at a concentration of 2,720 ppb.

Barium, lead and mercury were the only metals detected of the eight different metals analyzed. Barium was detected in all ten composite grid locations sampled, at concentrations ranging from 0.06 to 0.51 ppm. Lead was detected at only one of ten grid composite locations, B-6, at a concentration of 0.076 ppm. Mercury was detected at six of the ten grid composite locations sampled. At four locations, it was detected at the detection limit of 0.0002 ppm and at the other two locations it was detected at concentrations of 0.0003 ppm.

Of the six discrete samples collected from the grid, barium, lead, and mercury were detected at five, two and six locations, respectively. The barium concentrations ranged from 0.05 to 0.17 ppm, and lead was detected at discrete sample locations 2 and 5 with concentrations of 0.071 and 0.057 ppm, respectively. Mercury concentrations were at or slightly above the detection limit for all six discrete sample locations.

Seventeen semivolatile organic compounds were detected in the soil samples (Table 4-10). Eight of these compounds occurred in two or less of the 28 samples tested. Six phthalate compounds were detected, with di-n-butylphthalate and bis(2-ethylhexyl)phthalate the most widespread. Di-n-butylphthalate was detected in 25 of the 28 samples at concentrations ranging from 132 ppb to 9,800 ppb. Bis(2-ethylhexyl)phthalate was detected in 18 of the 28 samples ranging from 252 to 302,000 ppb. Three polynuclear aromatic hydrocarbon compounds were detected: acenaphthene, anthracene, and phenanthrene. Acenaphthene was detected in one sample at 165 ppb. Anthracene was detected in 6 samples ranging from 115 to 588 ppb. Phenanthrene was detected in 8 samples ranging from 100 to 576 ppb. Two additional compounds, phenol and benzoic acid, were found to be relatively widespread. Phenol was detected in 11 of 28 samples ranging from 247 ppb to 613 ppb. Benzoic acid was detected in 8 of 28 samples ranging from 2,890 ppb to 30,300 ppb.

No VOCs were detected in the background sample. However, TPH was detected at a concentration of 22.7 ppm. Barium and mercury were the only metals detected, at concentrations of 0.5 and 0.0003 ppm, respectively. Di-n-butyl-phthalate was the only semivolatile organic compound detected in the background sample, at a concentration of 685 ppb.

4.5 DISCUSSION OF DETECTED HAZARDOUS SUBSTANCES

The following discussion contains a brief environmental profile of each of the contaminant types detected during this SI, principal exposure routes, and the potential health effects.

4.5.1 PCBs and Dioxins

As discussed earlier, PCBs were detected in the soil samples collected from transformer banks one and three. They were also detected in low concentrations at several locations under the tram tower and in one of the stream sediment samples. The concrete floors from all three transformer banks contained PCBs, as shown by the results of the concrete swipe and chip samples. Dioxins were only detected at transformer bank three. Skin contact, ingestion, and inhalation of dust that has adsorbed PCBs or dioxins are possible exposure routes. Symptoms of exposure include chloracne, edema, jaundice, vomiting, anorexia, nausea, abdominal pains, fatigue, and psychosis. PCBs and dioxins are carcinogens (URS, 1990c).

4.5.2 Organic Compounds (Chlorinated and Nonchlorinated Solvents)

Organic compounds have been detected at generally low concentrations throughout the entire study area in the soil samples. Skin contact, inhalation of dust with related organic vapors, and ingestion are possible exposure routes. Possible effects include central nervous system depression, with symptoms such as dizziness, drowsiness, headache, fatigue, muscular weakness, and lack of coordination. Organic compounds detected in the soil samples include benzene, toluene, chloroform, methylene chloride, trichloroethene, xylene and styrene. Benzene, chloroform, and trichloroethene are carcinogens (URS, 1990c; EPA, 1986).

4.5.3 Petroleum Products (Total Petroleum Hydrocarbons)

Petroleum products pose the same type of inhalation, ingestion, and contact hazards, and cause the same symptoms as organic compounds. Total petroleum hydrocarbons have been detected in soil samples, and they are present throughout the site.

4.5.4 Pesticides

A variety of pesticides were detected in the soil and concrete chip and swipe samples collected from all three transformer banks. Skin contact, ingestion, and inhalation of dust that has adsorbed the pesticides are the three most likely exposure routes. Symptoms of exposure are similar to those for PCBs and dioxins. The following pesticides were detected: aldrin, heptachlor, 4,4-DDT, endrin aldehyde, endosulfan I, methoxychlor, endosulfan II,

endosulfan sulfate, endrin, BHC (alpha, beta, and gamma), heptachlor epoxide, 4,4-DDE, and 4,4-DDD. The compounds 4,4-DDE, 4,4-DDT, aldrin, heptachlor, and dieldrin are carcinogens.

4.5.5 Semivolatile Organic Compounds

A total of 12 semivolatile organic compounds were detected in some of the soil samples collected from under the tramway, in the stream sediment samples, and from the Upper Camp Drumfield. The analyses for semivolatile organic compounds also includes polycyclic aromatic compounds, some of which are carcinogens. Skin contact, ingestion and inhalation of dust that has adsorbed the compounds are the most likely exposure routes. Benzoic acid, bis(2-ethylhexyl)phthalate, di-n-butyl-phthalate, 4-chloro-3-methyl-phenol, phenol, diethyl-phthalate, bis (2-chloro-ethyl) ether, 2-nitro-phenol, phenanthrene, anthracene, dimethyl phthalate and 1,2,4-trichlorobenzene were detected (EPA, 1986; National Research Council, 1977).

4.5.6 Asbestos

Asbestos is a naturally occurring mineral which has been used in a variety of construction materials discussed earlier in Sections 3.1 and 4.2. Its most common form at this site was chrysotile, which is fibrous. Amosite and crocidolite were also detected in the analysis of the ACM. Asbestos is a carcinogen, and inhalation of asbestos fibers when the material becomes friable is the most common exposure route (EPA, 1986).

4.5.7 Metals

Barium, lead, and mercury were detected in low concentrations in the soil samples collected from under the tramway and from the Upper Camp Drumfield. Barium and mercury were also detected in the stream sediment samples. As discussed earlier, the metals were analyzed according to TCLP, and the results are reported in mg/l. Several of the lead analyses exceed the drinking water standard of 0.05 mg/l, but barium and mercury are below their respective standards of 1.0 mg/l and 0.002 mg/l. Skin contact, ingestion, and inhalation of dust are the most likely exposure routes. Excessive lead intake affects the heme-hemoprotein system, the kidneys, and the nervous system (National Research Council, 1982).

TABLE 4-1 (page 1 of 10)

Asbestos Sample Results

Building	Sample No.	Date Sampled	Sample Description	Sample Treatment	Asbestos		Non-Asbestos		Non-fibrous Components	%
					Type	%	Type	%		
Radome 221	1997	07/26/90	Tan fibrous non-friable Black gelatinous	P, H H	Chrysotile Chrysotile	> 1-5 40-50	Cellulose Cellulose	1-5 10-20	Binder Binder	80-90 20-30
221	1998	07/26/90	Tan fibrous non-friable Black gelatinous	P, H H	Chrysotile Chrysotile	> 1-5 5-10	Cellulose Cellulose	1-5 30-40	Binder Binder	80-90 40-50
221	1999	07/26/90	Tan fibrous non-friable Black gelatinous	P, H H	Chrysotile Chrysotile	> 1-5 35-45	Cellulose Cellulose	1-5 10-20	Binder Binder	80-90 25-35
221	2000	07/26/90	Beige fibrous friable	S, H	None detected		Mineral Wool Cellulose	10-20 10-20	Binder	50-60
Upper Quarters 124	2001	07/26/90	Orange fibrous non-friable Black gelatinous	P, H H	Chrysotile Chrysotile	> 1-5 25-35	Cellulose Cellulose	1-5 10-20	Binder Binder	80-90 35-45
124	2002	07/26/90	Orange fibrous non-friable Black gelatinous	P, H H	Chrysotile Chrysotile	> 1-5 10-20	Cellulose Cellulose	1-5 20-30	Binder Binder	80-90 40-50
124	2003	07/26/90	Orange fibrous non-friable Black gelatinous	P, H H	Chrysotile Chrysotile	> 1-5 10-20	Cellulose Cellulose	1-5 20-30	Binder Binder	80-90 40-50
124	2004	07/26/90	Orange fibrous non-friable Black gelatinous	P, H H	Chrysotile Chrysotile	> 1-5 30-40	Cellulose Cellulose	1-5 5-10	Binder Binder	80-90 40-50

TABLE 4-1/BAC-lkd/cbt

Note: Sample Treatment P = pulverize, H = homogenize, S = shred, D = dried

TABLE 4-1 (page 2 of 10)

Asbestos Sample Results

Building	Sample No.	Date Sampled	Sample Description	Sample Treatment	Asbestos		Non-Asbestos		Non-fibrous Components	%
					Type	%	Type	%		
Upper Quarters 124	2005	07/26/90	White and black, fibrous friable	S, H	Chrysotile	< 1	Cellulose	80-90	Binder Binder	5-10
124	2006	07/26/90	White fibrous friable Black gelatinous	S, H S, H	None detected Chrysotile	> 1-5	Cellulose Cellulose	85-95 5-10	Binder	1-5 75-85
124	2007	07/26/90	White and brown fibrous friable	S, H	Chrysotile	> 1-5	Cellulose Fiberglass	10-20 1-5	NF glass binder Total %	60-70
124	2008	07/26/90	Pale green and brown fibrous	S, H	None detected		Cellulose	60-70	Gypsum Binder	20-30
124	2009	07/26/90	Black gelatinous with silver, brown & white sheet	S, H	None detected		Cellulose	70-80	Quartz, Binder	10-20
124	2010	07/26/90	Gray and white fibrous friable	D, S, H	Chrysotile	> 1-5	Mineral Wool Cellulose	50-60 20-30	Binder	1-5
124	2011	07/26/90	Orange non-fibrous non-friable	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
			Black gelatinous	H	Chrysotile	10-20	Cellulose	5-10	Binder	60-70

TABLE 4-1 (page 3 of 10)

Asbestos Sample Results

Building	Sample No.	Date Sampled	Sample Description	Sample Treatment	Asbestos		Non-Asbestos		Non-fibrous Components	%
					Type	%	Type	%		
Upper Quarters 124	2012	07/26/90	Orange non-fibrous non-friable	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
			Black gelatinous	H	Chrysotile	20-30	Cellulose	5-10	Binder	50-60
124	2013	07/26/90	Orange non-fibrous non-friable	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
			Black gelatinous	H	Chrysotile	10-20	Cellulose	5-10	Binder	60-70
124	2014	07/26/90	Orange non-fibrous non-friable	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
			Black gelatinous	H	Chrysotile	5-10	Cellulose	10-20	Binder	60-70
124	2015	07/26/90	Orange non-fibrous non-friable	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
			Black gelatinous	H	Chrysotile	10-20	Cellulose	10-20	Binder	50-60
124	2016	07/26/90	Orange, non-fibrous non-friable	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
			Black gelatinous	H	Chrysotile	10-20	Cellulose	10-20	Binder	50-60
124	2017	07/26/90	Gray fibrous friable	D, S, H	Chrysotile	> 1-5	Mineral Wool Cellulose	70-80 1-5	Binder	5-10

TABLE 4-1/BAC-lkd/cbt

Note: Sample Treatment P = pulverize, H = homogenize, S = shred, D = dried

TABLE 4-1 (page 4 of 10)

Asbestos Sample Results

Building	Sample No.	Date Sampled	Sample Description	Sample Treatment	Asbestos		Non-Asbestos		Non-fibrous Components	%
					Type	%	Type	%		
MEC 1001	2019	07/27/90	Black, gelatinous with silver backing	S, H	Chrysotile	10-20	Cellulose	1-5	Binder	65-75
1001	2020	07/27/90	White fibrous semi-friable	P, S, H	Chrysotile Crocidolite	40-50 20-30	None detected		Binder	10-20
1001	2021	07/27/90	Gray non-fibrous non-friable Black gelatinous	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
				H	Chrysotile	5-10	Cellulose	10-20	Binder	60-70
1001	2022	07/27/90	Gray non-fibrous non-friable Black gelatinous	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
				H	Chrysotile	5-10	Cellulose	10-20	Binder	50-60
1001	2023	07/27/90	Gray non-fibrous non-friable Black gelatinous	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
				H	Chrysotile	5-10	Cellulose	10-20	Binder	50-60
1001	2024	07/27/90	Gray non-fibrous non-friable Black gelatinous	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
				H	Chrysotile	5-10	Cellulose	10-20	Binder	60-70

TABLE 4-1 (page 5 of 10)

Asbestos Sample Results

Building	Sample No.	Date Sampled	Sample Description	Sample Treatment	Asbestos		Non-Asbestos		Non-fibrous Components	%
					Type	%	Type	%		
MEC 1001	2025	07/27/90	White and brown, fibrous, friable	S, H	None detected		Cellulose	40-50	Quartz, gypsum, binder	Total 40-50
1001	2026	07/27/90	Gray, non-fibrous, non-friable	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
			Black gelatinous	H	Chrysotile	10-20	Cellulose	10-20	Binder	50-60
1001	2027	07/27/90	Gray non-fibrous non-friable	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
			Black gelatinous	H	Chrysotile	10-20	Cellulose	10-20	Binder	50-60
1001	2028	07/27/90	Gray non-fibrous non-friable	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
			Black gelatinous	H	Chrysotile	10-20	Cellulose	10-20	Binder	50-60
1001	2029	07/27/90	Gray non-fibrous non-friable	P, H	Chrysotile	> 1-5	Cellulose	< 1	Binder	85-95
			Black gelatinous	H	Chrysotile	10-20	Cellulose	10-20	Binder	50-60
Antenna #2	2030	07/27/90	Black gelatinous fibrous non-friable	S, H	Chrysotile	50-60	Cellulose	1-5	Lizardite, quartz	25-35

TABLE 4-1 (page 6 of 10)

Asbestos Sample Results

Building	Sample No.	Date Sampled	Sample Description	Sample Treatment	Asbestos		Non-Asbestos		Non-fibrous Components	%
					Type	%	Type	%		
Antenna #2	2031	07/27/90	White fibrous friable rope-like	S, H	Chrysotile	60-70	Cellulose	1-5	Binder	< 1
Antenna #3	2032	07/27/90	Black gelatinous fibrous friable	S, H	Chrysotile	50-60	Cellulose	1-5	Lizardite, quartz	25-35
Antenna #3	2033	07/27/90	Black gelatinous fibrous friable	S, H	Chrysotile	50-60	Cellulose	1-5	Lizardite, quartz	25-35
Antenna #3	2034	07/27/90	White fibrous friable rope-like	S, H	Chrysotile	60-70	Cellulose	20-30	Binder	< 1
Antenna #4	2035	07/27/90	Black gelatinous fibrous friable	S, H	Chrysotile	50-60	Cellulose	1-5	Lizardite, quartz	25-35
MEC 1001	2036	07/27/90	White, fibrous, cementitious	P, S, H	Chrysotile	30-40	Cellulose	< 1	Binder	50-60
			Black fibrous sheet	S, H	None detected		Cellulose	85-95	Binder	1-5
Antenna #4	2037	07/27/90	White, fibrous, friable, rope-like	S, H	Chrysotile	60-70	Cellulose	20-30	Binder	< 1

TABLE 4-1/BAC-lkd/cbt

Note: Sample Treatment P = pulverize, H = homogenize, S = shred, D = dried

TABLE 4-1 (page 7 of 10)

Asbestos Sample Results

Building	Sample No.	Date Sampled	Sample Description	Sample Treatment	Asbestos		Non-Asbestos		Non-fibrous Components	%
					Type	%	Type	%		
MEC 1001	2038	07/27/90	White fibrous cementitious Black fibrous sheet	P, S, H S, H	Chrysotile None detected	30-40	Cellulose Cellulose	< 1 85-95	Binder Binder	50-60 1-5
1001	2039	07/27/90	White fibrous cementitious Black fibrous sheet	P, S, H S, H	Chrysotile None detected	30-40	Cellulose Cellulose	< 1 85-95	Binder Binder	50-60 1-5
1001	2040	07/27/90	White fibrous cementitious Black fibrous sheet	P, S, H S, H	Chrysotile None detected	30-40	Cellulose Cellulose	< 1 85-95	Binder Binder	50-60 1-5
1001	2041	07/27/90	White fibrous cementitious	P, S, H	Chrysotile	30-40	Cellulose	< 1	Binder	50-60
1001	2042	07/27/90	White fibrous cementitious Black fibrous sheet	P, S, H S, H	Chrysotile None detected	30-40	Cellulose Cellulose	< 1 85-95	Binder Binder	50-60 1-5
1001	2043	07/27/90	White fibrous cementitious Black fibrous sheet	P, S, H S, H	Chrysotile None detected	30-40	Cellulose Cellulose	< 1 85-95	Binder Binder	50-60 1-5
1001	2044	07/27/90	Light green, fibrous, cementitious Black fibrous sheet	P, S, H S, H	Chrysotile None detected	30-40	Cellulose Cellulose	< 1 85-95	Binder Binder	50-60 1-5

TABLE 4-1/BAC-lkd/cbt

Note: Sample Treatment P = pulverize, H = homogenize, S = shred, D = dried

TABLE 4-1 (page 8 of 10)

Asbestos Sample Results

Building	Sample No.	Date Sampled	Sample Description	Sample Treatment	Asbestos		Non-Asbestos		Non-fibrous Components	%
					Type	%	Type	%		
MEC 1001	2045	07/27/90	White fibrous cementitious Black fibrous sheet	P, S, H S, H	Chrysotile None detected	30-40	Cellulose Cellulose	<1 85-95	Binder Binder	50-60 1-5
1001	2046	07/27/90	White fibrous cementitious Black fibrous sheet	P, S, H S, H	Chrysotile None detected	30-40	Cellulose Cellulose	<1 85-95	Binder Binder	50-60 1-5
1001	2063	07/27/90	Gray fibrous non-friable Black gelatinous	P, H H	Chrysotile Chrysotile	> 1-5 5-10	Cellulose Cellulose	<1 5-10	Binder Binder	85-95 70-80
1001	2064	07/27/90	Green, brown and white fibrous friable	S, H	Chrysotile Amosite	30-40 25-35	None detected		Binder	15-25
1001	2065	07/27/90	White and brown, fibrous friable	S, H	None detected		Fiberglass Cellulose	30-40 10-20	Binder	30-40
1001	2066	07/27/90	Gray fibrous non-friable Black gelatinous	P, H H	Chrysotile Chrysotile	> 1-5 30-40	Cellulose Cellulose	<1 1-5	Binder Binder	85-95 45-55
1001	2067	07/27/90	Gray fibrous non-friable Black gelatinous	P, H H	Chrysotile Chrysotile	> 1-5 30-40	Cellulose Cellulose	<1 1-5	Binder Binder	85-95 45-55
1001	2068	07/27/90	White and brown, fibrous friable	S, H	None detected		Fiberglass Cellulose	30-40 10-20	Binder	30-40

TABLE 4-1/BAC-lkd/cbt

Note: Sample Treatment P = pulverize, H = homogenize, S = shred, D = dried

TABLE 4-1 (page 9 of 10)

Asbestos Sample Results

Building	Sample No.	Date Sampled	Sample Description	Sample Treatment	Asbestos		Non-Asbestos		Non-fibrous Components	%
					Type	%	Type	%		
MEC 1001	2069	07/27/90	White and brown, fibrous, friable	S, H	None detected		Fiberglass Cellulose	30-40 10-20	Binder	30-40
1001	2070	07/27/90	White and gray, rope-like fibrous friable	S, H	Chrysotile	80-90	Cellulose	1-5	Binder	1-5
1001	2071	07/27/90	White and gray, rope-like fibrous friable	S, H	Chrysotile	80-90	Cellulose	1-5	Binder	1-5
1001	2072	07/27/90	White fibrous friable	S, H	Amosite	40-50	Cellulose	1-5	Gypsum Binder	35-45
1001	2073	07/27/90	White fibrous friable	S, H	Chrysotile/ Amosite	5-10/ 40-50	Cellulose	1-5	Binder	25-35
			White woven sheet	S, H	None detected		Cellulose	85-95	Binder	1-5
1001	2074	07/27/90	Light brown fibrous friable	S, H	Amosite	5-10	Fiberglass Cellulose	55-65 5-10	Binder	5-15
1001	2075	07/27/90	White fibrous friable	S, H	Chrysotile Amosite	5-10 40-50	Fiberglass	20-30	Binder	5-10
1001	2076	07/27/90	Pink and white, fibrous friable	S, H	Chrysotile Amosite	5-10 50-60	Cellulose	10-20	Binder	5-10

TABLE 4-1/BAC-lkd/cbt

Note: Sample Treatment P = pulverize, H = homogenize, S = shred, D = dried

TABLE 4-1 (page 10 of 10)

Asbestos Sample Results

Building	Sample No.	Date Sampled	Sample Description	Sample Treatment	Asbestos		Non-Asbestos		Non-fibrous Components	%
					Type	%	Type	%		
MEC 1001	2077	07/27/90	White fibrous friable	S, H	Chrysotile Amosite	20-30 40-50	Cellulose	1-5	Binder	5-15
1001	2078	07/27/90	White and brown, fibrous friable	S, H	Chrysotile Amosite	5-10 50-60	Fiberglass	1-5	Binder	15-25
1001	2079	07/27/90	White fibrous friable rope-like	S, H	Chrysotile	60-70	Cellulose	20-30	Binder	<1
1001	2080	07/27/90	Black gelatinous fibrous friable with silver lining	S, H	Chrysotile	>1-5	Glass fibers	TA	Binder	85-95
Upper Quarters Arctic Wlkwy.	2097	07/28/90	Gray fibrous friable (Cement Discharge Pipe)	S, H	Chrysotile Crocidolite	10-20 10-20	None detected		Binder	50-60
Arctic Wlkwy. Siding Panel	2098	07/28/90	Gray fibrous non-friable	P, S, H	Chrysotile	40-50	Cellulose	<1	Binder	40-50
Arctic Wlkwy.	2147	07/28/90	Gray fibrous non-friable	P, S, H	Chrysotile	40-50	Cellulose	<1	Binder	40-50

TABLE 4-1/BAC-lkd/cbt

Note: Sample Treatment P = pulverize, H = homogenize, S = shred, D = dried

TABLE 4-2 (page 1 of 2)

Building 1001 Transformer Bank No. 1 Results of Analyses

Grid Soil Samples

Grid Number (sample location)	Date Sampled	Sample Number	PCB/ Pesticides ¹	Dioxins/ Furans	Volatile Organic Compounds ²
			PCB-1260		methylene chloride
units			µg/kg (ppb)	ng/g (ppb)	µg/kg (ppb)
A-1	07/30/90	2099	3,140	ND ³	ND
A-2	07/30/90	2100	4,620	na	ND
A-3	07/30/90	2101	4,870	na	ND
A-4	07/30/90	2102	5,510	na	ND
B-1	07/30/90	2103	4,140	ND ³	ND
B-2	07/30/90	2104	8,696	na	ND
B-3	07/30/90	2105	12,890	na	ND
B-4	07/30/90	2106	13,240	na	ND
C-1	07/30/90	2107	14,100	na	ND
C-2	07/30/90	2108	3,540	ND ³	ND
C-3	07/30/90	2109	4,970	na	ND
C-4	07/30/90	2110	4,800	na	ND
D-1	07/30/90	2111	956	na	ND
D-4	07/30/90	2112	2,420	na	ND
E-1	07/30/90	2113	244	ND ³	900
background	07/30/90	2119	ND	ND ³	ND
units			µg/L	ng/L	µg/L
E-1 rinsate	07/30/90	2117	ND	ND ³	ND
trip blank	07/30/90	2119	na		ND
trip blank	07/30/90	2120	na	na	ND

NOTES: (1) Analysis within total holding time; however, no record of extraction date
(2) VOC analysis completed after 15-day holding time
(3) The non detect values for OCDF and OCDD are qualified as estimated due to a low internal standard recovery
ND none detected
na not analyzed

TABLE 4-2 (page 2 of 2)

Building Transformer Bank No. 1 Results of Analyses

Transformer Pad Discrete Samples

Sample Type	Date Sampled	Sample Number	PCB/Pesticides ¹		
			PCB-1260	aldrin	heptachlor
units			ng/100 sq. cm.		
concrete swipe	08/5/90	TB1.1	386	ND	ND
concrete swipe	08/5/90	TB1.2	1,780	ND	ND
concrete swipe	08/5/90	TB2.1	1,260	ND	ND
concrete swipe	08/5/90	TB2.2	ND	ND	ND
units			ppb		
concrete chip	08/5/90	TB1.3	ND	165	135
concrete chip	08/5/90	TB2.3	ND	ND	ND
concrete chip	08/5/90	TB3.1	936	ND	ND
concrete chip	08/5/90	TB4.1	331,000,000	ND	ND

NOTES: (1) Analysis within total holding time; however, no record of extraction date
ND none detected

TABLE 4-3 (page 1 of 2)

Lower Tramway Transformer Bank No. 2 Results of Analyses

Grid Soil Samples

Grid Number (sample location)	Date Sampled	Sample Number	PCB/Pesticides ¹		Dioxins/Furans	Volatile Organic Compounds ²
			4,4-DDT	endrin aldehyde		chloroform
units			µg/kg (ppb)		ng/g (ppb)	µg/kg (ppb)
A-1	08/01/90	2047	ND	ND	ND ³	ND
A-2	08/01/90	2048	ND	ND	na	ND
A-3	08/01/90	2049	ND	ND	na	ND
A-4	08/01/90	2050	ND	ND	ND ³	ND
B-1	08/01/90	2051	ND	ND	na	ND
B-4	08/01/90	2052	ND	ND	na	66.3
C-1	08/01/90	2053	13.7	11.8	na	ND
C-4	08/01/90	2054	ND	ND	na	ND
background	08/01/90	2055	ND	ND	ND ³	ND
units			µg/L (ppb)		ng/L (ppb)	µg/L (ppb)
rinsate (C-1)	08/01/90	2056	ND	ND	ND ³	ND
trip blank	08/01/90	2057	na	na	na	ND

NOTES: (1) Analysis within total holding time; however, no record of extraction date (7 days)
(2) VOC analysis completed after the 14-day holding time
(3) The non detect values for OCDF and OCDD are qualified as estimated due to a low internal standard recovery.
ND - none detected
na - not analyzed

TABLE 4-3 (page 2 of 2)
Lower Tramway Transformer Bank No. 2 Results of Analyses

Transformer Pad Discrete Samples

Sample Type	Date Sampled	Sample Number	PCB/Pesticides ¹					Dioxins/ Furans
			4,4-DDT	endrin aldehyde	endosulfan I	PCB-1260	methoxychlor	
units			μg/kg (ppb)					ng/g (ppb)
chip	08/05/90	TB2.2-1	ND	ND	ND	390,000,000	ND	na
chip	08/05/90	TB2.2-2	ND	ND	ND	ND	ND	na
chip	08/05/90	TB2.2-3	ND	ND	ND	ND	ND	na
chip	08/05/90	TB2.2-4	ND	ND	ND	ND	ND	na
soil ²	08/09/90	TB2-S1.1	na	na	na	na	na	ND ³
soil	08/09/90	TB2-S1.2	ND	ND	1,370	ND	ND	na
soil	08/09/90	TB2-S2.1	na	na	na	na	na	ND ³
soil	08/09/90	TB2-S2.2	ND	ND	240	ND	ND	na
units			ng/100 sq. cm. ⁴					
swipe	08/07/90	TB2-3.5	2,970	1,690	ND	ND	5,080	na
swipe	08/07/90	TB2-3.6	2,570	4,500	ND	ND	5,170	na

NOTES: (1) Analysis within total holding time; however, no record of extraction date (7 days)
(2) Soil samples were collected inside building from the soil border between the concrete pad and the wall
(3) Some of the non detect values for dioxins/furans are qualified as estimated due to low internal standard recovery
(4) Sample area was 10 cm squared
ND - none detected
na - not analyzed

TABLE 4-4 (page 1 of 2)

Upper Camp Transformer Bank No. 3, Results of PCB and Pesticides Analyses

Grid Number (sample location)	Date Sampled	Sample Number	PCB/Pesticides ¹							
			PCB-1260	dieldrin	endosulfan			endrin aldehyde	endrin	methoxychlor
					I	II	sulfate			
units			µg/kg (ppb)							
A-1	08/01/90	2121	ND	ND	ND	ND	ND	ND	ND	ND
A-2	08/01/90	2122	68.2	ND	ND	ND	ND	ND	ND	ND
A-3	08/01/90	2123	ND	ND	ND	ND	ND	ND	ND	ND
A-4	08/01/90	2124	166.0	ND	ND	ND	ND	ND	ND	ND
A-5	08/01/90	2125	ND	ND	ND	44.5	ND	ND	25.3	163
B-1	08/01/90	2126	21.7	ND	ND	ND	ND	ND	ND	ND
B-2	08/01/90	2127	ND	ND	ND	ND	10.5	13.1	31.2	ND
B-3	08/01/90	2128	ND	ND	ND	ND	ND	ND	ND	ND
B-4	08/01/90	2129	ND	ND	ND	ND	ND	ND	ND	ND
B-5	08/01/90	2130	ND	ND	ND	ND	ND	ND	ND	ND
C-1	08/01/90	2131	26.6	ND	ND	ND	ND	ND	ND	ND
C-2	08/01/90	2132	ND	ND	ND	ND	13.7	ND	19.6	ND
C-3	08/01/90	2133	ND	ND	ND	ND	ND	ND	22.7	ND
C-4	08/01/90	2134	ND	ND	ND	30.3	12.4	ND	18.9	195
C-5	08/01/90	2135	ND	ND	ND	ND	ND	ND	17.7	ND
D-1	08/01/90	2136	ND	ND	ND	ND	22.9	12.0	39.2	40.8
D-2	08/01/90	2137	ND	ND	ND	ND	11.4	12.5	44.7	ND
E-1	08/01/90	2138	ND	27.0	181	ND	38.4	ND	13.0	ND
E-2	08/01/90	2139	ND	ND	ND	ND	ND	11.6	21.1	ND
background	08/01/90	2140	ND	ND	ND	ND	ND	ND	ND	ND

NOTES: (1) Analysis within total holding time; however, no record of extraction date
ND none detected

TABLE 4-4/BAC-lkd/cbt

TABLE 4-4 (page 2 of 2)

Upper Camp Transformer Bank No. 3, Results of PCB and Pesticides Analyses

Grid Number (sample location)	Date Sampled	Sample Number	Pesticides ¹							
			BHC			heptachlor	heptachlor epoxide	4,4-DDE	4,4-DDT	4,4-DDD
			alpha	beta	gamma					
units			µg/kg (ppb)							
A-1	08/01/90	2121	ND	ND	ND	ND	ND	ND	ND	ND
A-2	08/01/90	2122	ND	ND	ND	ND	ND	ND	ND	ND
A-3	08/01/90	2123	ND	46.2	ND	ND	ND	ND	18.3	ND
A-4	08/01/90	2124	ND	ND	ND	ND	ND	ND	ND	ND
A-5	08/01/90	2125	27.6	ND	ND	ND	ND	ND	58.4	14.4
B-1	08/01/90	2126	ND	ND	ND	ND	ND	ND	ND	ND
B-2	08/01/90	2127	12.9	ND	ND	ND	ND	ND	342	ND
B-3	08/01/90	2128	ND	ND	ND	ND	ND	ND	ND	ND
B-4	08/01/90	2129	ND	ND	ND	ND	ND	ND	13.9	ND
B-5	08/01/90	2130	ND	ND	ND	ND	ND	ND	ND	ND
C-1	08/01/90	2131	ND	ND	ND	ND	ND	ND	ND	ND
C-2	08/01/90	2132	ND	ND	ND	ND	ND	11.3	36.8	ND
C-3	08/01/90	2133	ND	ND	ND	ND	ND	ND	24.0	ND
C-4	08/01/90	2134	ND	ND	ND	ND	ND	ND	29.1	ND
C-5	08/01/90	2135	ND	54.8	ND	ND	ND	11.9	17.1	ND
D-1	08/01/90	2136	ND	ND	15.5	ND	ND	18.3	19.0	ND
D-2	08/01/90	2137	ND	ND	ND	ND	44.8	16.4	20.8	ND
E-1	08/01/90	2138	10.8	ND	73.4	24.7	32.9	28.7	17.2	ND
E-2	08/01/90	2139	ND	ND	ND	ND	ND	ND	29.9	ND
background	08/01/90	2140	ND	99.8	ND	ND	ND	ND	ND	ND

NOTES: (1) Analysis within total holding time; however, no record of extraction date
ND none detected

TABLE 4-4/BAC-lkd/cbt

TABLE 4-5

Upper Camp Transformer Bank No. 3 Results of Dioxin and Furan Analyses

Grid Number (sample location)	Date Sampled	Sample Number	Dioxins			Furans			
			OCDD	HpCDD		HxCDF (total)	HpCDF		OCDF
				(total)	1,2,3,4,6,7,8		(total)	1,2,3,4,6,7,8	
units			ng/g (ppb)						
A-1	08/01/90	2121	0.46 ¹	ND	ND	ND	ND	ND	ND ¹
A-2	08/01/90	2122	na	na	na	na	na	na	na
A-3	08/01/90	2123	na	na	na	na	na	na	na
A-4	08/01/90	2124	na	na	na	na	na	na	na
A-5	08/01/90	2125	na	na	na	na	na	na	na
B-1	08/01/90	2126	na	na	na	na	na	na	na
B-2	08/01/90	2127	na	na	na	na	na	na	na
B-3	08/01/90	2128	ND ¹	ND	ND	ND	ND	ND	ND ¹
B-4	08/01/90	2129	na	na	na	na	na	na	na
B-5	08/01/90	2130	na	na	na	na	na	na	na
C-1	08/01/90	2131	1.5 ¹	0.7	0.38	ND	0.49	0.14	0.89 ¹
C-2	08/01/90	2132	na	na	na	na	na	na	na
C-3	08/01/90	2133	na	na	na	na	na	na	na
C-4	08/01/90	2134	na	na	na	na	na	na	na
C-5	08/01/90	2135	7.8 ¹	2.6	1.6	0.40	2.2	0.44	4.3 ¹
D-1	08/01/90	2136	na	na	na	na	na	na	na
D-2	08/01/90	2137	na	na	na	na	na	na	na
E-1	08/01/90	2138	na	na	na	na	na	na	na
E-2	08/01/90	2139	1.5	0.51	0.26	ND	0.48	ND	1.1
background	08/01/90	2140	ND ¹	ND	ND	ND	ND	ND	ND ¹
units			ng/L (ppb)						
rinsate	08/01/90	2141	ND ¹	ND	ND	ND	ND	ND	ND ¹

NOTES: (1) These values are qualified as estimated due to a low internal standard recovery.
ND - none detected
na - not analyzed

TABLE 4-6

Upper Camp Transformer Bank No. 3, Results of Volatile Organic Compound Analyses

Grid Number (sample location) Date Sampled Sample Number			Volatile Organic Compounds ¹			
			TCE	xylene	methylene chloride	styrene
units			µg/kg (ppb)			
A-1	08/01/90	2121	ND	ND	ND	ND
A-2	08/01/90	2122	ND	ND	ND	ND
A-3	08/01/90	2123	ND	ND	ND	ND
A-4	08/01/90	2124	ND	ND	ND	ND
A-5	08/01/90	2125	ND	ND	ND	73.0
B-1	08/01/90	2126	ND	ND	ND	ND
B-2	08/01/90	2127	ND	ND	ND	ND
B-3	08/01/90	2128	ND	ND	ND	ND
B-4	08/01/90	2129	ND	ND	ND	ND
B-5	08/01/90	2130	ND	ND	ND	ND
C-1	08/01/90	2131	ND	ND	ND	ND
C-2	08/01/90	2132	ND	ND	ND	ND
C-3	08/01/90	2133	ND	ND	ND	ND
C-4	08/01/90	2134	ND	ND	ND	ND
C-5	08/01/90	2135	ND	ND	ND	ND
D-1	08/01/90	2136	ND	ND	ND	ND
D-2	08/01/90	2137	ND	ND	ND	ND
E-1	08/01/90	2138	55.6	92.2	ND	ND
E-2	08/01/90	2139	ND	ND	ND	ND
background	08/01/90	2140	ND	ND	ND	ND
units			µg/L (ppb)			
rinsate	08/01/90	2141	ND	ND	ND	ND
trip blank	08/01/90	2142	ND	ND	2.94	ND
trip blank	08/01/90	2143	ND	ND	1.79	ND

NOTES: (1) VOC analyses completed after 14-day holding time
ND - none detected

TABLE 4-7

Upper Camp Transformer Bank No. 3, Results of PCB and Pesticide Analyses for Concrete Swipe and Chip Samples

Sample Type	Date Sampled	Sample Number	PCB/Pesticides ¹								
			PCB-1260	endosulfan II	endosulfan sulfate	beta-BHC	delta-BHC	endrin	4,4-DDT	endrin aldehyde	methoxychlor
units			ng/100 sq. cm								
swipe	08/07/90	TB3-1.1	ND	ND	1,660	ND	ND	ND	ND	3,310	11,600
swipe	08/07/90	TB3-1.2	311,000	ND	ND	ND	ND	ND	ND	ND	ND
swipe	08/07/90	TB3-2.1	ND	ND	ND	ND	ND	ND	2,520	3,850	4,240
swipe	08/07/90	TB3-2.2	ND	ND	ND	ND	ND	ND	2,870	4,570	4,900
swipe	08/07/90	TB3-4.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
swipe	08/07/90	TB3-4.2	ND	ND	ND	ND	ND	ND	3,920	6,090	5,560
units			ppb								
chip	08/07/90	TB3-1.3	ND	ND	ND	508	ND	164	224	184	ND
chip	08/07/90	TB3-2.3	ND	ND	ND	262	ND	ND	57.8	37.2	ND
chip	08/07/90	TB3-3.3	1,210	ND	ND	ND	ND	ND	ND	ND	ND
chip	08/07/90	TB3-4.3	ND	152	ND	ND	ND	ND	ND	ND	ND

NOTES: (1) Analysis within total holding time; however, no record of extraction date
ND - none detected

TABLE 4-8 (page 1 of 2)

Tram Tower Results of Analyses

Sample Location	Sample Number	Matrix	Date Sampled	VOC	Total Petroleum Hydrocarbons	Metals			PCB
				methylene chloride		barium	lead	mercury	PCB-1242
units				ppb	ppm dry weight	mg/L (ppm) ¹			ppb
TT4.1	2589	soil	08/07/90	ND	9.8	0.06	ND	0.0005	na
TT4.2	2590	soil	08/07/90	ND	23	ND	ND	0.0002	ND
TT4.3	2591	soil	08/07/90	ND	28.1	ND	ND	0.0002	na
TT4.4	2592	soil	08/07/90	ND	12.5	ND	ND	0.0002	na
TT4.5	2593	soil	08/07/90	ND	34.8	ND	ND	0.0002	na
TT4.5	2600	rinsate	08/07/90	1.24	ND	ND	ND	ND	ND
TT4.6	2594	soil	08/07/90	ND	24.7	na	na	0.0002	ND
TT4.7	2595	soil	08/07/90	ND	43	0.09	ND	0.0002	na
TT4.8	2596	soil	08/07/90	ND	21.5	ND	ND	0.0002	ND
TT4.9	2597	soil	08/07/90	ND	37.5	ND	ND	ND	na
TT4.10	2598	soil	08/07/90	ND	34.7	ND	ND	ND	na
TT4.11	2599	soil	08/07/90	ND	na	na	na	na	na
TT4.12	2601	soil	08/07/90	ND	16.1	na	na	na	224
TT4.13	2602	soil	08/07/90	ND	13.8	na	na	na	na
TT4.14	2603	soil	08/07/90	ND	13.3	na	na	na	ND
TT4.15	2604	soil	08/07/90	ND	16.5	na	na	na	na
TT4.16	2605	soil	08/07/90	ND	45.8	na	na	na	92
TT4.17	2606	background	08/07/90	ND	14	na	na	na	ND
TT4	2613	trip blank	08/08/90	ND	na	na	na	na	na
TT4	2615	trip blank	08/08/90	ND	na	na	na	na	na
TT4	2616	trip blank	08/08/90	1.11	na	na	na	na	na
TT4	2617	trip blank	08/08/90	1.09	na	na	na	na	na
TT4	2618	trip blank	08/08/90	ND	na	na	na	na	na
TT5.1	2585	soil	08/07/90	ND	24.6	0.26	0.07	0.0002	na
TT5.2	2586	soil	08/07/90	ND	48.7	0.18	0.12	0.0002	na
TT5.3	2587	soil	08/07/90	ND	35.1	0.28	ND	0.0003	na
TT5.4	2588	soil	08/07/90	ND	137	0.08	ND	0.0002	na

NOTES: (1) Metals were analyzed according to TCLP and therefore units are in mg/L
ND - none detected
na - not analyzed

TABLE 4-8 (page 2 of 2)

Tram Tower Results of Analyses

Sample Location	Sample Number	Matrix	Date Sampled	Semivolatile Organic Compounds						
				bis(2-ethyl-hexyl) phthalate	benzoic acid	di-n-butyl-phthalate	4-chloro-3-methyl-phenol	phenol	diethyl-phthalate	bis(2-chloro-ethyl) ether
units				ppb						
TT4.1	2589	soil	08/07/90	ND	ND	ND	ND	ND	ND	ND
TT4.2	2590	soil	08/07/90	ND	ND	ND	ND	ND	ND	ND
TT4.3	2591	soil	08/07/90	ND	ND	ND	ND	ND	ND	ND
TT4.4	2592	soil	08/07/90	ND	ND	ND	ND	ND	ND	ND
TT4.5	2593	soil	08/07/90	458	3,490	1,280	ND	ND	ND	ND
TT4.5	2600	rinsate	08/07/90	65.1	ND	ND	ND	ND	ND	ND
TT4.6	2594	soil	08/07/90	ND	ND	ND	ND	ND	ND	ND
TT4.7	2595	soil	08/07/90	32	ND	31.8	10.9	ND	ND	ND
TT4.8	2596	soil	08/07/90	na	na	na	na	na	na	na
TT4.9	2597	soil	08/07/90	na	ND	16.5	ND	ND	ND	ND
TT4.10	2598	soil	08/07/90	na	na	na	na	na	na	na
TT4.11	2599	soil	08/07/90	na	ND	2,650	ND	ND	ND	ND
TT4.12	2601	soil	08/07/90	224	na	na	na	na	na	na
TT4.13	2602	soil	08/07/90	na	ND	133	ND	ND	ND	ND
TT4.14	2603	soil	08/07/90	ND	na	na	na	na	na	na
TT4.15	2604	soil	08/07/90	na	4,960	739	ND	ND	ND	ND
TT4.16	2605	soil	08/07/90	92	na	na	na	na	na	na
TT4.17	2606	background	08/07/90	ND	ND	ND	ND	ND	ND	ND
TT4	2613	trip blank	08/08/90	na	na	na	na	na	na	na
TT4	2615	trip blank	08/08/90	na	na	na	na	na	na	na
TT4	2616	trip blank	08/08/90	na	na	na	na	na	na	na
TT4	2617	trip blank	08/08/90	na	na	na	na	na	na	na
TT4	2618	trip blank	08/08/90	na	na	na	na	na	na	na
TT5.1	2585	soil	08/07/90	na	7,250	1,500	ND	ND	ND	ND
TT5.2	2586	soil	08/07/90	na	7,330	1,200	ND	ND	ND	ND
TT5.3	2587	soil	08/07/90	na	13,900	848	ND	676	422	198
TT5.4	2588	soil	08/07/90	na	ND	ND	ND	ND	ND	ND

NOTES: (1) Metals were analyzed according to TCLP and therefore units are in mg/L
ND - none detected
na - not analyzed

TABLE 4-9 (page 1 of 3)

Results of Stream Water and Sediment Sample Analyses

Sample Matrix	Date Sampled	Sample Number	Metals		Semivolatile Organic Compounds								PCB	Volatile Organic Compounds		
			barium	mercury	diethyl-phthalate	benzoic acid	phenol	2-nitro-phenol	phenan-threne	anthra-cene	bis(2-ethyl-he-xyl) phthalate	di-n-butyl-phthalate	PCB-1260	toluene	xylene	methylene chloride
LT-US-1			mg/L ¹ (ppm)		µg/kg (ppb)								ppb	µg/kg (ppb)		
sediment	08/06/90	1597	na	na	na	na	na	na	na	na	na	na	ND	na	na	na
sediment	08/06/90	1598	na	na	262	10,900	118	ND	ND	ND	ND	ND	na	na	na	na
sediment	08/06/90	1599	0.09	0.0002	na	na	na	na	na	na	na	na	na	na	na	na
sediment	08/06/90	2166	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
sediment	08/06/90	2167	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
			mg/L (ppm)		µg/L (ppb)								mg/L	µg/L (ppb)		
water	08/06/90	2088	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
water	08/06/90	2089	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
water	08/06/90	2095	na	na	ND	ND	ND	ND	ND	ND	ND	ND	na	na	na	na
water	08/06/90	2096	na	na	ND	ND	ND	ND	ND	ND	ND	ND	na	na	na	na
water	08/06/90	2150	ND	ND	na	na	na	na	na	na	na	na	na	na	na	na
water	08/06/90	2155	ND	ND	na	na	na	na	na	na	na	na	na	na	na	na
LT-US-2			mg/L (ppm)		µg/kg (ppb)								ppb	µg/kg (ppb)		
sediment	08/06/90	1600	na	na	na	na	na	na	na	na	na	na	ND	na	na	na
sediment	08/06/90	1601	na	na	512	ND	ND	ND	184	187	1,220	1,650	na	na	na	na
sediment	08/06/90	1602	0.065	0.0002	na	na	na	na	na	na	na	na	na	na	na	na
sediment	08/06/90	2164	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
sediment	08/06/90	2165	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
			mg/L (ppm)		µg/L (ppb)								mg/L	µg/L (ppb)		
water	08/06/90	1545	ND	ND	na	na	na	na	na	na	na	na	na	na	na	na
water	08/06/90	2087	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
water	08/06/90	2094	na	na	ND	ND	ND	ND	ND	ND	ND	ND	na	na	na	na
water	08/06/90	2149	ND	ND	na	na	na	na	na	na	na	na	na	na	na	na

NOTES: (1) Metals were analyzed according to TCLP and therefore units are in mg/L
ND - none detected
na - not analyzed

TABLE 4-9 (page 2 of 3)

Results of Stream Water and Sediment Sample Analyses

Sample Matrix	Date Sampled	Sample Number	Metals		Semivolatile Organic Compounds								PCB	Volatile Organic Compounds		
			barium	mercury	diethyl-phthalate	benzoic acid	phenol	2-nitro-phenol	phenan-threne	anthra-cene	bis(2-ethyl-he-xyl) phthalate	di-n-butyl-phthalate	PCB-1260	toluene	xylene	methylene chloride
LT-LS-1			mg/L ¹ (ppm)		µg/kg (ppb)								ppb	µg/kg (ppb)		
sediment	08/06/90	2157	na	na	na	na	na	na	na	na	na	na	ND	na	na	na
sediment	08/06/90	2158	na	na	475	7,070	ND	438	ND	ND	440	1,470	na	na	na	na
sediment	08/06/90	2159	0.08	0.0002	na	na	na	na	na	na	na	na	na	na	na	na
sediment	08/06/90	2170	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
sediment	08/06/90	2171	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
			mg/L (ppm)		µg/L (ppb)								mg/L	µg/L (ppb)		
water	08/06/90	2090	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
water	08/06/90	2144	na	na	ND	ND	ND	ND	ND	ND	ND	ND	na	na	na	na
water	08/06/90	2152	ND	ND	na	na	na	na	na	na	na	na	na	na	na	na
LT-LS-2			mg/L (ppm)		µg/kg (ppb)								ppb	µg/kg (ppb)		
sediment	08/06/90	1605	na	na	na	na	na	na	na	na	na	na	ND	na	na	na
sediment	08/06/90	1606	0.07	0.0003	na	na	na	na	na	na	na	na	na	na	na	na
sediment	08/06/90	1607	na	na	ND	ND	ND	ND	ND	ND	ND	794	na	na	na	na
sediment	08/06/90	2172	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
sediment	08/06/90	2173	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
			mg/L (ppm)		µg/L (ppb)								mg/L	µg/L (ppb)		
water	08/06/90	2091	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
water	08/06/90	2145	na	na	ND	ND	ND	ND	ND	ND	ND	ND	na	na	na	na
water	08/06/90	2153	ND	ND	na	na	na	na	na	na	na	na	na	na	na	na
rinsate	08/06/90	2160	na	na	na	na	na	na	na	na	na	na	ND	na	na	na
rinsate	08/06/90	2161	na	na	284	9,100	208	ND	ND	ND	320	940	na	na	na	na
rinsate	08/06/90	2162	ND	0.0002	na	na	na	na	na	na	na	na	na	na	na	na

NOTES: (1) Metals were analyzed according to TCLP and therefore units are in mg/L
ND - none detected
na - not analyzed

TABLE 4-9 (page 3 of 3)
Results of Stream Water and Sediment Sample Analyses

Sample Matrix	Date Sampled	Sample Number	Metals		Semivolatile Organic Compounds								PCB	Volatile Organic Compounds		
			barium	mercury	diethyl-phthalate	benzoic acid	phenol	2-nitro-phenol	phenan-threne	anthra-cene	bis(2-ethyl-hexyl) phtha-late	di-n-butyl-phthalate	PCB-1260	toluene	xylene	methylene chloride
LT-LS-3			mg/L ¹ (ppm)		µg/kg (ppb)								ppb	µg/kg (ppb)		
sediment	08/06/90	1603	na	na	na	na	na	na	na	na	na	na	21.0	na	na	na
sediment	08/06/90	1604	na	na	109	ND	ND	ND	ND	ND	ND	703	na	na	na	na
sediment	08/06/90	1608	0.11	0.0002	na	na	na	na	na	na	na	na	na	na	na	na
sediment	08/06/90	2179	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
sediment	08/06/90	2180	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
			mg/L (ppm)		µg/L (ppb)								mg/L	µg/L (ppb)		
water	08/06/90	2092	na	na	na	na	na	na	na	na	na	na	na	ND	ND	ND
water	08/06/90	2146	na	na	ND	ND	ND	ND	ND	ND	ND	ND	na	na	na	na
water	08/06/90	2154	ND	ND	na	na	na	na	na	na	na	na	na	na	na	na
trip blank	08/06/90	2093	na	na	na	na	na	na	na	na	na	na	na	ND	ND	1.69
trip blank	08/06/90	2178	na	na	na	na	na	na	na	na	na	na	na	ND	ND	1.79
Background			mg/L (ppm)		µg/kg (ppb)								ppb	µg/kg (ppb)		
sediment	08/06/90	2174	na	na	na	na	na	na	na	na	na	na	na	59.7	ND	ND
sediment	08/06/90	2175	na	na	na	na	na	na	na	na	na	na	na	ND	53.5	ND

NOTES: (1) Metals were analyzed according to TCLP and therefore units are in mg/L
ND - none detected
na - not analyzed

Table 4-10 (page 1 of 12)

Upper Camp Drumfield, Results of VOC, TPH, and Metal Analyses

Grid Number (sample location)	Sample Number	Matrix	Date Sampled	Volatile Organic Compounds ¹				Total Petroleum Hydrocarbons	Metals		
				toluene	benzene	methylene chloride	xylene		barium	lead	mercury
units				μg/kg (ppb)				ppm dry wt.	mg/L ² (ppm)		
A-1	1583	soil	08/04/90	53.4	ND	ND	ND	23.7	na	na	na
A-1	1531	soil	08/04/90	na	na	na	na	na	0.39	ND	0.0002
A-2	1584	soil	08/04/90	ND	ND	ND	ND	67.9	na	na	na
A-3	1585	soil	08/04/90	ND	ND	ND	ND	35.6	na	na	na
A-4	1586	soil	08/04/90	ND	ND	ND	ND	22.8	na	na	na
A-5	1587	soil	08/04/90	ND	ND	ND	ND	32.0	na	na	na
A-6	1588	soil	08/04/90	ND	ND	ND	ND	30.3	na	na	na
A-7	1589	soil	08/04/90	ND	ND	ND	ND	63.7	na	na	na
A-8	1590	soil	08/04/90	155	56.3	ND	89.2	62.1	na	na	na
A-9	1591	soil	08/04/90	132	ND	ND	ND	ND	na	na	na
A-10	1592	soil	08/04/90	76.8	ND	ND	ND	1,090	na	na	na
A-10	1532	soil	08/04/90	na	na	na	na	na	0.34	ND	0.0002
B-1	1593	soil	08/04/90	ND	ND	ND	ND	22.0	na	na	na
B-2	no sample	--	--	--	--	--	--	--	--	--	--
B-3	1595	soil	08/04/90	60.7	ND	ND	ND	22.1	na	na	na

NOTES: (1) VOC analyses completed after 14-day holding time
(2) Metals were analyzed according to TCLP and therefore units are in mg/L.
ND - none detected
na - not analyzed

Table 4-10 (page 2 of 12)

Upper Camp Drumfield, Results of VOC, TPH, and Metal Analyses

Grid Number (sample location)				Volatile Organic Compounds ¹				Total Petroleum Hydrocarbons	Metals		
Sample Number	Matrix	Date Sampled	toluene	benzene	methylene chloride	xylene	barium		lead	mercury	
units				µg/kg (ppb)				ppm dry wt.	mg/L ² (ppm)		
B-4	no sample	--	--	--	--	--	--	--	--	--	--
B-5	1611	soil	08/03/90	ND	ND	ND	ND	119	na	na	na
B-6	1612	soil	08/03/90	ND	ND	ND	ND	136	na	na	na
B-6	1533	soil	08/03/90	na	na	na	na	na	0.14	0.08	ND
B-7	1613	soil	08/03/90	ND	ND	ND	ND	56.8	na	na	na
B-8	1614	soil	08/06/90	ND	ND	ND	ND	13.1	na	na	na
B-9	1615	soil	08/03/90	ND	ND	ND	ND	50.0	na	na	na
B-10	1616	soil	08/03/90	ND	ND	ND	ND	36.7	na	na	na
C-1	1617	soil	08/03/90	ND	ND	ND	ND	33.2	na	na	na
C-2	no sample	--	--	--	--	--	--	--	--	--	--
C-3	1619	soil	08/03/90	ND	ND	2,720	ND	763	na	na	na
C-4	1620	soil	08/03/90	ND	ND	ND	ND	29.2	na	na	na
C-4	1534	soil	08/03/90	na	na	na	na	na	0.39	ND	0.0003
C-5	1621	soil	08/03/90	ND	ND	ND	ND	110	na	na	na
C-6	1622	soil	08/03/90	ND	ND	ND	ND	23.2	na	na	na

NOTES: (1) VOC analyses completed after 14-day holding time
(2) Metals were analyzed according to TCLP and therefore units are in mg/L.
ND - none detected
na - not analyzed

Table 4-10 (page 3 of 12)

Upper Camp Drumfield, Results of VOC, TPH, and Metal Analyses

Grid Number (sample location)	Sample Number	Matrix	Date Sampled	Volatile Organic Compounds ¹				Total Petroleum Hydrocarbons	Metals		
				toluene	benzene	methylene chloride	xylene		barium	lead	mercury
units				µg/kg (ppb)				ppm dry wt.	mg/L ² (ppm)		
C-7	1623	soil	08/03/90	ND	ND	ND	ND	22.3 and ND* 23.7 28.4 22.5	na	na	na
C-8	1624	soil	08/03/90	ND	ND	ND	ND		na	na	na
C-9	1625	soil	08/03/90	ND	ND	ND	ND		na	na	na
C-10	1626	soil	08/03/90	ND	ND	ND	ND		na	na	na
D-1	1627	soil	08/03/90	ND	ND	ND	ND	38.3	na	na	na
D-2	1628	soil	08/03/90	ND	ND	ND	ND	32.3	na	na	na
D-3	1629	soil	08/03/90	ND	ND	ND	ND	27.6	na	na	na
D-3	1535	soil	08/03/90	na	na	na	na	na	0.51	ND	ND
D-4	1630	soil	08/03/90	ND	ND	ND	ND	74.8	na	na	na
D-5	1631	soil	08/03/90	ND	ND	ND	ND	35.1	na	na	na
D-6	1632	soil	08/03/90	ND	ND	ND	ND	422	na	na	na
D-7	1633	soil	08/04/90	74.8	ND	ND	ND	35.2	na	na	na
D-8	1634	soil	08/04/90	ND	ND	ND	ND	38.3	na	na	na
D-9	1635	soil	08/04/90	ND	ND	ND	ND	33.5	na	na	na

NOTES: (1) VOC analyses completed after 14-day holding time
(2) Metals were analyzed according to TCLP and therefore units are in mg/L.
* Two different samples and lab analyses for the same grid
ND - none detected
na - not analyzed

Table 4-10 (page 4 of 12)

Upper Camp Drumfield, Results of VOC, TPH, and Metal Analyses

Grid Number (sample location) Sample Number Matrix Date Sampled				Volatile Organic Compounds ¹				Total Petroleum Hydrocarbons	Metals		
				toluene	benzene	methylene chloride	xylene		barium	lead	mercury
units				µg/kg (ppb)				ppm dry wt.	mg/L ² (ppm)		
D-10	1636	soil	08/04/90	ND	ND	ND	ND	16.8	na	na	na
E-1	1637	soil	08/04/90	ND	ND	ND	ND	41.2	na	na	na
E-2	1638	soil	08/04/90	ND	ND	ND	ND	20.0	na	na	na
E-3	no sample	--	--	--	--	--	--	--	--	--	--
E-4	1640	soil	08/04/90	53.8	ND	ND	ND	28.0	na	na	na
E-5	1641	soil	08/04/90	ND	ND	ND	ND	17.1	na	na	na
E-5	1536	soil	08/04/90	na	na	na	na	na	0.12	ND	0.0002
E-6	1642	soil	08/04/90	ND	ND	ND	ND	177	na	na	na
E-7	1643	soil	08/04/90	ND	ND	ND	ND	74.8	na	na	na
E-8	1644	soil	08/04/90	ND	ND	ND	ND	14.5	na	na	na
E-9	1645	soil	08/04/90	ND	ND	ND	ND	20.0	na	na	na
E-10	1646	soil	08/04/90	ND	ND	ND	ND	34.8	na	na	na
F-1	1647	soil	08/04/90	ND	ND	ND	ND	18.1	na	na	na
F-2	1648	soil	08/04/90	ND	ND	ND	ND	28.7	na	na	na
F-2	1537	soil	08/04/90	na	na	na	na	na	0.31	ND	0.0003

NOTES: (1) VOC analyses completed after 14-day holding time
(2) Metals were analyzed according to TCLP and therefore units are in mg/L.
ND - none detected
na - not analyzed

Table 4-10 (page 5 of 12)

Upper Camp Drumfield, Results of VOC, TPH, and Metal Analyses

Grid Number (sample location)	Sample Number	Matrix	Date Sampled	Volatile Organic Compounds ¹				Total Petroleum Hydrocarbons	Metals		
				toluene	benzene	methylene chloride	xylene		barium	lead	mercury
units				µg/kg (ppb)				ppm dry wt.	mg/L ² (ppm)		
F-3	1649	soil	08/04/90	ND	ND	ND	ND	131	na	na	na
F-4	1650	soil	08/04/90	ND	ND	ND	ND	54.7	na	na	na
F-5	1651	soil	08/04/90	ND	ND	ND	ND	64.9	na	na	na
F-6	1652	soil	08/04/90	ND	ND	ND	ND	164	na	na	na
F-7	1653	soil	08/04/90	ND	ND	ND	ND	40.1	na	na	na
F-8	no sample	--	--	--	--	--	--	--	--	--	--
F-9	no sample	--	--	--	--	--	--	--	--	--	--
F-10	no sample	--	--	--	--	--	--	--	--	--	--
G-1	1654	soil	08/06/90	ND	ND	ND	ND	53.9	na	na	na
G-2	1655	soil	08/06/90	ND	ND	ND	ND	41.3	na	na	na
G-3	1656	soil	08/06/90	ND	ND	ND	ND	80.3	na	na	na
G-3	1538	soil	08/06/90	na	na	na	na	na	0.15	ND	0.0002
G-4	1657	soil	08/06/90	ND	ND	ND	ND	28.8	na	na	na
G-5	1658	soil	08/06/90	ND	ND	ND	ND	96.1	na	na	na
G-6	1659	soil	08/06/90	ND	ND	ND	ND	40.2	na	na	na

NOTES: (1) VOC analyses completed after 14-day holding time
(2) Metals were analyzed according to TCLP and therefore units are in mg/L.
ND - none detected
na - not analyzed

Table 4-10 (page 6 of 12)

Upper Camp Drumfield, Results of VOC, TPH, and Metal Analyses

Grid Number (sample location)	Sample Number	Matrix	Date Sampled	Volatile Organic Compounds ¹				Total Petroleum Hydrocarbons	Metals		
				toluene	benzene	methylene chloride	xylene		barium	lead	mercury
units				*µg/kg (ppb)				ppm dry wt.	mg/L ² (ppm)		
G-6	1539	soil	08/06/90	na	na	na	na	na	0.06	ND	ND
G-7	1660	soil	08/06/90	ND	ND	ND	ND	1,170	na	na	na
G-8	no sample	--	--	--	--	--	--	--	--	--	--
G-9	1661	soil	08/06/90	ND	ND	ND	ND	64.5	na	na	na
G-10	1662	soil	8/6/90	ND	ND	ND	ND	96.5	na	na	na
H-1	1663	soil	08/06/90	ND	ND	ND	ND	28.5	na	na	na
H-1	1540	soil	08/06/90	na	na	na	na	na	0.12	ND	ND
H-2	1664	soil	08/06/90	ND	ND	ND	ND	30.6	na	na	na
H-3	1665	soil	08/06/90	ND	ND	ND	ND	25.7	na	na	na
H-4	1666	soil	08/06/90	ND	ND	ND	ND	31.5	na	na	na
H-5	1667	soil	08/06/90	ND	ND	ND	ND	55.2	na	na	na
H-6	1668	soil	08/06/90	ND	ND	ND	ND	36.0	na	na	na
H-7	no sample	--	--	--	--	--	--	--	--	--	--
H-8	1669	soil	08/06/90	ND	ND	ND	ND	17.8	na	na	na
H-9	no sample	--	--	--	--	--	--	--	--	--	--

NOTES: (1) VOC analyses completed after 14-day holding time
(2) Metals were analyzed according to TCLP and therefore units are in mg/L.
ND - none detected
na - not analyzed

Table 4-10 (page 7 of 12)

Upper Camp Drumfield, Results of VOC, TPH, and Metal Analyses

Grid Number (sample location) Sample Number Matrix Date Sampled				Volatile Organic Compounds ¹				Total Petroleum Hydrocarbons	Metals		
				toluene	benzene	methylene chloride	xylene		barium	lead	mercury
units				µg/kg (ppb)				ppm dry wt.	mg/L ² (ppm)		
I-1	no sample	--	--	--	--	--	--	--	--	--	--
I-2	no sample	--	--	--	--	--	--	--	--	--	--
I-3	no sample	--	--	--	--	--	--	--	--	--	--
I-4	no sample	--	--	--	--	--	--	--	--	--	--
I-5	no sample	--	--	--	--	--	--	--	--	--	--
I-6	1670	soil	08/06/90	ND	ND	ND	ND	31.9	na	na	na
I-7	no sample	--	--	--	--	--	--	--	--	--	--
I-8	no sample	--	--	--	--	--	--	--	--	--	--
I-9	no sample	--	--	--	--	--	--	--	--	--	--
I-10	no sample	--	--	--	--	--	--	--	--	--	--
J-1	no sample	--	--	--	--	--	--	--	--	--	--
J-2	no sample	--	--	--	--	--	--	--	--	--	--
J-3	no sample	--	--	--	--	--	--	--	--	--	--
J-4	1678	soil	08/07/90	ND	ND	ND	ND	18.3	na	na	na
J-5	1677	soil	08/07/90	ND	ND	ND	ND	22.6	na	na	na

NOTES: (1) VOC analyses completed after 14-day holding time
(2) Metals were analyzed according to TCLP and therefore units are in mg/L.
ND - none detected
na - not analyzed

Table 4-10 (page 8 of 12)

Upper Camp Drumfield, Results of VOC, TPH, and Metal Analyses

Grid Number (sample location)	Sample Number	Matrix	Date Sampled	Volatile Organic Compounds ¹				Total Petroleum Hydrocarbons	Metals		
				toluene	benzene	methylene chloride	xylene		barium	lead	mercury
units				µg/kg (ppb)				ppm dry wt.	mg/L ² (ppm)		
J-6	1671	soil	08/06/90	ND	ND	ND	ND	68.9	na	na	na
J-7	1679	soil	08/07/90	ND	ND	ND	ND	761	na	na	na
J-8	no sample	--	--	--	--	--	--	--	--	--	--
J-9	no sample	--	--	--	--	--	--	--	--	--	--
J-10	no sample	--	--	--	--	--	--	--	--	--	--
K-1	no sample	--	--	--	--	--	--	--	--	--	--
K-2	no sample	--	--	--	--	--	--	--	--	--	--
K-3	no sample	--	--	--	--	--	--	--	--	--	--
K-4	no sample	--	--	--	--	--	--	--	--	--	--
K-5	1676	soil	08/07/90	ND	ND	ND	ND	22.1	na	na	na
K-6	1672	soil	08/07/90	ND	ND	ND	ND	21.2	na	na	na
K-7	no sample	--	--	--	--	--	--	--	--	--	--
K-8	no sample	--	--	--	--	--	--	--	--	--	--
K-9	no sample	--	--	--	--	--	--	--	--	--	--
K-10	1681	soil	08/07/90	ND	ND	ND	ND	35.4	na	na	na

NOTES: (1) VOC analyses completed after 14-day holding time
(2) Metals were analyzed according to TCLP and therefore units are in mg/L.
ND - none detected
na - not analyzed

Table 4-10 (page 9 of 12)

Upper Camp Drumfield, Results of VOC, TPH, and Metal Analyses

Grid Number (sample location)	Sample Number	Matrix	Date Sampled	Volatile Organic Compounds ¹				Total Petroleum Hydrocarbons	Metals		
				toluene	benzene	methylene chloride	xylene		barium	lead	mercury
units				μg/kg (ppb)				ppm dry wt.	mg/L ² (ppm)		
L-1	no sample	--	--	--	--	--	--	--	--	--	--
L-2	no sample	--	--	--	--	--	--	--	--	--	--
L-3	no sample	--	--	--	--	--	--	--	--	--	--
L-4	no sample	--	--	--	--	--	--	--	--	--	--
L-5	no sample	--	--	--	--	--	--	--	--	--	--
L-6	1673	soil	08/06/90	ND	ND	ND	ND	69.1	na	na	na
L-7	no sample	--	--	--	--	--	--	--	--	--	--
L-8	no sample	--	--	--	--	--	--	--	--	--	--
L-9	no sample	--	--	--	--	--	--	--	--	--	--
L-10	1680	soil	08/07/90	ND	ND	ND	ND	52.0	na	na	na
M-1	no sample	--	--	--	--	--	--	--	--	--	--
M-2	no sample	--	--	--	--	--	--	--	--	--	--
M-3	no sample	--	--	--	--	--	--	--	--	--	--
M-4	no sample	--	--	--	--	--	--	--	--	--	--
M-5	1675	soil	08/07/90	ND	ND	ND	ND	53.0	na	na	na

NOTES: (1) VOC analyses completed after 14-day holding time
(2) Metals were analyzed according to TCLP and therefore units are in mg/L.
ND - none detected
na - not analyzed

SITE INSPECTION REPORT
Navy CLEAN Program
Engineering Field Activity, Northwest
Contract No. N62474-89-D-9295/CTO #0019

Section No.: 4.0
Revision No.: 0
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Table 4-10 (page 10 of 12)

Upper Camp Drumfield, Results of VOC, TPH, and Metal Analyses

Grid Number (sample location)	Sample Number	Matrix	Date Sampled	Volatile Organic Compounds ¹				Total Petroleum Hydrocarbons	Metals		
				toluene	benzene	methylene chloride	xylene		barium	lead	mercury
units				µg/kg (ppb)				ppm dry wt.	mg/L ² (ppm)		
M-6	1674	soil	08/07/90	ND	ND	ND	ND	174	na	na	na
M-7	--	--	--	--	--	--	--	--	--	--	--
M-8	--	--	--	--	--	--	--	--	--	--	--
M-9	--	--	--	--	--	--	--	--	--	--	--
M-10	--	--	--	--	--	--	--	--	--	--	--
UPCDF-1	1594	soil	08/07/90	ND	ND	ND	ND	1,480	na	na	na
UPCDF-1	1726	soil	08/07/90	na	na	na	na	na	0.11	ND	0.0002
UPCDF-2	1596	soil	08/07/90	ND	ND	ND	ND	31,500	na	na	na
UPCDF-2	1727	soil	08/07/90	na	na	na	na	na	ND	0.07	0.0002
UPCDF-3	1686	soil	08/07/90	ND	ND	ND	ND	47.3	na	na	na
UPCDF-3	1728	soil	08/07/90	na	na	na	na	na	0.06	ND	0.0003
UPCDF-4	1682	soil	08/07/90	ND	ND	ND	ND	34.0	na	na	na
UPCDF-4	1725	soil	08/07/90	na	na	na	na	na	0.05	ND	0.0002
UPCDF-5	1683	soil	08/07/90	ND	ND	ND	ND	808	na	na	na
UPCDF-5	1730	soil	08/07/90	na	na	na	na	na	ND	0.057	0.0004

NOTES: (1) VOC analyses completed after 14-day holding time
(2) Metals were analyzed according to TCLP and therefore units are in mg/L.
ND - none detected
na - not analyzed

Table 4-10 (page 11 of 12)

Upper Camp Drumfield, Results of VOC, TPH, and Metal Analyses

Grid Number (sample location)				Volatile Organic Compounds ¹				Total Petroleum Hydrocarbons	Metals		
Sample Number	Matrix	Date Sampled	toluene	benzene	methylene chloride	xylene	barium		lead	mercury	
units				µg/kg (ppb)				ppm dry wt.	mg/L ² (ppm)		
UPCDF-6	1685	soil	08/07/90	ND	ND	ND	ND	31.8	na	na	na
UPCDF-6	1731	soil	08/07/90	na	na	na	na	na	0.17	ND	0.0003
background	1639	soil	08/06/90	ND	ND	ND	ND	22.7	na	na	na
background	1541	soil	08/06/90	na	na	na	na	na	0.5	ND	0.0003
I-6 rinsate	1690	water	08/06/90	ND	ND	ND	ND	ND	na	na	na
I-6 rinsate	1543	water	08/06/90	na	na	na	na	na	ND	ND	0.0002
J-6 rinsate	1688	water	08/06/90	ND	ND	ND	ND	ND	na	na	na
J-6 rinsate	1544	water	08/06/90	na	na	na	na	na	ND	17.1	0.0006
K-6 rinsate	1689	water	08/06/90	ND	ND	ND	ND	ND	na	na	na
L-6 rinsate	1687	water	08/06/90	ND	ND	ND	ND	ND	na	na	na
b.g. rinsate	1618	water	08/06/90	ND	ND	ND	ND	ND	na	na	na
b.g. rinsate	1542	water	08/06/90	na	na	na	na	na	ND	ND	0.0003
trip blank	1654	water	08/04/90	ND	ND	1.58	ND	na	na	na	na
trip blank	1546	water	08/06/90	ND	ND	ND	ND	na	na	na	na
trip blank	1655	water	08/03/90	ND	ND	ND	ND	na	na	na	na

NOTES: (1) VOC analyses completed after 14-day holding time
(2) Metals were analyzed according to TCLP and therefore units are in mg/L.
ND - none detected
na - not analyzed

Table 4-10 (page 12 of 12)

Upper Camp Drumfield, Results of VOC, TPH, and Metal Analyses

Grid Number (sample location)				Volatile Organic Compounds¹				Total Petroleum Hydrocarbons	Metals		
Sample Number	Matrix	Date Sampled	toluene	benzene	methylene chloride	xylene	barium		lead	mercury	
units				µg/kg (ppb)				ppm dry wt.	mg/L² (ppm)		
trip blank	1656	water	08/04/90	ND	ND	ND	ND	na	na	na	na
trip blank	1657	water	08/04/90	ND	ND	1.49	ND	na	na	na	na
trip blank	2062	water	08/06/90	ND	ND	ND	ND	na	na	na	na
trip blank	2607	water	08/08/90	ND	ND	1.29	1.1	na	na	na	na
trip blank	2608	water	08/08/90	ND	ND	1.41	ND	na	na	na	na
trip blank	2609	water	08/08/90	ND	ND	1.12	ND	na	na	na	na
trip blank	2610	water	08/08/90	ND	ND	1.15	ND	na	na	na	na
trip blank	2611	water	08/06/90	ND	ND	ND	ND	na	na	na	na
trip blank	2612	water	08/06/90	ND	ND	ND	ND	na	na	na	na

NOTES: (1) VOC analyses completed after 14-day holding time
(2) Metals were analyzed according to TCLP and therefore units are in mg/L.
ND - none detected
na - not analyzed

TABLE 4-11 (page 1 of 4)

Upper Camp Drumfield, Results of Semivolatile Organic Compound Analyses

Grid Number (sample location)	Sample Number	Matrix	Date Sampled	Semivolatile Organic Compounds				
				phenol	benzoic acid	dimethyl-phthalate	1,2,4-trichloro-benzene	4-chloro-3-methylphenol
units				µg/kg (ppb)				
A-1	1692	soil	08/04/90	ND	ND	ND	ND	ND
A-10	1693	soil	08/04/90	337	ND	292	ND	ND
B-6	1694	soil	08/03/90	483	ND	ND	ND	ND
C4	1695	soil	08/03/90	285	ND	ND	ND	ND
D-3	1696	soil	08/03/90	450	ND	ND	ND	ND
E-5	1697	soil	08/04/90	ND	2,890	ND	ND	ND
F-2	1698	soil	08/04/90	ND	ND	ND	ND	ND
G-3	1699	soil	08/04/90	613	ND	ND	ND	ND
G-6	1700	soil	08/04/90	247	ND	ND	ND	ND
H-1	1701	soil	08/04/90	592	30,300	ND	ND	ND
I-6	1704	soil	08/04/90	296	16,600	ND	ND	ND
J-4	1717	soil	08/07/90	434	ND	ND	ND	ND
J-5	1712	soil	08/07/90	513	5,970	ND	ND	ND
J-6	1705	soil	08/04/90	ND	ND	ND	ND	ND
J-7	1716	soil	08/07/90	432	9,060	181	ND	ND
K-5	1710	soil	08/07/90	ND	ND	ND	ND	ND
K-6	1706	soil	08/07/90	ND	6,640	ND	ND	ND
K-10	1717	soil	08/07/90	ND	ND	ND	ND	ND
L-6	1707	soil	08/07/90	ND	7,170	ND	ND	ND
L-10	1718	soil	08/07/90	ND	ND	ND	ND	ND
M-5	1709	soil	08/07/90	ND	ND	ND	ND	ND
M-6	1708	soil	08/06/90	ND	ND	ND	ND	ND
UPCDF-1	1720	soil	08/07/90	ND	ND	ND	ND	ND
UPCDF-2	1721	soil	08/07/90	ND	4,550	ND	122	ND
UPCDF-3	1727	soil	08/07/90	ND	ND	ND	ND	ND
UPCDF-4	1723	soil	08/07/90	ND	ND	ND	ND	ND
UPCDF-5	1724	soil	08/07/90	ND	ND	ND	ND	ND
UPCDF-6	1725	soil	08/07/90	ND	ND	ND	ND	130
background	1702	soil	08/06/90	ND	ND	ND	ND	ND
units				µg/L (ppb)				
I-6 rinsate	1715	water	08/06/90	ND	ND	ND	ND	ND
J-6 rinsate	1713	water	08/06/90	ND	ND	ND	ND	ND
K-6 rinsate	1714	water	08/06/90	ND	ND	ND	ND	ND
L-6 rinsate	1711	water	08/06/90	ND	ND	ND	ND	ND
b.g. rinsate	1703	water	08/06/90	ND	ND	ND	ND	ND

NOTE: ND - none detected

TABLE 4-11 (page 2 of 4)

Upper Camp Drumfield, Results of Semivolatile Organic Compound Analyses

Grid Number (sample location)	Sample Number	Matrix	Date Sampled	Semivolatile Organic Compounds			
				3-nitro-aniline	acenaphthene	2,6-di-nitro-toluene	4-nitrophenol
units				µg/kg (ppb)			
A-1	1692	soil	08/04/90	ND	ND	ND	ND
A-10	1693	soil	08/04/90	1,190	ND	ND	ND
B-6	1694	soil	08/03/90	ND	ND	ND	ND
C4	1695	soil	08/03/90	ND	ND	ND	ND
D-3	1696	soil	08/03/90	ND	ND	ND	ND
E-5	1697	soil	08/04/90	ND	ND	ND	ND
F-2	1698	soil	08/04/90	ND	ND	ND	ND
G-3	1699	soil	08/04/90	ND	ND	ND	ND
G-6	1700	soil	08/04/90	ND	ND	ND	ND
H-1	1701	soil	08/04/90	ND	ND	ND	ND
I-6	1704	soil	08/04/90	ND	ND	ND	ND
J-4	1717	soil	08/07/90	ND	ND	ND	ND
J-5	1712	soil	08/07/90	ND	ND	ND	ND
J-6	1705	soil	08/04/90	ND	ND	ND	ND
J-7	1716	soil	08/07/90	ND	ND	271	851
K-5	1710	soil	08/07/90	ND	ND	ND	ND
K-6	1706	soil	08/07/90	ND	ND	ND	ND
K-10	1717	soil	08/07/90	ND	ND	ND	ND
L-6	1707	soil	08/07/90	ND	ND	ND	ND
L-10	1718	soil	08/07/90	ND	ND	ND	ND
M-5	1709	soil	08/07/90	ND	ND	ND	ND
M-6	1708	soil	08/06/90	ND	ND	ND	ND
UPCDF-1	1720	soil	08/07/90	ND	ND	ND	ND
UPCDF-2	1721	soil	08/07/90	1,290	165	ND	8,540
UPCDF-3	1727	soil	08/07/90	ND	ND	ND	ND
UPCDF-4	1723	soil	08/07/90	ND	ND	ND	ND
UPCDF-5	1724	soil	08/07/90	ND	ND	ND	757
UPCDF-6	1725	soil	08/07/90	ND	ND	ND	ND
background	1702	soil	08/06/90	ND	ND	ND	ND
units				µg/L (ppb)			
I-6 rinsate	1715	water	08/06/90	ND	ND	ND	ND
J-6 rinsate	1713	water	08/06/90	ND	ND	ND	ND
K-6 rinsate	1714	water	08/06/90	ND	ND	ND	ND
L-6 rinsate	1711	water	08/06/90	ND	ND	ND	ND
b.g. rinsate	1703	water	08/06/90	ND	ND	ND	ND

NOTE: ND - none detected

TABLE 4-11 (page 3 of 4)

Upper Camp Drumfield, Results of Semivolatile Organic Compound Analyses

Grid Number (sample location)	Sample Number	Matrix	Date Sampled	Semivolatile Organic Compounds			
				4-nitro-aniline	diethyl-phthalate	phenanthrene	anthracene
units				μg/kg (ppb)			
A-1	1692	soil	08/04/90	ND	ND	ND	ND
A-10	1693	soil	08/04/90	ND	351	144	131
B-6	1694	soil	08/03/90	ND	ND	129	130
C4	1695	soil	08/03/90	ND	124	ND	ND
D-3	1696	soil	08/03/90	ND	179	114	115
E-5	1697	soil	08/04/90	ND	ND	ND	ND
F-2	1698	soil	08/04/90	ND	102	ND	ND
G-3	1699	soil	08/04/90	ND	189	122	123
G-6	1700	soil	08/04/90	ND	261	ND	ND
H-1	1701	soil	08/04/90	ND	477	154	156
I-6	1704	soil	08/04/90	ND	488	100	ND
J-4	1717	soil	08/07/90	ND	ND	ND	ND
J-5	1712	soil	08/07/90	ND	ND	ND	ND
J-6	1705	soil	08/04/90	ND	ND	ND	ND
J-7	1716	soil	08/07/90	ND	487	232	ND
K-5	1710	soil	08/07/90	ND	ND	ND	ND
K-6	1706	soil	08/07/90	ND	ND	ND	ND
K-10	1717	soil	08/07/90	ND	ND	ND	ND
L-6	1707	soil	08/07/90	ND	610	ND	ND
L-10	1718	soil	08/07/90	ND	ND	ND	ND
M-5	1709	soil	08/07/90	ND	ND	ND	ND
M-6	1708	soil	08/06/90	ND	ND	ND	ND
UPCDF-1	1720	soil	08/07/90	ND	ND	ND	ND
UPCDF-2	1721	soil	08/07/90	ND	ND	576	588
UPCDF-3	1727	soil	08/07/90	ND	ND	ND	ND
UPCDF-4	1723	soil	08/07/90	123	ND	ND	ND
UPCDF-5	1724	soil	08/07/90	ND	ND	ND	ND
UPCDF-6	1725	soil	08/07/90	ND	173	ND	ND
background	1702	soil	08/06/90		ND	ND	ND
units				μg/L (ppb)			
I-6 rinsate	1715	water	08/06/90	ND	ND	ND	ND
J-6 rinsate	1713	water	08/06/90	ND	ND	ND	ND
K-6 rinsate	1714	water	08/06/90	ND	ND	ND	ND
L-6 rinsate	1711	water	08/06/90	ND	ND	ND	ND
b.g. rinsate	1703	water	08/06/90	ND	ND	ND	ND

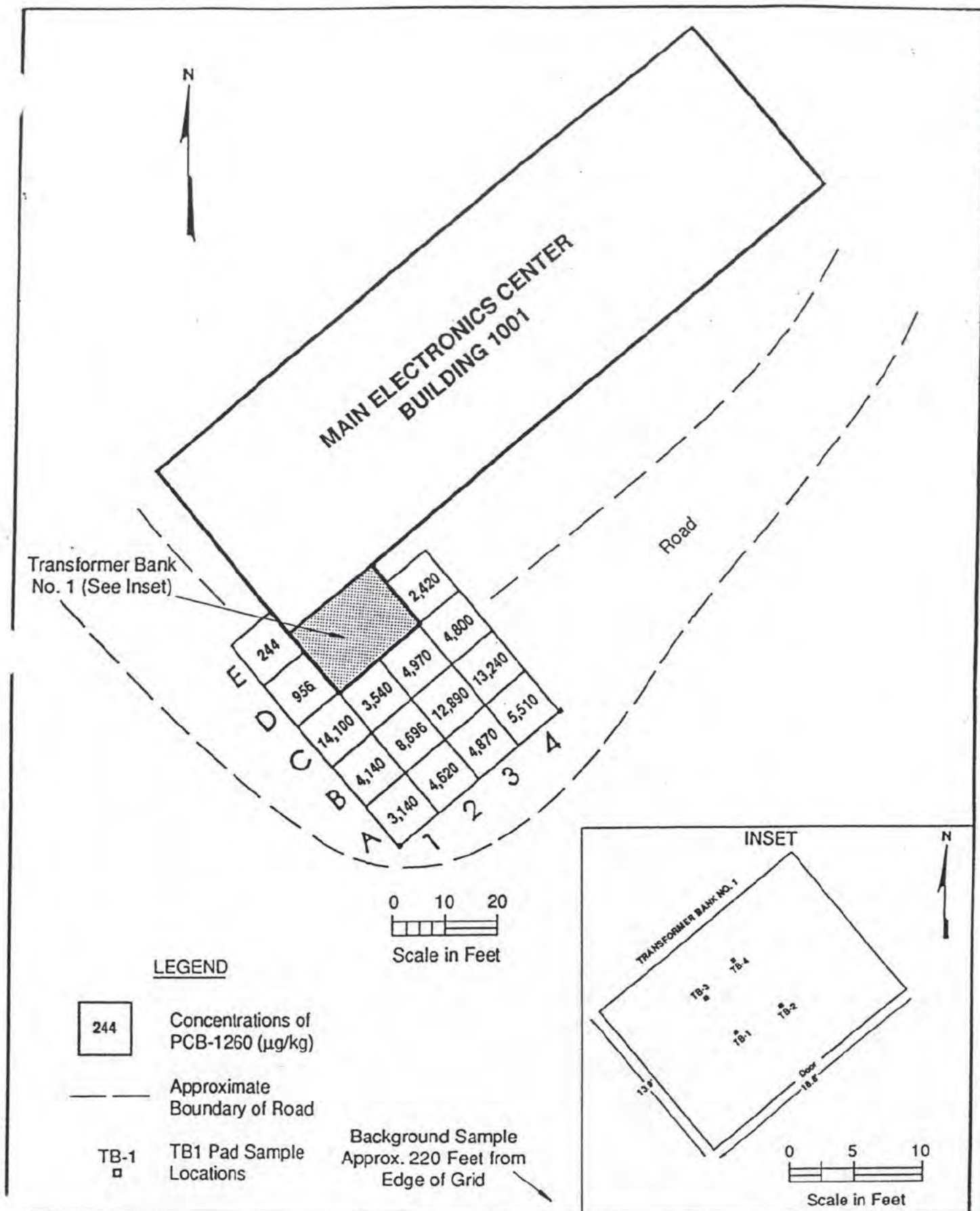
NOTE: ND - none detected

TABLE 4-11 (page 4 of 4)

Upper Camp Drumfield, Results of Semivolatile Organic Compound Analyses

Grid Number (sample location)	Sample Number	Matrix	Date Sampled	Semivolatile Organic Compounds			
				di-n-butyl-phthalate	butylbenzyl-phthalate	bis(2-ethylhexyl)phthalate	di-n-octyl-phthalate
units				µg/kg (ppb)			
A-1	1692	soil	08/04/90	446	ND	ND	ND
A-10	1693	soil	08/04/90	883	114	580	ND
B-6	1694	soil	08/03/90	1,310	102	607	ND
C4	1695	soil	08/03/90	717	ND	380	ND
D-3	1696	soil	08/03/90	720	ND	438	ND
E-5	1697	soil	08/04/90	951	ND	252	ND
F-2	1698	soil	08/04/90	1,040	ND	ND	ND
G-3	1699	soil	08/04/90	796	ND	489	ND
G-6	1700	soil	08/04/90	1,791	ND	539	ND
H-1	1701	soil	08/04/90	5,768	1,483	17,300	1,210
I-6	1704	soil	08/04/90	2,710	ND	512	ND
J-4	1717	soil	08/07/90	902	ND	364	ND
J-5	1712	soil	08/07/90	882	ND	ND	ND
J-6	1705	soil	08/04/90	410	ND	ND	ND
J-7	1716	soil	08/07/90	976	ND	257	ND
K-5	1710	soil	08/07/90	9,800	ND	302,000	ND
K-6	1706	soil	08/07/90	1,520	ND	671	ND
K-10	1717	soil	08/07/90	220	ND	ND	ND
L-6	1707	soil	08/07/90	3,990	159	474	ND
L-10	1718	soil	08/07/90	132	ND	582	ND
M-5	1709	soil	08/07/90	ND	ND	703	ND
M-6	1708	soil	08/06/90	ND	ND	ND	ND
UPCDF-1	1720	soil	08/07/90	ND	ND	ND	ND
UPCDF-2	1721	soil	08/07/90	187	110	274	ND
UPCDF-3	1727	soil	08/07/90	2,490	ND	302	ND
UPCDF-4	1723	soil	08/07/90	485	ND	ND	ND
UPCDF-5	1724	soil	08/07/90	154	ND	ND	ND
UPCDF-6	1725	soil	08/07/90	657	ND	ND	ND
background	1702	soil	08/06/90	685	ND	ND	ND
units				µg/L			
I-6 rinsate	1715	water	08/06/90	ND	ND	13.2	ND
J-6 rinsate	1713	water	08/06/90	ND	ND	101	ND
K-6 rinsate	1714	water	08/06/90	ND	ND	ND	ND
L-6 rinsate	1711	water	08/06/90	ND	ND	14.3	ND
b.g. rinsate	1703	water	08/06/90	ND	ND	ND	ND

NOTE: ND - none detected

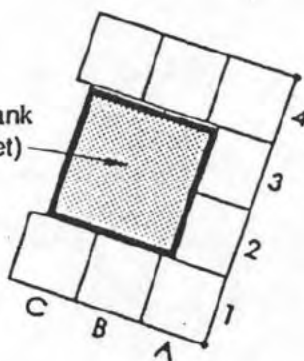


Approximate Location of
Background Sample

N

Transformer Bank
No.2 (See Inset)

To Lower Camp



LOWER TRAM BLDG

To Upper Camp

TRAM

0 10 20

Scale in Feet

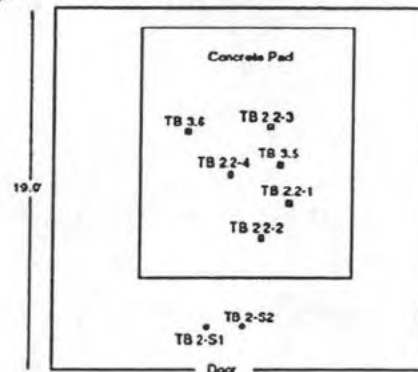
LEGEND

TB-1 TB1 Pad Sample Locations

TB 3.6 Discrete Soil Sample Location

INSET

TRANSFORMER BANK NO. 2



0 5 10

Scale in Feet



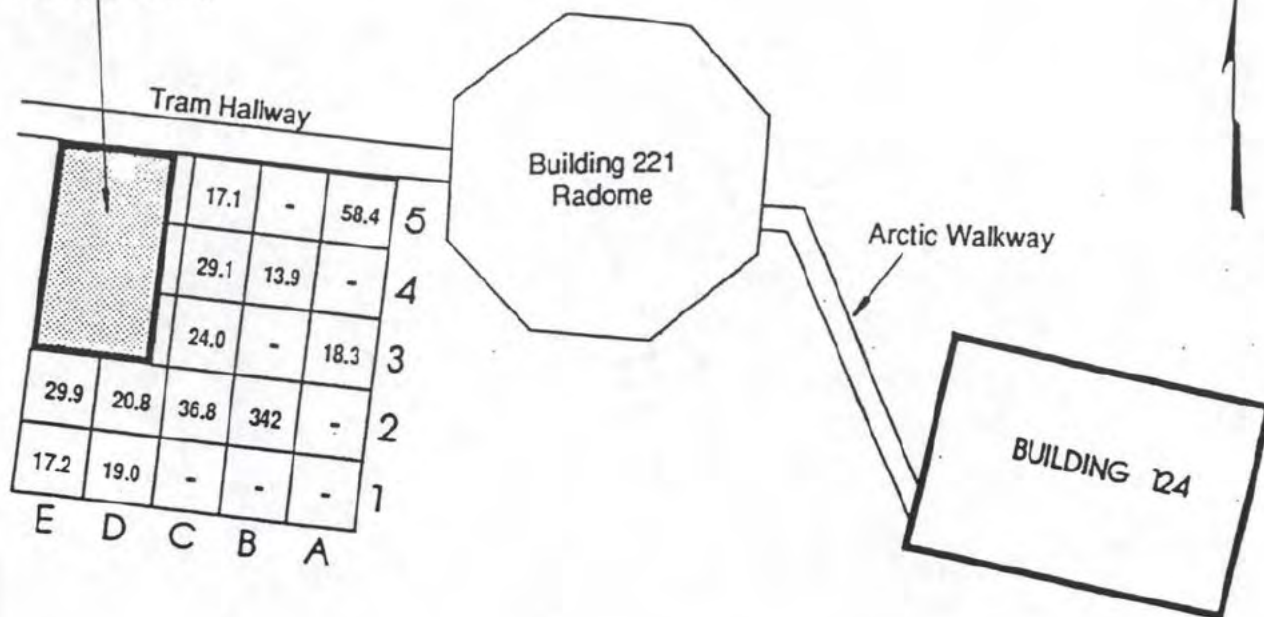
SHANNON & WILSON, INC.

Figure 4-2

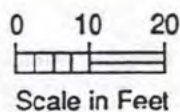
Lower Tramway Transformer
Soil and Pad Sample Locations

CTO 0019
URS - Navy CLEAN
St. Lawrence Island, Alaska

Transformer Bank
No.3 (See Inset)



Background Sample
Collected Approx. 300
Feet from Edge of Grid

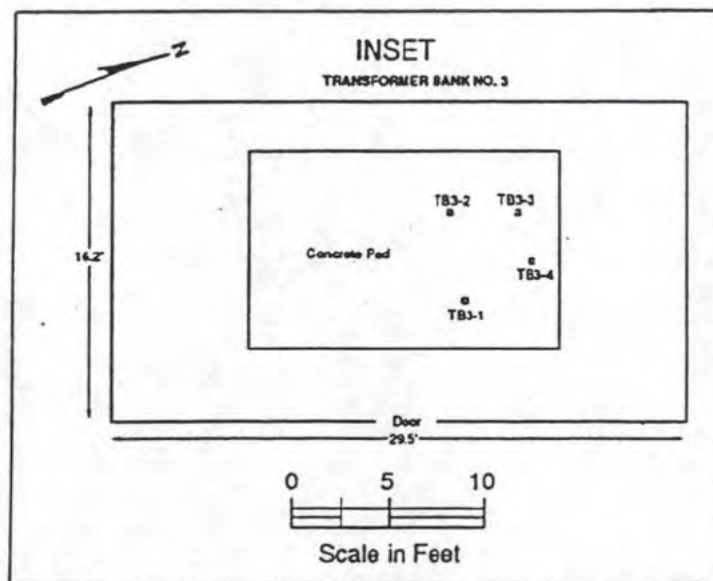


LEGEND

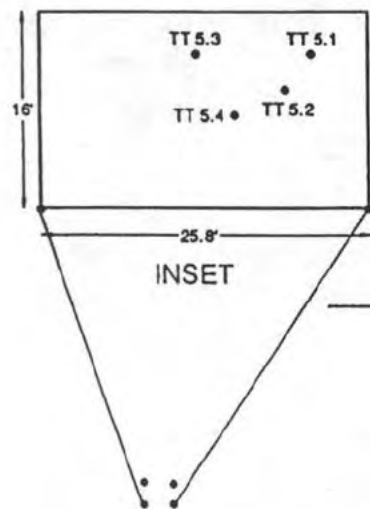
342 Concentrations of 4,4-DDT ($\mu\text{g/kg}$)
(Dashes indicate none detected)

CP-7 Survey Control Point

TB3-2 Pad Sample Locations



CP-7



Lower Tram Building.
(Approx. 1900 Feet)

TRAM

TT 4.1 → TT 4.16

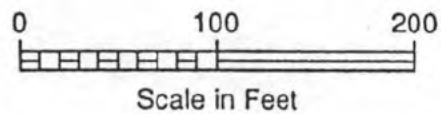
Approximate Axis of Valley

Background
(TT 4.17)

LEGEND

TT 5.4

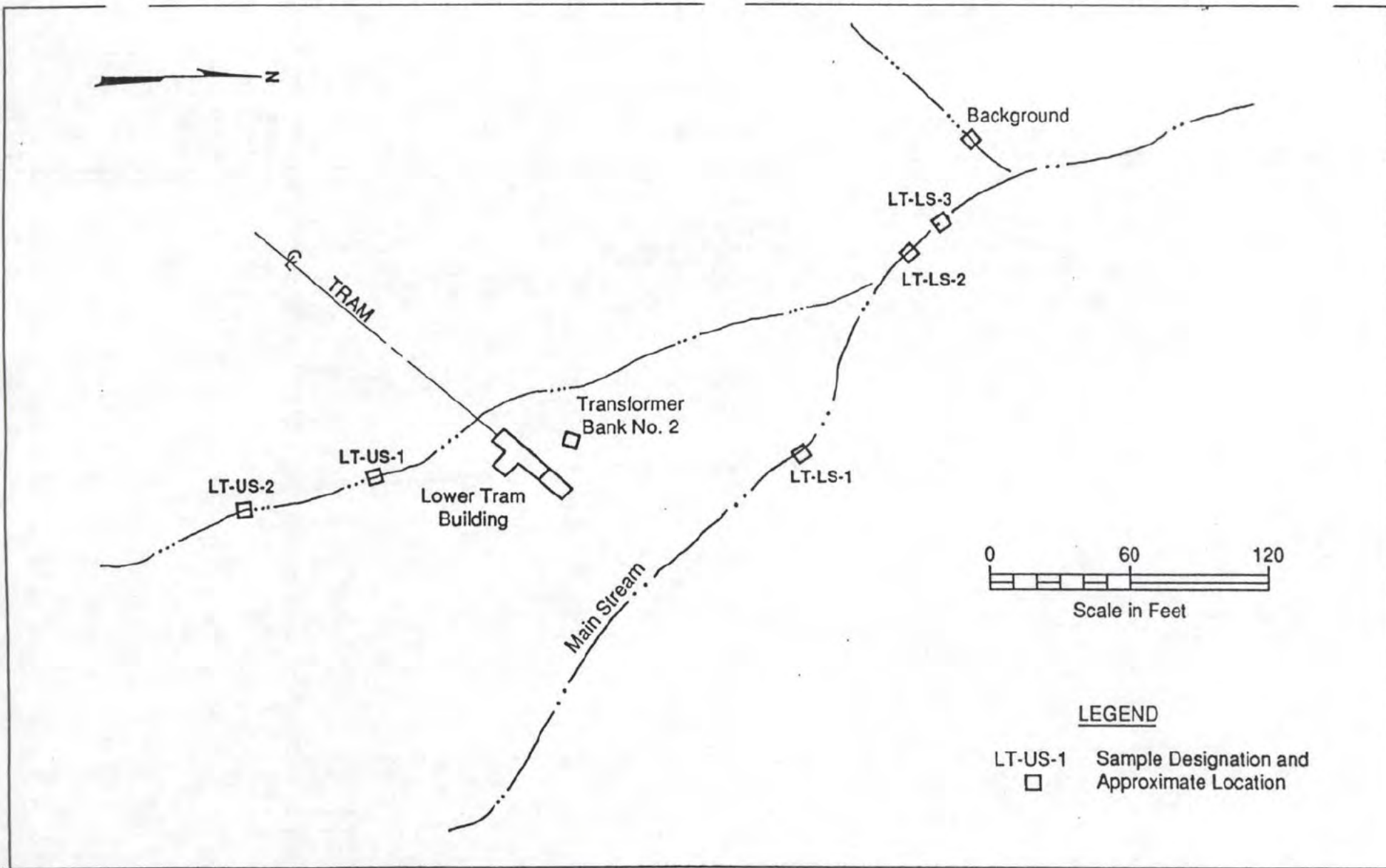
Sample Designation and
Approximate Location

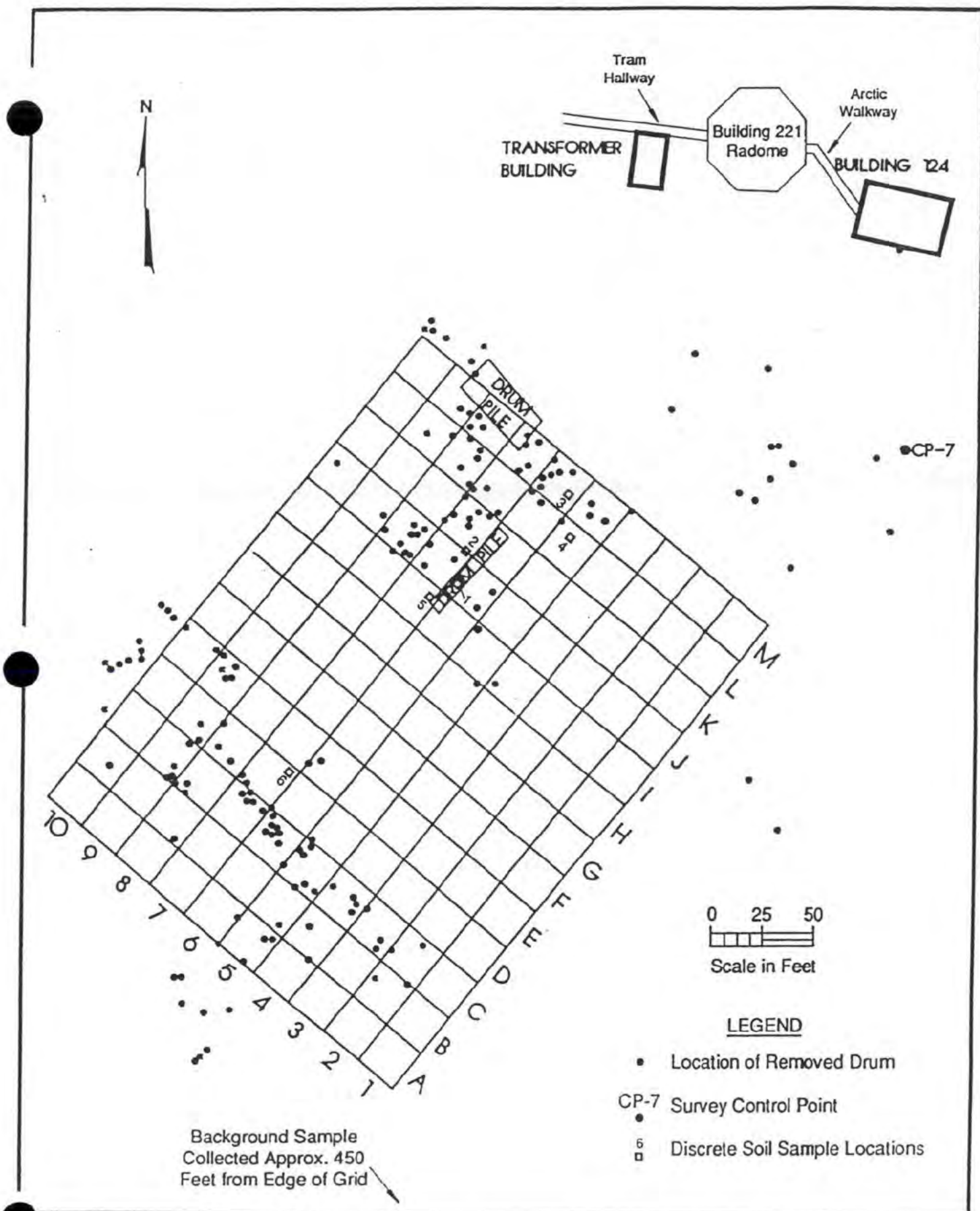


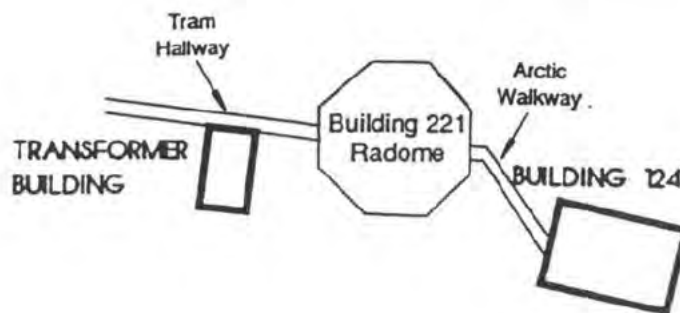
NOTE

Samples TT 4.1 through TT 4.16
are approximately evenly distributed
along line shown on figure.

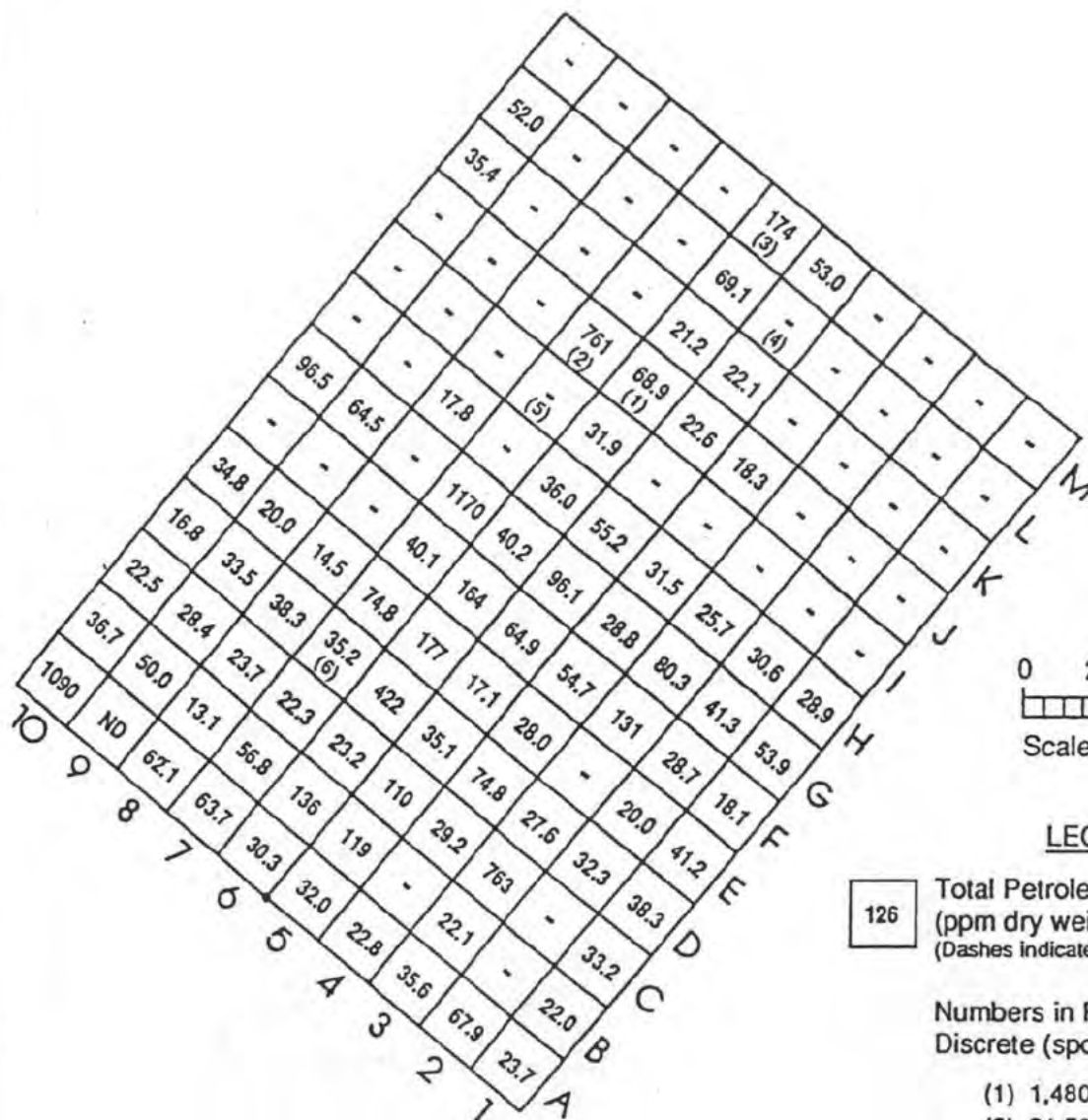








CP-7



0 25 50
Scale in Feet

LEGEND

126 Total Petroleum Hydrocarbons (ppm dry weight)
(Dashes indicate insufficient soil for sampling)

Numbers in Parentheses Refer to Discrete (spot) Samples

- | | |
|------------|----------|
| (1) 1,480 | (4) 34.3 |
| (2) 31,500 | (5) 808 |
| (3) 47.3 | (6) 31.8 |

CP-7 Survey Control Point

Background Sample
Collected Approx. 450
Feet from Edge of Grid

5.0 CONCLUSIONS

The following conclusions about the nature and magnitude of chemical contamination at the WASNC are based on the field observations and chemical data presented above.

1. ACM was identified during this investigation in Buildings 124, 221, 1001, the tram hallway, arctic walkway, and the antenna structures. NESHAP 30 CFR 61 Part M requires the removal of friable ACM before a building may be demolished. Under NESHAP, no visible emissions of dust to the environment are permitted during removal, renovation, demolition, collection, transportation or deposition of ACM waste.
2. Residual chemical compounds were detected in each concrete transformer pad and surrounding soil. PCB compounds, pesticides, and dioxin and furan compounds were found to be present. The nature of the contamination at each transformer bank is summarized below.
 - At Building 1001, Transformer Bank No. 1, PCB-1260 was encountered in each composited near-surface soil sample to a maximum level of 14.1 ppm. The highest levels were, however, encountered at the edges of the sampling grid. Higher concentrations may exist in discrete locations either within or beyond the sampling grid. The concrete pad was found to contain PCB-1260 in several locations, and in one sample, low levels of aldrin and heptachlor.
 - At the Lower Tramway Transformer Bank No. 2, no PCB compounds were detected in the near-surface soil samples. Low levels of 4,4-DDT and endrin aldehyde were detected in one soil sample. The concrete pad was found to contain low levels of several pesticides, and one swipe sample contained 390,000,000 ng/sq cm of PCB-1260.
 - At the Upper Camp Transformer Bank No. 3, PCB-1260 was detected in four composited soil samples up to 166 ppb. Several pesticides were also detected in the soil, including 4,4-DDE, 4,4-DDT, and 4,4-DDD. Low levels of several dioxin and furan compounds were also detected in the soil, with a maximum of 7.8 parts per trillion (ppt) of the dioxin OCDD detected. The concrete pad also contained PCB-1260 and several pesticides in both swipe and chip samples.
3. The two drum disposal areas were characterized by a general lack of significant soil development, which could impact future sampling efforts and remediation. The areas

were more generally characterized by near-surface bedrock (Upper Camp) and rocky talus slopes (Tramway). The nature of the detected contamination is summarized below.

- At the Tramway Drumfield, TPH was detected in all 19 soil samples up to 137 ppm. However, only one sample exceeded 100 ppm, which is the cleanup criteria established by the ADEC, 1990. PCB-1242 was detected in two samples at 92 ppb and 224 ppb. Generally low levels of seven semivolatile organic compounds were also detected, including phenolic compounds, polynuclear aromatic hydrocarbons, and phthalate compounds. Sediment in a stream downgradient of the drumfield was found to contain PCB-1260 in one sample and low levels of eight semivolatile organic compounds. No contaminants were detected in the stream water.
- At the Upper Camp Drumfield, 86 of 87 soil samples contained TPH at levels up to 1,170 ppm. Twelve of 81 composite samples exceeded 100 ppm, while 3 of 6 discrete samples exceeded that level. Four VOCs were also detected in selected soil samples; toluene up to 155 ppb; benzene at 56.3 ppb; xylenes at 89.2 ppb; and methylene chloride at 2,720 ppb. Generally low levels of 17 semivolatile organic compounds were also detected in the soil, including 6 phthalate compounds, 3 polynuclear aromatic hydrocarbons, and phenolic compounds.

6.0 RECOMMENDATIONS FOR ADDITIONAL INVESTIGATIONS

- The laboratory analytical data for all of the soil, sediment, concrete and water analyses completed by Chemical & Geological Laboratories of Alaska, Inc., have been used only for site screening, because of inconsistencies and omissions in the data package. A limited resampling effort should be performed prior to any remediation, to confirm the presence of pesticides/PCB and semivolatile organic compounds.
- The results of the SI showed that each of the three transformer pads indicated PCB contamination. Soil samples should be collected from underneath all three pads after the pads have been removed. The samples should be analyzed for pesticides/PCB.
- Additional confirmation soil sampling should be performed within the grid area around Transformer Bank No. 1, particularly in the vicinity of the grid locations with highest detection of pesticides/PCB. Samples from beyond the perimeter of the grid should also be collected to delineate the extent of pesticides/PCB in the soil.
- Additional confirmation soil sampling should be performed within the grid area of Transformer Bank No. 3, particularly in the vicinity of the grid locations where pesticides/PCB and dioxins/furans were detected. Samples from beyond the perimeter of the grid should also be collected to delineate the extent of contaminated soil.
- A baseline risk assessment should be performed on the stream and sediment data and on the analytical data collected from the Tramway Drumfield, from the Upper Camp Drumfield, and from the transformer banks. This risk assessment should be coupled with an evaluation of the potential health and environmental impact posed by the site in which the transport routes and potential receptors are identified. An evaluation must also be done to determine if the analytical data is of sufficient quality to support a risk assessment.

7.0 REFERENCES

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Navy CLEAN Program
Engineering Field Activity, Northwest
Contract No. N62474-89-D-9295/CTO #0019

Section No.: 7.0
Revision No.: 0
Date: 05/22/91
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APPENDIX A

TRANSFORMER FACE PLATE INFORMATION

APPENDIX A

TRANSFORMER FACE PLATE INFORMATION

ITEM

AS-FOUND LOCATION

Molony Electric
Ser. #1953123 Type LL-2
1 phase 60 cycle kva 15
Volt 2400/4160 y x 7200/12470 y 120-240

Lower Tram Substation

General Electric
Ser. #9730747 kva 37 1/2
Rate 7200/12470 y - 240/480

Lower Tram Substation

General Electric
Ser. #9730748 kva 37 1/2
Rate 7200/12470 y - 240/480

Lower Tram Substation

General Electric
Ser. #9730749 kva 37 1/2
Rate 7200/12470 y - 240/480

Lower Tram Substation

G&W Electric Specialty Co.
Type (RAL-FCR) Volt 7.5 kv
Cat. #RALFC62B4
Ser. #D9062-54

Lower Tram Substation

Magnatron, Inc.
Type AISC 30 ohm Volt 20 kva
Ser. #8186 Spec. #1293
Diag. #90-2750

White Alice Communication Building

Magnatron, Inc.
Type AISC 30 ohm Volt 20 kva
Ser. #8233 Spec. #1293
Diag. #90-2750

White Alice Communication Building

APPENDIX A (continued)

ITEM

AS-FOUND LOCATION

Magnatron, Inc.
Type AISC 30 ohm Volt 20 kva
Ser. #8221 Spec. #1293
Diag. #90-2750

White Alice Communication Building

Magnatron, Inc.
Spec. #1295 kva .44
Ser. #8267
Type HI-REACT Cycle 50/60 Phase 1

White Alice Communication Building

Magnatron, Inc.
Spec. #1295 kva .44
Ser. #8268
Type HI-REACT Cycle 50/60 Phase 1

White Alice Communication Building

Magnatron, Inc.
Spec. #1295 kva .44
Ser. #8286
Type HI-REACT Cycle 50/60 Phase 1

White Alice Communication Building

Magnatron, Inc. Unitized Rectifier
Spec. #1366-A-01 Ser. #8153
Diag. #A-91-3441 kw 1.7 kva 3.76
Volts 208 Cycle 50/60 Phase 1

White Alice Communication Building

Magnatron, Inc. Unitized Rectifier
Spec. #1366-A-01 Ser. #8129
Diag. #A-91-3441 kw 1.7 kva 3.76
Volts 208 Cycle 50/60 Phase 1

White Alice Communication Building

Magnatron, Inc. Unitized Rectifier
Spec. #1366-A-01 Ser. #8158
Diag. #A-91-3441 kw 1.7 kva 3.76
Volts 208 Cycle 50/60 Phase 1

White Alice Communication Building

APPENDIX A (continued)

ITEM

AS-FOUND LOCATION

Magnatron, Inc.
Spec. #1294 Ser. #8092
Diag. #B-90-2751 kw 34 kva 39
Cycle 50/60 1 phase-208 V 3 phase-208 V

White Alice Communication Building

Magnatron, Inc.
Spec. #1294 Ser. #8095
Diag. #B-90-2751 kw 34 kva 39
Cycle 50/60 1 phase-208 V 3 phase-208 V

White Alice Communication Building

Magnatron, Inc.
Spec. #1294 Ser. #8109
Diag. #B-90-2751 kw 34 kva 39
Cycle 50/60 1 phase-208 V 3 phase-208 V

White Alice Communication Building

Hill Transformer Co.
Ser. #142524 kva 100 type DAZ
V7200/12470 y - 120/240

White Alice Communication Building

Hill Transformer Co.
Ser. #142525 kva 100 type DAZ
V7200/12470 y - 120/240

White Alice Communication Building

Hill Transformer Co.
Ser. #142529 kva 100 Type DAZ
V7200/12470 y - 120/240

White Alice Communication Building

G&W Electric Specialty Co.
Ser. #(8096-293)
Type FCBX V 8000 Amp 1000
Cat. #3BXC61B-EC-T

White Alice Communication Building

APPENDIX A (continued)

ITEM

AS-FOUND LOCATION

Standard Tranx Co.
Ser. #109042
60 cycle 25 kva Type A
Type HV Volts 7200/12470 y - 120/240

Transformer Bank No. 4

Standard Tranx Co.
Ser. #109049
60 cycle 25 kva Type A
Type HV Volts 7200/12470 y - 120/240

Transformer Bank No. 4

Standard Tranx Co.
Ser. #109047
60 cycle 25 kva Type A
Type HV Volts 7200/12470 y - 120/240

Transformer Bank No. 4

G&W Electric Specialty Co.
Type (RAL-FCBX) Volts 7.5 kv Amps 200
Ser. #D9062-54
Cat. #RALFC62BX

Transformer Bank No. 3

G&W Electric Specialty Co.
Type - (RAL-FCBX) Volts 7.5 kv Amps 200
Cat. #RALFC62BX

Transformer Bank No. 3

General Electric
Type HS kva 37.5 60 cycle 1 phase
Ser. #B368542
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

General Electric
Type HS kva 37.5 60 cycle 1 phase
Ser. #B511418A
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

APPENDIX A (continued)

ITEM

AS-FOUND LOCATION

General Electric
Type HS kva 37.5 60 cycle 1 phase
Ser. #B286616A
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

General Electric
Type HS kva 37.5 60 cycle 1 phase
Ser. #8686044A
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

General Electric
Type HS kva 37.5 60 cycle 1 phase
Ser. #9668788
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

General Electric
Type HS kva 37.5 60 cycle 1 phase
Ser. #9669458
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

General Electric
Type HS kva 37.5 60 cycle 1 phase
Ser. #9669460
Volt Rating 7200/12470 y - 120/240

Transformer Bank No. 3

APPENDIX B

SAMPLING PROCEDURES

APPENDIX B SAMPLING PROCEDURES

B.1 SOIL SAMPLING PROCEDURES

Soil samples were collected from the two drum disposal areas and adjacent to the buildings containing the three transformer banks. Where possible, sampling grids were established to allow for systematic coverage of areas with suspected contamination. The grids were laid out with surveying instruments at locations designated by the field sampling team. The surveyed grids were tied to existing structures or physical features for later location. The corners of each grid cell were marked with wooden stakes, surveyor tape, or spray paint. Cells of 10 feet square and 25 feet square were used for sampling the transformer banks and the Upper Camp Drumfield, respectively.

Four sampling locations were designated for each cell of a grid. The locations were determined by measuring across the two diagonals of each cell and marking points equidistant from the center and each cell corner. In this manner, four component subsamples would be collected from each cell on 5-foot and 12.5-foot centers for cells of 10-foot- and 25-foot-square, respectively. The soil samples were collected between 4 and 8 inches below the ground surface with shovels, hand picks, and stainless steel spoons, according to the Field Sampling Plan (URS, 1990a) and the SOP (URS, 1990b). Tables B-1 and B-2 list the analytical methods and detection limits for the water and soil samples, respectively.

The four component subsamples were collected in a clean, stainless steel mixing bowl, resulting in one composite soil sample for each cell of the grid. With the use of stainless steel spoons, soil was placed in the appropriate number and types of jars as required for the scheduled analyses. Except for samples designated for VOC analysis, composite samples were mixed in the bowls prior to placement in the sampling jars.

VOC samples were placed in jars prior to mixing to minimize the escape of volatiles. Spoonfuls of soil were collected from various areas of the bowl to ensure that composite samples were representative of the four component subsamples. VOC samples were packed tightly in the sample jars to prevent headspace from developing during subsequent handling and shipping.

Background samples were also composites, with four component subsamples combined into one sample. The component subsamples were taken with the same spacing as that used for

the grid samples. A wooden stake was placed at the center of the four subsample locations for subsequent location by the surveyor.

Because soil was often not developed in areas covered with talus, the sampling plan was altered for the drum disposal areas on the tramway slope and near the Upper Camp. Almost no soil was found on the tramway slope. Therefore, discrete spot samples were obtained from the few locations where soil existed. Systematic grid sampling with composite and component samples was not feasible. The method of soil collection, however, followed the other procedures described above.

In the case of the Upper Camp Drumfield, soil was sparse and often did not exist at the measured subsample locations. Soil was often collected from a depth as shallow as two inches if no soil existed between a depth of 4 and 8 inches as specified in the field sampling plan. If there was insufficient soil for sample collection within a 1½-foot radius of the measured location, the subsample was not collected. Photodocumentation was obtained for each subsample location where samples could not be taken. If soil could be collected from two or more of the four subsample locations of any given cell, then the cell was determined to be adequate and a composite sample was collected. In cells where only one subsample could be collected, the cell was considered inadequate, and no samples were collected.

Following the criteria just described, composite samples were collected from every cell in which sampling was feasible. After sampling from all possible cells, the remainder of the 87 samples were taken as discrete samples. Six discrete samples were collected from areas with stained soil. These areas were usually where one or more drums had been found. For discrete samples, the top two inches of soil were removed and the required samples taken from one spot.

B.2 STREAM SAMPLING PROCEDURES

Water and stream sediment samples were collected at each of the five sampling locations. Sample collection was generally in accordance with the procedures outlined in SOP (URS, 1990b). Sample locations were selected where there was sufficient fine-grained stream sediment to obtain a sample. Each location was marked with a wooden stake for later surveying.

Water samples were obtained by submerging the appropriate sample container beneath the surface of the stream. Additional stream water was then added with a beaker to completely fill the sample container. The container was then sealed. With VOC samples, the container

was inverted to check for headspace and additional stream water was added if necessary. Once water samples were collected, sediment samples were obtained.

Sediment sampling consisted of gently driving the sample jars into the stream bottom while minimizing sediment disturbance. Excess water was poured off and the jar topped off with sediment collected with a stainless steel spoon or plastic measuring cup. The spoon was not used for collection of the samples for metal analysis. Each successive sample taken at a location was collected slightly upstream so that only undisturbed sediment was collected.

B.3 CONCRETE CHIP AND SWIPE SAMPLING PROCEDURES

Each swipe or chip sample was taken from a 10-cm area outlined with a duct tape template. Two types of samples were collected from each transformer pad. Surface swipe samples were obtained by wiping the surface of the concrete exposed within the template with filter paper saturated with acetone. PCBs and dioxins are soluble in acetone, and the evidence of contamination from these compounds should be collected on the swipe. The swipes were then placed in glass jars.

Concrete samples were also collected from the concrete pads. With the use of a sledge hammer and a jack hammer bit, concrete chips were broken out from the floor and collected in a sample jar. Chips were collected from within a 10-cm area to a depth of approximately 4 cm.

TABLE B-1
Water Sample Laboratory Analyses

Analysis	Method	Method Detection Limit
Volatile Organic Analysis	EPA 624	1.6-7.2 $\mu\text{g}/\text{l}^1$
Semivolatile Organic Analysis	EPA 625	0.9-44.0 $\mu\text{g}/\text{l}^2$
Arsenic	EPA 7060/7061	0.01 mg/l
Barium	EPA 7080/6010	0.05 mg/l
Cadmium	EPA 7131/6010	0.05 mg/l
Chromium	EPA 7191/6010	0.05 mg/l
Lead	EPA 7421/6010	0.05 mg/l
Mercury	EPA 7470	0.0002 mg/l
Selenium	EPA 7740/7741	0.01 mg/l
Silver	EPA 7760/6010	0.05 mg/l
pH	Field Measurement	NA
Conductivity	Field Measurement	NA
Temperature	Field Measurement	NA

- (1) Reported detection limit was normally 1 $\mu\text{g}/\text{l}$ and 50 $\mu\text{g}/\text{l}$ for vinyl acetate and 4-methyl-2-pentanone.
- (2) Reported detection limit was normally 100 $\mu\text{g}/\text{l}$.

NA - not applicable

TABLE B-2
Soil and Sediment Sample Laboratory Analyses

Analysis	Method	Method Detection Limit
Pesticides/PCBs	EPA 8080	100-200 $\mu\text{g/kg}$
Dioxins and Furans	EPA 8280	0.01 $\mu\text{g/kg}^1$
Volatile Organic Analysis	EPA 8240	6-13 $\mu\text{g/kg}^2$
Semivolatile Organic Analysis	EPA 8270	660-1200 $\mu\text{g/kg}$
Total Petroleum Hydrocarbons	EPA 418.1	1 $\mu\text{g/kg}$
Arsenic	EPA 7060/7061	0.01 mg/l
Barium	EPA 7080/6010	0.05 mg/l
Cadmium	EPA 7131/6010	0.05 mg/l
Chromium	EPA 7191/6010	0.05 mg/l
Lead	EPA 7421/6010	0.05 mg/l
Mercury	EPA 7470	0.0002 mg/l
Selenium	EPA 7740/7741	0.01 mg/l
Silver	EPA 7760/6010	0.05 mg/l

- (1) Reported detection limit varied from 0.014 to 0.49 $\mu\text{g/kg}$ depending upon the compound analyzed.
- (2) Reported detection limit was normally 50 $\mu\text{g/kg}$, although it was 500 $\mu\text{g/kg}$ for vinyl acetate and 4-methyl-2-pentanone for some analyses.

APPENDIX C

ASBESTOS BULK SURVEY

APPENDIX C ASBESTOS BULK SURVEY

C.1 INTRODUCTION

On July 26, 1990, URS Consultants, Inc., initiated an asbestos bulk survey of the White Alice Northeast Cape facilities at St. Lawrence Island, Alaska. Samples to be analyzed for ACM were collected in the Upper and Lower Camp. The Radome building (Building 221), the Upper Quarters building (Building 124), and the Arctic Walkway were sampled in the Upper Camp, and the Main Electronics Center (Building 1001) and the Antenna structures (Antennas #2, #3, and #4) were sampled in the Lower Camp.

The protocol utilized for the survey is detailed in Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials (EPA, 1985) and in the URS SOP manual (URS, 1990b). The minimum number of samples taken at each installation was determined by the square footage of the homogeneous sampling area. Table C-1, taken from EPA 1985, illustrates the sampling scheme.

The selection of sampling locations was determined by the findings presented in the PA report (NEESA, 1990), on-site reconnaissance of the installations conducted by URS, and EPA 1985.

C.2 UPPER CAMP SAMPLING LOCATIONS

C.2.1 Radome Building

Preliminary reconnaissance of the Radome (Building 221) was completed on July 25, 1990. The structure's walls and floors were water-soaked and warped, and signs of forced entry were evident. Asbestos bulk sampling commenced on July 26, 1990 and consisted of four bulk samples. Three samples were taken from the main floor, which has an approximate floor area of 1,000 square feet. The other was obtained from interior wallboard. The samples from the floor were tan floor tile coated with black mastic (adhesive). The sample from the wall was beige-colored wallboard.

The methods and tools for sample extraction are described in Guidance for Controlling Asbestos-Containing Materials in Buildings (EPA, 1986), EPA 1985, and in the URS SOP

manual (URS, 1990b). The URS sample numbers and description of the samples from the Radome Building are shown in Table C-2, and the sample locations are shown in Figure C-1.

C.2.2 Upper Quarters Building

Preliminary reconnaissance of the Upper Quarters building (Building 124) was completed on July 25, 1990. The structure has been severely damaged by water and heavy snows, particularly as a result of forced entry, which left many openings for rain, snow, and ice to enter the interior. Asbestos bulk sampling commenced on July 26, 1990 and consisted of 17 samples. Nine samples were taken from tiled floor areas. The remaining eight samples were taken from overhead pipe runs, elbows, and interior wallboard. The samples from the floor were reddish orange and coated with black mastic adhesive. The samples from interior wallboard ranged from pale green to white. Overhead pipe runs and transition pieces coated with lagging, ranged in color from white to black. The composition of the lagging is generally fibrous with assorted binder material. The methods and tools used for obtaining the samples were referenced previously.

The URS sample numbers and sample description for the Upper Quarters building are shown in Table C-3, and the sample locations are shown in Figure C-2.

C.2.3 Arctic Walkway

Preliminary reconnaissance of the Arctic Walkway and Tram Hallway exterior was completed on July 26, 1990. The structures have been severely damaged by snow loads and high winds, and one portion of the Tram Hallway was demolished. Asbestos bulk sampling was performed on July 28, 1990. Two samples from the Arctic Walkway and one sample from the cement-coated discharge pipe located east of the walkway and building 124 were collected. The URS sample numbers and sample descriptions from the buildings are shown in Table C-4, and the sample locations are shown in Figures C-1 and C-2.

C.3 LOWER CAMP

C.3.1 Main Electronics Center

Preliminary reconnaissance of the Main Electronics Center (Building 1001) was completed on July 25, 1990. The structure was well preserved, but showed some signs of water damage. Asbestos bulk sampling commenced on July 27, 1990 and consisted of 39 interior/exterior samples. Interior samples were obtained from tiled floor areas, wallboard, HVAC ducting,

pipe wrap, and mechanical air handling equipment. Exterior samples were obtained from roofing material, pipe wrap, and sidewall shingles.

The URS sample numbers and sample descriptions for the Main Electronics Center building are shown in Table C-5, and the sample locations are shown in Figure C-3.

C.3.2 White Alice Antennas

Preliminary reconnaissance of the White Alice Antennas #1, #2, #3, #4 was completed July 25, 1990. The structures are constructed of heavy corrugated sheet metal and showed very little damage. Seven asbestos bulk samples were collected on July 27, 1990. The samples were obtained from entryway gaskets, fireproof doorway seals, and exterior coating. The material ranged in color from brown to black, and was fibrous in composition. The URS sample numbers and sample descriptions from the antenna structures are shown in Table C-6, and the sample locations are shown in Figure C-4.

TABLE C-1

Number of Samples to Be Collected from Each Sampling Area

Size of the Sampling Area	Recommended Number of Samples to Be Collected	Minimum Number of Samples to Be Collected
Less than 1,000 square feet	9	3
Between 1,000 & 5,000 square feet	9	5
Greater than 5,000 square feet	9	7

TABLE C-2

Radome Sample Locations

LOCATION	URS SAMPLE NUMBER	DESCRIPTION
Radome	001997	Floor tile, tan
Radome	001998	Floor tile, tan
Radome	001999	Floor tile, tan
Radome	002000	Wallboard, beige

TABLE C-3

Upper Quarters Building Sample Locations

LOCATION	URS SAMPLE NUMBER	DESCRIPTION
Upper Quarters Kitchen	002001	Floor tile, orange
Upper Quarters Kitchen	002002	Floor tile, orange
Upper Quarters Corridor	002003	Floor tile, orange
Upper Quarters Airmen Sleeping Room	002004	Floor tile, orange
Upper Quarters Bathroom	002005	Lagging, black fibrous
Upper Quarters Airmen Closet	002006	Lagging, black fibrous
Upper Quarters Airmen Sleeping Room	002007	Wallboard, white and brown
Upper Quarters Kitchen	002008	Wallboard, pale green and brown
Upper Quarters Airmen Sleeping Room	002009	Lagging, black and brown with silver fibrous
Upper Quarters Airmen Sleeping Room	002010	Pipe elbow, grey and white
Upper Quarters Airmen Sleeping Room	002011	Floor tile, orange
Upper Quarters Airmen Sleeping Room	002012	Floor tile, orange
Upper Quarters Airmen Sleeping Room	002013	Floor tile, orange
Upper Quarters Airmen Sleeping Room	002014	Floor tile, orange
Upper Quarters Kitchen	002015	Floor tile, orange
Upper Quarters Bathroom	002016	Floor tile, orange
Upper Quarters	002017	Lagging, grey fibrous

TABLE C-4

Arctic Walkway Sample Locations

LOCATION	URS SAMPLE NUMBER	DESCRIPTION
Upper Quarters Arctic Walkway	002097	Cement pipe, gray
Arctic Walkway	002098	Siding panel, gray
Arctic Walkway	002147	Siding panel, gray

TABLE C-5
Main Electronics Center Sample Locations

LOCATION	URS SAMPLE NUMBER	DESCRIPTION
Main Electronics Center	002019	Roofing asphalt, black, silver
Main Electronics Center	002020	Lagging, white
Main Electronics Center	002021	Floor tile, gray
Main Electronics Center	002022	Floor tile, gray
Main Electronics Center	002023	Floor tile, gray
Main Electronics Center	002024	Floor tile, gray
Main Electronics Center	002025	Wallboard, white
Main Electronics Center	002026	Floor tile, gray
Main Electronics Center	002027	Floor tile, gray
Main Electronics Center	002028	Floor tile, gray
Main Electronics Center	002029	Floor tile, gray
Main Electronics Center	002036	Sidewall shingle, white
Main Electronics Center	002038	Sidewall shingle, white
Main Electronics Center	002039	Sidewall shingle, white
Main Electronics Center	002040	Sidewall shingle, white
Main Electronics Center	002041	Sidewall shingle, white
Main Electronics Center	002042	Sidewall shingle, white
Main Electronics Center	002043	Sidewall shingle, white
Main Electronics Center	002044	Sidewall shingle, light green
Main Electronics Center	002045	Sidewall shingle, white

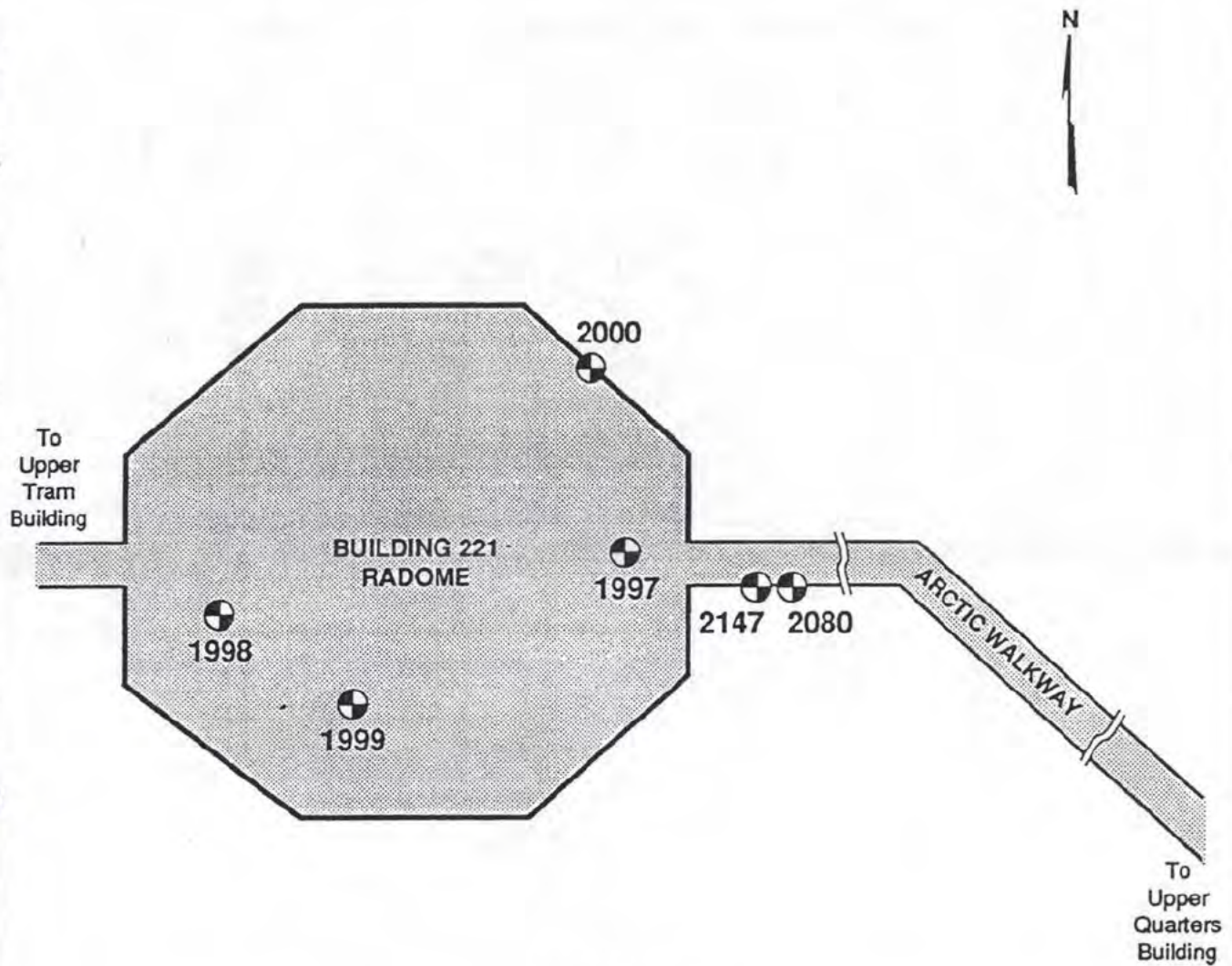
TABLE C-5 (continued)

Main Electronics Center Sample Locations

LOCATION	URS SAMPLE NUMBER	DESCRIPTION
Main Electronics Center	002046	Sidewall shingle, white
Main Electronics Center	002063	Floor tile, gray
Main Electronics Center	002064	Lagging, green brown, white
Main Electronics Center	002065	Wallboard, white brown
Main Electronics Center	002066	Floor tile, gray
Main Electronics Center	002067	Floor tile, gray
Main Electronics Center	002068	Wallboard, white, brown
Main Electronics Center	002069	Wallboard, white, brown
Main Electronics Center	002070	Vibration damper, white, gray
Main Electronics Center	002071	Vibration damper, white, gray
Main Electronics Center	002072	Lagging, white
Main Electronics Center	002073	T-box duct wrap, white
Main Electronics Center	002074	T-box duct wrap, brown
Main Electronics Center	002075	T-box duct wrap, white
Main Electronics Center	002076	Lagging, pink, white
Main Electronics Center	002077	Pipe elbow, white
Main Electronics Center	002078	Duct wrap, white
Main Electronics Center	002079	Vibration damper, white
Main Electronics Center	002080	Roofing asphalt, black

TABLE C-6
Antenna Sample Locations

LOCATION	URS SAMPLE NUMBER	DESCRIPTION
Antenna #2	002030	Exterior coating, black
Antenna #2	002031	Doorway gasket seal, white
Antenna #3	002032	Exterior coating, black
Antenna #3	002033	Exterior coating, black
Antenna #3	002034	Doorway gasket seal, white
Antenna #4	002035	Exterior coating, black
Antenna #4	002037	Doorway gasket seal, white



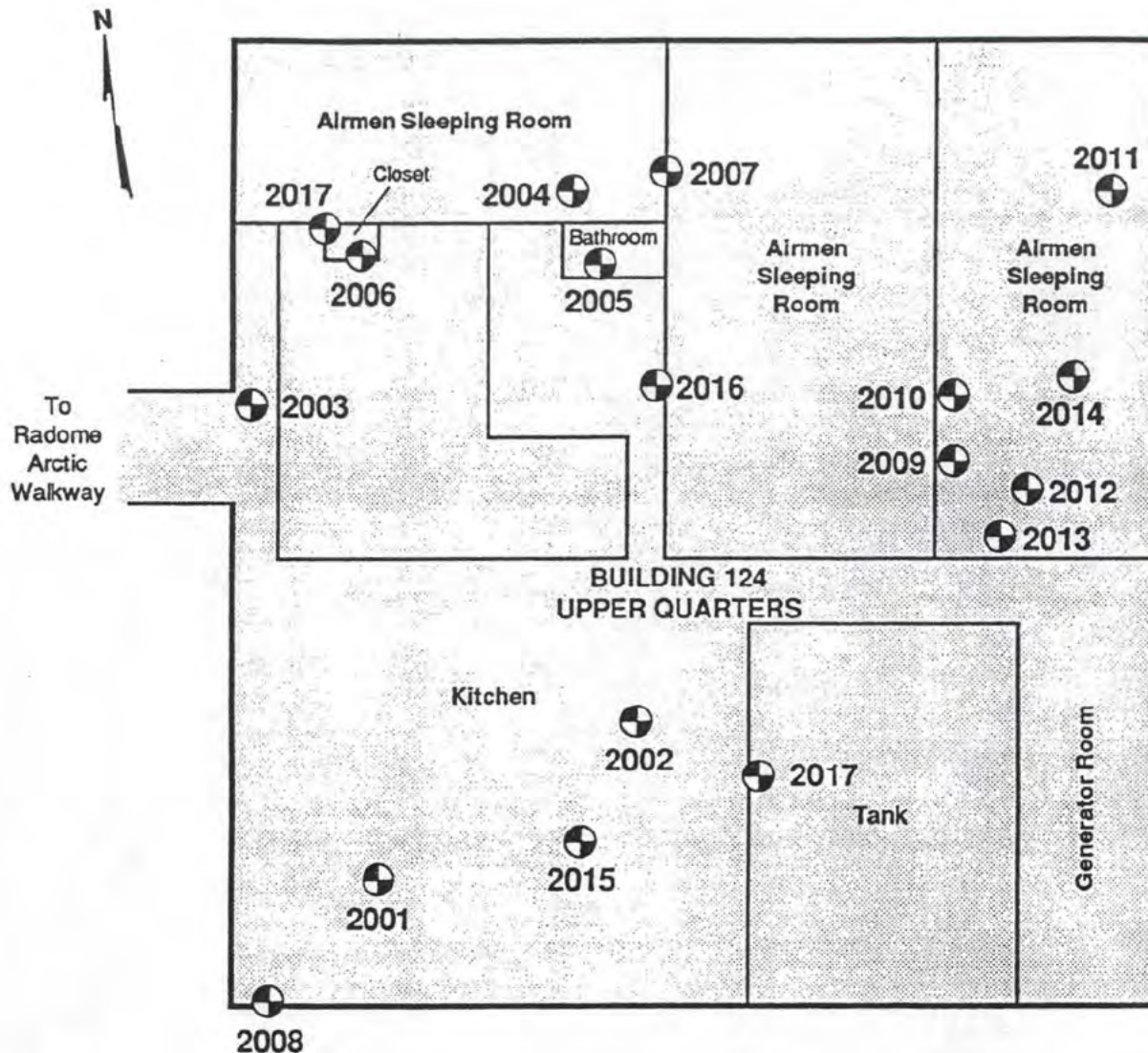
Not to Scale

LEGEND

1998  Bulk Sample Designation and Approximate Location

NOTE

Sample numbers preceded by double zero.



Not to Scale

LEGEND

1998 Bulk Sample Designation and Approximate Location

NOTE

Sample numbers preceded by double zero.

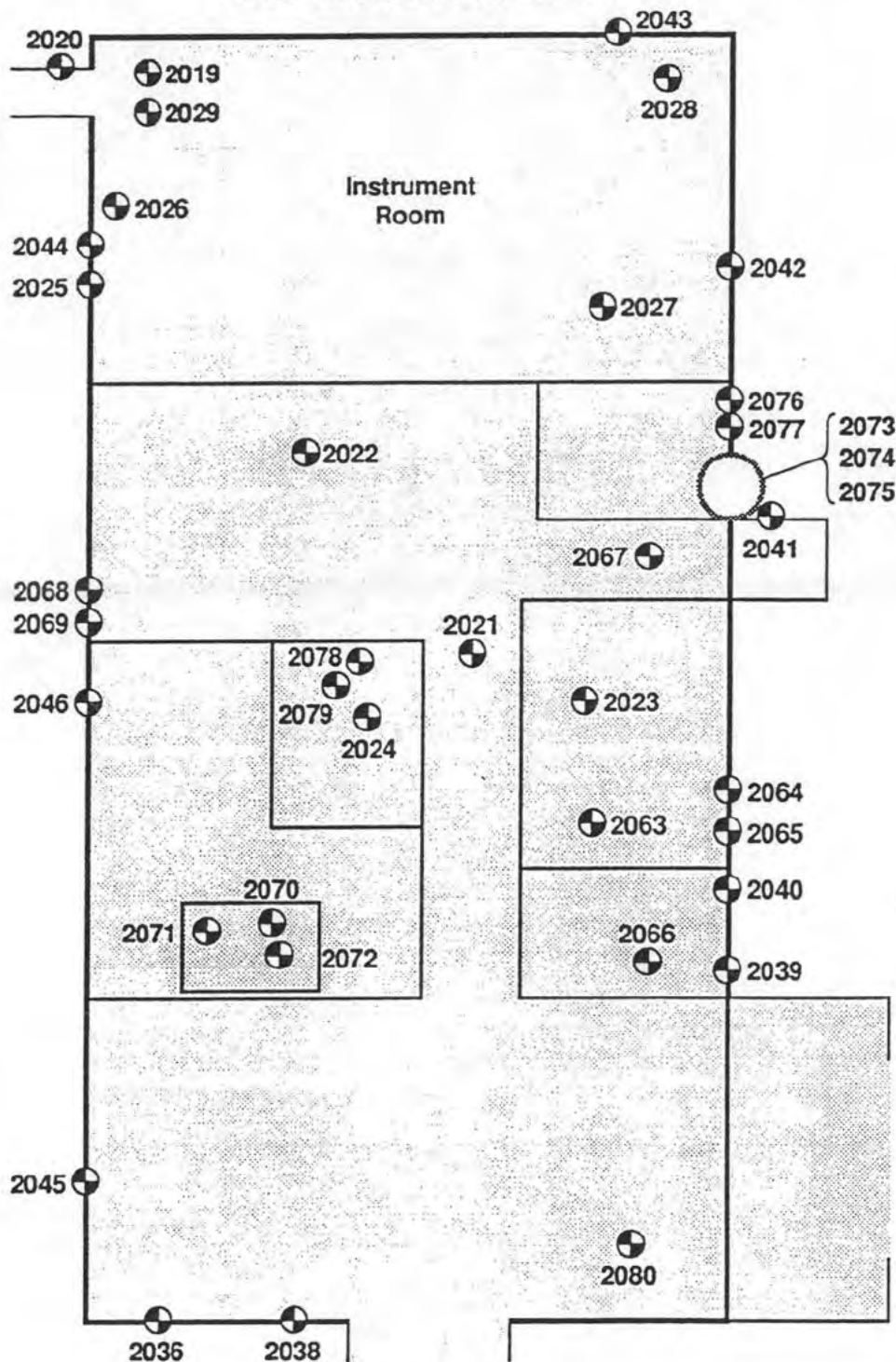


SHANNON & WILSON, INC.

Figure C-2
Asbestos Sample Locations
Building 124 Upper Quarters

CTO 0019
URS - Navy CLEAN
St. Lawrence Island, Alaska

**BUILDING 1001
MAIN ELECTRONICS CENTER**



Not to Scale

NOTE

Sample numbers preceded by double zero.

LEGEND

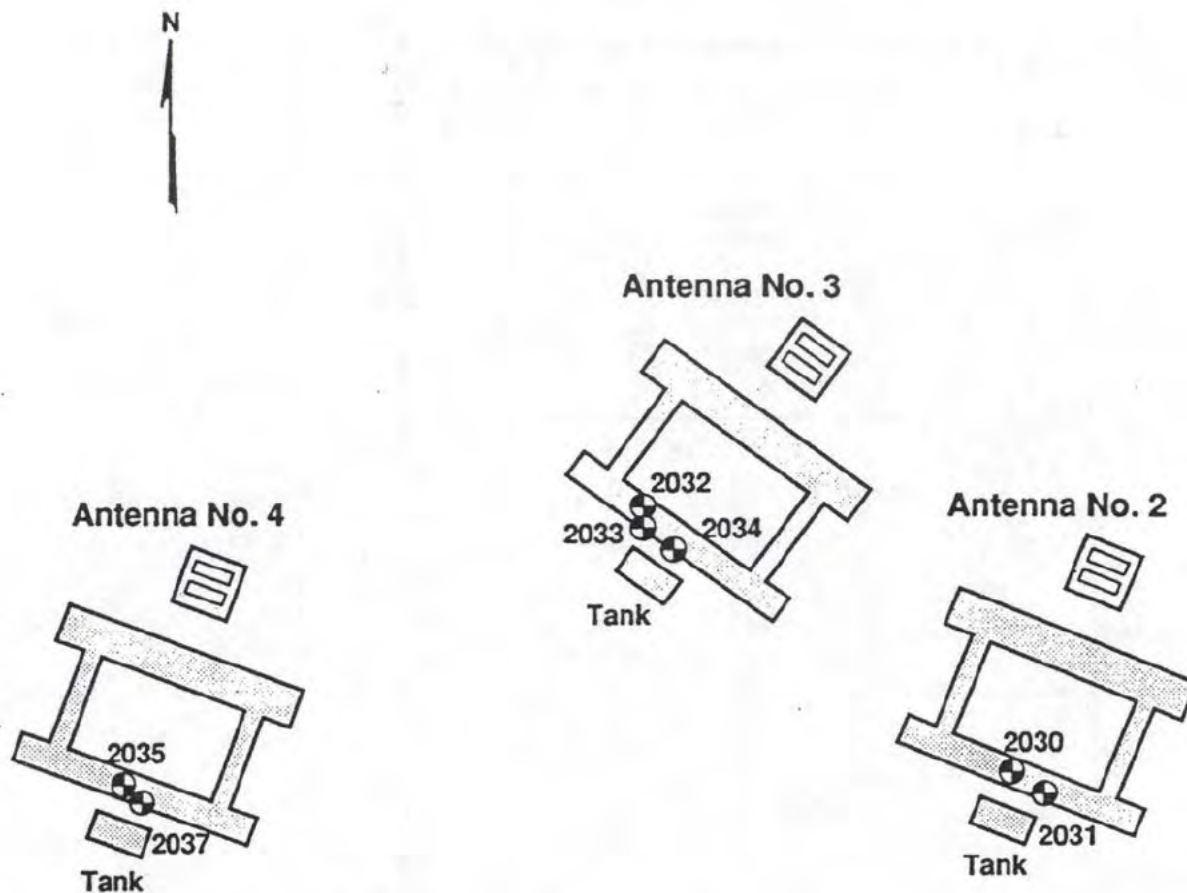
2036  Bulk Sample Designation and Approximate Location



SHANNON & WILSON, INC.

**Figure C-3
Asbestos Sample Locations
Building 1001
Main Electronics Center**

**CTO 0019
URS - Navy CLEAN
St. Lawrence Island, Alaska**



Not to Scale

LEGEND

2035 ● Bulk Sample Designation
and Approximate Location

NOTE

Sample numbers preceded by double zero.



SHANNON & WILSON, INC.

Figure C-4
Asbestos Sample Locations
Building 1001 Antennas

CTO 0019
URS - Navy CLEAN
St. Lawrence Island, Alaska

APPENDIX D

**DATA VALIDATION RESULTS
FOR ANALYSES PERFORMED
BY CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA**

MEMORANDUM

TO: Jim Swing
FROM: Rob Rau
THRU: David Mohr
DATE: February 27, 1991
SUBJECT: Chemical & Geological Laboratories of Alaska, Inc. performance on CTO #0019

On June 26, 1990, URS entered into contract with Chemical & Geological Laboratories of Alaska, Inc. (Chem Geo) for VOC, BNA, TPH, metals, and PCB/pesticide analysis of soil and water samples collected on St. Lawrence Island under CTO #0019. The ensuing data package deliverables have been identified as grossly inadequate resulting in: 1) Chem Geo failure to meet NEESA approval; 2) data which does not meet the QA/QC objectives of the Project Plans; and, 3) data packages insufficient for complete validation.

Many of the problems encountered with Chem Geo are summarized in the initial data validation report submitted by Heartland Environmental Services, Inc. on January 2, 1991 (see enclosure). As identified in this report, significant inconsistencies and/or omissions with respect to holding times, calibrations, sample TCL/TIC data, tunes and blanks rendered the data insufficient for validation. In subsequent deliverable packages, only data summary sheets (Form 1s) were provided with no accompanying QA/QC materials. As a result, data could not be validated nor used in accordance with the Project Plan. In addition, criteria for the evaluation of performance evaluation (PE) samples caused these data to be rejected (see enclosure).

It was later disclosed that Chem Geo was neither prepared nor experienced in performing CLP type deliverable packages, lacked the necessary computer software to prepare such packages, did not have adequate personnel to QA or prepare the data, and was unfamiliar with NEESA documents and EPA scopes of work for the Contract Laboratory Program.

As such, there are three options for data usage toward attaining project goals or modified goals. The selected option must be clearly stated in the Final Report along with any recommendations.

- o Use existing data as a site screening tool;
- o confirm existing data through a limited resampling effort; and,
- o conduct a complete resampling effort.

To date, no payments have been made to Chem Geo for services rendered.

enclosures: Heartland Environmental Services validation report
NEESA letter regarding PE samples

HEARTLAND ENVIRONMENTAL
SERVICES, INC.



January 2, 1991

Mr. Jerry Drews
1100 Olive Way, Suite 200
Seattle, WA 98101

Dear Mr. Drews:

Per our conversation on December 31, 1990, please find enclosed the information you requested on the data from the White Alice Site. The summary of the problems with the data has been divided into five categories: holding times, calibrations, sample TCL/TIC data, tunes, and blanks. Each category will contain a description of the problems noted with the data, specific examples of these problems, and recommendations for the remediation of the problems.

If you have any questions regarding the summary or materials that have been requested for resubmittals, please contact me at your earliest convenience.

Sincerely,

Eugene M. Watson

Asst. Vice President

Rec'd 1-2-91
JMD

HEARTLAND ENVIRONMENTAL
SERVICES, INC.

PROJECT NAME: White Alice Site, Northeast Cape, St.
Lawrence Island

PROJECT NUMBER: CTO-019

SAMPLE INDENTIFICATION: 90.2786-01 thru 90.2786-30
90.2847-01 thru 90.2847-23

GENERAL COMMENTS

On December 31, 1990, Mr. Jerry Drews of URS Consultants stated that the protocol required for the sample analyses of the White Alice Site, Northeast Cape, St. Lawrence Island was EPA CLP 2/88 SOW. Chemical and Geological Laboratories of Alaska performed the sample analyses under contract to URS Consultants. After a preliminary review of the two data packages produced by the laboratory, it is evident that the laboratory was not experienced in performing this type of work.

HOLDING TIMES

Based on the USEPA CLP contractual requirement, eighteen (18) samples from the two data packages were analyzed outside of the holding times specified for VOAs (10 days from VSTR). The samples that missed holding times are as follows:

2786-24	2786-25	2786-26	2786-27	2786-28	2786-29
2786-06	2847-02	2847-03	2847-05	2847-08	2847-10
2847-13	2847-14	2847-17	2847-18	2847-19	2847-20

All positive results for these samples will have to be qualified as J and all non-detect results will have to be rejected (R). There is no action that can be taken to remediate this problem. All the above samples will be qualified at the very least, if not rejected based on other data validation criteria.

CALIBRATIONS

The calibration methodology which was used by the laboratory was improper in all respect to the USEPA CLP guidelines. The laboratory calibrated the GC/MS systems by using 624.2 TCLs and QA/QC requirements. The laboratory failed to calibrate for five compounds (acetone, carbon disulfide, vinyl acetate, 4-methyl-2-pentanone, and 2-hexanone), yet they reported these compounds on the form as being non-detects. Not only is this practice improper, it is also misleading to the client (URS). The methodology they used is not designed for the analysis of soil samples. Specific examples of the calibration deviations are as follows:

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SERVICES, INC.



1. The laboratory failed to analyze for all the compounds required under the USEPA CLP.
2. The laboratory did not fill out the required forms for the initial and continuing calibrations (form 6A and 7A).
3. The wrong internal standards were used for quantitation. The laboratory used fluorobenzene, chlorobenzene-d5, and 1,2-dichlorobenzene-d4. The internal standards that should have been used are bromochloromethane (a 524.2 method TCL), 1,4-difluorobenzene, and chlorobenzene-d5.
4. The CCC and SPCC criteria used was per 524.2 methodology, not USEPA CLP.

In order to validate the calibration data, the laboratory must provide Heartland ESI with the form 6s and form 7s that are completed per protocol. This will require a resubmittal from ChemGeo. Validation of the calibrations will be difficult because of the major deviations from the proper protocol. If required by URS, Heartland ESI will submit an alternate plan of evaluation due to deviations of the required methodology.

SAMPLE TCL/TIC DATA

The sample results reported by the laboratory were of poor quality. The laboratory failed to meet the requirements of the data package with the forms that were submitted (form 1A and 1E). The deficiencies noted in this part of the review were numerous. Some of the most serious mistakes are noted below:

1. The majority of the form 1As and 1Es did not report the sample weight or volume and/or the level of analysis (low or medium).
2. The laboratory reports the percent moisture on the form but does not correct for it. All results are reported on a wet weight basis.
3. In a few cases, a percent moisture is reported for a water sample.
4. All of the form 1As have results for the compounds that were not included in the calibration. All of these results will have to be rejected.
5. The form 1As report many strange dilution factors. The dilution factors are reported in four significant figures and do not follow the guidelines set forth by the USEPA CLP. Soil samples can only have a dilution factor of 1, 5, 125 or greater than 125. The dilution factors used by the laboratory are in the range of 40 to 80, which is not within protocol. All results will have to be qualified due to improper dilutions and all extraction records will be needed.

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SERVICES, INC.



6. The form 1Es are inconsistent with respect to the TICs that are reported. The laboratory does not always report all the TICs and/or it will report TCLs as TICs.
7. Since the laboratory did not follow the CLP methodology and used the wrong internal standards, the evaluation of the surrogates will be difficult due to the fact all recovery limits are based on different internal standards.

The validation of the sample data will require substantial resubmittals from the laboratory. New form 1As and 1Es will be required and a new review of the TICs by a USEPA GC/MS mass spectral interpretation specialist. Heartland ESI will review all spectra in addition to the review performed by the laboratory.

GC/MS TUNING

Based on the preliminary assesment of the data, proper tuning procedures were not always used. The tuning compound, BFB, was not always analyzed in the beginning of a sequence or it was analyzed prior to analysis (12 hours or greater). The tuning sequence also does not follow the 12 hour clock as specified by the CLP.

BLANKS

There are instances in which the blanks are not analyzed at the beginning of the analytical sequence or they are analyzed as a spike blank. In cases that involve these blanks, the samples associated with will have to qualified for all plsitives and non-detects.

SUMMARY OF REQUIRED RESUBMITTALS

1. All new form 6As filled out per protocol.
2. All new form 7As filled out per protocol.
3. New form 1As that reflect sample weights/volume and results based on dry weight basis. The new forms must reflect the compounds that are not calibrated.
4. New form 1Es that reflect results on a dry weight basis and report the correct number of TICs and no TCLs.
5. Extraction records for medium level analysis.
6. Instrument run logs to aid in the evaluation procedure of the sample data.

MARTIN MARIETTA

MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 2003
OAK RIDGE, TENNESSEE 37831

December 18, 1990

Mr. Daniel J. Bacon
Chemical & Geological Laboratories of Alaska, Inc.
5633-B Street
Anchorage, Alaska 99518

Dear Mr. Bacon:

Review of organic performance evaluation (PE) sample data has been completed by this office. Our findings, comments, and statistical results are enclosed. Due to analytical deficiencies and noncompliance to the Environmental Protection Agency (EPA) statement of work (SOW), the analysis of remedial organic PE samples will be required. A copy of the 2/88 Revision of the organic SOW will be forwarded to your office. It is suggested that your laboratory implement the methodology in the SOW. The use of the Contract Laboratory Program methods is intended to evaluate a laboratory's ability to implement and follow the specific guidance of analytical methods, and to deliver the required deliverables. After you have made the necessary corrections and prepared to analyze the remedial samples, please contact this office.

Your laboratory must respond to this report within ten working days from receipt of this correspondence. The NEESA approval process cannot be completed until satisfactory completion of this review, the analysis of the remedial organic PE samples, and the successful completion of the inorganic PE samples.

If you have any questions, please contact me at (615) 574-6773.

Sincerely,

Luedtke Jr

Jr.
ger

GJP:mpl

Attachment:
As stated

w/complete attach:

cc w/partial attach:

R. Wandrocke, NEESA
Laboratory File - RC



HEARTLAND ENVIRONMENTAL SERVICES, INC.

P.O. BOX 163 ST. PETERS MO 63376

(314) 278-8232

May 1, 1991

To: Jamie Bruton
URS Consultants Inc.
1100 Olive Way
Seattle, WA. 98101

From: Paul B. Humburg
Project Manager
Heartland ESI

Subject: Submittal of Analytical Data Validation of the
Dioxin/Furan results of sampling conducted for your
CTO-0019 ~~ADAK~~ Site. The 16 soil samples and 3 water
samples were analyzed by Enseco California
Analytical Laboratory.

*St. Lawrence
Island*

RECEIVED
MAY 24 1991
URS CONSULTANTS

Samples Reviewed Soil Samples (all)

<u>URS ID</u>	<u>CAL ID</u>	<u>URS ID</u>	<u>CAL ID</u>
TB2-S1.1	54257-0001	TB2-S2.1	54257-0002
002121	54128-0001	002128	54128-0002
002131	54128-0003	002135	54128-0004
002139	54128-0005	002140	54128-0006
002099	54126-0001	002103	54126-0002
002108	54126-0003	002113	54126-0004
002119	54126-0006	002047	54126-0007
002050	54126-0008	002055	54126-0009

Water Samples (all)

<u>URS ID</u>	<u>CAL ID</u>	<u>URS ID</u>	<u>CAL ID</u>
002141	54128-0007	002117	54126-0005
002056	54126-0010		

Heartland ESI has reviewed the data for the samples listed above for the TCL list for Dioxin/Furans using EPA SW846, Method 8280, 3rd Edition according to Neesa requirements level C. Analytical data in this report were screened to determine usability of results and also to determine contractual compliance relative to the requirements and deliverables of NEESA level C. This screening assumes analytical results are correct as reported and merely provides an interpretation of the reported quality control results.

Document Control

Type: 63 TDCN: 3000502

Project Number: 30190

Project Name: cto-19

00001



Individual fraction was reviewed as follows:

- * Dioxin/Furans by Eugene M. Watson with secondary review by Christopher D. Scarpellino

Please refer to the Target and Non Target Analyte Summary List and detailed Data Validation Report for additional information. Specific comments are provided in the following case narrative.



Dioxin/Furans

General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, calibration results and reported internal standard recoveries. All comments made within this report should be considered when examining the analytical results (Form I's).

Dioxin/Furans

The overall quality of the data package was good for the type of deliverable package that was requested by URS Consultants. All of the holding times were met per SW846, Method 8280. No MS/MSD analyses were requested for the sample batches and the method blanks that were extracted and analyzed with each batch of samples were found to be acceptable.

A significant portion of the data, needed for a comprehensive validation process, is missing for the CTO-0019 Adak Site. Heartland ESI reviewed the data packages for the information that was available for validation of the data. Upon the completion of the review of the data packages, Heartland ESI will use the following deliverables for the data validation of the dioxin/furans:

- 1) The initial and continuing calibration data with the ion ratios, RRFs, %RSDs and %Ds.
- 2) The summarized internal standard recoveries for all of the samples and blanks.
- 3) The blank control charts for the analyses.

Heartland ESI strongly suggests that all future data packages for dioxin/furan analysis be Neesa Level D or equivalent deliverables. This is very important because all of the data is vitally important to access the results. Specific examples of the data that is not included in the CTO-0019 data package, but is required under Neesa Level D, is as follows:

- 1) The column performance mixture, which is used to measure the resolution between the 2,3,7,8-TCDD isomer and the 1,2,3,4-TCDD isomer, and the retention time window criteria for each homologue series.
- 2) The instrument run logs, which are used to verify that proper sequence was analyzed by the laboratory.
- 3) The selected ion current profiles for the congeners of each homologue series that are detected in the samples.



- 4) The RIC (Reconstructed Ion Chromatogram) for all of the samples.

Each batch of samples will have their own data validation narrative and specific findings section. The Target Summary List will be inclusive for all the sample batches.

Batch 54257

Neither sample in this batch of two (2) contained positive hits for PCDDs and/or PCDFs. The continuing calibration curve for the analysis was acceptable based on all of the %Ds being less than 30%. Some of the internal standard recoveries for the samples were below 40%, which in turn led to qualification of some of the data. Please refer to the specific findings for detailed explanation of the qualifications.

Specific Findings:

1. For sample TB2-S1.1, all of the internal standard recoveries were below 40%. Qualify all the associated non detects (UJ).
2. For sample TB2-S2.1, all of the internal standard recoveries were acceptable with the exception of ¹³C-2,3,7,8-TCDF and ¹³C-2,3,7,8-TCDD. Qualify all the associated non detects (UJ).

Batch 54128

Four (4) of the seven (7) samples in this batch contained positive hits for PCDDs and/or PCDFs. The continuing calibration curve for the analysis was acceptable based on all of the %Ds being less than 30%. Some of the internal standard recoveries for the samples were below 40%, which in turn led to qualification of some of the data. Please refer to the specific findings for detailed explanation of the qualifications.

Specific Findings:

1. For samples 002121, 002128, 002131, 002135, 002140, and 002141, the internal standard ¹³C-OCDD, has recoveries below 40%. Qualify all the associated positive results (J) and the associated non detects (UJ).

Batch 54126

None of the ten (10) samples in this batch contained positive hits for PCDDs and/or PCDFs. The continuing calibration curve for the analysis was acceptable based on all of the %Ds being less than 30%. Some of the internal standard recoveries for the samples were below 40%, which in turn led to qualification of some of the data. Please refer to the specific findings for detailed explanation of the qualifications.

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Specific Findings:

1. For samples 002099, 002103, 002108, 002113, 002117, 002119, 002047, 002050, 002055 and 002156, the internal standard ¹³C-OCDD, has recoveries below 40%. Qualify all the associated non detects (UJ).



TARGET ANALYTE SUMMARY LIST

Site Name: CTO-0019 ADAK Site

Sample No. Analyte	Lab Report Conc. ng/g	QAS Report Conc. ng/g	QAS Decision	Footnotes
-----------------------	--------------------------------	--------------------------------	-----------------	-----------

Sample TB2-S1.1

- * all non detect (isomer specific and class totals) values for TCDFs, PeCDFs, HxCDFs, HpCDFs, OCDFs, TCDDs, PeCDDs, HxCDDs, HpCDDs, and OCDDs are qualified as estimated (UJ) due to low internal standard recoveries.

Sample TB2-S2.1

- * all non detect (isomer specific and class totals) values for TCDFs and TCDDs are qualified as estimated (UJ) due to low internal standard recoveries.

Sample 002121

OCDD	0.46	0.46J	qualify	1
------	------	-------	---------	---

- * the non detect (isomer specific) value for OCDF is qualified as estimated (UJ) due to a low internal standard recovery.

Sample 002128

- * the non detect (isomer specific) values for OCDF and OCDD are qualified as estimated (UJ) due to a low internal standard recovery.

Sample 002131

HpCDFs (total)	0.49	0.49		
1,2,3,4,6,7,8-HpCDF	0.14	0.14		
OCDF	0.89	0.89J	qualify	1
HpCDDs (total)	0.70	0.70		
1,2,3,4,6,7,8-HpCDD	0.38	0.38		
OCDD	1.5	1.5J	qualify	1



TARGET ANALYTE SUMMARY LIST

Site Name: CTO-0019 ADAK Site

Sample No. Analyte	Lab Report Conc. ng/g	QAS Report Conc. ng/g	QAS Decision	Footnotes
-----------------------	--------------------------------	--------------------------------	-----------------	-----------

Sample 002135

HxCDFs (total)	0.40	0.40		
HpCDFs (total)	2.2	2.2		
1,2,3,4,6,7,8-HpCDF	0.44	0.44		
OCDF	4.3	4.3J	qualify	1
HpCDDs (total)	2.6	2.6		
1,2,3,4,6,7,8-HpCDD	1.6	1.6		
OCDD	7.8	7.8J	qualify	1

Sample 002139

HpCDFs (total)	0.48	0.48		
OCDF	1.1	1.1		
HpCDDs (total)	0.51	0.51		
1,2,3,4,6,7,8-HpCDD	0.26	0.26		
OCDD	1.5	1.5		

Sample 002140

* the non detect (isomer specific) values for OCDF and OCDD are qualified as estimated (UJ) due to a low internal standard recovery.

Sample 002099

* the non detect (isomer specific) values for OCDF and OCDD are qualified as estimated (UJ) due to a low internal standard recovery.

Sample 002103

* the non detect (isomer specific) values for OCDF and OCDD are qualified as estimated (UJ) due to a low internal standard recovery.



TARGET ANALYTE SUMMARY LIST

Site Name: CTO-0019 ADAK Site

Sample No. Analyte	Lab Report Conc. ng/g	QAS Report Conc. ng/g	QAS Decision	Footnotes
-----------------------	--------------------------------	--------------------------------	-----------------	-----------

Sample 002108

- * the non detect (isomer specific) values for OCDF and OCDD are qualified as estimated (UJ) due to a low internal standard recovery.

Sample 002113

- * the non detect (isomer specific) values for OCDF and OCDD are qualified as estimated (UJ) due to a low internal standard recovery.

Sample 002119

- * the non detect (isomer specific) values for OCDF and OCDD are qualified as estimated (UJ) due to a low internal standard recovery.

Sample 002047

- * the non detect (isomer specific) values for OCDF and OCDD are qualified as estimated (UJ) due to a low internal standard recovery.

Sample 002050

- * the non detect (isomer specific) values for OCDF and OCDD are qualified as estimated (UJ) due to a low internal standard recovery.



TARGET ANALYTE SUMMARY LIST

Site Name:CTO-0019 ADAK Site

Sample No. Analyte	Lab Report Conc. ng/g	QAS Report Conc. ng/g	QAS Decision	Footnotes
-----------------------	--------------------------------	--------------------------------	-----------------	-----------

Sample 002055

- * the non detect (isomer specific) values for OCDF and OCDD are qualified as estimated (UJ) due to a low internal standard recovery.

Sample 002141

- * the non detect (isomer specific) values for OCDF and OCDD are qualified as estimated (UJ) due to a low internal standard recovery.

Sample 002117

- * the non detect (isomer specific) values for OCDF and OCDD are qualified as estimated (UJ) due to a low internal standard recovery.

Sample 002056

- * the non detect (isomer specific) values for OCDF and OCDD are qualified as estimated (UJ) due to a low internal standard recovery.
-



DIOXIN/FURAN FOOTNOTES

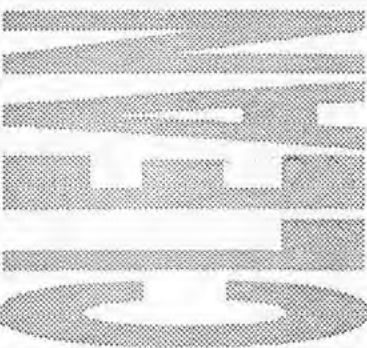
1. The value reported is estimated (J) because the associated homologue series internal standard recovery is low (<40%).

CTO #0051
Revised Site Inspection
White Alice Site
Northeast Cape
St. Lawrence Island, Alaska

Final Report
April 27, 1992

NORTHWEST AREA

**COMPREHENSIVE
LONG-TERM
ENVIRONMENTAL
ACTION NAVY**



ENGINEERING FIELD ACTIVITY
NORTHWEST, NAVAL FACILITIES
ENGINEERING COMMAND
CONTRACT #N62474-89-D-9295



THE URS TEAM

URS Consultants

Science Applications
International Corp.

B&V Waste Science and
Technology Corp.

Shannon & Wilson, Inc.

SF 2-001

**FINAL
REVISED SITE INSPECTION REPORT**

FOR THE

**COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY
(CLEAN PROGRAM) NORTHWEST AREA**

**WHITE ALICE SITE
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
CONTRACT TASK ORDER #0051**

**PREPARED BY:
URS CONSULTANTS, INC.
ANCHORAGE, ALASKA**

**PREPARED FOR:
ENGINEERING FIELD ACTIVITY, NORTHWEST
WESTERN DIVISION, NAVAL FACILITIES ENGINEERING COMMAND
SILVERDALE, WASHINGTON**

APRIL 27, 1992

REVISED SITE INSPECTION
U.S. Navy - CLEAN Program
Engineering Field Activity, Northwest
Contract No. N62474-89-D-9295/CTO #0051

Title Page
Revision No.: 0
Date: April 27, 1992
Page i

REVISED SITE INSPECTION TITLE PAGE

Document Title: Revised Site Inspection Report
U.S. Navy - CLEAN Program, Northwest Area

Site Name: White Alice Site

Site Location: White Alice Site, St. Lawrence Island, Alaska

Contract Task Order No.: CTO #0051

Document Control No.: 9204.693

Plan Coverage: This report summarizes the results of revised site inspection activities as a part of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Program under Contract No. N62474-89-D-9295 for the Engineering Field Activity, Northwest, of the Western Division, Naval Facilities Engineering Command. These services are provided by URS Consultants, Inc. as Prime Contractor for the site indicated above and described within this Report.

Organization Title: Engineering Field Activity, Northwest
Address: Naval Facilities Engineering Command
3505 NW Anderson Hill Road
Silverdale, WA 98383
(206) 476-5775

Prime Contractor: URS Consultants, Inc.
Address: 1100 Olive Way, Suite 200
Seattle, Washington 98101
(206) 623-1800

REVISED SITE INSPECTION
U.S. Navy - CLEAN Program
Engineering Field Activity, Northwest
Contract No. N62474-89-D-9295/CTO #0051

Title Page
Revision No.: 0
Date: April 27, 1992
Page ii

Quality Assurance Manager:
Telephone:

Justin Freed
(206) 623-1800

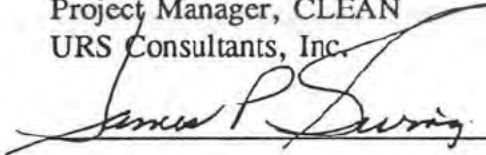
Project Manager:
Telephone:

James P. Swing, P.E.
(907) 563-3559

Concurrences:

Name: James P. Swing, P.E.
Title: Project Manager, CLEAN
URS Consultants, Inc.

Signature:

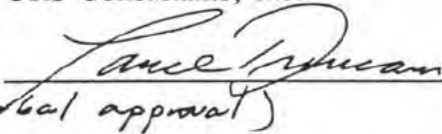


Date:

4/27/92

Name: Justin Freed
Title: Quality Assurance Manager, CLEAN
URS Consultants, Inc.

Signature:


(Per verbal approval)

Date:

4/27/92

Approval for Navy:

Name: Lt. Brian Scott, CEC, USN
Title: Contracting Officer's Technical Representative
Engineering Field Activity, Northwest

Signature:

Date:

EXECUTIVE SUMMARY

A site inspection (SI) was performed by URS Consultants, Inc. (URS) at the White Alice Site, Northeast Cape (WASNC), Saint Lawrence Island, Alaska, as part of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62474-89-D-9295, Task Order No. 0051 (CTO #0051). The results of this supplemental site inspection are reported in this document as a revised SI. The objective of CTO #0051 was to generate sampling and other field data to augment information collected in a previous SI (CTO #0019). Soil samples, as well as wipe and concrete chip samples, were taken from the historic transformer pads and surrounding soils, and analyzed for volatile organic compounds, polychlorinated biphenyls (PCB), and pesticides. All usable data from both CTOs was combined and analyzed to determine (1) if a threat or potential threat to public health or the environment exists, and (2) if further action or investigations are warranted.

The results of the supplemental sampling verified the presence of significant levels of PCBs at each of the site areas, both in soils and on the concrete transformer pads, as indicated in the initial SI. Significant levels of 4,4-DDT, methoxychlor, and endrin aldehyde (all pesticides) were also found at the Lower Tram Site (Site 2). No other significant levels of contaminants were detected.

Because of the most recent sampling efforts, WASNC transformer sites appear to have relatively low amounts of contamination, with the exception of high concentrations of PCBs on and immediately adjacent to all the former transformer pads. However, outer-sampling grid-boundary contamination is evident from this sampling effort and from the sampling effort conducted in the previous SI (CTO #0019). Therefore, it is likely that sampling did not fully delineate the lateral extent of contaminated soils. The presence or absence of contaminants at other locations of the WASNC facility has not been investigated under this CTO.

The initial SI (CTO #0019) had unvalidated data, which indicated hydrocarbons in the soil at the Tramway Drumfield and at the Upper Camp Drumfield. At that time, stream samples did not appear to detect water contamination. Asbestos-containing materials were also identified in that effort in the Upper Camp Radome Building (Building 221), Building 124, Building 1001, the arctic walkway, the tram hallway, and at Antennas #2, #3, and #4 at the lower camp.

Utilizing the information contained in this revised SI and the usable data from the original SI (CTO #0019), we recommend that a further investigation under a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation/Feasibility Study (RI/FS) be conducted to delineate the contaminant extent and concentrations, and to evaluate appropriate cleanup procedures. The RI/FS should address delineation (laterally and at depth) of existing PCB-contaminated areas, and identification and delineation of additional potential source areas that may have contributed to the PCB or semi-volatile tentatively identified compound (TIC) contamination that was detected.

Polychlorinated biphenyls, dioxin/furan, and semi-volatile tests should be conducted on surficial materials, with at-depth sample analysis adding volatile organic testing. In addition, total petroleum compounds/total petroleum hydrocarbons (TPC/TPH) testing should be performed on surficial samples to ascertain the need for hydrocarbon-spill remedial actions, and on subsurface samples at sites with detected surface-hydrocarbon contamination to enable evaluation of the potential extent of any such spills.

It is postulated that a limited-area cleanup at the transformer pads would result in removal of the high-level PCB contamination that was detected. Such an action would remove the highest level contaminants known onsite, which contribute, based on the information to date, the vast majority of the site risk from hazardous materials contamination.

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B	Site Grids and Associated Sample Numbers (Figures B-1 through B-11)
C	Contaminant Distribution by Sample Number (Tables C-1, C-2, C-3)
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ACRONYMS

ACM	Asbestos-Containing Material
ADEC	Alaska Department of Environmental Conservation
ARAR	Applicable or Relevant and Appropriate Requirements
bgs	below ground surface
BLM	Bureau of Land Management
BNA	Base-Neutral-Acid Semi-Volatile Analysis
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
CTO	Contract Task Order
EPA	U.S. Environmental Protection Agency
F	Fahrenheit
H&S	Health and Safety
IRP	Installation Restoration Program
MCL	Maximum Contaminant Level
mph	miles per hour
NEESA	Naval Energy and Environmental Support Activity
NIOSH	National Institute of Occupational Safety and Health
NOSC	Naval Ocean System Center
OSHA	Occupational Safety and Health Administration

ACRONYMS (continued)

PA	Preliminary Assessment
PCB	Polychlorinated Biphenyls
PPE	Personal Protective Equipment
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RA	Removal Action
RI/FS	Remedial Investigation/Feasibility Study
SARA	Superfund Amendments and Reauthorization Act of 1986
SI	Site Inspection
SVOA	Semivolatile Organic Analysis
TCE	Trichloroethylene
TIC	Tentatively Identified Compound
TPC	Total Petroleum Compounds
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control Act
TWA	Time-Weighted Average
URS	URS Consultants, Inc.
USGS	United States Geological Survey
VOC	Volatile Organic Compound

REVISED SITE INSPECTION
U.S. Navy - CLEAN Program
Engineering Field Activity, Northwest
Contract No. N62474-89-D-9295/CTO #0051

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ACRONYMS (continued)

WASNC White Alice Site, Northeast Cape

XFMR Transformer

1.0 INTRODUCTION

The Engineering Field Activity, Northwest, Naval Facilities Engineering Command requested that engineering services be provided by URS Consultants, Inc. (URS) to perform a revised site inspection (SI) for three sites at the White Alice Site, Northeast Cape (WASNC), St. Lawrence Island, Alaska. The revised SI was performed under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract, N62474-89-D-9295, Task Order No. 0051 (CTO #0051).

This report presents the results of the summer 1991 WASNC sampling effort, incorporating data from the 1990 initial SI sampling. Details of the 1990 sampling procedures (CTO #0019) are not provided in this report. Basically, the chemical (as opposed to asbestos-containing materials [ACM]) results based on the CTO #0019 lab analyses failed validation due to laboratory procedure errors.

Therefore, CTO #0051 involved resampling and retesting the WASNC site, and incorporating those results with the usable CTO #0019 data.

2.0 PROJECT PURPOSE AND OBJECTIVES

The purposes and scope of work, as stated in the Contract Task Order (CTO) scope of work were:

"The objective of CTO-51 is to revise the Site Inspection for the Northeast Cape White Alice Site to determine if a threat or potential threat to public health and the environment exists.

The Site Inspection is an on-site investigation to determine whether there is a release or potential release and the nature of the associated threats. The purpose of the SI is to augment data collected in the Preliminary Assessment and to generate sampling and other field data to determine if further action or investigation is appropriate....

Soil samples from the grids established around the transformer pads by the Site Investigation Work Plan shall be obtained and analyzed for volatile organic compounds and PCBs/chlorinated pesticides. Concrete samples and swipe samples shall be obtained from the pads and analyzed for PCBs/chlorinated pesticides.

All samples collected for determination of environmental contamination shall be submitted to a Navy certified laboratory for analysis.

The contractor shall review data obtained during the field sampling and laboratory analysis for data quality and shall enter this information in a database for future reference.

The contractor shall prepare a revised Site Inspection Report which incorporates all available and relevant information collected [as part of this CTO]..."

The usefulness of the CTO #0019 data in determining the degree of contamination at this site was limited. The analytical laboratory could not demonstrate that proper procedures were followed in analyzing the samples from the site in the course of the CTO #0019 work. Therefore, the data was not suitable for use in quantitative determinations of the existence, extent, or severity of site contamination. The 1990 SI report stated that contamination appeared to be present at the site, but was unable to quantify contamination levels with validated data. The purpose of CTO #0051 was to provide credible data on contamination levels present at the site.

CTO #0051 utilized the Quality Assurance Project Plan (QAPP) (URS 1990B) and Site Safety and Health Plan (URS 1990C) from CTO #0019. The Work Plan (URS 1990D) presented the tasks and rationale used to conduct the revised SI. Only the sampling plan portion of the Project Plans (URS 1990D) for the original SI was revised, to extend sampling areas (as shown in subsequent figures) and to reflect the modified sampling scope.

The objectives of the project were to collect (1) soil samples adjacent to three transformer bank electrical substations, and (2) wipe and concrete samples from the transformer pads at the following three sites identified in the Scope of Work for CTO #0051:

- Site 1 - White Alice Transformer Bank No. 1
- Site 2 - Lower Tram Transformer Bank No. 2
- Site 3 - Upper Camp Transformer Bank No. 3

The scope of work was limited to the three transformer pads, and did not involve sampling or evaluation of any other areas or facilities. Therefore, the qualitative results of CTO #0019 (including sampling of areas not covered in the scope of this CTO) must be considered in conjunction with this report when assessing overall site risk and contamination levels.

3.0 PROJECT DESCRIPTION

3.1 SITE BACKGROUND

The facilities at WASNC (Figure 3-1) were constructed in 1952 for the U.S. Air Force and used as part of the high-energy-pulse tropospheric scatter system located throughout coastal Alaska. Excess property of the original Air Force facility (16,213 acres) was relinquished to the Bureau of Land Management (BLM) on March 14, 1958, and conveyed to the Gambell and Savoonga Native Corporation on June 27, 1979. White Alice Site, Northeast Cape (WASNC) was used by the Air Force until it was closed in 1975, when the White Alice communication sites became obsolete with the introduction of communications satellites. After its closure, an additional 4,855 acres of the remaining base property were relinquished to the BLM on August 20, 1975, and conveyed to the Gambell and Savoonga Native Corporation on June 27, 1979.

On July 12, 1982, 26 acres of property were transferred from the Air Force to the U.S. Navy. The transferred property consisted of the lower antenna site (White Alice Lower Camp), the lower tramway terminal, the tramway up Mount Kanguksam, and the upper camp complex.

On July 29, 1982, the Naval Ocean System Center (NOSC) accepted control of the 26 acres of property. The Naval Ocean System Center (NOSC) originally planned to use the WASNC facilities as part of experiments run by the Arctic Submarine Laboratory; however, the Navy has not used the property (NEESA 1990).

3.2 SITE DESCRIPTION

3.2.1 Location

WASNC is located on St. Lawrence Island, Alaska (Figure 3-1), which lies in the Bering Sea with its southern and northern limits marked by $62^{\circ} 52'$ and $63^{\circ} 52'$ North latitude, and between $168^{\circ} 30'$ and $172^{\circ} 00'$ West longitude, respectively. The island is approximately 100 miles in length and averages about 20 miles in width. The distance to the nearest point in Siberia, Cape Chaplin, is about 40 miles to the northwest of Gambell, while the distance to the nearest point on the Alaskan mainland at Cape Rodney on the Seward Peninsula is 118 miles to the northeast of Northeast Cape.

The topography of Northeast Cape begins at the coastal plain at the Bering Sea. A transition from the seaside rolling terrain leads to the Kinipaghulghat Mountains with Kangukhsam Mountain at 1,820 feet above mean sea level as the highest local peak. The mountain is steep, with exposed weathered talus slopes.

The two population centers of Saint Lawrence Island are Savoonga and Gambell. A number of campsites are scattered along the shoreline of the island. One of these sites is Lietnik, located to the west of the runway, which appears to be an abandoned native site recognized by the United States Geological Survey (USGS).

All present-day fishing and hunting activities take place out of the Kitnagak Bay fish camp located to the east of the WASNC runway. Kitnagak Bay is the former lightering area for material and supplies for the WASNC when it was an active facility. Local native people from Savoonga and Gambell use the camp at Kitnagak Bay for seasonal fishing and hunting.

3.2.2 Climate

The weather on the island is characterized by a typically arctic maritime climate, with a relatively milder winter and a relatively cooler summer than arctic continental areas at a similar latitude. Measurable precipitation as rain or snow is recorded about 250 days out of the year. The greatest precipitation is recorded during the months of August and September. Mean precipitation for these months at Savoonga (the nearest of the two villages) is 1.98 and 1.78 inches, respectively. The months with the lowest mean precipitation are April, May, and June with means of 0.36, 0.45, and 0.55 inches, respectively. However, most months have significant precipitation.

Winter temperatures seldom fall below -10° Fahrenheit (F), and summer temperatures above 55°F are infrequent and of short duration. The record minimum temperature of the villages of Gambell and Savoonga is -34°F recorded in February 1929, and the maximum is 69°F recorded in July of 1987 (AEIDC 1989).

Located in a stormy sea with water temperatures that vary only a few degrees from 32°F throughout the year, the island is characterized by cold winds of gale and occasionally, hurricane force. Commonly, the chill factor created by high winds, sometimes up to 100 miles per hour (mph), produce effective temperatures of -70°F. These winds can also produce severe winter blizzards that cause whiteout conditions. Prevailing winds are from the southwest and northwest in summer, and northerly in winter. The average annual hourly wind velocity is 17.8 mph. The average velocity in January is 19.4 mph and in July the average is 11.0 mph.

The growing season extends from early June through late August, but there may be snow and freezing temperatures in any month. The first autumn snowfall and formation of freshwater ice generally occur in October, and sea ice usually forms in late November. The spring icepack breakup usually occurs in the first two weeks of June, and some ice and snow may remain until July or later in certain localities (NEESA 1990).

3.2.3 Geology

The eastern part of the island is a broad, wave-cut bedrock platform now elevated to nearly 100 feet above mean sea level. The surface of the platform is covered with numerous small shallow lakes and blanketed by a thin veneer of water-saturated mossy turf and peat.

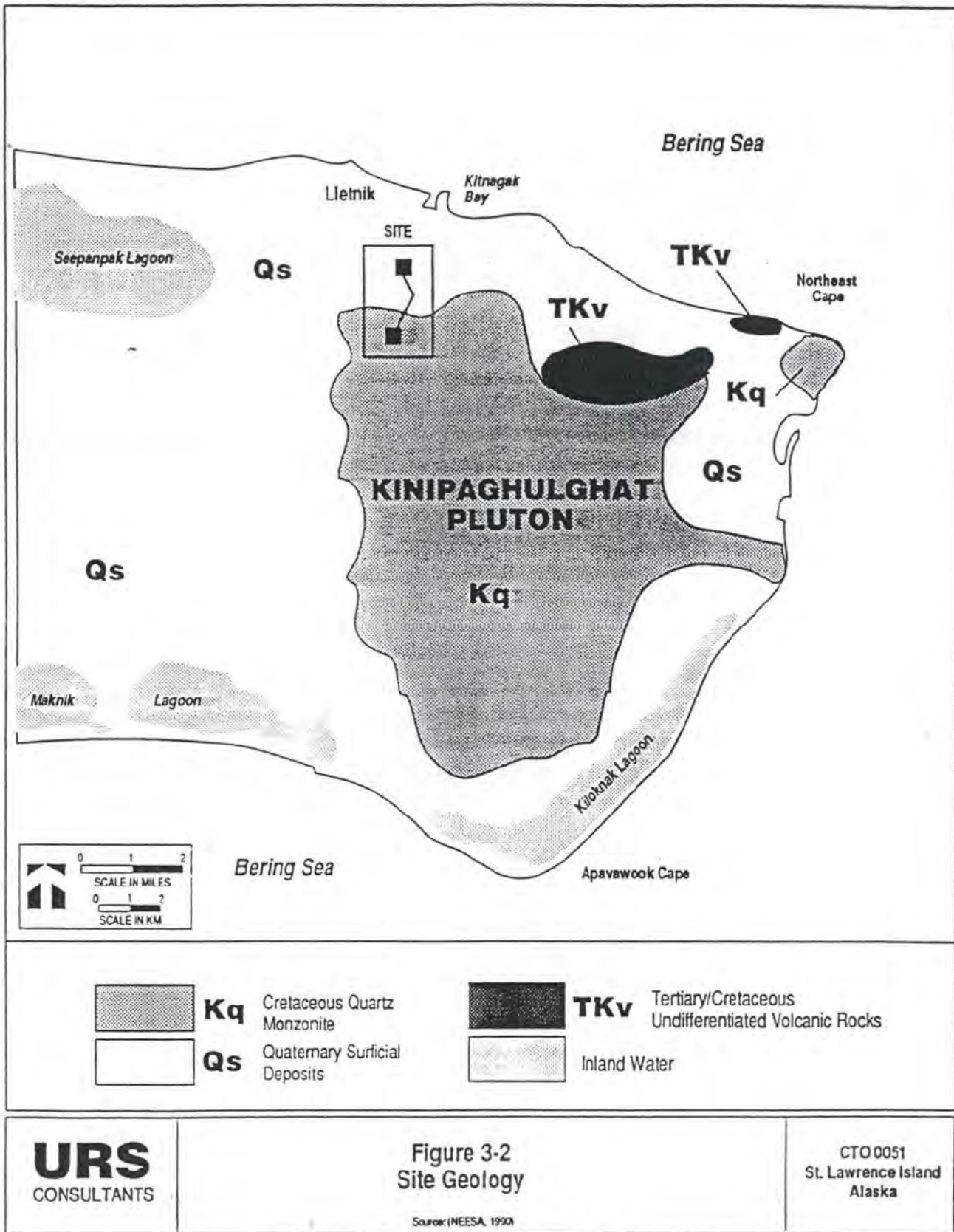
Several isolated groups of talus-covered hills containing ancient sea cliffs rise to elevations of 1,000 to 2,000 feet above mean sea level. These hills, which consist of the Kinipaghulghat Mountains in the vicinity of Northeast Cape, are formed by the Kinipaghulghat pluton. This pluton is Cretaceous in age (65 to 136 million years old) and consists predominantly of quartz monzonite and other granitic rock types. Towards the northeast of the pluton, a contact exists with undifferentiated volcanic rocks of Cretaceous and/or Tertiary (2 to 70 million years old) age (Figure 3-2).

The pluton and volcanic rocks are surrounded by Quaternary (<2 million years old) age surficial deposits consisting of gravel, sand, silt, and peat, which overlie the wave-cut bedrock platform (Patton and Csejtey 1980).

3.2.4 Hydrology

The principal surface-water feature at the site is the Bering Sea, which is located (at the closest point) approximately 1.5 miles to the north and east of the Main Electronics Center (Figure 3-1). All surface-water run-off from the area investigated in this report discharges to the Bering Sea.

The lowland areas of Northeast Cape are typical of a subarctic coastal plain where flat topography, frozen soils, and wet tundra have created numerous shallow thaw lake basins and peat in-filled thaw lake basins. These lakes are clear but tannic in color. In addition, there are numerous glacial run-off streams throughout the area. These clear flowing streams have vegetated, incised banks, with sandy gravel streambeds, and range from a few feet to 20 to 30 feet in width. These streams are braided in the lowlands in contrast to high-velocity single-channel streams in the mountainous areas.



A water supply well was drilled at the lower tramway terminal (Figure 3-3) in September 1962 to a depth of 68 feet. Bedrock consisting of decomposed granitic rocks was encountered at a depth of 32 feet, with the primary source of water located in a fractured zone from 61 to 65 feet below ground surface (bgs). At the time of drilling, the static water level was 25 feet bgs and the well sustained a yield of 12 gallons per minute for at least seven and a half hours. Several weeks after the well was tested, the water level dropped to a depth of 58 feet bgs and the well became unusable. It appears that seasonal fluctuations of the water table made the well usable only during the summer and early fall months. The well was eventually abandoned (U.S. Army Corps of Engineers 1962).

According to files of the USGS, Water Resources Division in Anchorage, Alaska, records exist for nine wells drilled on the island. Two of these were drilled by the Air Force in the vicinity of Northeast Cape and have been abandoned. The others appear to have been at locations away from the area under investigation. The nearest water supply well to WASNC, according to USGS records, is approximately 100 miles to the west in Gambell (USGS 1990).

3.2.5 Ecology

The vegetation of Northeast Cape is classified as alpine tundra, which is dominated by white mountain avens, mat-forming herbs, grasses, and sedges. Indigenous shrubs include alpine bearberry, dwarf birch, Labrador tea, willows, heaths, and cassipes. The lowland area is mainly wet tundra with lakes, bogs, and generally poorly drained soils. Vegetation at higher, drier areas is sparse to almost nonexistent. Steep slopes, lack of soils, and harsh climate make plant populations and densities low.

Arctic fox may be found at sea on pack ice during the winter and are present on the island year-round. Red fox, short-tailed weasels (ermine), and arctic ground squirrels are also permanent residents. Smaller mammals are numerous and provide the primary spring diet to migratory raptors, foxes, and jaegers (aggressive seabirds) when the snow first begins to leave the tundra. These small mammals include the tundra shrew, Greenland collared lemming, the red-backed vole, and the tundra vole.

Walrus, sea lion, minke, beluga and killer whales, harbor porpoise, bearded seals, and possibly ribbon seals are present during open water (July to September). Walrus frequently haul out at Northeast Cape, which is also a minor haul-out area for sea lions. Ringed seals breed and pup on shorefast ice during late winter (March to April) at Northeast Cape between Kangighsak Point and Apavawook Cape. Polar bears are likely to be present in winter on ice pack and/or on shore. There is a minor bowhead whale (April to May) and

gray whale (May to June) migration route off the eastern coast of the island. A gray whale summer feeding area is located northeast of the island. Walrus and bearded, ringed, and spotted seals are also harvested in this area by the native population.

Most of the island provides important summer/fall nesting and molting habitat for migratory waterfowl. It also provides habitat for a major part of the seabird population in the northern Bering Sea. The waters surrounding the island are the major seabird concentration and foraging area. Three seabird colonies at the Northeast Cape area are located at Kinipaghulghat Mountain, Punuk Island, and Seevookhan Mountain. At each location, only a few pairs of a handful of species are present.

There have been sightings of peregrine falcons on the island, but they are listed as accidental and irregular visitors.

A small, few-flowered primula (Primula tschuktschorum), restricted to the Chukchi and Seward Peninsulas and St. Lawrence Island, is listed as an endangered species candidate. While current knowledge suggests that this species may be threatened or endangered, data to fully support this sentiment is not available.

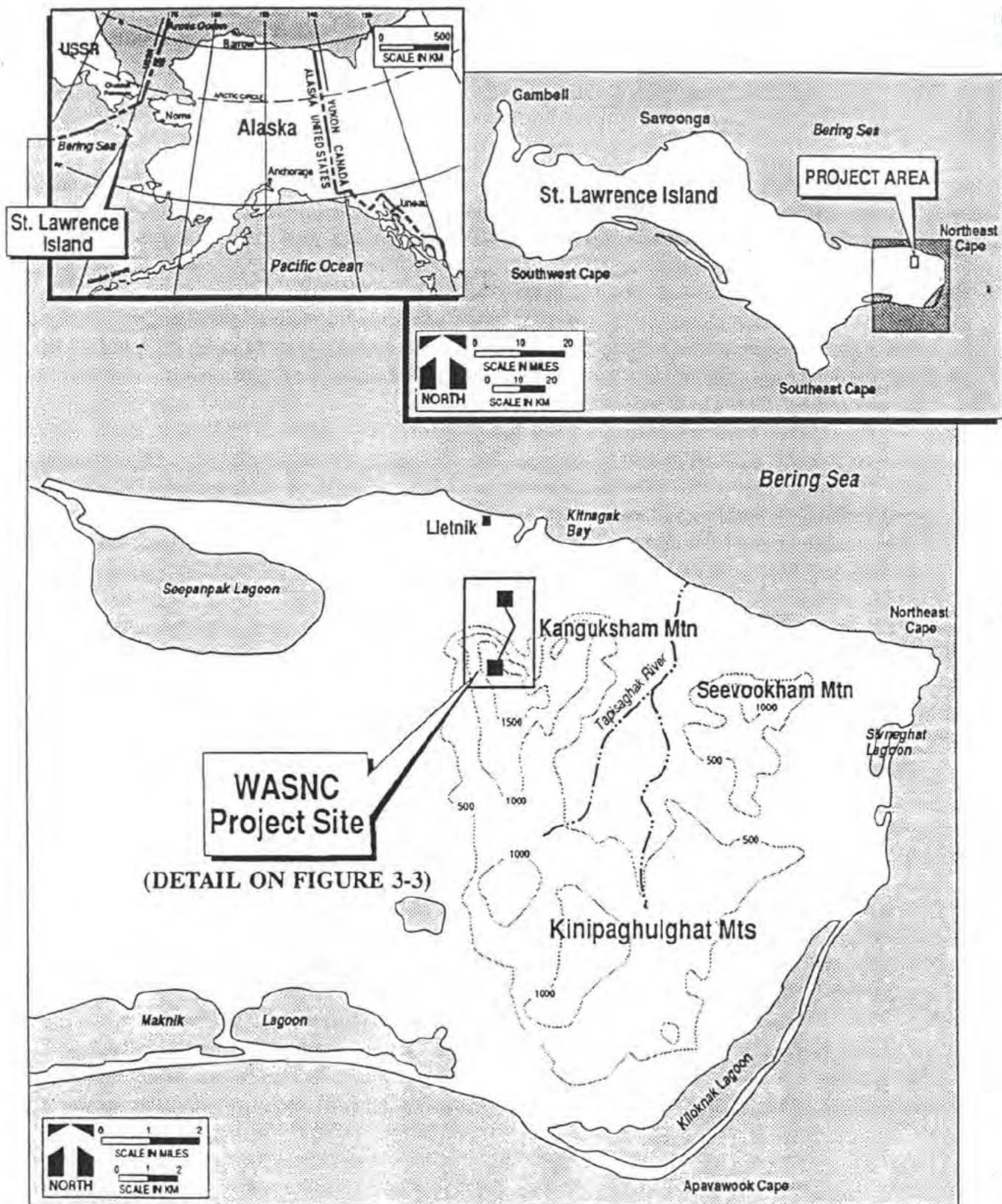
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NEESA 1990).

3.2.6 Types and Behavior of Contaminants Present

Electricity for WASNC was obtained from the main power plant located in the housing and operations area approximately 3/4 mile by road from the White Alice Site lower camp. On the present Navy property, power was delivered to three separate transformer banks, located in the substation of Building 1001 (Figure 3-4), the Lower Tramway Transformer Building (Figure 3-5), and the Upper Camp Transformer Building as shown in Figure 3-6. For emergency service in case of normal power source failure, there were two diesel-engine-driven emergency generators located near each of the transformer banks. The electrical system was abandoned in 1975 when the Air Force ceased operations at Northeast Cape.

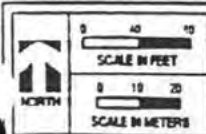


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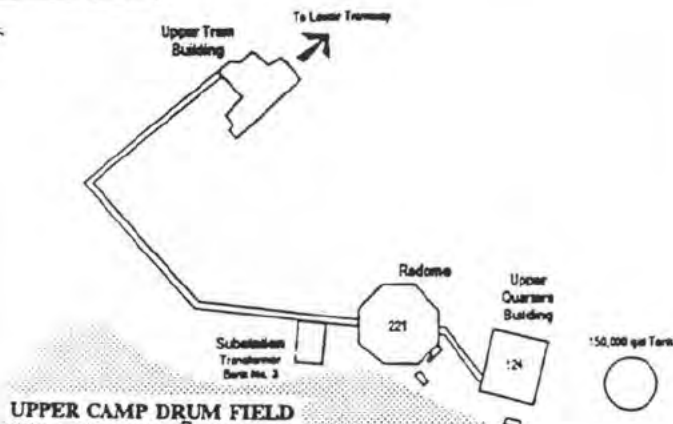
Figure 3-1
St. Lawrence Island
Location Map

Source: (USGS, 1974 and NEESA, 1990)

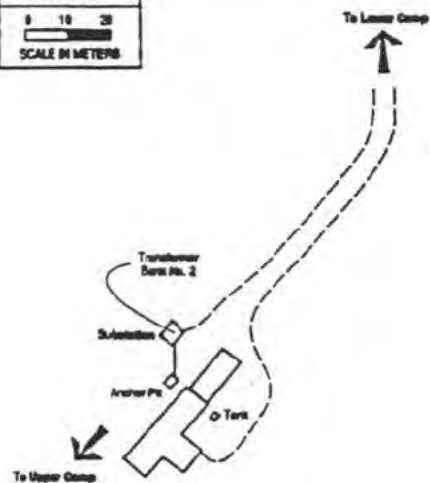
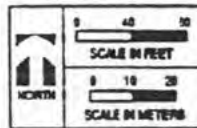
CTO 0051
St. Lawrence Island
Alaska



Upper Camp 3



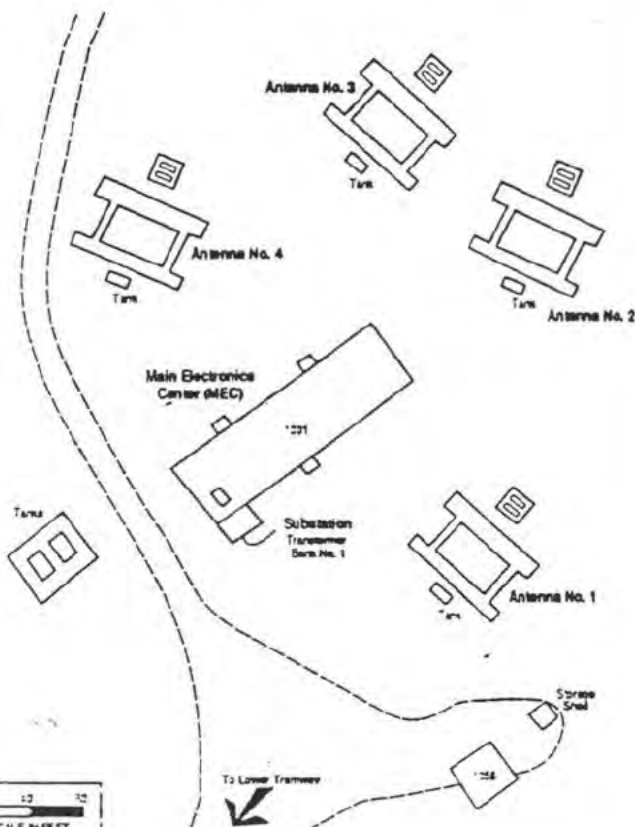
Site 3



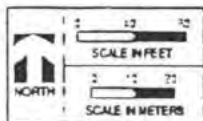
2 Lower Tramway Terminal

Site 2

1 White Alice Site



Site 1



White Alice Site

Lower Tramway Terminal

TRAM DRUM FIELD

Upper Tramway Terminal

Sites 1, 2, 3

NTS

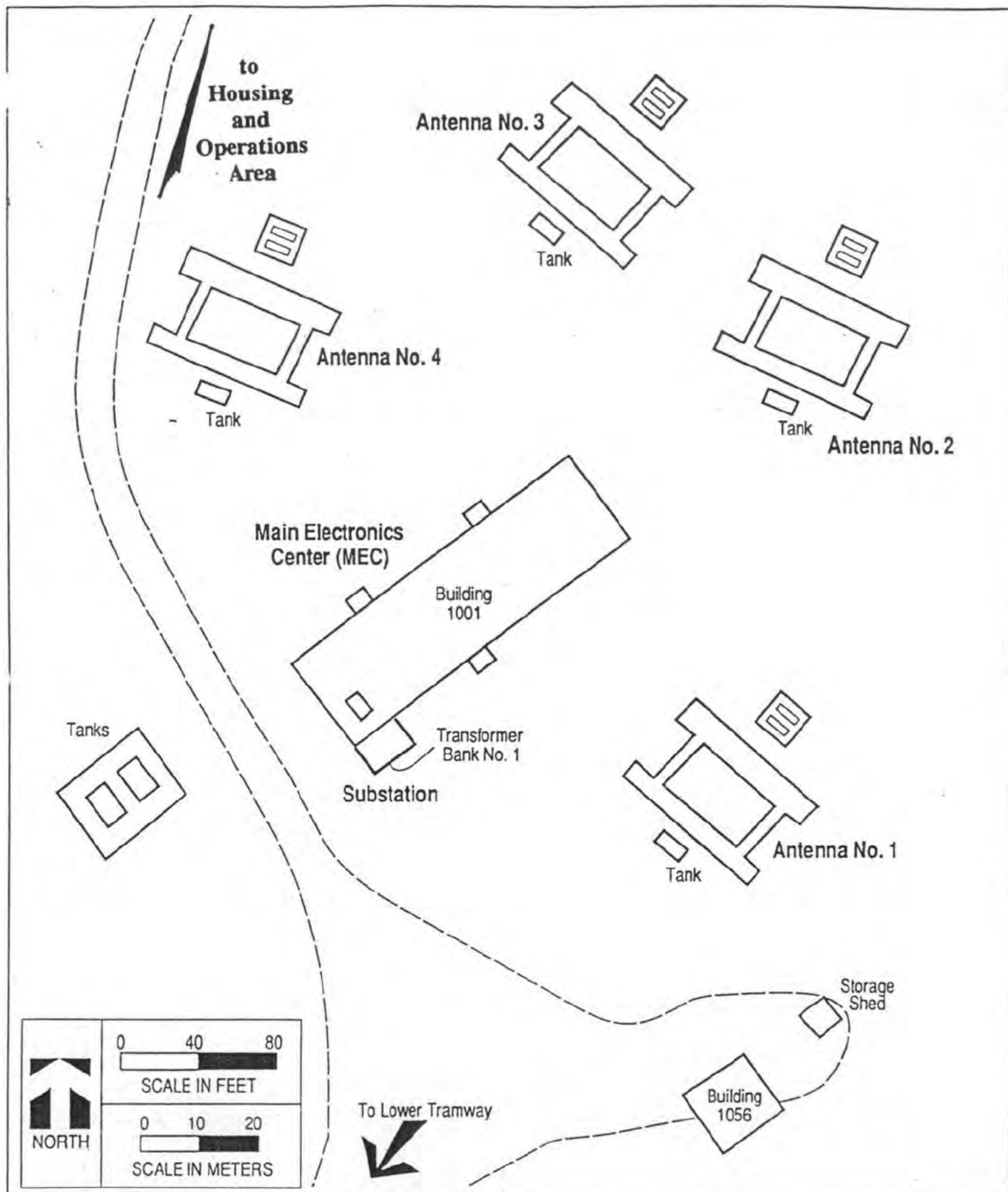


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Figure 3-3
Site Location Map

Source: INEESA, 1990

CTO 0051
St. Lawrence Island
Alaska



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Figure 3-4
Lower Camp/White Alice Site
Site 1

Source: (NEESA, 1990)

CTO 0051
St. Lawrence Island
Alaska

Transformer Bank #2

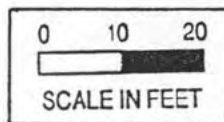
Transformer
Building

To Lower Camp

Lower Tram Building

Tram

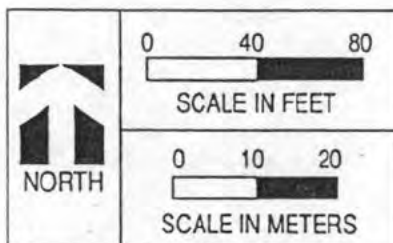
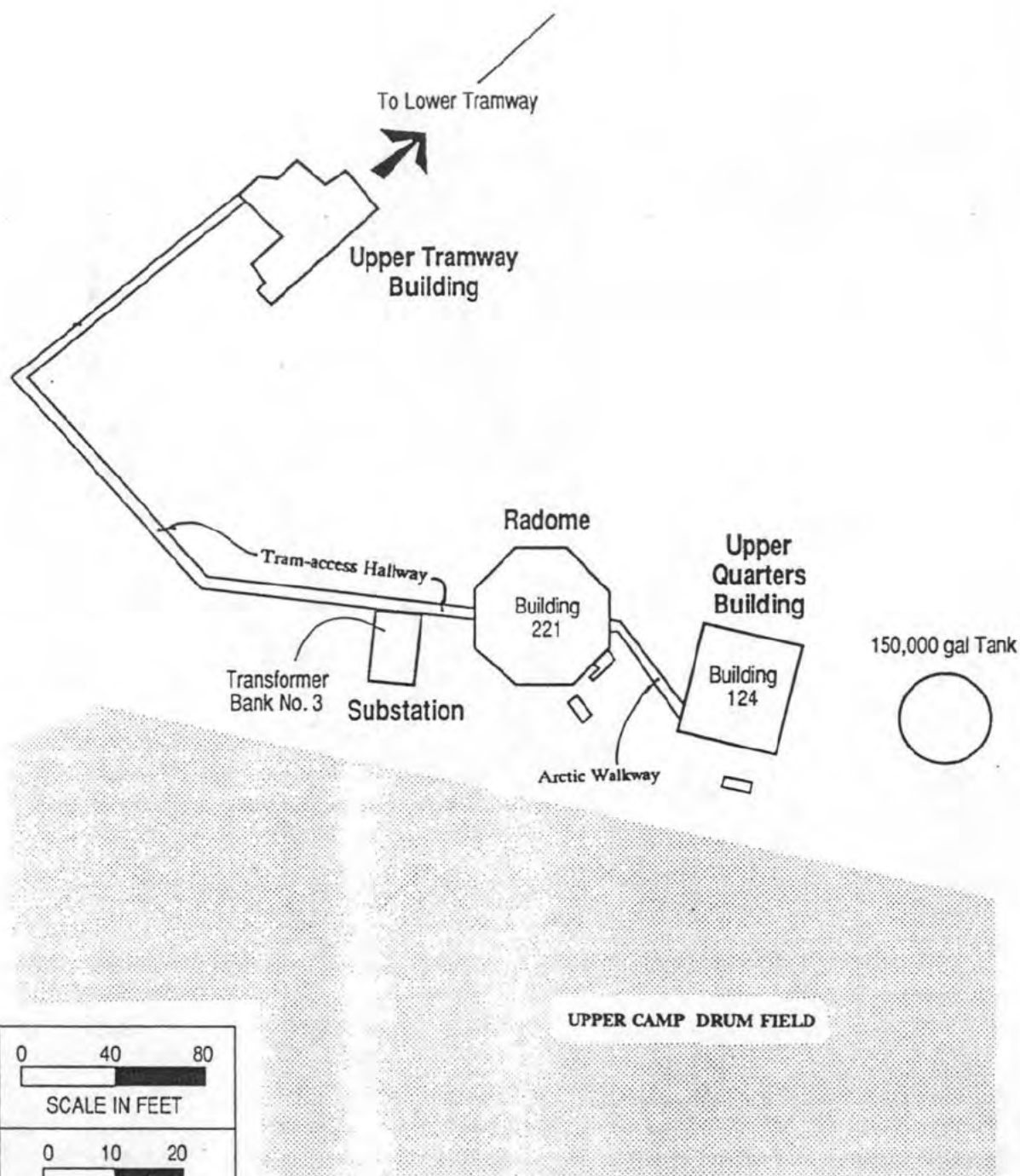
To Upper Camp



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Figure 3-5
Lower Tram
Site 2

CTO 0051
St. Lawrence Island
Alaska



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Figure 3-6
Upper Camp/Upper Tramway Terminal
Site 3
Source: (NEESA, 1990)

CTO 0051
St. Lawrence Island
Alaska

Because the equipment at the White Alice sites was a high-power-pulse system, it reportedly would occasionally seriously overheat, and at times transformer fires would occur. When this would happen, the burned dielectric fluid was reportedly dumped onto the ground outside the building and the transformer was flushed with the solvent trichloroethylene (TCE) and refilled with fresh oil. There are no known records of the number, amount, or time period of these reported releases of dielectric fluid and flushing material. No physical records were produced to show dielectric fluid oil with PCB; however, the results of the Removal Action (RA) of CTO #0018 showed the transformers to have "ASKAREL" stamped on the face plates. Because of the stamped data statement, the transformers' oil and flush-oil were assumed to be over 500 ppm, and manifested and shipped accordingly. Records do not indicate if any of the dielectric fluid contained PCBs (although it is likely considering the years of operation), or the amount(s) and/or location(s) of these reported releases.

PCB are thermally and chemically stable compounds with dielectric properties, specifically developed as a transformer and high-energy dielectric and electrical-equipment immersion coolant. In 1974, regulations limited PCB use in the United States to closed systems, with approximately seventy percent of the PCB produced reportedly used in capacitors and the remaining thirty percent utilized in transformers (NEESA 1990).

The environmental behavior of PCB mixtures is a function of the individual chlorinated biphenyl species. In general, as chlorine content increases, sorption increases while transport and transformation processes decrease. Adsorption onto building materials, soils, and sediments is the major fate process affecting PCB in the environment. Soil material adsorption capacity is normally directly related to organic content, specific soil surface area, and clay content (NEESA 1990).

Air Force sites in Alaska also commonly utilized a variety of chemicals for cleaning purposes. In addition to various phosphates and ammoniated cleaning materials, solvents such as naphthene, toluene, alcohols, trichloroethylene, acetone, carbon tetrachloride, sulfuric acid, trichlorophenoxy acetic acid (2,4,5-T), trichloroethane, trichloroethene, hexane, and various chlorobenzenes. Most of these chemicals were volatiles, so tests for volatile organic compounds (VOC) are the best detectors. In some cases, base-neutral-acid extractable semi-volatile analysis (BNA) tests will also detect constituents of these cleaning compounds.

TCE was widely used as an industrial solvent. It is highly volatile in aqueous solutions, moderately soluble in water, and not strongly adsorbed or bioaccumulated. TCE on the soil surface is likely to volatilize, but that portion not removed by volatilization is likely to become mobile in groundwater.

Pesticides (particularly rodenticides, larvacides, and insecticides) were also commonly utilized at remote sites. Some remote sites have records of herbicide use to reduce grass and weed growth. Use of these materials at WASNC is not in records reviewed by URS, but is a viable potential source of contamination.

Antifreeze compounds, including acetic acids, glycols, alcohol, silicates (aluminated and glycolated), and salts were also common. Metals (inorganics analysis) tests will commonly detect various metallic wastes from maintenance activities, metal-based greases and other lubricants, and from deterioration of the scrap metals that were commonly discarded at the White Alice sites. Asbestos is common at the site, in the possible forms of building, duct, and pipe insulation; ceiling tiles; floor tiles; and shingles.

3.2.7 General Waste-Handling Practices

Past material handling and waste disposal at the WASNC caused contamination at several locations around the WASNC site. Although many of these disposal practices were considered acceptable at the time, unexpected long-term problems may result from releases of pollutants into soil, groundwater, surface water, or the air. Generally, remote sites like WASNC did not have deliberate waste-disposal procedures, so wastes tend to be widely distributed around the facilities with only limited information on waste-generation rates and types. Wastes commonly generated from operations included waste petroleum, oil lubricants, chlorinated and non-chlorinated solvents, and batteries. Pesticides were also used at the facility.

No large-scale industrial operations were conducted at the various areas within the WASNC site. Past industrial operations at the WASNC were broken into two activities. The White Alice Building 1001, the antennas, the tram unit and the upper camp area were primarily for electronic transmission and receiving. The lower main base camp area was for site personnel, aircraft, aircraft support, automotive, fire and total maintenance of all ground support equipment to the WASNC.

The majority of incoming material was shipped in 55-gallon metal drums. Occasionally, material was shipped in small drums or 5-gallon metal containers. The drums typically contained petroleum products, PCB-containing dielectric and/or cooling fluid, cleaning solvents, alcohol, and other substances. No known generation of hazardous waste, other than degradation of steel drums on site, has taken place since WASNC was abandoned in 1975. Exact quantities of potential waste generated over the life of the project is unknown, but potentially could run into the tens of thousands of gallons, based on the number of discarded drums.

3.3 PREVIOUS INVESTIGATIONS

The Navy Installation Restoration Program (IRP) is designed to assess, clean up, or control contamination from past hazardous-waste-disposal operations and hazardous-material spills at Navy and Marine Corps facilities. The U.S. Navy has adopted terminology used by the U.S. Environmental Protection Agency (EPA) pursuant to the Superfund Amendments and Reauthorization Act of 1986 (SARA). The NOSC at San Diego, California, had requested in a letter dated November 17, 1988, that the Naval Energy and Environmental Support Activity (NEESA) perform a Preliminary Assessment (PA) at the WASNC as part of the initial phase of the IRP.

The principal purpose of the PA was to collect existing information to be used (1) in assessing the presence of hazardous waste at the site, and (2) to evaluate the potential for offsite migration. The NEESA team visited the site from July 16 to July 22, 1989, and produced a report that identified ACM, transformers, compressed gas cylinders, and 55-gallon drums containing various fuels and solvents that might pose a threat to human health and/or the environment.

A Removal Action (CTO #0018) was performed by URS in July and August of 1990. All drums, transformers, and gas cylinders from eight locations identified in the PA were removed. The 1990 SI (CTO #0019) was conducted by URS immediately following the completion of the Removal Action to determine the presence of hazardous materials remaining at the sites identified in the PA.

The results of the SI indicated significant PCB contamination at each of the transformer pad areas. The lateral extent or penetration into the soil of the PCBs was not delineated. Pesticides (including 4,4-DDT; 4,4-DDE; 4,4-DDD; and endrin aldehyde) were also detected in low concentrations in the same areas, and several low-concentration dioxin and furan samples were also detected.

Sampling at the drum fields (along the tramway and at the upper camp) revealed levels of total petroleum hydrocarbons (TPH), which were generally below 100 ppm -- the soil cleanup criteria established by the Alaska Department of Environmental Conservation (ADEC). Various typical solvent materials, including benzene, toluene, xylenes, methylene chloride, and sporadic encounters with semi-volatile compounds, were recorded at the drum fields.

No contaminants were noted in the analysis of the stream water samples collected down-gradient from the WASNC areas.

4.0 SAMPLING AND ANALYSIS

This section identifies the location, number, and types of samples collected to fulfill the objectives of this investigation. Details on sampling methodology and quality assurance/quality control (QA/QC) measures are provided in the CTO #0019 Project Plans (URS 1990A, 1990B, 1990C, 1990D, 1990E) and in the Standard Operating Procedures (URS 1990F). More detailed descriptions of the specific areas, and the historic uses and facilities, may be found in the CTO #0019 SI report (URS 1991A).

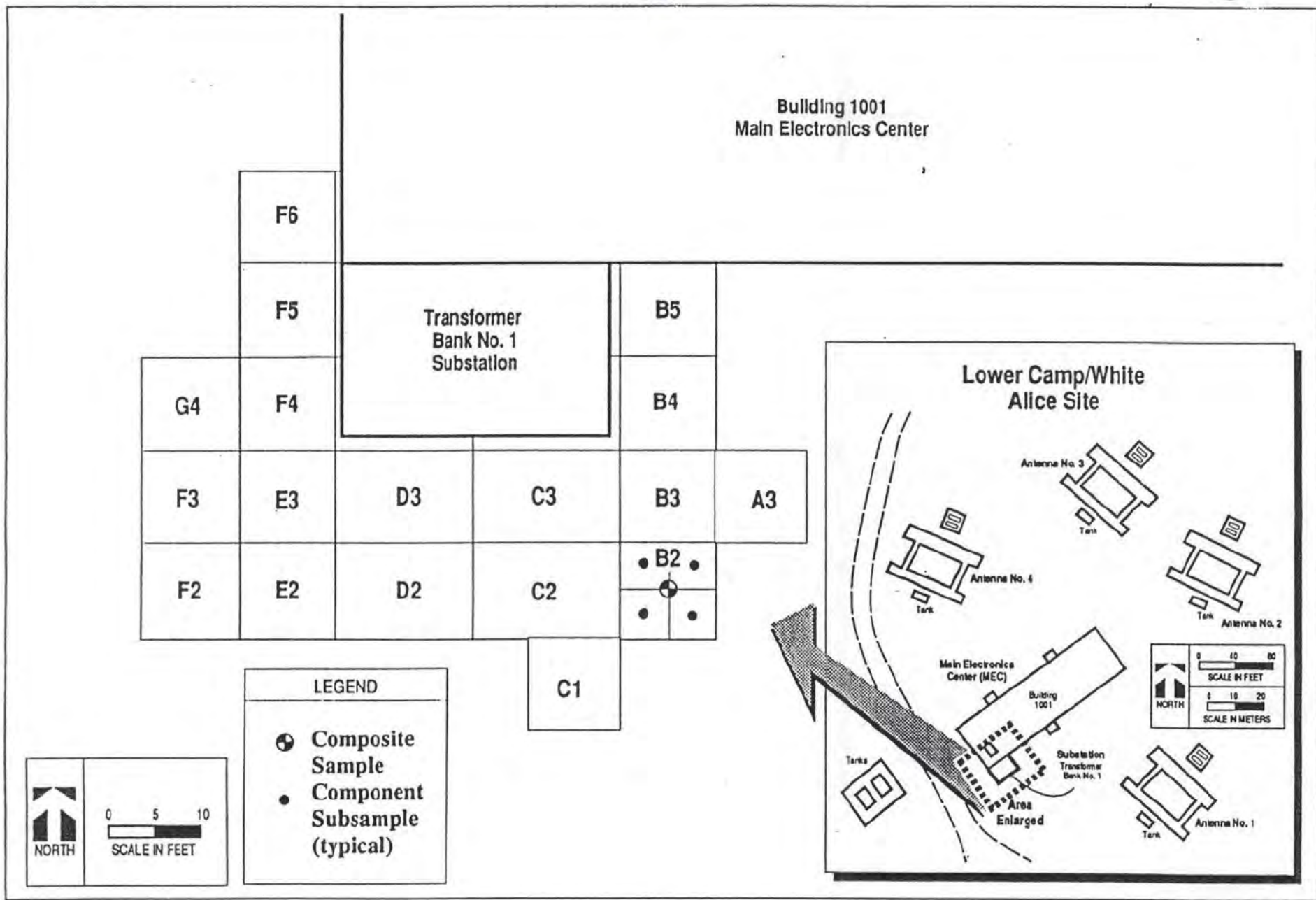
4.1 SOIL AND MATRIX SAMPLING

Sampling grids were developed (Figures 4-1, 4-2, and 4-3) and soil sampling was performed in the three areas adjacent to the substations where PCB-laden fluid was allegedly disposed. Because there were no records of actual disposal location, a grid space of five feet by five feet was selected. This spacing was chosen because it approximates the sampling density to detect a hypothetical PCB spill area. Based upon the grid spacing and assumed diameter of the spill area, a probability factor of greater than 80 percent of detecting any indications of PCB spillage is expected (EPA 1987). Sampling was performed utilizing a four-point system, with one sample from the center of each quadrant of each grid cell. The four samples were composited into one sample and submitted for analysis. Samples from all three sites were analyzed for VOCs, PCBs, and pesticides.

4.1.1 Site 1

Site 1, located at Building 1001, consists of (1) a wood structure on a concrete pad that previously housed transformers, and (2) the soils adjacent to the entrance of Transformer Bank Number 1 (Figure 3-3).

The grid layout for the soil-sampling effort of Site 1 was identical to the grid established during the previous SI Sampling Plan (URS 1990E) with the exception of three additional sample-point locations shown as shaded boxes in Figure 4-1. The sample grid was extended to add one composite sample each to the southwest, southeast, and east sides of the grid where previous sampling efforts had indicated the presence of contamination (URS 1991). This extension was intended to identify whether the contamination limit was immediately adjacent to the prior grid boundary, or if the contamination was more widespread.



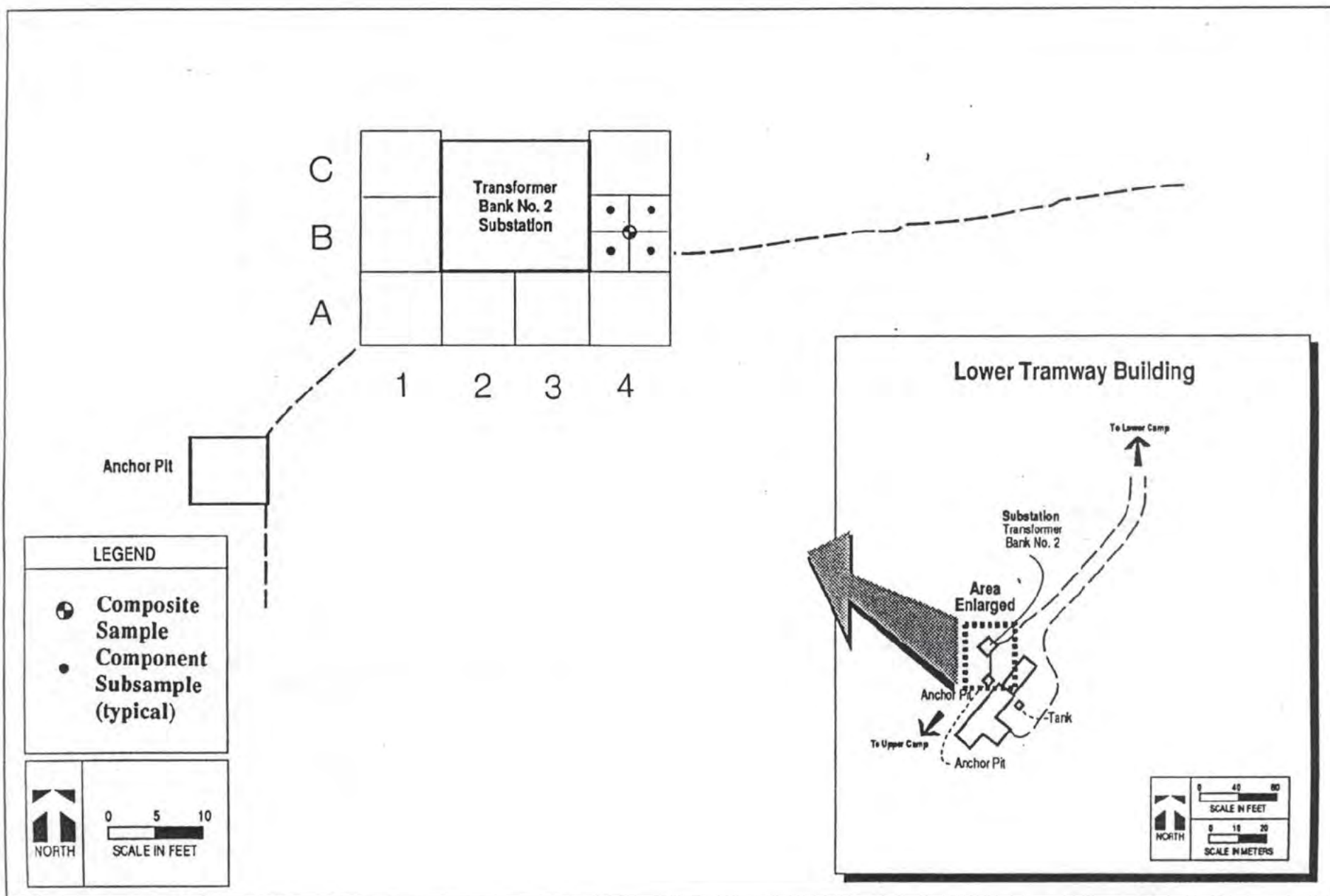
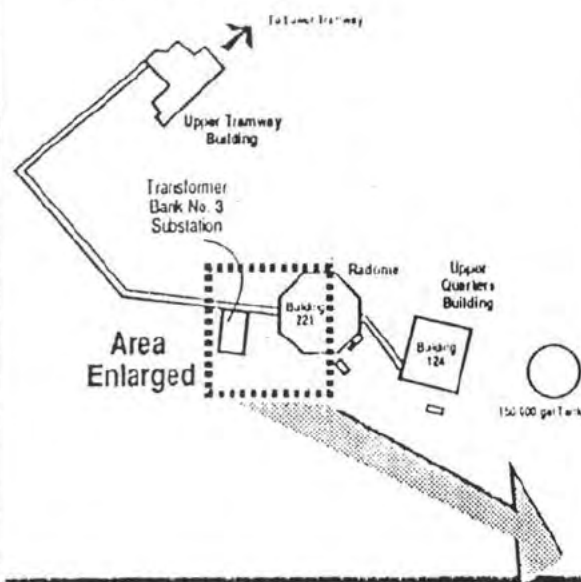


Figure 4-2
Location and Sampling Grid Layout
for Transformer Bank No. 2

Upper Camp/Tramway Terminal Site



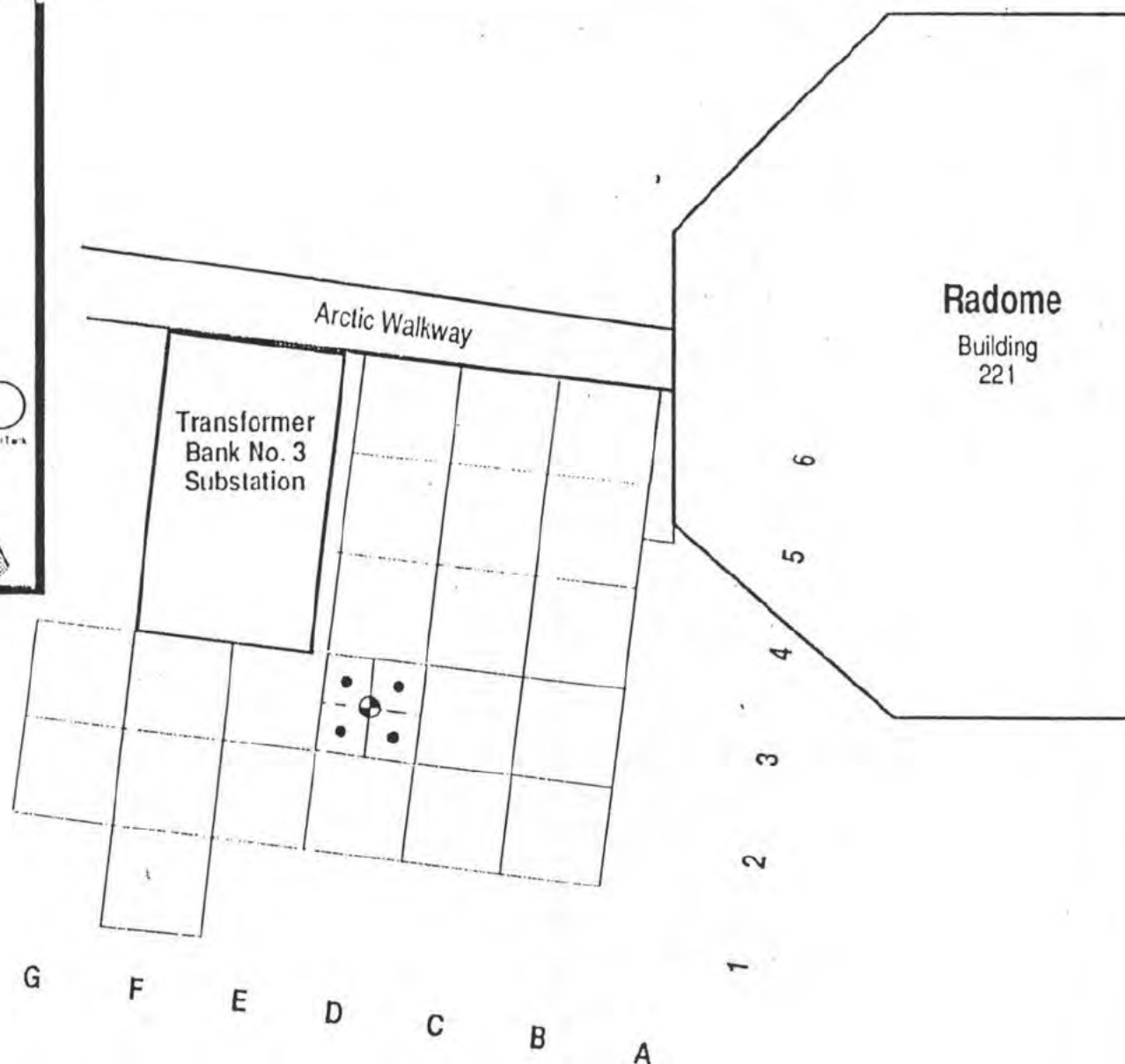
LEGEND

- Composite Sample
- Component Subsample (typical)



NORTH

0 5 10
SCALE IN FEET



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Figure 4-3
Original Location and Sampling Grid Layout
for Transformer Bank No. 3

CTO 0051
St. Lawrence Island
Alaska

Eighteen soil samples -- one from each grid point -- were submitted for analysis of VOCs and PCB/pesticides.

The electrical substation at Site 1 consists of an 8.8-foot by 13.9-foot building over a concrete pad. Previous wipe and concrete chip samples indicated the presence of PCB, aldrin, and heptachlor. Therefore, four wipe and four concrete chip samples were collected from the concrete pad and analyzed for PCB/pesticides (Figures B-2 and B-3).

4.1.2 Site 2

Site 2 is located at Transformer Bank Number 2, adjacent to the Lower Tram Building (Figure 4-2). Site 2 consists of (1) an 18.6-foot by 19.0-foot concrete pad within a wood structure that previously housed transformers, and (2) the soils adjacent to the entrance of Transformer Bank Number 2. No evidence was obtained from the previous sampling effort that indicated PCB soil contamination in this area. Current sampling indicated low levels of pesticide contamination on the concrete pad, and one wipe sample contained 390,000 ppb of Aroclor 1260 (URS 1991A).

All soil sample grid locations established in the previous SI (CTO #0019) remained the same and were resampled (Figure 4-2). A total of eight composite soil samples were collected from the sample grid area outside of the transformer building (Figure B-4) and submitted for analysis of VOCs and PCB/pesticides. Two wipe (Figure B-5) and four concrete chip samples (Figure B-6) were obtained from the concrete pad within the building and analyzed for PCB/pesticides. Four composite soil samples (Figure B-7) were obtained from soils within the building (an unconcreted floor area) and analyzed for PCB/pesticides.

4.1.3 Site 3

Site 3 is located at the Upper Camp Transformer Bank Number 3 (Figure 4-3). Site 3 consists of (1) a concrete pad within a wood structure that previously housed transformers, and (2) the soils adjacent to the entrance of Transformer Bank Number 3. The previous SI (CTO #0019) sampling effort indicated that Aroclor 1260 was evident in four composite soil samples. Several pesticides were detected, including 4,4-DDE; 4,4-DDT; and 4,4-DDD. The concrete pad contained evidence of Aroclor 1260 in both the wipe and chip samples.

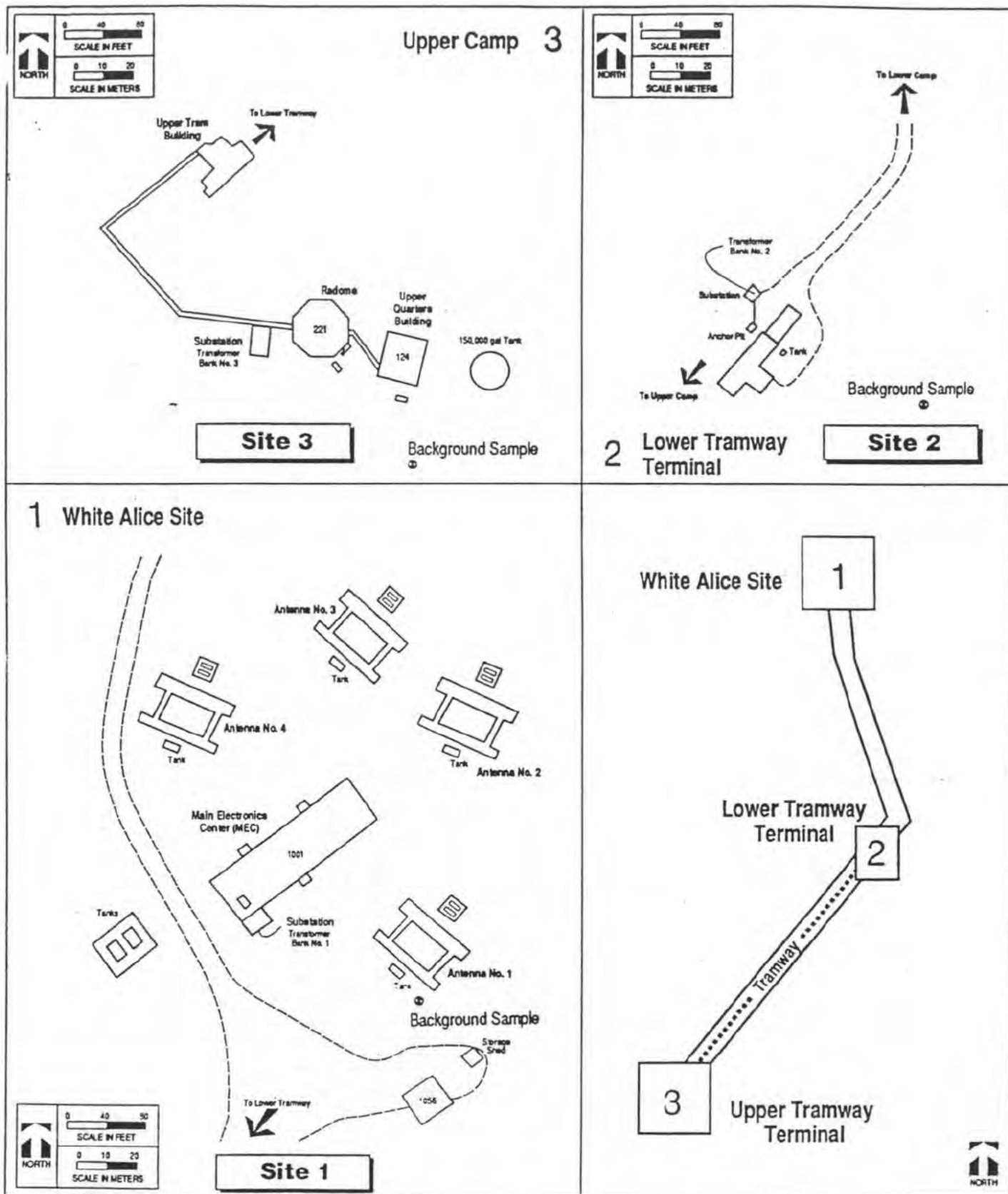
The grid layout for the soil sampling effort of Site 3 was identical to the grid established during the previous SI performed in 1990 under CTO #0019, with the exception of four additional sample point locations (Figure 4-3). The sample grid was extended to add three composite samples to the southwest side of the grid and one composite sample to the northeast side of the grid where previous sampling efforts indicated the possible presence of PCB contamination (URS 1991). This extension was intended to determine if the contamination extended significantly beyond the initial sample grid. A total of 23 composite soil samples from the grid were submitted for analysis of VOCs and PCB/pesticides (Figure B-8).

The electrical substation at Site 3 consists of a 16.2-foot by 29.5-foot concrete pad. Four wipe and six concrete chip samples were collected from the pad and analyzed for PCB/pesticides (Figures B-9 and B-10).

4.1.4 Background Samples

The following samples were collected as a background reference for comparison, and analyzed for VOCs and PCB/pesticides (Locations are indicated in Figure 4-4.):

- Site 1 (Sample #8427) - approximately 100 feet south and slightly upgradient from the site. Background contaminants detected consisted of Aroclor 1260 at 90 ppb and a tentatively identified compound (TIC) at 7 ppb.
- Site 2 (Sample #8447) - approximately 150 feet south and upgradient of the site. No contaminants were detected in Sample 8447.
- Site 3 (Sample #8482) - approximately 75 feet south and across a flat, rocky field. Background contaminants detected consisted of Aroclor 1254 at 140 ppb, concentrations of benzene at 12 ppb, and naphthalene at 20 ppb.



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Figure 4-4
Background Sample Location Map

Source: (NEESA, 1990)

CTO 0051
St. Lawrence Island
Alaska

5.0 SAMPLING RESULTS

The results of analyses from this site inspection, presented as sample data summaries, are detailed in this section. All sample data used in this report was reviewed according to EPA guidelines and compared with the data quality objectives presented in CTO #0019 Project Plans (EPA 1988A, EPA 1988B, URS 1990B, C, D, E). The CTO #0019 results in the drum fields and streams are not discussed because CTO #0051 did not resample these areas.

5.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Federal and state public health and environmental standards considered to be indicative of potential, albeit generally conservative, comparison or screening-level values for this field investigation are presented with each sample result as appropriate (Table A-1). Definitive site Applicable or Relevant and Appropriate Requirements (ARARs) or cleanup standards have not been developed for WASNC.

5.2 SAMPLE ANALYSIS RESULTS

This field investigation consisted of 83 collected samples, which were comprised of 50 composite soil samples, 10 wipes, 14 concrete chip samples, 3 background soil samples, and 6 QA/QC samples. Each of the collected samples were analyzed by Eureka Laboratory in California for VOCs (Method V-CLP [2/88]) and PCB/pesticides (Method 8080). Sample data results are tabulated in Appendix A and discussed in the following sections. The sample locations are provided in Appendix B. The sample test results are provided in Appendix C. Section 5.3 discusses the data validation processes and the data quality problems encountered. Appendix D presents the data validation reports, which detail the lab procedure and data quality qualifications and limitations.

5.2.1 Volatile Organic Compounds

Only one VOC contaminant -- 1,1,1-trichloroethane (Sample #8433) -- was definitively detected at 1 ppb at Site 2 (Lower Tram) in Cell B-1 (Figure B-4 and Table A-1). The VOC contamination level is well below the ADEC action level of 200 ppb, and could be a trace sampling or lab contaminant rather than an indication of actual contaminant presence. Previous sampling (CTO #0019) had reported methylene chloride, chloroform, TCE, xylene, and styrenes. These were not detected in the current sampling. However, several TICs

were identified, some of which are volatiles (Table A-2). The greatest detected concentration of any TIC was 170 ppb, so no major volatile contamination was detected at the sites sampled.

5.2.2 PCB/Pesticides

On the concrete pad at Site 1, in one concrete chip sample (#8425), Aroclor 1260 was detected at 470,000 ppb and in one wipe sample (#8421) Aroclor 1260 was detected at 3,200 ppb, both at Location C (Figures B-2 and B-3 and Table A-1). However, all 28 samples detected PCB, ranging from 90 ppb (for the background sample) to 470,000 ppb. The Toxic Substances Control Act (TSCA) action levels for PCB in soil are 1,000 ppb, whereas the ADEC states that soils must be cleaned to background levels. The levels for soil and mixed media at all three sites are well above these accepted levels. Therefore, these detected levels would appear to require remedial action. CTO #0019 reported aldrin and heptachlor at Site 1, but these were not reported in the CTO #0051 results.

At Site 2, the following pesticide contaminants were detected in the wipe samples collected from the concrete pad (Figure B-5 and Table A-1).

•	4,4-DDT	(Sample #8437)	2,970 ppb	Location A
•	Methoxychlor	(Sample #8438)	5,170 ppb	Location B
•	Endrin Aldehyde	(Sample #8438)	4,500 ppb	Location B

CTO #0019 had also reported endosulfan I, which was not detected in the current testing.

In addition, at Site 2 (location D), Aroclor 1260 (Sample #8442) was detected in a concrete chip sample at a high level of 390,000 ppb. Other hits included values from 130 to 2,100 ppb. A total of 6 of the 20 site samples at Site 2 detected PCB. All these values are substantially above commonly accepted action levels.

The only contaminant of concern at Site 3 was Aroclor 1260 (Sample #8475) in a concrete pad wipe at Location D (Sample #8475). Aroclor 1260 was detected at a level of 2,200 ppb, which exceeds commonly accepted action levels (Figure B-9 and Table A-1). CTO #0019 had also reported low levels of dioxins, furans, and a range of pesticides.

5.2.3 Semivolatile Organic Compounds

The Statement of Work dated May 7, 1991, did not request semi-volatile organic analysis (SVOA) sampling and analysis. However, 36 TICs (including potential VOCs and semi-VOCs) were identified at the White Alice Site, Site 1 (Table A-2). Some of these values exceeded probable action levels, although overall concentrations were apparently relatively low. The highest concentration detected for a TIC was 170 ppb.

5.2.4 Dioxins/Furans

Dioxin and furan contaminants were identified only at Site 3, as noted in the CTO #0019 SI. The dioxin and furan contaminant levels in the CTO #0019 validated data are considered usable data. The four dioxin samples and the three furan samples in the grid correlate to the PCB "hits" of the revised CTO #0051 SI (Figure B-11). Dioxins and furans generally have non-detectable concentration cleanup standards. Detected levels were very low; less than 10 ppb in all cases.

5.2.5 Asbestos-Containing Materials

The CTO #0019 sampling detected ACMs in the Radome Building (221); Building 124; the Arctic Walkway; the Tram Hallway (all in the Upper Camp); Building 1001; and Antennas #2, #3, and #4 at the Lower Camp. Details of the sampling and results are presented in the CTO #0019 Report (URS 1991A).

5.2.6 Background Samples

Background samples were taken at each of the three (3) sites and included in the analyses of contaminants. Site 2 did not detect contaminants in the background sample, whereas the other two sites have contaminants present, indicating what appears to be a wide spread contamination problem.

Site 1 background (Sample #8427) was taken approximately 100' south and slightly upgradient from the main site. Background contaminants detected consisted of Aroclor 1260 at 90 ppb, and a Tentatively Identified Compound (TIC) at 7 ppb.

Site 2 background (Sample #8447) was taken approximately 150' south and upgradient of the site. No contaminants were detected.

Site 3 background (Sample #8482) was taken approximately 75' south across a flat, rock field. Background contaminants detected consisted of Aroclor 1254 at 140 ppb and concentrations of benzene at 12 ppb and naphthalene at 20 ppb.

5.3 LABORATORY VALIDATION

The sample validation program was performed in accordance with the *Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program*, under the purview of the URS Quality Assurance Coordinator.

The laboratory sample validation reports (excluding data sheets with validation amendments) are included in Appendix D. These sheets explain validation results, detail changes made in data results by the validators, and provide a discussion of unique test validation issues such as dilution samples and results of sample and shipping blank tests. The validation recommended changes have been included on the summary test data sheets in Appendix A, and the data summary in Appendix C.

This SI report has been prepared based on certain assumptions (reflected in CTO #0019) regarding site conditions and contamination presence, as presented in previous site- assessment work. This previous work has been referenced where applicable, and has been relied upon by URS in preparation of its work plan, SI sampling, and report writing.

This report presents the results of SI activities at WASNC, and is intended to provide the Navy with data and preliminary conclusions for use in future studies and potential remediation activities. The conclusions and recommendations are preliminary in nature because of the need for more in-depth and comprehensive discrete sampling and evaluation of the sites, as required by various sections of 40 CFR and the Navy CLEAN program.

The purpose of the validation process is to eliminate unacceptable analytical data, and to designate with data qualifiers any data whose quality is subject to limitation. In some instances, the qualified analytical data may be used only for approximation purposes, while in other cases the data is usable, subject to minor limitations on statistical quantifications. Data-validation summary reports are filed with the data and describe the usability of the data for further technical interpretations. Data-usability review determines the degree to which validated data are suitable for the purposes intended, and whether the data are useful for other purposes. Sample validation analyses for this CTO was performed by C.C. Johnson & Malhotra, P.C., Lakewood, Colorado.

Certain data was flagged in validation with a "J" qualifier. This does not invalidate the use of the data, although strict reliance on reported quantitative data would not be recommended. The majority of the samples were composite samples rather than discrete samples; therefore, strict quantitative reliance is not possible. This does not invalidate or hinder use of this data for SI screening purposes, which was the intent of the project.

Due to lab procedural and calibration difficulties, and due to reported hydrocarbon masking, a large percentage of the lab data was "J" qualified. Therefore, while the data can be used qualitatively, strict adherence to quantitative values is, in many cases, not advised.

The following "hits" were ignored as they were consistently at or near detection limits in multiple samples and were flagged during validation as probable lab or transit contamination of the samples: methylene chloride, 2-butanone, and a TIC with retention time of 22.8. Some samples were flagged "R" as unusable because of problems with overlap contamination or lab procedure. In these cases, it is therefore unknown whether or not these samples were contaminated.

6.0 SITE SAFETY

During the CTO #0051 site-inspection tasks, all health and safety guidelines outlined in the Site Safety and Health Plan were implemented (URS 1990C). A brief summary of safety issues is presented below.

6.1 WORK ZONES

Safe work zones were established around all hazardous-waste areas in accordance with 29 CFR 1910.120. Because of the remote, uninhabited location, no intrusion events or risk of public exposure occurred.

6.2 PERSONAL PROTECTIVE EQUIPMENT USAGE

During all sample activities, disposable personal protective equipment (PPE) was available. The modified Level D PPE consisted of Tyvek suits, silver sheaths over nitro gloves, and boot covers.

6.3 FINAL WASTE DISPOSITION

All modified Level D PPE (Tyveks, gloves, and boot covers) was removed during decontamination and remained in the Exclusion Zone. The sampling equipment and used PPE were stored within one of the contaminated buildings and became part of the existing "debris pile" waste unit. It will be disposed during future remediation activities.

7.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents a summary discussion of CTO #0051 site inspection, assessing the extent of soil contamination in accordance with EPA and State of Alaska potential ARARs.

The revised SI verified that the previously suspected PCB/pesticide contaminants are present in the soil immediately surrounding each transformer bank, as well as existing in very high concentrations in the concrete transformer bank pads and their corresponding surfaces. In addition, outer-boundary grid contamination is evident from this sampling effort as well as the previous SI (CTO #0019). Therefore, it is likely that the sampling did not delineate the full extent of contaminated soils. Since the site was abandoned in 1975, the majority of VOCs have probably volatilized, but this conclusion cannot be verified due to a lack of subsurface soil analysis. In the Site 2 grid (Lower Tram), one VOC was detected at a very low concentration. Multiple TICs were detected in the soil grid at Site 1, adjacent to the White Alice electronics building. Of the three background samples, only the one for Site 2 did not demonstrate a contaminant in the revised sampling effort, indicating that contamination may be widespread. Dioxin and furan contaminants, collected in the original SI, were in evidence in the Site 3 grid surrounding the transformer building. These specific contaminants were also evident in grid cells that contain PCB contaminants, as would be expected if they were the result of disposal of burned PCB-treated dielectric fluids.

Utilizing the information contained in the revised SI and the usable data from the original SI, it is recommended that further remedial actions be considered for the future. The remoteness of the site and the presence of a large formerly used defense site (the former Air Force Housing and Operations Area) adjacent to the site which has not yet been investigated, indicate that it would be in the Federal Government's interest to coordinate remedial activities on the Navy and formerly used defense sites to achieve economies of scale on mobilization, transportation, and disposal costs.

If a CERCLA RI/FS is conducted to delineate the contaminant levels and the contaminant boundaries and evaluate appropriate cleanup levels, it should determine the lateral and vertical extent of existing PCB-contaminated areas and additional source areas which may have contributed to BNA TIC hits, as well as the extent of contamination inside the buildings and in the drum fields. Therefore, PCB, dioxin/furan, and semi-volatiles tests should be conducted, along with TPX/TPH tests to ascertain the need for hydrocarbon remedial actions.

An interim cleanup action on a limited area at the transformer pads may also be considered. This cleanup, by cleaning concrete (or removing it) and removing adjacent contaminated soils, could result in removal of the high-level PCB contamination that was detected. Such an action would remove the highest detected levels of contaminants onsite, which comprise, based on current information, the majority of the site contamination risk. It is also possible that removing PCBs, as a selected analyte of concern, would also incorporate simultaneous removal of other associated contamination.

8.0 REFERENCES

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- Naval Energy and Environmental Support Activity. June 1988. Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, NEESA.
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APPENDIX A

CTO #0051 Laboratory Data Summary

APPENDIX A

CTO #0051 Laboratory Data Summary

Appendix A CTO #0051 SI Data Summary

The tables in Appendix A present the maximum detected contaminant levels (MCL) for each site for use in preliminary site-contamination evaluation. These values are not representative or average values, nor are they necessarily the highest level present on each site.

The determination of "threshold limit" or acceptable MCL "no-action" values of various hazardous materials and substances is highly dependent on the exposure factors at the site; whether the public or workers are regularly exposed to the potential hazards; continually changing regulatory thresholds; and various site-exposure, risk-severity, and related factors. Therefore, the weighted averages or MCLs at which an action to remediate to an ARAR is required demands information that is not available until at least an HRS (II) ranking is performed, and possibly until an RI/FS is performed at the site.

The "comparison value" in Appendix A represents a tentative threshold value for use in evaluating relative significance of the compounds detected at the various sites. In general, the comparison values generally represent EPA or National Institute of Occupational Safety and Health (NIOSH) action levels or regulatory levels from Toxicity Characteristic tables. (Reference from which comparison level was extracted is noted in parentheses.) Where such values are not available, State of Alaska or Occupational Safety and Health Administration (OSHA) time-weighted-average (TWA) values have been used for comparative purposes. In some cases, levels for closely related derivatives have been listed in lieu of specific isomer guidelines, where isomer-specific data is not available.

The values presented as comparison values should not be considered equivalent to remedial action or emergency action threshold limits, nor to "safe" or "permissible" levels. Such determination requires a deliberate site ranking, establishment and agency concurrence with site ARAR, and accomplishing screening-quality sampling and testing, which is not fully satisfied by the samples represented in the data in these tables.

SYMBOL DESIGNATION

- (1) 40 CFR 257.4. Appendix I, eff 10/15/79, 7/1/89 edition (levels for wastes) and 40 CFR 264.94 Table 1.
- (2) 40 CFR 261.24. Table 1 - Maximum Concentration of Contaminants for Characteristics of EP Toxicity (EP Toxicity Extraction Levels). 7/1/89 edition.
- (3) 40 CFR 260.41. Table CCWE - Constituent Concentrations in Waste Extract.
- (4) Summary of General PCB Regulations. EPA Region 10. February 1990.
- (5) EPA Region 10. Supplemental Risk Assessment Guidance. August 1991. (Regulated MCL, Risk = 10^{-6} concentration if no regulated MCL).
- (6) EPA Region 10. Supplemental Risk Assessment Guidance, August 1991. Table II-2, Soil Cheat Sheet: Risk-based Concentrations.
- (7) Toxicity Characteristic Based on TCLP (Sept. 90 tentative list) - regulated levels.
- (8) Internal URS Anchorage composite summary notebook of Federal/ACGIH TLV standards.
- (9) NIOSH Pocket Guide to Chemical Hazards. U.S. Public Health Service, CDC. June 1990. (value listed is Exposure Limit, usually TWA, for occupational exposure).
- (10) CERCLA Compliance with Other Laws Manual, Interim Final. EPA, EPA/540/G-89-006, August 1988.
- (11) Interim Guidance for Non-UST Contaminated Soil Cleanup Levels, Appendix I: Final and Proposed Maximum Contaminant Levels (MCL) for Selected Organic and Inorganic Contaminants, Alaska Department of Environmental Conservation.

Table A-1 (page 1 of 7)
 White Alice Site, Northeast Cape
 Sites 1, 2, 3
 Maximum Detected Contaminant Concentrations

TEST METHOD: 8080 (pesticides)		CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA			
SITE Compound:	CAS #	Comparison Value ug/l (ppb)	White Alice	Lower Tram	Top Camp
alpha-BHC	319-84-6	.0092 (10)	nd	nd	nd
beta-BHC	319-85-7	.00012 (10)	nd	nd	nd
delta-BHC	319-86-8	.00012 (10)	nd	nd	nd
gamma-BHC (Lindane)	58-89-9	0.2 (1)	nd	nd	nd
Heptachlor	76-44-8	.00028 (10)	nd	nd	nd
Aldrin	309-00-2	.000074 (10)	nd	nd	nd
Heptachlor epoxide	1024-57-3	.00028 (10)	nd	nd	nd
Endosulfan I	959-98-8	< 10 (6)	nd	nd	nd
Dieldrin	60-57-1	40 (6)	nd	nd	nd

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

Designation codes:

e.g., 130 (s) J /75 (w) J = 130 J soil; 75 J water sample

Table A-1 (page 2 of 7)
White Alice Site, Northeast Cape
Sites 1, 2, 3
Maximum Detected Contaminant Concentrations

TEST METHOD: 8080 (pesticide)		CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA			
SITE Compound:	CAS #	Comparison Value ug/l (ppb)	White Alice	Lower Tram	Top Camp
4,4'-DDE	72-55-9	2,000 (6)	nd	nd	nd
Endrin	72-20-8	0.18 (10)	nd	nd	nd
Endosulfan II	33213-65-9	10 (10)	nd	nd	nd
4,4'-DDD	72-54-8	2,000 (6)	nd	nd	nd
Endosulfan sulfate	1031-07-8	N/A (6)	nd	nd	nd
4,4'-DDT	50-29-3	.000024 (10)	nd	2,970 (wipe)	nd
Methoxychlor	72-43-5	.03 (10)	nd	5,170 (wipe)	nd
Endrin aldehyde	53494-70-5	N/A (6)	nd	4,500 (wipe)	nd
alpha-Chlordane	5103-71-9	.0046 (10)	nd	nd	nd

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

Designation codes:

e.g., 130 (s) J /75 (w) J = 130 J soil; 75 J water sample

Table A-1 (page 3 of 7)
 White Alice Site, Northeast Cape
 Sites 1, 2, 3
 Maximum Detected Contaminant Concentrations

TEST METHOD: 8080 (pesticides)		CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA			
SITE Compound:	CAS #	Comparison Value ug/l (ppb)	White Alice	Lower Tram	Top Camp
gamma-Chlordane	5103-74-2	0.0046 (10)	nd	nd	nd
Toxaphene	8001-35-2	.00071 (10)	nd	nd	nd
Aroclor-1016	12674-11-2	0.5 (11)	nd	nd	nd
Aroclor-1221	11104-28-2	0.5 (11)	nd	nd	nd
Aroclor-1232	11141-16-5	0.5 (11)	nd	nd	nd
Aroclor-1242	53469-21-9	0.5 (11)	nd	nd	nd
Aroclor-1248	12672-29-6	0.5 (11)	nd	nd	nd
Aroclor-1254	11097-69-1	0.5 (11)	nd	180 (s) J	1,400 (s)
Aroclor-1260	11096-82-5	0.5 (11)	470,000 (c) J 3,200 (s) J	390,000 (chip)	2,200 (wipe)

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

Designation codes:

e.g., 130 (s) J / 75 (w) J = 130 J soil; 75 J water sample

Table A-1 (page 4 of 7)
 White Alice Site, Northeast Cape
 Sites 1, 2, 3
 Maximum Detected Contaminant Concentrations

TEST METHOD: V-CLP					
CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA					
SITE Compound:	CAS #	Comparison Value ug/l (pph)	White Alice	Lower Tram	Top Camp
Chloromethane	74-87-3	50,000 (6)	nd	nd	nd
Bromomethane	74-83-9	5,000 (8)	nd	nd	nd
Vinyl Chloride	75-01-4	2 (10)	nd	nd	nd
Chloroethane	75-00-3	N/A (6)	nd	nd	nd
Methylene Chloride	75-09-2	20 (3)	nd	nd	nd
Acetone	67-64-1	50 (3)	nd	nd	nd
Carbon Disulfide	75-15-0	1,000 (8)	nd	nd	nd
1,1-Dichloroethene	75-34-4	1,000 (6)	nd	nd	nd
1,1-Dichloroethane	75-34-3	100,000 (8)	nd	nd	nd

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

Designation codes:

e.g., 130 (s) J /75 (w) J = 130 J soil; 75 J water sample

Table A-1 (page 5 of 7)
White Alice Site, Northeast Cape
Sites 1, 2, 3
Maximum Detected Contaminant Concentrations

TEST METHOD: V-CLP					
CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA					
SITE Compound:	CAS #	Comparison Value ug/l (ppb)	White Alice	Lower Tram	Top Camp
trans-1,2-Dichloroethene	156-60-5	5,000 (8)	nd	nd	nd
cis-1,2-Dichloroethene	156-59-2	N/A (6)	nd	nd	nd
Chloroform	67-66-3	0.19 (10)	nd	nd	nd
1,2-Dichloroethane	107-06-2	0.94 (10)	nd	nd	nd
2-Butanone	78-93-3	200,000 (8)	nd	nd	nd
1,1,1-Trichloroethane	71-55-6	200 (11)	nd	1 (s) J	nd
Carbon Tetrachloride	56-23-5	0.4 (10)	nd	nd	nd
Vinyl Acetate	108-05-4	10,000 (8)	nd	nd	nd
Bromodichloromethane	75-27-4	5,000 (6)	nd	nd	nd

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

Designation codes:

e.g., 130 (s) J / 75 (w) J = 130 J soil; 75 J water sample

Table A-1 (page 6 of 7)
White Alice Site, Northeast Cape
Sites 1, 2, 3
Maximum Detected Contaminant Concentrations

TEST METHOD: V-CLP		CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA			
SITE Compound:	CAS #	Comparison Value ug/l (ppb)	White Alice	Lower Tram	Top Camp
1,2-Dichloropropane	78-87-5	5 (11)	nd	nd	nd
cis-1,3-Dichloropropene	10061-01-5	87 (10)	nd	nd	nd
Trichloroethene	79-01-6	62 (3)	nd	nd	nd
Dibromochloromethane	124-48-1	8,000 (6)	nd	nd	nd
1,1,2-Trichloroethane	79-00-5	0.6 (10)	nd	nd	nd
Benzene	71-43-2	0.66 (10)	nd	nd	nd
trans-1,3-Dichloropropene	10061-02-6	1,000 (8)	nd	nd	nd
Bromoform	75-25-2	500 (8)	nd	nd	nd
4-Methyl-2-Pentanone	108-10-1	50,000 (8)	nd	nd	nd

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

Designation codes:

e.g., 130 (s) J /75 (w) J = 130 J soil; 75 J water sample

Table A-1 (page 7 of 7)
 White Alice Site, Northeast Cape
 Sites 1, 2, 3
 Maximum Detected Contaminant Concentrations

TEST METHOD: V-CLP					
CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA					
SITE Compound:	CAS #	Comparison Value ug/l (ppb)	White Alice	Lower Tram	Top Camp
2-Hexanone	591-78-6	N/A (6)	nd	nd	nd
Tetrachloroethane	127-18-4	.79 (3)	nd	nd	nd
1,1,2,-Tetrachloroethane	79-31-5	170 (10)	nd	nd	nd
Toluene	108-88-3	1,120 (6)	nd	nd	nd
Chlorobenzene	108-90-7	100 (11)	nd	nd	nd
Ethylbenzene	100-41-4	50 (3)	nd	nd	nd
Styrene	100-42-5	20,000 (6)	nd	nd	nd
Xylene (total)	1330-20-7	50 (3)	nd	nd	nd

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

Designation codes:

e.g., 130 (s) J /75 (w) J = 130 J soil; 75 J water sample

Table A-2 (page 1 of 3)
 White Alice Site, Site 1
 Tentatively Identified Compounds

SEMI VOA TICs (Isomers; base compound listed)		CTO: 0051 LOCATION:	ST. LAWRENCE ISLAND, ALASKA
PRODUCT	CAS #	Comparison Value ug/l (ppb)	QUANTITY
Cyclohexane	7058-05-1	.012 (10)	36 J
Cyclohexene	1003-64-1	9,200 (10)	44 J
Naphthalene	493-02-7	10,000 (8)	170 J
Cyclohexane	61141-80-8	0.12 (10)	37 J
Naphthalene	2958-76-1	10,000 (5)	150 J
Cyclopropane	61142-25-4	N/A	14 J
Naphthalene	1750-51-2	10,000 (8)	79 J
Benzene	17851-27-3	.1 (10)	48 J
Naphthalene	91-17-8	10,000 (8)	8 J
Naphthalene	2958-76-1	10,000 (8)	13 J
Benzene	2050-24-0	1,400 (10)	18 J
Benzene	4132-72-3	1,400 (10)	12 J
Naphthalene	25419-33-4	10,000 (8)	7 J

TIC = tentatively identified compound

Table A-2 (page 2 of 3)
 White Alice Site, Site 1
 Tentatively Identified Compounds

SEMI VOA TICs (Isomers; base compound listed)		CTO: 0051 LOCATION:	ST. LAWRENCE ISLAND, ALASKA
PRODUCT	CAS #	Comparison Value ug/l (pph)	QUANTITY
Naphthalene		10,000 (8)	42 JN
Cyclohexane		.012 (10)	10 JN
Naphthalene		10,000 (10)	43 JN
2-Cyclohexane		0.012 (10)	46 JN
Naphthalene		10,000 (8)	14 JN
Camphor		2,000 (9)	27 JN
4,5-Nonadiene		N/A	92 JN
Naphthalene		10,000 (10)	35 JN
Naphthalene		10,000 (10)	20 JN
Undecane		N/A	26 JN
2,5-Octadiyne		N/A	19 JN
Nonane, 1-chloro	2473-01-0	N/A	7 J
Pentane, 3-methylene	760-21-4	10,000 (8)	8 J

TIC = tentatively identified compound

Table A-2 (page 3 of 3)
 White Alice Site, Site 1
 Tentatively Identified Compounds

SEMI VOA TICs (Isomers; base compound listed)		CTO: 0051 LOCATION:	ST. LAWRENCE ISLAND, ALASKA
PRODUCT	CAS #	Comparison Value ug/l (pph)	QUANTITY
Cyclohexane, 1,4-dimethyl	624-29-3	.012 (10)	8 J
Cyclohexane, 1-ethyl-2, 3-dim	7058-05-1	9,200 (10)	24 J
Cyclopentene, 1-isopropyl-2	7112-73-4	N/A	20 J
4-Decane, 9-methyl-(E)-9	62338-49-2	N/A	33 J
Naphthalene, decahydro (8CI)	493-07-2	10,000 (8)	100 J
Cyclohexane (1,1-dimethylpr)	31797-64-5	.012 (10)	25 J
Naphthalene, decahydro-2-me	2958-76-1	10,000 (8)	51 J
Spiro(3,5)nonan-1-one,5-me	65147-56-0	N/A	6 J
Naphthalene, decahydro-2,6-d	1618-22-0	10,000 (8)	46 J
Naphthalene, decahydro-1,6-d	1750-51-2	10,000 (8)	88 J

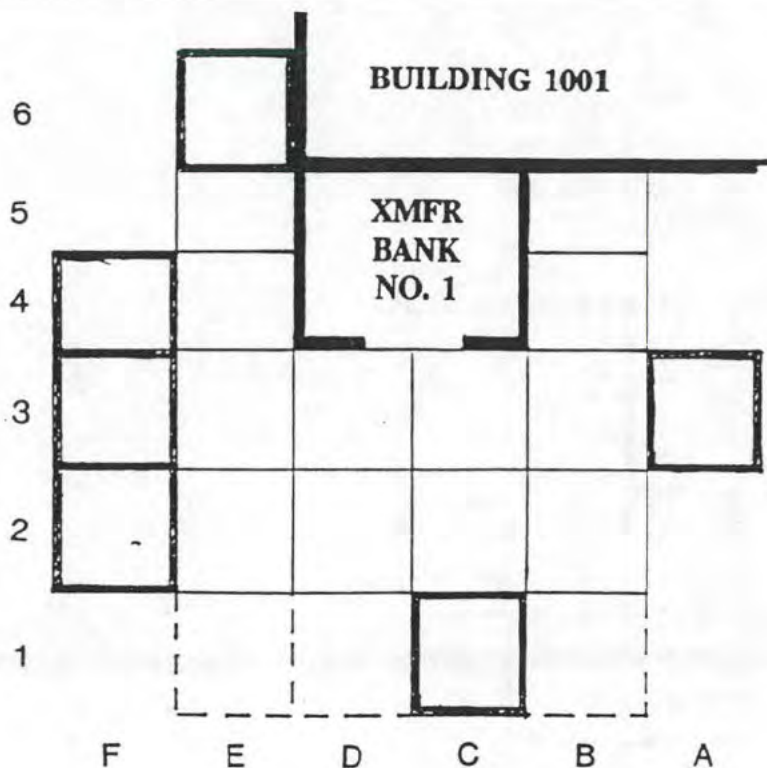
TIC = tentatively identified compound

APPENDIX B

CTO #0051 Site Grids and Associated Sample Numbers

APPENDIX B

CTO #0051 Site Grids and Associated Sample Numbers



Grid Number (sample location)	Sample Number
A-3	8401
B-2	8402
B-3	8403
B-4	8404
B-5	8405
C-1	8406
C-2	8407
C-3	8408
D-2	8409
D-3	8410

Grid Number (sample location)	Sample Number
E-2	8411
E-3	8412
F-2	8413
F-3	8414
F-4	8415
F-5	8416
F-6	8417
G-4	8418
background	8427
duplicate	8428

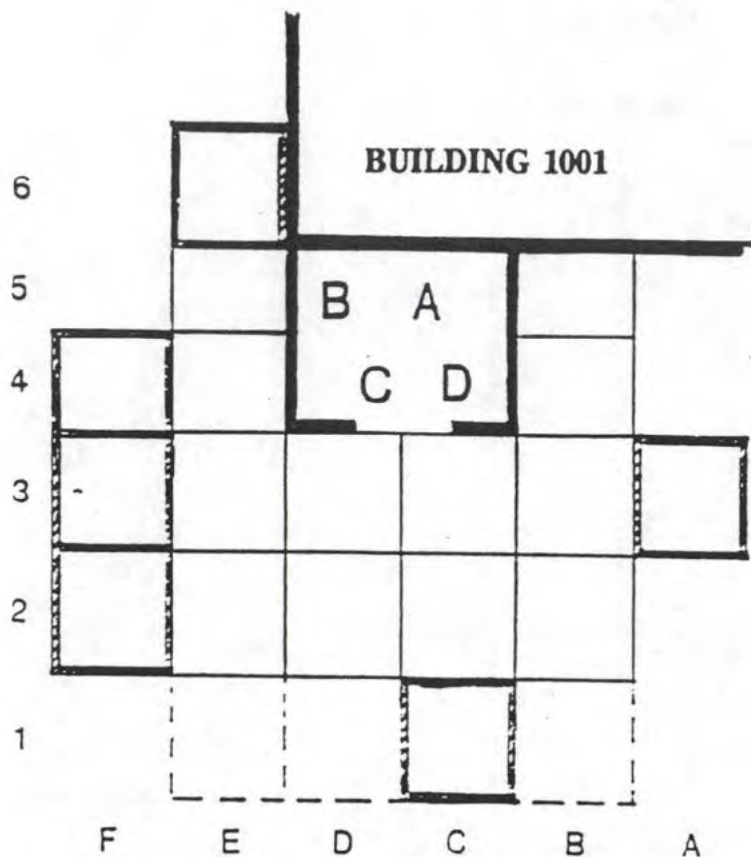
GRID SIZE 5' X 5'

Location on Figure 4-1

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FIGURE B-1
SITE 1 - LOWER CAMP
Soil Sample Locations

CTO 0051
St. Lawrence Island
Alaska



Grid Number (sample location)	Sample Number
A	8419
B	8420
C	8421
D	8422



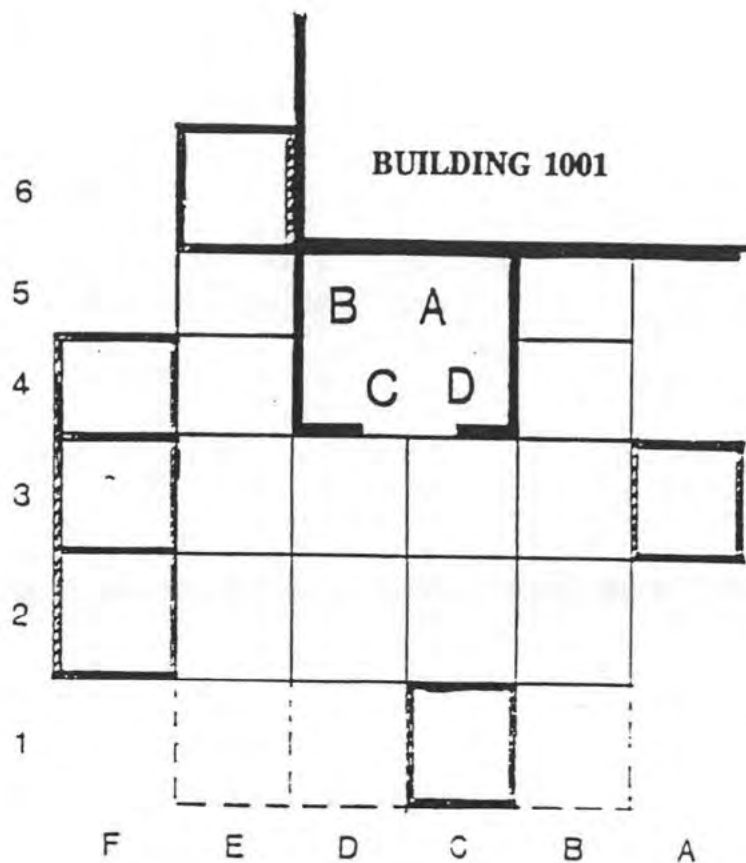
GRID SIZE 5' X 5'

Location on Figure 4-1

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FIGURE B-2
SITE 1 - LOWER CAMP
Wipe Sample Locations

CTO 0051
St. Lawrence Island
Alaska



Grid Number (sample location)	Sample Number
A	8423
B	8424
C	8425
D	8426



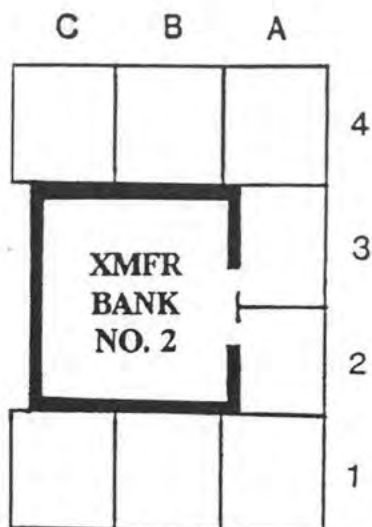
GRID SIZE 5' X 5'

Location on Figure 4-1

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FIGURE B-3
SITE 1 - LOWER CAMP
Concrete Chip Sample Locations

CTO 0051
St. Lawrence Island
Alaska



BACKGROUND SAMPLE
APPROXIMATELY 150'

Grid Number (sample location)	Sample Number
A-1	8429
A-2	8430
A-3	8431
A-4	8432
B-1	8433
B-4	8434
C-1	8435
C-4	8436
background	8447



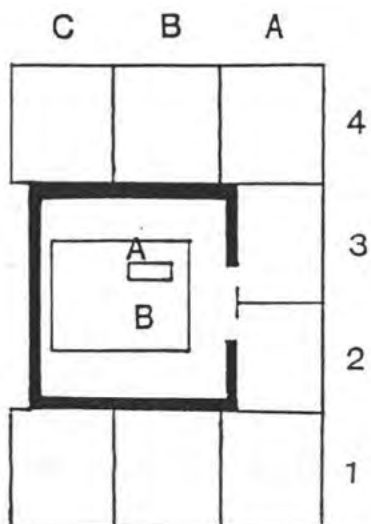
GRID SIZE 5' X 5'

Location on Figure 4-2

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FIGURE B-4
SITE 2 - LOWER TRAMWAY TERMINAL
Soil Sample Locations

CTO 0051
St. Lawrence Island
Alaska



Grid Number (sample location)	Sample Number
A	8437
B	8438



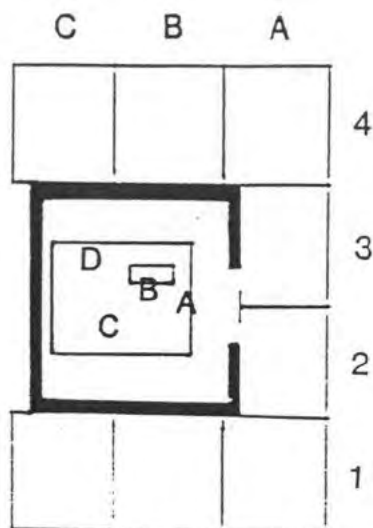
GRID SIZE 5' X 5'

Location on Figure 4-2

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FIGURE B-5
SITE 2 - LOWER TRAMWAY TERMINAL
Wipe Sample Locations

CTO 0051
St. Lawrence Island
Alaska



Grid Number (sample location)	Sample Number
A	8439
B	8440
C	8441
D	8442

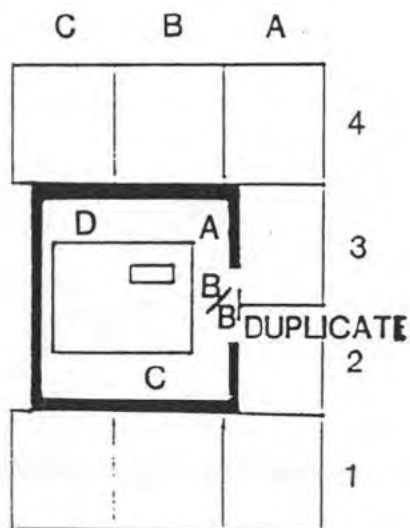
GRID SIZE 5' X 5'

Location on Figure 4-2

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FIGURE B-6
SITE 2 - LOWER TRAMWAY TERMINAL
Concrete Chip Sample Locations

CTO 0051
St. Lawrence Island
Alaska



Grid Number (sample location)	Sample Number
A	8443
B	8444
C	8445
D	8446
B/B	8448



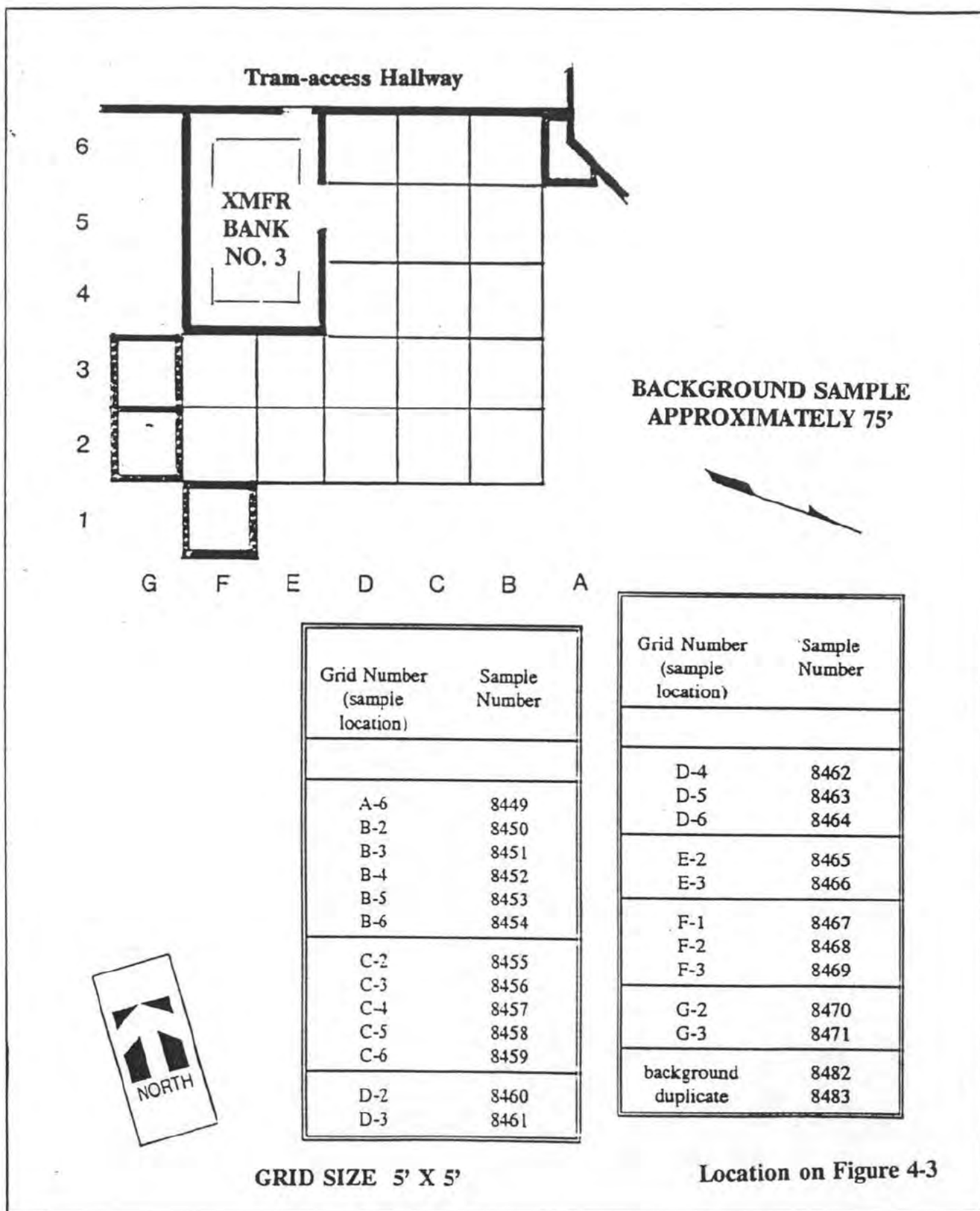
GRID SIZE 5' X 5'

Location on Figure 4-2

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FIGURE B-7
SITE 2 - LOWER TRAMWAY TERMINAL
Interior Soil Sample Locations

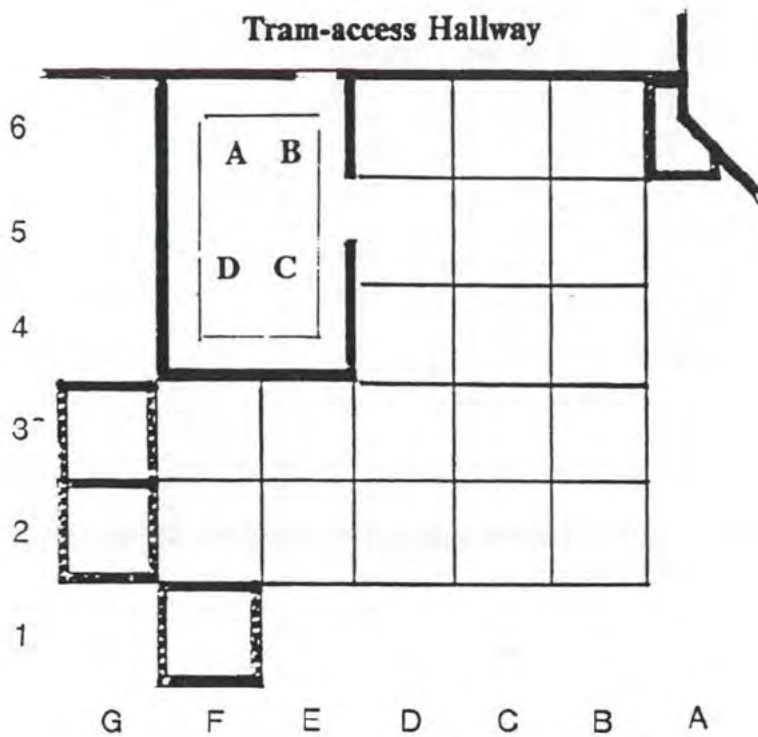
CTO 0051
St. Lawrence Island
Alaska



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FIGURE B-8
SITE 3 - UPPER CAMP
Soil Sample Locations

CTO 0051
St. Lawrence Island
Alaska



Grid Number (sample location)	Sample Number
A	8472
B	8473
C	8474
D	8475



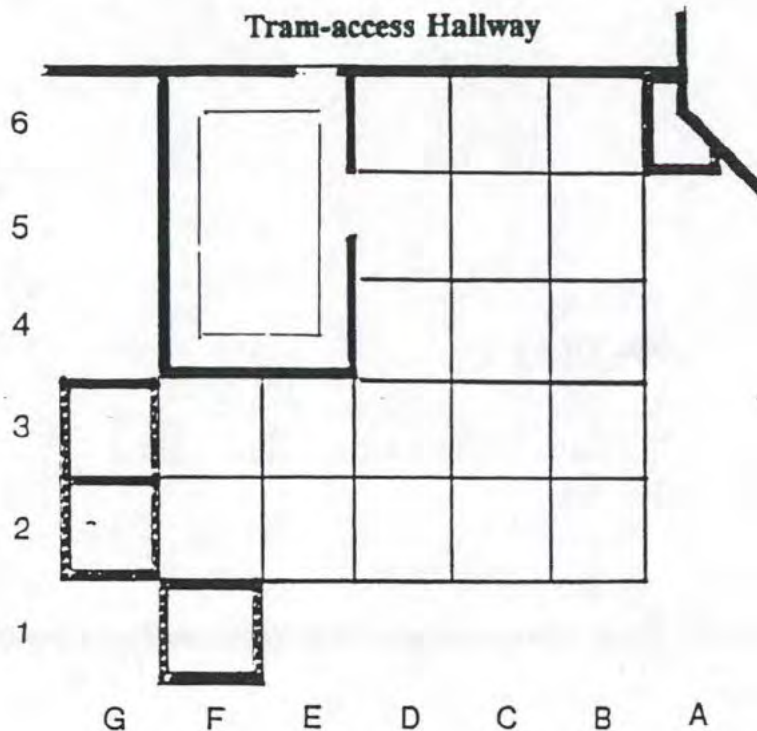
GRID SIZE 5' X 5'

Location on Figure 4-3

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FIGURE B-9
SITE 3 - UPPER CAMP
Wipe Sample Locations

CTO 0051
St. Lawrence Island
Alaska



Grid Number (sample location)	Sample Number (0019)	Sample Number (0051)			
			Dioxins	Furans	PCB 1260
			(ppb)		
A-6		8449			1400 J
B-2	2121	8450	0.46		190 J
D-2	2131		1.5	0.89	
D-3					85 J
D-6	2135	8464	7.8	4.3	
F-1		8467			74 J
F-2		8468			180 J
F-3	2139		1.5	1.1	



GRID SIZE 5' X 5'

Location on Figure 4-3

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FIGURE B-11
SITE 3 - UPPER CAMP
Dioxin, Furan and PCB Comparison

CTO 0051
St. Lawrence Island
Alaska

APPENDIX C

CTO #0051 Contaminant Distribution by Sample Number

APPENDIX C

CTO #0051 Contaminant Distribution by Sample Number

Table C-1 (page 1 of 3)
 White Alice Site (Lower Camp), Northeast Cape
 Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	ANALYTE	DETECTED QUANTITY	MATRIX
8401	Aroclor 1260	660 J	s
8402	Aroclor 1260	1,100 J	s
8403	Aroclor 1260	1,700 J	s
8404	Aroclor 1260	490 J	s
	TIC	14 J	s
8405	Aroclor 1260	480 J	s
	TIC	7 J	s
8406	Aroclor 1260	1,000 J	s
8407	Aroclor 1260	980 J	s
	2 TICs	13 J, 6 J	s
8408	Aroclor 1260	790 J	s
	20 TICs	12 to 170 J	s
8409	Aroclor 1260	730 J	s

nd = non detected

J,R = lab validation qualifiers

s = soil matrix, w = wipe, c = chip

Table C-1 (page 2 of 3)
 White Alice Site (Lower Camp), Northeast Cape
 Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	ANALYTE	DETECTED QUANTITY	MATRIX
	TIC	16 J	s
8410	Aroclor 1260	960 J	s
	13 TICs	7 to 28 J	s
8411	Aroclor 1260	340 J	s
8412	Aroclor 1260	1,200 J	s
	20 TICs	6 to 100 J	s
8413	Aroclor 1260	200 J	s
	TIC	10 J	s
8414	Aroclor 1260	1,600 J	s
8415	Aroclor 1260	1,000 J	s
	6 TICs	4 to 17 J	s
8416	Aroclor 1260	920 J	s
8417	Aroclor 1260	190 J	s

nd = non detected

J, R = lab validation qualifiers

s = soil matrix, w = wipe, c = chip

Table C-1 (page 3 of 3)
 White Alice Site (Lower Camp), Northeast Cape
 Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	ANALYTE	DETECTED QUANTITY	MATRIX
	14 TICs	10 to 92 J	s
8418	Aroclor 1260	250 J	s
	TIC	4 J	s
8419	Aroclor 1260	64,000 J	w
8420	Aroclor 1260	2,000 J	w
8421	Aroclor 1260	3,200 J	w
8422	Aroclor 1260	73,000 J	w
8423, 24, 25	Aroclor 1260	470,000 J	c
8426		nd	c
8427	Aroclor 1260	90 J	bkgds
	TIC	7 J	
8428	Aroclor 1260	870 J	dup s

nd = non detected
 J, R = lab validation qualifiers
 s = soil matrix, w = wipe, c = chip

Table C-2 (page 1 of 2)
 Lower Tram Site, Northeast Cape
 Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	ANALYTE	DETECTED QUANTITY	MATRIX
8429	TIC	10 J	s
8430		nd	s
8431		nd	s
8432		nd	s
8433	1,1,1-Trichloroethane	1 J	s
8434		nd	s
8435		nd	s
8436		nd	s
8437	Aroclor 1260	2,100 J	w
8438	Aroclor 1260	1,800 J	w
8439		nd	c
8440	Aroclor 1260	330 J	c
8441		nd	c

nd = non detected

J, R = lab validation qualifiers

s = soil matrix, w = wipe, c = chip

Table C-2 (page 2 of 2)
 Lower Tram Site, Northeast Cape
 Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	ANALYTE	DETECTED QUANTITY	MATRIX
8442	Aroclor 1260	390,000 J	c
8443	Aroclor 1254	180 J	s
8444		R	s
8445	Aroclor 1260	130 J	s
8446		nd	s
8447		nd	bkgd s
8448		R	dup s

nd = non detected

J, R = lab validation qualifiers

s = soil matrix, w = wipe, c = chip

Table C-3 (page 1 of 3)
 Top Camp Site, Northeast Cape
 Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	ANALYTE	DETECTED QUANTITY	MATRIX
8449	Aroclor 1254	1,400 JP	s
8450	Aroclor 1260	190 J	s
8451	Aroclor 1254	410 J	s
8452	Aroclor 1254	150 J	s
8453	Aroclor 1254	220 J	s
8454	Aroclor 1254	790 J	s
8455	Aroclor 1260	88 J	s
	TIC	45 J, 16 J	s
8456	TIC	20 J, 5 J	s
8457	Aroclor 1254	54 J	s
8458	Aroclor 1254	93 J	s
	3 TICs	5 to 33 J	s
8459	Aroclor 1254	230 J	s

nd = non detected

J, R = lab validation qualifiers

s = soil matrix, w = wipe, c = chip

Table C-3 (page 2 of 3)
 Top Camp Site, Northeast Cape
 Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	ANALYTE	DETECTED QUANTITY	MATRIX
8460		nd	s
8461	Aroclor 1260	85 J	s
8462	Aroclor 1254	67 J	s
8463	Aroclor 1254	74 J	s
8464	Aroclor 1254	65 J	s
8465	Aroclor 1254	63 J	s
8466	Aroclor 1260	57 J	s
8467	Aroclor 1254	74 J	s
8468	Aroclor 1254	180 J	s
8469		nd	s
8470		nd	s
8471	TIC	7 J, 7 J	s
8472		nd	w

nd = non detected

J, R = lab validation qualifiers

s = soil matrix, w = wipe, c = chip

Table C-3 (page 3 of 3)
 Top Camp Site, Northeast Cape
 Detected Contaminants by Sample Number

CTO #0051		LOCATION:	ST. LAWRENCE ISLAND, ALASKA
SAMPLE NUMBER	ANALYTE	DETECTED QUANTITY	MATRIX
8473		nd	w
8474		nd	w
8475	Aroclor 1260	2,200 J	w
8476		R	c
8477		nd	c
8478		R	c
8479		R	c
8480		R	c
8481		R	c
8482	Aroclor 1254	140 J	bkgd s
	3 TICs	12 to 20 J	
8483	Aroclor 1260	97 J	dup s

nd = non detected

J, R = lab validation qualifiers

s = soil matrix, w = wipe, c = chip

APPENDIX D

CTO #0051 Laboratory Sample Validation Reports

APPENDIX D

CTO #0051 Laboratory Sample Validation Reports

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CHICAGO
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DOCUMENT NO.: 068NOODS.RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

Case No. 0051 URS TDCN 3001436 Project No. CTO-0051
Site Name St. Lawrence Island, AK Project Name N.E. Cape
Contract Laboratory Eureka Laboratories, Inc.
Sample Delivery Group (SDG) 8401 Sampling Date (Month/Year) 8/91
Sample Matrix 20 low level soils
Type of Analyses Volatile Organics, Pesticide/PCB (see page 2)

Data Reviewer Roger Simon/Alan Alai Date 12/28/91
QA Review by Jeralyn Guthrie Date 12/28/91
CCJM Approval by Richard Cheatham Date 12/28/91
Telephone logs/correspondence attached? Yes No Not Appl. X
Laboratory case narrative attached? Yes X No Not Avail.
Required deliverables provided? Yes No X Not Appl.
Airbill enclosed? Yes X No Not Avail.
CLP SOW used by laboratory for analysis 3/90

Remarks: Report is based on resubmissions (rec'd 12/19/91) and is considered as final.

Note:

- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, the EPA's Functional Guidelines for Organics Analysis and method specific references have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.
- Please see data flagging definitions on the last page of this report.

(Revised 12/91) C.C. JOHNSON & MALHOTRA, P.C.

215 UNION BOULEVARD, SUITE 215 • LAKEWOOD, COLORADO 80228 • (303) 987-2928

<u>Sample Number</u>	<u>Sample Matrix</u>	<u>VOA</u>	<u>Pest/PCB</u>
8401	soil	X	X
8402	soil	X	X
8403	soil	X	X
8404	soil	X	X
8405	soil	X	X
8406	soil	X	X
8407	soil	X	X
8408	soil	X	X
8409	soil	X	X
8410	soil	X	X
8411	soil	X	X
8412	soil	X	X
8413	soil	X	X
8414	soil	X	X
8415	soil	X	X
8469	soil	X	X
8470	soil	X	X
8471	soil	X	X
8482	soil	X	X

(continued next page)

X = Analysis has been provided for validation.

0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.

- = Analysis was not requested per the Chain of Custody or required to meet criteria.

Sample
Number

Sample
Matrix

VOAPest/PCB[illegible]

X = Analysis has been provided for validation.

0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.

- = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. Deliverables

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes _____ No X

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY

- X Included in package
O Not included and/or Not available
NA Not applicable or Not required
RS Provided as resubmission

- X Method blank spikes with each batch
X/O Control chart developed by lab
X Sample results - Form 1 or spreadsheet
X/O CLP data flags used by laboratory
X Sample chromatograms and mass spectra
X/RS Holding times (sampling, prep and analysis dates provided)
X System Monitoring Compound (SMC) and Surrogate recoveries - Form 2
X Matrix spike/matrix spike duplicate (MS/MSD) - Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
X Method blank summary - Form 4
X Report form for method blank results (Form 1 or spreadsheet)
X GC/MS tuning - Form 5
X Initial calibration data and Resolution Summary - Form 6
X Continuing calibration data and Verification Summary - Form 7
X Internal standard area summary and analytical sequence, Form 8
X Pesticide Florisil Cartridge Check and GPC Calibration

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines or SW846 holding time requirements. See the following table for a summarization of sample holding times.

Yes _____ No X

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or U).

Holding Time Summary

<u>Sample Number</u>	<u>Sampling Date</u>	<u>VISR</u>	<u>VOA Analysis</u>	<u>Pesticide</u>	
				<u>Extract</u>	<u>Analysis</u>
8401+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8402+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8403+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8404+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8405+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8406+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8407+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8408+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8409+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8410+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8410MS	8/23/91	8/27	9/04	—	—
8410MSD	8/23/91	8/27	9/04	—	—
8411+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8411MS	8/23/91	8/27	9/04	9/4 (*5)	10/01
8411MSD	8/23/91	8/27	9/04	9/4 (*5)	10/01
8412+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8413***	8/23/91	8/28	9/05	9/4 (*5)	10/01
8414***	8/23/91	8/28	9/05	9/4 (*5)	10/01
8415***	8/23/91	8/28	9/05	9/4 (*5)	10/01
8469	8/23/91	8/27	9/05	9/4 (*5)	10/01
8470	8/23/91	8/27	9/05	9/4 (*5)	10/01
8471	8/23/91	8/27	9/05	9/4 (*5)	10/01
8482+	8/23/91	8/27	9/04	9/4 (*5)	10/01
8483+	8/23/91	8/27	9/04	9/4 (*5)	10/01

+ COC's provided as resubmission

** all analyses with exception of samples 8413, 8469, 8470, 8471, 8482 and 8483 were analyzed at dilution.

*** dates taken from COC's included with package 8416.

III. GC/MS Tuning and Mass Calibration

The BFB and/or DF/TPP performance results summaries were included for all samples, and were reported to be within specified criteria at the appropriate frequency.

Yes X No

Comments: In the original submission, calculation of the mass ratios for masses 177 / 176 for all tunes in the package (7/19, 9/4 and 9/5) were incorrect. Instead of 100%, these values should be 8.0%, 7.9% and 6.9%, respectively. The laboratory has provided the corrected Forms 5A for these dates.

IV. A. Instrument Calibration (Volatiles)

1. The instrument response factor (RRF) data summaries were reviewed for the initial and continuing calibrations. All information was present and reported on the required summary forms. Response factors met the required criteria for volatile analyses, thus no data have been qualified.

Yes No X

Comments: The RRF values outside of data validation guideline specifications are listed below. All volatile compounds have been reviewed with a control limit of 0.050 being used as a minimum response factor. (NOTE: This procedure has been used by the reviewer in order to prevent the qualification of compounds that had acceptable response factors.) The following out-of-control calibration compound(s) have resulted in associated sample data being flagged as estimated (J or W) or in those instances where a response factor of <0.050 was reported the data for the compound has been rejected (R) if reported as undetected in the sample. All samples are affected.

<u>Other Compounds</u>	<u>Control Limit</u>	<u>Init. Cal. Date / RRF</u>	<u>Cont. Cal. Date / RRF</u>
2-butanone	0.050	7-19 /0.049	9-5 /0.049

It is noted by the reviewer that 2-butanone has a minimum RRF of 0.010 according to SOW 3/90. While contractually compliant, a significant calibration problem is demonstrated and all 2-butanone results have been qualified per Functional Guidelines criteria.

2. The percent relative standard deviation (%RSD) for the initial calibrations and the percent difference (%D) for the continuing calibrations were reviewed. The %RSD and %D values reported met the data validation criteria (i.e., < 30 %RSD and < 25 %D) for volatile analyses, thus no data have been qualified.

Yes X No

Comments: No comments.

B. Instrument Calibration (Pesticide/PCB)

1. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes X No

Comments: No comments.

2. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes X No

Comments: No comments.

3. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes No X

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P. Samples 8411MS, 8411MSD and 8417 were not bracketed at the end of the analytical sequence on 10/06/91, DB-1701. No calibration summary data was provided for the required PEM standard.

4. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes ☐ No ☒

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P. All pesticide/PCB data is qualified on the basis of holding times, and no additional qualifiers have been applied.

5. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes ☐ No ☒

Comments: The retention times for tetrachloro-m-xylene (TCX) and decachlorobiphenyl did not meet the specified criteria as stated in the SOW. This deficiency for the continuing calibration standards is considered to be non-compliant with SOW-3/90. No additional qualifiers were applied to the sample data.

6. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses, and the combined breakdown was less than 30%.

Yes ☐ No ☒

Comments: The following breakdown criteria were not met:

<u>Calibration</u>	<u>Column</u>	<u>% Breakdown</u>			<u>Affected Samples</u>
		<u>4,4'-DDT</u>	<u>Endrin</u>	<u>Combined</u>	
Initial, 09/27/91	DB-608	-/-	-/-	30.8	all
Continuing 09/30/91	DB-608	-/-	-/-	32.5/41.0	8469, 8470, 8471, 8482, 8483, 8401IL, 8402IL, 8403IL, 8404IL, 8405IL, 8406IL

<u>Calibration</u>	<u>Column</u>	<u>% Breakdown</u>			<u>Affected Samples</u>
		<u>4,4'-DDT</u>	<u>Endrin</u>	<u>Combined</u>	
Initial 10/02/91	DB-1701	-/-	30.6/32.6	30.6/35.2	all
Continuing	DB-1701	-/-	—/62.8	—/62.8	all

No additional qualifiers have been applied to the sample data on the basis of DDT or endrin breakdown.

7. The florisil cartridge check and when applicable, the GPC calibration were found to be within specified criteria.

Yes X No

Comments: No comments.

8. The retention times for the surrogates were within criteria for every sample.

Yes No X

Comments: An asterisk (*) on the following table indicates that the surrogate retention time was outside the established retention time windows. The reviewer considers this deficiency to be non-compliant with 3/90 SOW specifications. No additional qualifiers have been applied.

Sample No.	TCX 1	TCX 2	DCB 1	DCB 2
8401DL		*		*
8402DL		*		*
8403DL		*		
8404DL		*		
8405DL		*		
8406DL				
8407DL		*		
8408DL		*		
8409DL		*		
8410DL		*		
8411DL				
8411MS		*		
8411MSD		*		
8412DL		*		*
8413				*
8414DL		*		
8415DL		*		*
8469		*	*	*
8470		*	*	*
8471		*	*	*
8482		*	*	*
8483		*	*	*
PBLK1		*	*	*

V. Blanks

- A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes _____ No X

Comments: Contaminant quantities reported in the laboratory preparation blanks are listed below. Associated samples which have been flagged "U" due to the blank contaminants are also shown.

<u>Blank ID</u>	<u>Compound</u>	<u>Amount (μg/kg)</u>	<u>Affected Samples</u>
VBLK1, VBLK2	methylene chloride	7, 8	all
VBLK1	unknown (RT = 21.2)	3	*
VBLK1	unknown (RT = 22.9)	6	*

* Indeterminable since retention times were reported to tenths rather than hundredths.

- B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes _____ No _____ Not Identified _____

Comments: No trip blank was included with this package.

- C. Other Blanks - No other types of blanks have been identified in the data package.

VI. Surrogate and System Monitoring Compound Recovery

The surrogate and system monitoring compound recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes _____ No X

Comments:

1. Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.
2. The reviewer has included the pesticide/PCB method blank on Table 2. The recovery for decachlorobiphenyl (330%) in the method blank (PBLK1) is considered by the reviewer, to be indicative of a serious problem.

VII. Blank Spike - Laboratory Control Sample(s)

- A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes X No _____

Comments:

1. The compounds used for the Pesticide/PCB blank spike were the matrix spike compounds. Laboratory control limits have been applied by the reviewer.
2. The blank spike for volatile analysis was spiked with the matrix spike compounds. Matrix spike control limits have been applied by the reviewer.

- B. Laboratory control charts were provided in the package for the spike compounds.

Yes _____ No X

Comments: Laboratory control charts provided for the volatile LCS were for volatile surrogate compounds, not TCL's.

VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes _____ No X

Comments:

1. Sample 8410 was used for VOA MS/MSD. Sample 8411 was used for Pesticide/PCB MS/MSD.
2. The following spike analytes were reported to be outside limits; however no additional qualifiers were applied:

<u>Analyte</u>	<u>% Recovery</u>	<u>RPD</u>	<u>Control Limits</u>
	<u>MS / MSD</u>		<u>% Rec. / RPD</u>
endrin	147 / 109	29	42-139 / 45
dieldrin	104 / 164	45	31-134 / 38
4,4'-DDT	180 / 164	9	23-134 / 50

IX. Additional Comments

1. It was noted by the reviewer that CRDL's have not been adjusted to SOW 3/90 levels for most VOA compounds.
2. The Form 4 blank summary incorrectly showed samples associated with VBLK1 as being with VBLK2 and vice versa.

3. The internal standard (IS3) for sample 8408 was lower than the required control limits. Since this analytical value is not part of the NEESA validation criteria, no action has been taken by the reviewer.
4. Several contract requirements were not met by the laboratory for the Pesticide/PCB analysis. These deficiencies are noted in the following sections: Section IV.B.4, Section IV.B.6, Section IV.B.7, and Section VI.
5. The laboratory reported the higher of the two values from the two pesticide/PCB analysis columns. This procedure is specifically not allowed as stated in the 3/90 SOW.
6. No "C" flags were used by the laboratory to indicate whether GC/MS confirmational analyses were performed for the pesticide/PCB values that were sufficiently high for GC/MS detection.

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

- U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
- R - Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.
- J - The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.
- B - The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.
- JN - Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

CCJM

ENVIRONMENTAL ENGINEERS & SCIENTISTS

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MEMORANDUM

C.C.J.M.
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TO: Jamie Bruton, URS/Seattle

FROM: Roger Simon, Jeralyn Guthrie, Richard Cheatham,
CCJM/Denver

DATE: December 5, 1991

DOCUMENT NO: 072^{17/176}ANCRAI.MEM

SUBJECT: Volatile Organics Tuning Problems for CTO-051

Per our conversation of 12/5/91, please find herein a detailed description of tuning problems found with all volatile organics analyses performed at Eureka Laboratories for CTO-051. These data packages are considered "on hold" until these issues have been resolved. Data packages have been identified by TDCN numbers and SDG.

1. For all CTO-051 data packages with volatile organics analyses (SDG 8449/TDCN 3001421, SDG 8484/TDCN 301210, SDG 8401/TDCN 3001436 and SDG 8416/TDCN 3001439), the values reported for the percent relative abundance of masses 177/176 were incorrectly reported as 100% on the Form V Tuning Summaries. This appeared to be a computer error since calculation of this ratio by the reviewer resulted in acceptable tunes. The laboratory should provide corrected summary forms.
2. In SDG 8484/TDCN 3001210, the relative abundance for masses 176/174 was reported and found by the reviewer to be 119.4%. Since there is no expanded criteria for this critical ratio, all data will have to be qualified as unusable (R); raw data to verify the values reported on the Form V Tuning Summary were not included with the Level C data package, so it could not be determined whether the reported ratio was a transcription problem with the base mass percentages reported for m/z 174 and 176, software problem or something else. Please indicate if a calculation/transcription problem existed and provide a corrected summary form or the correct values for masses 176 and 174.

If you should have any questions, please do not hesitate to call us at (303) 987-2928.

cc: URS / Navy Clean PF

C.C. JOHNSON & MALHOTRA, P.C.

11/11/91 10:00 AM C.C. JOHNSON & MALHOTRA, P.C. 11/11/91 10:00 AM C.C. JOHNSON & MALHOTRA, P.C. (303) 987-2928

RESUBMISSION 12/19/91

VG
RAC

URS

MEMORANDUM C.C.J.M.

Date 12-18-91

Page 1 of 1

TO: CCJM

215 Union Blvd. Suite 215
Lake wood, CO 80228

ATTENTION:

~~Rolf Reindt~~ GERALYN GUTHRIE

FROM: URS Consultants, Inc.

RECEIVED 1100 Olive Way, Suite 200

Seattle, Washington 98101-1832

BY:

Analytical Support Activities

PHONE:

(206) 623-1800

FAX:

(206) 233-9570

SUBJECT:

Resubmitted FORM I for Volatile Analysis by Eureka Laboratories Inc for CTO-51

Please find the above referenced resubmitted Form I for volatile analysis. They are for four (4) separate SDG numbers and are as follows:

- | | | |
|-----------|-----------|-------------------|
| 1. Eureka | SDG: 8401 | URS TDCN: 3001436 |
| 2. Eureka | SDG: 8416 | URS TDCN: 3001439 |
| 3. Eureka | SDG: 8449 | URS TDCN: 3001421 |
| 4. Eureka | SDG: 8484 | URS TDCN: 3001210 |

C.C.J.M.

DEC 19 1991

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If you have any questions, please feel free to call any time.

DISTRIBUTION:

Lab File

Sincerely Yours,

W. J. Burton, PhD
URS CONSULTANTS

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Company W.D. CONSULTANTS/INTEGRITY		Company CCJM	
Street Address 1100 E. IV. WAY STE 200		Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes) 215 Union Boulevard	
City Seattle		City Lakewood	
State WA		State CO	
ZIP Required 98101		ZIP Required 80228	
YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice) CTG-51 30510.12			
IF HOLD FOR PICK-UP, Print FEDEX Address Here Street Address City State ZIP Required			
PAYMENT 1 ☒ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☐ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☐ Cash Check			
4 SERVICES (Check only one box) Priority Overnight (Delivery by next business morning) 11 ☐ YOUR PACKAGING 16 ☐ FEDEX LETTER 12 ☐ FEDEX PAK 13 ☐ FEDEX BOX 14 ☐ FEDEX TUBE Economy Two-Day (Delivery by second business day) 30 ☐ ECONOMY Government Overnight (Delivery by next business morning) 45 ☐ GOVT LETTER 41 ☒ GOVT PACKAGE Freight Service (See 1-800-238-5355 for more details) 70 ☐ OVERNIGHT FREIGHT 80 ☐ TWO-DAY FREIGHT		5 DELIVERY AND SPECIAL HANDLING (Check services required) 1 ☐ HOLD FOR PICK-UP (if 4 on Box 1) 2 ☒ DELIVER WEEKDAY 3 ☐ DELIVER SATURDAY (if 4 on Box 1) 4 ☐ DANGEROUS GOODS (if 4 on Box 1) 5 ☐ 6 ☐ DRY ICE 7 ☐ OTHER SPECIAL SERVICE 8 ☐ 9 ☐ SATURDAY PICK-UP (if 4 on Box 1) 10 ☐ 11 ☐ 12 ☐ HOLIDAY DELIVERY (if 4 on Box 1)	
PACKAGE 1 WEIGHT in Pounds YOUR DECLARED VALUE		Emp No Date ☐ Cash Received ☐ Return Shipment ☐ Third Party ☐ Cng To Del ☐ Cng To Hold Street Address City State Zip Received By X Date/Time Received FedEx Employee Number Release Signature FedEx Emp No	
Total 1 20 NA Total 1 20 NA DIM SHIPMENT (Chargeable Weight) 1 Regular Stop 3 Drop Box 4 BSC 5 (Station)		Federal Express Use Base Charges Declared Value Charge Other 1 Other 2 Total Charges REVISION DATE 6/91 PART #137,001 FAX# 9/91 FORMAT #099 099 © 1990-91, F.E.C. PRINTED IN U.S.A.	

I. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc.
 Lab Certification Number: E765
 SDG Number: 8401
 Purchase Order Number: AN-91-P-0019
 Contract Task Order Number: 0051
 NEESA QA/QC Level C
 Analysis: Initial
 Sample No.: 20

URS TDM
 3001436

A. Sample Description/Analytical Description

<u>Client ID</u>	<u>Lab ID</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Matrix</u>	<u>Analysis/Method</u>
8401	9108213-11A	08/23/91	08/27/91	Soil	VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW
8402	9108214-12A	08/23/91	08/27/91	Soil	Same as above
8403	9108214-13A	08/23/91	08/27/91	Soil	Same as above
8404	9108214-14A	08/23/91	08/27/91	Soil	Same as above
8405	9108214-15A	08/23/91	08/27/91	Soil	Same as above
8406	9108214-16A	08/23/91	08/27/91	Soil	Same as above
8407	9108214-17A	08/23/91	08/27/91	Soil	Same as above
8408	9108214-18A	08/23/91	08/27/91	Soil	Same as above
8409	9108214-19A	08/23/91	08/27/91	Soil	Same as above
8410	9108214-20A	08/23/91	08/27/91	Soil	Same as above
8411	9108214-21A	08/23/91	08/27/91	Soil	Same as above
8412	9108214-22A	08/23/91	08/27/91	Soil	Same as above
8413	9108219-1A	08/23/91	08/28/91	Soil	Same as above
8414	9108219-2A	08/23/91	08/28/91	Soil	Same as above
8415	9108219-3A	08/23/91	08/28/91	Soil	Same as above
8469	9108213-21A	08/23/91	08/27/91	Soil	Same as above
8470	9108213-22A	08/23/91	08/27/91	Soil	Same as above
8471	9108213-23A	08/23/91	08/27/91	Soil	Same as above
8482	9108214-8A	08/23/91	08/27/91	Soil	Same as above
8483	9108214-9A	08/23/91	08/27/91	Soil	Same as above

B. Sample Receipt

Samples were received in two delivery batches on August 27 and 28, 1991. Samples were in good condition. Sample receipt condition, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bill. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Numbers 91-08-213, 91-08-214, and 91-08-219.

C. Quality Control Report

1. Volatile Analysis by 3/90 CLP SOW

Method Blank

Methylene Chloride, a common laboratory introduced contaminant, was found in the method blank as well as in the sample. The concentration of Methylene Chloride found in the method blanks was 7 and 8 ppb (ug/Kg) as compared to 11-18 ppb (ug/Kg) detected in the samples. Therefore, if the blank is subtracted from the sample, the real concentration of Methylene Chloride in the samples would be below the detection limit.

Internal Standard

The area count of internal standard (Chlorobenzene-d5) is out of the control limit for Sample No. 8408. However, the area counts of other internal standards are within the control limits.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

2. Pesticide/PCB by 3/90 CLP SOW

Higher CRQL for Sample No. 8401, 8402, 8403, 8404, 8405, 8406, 8407, 8408, 8409, 8410, 8411, 8412, 8414, and 8415 is due to high analyte concentration.

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (1) Telecation Software used the Response Factor for the 0.1 ppm standards of the Aroclors analyzed in the initial calibration. (2) ELI manual worksheet used the response factors for 2 ppm standards of the Aroclors which were analyzed after the sample analyses and used for confirmation per 3/90 CLP SOW.

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

- i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.
- ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEM02 (Performance Evaluation Mixture #2), PEM08, and PEM10 from the first column analysis exceeded the limit by 0.8%, 2.5%, and 11% respectively. The % combined breakdown for PEM01, PEM02, and PEM08 from the second column analysis exceeded the limit by 0.6%, 5.2%, and 32.8%.

The % breakdown of Endrin for PEM01, PEM02, PEM04, PEM06, and PEM08 from the 2nd column analysis exceeded the limit by 10.6%, 12.6%, 1.4%, 7.8%, and 42.8%. The % breakdown of 4-4'-DDT for PEM10 from the 1st column analysis exceeded the limit by 1.2%.

Calibration Verification

There is a total of fifteen continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence.

RPD value of gamma-BHC (Lindane) for PEM10 (Performance Evaluation Mixture #10) from the 1st column analysis, beta-BHC for PEM 04 and alpha-BHC for PEM02 from the 2nd column analysis exceeded the control limit by a margin of 1.1%, 1.1%, and 8.9%.

RPD value of Endrin and DDT for PEM08 from the 2nd column analysis exceeded the control limit by 24.7% and 1.1%.

RPD value of Endosulfan II, Endosulfan sulfate, Endrin Ketone and Endrin Aldehyde for INDAM 05 (Individual Standard Mixture A medium level #5) from the 2nd column analysis exceeded the QC limits by a margin of 1%, 3%, 4%, and 1%.

RPD value of Endrin and DCB for INDAM07 and INDAM09 from the 2nd column analysis exceeded the QC limits by 1% & 30%, and 18% & 5% respectively.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

DCB was slightly outside the Surrogate Retention Time (RT) window in seven analyses for the 1st column analysis. TCX and DCB were slightly outside the RT window in thirty six and twenty eight analyses respectively for the 2nd-column analysis.

Surrogate Recovery

The % recoveries of DCB for Sample Nos. 8411 MS/MSD, 8413, 8469, 8471, 8482, 8483, and PBLK1 from the 2nd column analysis were high due to over integration caused by raised baseline. If peak height is used for the calculation, the spike % recoveries would be within the control limit. The DCB recoveries were out of the advisory limit for Sample No. 8401DL, 8402DL, 8403DL, 8404DL, 8405DL, 8406DL, 8407DL, 8408DL, 8409DL, 8410DL, 8411DL, 8412DL, 8414DL, and 8415DL due to high analyte concentrations and dilutions.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 8482, 8407DL, and 8402DL.

Matrix Spike and Matrix Spike Duplicate

The % spike recoveries of Endrin and DDT for Sample No. 8411 MS and the % spike recoveries of Dieldrin and DDT for Sample No. 8411 MSD from the 1st column analysis were not within control limits. However, the % spike recoveries of these analytes for the same sample from the 2nd column analysis were 57% & 70% for 8411 MS, and 92% & 73% for 8411 MSD, respectively, which are within the control limits. The high % recoveries was due to over integration caused by the raised baseline. The % recoveries for 8411 MS/MSD presented on form 3F are the higher of the two values. Therefore, the data is still valid.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

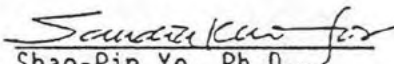

Shao-Pin Yo, Ph.D.
Laboratory Director

TABLE 1 (3/90, OLM01.8)

VOA Qualifier Summary

Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed: 9/4/91

Instrument ID: VOA 2

Method Blank ID: ~~VBLK1~~ VBLK1Date: 9/5/91 Time: 16:35
9/4/91 8:05

Sample Identifier:	Hold Time		Standards: (↑, ↓; ↓↑=<10%)					
	Out		SMCS			Internal (IS)		
	Ar	All	1	2	3	1	2	3
8401								
8402								
8403								
8404								
8404								
8405								
8406								
8407								
8408								↓
8409								

ICal

Date: 7/19

CCal

Time: 9/4

7:30

* RRF must be ≥ .010 *System Monitor Compound COMPOUND:	MIN RRF	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	Internal Standard
		RRF < MIN	NRSD >20.5	RRF < MIN	NRD >25	Method	Trip		
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					7		UT	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethane	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethane(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	* 0.049							R	2
1,1,1-Trichloroethane	.100								
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropane	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropane	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8	oi *								3
Bromofluorobenzene	oi .200								3
1,2-Dichloroethane-d4	oi *								1

Blank Tentatively Identified Compounds

Blank ID	Reported as:	RT	(µg/kg or µg/L)	Qualifiers
VBLK1	unknown	21.2	3 µg/kg	US
VBLK2	unknown	22.9	6 µg/kg	UT

VOA Qualifier Summary

Date Analyzed: 9/4/91

Instrument ID: VOA 2

Method Blank ID: YBLK1
Date: 9/4/94 Time: 8:05

[illegible]

ICal OCal
Date: 7/19 Time: 9/4 7:30

* RRF must be ≥ .010		Initial Cal.		Continuing Cal.		Blanks		Qualifiers	Internal Standard
*System Monitor Compound COMPOUND:	MIN RRF	RRF < MIN	%RSD >20.5	RRF < MIN	%D >25	Method	Trip	(+/-)	
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					#7		UT	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049						R	
1,1,1-Trichloroethane	.100								2
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropene	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8	o *								3
Bromofluorobenzene	o .200								3
1,2-Dichloroethane-d4	o *								1

Blank Tentatively Identified Compounds

Blank ID	Reported as:	RT	($\mu\text{g/kg}$ or $\mu\text{g/L}$)	Qualifiers
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VOA Qualifier Summary

Date Analyzed: 9/4/91

Instrument ID: V017 2

Method Blank ID: VBLK2

Date: 9/5/91 Time: 16:35

[illegible]

ICal CCal
Date: Time:

* RRF must be ≥ .010		Initial Cal.		Continuing Cal.		Blanks		Qualifiers	Internal
*System Monitor Compound	MIN	RRF	%RSD	RRF	%D	Method	Trip	(+/-)	Standard
COMPOUND:	RRF	< MIN	>20.5	< MIN	>25				
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					g		UJ	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049		0.049				R	
1,1,1-Trichloroethane	.100								2
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropene	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8	o *								3
Bromofluorobenzene	o .200								3
1,2-Dichloroethane-d4	o *								1

Blank ID	Reported as:	RT	($\mu\text{g/kg}$ or $\mu\text{g/L}$)	Qualifiers
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VALK1	unknown	21.2	3 ug/kg	US
VALK1	unknown	22.9	6 ug/kg	US

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/01/91

Instrument ID: HP 5890

Method Blank ID(s):

PE CLK 05

PCB CLK 05

Extract Date(s): 09/24/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
8464						X					
8470						X					
8471			↓			X					
8482			↓			X					
8483						X					
8401 DL						X					
8402 DL			↓ 0%	↑		X					
8403 DL				↑		X					
8405 DL				↑		X					
8406 DL				↑		X					
8407 DL				↑		X					

±20% Resolved _____ ±50% Resolved _____ ±60% Resolved _____
in Initial Resolution Check

DB-608 or Equivalent		Calibrations:								Blank Conc.		Qualifiers (+/-)		
		Initial 2RSD>20	Continuing: RPD > 25% *											
			PEM	INDs	PEM	INDs	PEM	INDs	PEM					
Cont. Cal. Date, Month+		Day+	1	2	3	4	5	6	7					
COMPOUND		Time	2105	1912	10205									
alpha-BHC														
beta-BHC														
delta-BHC														
gamma-BHC (Lindane)					26.1							J-C/-		
Heptachlor														
Aldrin														
Heptachlor epoxide														
Endosulfan I		+												
Dieldrin		§												
4,4'-DDE		§												
Endrin														
Endosulfan II														
4,4'-DDD														
Endosulfan sulfate														
4,4'-DDT														
Methoxychlor		•												
Endrin Ketone		•												
Endrin Aldehyde														
alpha-Chlordane														
gamma-Chlordane		+												
Toxaphene														
Aroclor-1016														
Aroclor-1221														
Aroclor-1232														
Aroclor-1242														
Aroclor-1248														
Aroclor-1254														
Aroclor-1260														
Surrogates - 2RSD > 30%			Surrogate RPDs must also be ≤ 25%											
Tetrachloro-m-Xylene(TCX)														
Decachlorobiphenyl (DCB)			Cr								GT			

* Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column
RPD < 25%
RPD < 25%

and
or

Confirmation Column
RPD < 25%
RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/01/91

Instrument ID: HP 5890C

Method Blank ID(s): FTBLK09

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
84070L				†			X				
84080L				†			X				
84090L							X				
84100L				†			X				
84110L				†			X				
84120L			†	†			X				
8413							X				
84140L				†			X				
84150L			↓(0)	†			X				
8411 ms			↓	†			X				

±60% Resolved ±60% Resolved ±60% Resolved
in Initial Resolution Check

DB-608 or Equivalent	9/27/91	Calibrations:								Blank Conc.	Qualifiers
		Initial %RSD>20	Continuing: RPD > 25% *								
			PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7		
Cont. Cal. Date, Month*	Day*	9/5/91	9/11/91	10/1/91							
COMPOUND	Time*	2104	2104	2104							(+/-)
alpha-BHC											
beta-BHC											
delta-BHC											
gamma-BHC (Lindane)				26.1							J-C / -
Heptachlor											
Aldrin											
Heptachlor epoxide											
Endosulfan I	+										
Dieldrin	§										
4,4'-DDE	§										
Endrin											
Endosulfan II											
4,4'-DDD											
Endosulfan sulfate											
4,4'-DDT											
Methoxychlor	•										
Endrin Ketone	•										
Endrin Aldehyde											
alpha-Chlordane											
gamma-Chlordane	+										
Toxaphene											
Anaclo-1016											
Anaclo-1221											
Anaclo-1232											
Anaclo-1242											
Anaclo-1248											
Anaclo-1254											
Anaclo-1260											
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%									
Tetrachloro-m-Xylene (TCX)											
Decachlorobiphenyl (DCB)											

* Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column
RPD < 25%
RPD < 25%

and
or

Confirmation Column
RPD < 25%
RPD < 25%

Calibrations, Method Blank, Holding Time, Surrogate Recovery

10/01/91

HFSTFC

ρ₁ ρ₂ ρ₃

07/04/91

[illegible]

		Calibrations:								
DB-608 or Equivalent ✓		Initial %RSD > 20	Continuing: RPD > 25% *						Blank Conc.	Qualifiers (+/-)
		PEM	INDs	PEM	INDs	PEM	INDs	PEM		
Cont. Cal. Date, Month*	Day*	9/30/91	10/1/91	10/1/91	10/1/91					
COMPOUND	Time*	710.5	698.2	710.3						
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)				26.1						J-C/-
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I †										
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor ○										
Endrin Ketone ○										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane †										
Toxaphene										
Anacloar-1016										
Anacloar-1221										
Anacloar-1232										
Anacloar-1242										
Anacloar-1248										
Anacloar-1254										
Anacloar-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TOX)										
Decachlorobiphenyl (DOB)		K.T								K.T

Compound Detected
Compound Undetected

RPD% < 25%

9/15

RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/06/91

Instrument ID: VAX 6000

Method Blank ID(s): PI 6007

PBCK 1
PI 6000

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
8469				↑			X				
8470							X				
8482			↓				X				
8483				↑			X				
8484 DL				↑			X				
8483 DL			↓	↑				X			
8403 DL				↑				X			
8404 DL				↑				X			
8405 DL				↑				X			
8405 DL 4th								X			

±20% Resolved ☒ ±20% Resolved ☒
in Initial Resolution Check

DB-1701 or Equivalent <u>DB-17</u>	10/02/91		Calibrations:								
	Initial 2RSD > 20	Continuing: RPD > 25% *							Blank Conc.	Qualifiers (+/-)	
		PEM	INDs	PEM	INDs	PEM	INDs	PEM			
Cont. Cal. Date, Month+ : 10	Day+ Time+	1	2	3	4	5	6	7			
COMPOUND 1		—	25	06	24						
alpha-BHC		—	1725	0613	1711						
beta-BHC											
delta-BHC											
gamma-BHC (Lindane)											
Heptachlor											
Aldrin											
Heptachlor epoxide											
Endosulfan I											
Dieldrin											
4,4'-DDE											
Endrin			21.8	59.2	53.0					T-C / -	
Endosulfan II											
4,4'-DDD											
Endosulfan sulfate											
4,4'-DDT				26.1						T-C / -	
Methoxychlor											
Endrin Ketone											
Endrin Aldehyde											
alpha-Chlordane											
gamma-Chlordane											
Toxaphene											
Anaclo-1016											
Anaclo-1221											
Anaclo-1232											
Anaclo-1242											
Anaclo-1248											
Anaclo-1254											
Anaclo-1260											
Surrogates - 2RSD > 30%											
Tetrachloro- <i>m</i> -xylene (TCX)		—	CT	CT	CT				CT		
Decachlorobiphenyl (DCB)		—	CT	CT	CT				CT		

* Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column

RPD < 25%

RPD < 25%

and

or

Confirmation Column

RPD < 25%

RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/06/91

Instrument ID: VAE 6000

Method Blank ID(s): FIGURE
P6661

Extract Date(s): 04/04/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
84060L				↑			X	X			
84060L				↑			X	X			
84070L				↑			X	X			
84080L			↑	↑			X	X			
84090L			↓	↑			X	X			
84100L				↑			X	X			
84110L				↑			X	X			
84120L				↑			X	X			
8413				↑			X	X			
84140L				↑			X	X			

±50% Resolved ☒ ±50% Resolved ☒
in Initial Resolution Check

? = high rec; not off field range (±1000%)
After

DB-1701 or Equivalent	10/06/91									
	Calibrations:									
	Initial XPSD > 20	Continuing: RPD > 25% *								
	PEM	INDs	PEM	INDs	PEM	INDs	PEM	Blank Conc.	Qualifiers	
Cont. Cal. Date, Month+ Day+ Time+ COMPOUND:	1	2	3	4	5	6	7		(+/-)	
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I										
Dieldrin										
4,4'-DDE										
Endrin			20.0	54.2	53.0				J-C 1-	
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT			26.1						J-C 1-	
Methoxychlor										
Endrin Ketone										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - XPSD > 30%	Surrogate RPDs must also be ≤ 25%									
Tetrachloro-m-xylene (TCX)	-	LT	LT	LT				LT		
Decachlorobiphenyl (DCB)	-	LT	LT	LT				LT		

* Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column
RPD < 25%
RPD < 25%

and
or

Confirmation Column
RPD < 25%
RPD < 25%

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Extract Date(s): 6/4/01/01

[illegible]

12/04/91

AKA

DB-1701 or Equivalent <u>06-17</u>		9/27/17 Calibrations:									
Initial XPSD > 20		Continuing: RPD > 25% *									
1		PEM	INDs	PEM	INDs	PEM	INDs	PEM			
1		1	2	3	4	5	6	7	Blank Conc.	Qualifiers	
Cont. Cal. Date, Month- COMPOUND1	Day- Time-	—	25	06	06					(+/-)	
alpha-BHC											
beta-BHC											
delta-BHC											
gamma-BHC (Lindane)											
Heptachlor											
Aldrin											
Heptachlor epoxide											
Endosulfan I *											
Dieldrin											
4,4'-DDE											
Endrin			26.0	53.7	53.0					7-01-	
Endosulfan II											
4,4'-DDD											
Endosulfan sulfate *											
4,4'-DDT				26.1						7-01-	
Methoxychlor *											
Endrin Ketone											
Endrin Aldehyde											
alpha-Chlordane											
gamma-Chlordane *											
Toxaphene											
Aroclor-1016											
Aroclor-1221											
Aroclor-1232											
Aroclor-1242											
Aroclor-1248											
Aroclor-1254											
Aroclor-1260											
Surrogates - XPSD > 30%		Surrogate RPDs must also be ≤ 25%									
Tetrachloro-p-Xylene (TCX)		ET	ET	ET					ET		
Decachlorobiphenyl (DCB)		ET	ET	ET					ET		

Confirmation Column
RPD < 25%
RPD < 25%

TABLE 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 1 of 3

VOA FRACTION

All OK

A. Sample Numbers	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3
B. Surrogate(s) outside QC limits (show %R)																		
C. Compound less than 10%? (Y/N)																		
D. Initial Analysis Qualifiers																		
E. Reanalysis required? (Y/N)																		
o If blank, were associated samples reanalyzed? (Y/N)																		
F. Sample Number for reanalysis.																		
G. Reanalysis surrogates outside limits (show % R)																		
H. Reanalysis qualifiers.																		

QC Limits (%R)

SOIL

WATER

VOA S1 = Toluene-d8
 VOA S2 = Bromofluorobenzene
 VOA S3 = 1,2-Dichloroethane-d4
 A:\SURROG-1.WK3

84-138 88-110
 59-113 86-115
 70-121 76-114

NOTE: The circled sample number is the analysis/reanalysis recommended for use.

ACID FRACTION

File Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Sample(s) outside limits (show XR)																				
Found less than 10%? (Y/N)																				
Analysis required? (Y/N)																				
Blank, were associated plus reanalyzed? (Y/N)																				
Net Analysis Quantifiers																				
File Number for reanalysis.																				
Analysis supersedes outside limits (show X R)																				
Extraction required? (Y/N)																				
Blank, were associated plus re-extracted? (Y/N)																				
File number for re-extract.																				
Extraction outside limits (show X R)																				
Analysis qualifiers.																				

QC Limits (XR)	SOIL	WATER
1 = Phenol-d6	24-113	10-110
2 = 2-Fluorophenol	10-121	10-110
3 = 2,4,6-Tribromophenol	10-121	10-110
4 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

File Numbers	8401 DL	8402 DL	8403 DL	8404 DL	8405 DL	8406 DL
Limits exceeded (show XR)	S1 - / - S2 - / 663	S1 0 / 45.0 S2 503 / 217	S1 - / - S2 200.6 / 151.4	S1 1 S2 422.4 / 180.1	S1 59.0 S2 241.3 / 584	S1 1 S2 655 / 729
Lifter, if applied.	J-C/-	(J/R) J-C/-	J-C/-	J-C/-	J-C/-	J-C/-

File (XR)	SOIL	WATER
1 de S1 = Tetrachloro-m-xylene (TCX)	80-150 (advisory)	80-150 (advisory)
1 de S2 = Decachlorobiphenyl (DCB)		

LL\SURROG-2.WK3

? = Very high recovery; out of field range (+1000%)

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside QC limits (show %R)																				
Compound less than 10%? (Y/N)																				
Reanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analysis Qualifiers																				
Sample Number for reanalysis.																				
Reanalysis surrogates outside limits (show % R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract.																				
Re-extraction outside limits (show % R)																				
Reanalysis qualifiers.																				

QC Limits (%R)	SOIL	WATER
S4 = Phenol-d6	24-113	10-110
S5 = 2,4-Dichlorophenol	10-113	10-110
S6 = 2,4,6-Tribromophenol	10-113	10-110
S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8407 DL		8408 DL		8409 DL		8410 DL		8411 DL		8411 MS	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC Limits exceeded (show %R)	-	116/568	227/156	-/421	38.9/38.0	-/729	-	426/240	-	168/323	47/58	32/-
Qualifier, if applied.		J-C/-	J-C/-	J-C/-	J-C/-	J-C/-		J-C/-		J-C/-	J-C/-	J-C/-

Limits (%R)	SOIL	WATER
Pesticide S1 = Tetrachloro-m-xylene (TCX)	88-138 (advisory)	88-138 (advisory)
Pesticide S2 = Decachlorobiphenyl (DCB)		

\\SHELL\SURROG-2.WK3

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside QC limits (show %R)																				
Compound less than 10%? (Y/N)																				
Reanalysis required? (Y/N)																				
If blank were associated samples reanalyzed? (Y/N)																				
Initial Analysis Qualifiers																				
Sample Number for reanalysis.																				
Reanalysis surrogates outside limits (show % R)																				
Re-extraction required? (Y/N)																				
If blank were associated samples re-extracted? (Y/N)																				
Sample number for re-extract.																				
Re-extraction outside limits (show % R)																				
Reanalysis qualifiers.																				

QC Limits (%R)	SOIL	WATER
S4 = Phenol-d6	26-113	10-110
S5 = 2-Fluorophenol	26-113	10-110
S6 = 5,6-Dibromophenol	10-122	10-123
S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8411 m.c.D		8412 DL		8413		8414 DL		8415 DL		8469	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	230 55	39 168	152 -	235 2	- -	31 199	- -	224 ?	0 23	240 472	- -	56 237
Qualifier, if applied.	J-C/-	J-C/-	J-C/-	J-C/-		J-C/-		J-C/-	(R)	J-C/-		J-C/-

Limits (%R)	SOIL	WATER
sticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
sticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

\\SHELL\\SURROG-2.WK3

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside limits (show %R)																				
Compound less than 10%? (Y/N)																				
Reanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analysts Qualifiers																				
Sample Number for reanalysis																				
Reanalysis surrogates outside limits (show % R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract																				
Re-extraction outside limits (show % R)																				
Reanalysis qualifiers.																				

QC Limits (%R)

S4 = Phenol-d6
S5 = 2-fluorophenol
S6 = 2,4,6-Tribromophenol
S7 = 2-chlorophenol-d4

SOIL

24-113
18-150
20-150 (advisory)

WATER

10-110
21-120
33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	E470		8471		8482		8483		PBLL1		S1	S2
QC limits exceeded (show %R)	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2		
Qualifier, if applied.	-	-	57	-	36	182	-	182	-	330		
			J-C/-		J-C/-		J-C/-		J-C/-			

Limits (%R)

Pesticide S1 = Tetrachloro-p-m-xylene (TCX)
Pesticide S2 = Decachlorobiphenyl (DCB)

SOIL

80-150 (advisory)

WATER

80-150 (advisory)

HELL\SURROG-2.WK3

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ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL CCase No. 0051 URS TDCN 3001439 Project No. CTO-0051Site Name St. Lawrence Island, AK Project Name N.E. CapeContract Laboratory Eureka Laboratories, Inc.Sample Delivery Group (SDG) 8416 Sampling Date (Month/Year) 8/91Sample Matrix 19 low level soilsType of Analyses Volatile Organics, Pesticide/PCB (see page 2)Data Reviewer ^{Ch Sur} Roger Simon/Alan Alai Date 12/28/91QA Review by ^{Ch} Jeralyn Guthrie Date 12/28/91CCJM Approval by ^{Ch Sur} Richard Cheatham Date 12/28/91Telephone logs/correspondence attached? Yes X No Not Appl. Laboratory case narrative attached? Yes X No Not Avail. Required deliverables provided? Yes No X Not Appl. Airbill enclosed? Yes X No Not Avail. CLP SOW used by laboratory for analysis 3/90Remarks: Report is based on resubmissions (rec'd 12/19/91) and is considered to be final.

Note:

- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, the EPA's Functional Guidelines for Organics Analyses and method specific references have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.
- Please see data flagging definitions on the last page of this report.

(Revised 12/91) C.C. JOHNSON & MALHOTRA, P.C.

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<u>Sample Number</u>	<u>Sample Matrix</u>	<u>VOA</u>	<u>Pest/PCB</u>
8416	soil	X	X
8417	soil	X	X
8418	soil	X	X
8427	soil	X	X
8428	soil	X	X
8429	soil	X	X
8430	soil	X	X
8431	soil	X	X
8432	soil	X	X
8433	soil	X	X
8434	soil	X	X
8435	soil	X	X
8436	soil	X	X
8443	soil	—	X
8444	soil	—	X
8445	soil	—	X
8446	soil	—	X
8447	soil	X	X
8448	soil	X	X

(continued next page)

X = Analysis has been provided for validation.

0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.

- = Analysis was not requested per the Chain of Custody or required to meet criteria.

<u>Sample Number</u>	<u>Sample Matrix</u>	<u>VOA</u>	<u>Pest/PCB</u>
--------------------------	--------------------------	------------	-----------------

- X = Analysis has been provided for validation.
- 0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. Deliverables

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes _____ No X

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY

- X Included in package
- O Not included and/or Not available
- NA Not applicable or Not required
- RS Provided as resubmission

- X Method blank spikes with each batch
- X/O Control chart developed by lab
- X/O Sample results - Form 1 or spreadsheet
- X/O CLP data flags used by laboratory
- X Sample chromatograms and mass spectra
- X Holding times (sampling, prep and analysis dates provided)
- X System monitoring Compounds (SMC) and Surrogate recoveries - Form 2
- X Matrix spike/matrix spike duplicate (MS/MSD) - Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
- X Method blank summary - Form 4
- X Report form for method blank results (Form 1 or spreadsheet)
- X GC/MS tuning - Form 5
- X Initial calibration data and Resolution Summary - Form 6
- X Continuing calibration data and Verification Summary - Form 7
- X Internal standard area summary and Analytical Sequence - Form 8
- X Pesticide Florisil Cartridge Check and GPC Calibration - Form 9

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines or SW846 holding time requirements. See the following table for a summarization of sample holding times.

Yes _____ No X

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or U).

Holding Time Summary

<u>Sample Number</u>	<u>Sampling Date</u>	<u>VISR</u>	<u>VOA Analysis</u>	<u>Pesticide</u>	
				<u>Extract</u>	<u>Analysis</u>
8416	8/23/91	8/28	9/7 (*1)	—	—
8417	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8418	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8427	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8428	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8429	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8429 MS			X	—	—
8429 MSD			X	—	—
8430	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8431	8/23/91	8/28	9/7 (*1)	9/4 (*5)	9/30
8432	8/23/91	8/28	9/7 (*1)	9/4 (*5)	10/2
8433	8/23/91	8/28	9/7 (*1)	9/4 (*5)	10/2
8433 MS			—	X	X
8433 MSD			—	X	X
8434	8/23/91	8/28	9/7 (*1)	9/4 (*5)	10/2
8435	8/23/91	8/26	9/7 (*1)	9/4 (*5)	10/2
8436	8/23/91	8/26	9/7 (*1)	9/4 (*5)	10/2
8443	8/23/91	8/28	—	9/4 (*5)	10/2
8444	8/23/91	8/28	—	9/4 (*5)	10/2
8445	8/23/91	8/28	—	9/4 (*5)	10/2
8446	8/23/91	8/28	—	9/4 (*5)	10/2
8447	8/23/91	8/28	9/7 (*1)	9/4 (*5)	10/2
8448	8/23/91	8/28	—	—	—
8416 DL	8/23/91	8/28	—	9/4 (*5)	9/30
8448 DL	8/23/91	8/28	—	9/4 (*5)	10/2

X - indicates MS/MSD analysis was performed

III. GC/MS Tuning and Mass Calibration

The BFB and/or DFTPP performance results summaries were included for all samples, and were reported to be within specified criteria at the appropriate frequency.

Yes X No

Comments: In the original submission the ratios for masses 177/176 were calculated incorrectly for both the initial tune on 7/19/91 and the continuing tune on 9/7/91. Instead of 100% as reported by the laboratory they should be 8.0% and 6.8% respectively. The laboratory has provided corrected Forms 5A as resubmissions.

IV. A. Instrument Calibration (Volatiles)

- The instrument response factor (RRF) data summaries were reviewed for the initial and continuing calibrations. All information was present and reported on the required summary forms. Response factors met the required criteria for volatile analyses, thus no data have been qualified.

Yes No X

Comments: The RRF values outside of data validation guideline specifications are listed below. All volatile compounds have been reviewed with a control limit of 0.050 being used as a minimum response factor. (NOTE: This procedure has been used by the reviewer in order to prevent the qualification of compounds that had acceptable response factors.) The following out-of-control calibration compound(s) have resulted in associated sample data being flagged as estimated (J or U) or in those instances where a response factor of <0.050 was reported the data for the compound has been rejected (R) if reported as undetected in the sample. All samples have been affected.

<u>Other compounds</u>	<u>Control Limit</u>	<u>Init. Cal. Date / RRF</u>	<u>Cont. Cal. Date / RRF</u>
2-butanone	0.050	7-19/0.049	9-7/0.046

It is noted by the reviewer that 2-butanone has a minimum RRF of 0.010 according to the SOW 3/90. While contractually compliant, a significant calibration problem is demonstrated and all 2-butanone results have been qualified per Functional Guidelines criteria.

2. The percent relative standard deviation (%RSD) for the initial calibrations and the percent difference (%D) for the continuing calibrations were reviewed. The %RSD and %D values reported met the data validation criteria (i.e., < 30 %RSD and < 25 %D) for volatile analyses, thus no data have been qualified.

Yes ☒ No ☐

Comments: No comments.

B. Instrument Calibration (Pesticide/PCB)

1. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes ☐ No ☒

Comments: The compliant and non-compliant %RSD values found to be above 20% are summarized on the attached Table 1-P. A data validation specification of 20% RSD for any compound identified, has been applied for the column used in quantifying the sample result(s).

2. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes ☒ No ☐

Comments: No comments.

3. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes ☐ No ☒

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

4. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes _____ No X

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

5. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes _____ No X

Comments: The retention times for a majority of compounds analyzed on the DB-17 column did not meet the specified criteria as stated in the SOW. In addition, all surrogate retention times for calibration verification standards must be within retention time windows established in the initial calibration. In many instances, this criteria was not met. The reviewer considers this deficiency to be non-compliant with SOW 3/90. All data is qualified due to holding times and no additional qualifiers have been added to the sample data on the basis of retention time problems.

6. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses.

Yes _____ No X

Comments: The following breakdown criteria was not met:

Calibration	Column	% Breakdown			Affected Samples
		DDT	Endrin	Combined	
Initial, 09/27/91	DB-608	—	—	30.8	All
Initial, 10/3/91	DB-17	—	30.6	30.6	All
Verification, 09/30/91	DB-608	—	—	32.5	8428DL, 8429, 8430, 8431, 8416DL

<u>Calibration</u>	<u>Column</u>	<u>% Breakdown</u>			<u>Affected Samples</u>
		<u>DDT</u>	<u>Endrin</u>	<u>Combined</u>	
Verification, DB-608 10/01/91		—	23.4	40.9	8432, 8433
Verification DB-17 10/05/91		—	77.8	—	All

No additional qualifiers have been assigned to the data.

8. The florisil cartridge check and when applicable, the GPC calibration were found to be within specified criteria.

Yes X No

Comments: No comments.

9. The retention times for the surrogates were within criteria for every sample.

Yes No X

Comments: An asterisk (*) on the following table indicates that the surrogate retention time was outside the established retention time windows. The reviewer has considered these sample analyses as non-compliant; however, no further qualifiers have been applied.

Sample No.	TCX 1	TCX 2	DCB 1	DCB 2
8416DL		*	*	*
8417		*		*
8418		*		*
8427		*		*
-8428DL		*		*
8429		*	*	*
8430		*	*	*
8431		*	*	*
8432		*		*
8433		*		*
8433MS		*		*
8433MSD		*		*
8434		*		*
8435		*		*
8436		*		*
8443		*		*
8444DL	*	*	*	*
8445		*		*
8446		*		*
8447		*		*
8448DL		*		*
PBLKI		*		*

V. Blanks

- A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes _____ No X

Comments: Contaminant quantities reported in the laboratory preparation blanks are listed below. Associated samples which have been flagged "U" due to the blank contaminants are also shown.

<u>Blank ID</u>	<u>Compound</u>	<u>Amount</u>	<u>Affected Samples</u>
VBK1	methylene chloride	6 J $\mu\text{g/kg}$	all
VBK1	unknown - RT=22.8 min	4 $\mu\text{g/kg}$	none

- B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes _____ No _____ Not Identified _____

Comments: No trip blanks were included in this data package.

- C. Other Blanks - No other types of blanks have been identified in the data package.

VI. Surrogate Recovery

The surrogate recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes _____ No X

Comments: Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.

VII. Blank Spike - Laboratory Control Sample(s)

- A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes ☒ No ☐

Comments: The blank spikes for for both volatile and pesticide/PCB analyses were spiked with the matrix spike compounds. Matrix spike control limits were applied by the reviewer for the volatile analysis.

- B. Laboratory control charts were provided in the package for blank spike compounds.

Yes ☐ No ☒

Comments: Control charts provided by the laboratory for the VOA analysis were for surrogates not LCS/blank spike results.

VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes ☒ No ☐

Comments: Sample 8429 was used for MS/MSD for volatile organics analysis. Sample 8433 was used for Pesticide/PCB MS/MSD.

IX. Additional Comments

1. It was noted by the reviewer that CRQL's have not been adjusted to SOW 3/90 levels for most VOA compounds.
2. No volatile organics analysis results were found for Sample 8448. Although it is indicated as requiring this analysis on the Chain of Custody and the Case Narrative.
3. Several contract requirements were not met by the laboratory for the Pesticide/PCB analysis. These deficiencies are noted in the following sections: Section IV.B.4, Section IV.B.6, Section IV.B.7 and Section IV.B.9.
4. The laboratory reported the higher of the two values from the two columns for the Pesticide/PCB analyses. This procedure is specifically not allowed as stated in the 3/90 SOW.
5. GC/MS confirmation was not indicated by the laboratory for the following samples 8416DL, 8417, 8418, 8427, 8428DL, 8443 and 8445. The laboratory did not flag positive hits in these samples with a "C".

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

- U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
- R - Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.
- J - The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.
- B - The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.
- JN - Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

CCJM

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MEMORANDUM

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FILE
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TO: Jamie Bruton, URS/Seattle

FROM: Roger Simon, Jeralyn Guthrie, Richard Cheatham, CCJM/Denver

DATE: December 5, 1991

DOCUMENT NO: 0721NCRAI.MEM

SUBJECT: Volatile Organics Tuning Problems for CTO-051

Per our conversation of 12/5/91, please find herein a detailed description of tuning problems found with all volatile organics analyses performed at Eureka Laboratories for CTO-051. These data packages are considered "on hold" until these issues have been resolved. Data packages have been identified by TDCN numbers and SDG.

1. For all CTO-051 data packages with volatile organics analyses (SDG 8449/TDCN 3001421, SDG 8484/TDCN 301210, SDG 8401/TDCN 3001436 and SDG 8416/TDCN 3001439), the values reported for the percent relative abundance of masses 177/176 were incorrectly reported as 100% on the Form V Tuning Summaries. This appeared to be a computer error since calculation of this ratio by the reviewer resulted in acceptable tunes. The laboratory should provide corrected summary forms.
2. In SDG 8484/TDCN 3001210, the relative abundance for masses 176/174 was reported and found by the reviewer to be 119.4%. Since there is no expanded criteria for this critical ratio, all data will have to be qualified as unusable (R); raw data to verify the values reported on the Form V Tuning Summary were not included with the Level C data package, so it could not be determined whether the reported ratio was a transcription problem with the base mass percentages reported for m/z 174 and 176, software problem or something else. Please indicate if a calculation/transcription problem existed and provide a corrected summary form or the correct values for masses 176 and 174.

If you should have any questions, please do not hesitate to call us at (303) 987-2928.

cc: URS / Navy Clean PP

C.C. JOHNSON & MALHOTRA, P.C.

215 UNION BOULEVARD, SUITE 215 • LAKEWOOD, COLORADO 80228 • (303) 987-2928

RESUBMISSION 12/14/91

VG
RAC

URS	MEMORANDUM C.C.J.M.	Date 12-18-91	Page 1 of 1
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TO: CCJM	FROM: URS Consultants, Inc.
215 Union Blvd. Suite 415	RECEIVED 1100 Olive Way, Suite 200
Lake wood, CO 80228	Seattle, Washington 98101-1832
ATTENTION: Rolf Reindt GERALYN GUTHRIE	BY: Analytical Support Activities
	PHONE: (206) 623-1800 FAX: (206) 233-9570

SUBJECT: Resubmitted FORM I for Volatile Analysis by Eureka Laboratories Inc for CTO-51

Please find the above referenced resubmitted Form I for volatile analysis. They are for four (4) separate SDG numbers and are as follows:

1. Eureka	SDG: 8401	URS TDCN: 3001436	C.C.J.M.
2. Eureka	SDG: 8416	URS TDCN: 3001439	DEC 19 1991
3. Eureka	SDG: 8449	URS TDCN: 3001421	
4. Eureka	SDG: 8484	URS TDCN: 3001210	RECEIVED

If you have any questions, please feel free to call any time.

DISTRIBUTION: Lab File	Sincerely Yours, W. J. Buntin, PhD URS CONSULTANTS
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I. SDG NARRATIVE

URS TDM

3001439

Laboratory Name: Eureka Laboratories, Inc.
 Lab Certification Number: E765
 SDG Number: 8416
 Purchase Order Number: AN-91-P-0019
 Contract Task Order Number: 0051
 NEESA QA/QC Level C
 Analysis: Initial
 Sample No.: 19

A. Sample Description/Analytical Description

<u>Client ID</u>	<u>Lab ID</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Matrix</u>	<u>Analysis/Method</u>
8416	9108219-4A	08/23/91	08/28/91	Soil	VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW
8417	9108219-5A	08/23/91	08/28/91	Soil	Same as above
8418	9108219-6A	08/23/91	08/28/91	Soil	Same as above
8427	9108219-15A	08/23/91	08/28/91	Soil	Same as above
8428	9108219-16A	08/23/91	08/28/91	Soil	Same as above
8429	9108219-18A	08/23/91	08/28/91	Soil	Same as above
8430	9108219-19A	08/23/91	08/28/91	Soil	Same as above
8431	9108219-20A	08/23/91	08/28/91	Soil	Same as above
8432	9108219-22A	08/23/91	08/28/91	Soil	Same as above
8433	9108219-23A	08/23/91	08/28/91	Soil	Same as above
8434	9108219-24A	08/23/91	08/28/91	Soil	Same as above
8435	9108219-25A	08/23/91	08/28/91	Soil	Same as above
8436	9108219-26A	08/23/91	08/28/91	Soil	Same as above
8443	9108219-33A	08/23/91	08/28/91	Soil	P/PCBs/3-90 CLP SOW
8444	9108219-34A	08/23/91	08/28/91	Soil	P/PCBs/3-90 CLP SOW
8445	9108219-35A	08/23/91	08/28/91	Soil	P/PCBs/3-90 CLP SOW
8446	9108219-36A	08/23/91	08/28/91	Soil	P/PCBs/3-90 CLP SOW
8447	9108219-37A	08/23/91	08/28/91	Soil	VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW
8448	9108219-38A	08/23/91	08/28/91	Soil	VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW

B. Sample Receipt

Samples were received in one delivery batch on August 28, 1991. Samples were in good condition. Sample receipt condition, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bill. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Number 91-08-219.

C. Quality Control Report

Volatile Analysis by 3/90 CLP SOW

Method Blank

Methylene Chloride, a common laboratory introduced contaminant, was found in the method blank as well as in the sample. The concentration of Methylene Chloride found in the method blank was 6 ppb (ug/Kg) as compared to 7-8 ppb (ug/Kg) detected in the samples. Therefore, if the blank is subtracted from the sample, the real concentration of Methylene Chloride in the samples would be below the detection limit.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

2. Pesticide/PCB by 3/90 CLP SOW

Higher CRQL for Sample No. 8416, 8428, 8444, and 8448 is due to high analyte concentration.

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (1) Telecation Software used the Response Factor for the 0.1 ppm standards of the Aroclors analyzed in the initial calibration. (2) ELI manual worksheet used the response factors for 2 ppm standards of the Aroclors which were analyzed after the sample analyses and used for confirmation per 3/90 CLP SOW.

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

- i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.
- ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEM02 (Performance Evaluation Mixture #2), PEM08, PEM10, and PEM12 from the first column analysis exceeded the limit by 0.8%, 2.5%, 11%, and 10.9% respectively. The % combined breakdown for PEM01 and PEM02 from the second column analysis exceeded the limit by 0.6% and 5.2%.

The % breakdown of Endrin for PEM01, PEM02, PEM04, PEM06, and PEM12 from the 2nd column analysis exceeded the limit by 10.6%, 12.6%, 1.4%, 7.8%, and 3.4%. The % breakdown of 4-4'-DDT for PEM10 from the 1st column analysis exceeded the limit by 1.2%.

Calibration Verification

There is a total of seventeen continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence.

RPD value of gamma-BHC (Lindane) for PEM10 (Performance Evaluation Mixture #10) from the 1st column analysis, beta-BHC for PEM 04 and alpha-BHC for PEM02 from the 2nd column analysis exceeded the control limit by a margin of 1.1%, 1.1%, and 8.9%.

RPD value of Endosulfan II, Endosulfan sulfate, Endrin Ketone and Endrin Aldehyde for INDAM 05 (Individual Standard Mixture A medium level #5) from the 2nd column analysis exceeded the QC limits by a margin of 1%, 3%, 4%, and 1%.

RPD value of Endrin and DCB for INDAM07 from the 2nd column analysis exceeded the QC limits by 1% and 15% respectively.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

DCB was slightly outside the Surrogate Retention Time (RT) window in eight analyses for the 1st column analysis. TCX and DCB were slightly outside the RT window in twenty nine and thirty three analyses respectively for the 2nd column analysis.

Surrogate Recovery

The % recoveries of DCB for Sample Nos. 8429, 8431, 8432, 8433, 8433 MSD, 8435, 8436, 8443, 8446, and 8447 from the 2nd column analysis were high due to over integration caused by raised baseline. If peak height is used for the calculation, the spike % recoveries would be within the control limit. The DCB and TCX recoveries were out of the advisory limit for Sample No. 8416DL, 8428DL, 8444DL, and 8448DL due to high analyte concentrations and dilutions.

The % recoveries of TCX for Sample No. 8418, 8427, 8432, 8433, 8434, 8435, 8436, and 8445 were slightly outside the advisory QC limit. The % recovery of TCX for Sample No. 8447 was low due to water bath temperature too high during the concentration step of sample preparation.

Pesticides Identification Summary

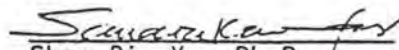
A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 8443 and 8416DL.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.


Shao-Pin Yo, Ph.D.
Laboratory Director

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER

1420753250

1420753250

RECIPIENT'S COPY

DATE		Date 11/15/91		RECIPIENT'S COPY	
From (Your Name) Please Print W. Joanne Bruton, Ph.D.		Your Phone Number (Very Important) (206) 623-1800		To (Recipient's Name) Please Print Richard Cheatham	
Company U.S. CONSULTANTS / U.S. NAVY		Department/Floor No		Recipient's Phone Number (Very Important) (303)	
Street Address 1100 LIVINGSTON ST		City SEATTLE		Department/Floor No Suite 215	
State		ZIP Required		Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes) 215 Union Boulevard	
City		State		City Lakewood	
		State		State CO	
		ZIP Required		ZIP Required 80228	
YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.) CIG-51 30510.12					
PAYMENT 1 ☒ Bill Sender 2 ☐ Bill Recipient's FedEx Acct No 3 ☐ Bill 3rd Party FedEx Acct No 4 ☐ Bill Credit Card				IF HOLD FOR PICK-UP, Print FEDEX Address Here	
5 ☐ Cash Check				Street Address	
				City	
				State	
				ZIP Required	
SERVICES (Check only one box)		DELIVERY AND SPECIAL HANDLING (Check services required)		FEDERAL EXPRESS USE	
Priority Overnight (Delivery by next business morning) 11 ☐ YOUR PACKAGING 16 ☐ FEDEX LETTER ** 12 ☐ FEDEX PAK * 13 ☐ FEDEX BOX 14 ☐ FEDEX TUBE Economy Two-Day (Delivery by second business day) 30 ☐ ECONOMY		5 ☐ HOLD FOR PICK-UP (if it fits in Box 1) 2 ☒ DELIVER WEEKDAY 3 ☐ DELIVER SATURDAY (extra charge) 4 ☐ DANGEROUS GOODS (if extra charges) 5 ☐ 6 ☐ DRY ICE 7 ☐ OTHER SPECIAL SERVICE 8 ☐ 9 ☐ SATURDAY PICK-UP (if extra charges) 10 ☐ 11 ☐ 12 ☐ HOLIDAY DELIVERY (if applicable)		WEIGHT IN POUNDS ONLY 1 20 NA Total Total Total 1 20 NA DIM SHIPMENT (Chargeable Weight) ☐ lbs x 1.8 x 1.8 = Invoiced At 1 ☒ Regular Stop 3 ☐ Drop Box 4 ☐ BSC 2 ☐ Call Gate Stop 5 ☐ Station	
Standard Overnight (Delivery by next business afternoon) 51 ☐ YOUR PACKAGING 56 ☐ FEDEX LETTER ** 52 ☐ FEDEX PAK * 53 ☐ FEDEX BOX 54 ☐ FEDEX TUBE Government Overnight (Priority by next business morning) 46 ☐ GOVT LETTER 41 ☒ GOVT PACKAGE Freight Service (For large items only - call 1-800-325-1234) 70 ☐ OVERNIGHT FREIGHT ** 80 ☐ TWO-DAY FREIGHT **				Emp No ☐ Cash Received ☐ Return Shipment ☐ Third Party ☐ Crg To Del ☐ Crg To Hold Street Address City State Zip Received By X Date/Time Received FedEx Employee Number Release Signature FedEx Emp No Date/Time	
				Federal Express Use Base Charges Declared Value Charge Other 1 Other 2 Total Charges REVISION DATE 8/91 PART #137204 EXEM 8/91 FORMAT #099 099 • 1990-91 F&G PRINTED IN USA	

TABLE 1 (3/90, OLM01.8)

VOA Qualifier Summary

Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed:

9/7/91

Instrument ID:

VOA 2

Method Blank ID: YBLK1

Date: _____ Time: _____

Sample Identifier:	Hold Time		Standards: (↑, ↓; ↓↑=<10%)					
	Out		✓ SMCs			Internal (IS)		
	Ar	All	1	2	3	1	2	3
8416								
8417								
8418								
8427								
8428								
8429								
8429 ms								
8429 msD								
8430								
8431								

ICal 9:13 6/2 14:24

CCal

Date: 7/14/91

Time: 9/17/91

7:04

* RRF must be ≥ .010 System Monitor Compound COMPOUND:	MIN RRF	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	Internal Standard
		RRF < MIN	%RSD >20.5	RRF < MIN	%RSD >25	Method	Trip		
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					65		05	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049		0.046				R	
1,1,1-Trichloroethane	.100								2
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8	o *								3
Bromofluorobenzene	o .200								3
1,2-Dichloroethane-d4	o *								1

Blank Tentatively Identified Compounds

Blank ID	Reported as:	RT	(µg/kg or µg/L)	Qualifiers
YBLK1	unknown	22.8	4 µg/kg	058

VOA Qualifier Summary

Date Analyzed:

ed:
9/7/91

Instrument ID: VCA 2

Method Blank ID: VBLK1

Date: _____ Time: _____

[illegible]

ICal 9:13 and 94:24 OCal

ICal 9:13 and 94:24 CCal
Date: 7/9/91 Time: 9/7/91 7:04

* RRF must be $\geq .010$	Initial Cal.			Continuing Cal.		Blanks		Qualifiers	Internal Standard
eSystem Monitor Compound COMPOUND:	MIN RRF	RRF < MIN	%RSD >20.5	RRF < MIN	%D >25	Method	Trip	(+/-)	
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					6.5		.5	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene (total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049		0.046				R	2
1,1,1-Trichloroethane	.100								
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8	o *								3
Bromofluorobenzene	o .200								3
1,2-Dichloroethane-d4	o *								1

Blank Tentatively Identified Compounds

Blank ID Reported as:

RT

($\mu\text{g/kg}$ or $\mu\text{g/L}$)

Qualifiers

YBLK1

unknown

22.8

4 uzlaka

55

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/30/91-10/03/91

Instrument ID: HP 5890

Method Blank ID(s):

P6LK1

Extract Date(s):

09/04/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
8412						X					
8418						X					
8427						X					
8476 OL								X			
8479								X			
8430								X			
8431								X			
8416 OL									X		
8432											X
8433											X

124

≤60% Resolved ☒ ≥60% Resolved ☒ ≥60% Resolved ☒
in Initial Resolution Check

DB-608 ✓ or Equivalent	Calibrations:								Blank Conc.	Qualifiers (+/-)
	Initial 2RSD>20 ↓	Continuing: RPD > 25% *								
		PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7		
Cont. Cal. Date, Month- Day*	09	29	20	30	01	01	02	02		
COMPOUND:	Time*	2129	0517	2103	0517	2105	0737	2025		
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦	20.5									J-C 1-
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor □										
Endrin Ketone □										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Anaclo-1016										
Anaclo-1221										
Anaclo-1232										
Anaclo-1242										
Anaclo-1248										
Anaclo-1254										
Anaclo-1260										
Surrogates - 2RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene (TCX)										
Decachlorobiphenyl (DCB)				ET					ET	

* Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column
RPD < 25%
RPD < 25%

and
or

Confirmation Column
RPD < 25%
RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/29/91
09/30/91
10/01/91 - 10/03/91

Instrument ID: HP 5890

Method Blank ID(s):
PCE1

Extract Date(s):
09/04/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
8434											X
8435											X
8436											X
8443											X
8445											X
8446											X
8447											X
8448 M											X
8444 DC			0	0							X
8433 MS											X
8433 MS											X

≥60% Resolved ☒ ≥60% Resolved ☒ ≥60% Resolved ☒
in Initial Resolution Check

DB-608 or Equivalent	Calibrations:								Blank Conc.	Qualifiers
	Initial XRSD>20 ↓	Continuing: RPD > 25% *								
		PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7		
Cont. Cal. Date, Month+ 09-10 Day+ COMPOUND↓	Time+	29 2124	30 0517	0930 2103	01 0517	02 2105	02 0457	02 2023		
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦	20.5									J C / -
Dieldrin §										
4,4'-DDE §										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor ♦										
Endrin Ketone ♦										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - XRSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene (TCX)										
Decachlorobiphenyl (DCB)				RT					RT	

* Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column
RPD < 25%
RPD < 25%

and
or

Confirmation Column
RPD < 25%
RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/04/91 -
10/06/91

Instrument ID: VARIAN 6000

Method Blank ID(s):
PBLK1

Extract Date(s):
09/04/91

Sample Identifier:	HoldTime Out		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
8416 CL						X					
8417						X					
8418						X					
8427						X					
8428 CL						X					
8429						X					
8430						X					
8431						X					
8432						X					
8433						X					

≥50% Resolved ☒ ≥50% Resolved ☒
in Initial Resolution Check

DB-1701 or Equivalent	10/03/91		Calibrations:								
	Initial XPSD > 20	Continuing: RPD > 25% *							Blank Conc.	Qualifiers (+/-)	
		PEM	INDs	PEM	INDs	PEM	INDs	PEM			
Cont. Cal. Date, Month+ COMPOUND!	Day+ Time+	1	2	3	4	5	6	7			
alpha-BHC											
beta-BHC	20.2	26.6								T-C / -	
delta-BHC											
gamma-BHC (Lindane)											
Heptachlor											
Aldrin											
Heptachlor epoxide											
Endosulfan I											
Dieldrin											
4,4'-DDE											
Endrin	31.4	38.1	26.0							T-C / -	
Endosulfan II											
4,4'-DDD											
Endosulfan sulfate	26.0									T-C / -	
4,4'-DDT											
Methoxychlor											
Endrin Ketone	37.4									T-C / -	
Endrin Aldehyde	26.0									T-C / -	
alpha-Chlordane											
gamma-Chlordane											
Toxaphene											
Anaclar-1016											
Anaclar-1221											
Anaclar-1232											
Anaclar-1242											
Anaclar-1248											
Anaclar-1254											
Anaclar-1260											
Surrogates - XPSD > 30%		Surrogate RPDs must be ≤ 25%									
Tetrachloro-m-Xylene(TCX)	✓	RT									
Decachlorobiphenyl (DCB)	✓	RT	40 RT								

* Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column
RPD < 25%
RPD < 25%

and
or

Confirmation Column
RPD < 25%
RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/04/91 -
10/06/91

Instrument ID: VARIAN 6000

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
8434						X					
8435						X					
8436						X					
8443						X					
0.4440L			0	0	NONE						
8045						NONE					
8446						NONE					
8447						NONE					
8448 DC						NONE					
8433 MS						NONE					
8433 MS						NONE					

≥60% Resolved ☒ ≥60% Resolved ☒
in Initial Resolution Check

DB-1701 or Equivalent		Calibrations:									
D6-17		Initial SRSD > 20	Continuing: RPD > 25% *								
		1	2	3	4	5	6	7	Blank Conc.	Qualifiers	
		1	2	3	4	5	6	7		(+/-)	
Cont. Cal. Date, Month*	10	Day*	05	05							
COMPOUND		Time*	0527	1029							
alpha-BHC											
beta-BHC	20.2		24.6							J-C/-	
delta-BHC											
gamma-BHC (Lindane)											
Heptachlor											
Aldrin											
Heptachlor epoxide											
Endosulfan I *											
Dieldrin											
4,4'-DDE											
Endrin	21.4		25.1	26.0						J-C/-	
Endosulfan II											
4,4'-DDD											
Endosulfan sulfate *	26.0		11:45M							J-C/-	
4,4'-DDT											
Methoxychlor *											
Endrin Ketone	37.4									J-C/-	
Endrin Aldehyde	26.0									J-C/-	
alpha-Chlordane											
gamma-Chlordane *											
Toxaphene											
Anroclor-1016											
Anroclor-1221											
Anroclor-1232											
Anroclor-1242											
Anroclor-1248											
Anroclor-1254											
Anroclor-1260											
Surrogates - SRSD > 30%											
Tetrachloro-m-Xylene (TCX)	-	RT									
Decachlorobiphenyl (DCB)	-	RT	40.15								

* Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column
RPD < 25%
RPD < 25%

and
or

Confirmation Column
RPD < 25%
RPD < 25%

TABLE 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 1 of 3

VOA FRACTION

All OK

A. Sample Numbers	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3
B. Surrogate(s) outside QC limits (show %R)																		
C. Compound less than 10%? (Y/N)																		
D. Initial Analysis Qualifiers																		
E. Reanalysis required? (Y/N)																		
o If blank, were associated samples reanalyzed? (Y/N)																		
F. Sample Number for reanalysis.																		
G. Reanalysis surrogates outside limits (show % R)																		
H. Reanalysis qualifiers.																		

QC Limits (%R)

SOIL

WATER

VOA S1 = Toluene-d8

84-138

88-110

VOA S2 = Bromofluorobenzene

59-113

86-115

VOA S3 = 1,2-Dichloroethane-d4

70-121

76-114

A:\SURROG-1.WK3

NOTE: The circled sample number is the analysis/reanalysis recommended for use.

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Sample(s) outside limits (show XR)																				
Found less than 10%? (Y/N)																				
Analysis required? (Y/N)																				
Blank, were associated plus reanalyzed? (Y/N)																				
Test Analysis Qualifiers																				
Sample Number for reanalysis																				
Analysis supersedes outside limits (show XR)																				
Extraction required? (Y/N)																				
Blank, were associated plus re-extracted? (Y/N)																				
Sample number for re-extract																				
Extraction outside limits (show XR)																				
Analysis Qualifiers																				

QC Limits (XR)	SOIL	WATER
1 = Phenol-d6	25-113	10-110
2 = 2-Fluorophenol	25-121	20-110
3 = 2,4,6-Tribromophenol	10-122	30-110
4 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
Limits exceeded (show XR)	0/53.9	244/-			45.6/45.0	37.1/	156.6		40.9/54.4	192/(?)		196
Lifter, if applied.	J-S/R-S	J-S/-			J-C/-	J-C/-	J-C/-		J-S/-	J-S/-		J-S/-

Limits (XR)	SOIL	WATER
1 = Tetrachloro-m-xylene (TCX)	80-150 (advisory)	80-150 (advisory)
2 = Decachlorobiphenyl (DCB)	80-150 (advisory)	80-150 (advisory)

LL\SURROG-2.WK3

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Sample(s) outside limits (show XR)																				
Found less than 10%? (Y/N)																				
Analysis required? (Y/N)																				
Blank, were associated samples reanalyzed? (Y/N)																				
What Analysis Qualifiers																				
Sample Number for reanalysis																				
Analysis supersedes outside limits (show X R)																				
Extraction required? (Y/N)																				
Blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract																				
Extraction outside limits (show X R)																				
Analysis Qualifiers																				

Note: The circled sample number is the analysis/reanalysis recommended for use.

QC Limits (XR)	SOIL	WATER
4 = Phenol-d6	24-113	10-110
5 = 2-Fluorophenol	25-113	21-110
6 = 2,4-Dibromophenol	16-112	10-113
7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

PESTICIDE FRACTION

Sample Numbers	8430		8431		8432		8433		8433ms		8433ms0	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
Limits exceeded (show XR)				427/218	53/58	44/162	52/36	41/165	157	42/		41/171
Qualifier, if applied.				J-S/-	J-S/-	J-S/-	J-S/-	J-S/-	J-S/-	J-S/-		J-S/-

Notes (XR)	SOIL	WATER
ide S1 = Tetrachloro-m-xylene (TCX)	88-158 (advisory)	88-158 (advisory)
ide S2 = Decachlorobiphenyl (DCB)		
ELL\SURROG-2.WK3		

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside limits (show XR)																				
Compound less than 10%? (Y/N)																				
Analysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analysis Qualifiers																				
Sample Number for reanalysis																				
Analysis surrogates outside limits (show X & R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract																				
Re-extraction outside limits (show X & R)																				
Analysis qualifiers																				

QC Limits (XR)

S4 = Phenol-d6
 S5 = 2-Fluorophenol
 S6 = 2,4,6-Tribromophenol
 S7 = 2-Chlorophenol-d4

SOIL

24-113
 25-113
 10-123
 20-130 (advisory)

WATER

10-110
 21-110
 10-123
 33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8434		8435		8436		8443		84440C		8445	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
Limits exceeded (show XR)	52/58	27/	47/42	32/190	57.6/	43.5/122		48/186	0/0	0/0	38.1/48.5	28.4/
Qualifier, if applied.	J-S/-	J-S/-	J-S/-	J-S/-	J-S/-	J-S/-		J-S/-	J-S/R-S	J-S/R-S	J-S/-	J-S/-

Limits (XR)

Pesticide S1 = Tetrachloro-m-xylene (TCX)
 Pesticide S2 = Decachlorobiphenyl (DCB)

SOIL

60-150 (advisory)

WATER

60-150 (advisory)

HELL\SURROG-2.WK3

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside QC limits (show %R)																				
Compound less than 10%? (Y/N)																				
Reanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analysts Qualifiers																				
Sample Number for reanalysis.																				
Reanalysis surrogates outside limits (show %R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract.																				
Re-extraction outside limits (show %R)																				
Reanalysis qualifiers.																				

Note: The circled sample number is the analysis/reanalysis recommended for use.

QC Limits (%R)	SOIL	WATER
id S4 = Phenol-d6	24-113	10-110
id S5 = 2-Fluorophenol	25-121	21-110
id S6 = 2,6-Dibromophenol	19-122	10-123
id S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

PESTICIDE FRACTION

Sample Numbers	8446		8447		8448 DL		PDLK1					
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)		1186	5.3/4.8	44.4/229	10	761.9/0						
Qualifier, if applied.		J-S/-	J-S/-	J-S/-	J-S/R-S	J-S/R-S						

Limits (%R)
 sticide S1 = Tetrachloro-m-xylene (TCX)
 sticide S2 = Decachlorobiphenyl (DCB)

SOIL WATER
 88-158 (advisory) 88-158 (advisory)

CCJM

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SILVER SPRING
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GRAND RAPIDSURS Technical Document Title:
Case No. URS TDCN 3001424
Project Name: CTO-051

DOCUMENT NO.: 074NOODS.RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL CCase No. 0051 URS TDCN 3001424 Project No. CTO-051Site Name Saint Lawrence Island, Alaska Project Name N.E. CapeContract Laboratory Eureka Laboratories, Inc.Sample Delivery Group (SDG) 8419 Sampling Date (Month/Year) 8/91Sample Matrix 10 wipesType of Analyses/Special Request Pesticide/PCB (see page 2)Data Reviewer Alan Alai Date 12/28/91QA Review by Jeralyn Guthrie Date 12/28/91CCJM Approval by Richard Cheatham Date 12/28/91Telephone logs/correspondence attached? Yes ☐ No ☒ Not Appl. ☐Laboratory case narrative attached? Yes ☒ No ☐ Not Avail. ☐Required deliverables provided? Yes ☐ No ☐ Not Appl. ☐Airbill enclosed? Yes ☒ No ☐ Not Avail. ☐CLP SOW used by laboratory for analysis 3/90, REV OLMO1.8

Note:

- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, The EPA's Functional Guidelines for Organics Validation and project specific references have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.
- Please see data flagging definitions on the last page of this report.

<u>Sample Number</u>	<u>Sample Matrix</u>	<u>Pest/PCB</u>
8419	wipes	X
8420	wipes	X
8421	wipes	X
8422	wipes	X
8437	wipes	X
8438	wipes	X
8472	wipes	X
8473	wipes	X
8474	wipes	X
8475	wipes	X

X = Analysis has been provided for validation.

0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.

- = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. Deliverables

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes No X

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY

- X Included in package
 O Not included and/or Not available
 NA Not applicable or Not required
 RS Provided as resubmission

- X Method blank spikes with each batch
 X Control chart developed by lab
 X Sample results - Form 1 or spreadsheet
 O CLP data flags used by laboratory
 X Sample chromatograms and mass spectra
 X Holding times (sampling, prep and analysis dates provided)
 X Surrogate recoveries - Form 2
 X Matrix spike/matrix spike duplicate (MS/MSD) - Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
 X Method blank summary - Form 4
 X Report form for method blank results (Form 1 or spreadsheet)
 NA GC/MS tuning - Form 5
 X Initial calibration data and Resolution Summary - Form 6
 X Continuing calibration data and Verification Summary - Form 7
 X Internal standard area summary and analytical sequence - Form 8
 X Pesticide Florisil Cartridge Check and GPC Calibration

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines. See the following table for a summarization of sample holding times.

Yes ☐ No ☒

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or U).

Holding Time Summary

<u>Sample Number</u>	<u>Sampling Date</u>	<u>VTSR</u>	<u>Pesticide</u>	
			<u>Extract</u>	<u>Analysis</u>
8419 DL	8/23/91	8/28	09/04 *(5)	10/02
8420	8/23/91	8/28	09/04 *(5)	09/30
8421	8/23/91	8/28	09/04 *(5)	09/30
8422 DL	8/23/91	8/28	09/04 *(5)	09/30
8437	8/23/91	8/28	09/04 *(5)	09/30
8438	8/23/91	8/28	09/04 *(5)	09/30
8472	8/23/91	8/27	09/04 *(5)	09/29
8473	8/23/91	8/27	09/04 *(5)	09/29
8474	8/23/91	8/27	09/04 *(5)	09/29
8475	8/23/91	8/27	09/04 *(5)	09/29

III. Instrument Calibration (Pesticide/PCB)

- A. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes ☒ No ☐

Comments: The compliant %RSD values found to be above 20% are summarized on the attached Table 1-P. A data validation specification of 20% RSD for any compound identified, has been applied for the column used in quantifying the sample result(s).

- B. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes X No

Comments: No comments.

- C. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes No X

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P

- D. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes No X

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P. Sample 8419DL was not bracketed with Individual Mixes A and B on the DB-17 column, 10/04/91.

- E. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes No X

Comments:

1. The retention times for a majority of compounds analyzed on the DB-17 column did not meet the specified criteria as stated in the SOW. No additional qualifiers were applied to the sample data since all samples are qualified on the basis of holding times.
2. In many instances, the surrogate retention times were not within the established retention time windows for the calibration verification standards. The reviewer considers this deficiency to be non-compliant with SOW 3/90.

- F. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses.

Yes ☐ No ☒

Comments: The following % Breakdown criteria were not met:

<u>Calibration</u>	<u>Column</u>	<u>% Breakdown</u>			<u>Affected Samples</u>
		<u>DDT</u>	<u>Endrin</u>	<u>Combined</u>	
Initial, 10/02/91	DB-17	—	30.1	—	all
Verification, 09/30/91	DB-608	—	—	32.5	8474, 8475, 8420, 8421, 8437, 8438, 8422DL, 8419DL
Verification, 10/01/91	DB-608	21.0	—	41.0	8419DL

No additional qualifiers have been added to the sample data on the basis of DDT or Endrin breakdown.

- G. The florisil cartridge check and when applicable, the GPC calibration were found to be within specified criteria.

Yes ☒ No ☐

Comments: All samples were Florisil and GPC cleaned.

- H. The retention times for the surrogates were within criteria for every sample.

Yes _____ No X

Comments: An asterisk of the following table indicates surrogate retention times outside (*) the established retention time windows:

Sample No.	TCX 1	TCX 2	DCB 1	DCB 2
8419DL		*		*
8420		*		*
8421		*		*
8422DL		*	*	*
8437		*		*
8438		*		*
8472		*		*
8473		*		*
8474		*		*
8475		*		*
MS		*		*
MSD		*		*
PBLKL		*		*

IV. Blanks

- A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes X No

Comments: No comments.

- B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes No Not Identified X

Comments: No trip blanks were provided in this data package.

- C. Other Blanks - No other types of blanks have been identified in the data package.

V. Surrogate Recovery

The surrogate recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes No X

Comments: Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.

VI. Blank Spike - Laboratory Control Sample(s)

- A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes X No

Comments: The compounds used for the Pesticide/PCB blank spike were the matrix spike compounds, (gamma-BHC, Heptachlor, Aldrin, Dieldrin, Endrin and 4,4'-DDT)..

- B. Laboratory control charts were provided in the package for the spike compounds and the limits specified by the control charts were used for review.

Yes X No

Comments: The following spike analytes were reported to be outside control limits:

<u>Spike Compound</u>	<u>% Recovery</u>	<u>Control Limits % Recovery</u>
Aldrin	125	45 - 116
Dieldrin	132	50 - 130

No additional qualifiers have been applied to any samples on the basis of blank spike recoveries.

VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes No X

Comments: No matrix spike and matrix spike duplicate results were found to be included in this data package.

VIII. Additional Comments

1. Several contract requirements were not met by the laboratory for the pesticide/PCB analyses. These deficiencies were noted in the following sections: Section III. Items D, E, F and H.
2. No "C" flags were shown by the lab in the data to indicate GC/MS confirmation. This indicates the probability that the GC/MS confirmation was not performed on any samples which have sufficiently high positive results.
3. The laboratory has reported the higher value from the two columns rather than the lower of the two values as specified by the 3/90 SOW.

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

- U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
- R - Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.
- J - The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.
- B - The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.
- JN - Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

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From (Your Name) Please Print W. Jamie Bruton, Ph.D.		Your Phone Number (Very Important) 206 1623-1800		To (Recipient's Name) Please Print Richard Cheatham		Recipient's Phone Number (Very Important) 303	
Company U.S. COMMERCE BANK		Department/Floor No.		Company CCJM		Department/Floor No. Suite 215	
Street Address 1000 L.V. ...		City Seattle		Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes) 215 Union Boulevard		City Lakewood	
State WA		ZIP Required 98101		State CO		ZIP Required 80228	
YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice) C70-51 30510.12							
PAYMENT 1 ☒ Bill Sender 2 ☐ Bill Recipient's FedEx Acct No 3 ☐ Bill 3rd Party FedEx Acct No 4 ☐ Bill Credit Card 5 ☐ Cash 6 ☐ Check				IF HOLD FOR PICK-UP, Print FEDEX Address Here Street Address City State ZIP Required			
4 SERVICES (Check only one box) Priority Overnight (Delivery by next business morning) 11 ☐ YOUR PACKAGING 16 ☐ FEDEX LETTER 12 ☐ FEDEX PAK 13 ☐ FEDEX BOX 14 ☐ FEDEX TUBE Economy Two-Day (Delivery by second business day) 30 ☐ ECONOMY Freight Service (For Extra Large or any package over 150 lbs) 10 ☐ OVERNIGHT FREIGHT 60 ☐ TWO-DAY FREIGHT		5 DELIVERY AND SPECIAL HANDLING (Check services required) 1 ☐ HOLD FOR PICK-UP (if in box #) 2 ☒ DELIVER WEEKDAY 3 ☐ DELIVER SATURDAY (extra charge) 4 ☐ DANGEROUS GOODS (extra charge) 5 ☐ 6 ☐ DRY ICE 7 ☐ OTHER SPECIAL SERVICE 8 ☐ 9 ☐ SATURDAY PICK-UP (extra charge) 10 ☐ 11 ☐ 12 ☐ HOLIDAY DELIVERY (extra charge)		6 PACKAGES 1 20 NA Total 1 20 NA DIM SHIPMENT (Chargeable Weight) 1 ☒ Regular Ship 3 ☐ Drop Box 2 ☐ On Call Ship 5 ☐ Station		Emp No. Date Federal Express Use Base Charges Declared Value Charge Other 1 Other 2 Total Charges REVISION DATE 8/91 PART #137204 FXEM 9/91 FORMAT #099 099 1990-91 AEC PRINTED BY USA	

CASE NARRATIVE

CTO-0051

CTO-0051 consists of approximately 102 soil samples, 40 water samples, 14 concrete chips, and 10 wipe samples from Saint Lawrence Island, Alaska. Samples are to be analyzed by 3/90 CLP SOW for VOA and Pesticide/PCBs.

As of 9/25/91 a total of 6 SDG was received by Eureka Laboratories Inc. They are 8449, 8419, 8423, 8484, 8416, and 8401.

Details for sample description/analytical description, sample conditions, and quality control for received samples are presented in the SDG Narratives.

I. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc.
Lab Certification Number: E765
SDG Number: 8419
Purchase Order Number: AN-91-P-0019
Contract Task Order Number: 0051
NEESA QA/QC Level C
Analysis: Initial
Sample No.: 10

A. Sample Description/Analytical Description

<u>Client ID</u>	<u>Lab ID</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Matrix</u>	<u>Analysis/Method</u>
8419	9108219-7A	08/23/91	08/28/91	Wipe	P/PCBs/3-90 CLP SOW
8420	9108219-8A	08/23/91	08/28/91	Wipe	Same as above
8421	9108219-9A	08/23/91	08/28/91	Wipe	Same as above
8422	9108219-10A	08/23/91	08/28/91	Wipe	Same as above
8437	9108219-27A	08/23/91	08/28/91	Wipe	Same as above
8438	9108219-28A	08/23/91	08/28/91	Wipe	Same as above
8472	9108213-24A	08/23/91	08/27/91	Wipe	Same as above
8473	9108213-25A	08/23/91	08/27/91	Wipe	Same as above
8474	9108213-26A	08/23/91	08/27/91	Wipe	Same as above
8475	9108213-27A	08/23/91	08/27/91	Wipe	Same as above

B. Sample Receipt

Samples were received in two delivery batches on August 27 & 28, 1991. Samples were in good condition. Sample receipt conditions, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bills. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Numbers 91-08-213 and 91-08-219.

C. Quality Control Report

1. Pesticide/PCB by 3/90 CLP SOW

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (1) Telecation Software used the Response Factors of the Aroclors standards (0.1 ppm) analyzed in the initial calibration for the quantification. (2) ELI manual worksheet used the response factors of a higher concentration of Aroclor standards (2 ppm) which were analyzed after the sample run and used for confirmation per 3/90 CLP SOW.

Sample No. 8422 was analyzed at a dilution factor of 20 and a dilution factor of 1 by 1st column and 2nd column respectively. The concentration values reported on Form I was from the 1st column analysis.

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

- i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.
- ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEM02 (Performance Evaluation Mixture #2), PEM08, and PEM10 from the first column analysis exceeded the limit by 8%, 2.5%, and 11% respectively.

The % combined breakdown for PEM01 from the second column analysis exceeded the limit by 0.6%.

Calibration Verification

There is a total of fifteen continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence as required by CLP protocol.

RPD value of gamma-BHC (Lindane) and beta-BHC for PEM 10 (Performance Evaluation Mixture #10) and PEM 04 exceeded the control limit by a margin of 1.1% and 8.9%.

RPD value of Endosulfan II, Endosulfan sulfate, Endrin Ketone and Endrin Aldehyde for INDAM 03 (Individual Standard Mixture A medium level #3) and INDAM 05 exceeded the QC limits.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

DCB was slightly outside the Surrogate Retention Time (RT) window in three analyses for the first column analysis. DCB and TCX were slightly outside the RT window in twenty one and twenty two analyses respectively for the 2nd column analysis.

Surrogate Recovery

The % recovery of TCX for Sample No. 8438, 8473, 8474, and PBLK1 were out of the advisory QC limit. The % recoveries of DCB for Sample No. 8421 is high due to matrix interference. The DCB recoveries were out of the advisory limit for Sample No. 8419 DL, and 8422 DL, due to dilutions.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I without P flag.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 8420, 8421, 8437, 8438, and 8475.

Spike and Spike Duplicate:

The % Recovery and % RPD of Heptachlor for Reagent Spike and Reagent Spike Duplicate exceeded the QC limit by a margin of 5% and 1% respectively.

No matrix spike or matrix spike duplicate were analyzed due to insufficient sample provided.

CRQL and Reporting Units

CRQL for wipe samples is 0.051 - 5.1 ug/wipe or 51 - 5100 ng/wipe. The unit in the hard copy reports for SDG 8419 is ng/wipe, however, the unit in the disc deliverables remains as ug/Kg because it cannot be corrected due to the limitation of the Telecation software.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Shao-Pin Yo for
Shao-Pin Yo, Ph.D.
Laboratory Director

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

09/28/90 - 10/02/91

Instrument ID:

HP 5890

Method Blank ID(s):

PBLK1

Extract Date(s):

09/04/90

Sample Identifier:	HoldTime Out		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
MS (REAGENT)						X					
MSO (REAGENT)							X				
8472							X				
8473							X				
8474								X			
8475								X			
8420								X			
8421								X			
8437								X			
8438								X			

☒ >60% Resolved
☒ >60% Resolved
☒ >60% Resolved
 in Initial Resolution Check

DB-608 or Equivalent	09/27/91		Calibrations:								
	Initial 2RSD>20	Continuing: RPD > 25% *							Blank Conc.	Qualifiers (+/-)	
		PEM	INDs	PEM	INDs	PEM	INDs	PEM			
Cont. Cal. Date, Month+ Day+	9	23	29	29	30	04	01				
COMPOUND	Time	2033	0819	2047	0817	2021	0817	2020			
alpha-BHC		✓	✓	✓	✓	✓	✓	✓			
beta-BHC											
delta-BHC											
gamma-BHC (Lindane)								26.1	US/-		
Heptachlor											
Aldrin											
Heptachlor epoxide											
Endosulfan I	20.5								US/-		
Dieldrin											
4,4'-DDE											
Endrin											
Endosulfan II											
4,4'-DDD											
Endosulfan sulfate											
4,4'-DDT											
Methoxychlor											
Endrin Ketone											
Endrin Aldehyde											
alpha-Chlordane											
gamma-Chlordane											
Toxaphene											
Anroclor-1016											
Anroclor-1221											
Anroclor-1232											
Anroclor-1242											
Anroclor-1248											
Anroclor-1254											
Anroclor-1260											
Surrogates - 2RSD > 30%		Surrogate RPDs must also be ≤ 25%									
Tetrachloro-m-Xylene(TOX)											
Decachlorobiphenyl (DCB)		35.0		RT							

* Validation Criteria:

Compound Detected
Compound Undetected

Quantitation Column

RPD < 25%
or
RPD < 25%

Confirmation Column

RPD < 25%
or
RPD < 25%

Calibrations, Method Blank, Holding Time, Surrogate Recovery

09/28/91 - 10/02/91

Instrument ID: HP 5890

PBLK1

Extract Date(s): 6/9/04/91

[illegible]

		Calibrations:									
		Initial %RSD > 20	Continuing: RPD > 25% *								
		I	PEM 1	INDs 2	PEM 3	INDs 4	PEM 5	INDs 6	PEM 7		
DB-608 ✓ Equivalent										Blank Conc.	Qualifiers
Cont. Cal. Date, Month+	9 Day+	Time+	24	29	29	30	30	01	01		(+/-)
COMPOUND I			2055	0419	2047	0417	2021	1617	2020		
alpha-BHC											
beta-BHC											
delta-BHC											
gamma-BHC (Lindane)									26.1		NJ -/-
Heptachlor											
Aldrin											
Heptachlor epoxide											
Endosulfan I ♦		20.5									NJ -/-
Dieldrin §											
4,4'-DDE §											
Endrin											
Endosulfan II											
4,4'-DDD											
Endosulfan sulfate											
4,4'-DDT											
Methoxychlor •											
Endrin Ketone •											
Endrin Aldehyde											
alpha-Chlordane											
gamma-Chlordane ♦											
Toxaphene											
Anaclor-1016											
Anaclor-1221											
Anaclor-1232											
Anaclor-1242											
Anaclor-1248											
Anaclor-1254											
Anaclor-1260											
Surrogates - %RSD > 30%			Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TOX)											
Decachlorobiphenyl (DOB)			25.0								

Compound Undetected

RPD% < 25%

or

RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

10/04/91

Instrument ID:

VARIAN 6000

Method Blank ID(s):

BLK1

Extract Date(s):

09/04/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
0472						X					
0473						X					
0474						X					
0475						r					
0479 DL						r					
0470						r					
0471						r					
0472						r					
0473						r					
0478						X					

≥60% Resolved ☒ ≥60% Resolved ☒

in Initial Resolution Check

DB-1701 or Equivalent		Calibrations:								
Initial		Continuing: RPD > 25% *								
RPD > 20		PEM	INDs	PEM	INDs	PEM	INDs	PEM		
↓		1	2	3	4	5	6	7		
Cont. Cal. Date, Month+ 10	Day+	04	04						Blank Conc.	Qualifiers
COMPOUND	Time+	0445	1706							(+/-)
alpha-BHC										
beta-BHC	20.3	33.9								U.T./-
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I *										
Dieldrin										
4,4'-DDE										
Endrin	21.4									U.T./-
Endosulfan II			26.0							
4,4'-DDD										
Endosulfan sulfate *	26.0		28.0							U.T./-
4,4'-DDT										
Methoxychlor *										
Endrin Ketone	34.87		27.0							U.T./-
Endrin Aldehyde	26.0		26.0							U.T./-
alpha-Chlordane										
gamma-Chlordane *										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - RPD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)	✓									
Decachlorobiphenyl (DCB)	✓									

* Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column
RPD < 25%
RPD < 25%

and
or

Confirmation Column
RPD < 25%
RPD < 25%

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside QC limits (show XR)																				
Compound less than 10%? (Y/N)																				
Reanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analysis qualifiers																				
Sample Number for reanalysis.																				
Reanalysis surrogates outside limits (show X R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract.																				
Re-extraction outside limits (show X R)																				
Reanalysis qualifiers.																				

QC Limits (XR)	SOIL	WATER
1 = Phenol-d6	24-113	10-110
2 = 2-Fluorophenol	24-113	21-110
3 = 2,4-Dibromophenol	24-113	10-110
4 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8472	8473	8474	8475	MS (Request)	MS (Request)
QC limits exceeded (show XR)	S1 - - S2 - -	S1 37.5 35.0 - / 40 S2	S1 37.5 32.5 - - S2	S1 - - - - S2	S1 - - 45 - S2	S1 - - - - S2
Qualifier, if applied.		J/LT S/UT	J/LT			

QC Limits (XR)	SOIL	WATER
1 = Tetrachloro-m-xylene (TCX)	80-150 (advisory)	80-150 (advisory)
2 = Decachlorobiphenyl (DCB)	80-150 (advisory)	80-150 (advisory)

\\SHELL\SURROG-2.WK3

PBCLK1
S1 - - S2 40 -

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside QC limits (show XR)																								
Compound less than 10%? (Y/N)																								
Reanalysis required? (Y/N)																								
If blank were associated samples reanalyzed? (Y/N)																								
Initial Analysis Qualifiers																								
Sample Number for reanalysis.																								
Reanalysis surrogates outside limits (show X & R)																								
Re-extraction required? (Y/N)																								
If blank were associated samples re-extracted? (Y/N)																								
Sample number for re-extract.																								
Re-extraction outside limits (show X & R)																								
Reanalysis qualifiers.																								

QC Limits (XR)

SOIL

WATER

S4 = Phenol-d6
 S5 = 2-Fluorophenol
 S6 = 2,4,6-Trifluorophenol
 S7 = 2-Chlorophenol-d4

24-113
 25-121
 10-122
 20-130 (advisory)

10-110
 21-110
 10-123
 33-170 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8419 DL		8420		8421		8422 DL		8437		8438	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC Limits exceeded (show XR)	50.0	475	-	-	-	192.5	-	650	-	45	23.5	24.5
Qualifier, if applied.	JG/NI	RL				JG/NI		JG/NI		JG/NI	JG/NI	

QC Limits (XR)

SOIL

WATER

Pesticide S1 = Tetrachloro-m-xylene (TCX)
 Pesticide S2 = Decachlorobiphenyl (DCB)

60-150 (advisory) 60-150 (advisory)
 60-150 (advisory) 60-150 (advisory)

Calibrations, Method Blank, Holding Time, Surrogate Recovery

10/09/91

Instrument ID: VARIAN 6000

Method Blank ID(s): *PBLK1*

Extract Date(s): 04/04/21

[illegible]

DB-1701 or Equivalent <u>DB-17</u>		10/22/01 Calibrations:								
Initial X _{RSD} > 20		Continuing: RPD > 25% *								
1		PEM	INDs	PEM	INDs	PEM	INDs	PEM		
2		3	4	5	6	7				
Cont. Cal. Date, Month	10	Day	04	04					Blank Conc.	Qualifiers
COMPOUND	Time	0445	1708							(+/-)
alpha-BHC										
beta-BHC	20.2	33.9								161/-
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I										
Dieldrin										
4,4'-DDE										
Endrin	21.4									157/-
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate	26.0									141/-
4,4'-DDT										
Methoxychlor										
Endrin Ketone	24.7									151/-
Endrin Aldehyde	26.0									117/-
alpha-Chlordane										
gamma-Chlordane										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - X _{RSD} > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-xylene (TCX)	✓	LT	LT						LT	
Decachlorobiphenyl (DCB)	✓	LT	LT						LT	

- Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column
RFD% < 25%
RFD% < 25%

Confirmation Column
RPD < 25%
RPD < 25%

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SILVER SPRING
CHICAGO
DENVER
DETROIT
GRAND RAPIDS

Project Name: STG-1

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

Case No. 0051 URS TDCN 3001434 Project No. CTO-0051
Site Name St. Lawrence Island, AK Project Name N.E. Cape
Contract Laboratory Eureka Laboratories
Sample Delivery Group (SDG) 8423 Sampling Date (Month/Year) 8/91
Sample Matrix Concrete Chips
Type of Analyses Pesticide/PCB (see page 2)

Data Reviewer Alan Alai Date 12/28/91
 QA Review by Jeralyn Guthrie Date 12/28/91
 CCJM Approval by Richard Cheatham Date 12/28/91
 Telephone logs/correspondence attached? Yes ☐ No ☒ Not Appl. ☐
 Laboratory case narrative attached? Yes ☒ No ☐ Not Avail. ☐
 Required deliverables provided? Yes ☐ No ☒ Not Appl. ☐
 Airbill enclosed? Yes ☒ No ☐ Not Avail. ☐
 CLP SOW used by laboratory for analysis 3/90

- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.
- Please see data flagging definitions on the last page of this report.

(Revised 12/91) C.C. JOHNSON & MALHOTRA, P.C.
215 UNION BOULEVARD, SUITE 215 • LAKEWOOD, COLORADO 80228 • (303) 987-2928

<u>Sample Number</u>	<u>Sample Matrix</u>	<u>Pest/PCB</u>
84232425 (8423, 8424, 8425 - COMPOSITE)	concrete chips	X
8477	concrete chips	X
8480	concrete chips	X
8426	concrete chips	X
8440	concrete chips	X
8442	concrete chips	X
8478	concrete chips	X
8481	concrete chips	X
8439	concrete chips	X
8441	concrete chips	X
8476	concrete chips	X
8479	concrete chips	X

- X = Analysis has been provided for validation.
 0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
 - = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. Deliverables

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes _____ No X

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY

- X Included in package
O Not included and/or Not available
NA Not applicable or Not required
RS Provided as resubmission

- X Method blank spikes with each batch
 X Control chart developed by lab
X Sample results - Form 1 or spreadsheet
 O CLP data flags used by laboratory
 NA Sample chromatograms and mass spectra
X Holding times (sampling, prep and analysis dates provided)
X System Monitoring Compounds (SMC) and Surrogate recoveries - Form 2
O Matrix spike/matrix spike duplicate (MS/MSD) - Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
X Method blank summary - Form 4
 X Report form for method blank results (Form 1 or spreadsheet)
NA GC/MS tuning - Form 5
X Initial calibration data and Resolution Summary - Form 6
X Continuing calibration data and Verification Summary - Form 7
X Internal standard area summary and analytical sequence - Form 8
X Pesticide Florisil Cartridge Check and GPC calibration

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines. See the following table for a summarization of sample holding times.

Yes ☐ No ☒

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or U).

Holding Time Summary

<u>Sample Number</u>	<u>Sampling Date</u>	<u>VISR</u>	<u>Pesticide</u>	
			<u>Extract</u>	<u>Analysis</u>
84232425DL	8/23/91	8/28	09/04*(5)	10/02
8426 DL	8/23/91	8/28	09/04*(5)	10/02
8439	8/23/91	8/28	09/04*(5)	09/29
8440	8/23/91	8/28	09/04*(5)	09/29
8441	8/23/91	8/28	09/04*(5)	09/29
8442 DL	8/23/91	8/28	09/04*(5)	10/02
8476 DL	8/23/91	8/27	09/04*(5)	09/30
8477 DL	8/23/91	8/27	09/04*(5)	09/30
8478 DL	8/23/91	8/27	09/04*(5)	09/30
8479 DL	8/23/91	8/27	09/04*(5)	09/30
8480 DL	8/23/91	8/27	09/04*(5)	09/30
8479 DL	8/23/91	8/27	09/04*(5)	09/30

II. Instrument Calibration (Pesticide/PCB)

- The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes ☐ No ☒

Comments: The compliant and non-compliant %RSD values found to be above 20% are summarized on the attached Table 1-P. A data validation specification of 20% RSD for any compound identified, has been applied for the column used in quantifying the sample result(s).

2. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes X No

Comments: No comments.

3. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes No X

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

4. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes No X

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

5. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes No X

Comments: The retention times for all target analytes and surrogates on the D6-17 column did not meet the specified criteria as stated in the SOW. This deficiency is considered to be non-compliant as specified in the 3/90 SOW. No additional qualifiers were assigned to the sample data.

6. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses.

Yes _____ No X

Comments: The following % breakdown criteria were not met:

<u>Calibration, Date, Time</u>	<u>Column</u>	<u>% Breakdown</u>			<u>Affected Samples</u>
		<u>DDT</u>	<u>Endrin</u>	<u>Combined</u>	
Init., 09/27/91, 2219	DB-608	16.2	14.6	30.8	All
Verif., 10/01/91, 2020	DB-608	21.2	19.8	41.0	84232425DL
Init., 10/02/91, 1901	DB-17	0	30.6	30.6	All
Init., 10/02/91, 0522	DB-17	2.6	32.6	35.2	All
Verif., 10/04/91, 0445	DB-17	-	21.4	-	MS, MSD
Verif., 10/05/91, 0446	DB-17	-	27.8	-	All

No additional qualifiers have been assigned on the basis of DDT or Endrin % breakdown.

7. The florisil cartridge check and when applicable, the GPC calibration were found to be within specified criteria.

Yes X No _____

Comments: No comments.

8. The retention times for the surrogates were within criteria for every sample.

Yes _____ No X

Comments: An asterisk(*) on the following table indicates the retention time was outside of the established retention time window.

Sample No.	TCX 1	TCX 2	DCB 1	DCB 2
84232425DL	D	D	D	D
8426DL	D	D	D	D
8439		*		*
8440		*		*
8441		*		*
8442DL	D	D	D	D
8476DL		*		*
8477DL		*		*
8478DL		*		*
8479DL		*		*
8480DL		*		*
8481DL		*		*
MS		*		*
MSD		*		*
PBLK1		*		*

D = surrogate diluted out

III. Blanks

- A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes X No

Comments: No contaminants were reported for this data package.

- B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes No Not Identified

Comments: No trip blanks were reported in this data package.

- C. Other Blanks - No other types of blanks have been identified in the data package.

IV. Surrogate Recovery

The surrogate recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes No X

Comments: Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.

V. Blank Spike - Laboratory Control Sample(s)

- A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes ☐ No ☒

Comments:

1. The compounds used for the Pesticide/PCB blank spike were the matrix spike compounds.
2. The following spike analytes were reported to be outside control limits based on the laboratory control charts:

<u>Spike Compound</u>	<u>% Recovery</u>	<u>Control Limits % Recovery</u>
Aldrin	126	45 - 114

No additional qualifiers were applied based on blank spike recoveries.

- B. Laboratory control charts provided in the package.

Yes ☒ No ☐

Comments: No comments.

VI. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes ☐ No ☒

Comments: No MS/MSD analyses were reported for this data package.

VII. Additional Comments

1. The laboratory did not meet several contract requirements. They are indicated in the above sections as follows:

Sec. III. A.6
Sec. III. A.7
Sec. III. A.9
Sec. VIII

2. The reviewer was unable to assess whether the laboratory performed GC/MS confirmation for positive hits that were sufficiently high. No "C" flag was applied to the data by the laboratory.
3. The laboratory reported the higher of the two results from the two columns. This procedure is specifically not allowed as stated in 3/90 SOW.

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

- U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
- R - Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.
- J - The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.
- B - The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.
- JN - Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

I. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc.
Lab Certification Number: E765
SDG Number: 8423
Purchase Order Number: AN-91-P-0019
Contract Task Order Number: 0051
NEESA QA/QC Level C
Analysis: Initial
Sample No.: 14

A. Sample Description/Analytical Description

<u>Client ID</u>	<u>Lab ID</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Matrix</u>	<u>Analysis/Method</u>
8423, 8424, 8425- Composite	9108219-11A, 12A,13A	08/23/91	08/28/91	Chips	P/PCBs/3-90 CLP SOW
8426	9108219-14A	08/23/91	08/28/91	Chips	Same as above
8439	9108219-29A	08/23/91	08/28/91	Chips	Same as above
8440	9108219-30A	08/23/91	08/28/91	Chips	Same as above
8441	9108219-31A	08/23/91	08/28/91	Chips	Same as above
8442	9108219-32A	08/23/91	08/28/91	Chips	Same as above
8476	9108214-1A	08/23/91	08/27/91	Chips	Same as above
8477	9108214-2A	08/23/91	08/27/91	Chips	Same as above
8478	9108214-3A	08/23/91	08/27/91	Chips	Same as above
8479	9108214-4A	08/23/91	08/27/91	Chips	Same as above
8480	9108214-5A	08/23/91	08/27/91	Chips	Same as above
8481	9108214-6A	08/23/91	08/27/91	Chips	Same as above

B. Sample Receipt

Samples were received in two delivery batches on August 27 & 28, 1991. Samples were in good condition. Sample receipt conditions, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bills. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Number 91-08-214. For Order Numbers 91-08-219, the following problem was observed:

1. ELI Order Number 91-08-219:

Sample volume for Sample Numbers 8423, 8424, and 8425 is not sufficient for P/PCBs-CLP analysis and percent moisture determination.

A memo was faxed by URS with an authorized signature to instruct ELI to composite these three samples and analyze as one.

C. Quality Control Report

1. Pesticide/PCB by 3/90 CLP SOW

Sample Matrix and CRQL

Sample matrix for this SDG was concrete chip, containing high concentration of petroleum hydrocarbon products. Samples were extracted according to Pesticide/PCB 3/90 CLP SOW and subsequently followed by GPC and florisil cartridge clean up.

The petroleum product, however, remains in the sample extract despite the clean up procedures, and constitutes severe matrix interference. Samples were initially analyzed without dilution and found to be beyond quantitation range except for Sample Nos. 8439, 8440, and 8441. All other samples were then reanalyzed at a dilution factor of 20 or 500. High CRQL for Sample No. 8426, 8476, 8477, 8478, 8479, and 8480 is due to matrix interference. Higher CRQL for Sample No. 8423 and 8442 is due to high analyte concentration.

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (1) Telecation Software used the Response Factor for the 0.1 ppm standards of the Aroclors analyzed in the initial calibration. (2) ELI manual worksheet used the response factors for 2 ppm standards of the Aroclors which were analyzed after the sample analyses and used for confirmation per 3/90 CLP SOW.

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

- i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.
- ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEM02 (Performance Evaluation Mixture #2), PEM08, and PEM10 from the first column analysis exceeded the limit by 8%, 2.5%, and 11% respectively.

The % combined breakdown for PEM01 and PEM02 from the second column analysis exceeded the limit by 0.6% and 5.2%. The % breakdown of Endrin for PEM01, PEM02, PEM04, and PEM06 from the 2nd column analysis exceeded the limit by 10.6%, 12.6%, 1.4%, and 7.8%. The % breakdown of 4-4'-DDT for PEM10 from the 1st column analysis exceeded the limit by 1.2%.

Calibration Verification

There is a total of fifteen continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence.

RPD value of gamma-BHC (Lindane) and beta-BHC for PEM 10 (Performance Evaluation Mixture #10) and PEM 04 exceeded the control limit by a margin of 1.1% and 8.9%.

RPD value of Endosulfan II, Endosulfan sulfate, Endrin Ketone and Endrin Aldehyde for INDAM 03 (Individual Standard Mixture A medium level #3) and INDAM 05 exceeded the QC limits.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

TCX and DCB was slightly outside the Surrogate Retention Time (RT) window in three and five analyses respectively for the 1st column analysis. TCX and DCB were slightly outside the RT window in eighteen and eighteen analyses respectively for the 2nd column analysis.

Surrogate Recovery

The % recoveries of DCB for Sample Nos. 8439, 8440, and 8441 were high due to matrix interference. The DCB recoveries were out of the advisory limit for Sample No. 8426 DL, 8423, 2425 DL, 8442 DL, 8476 DL, 8477 DL, 8478 DL, 8479 DL, 8480 DL, and 8481 DL due to dilutions.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 84232425DL, 8440, and 8442DL.

Spike and Spike Duplicate:

The % Recovery and % RPD of Heptachlor for Reagent Spike and Reagent Spike Duplicate exceeded the QC limit by a margin of 5% and 1% respectively.

Sample No. 8477 MS/MSD were extracted and analyzed, but unable to be quantified due to matrix interference.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Shao-Pin Yo, Ph.D.
Shao-Pin Yo, Ph.D.
Laboratory Director

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State WA		State CO	
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YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice) CIG-51 30510.12			
PAYMENT 1 ☒ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☐ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card		IF HOLD FOR PICK-UP, Print FEDEX Address Here Street Address City State ZIP Required	
5 SERVICES (Check only one box) Priority Overnight (Delivery by next business morning) 11 ☐ YOUR PACKAGING 16 ☐ FEDEX LETTER 12 ☐ FEDEX PAK 13 ☐ FEDEX BOX 14 ☐ FEDEX TUBE Economy Two-Day (Delivery by second business day) 30 ☐ ECONOMY Overnight Freight (For large or heavy packages over 150 lbs) 10 ☐ OVERNIGHT FREIGHT Standard Overnight (Delivery by next business afternoon) 51 ☐ YOUR PACKAGING 56 ☐ FEDEX LETTER 52 ☐ FEDEX PAK 53 ☐ FEDEX BOX 54 ☐ FEDEX TUBE Government Overnight (Restricted to authorized users only) 46 ☐ GOVT LETTER 41 ☒ GOVT PACKAGE Freight Service (For large or heavy packages over 150 lbs) 10 ☐ OVERNIGHT FREIGHT 80 ☐ TWO-DAY FREIGHT		6 DELIVERY AND SPECIAL HANDLING (Check services required) 1 ☐ HOLD FOR PICK-UP (Use in Box 11) 2 ☒ DELIVER WEEKDAY 3 ☐ DELIVER SATURDAY (Extra charge) 4 ☐ DANGEROUS GOODS (Extra charge) 5 ☐ 6 ☐ DRY ICE (Lbs) 7 ☐ OTHER SPECIAL SERVICE 8 ☐ 9 ☐ SATURDAY PICK-UP (Extra charge) 10 ☐ 11 ☐ 12 ☐ HOLIDAY DELIVERY (Extra charge) 7 DIM SHIPMENT (Chargeable Weight) 1 ☒ Regular Stop 3 ☐ Drop Box 4 ☐ BSC 5 ☐ Station 2 ☐ On Call Stop	
Total 1 20 NA		Total 1 20 NA	
Received At 1 ☒ Regular Stop 3 ☐ Drop Box 4 ☐ BSC 5 ☐ Station 2 ☐ On Call Stop		Received By X Date/Time Received FedEx Employee Number	
Release Signature FedEx Emp No		Federal Express Use Base Charges Declared Value Charge Other 1 Other 2 Total Charges REVISION DATE 6/91 PART #137204 FXEM 9/91 FORMAT #099 099 © 1990-91 A.S.C. PRINTED IN USA	

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

09/27/91 - 10/01/91

Instrument ID: HP 5890

Method Blank ID(s): PBLK1

Extract Date(s):

09/04/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
MS (REAGENT)	X	X				X					
8439	X						X				
8440	X						X				
8441	X						X				
MS (REAGENT)							X				
8476 DL	X									X	
8479 DL	X									X	
8480 DL	X									X	
8481 DL	X									X	
8477 DL	X									X	

≥60% Resolved ☒ ≥60% Resolved ☒ ≥60% Resolved ☒
in Initial Resolution Check

DB-608 or Equivalent	Calibrations:								Blank Conc.	Qualifiers
	Initial %RSD>20	Continuing: RPD > 25% *								
		PEM	INDs	PEM	INDs	PEM	INDs	PEM		
Cont. Cal. Date, Month+ Day+	09	1	2	3	4	5	6	7		
COMPOUND	Time	13	19	29	30	30	01	01		
alpha-BHC		✓	✓	✓	✓	✓	✓	✓		
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I	20.5									
Dieldrin										
4,4'-DDE										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor										
Endrin Ketone										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%										
Tetrachloro-m-Xylene (TCX)	✓	✓	✓	✓	✓	✓	✓	✓		
Decachlorobiphenyl (DCB)	✓	✓	✓	✓	✓	✓	✓	✓		

* Validation Criteria:

Compound Detected
Compound Undetected

Quantitation Column

RPD < 25%
RPD < 25%

and
or

Confirmation Column

RPD < 25%
RPD < 25%

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Extract Date(s): 07/04/91

[illegible]

In-Field Calibration Check										
✓ DB-60B or Equivalent _____		Calibrations:								
Initial %RSD > 20		Continuing: RPD > 25% *								
1		PEN	INDs	PEN	INDs	PEN	INDs	PEN		
Day*		1	2	3	4	5	6	7		
Cont. Cal. Date, Month+ Day+									Blank Conc.	Qualifiers
COMPOUND I		Time+							(+/ -)	
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I +										
Dieldrin §										
4,4'-DDT §										
Ethin										
Endosufan II										
4,4'-DDD										
Endosufan sulfate										
4,4'-DDT										
Methoxychlor °										
Ethrin Ketone °										
Ethrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane +										
Toxaphene										
Anoclon-1016										
Anoclon-1221										
Anoclon-1232										
Anoclon-1242										
Anoclon-1248										
Anoclon-1254										
Anoclon-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TOX) ✓										
Decachlorobiphenyl (DCB) ✓										

Confirmation Column
RPD < 25%
RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

10/04/91 10/05/91

Instrument ID: VARIAN
6100

Method Blank ID(s):
PBLK1

Extract Date(s):
09/04/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
MS (REAGENT)						X					
MSO (REAGENT)						X					
8476 DL	X							X			
8477 DL	X							X			
8478 DL	X							X			
8479 DL	X							X			
8480 DL	X							X			
8481 DL	X							X			
8482 DL	X							X			
8483 DL	X							X			
8484 DL	X							X			
8485 DL	X							X			
8486 DL	X							X			
8487 DL	X							X			
8488 DL	X							X			
8489 DL	X							X			
8490 DL	X							X			
8491 DL	X							X			
8492 DL	X							X			
8493 DL	X							X			
8494 DL	X							X			
8495 DL	X							X			
8496 DL	X							X			
8497 DL	X							X			
8498 DL	X							X			
8499 DL	X							X			
8500 DL	X							X			
8501 DL	X							X			
8502 DL	X							X			
8503 DL	X							X			
8504 DL	X							X			
8505 DL	X							X			
8506 DL	X							X			
8507 DL	X							X			
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8509 DL	X							X			
8510 DL	X							X			
8511 DL	X							X			
8512 DL	X							X			
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8645 DL	X							X			
8646 DL	X							X			
8647 DL	X							X			
8648 DL	X							X			
8649 DL	X							X			
8650 DL	X							X			
8651 DL	X							X			
8652 DL	X							X			
8653 DL	X							X			
8654 DL	X							X			
8655 DL	X							X			
8656 DL	X							X			
8657 DL	X							X			
8658 DL	X							X			
8659 DL	X							X			
8660 DL	X							X			
8661 DL	X							X			
8662 DL	X							X			
8663 DL	X							X			

Calibrations, Method Blank, Holding Time, Surrogate Recovery

10/04/91 - 10/05/91

VARIAN 6000

PBLK1

Extract Date(s): 09/04/91

[illegible]

DB-1701 or Equivalent <u>DB-17</u>		Calibrations:								
Initial NRSD > 20		Continuing: RPD > 25% *								
1		1	2	3	4	5	6	7		
Cont. Cal. Date, Month+ <u>10</u>	Day+ <u>04</u>	<u>04</u>	<u>04</u>	<u>05</u>					Blank Conc.	Qualifiers
COMPOUND	Time	<u>0445</u>	<u>1708</u>	<u>0446</u>						(+/-)
alpha-BHC										
beta-BHC	<u>20.2</u>	<u>33.9</u>		<u>28.9</u>						
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin										
4,4'-DDE										
Endrin	<u>21.4</u>		<u>76.0</u>	<u>38.1</u>						
Endosulfan II			<u>28.0</u>							
4,4'-DDD			<u>29.0</u>							
Endosulfan sulfate ♦	<u>26.0</u>		<u>76.0</u>							
4,4'-DDT										
Methoxychlor ♦										
Endrin Ketone	<u>34.7</u>									
Endrin Aldehyde	<u>26.0</u>									
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - NRSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene (TCX)	<u>✓</u>	<u>RT</u>	<u>RT</u>	<u>RT</u>						
Decachlorobiphenyl (DCB)	<u>✓</u>	<u>RT</u>	<u>RT</u>	<u>RT</u>						

Confirmation Column
RPD < 25%
RPD < 25%

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside limits (show XR)																				
Compound less than 10%? (Y/N)																				
Reanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analyst's Qualifiers																				
Sample Number for reanalysis																				
Reanalysis surrogates outside limits (show X R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract																				
Re-extraction outside limits (show X R)																				
Reanalysis Qualifiers																				

QC Limits (XR)	SOIL	WATER
S4 = Phenol-d6	24-113	10-110
S5 = 2,4-Dichlorophenol	19-122	10-123
S6 = 2,4,6-Trichlorophenol	19-122	10-123
S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC Limits exceeded (show XR)	0	0	0	0	-1-	2031-	-1-	-1170	-1-	-1292	0	0
Qualifier, if applied.					J-S/-		J-S/-		J-S/-			

Limits (XR)	SOIL	WATER
Pesticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
Pesticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

SHELL\SURROG-2.WK3

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside QC limits (show XR)																				
Compound less than 10%? (Y/N)																				
Reanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analysis Qualifiers																				
Sample Number for reanalysis.																				
Reanalysis surrogates outside limits (show & R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract.																				
Re-extraction outside limits (show & R)																				
Reanalysis qualifiers.																				

QC Limits (XR)	SOIL	WATER
S4 = Phenol-d6	25-117	10-110
S5 = 2-Fluorophenol	18-121	21-110
S6 = 2,4,6-Tribromophenol	18-121	10-110
S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8476 DL		8477 DL		8478 DL		8478 ^{RCA} 9 DL		8480 DL		8481 DL	
QC limits exceeded (show XR)	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
Qualifier, if applied.	10	650/0	-1-	? 1188	0/0	522/0	0/0	522/0	-10	608/0	-10	712/0
Limits (XR)	J-S/R	J-S/R	J-S/-	J-S/R	J-S/R	J-S/R	J-S/R	J-S/R	J-S/R	J-S/R	J-S/R	J-S/R

Limits (XR)	SOIL	WATER
Pesticide S1 = Tetrachloro-m-xylene (TCX)	80-150 (advisory)	80-150 (advisory)
Pesticide S2 = Decachlorobiphenyl (DCB)		

USHELL\SURROG-2.WK3

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside limits (show %R)																				
Compound less than 10%? (Y/N)																				
Reanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analysis Qualifiers																				
Sample Number for reanalysis																				
Reanalysis surrogate outside limits (show %R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract																				
Re-extraction outside limits (show %R)																				
Reanalysis qualifiers.																				

QC Limits (%R)	SOIL	WATER
S4 = Phenol-d6	24-113	10-110
S5 = 2-Fluorophenol	18-161	21-120
S6 = 2,4,6-Tribromophenol	18-161	10-120
S7 = 2-Chlorophenol-d4	20-150 (advisory)	33-170 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	MS		MSD		PBLK1							
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	-1-	-1-	-1-	-1-	-1-	#41/-						
Qualifier, if applied.												

Limits (%R)	SOIL	WATER
Pesticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
Pesticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

SHELL\SURROG-2.WK3

DEC 30 1991

AS/ST/DV

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CHICAGO
DENVER
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GRAND RAPIDS

DOCUMENT NO.: 070NCOODS.RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

Case No. 0051 URS TDCN 3001421 Project No. CTO-0051
Site Name St. Lawrence Island, AK Project Name N.E. Cape
Contract Laboratory Eureka Laboratories, Inc.
Sample Delivery Group (SDG) 8449 Sampling Date (Month/Year) 8/91
Sample Matrix 20 low level soils
Type of Analyses Volatile Organics, Pesticide/PCB (see page 2)

Data Reviewer Roger Simon/Alan Alai Date 12/28/91
QA Review by Jeralyn Guthrie Date 12/28/91
CCJM Approval by Richard Cheatham Date 12/28/91
Telephone logs/correspondence attached? Yes X No Not Appl.
Laboratory case narrative attached? Yes X No Not Avail.
Required deliverables provided? Yes Not Appl. No X
Airbill enclosed? Yes X No Not Avail.
CLP SOW used by laboratory for analysis 3/90

Remarks: Report is based on resubmission (rec'd 12/19/91) and is considered to be final.

Note:

- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, the EPA's Functional Guidelines for Organic Analyses and Method Specific References have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.
- Please see data flagging definitions on the last page of this report.

<u>Sample Number</u>	<u>Sample Matrix</u>	<u>VOA</u>	<u>Pest/PCB</u>
8449	soil	X	X
8450	soil	X	X
8451	soil	X	X
8452	soil	X	X
8453	soil	X	X
8454	soil	X	X
8455	soil	X	X
8456	soil	X	X
8457	soil	X	X
8458	soil	X	X
8459	soil	X	X
8460	soil	X	X
8461	soil	X	X
8462	soil	X	X
8463	soil	X	X
8464	soil	X	X
8465	soil	X	X
8466	soil	X	X
8467	soil	X	X

(continued next page)

X = Analysis has been provided for validation.

0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.

- = Analysis was not requested per the Chain of Custody or required to meet criteria.

(continued from page 2)

[illegible]

- X = Analysis has been provided for validation.
- 0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. Deliverables

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes _____ No X

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY

- X Included in package
O Not included and/or Not available
NA Not applicable or Not required
RS Provided as resubmission

- X Method blank spikes with each batch
X/O Control chart developed by lab
X Sample results - Form 1 or spreadsheet
X/O CLP data flags used by laboratory
X Sample chromatograms and mass spectra
X/RS Holding times (sampling, prep and analysis dates provided)
X System Monitoring Compounds (SMC) and Surrogate recoveries - Form 2
X Matrix spike/matrix spike duplicate (MS/MSD) - Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
X Method blank summary - Form 4
X Report form for method blank results (Form 1 or spreadsheet)
X/RS GC/MS tuning - Form 5
X Initial calibration data and Resolution Summary, - Form 6
X Continuing calibration data and Verification Summary - Form 7
X Internal standard area summary and Analytical Sequence - Form 8
X Pesticide Florisil Cartridge Check and GPC Calibration - Form 9

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines or SW846 holding time requirements. See the following table for a summarization of sample holding times.

Yes No X

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or U).

Holding Time Summary

<u>Sample Number</u>	<u>Sampling Date</u>	<u>VISR</u>	<u>VOA Analysis</u>	<u>Pesticide</u>	
				<u>Extract</u>	<u>Analysis</u>
8449**	8/23/91	8/27	9/06	9/4 (*5)	9/28
8450	8/23/91	8/27	9/06	9/4 (*5)	9/28
8451**	8/23/91	8/27	9/06	9/4 (*5)	9/28
8452	8/23/91	8/27	9/06	9/4 (*5)	9/28
8453	8/23/91	8/27	9/06	9/4 (*5)	9/28
8453MS			X	—	—
8453MSD			X	—	—
8454**	8/23/91	8/27	9/06	9/4 (*5)	9/28
8455	8/23/91	8/27	9/06	9/4 (*5)	9/28
8456	8/23/91	8/27	9/06	9/4 (*5)	9/28
8457	8/23/91	8/27	9/06	9/4 (*5)	9/28
8458	8/23/91	8/27	9/06	9/4 (*5)	9/28
8459	8/23/91	8/27	9/06	9/4 (*5)	9/28
8460	8/23/91	8/27	9/06	9/4 (*5)	9/28
8461	8/23/91	8/27	9/06	9/4 (*5)	9/28
8462	8/23/91	8/27	9/06	9/4 (*5)	9/28
8463	8/23/91	8/27	9/06	9/4 (*5)	9/28
8464	8/23/91	8/27	9/06	9/4 (*5)	9/28
8465	8/23/91	8/27	9/05	9/4 (*5)	9/28
8466	8/23/91	8/27	9/05	9/4 (*5)	9/28
8466MS			—	X	X
8466MSD			—	X	X
8467	8/23/91	8/27	9/05	9/4 (*5)	9/28
8468	8/23/91	8/27	9/05	9/4 (*5)	9/28

** analyzed at dilution for Pest/PCB analysis. Form I's labeled with "DL".

III. GC/MS Tuning and Mass Calibration

The BFB and/or DFIPP performance results summaries were included for all samples, and were reported to be within specified criteria at the appropriate frequency.

Yes X No

Comments: In the original submission the ratios for masses 177/176 were calculated incorrectly for all tunes. Instead of 100%, the initial (7/19) and continuing (9/5 and 9/6) tune ratios should be 8.0%, 6.9% and 7.0% respectively. The laboratory has provided the corrected Forms 5A as resubmissions.

IV. A. Instrument Calibration (Volatiles)

- The instrument response factor (RRF) data summaries were reviewed for the initial and continuing calibrations. All information was present and reported on the required summary forms. Response factors met the required criteria for volatile analyses, thus no data have been qualified.

Yes No X

Comments: The RRF values outside of data validation guideline specifications for the SPOC's are listed below. All volatile compounds have been reviewed with a control limit of 0.050 being used as a minimum response factor. (NOTE: This procedure has been used by the reviewer in order to prevent the qualification of compounds that had acceptable response factors.) The following out-of-control calibration compound(s) have resulted in associated sample data being flagged as estimated (J or U) or in those instances where a response factor of <0.050 was reported the data for the compound has been rejected (R) if reported as undetected in the sample. All samples have been affected.

<u>Other compounds</u>	<u>Control</u>	<u>Init. Cal.</u>	<u>Cont. Cal.</u>	<u>Cont. Cal.</u>
	<u>Limit</u>	<u>Date / RRF</u>	<u>Date / RRF</u>	<u>Date / RRF</u>
2-butanone	0.050	7-19/0.049	9-5/0.049	9-6/0.044

It was noted by the reviewer that 2-butanone has a minimum RRF of 0.010 according to the SOW 3/90. While contractually compliant, a significant calibration problem is demonstrated and all 2-butanone results have been qualified per Functional Guidelines criteria.

2. The percent relative standard deviation (%RSD) for the initial calibrations and the percent difference (%D) for the continuing calibrations were reviewed. The %RSD and %D values reported met the data validation criteria (i.e., < 30 %RSD and < 25 %D) for volatile analyses, thus no data have been qualified.

Yes X No

Comments: No comments.

B. Instrument Calibration (Pesticide/PCB)

1. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes No X

Comments: The compliant and non-compliant %RSD values found to be above 20% are summarized on the attached Table 1-P. A data validation specification of 20% RSD for any compound identified, has been applied for the column used in quantifying the sample result(s).

2. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes X No

Comments: No comments.

3. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes No X

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

4. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes _____ No X

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

5. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes _____ No X

Comments: The retention times for alpha BHC, beta-BHC, gamma-BHC, endrin, 4,4'-DDT, methoxychlor, heptachlor, tetrachloro-m-xylene (INDA and B surrogate), aldrin, heptachlor, endrin, aldehyde, alpha-chlorodane, gamma-chlorodane, decachlorobiphenyl (IND B, surrogate) did not meet the specified criteria for the DB-17 column analysis as stated in the SOW. This deficiency is considered to be non-compliant as specified in the 3/90 SOW. However, no additional qualifiers have been applied to any sample data.

6. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses.

Yes _____ No X

Comments: The following standard analyses did not meet the % breakdown criteria.

<u>Calibration</u>	<u>Column</u>	<u>DDT</u>	<u>% Breakdown</u>		<u>Affected Samples</u>
			<u>Endrin</u>	<u>Combined</u>	
Initial 10/02/91,	DB-17 1901	—	30.6	30.6	All
Initial 10/03/91,	DB-17 0522	—	32.6	35.2	All
Verification 09/27/91,	DB-608 2219	16.2	14.6	30.8	8449DL, 8450, 8452, 8452, 8453, 8454DL, 8455, 8456, 8457, 8458, 8459

All pesticide/PCB data is qualified on the basis of holding times and no additional qualifiers have been applied to the data based on the % breakdown of DDT or Endrin.

7. The florisil cartridge check and, when applicable, the GPC calibration were found to be within specified criteria.

Yes X No

Comments: No comments.

8. The retention times for the surrogates were within criteria for every sample.

Yes No X

Comments: An asterisk (*) on the following table indicates that the retention time was not within established retention time windows. No additional qualifiers have been applied to the sample data based on this non-compliance.

Sample No.	TCX 1	TCX 2	DCB 1	DCB 2
00MS				
00MSD				
8449DL				*
8450				*
8451DL		*		
-8452		*		*
8453		*		*
8454DL				*
8455		*		*
8456		*		
8457		*		*
8458		*		*
8459		*		*
8460		*		*
8461		*		*
8462		*		*
8463		*		*
8464		*		*
8465		*		*
8466		*		*
8466MS		*		*
8466MSD		*		
8467		*		*
8468		*		
PBLK1				

V. Blanks

- A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes ☐ No ☒

Comments: Contaminant quantities reported in the laboratory preparation blanks are listed below. Associated samples which have been flagged "U" due to the blank contaminants are also shown.

<u>Blank ID</u>	<u>Analyte</u>	<u>Amount (μg/kg)</u>	<u>Associated Samples</u>
VBLK1, VBLK2	methylene chloride	8, 6	all

- B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes ☐ No ☐ Not Identified ☐

Comments: No trip blanks were found in this data package.

- C. Other Blanks - No other types of blanks have been identified in the data package.

VI. Surrogate and System Monitoring Compound (SMC) Recovery

The surrogate and System Monitoring Compound (SMC) recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes ☐ No ☒

Comments: Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.

VII. Blank Spike - Laboratory Control Sample(s)

- A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes X No

Comments:

1. The compounds used for the Pesticide/PCB blank spike were matrix spike compounds.
2. The reagent spike for volatile analysis was spiked with the matrix spike compounds. Matrix spike control limits were applied by the reviewer.

- B. Laboratory control charts for LCS analysis were provided in the package for the spike compounds.

Yes No X

Comments:

1. The pesticide/PCB control charts provided for the LCS analysis were used for review.
2. The volatile control charts provided with the data package were for system monitoring compounds (SMC) analysis instead of LCS analysis. The CLP limits were used for the review of the volatile analysis.

VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes ☐ No ☒

Comments:

1. Sample 8453 was used for volatile MS/MSD. Sample 8466 was used for Pesticide/PCB MS/MSD.
2. The following spike analytes were reported to be outside limits:

<u>Analyte</u>	<u>% Recovery</u>		<u>RPD</u>	<u>Control Limits</u>	
	<u>MS</u>	<u>/ MSD</u>		<u>% Rec.</u>	<u>/ RPD</u>
heptachlor	76	/ 49	43	35 - 130	/ 31
aldrin	84	/ 53	45	34 - 132	/ 43

3. No additional qualifiers have been applied to any sample results on the basis of MS/MSD recoveries or RPD values.

IX. Additional Comments

1. It was noted by the reviewer that CRDL's have not been adjusted to SOW 3/90 levels for most VOA compounds.
2. Several contract requirements were not met as indicated in the following sections: Section IV.B.1., IV.B.5, IV.B.6., IV.B.8.
3. The laboratory did not flag pesticide/PCB results which were sufficiently high in concentration with a "C" indicating GC/MS confirmation. The reviewer was unable to determine that the requirements as stated in the 3/90 SOW were met with regard to GC/MS confirmation analysis of Pesticide/PCB positive hits.
4. As addressed in the laboratory case narrative, the higher of the two columns analyses was reported for the Pesticide/PCB Form I's. This procedure is specifically non-compliant as stated in the 3/90 SOW.
5. The case narrative/certification statement was not signed by the laboratory director or a designee.

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

- U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
- R - Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.
- J - The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.
- B - The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.
- JN - Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

CCJM

ENVIRONMENTAL ENGINEERS & SCIENTISTS

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MEMORANDUM

C.C.J.M.
FILE
COPY

TO: Jamie Bruton, URS/Seattle
FROM: ^{RS} Roger Simon, ^{for} Jeralyn Guthrie, Richard Cheatham,
CCJM/Denver
DATE: December 5, 1991
DOCUMENT NO: 0721^{7/11}NCRAI.MEM
SUBJECT: Volatile Organics Tuning Problems for CTO-051

Per our conversation of 12/5/91, please find herein a detailed description of tuning problems found with all volatile organics analyses performed at Eureka Laboratories for CTO-051. These data packages are considered "on hold" until these issues have been resolved. Data packages have been identified by TDCN numbers and SDG.

1. For all CTO-051 data packages with volatile organics analyses (SDG 8449/TDCN 3001421, SDG 8484/TDCN 301210, SDG 8401/TDCN 3001436 and SDG 8416/TDCN 3001439), the values reported for the percent relative abundance of masses 177/176 were incorrectly reported as 100% on the Form V Tuning Summaries. This appeared to be a computer error since calculation of this ratio by the reviewer resulted in acceptable tunes. The laboratory should provide corrected summary forms.
2. In SDG 8484/TDCN 3001210, the relative abundance for masses 176/174 was reported and found by the reviewer to be 119.4%. Since there is no expanded criteria for this critical ratio, all data will have to be qualified as unusable (R); raw data to verify the values reported on the Form V Tuning Summary were not included with the Level C data package, so it could not be determined whether the reported ratio was a transcription problem with the base mass percentages reported for m/z 174 and 176, software problem or something else. Please indicate if a calculation/transcription problem existed and provide a corrected summary form or the correct values for masses 176 and 174.

If you should have any questions, please do not hesitate to call us at (303) 987-2928.

cc: URS / Navy Clean PP
C.C. JOHNSON & MALHOTRA. P.C.

RESUBMISSION 12/14/91

URS

MEMORANDUM C.C.J.M.

Date

12-18-91

Page

of

1

TO:

CCJM

FROM:

FORM 1991

URS Consultants, Inc.

215 Union Blvd. Suite 215
Lake wood, CO 80228

RECEIVED 1100 Olive Way, Suite 200

Seattle, Washington 98101-1832

BY:

Analytical Support Activities

PHONE:

(206) 623-1800

FAX:

(206) 233-9570

ATTENTION:

~~Rolf Reindt~~ GERALYN GUTHRIE

SUBJECT:

Resubmitted FORM I for Volatile Analysis by Eureka Laboratories Inc for CTO-81

Please find the above referenced resubmitted Form I for volatile analysis. They are for four (4) separate SDG numbers and are as follows:

1. Eureka	SDG: 8401	URS TDCN: 3001436
2. Eureka	SDG: 8416	URS TDCN: 3001439
3. Eureka	SDG: 8449	URS TDCN: 3001421
4. Eureka	SDG: 8484	URS TDCN: 3001210

C.C.J.M.

12/18/1991

RECEIVED

If you have any questions, please feel free to call any time.

DISTRIBUTION:

Lab File

Sincerely Yours,

W. J. Burton, PhD
URS CONSULTANTS

1. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc.
Lab Certification Number: E765
SDG Number: 8449
Purchase Order Number: AN-91-P-0019
Contract Task Order Number: 0051
NEESA QA/QC Level C
Analysis: Initial
Sample No.: 20

A. Sample Description/Analytical Description

<u>Client ID</u>	<u>Lab ID</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Matrix</u>	<u>Analysis/Method</u>
8449	9108213-1A	08/23/91	08/27/91	Soil	VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW
8450	9108213-2A	08/23/91	08/27/91	Soil	Same as above
8451	9108213-3A	08/23/91	08/27/91	Soil	Same as above
8452	9108213-4A	08/23/91	08/27/91	Soil	Same as above
8453	9108213-5A	08/23/91	08/27/91	Soil	Same as above
8454	9108213-6A	08/23/91	08/27/91	Soil	Same as above
8455	9108213-7A	08/23/91	08/27/91	Soil	Same as above
8456	9108213-8A	08/23/91	08/27/91	Soil	Same as above
8457	9108213-9A	08/23/91	08/27/91	Soil	Same as above
8458	9108213-10A	08/23/91	08/27/91	Soil	Same as above
8459	9108213-11A	08/23/91	08/27/91	Soil	Same as above
8460	9108213-12A	08/23/91	08/27/91	Soil	Same as above
8461	9108213-13A	08/23/91	08/27/91	Soil	Same as above
8462	9108213-14A	08/23/91	08/27/91	Soil	Same as above
8463	9108213-15A	08/23/91	08/27/91	Soil	Same as above
8464	9108213-16A	08/23/91	08/27/91	Soil	Same as above
8465	9108213-17A	08/23/91	08/27/91	Soil	Same as above
8466	9108213-18A	08/23/91	08/27/91	Soil	Same as above
8467	9108213-19A	08/23/91	08/27/91	Soil	Same as above
8468	9108213-20A	08/23/91	08/27/91	Soil	Same as above

B. Sample Receipt

Samples were received in one delivery batch on August 27, 1991. Samples were in good condition. Sample receipt conditions, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bill. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Number 91-08-213.

C. Quality Control Report

1. Volatile Analysis by 3/90 CLP SOW

Method Blank

Methylene chloride, a common laboratory introduced contaminant, was found in the method blanks, as well as in the samples. The concentration of Methylene Chloride found in the method blanks were 6 and 8 ug/l (ppb) as compared to the 8 - 30 ug/L (ppb) detected in the samples. In such an event, Methylene chloride is not identified as positive analyte in the samples when the contamination is taken into consideration.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

2. Pesticide/PCB by 3/90 CLP SOW

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (I) Telecation Software used the Response Factors of the Aroclors standards analyzed in the initial calibration for the quantification. (II) ELI manual worksheet used the response factors of a higher concentration of Aroclor standards which were analyzed after the sample run and used for quantification per 3/90 CLP SOW.

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

- i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.
- ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEM02 (Performance Evaluation Mixture #2) from the first column analysis exceeded the limit by 8%. The % combined breakdown for PEM08 and PEM10 exceeded the limit by 2.5% and 11% respectively.

The % combined breakdown for PEM01 from the second column analysis exceeded the limit by 0.6%.

Calibration Verification

There is a total of eight continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence as required by CLP protocol.

RPD value (26.1) for gamma-BHC (Lindane) for one of the form VII Pest-I exceeded the control limit (25) by a margin of 1.1%.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

DCB was slightly outside the Surrogate Retention Time (RT) window in two analyses for the first column analysis. DCB and TCX were slightly outside the RT window in twenty three and twenty one analyses respectively for the 2nd column analysis.

Surrogate Recovery

The % recovery of TCX for Sample No. 8457, 8465, 8466 MS/MSD, 8468, and PBLK1 were out of the advisory QC limit. The % recoveries of DCB for Sample No. 8453, 8459 were high due to matrix interference. The DCB recoveries were out of the advisory limit for Sample No. 8449 DL, 8451 DL, and 8454 DL, due to dilutions.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I without P flag.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 8468, 8466, 8464, 8463, 8461, 8459, 8455, 8453, 8452, 8450.

Matrix Spike and Matrix Spike Duplicate:

The % RPD of Heptachlor, Aldrin, and Lindane for 8466 MS and 8466 MSD exceeded the QC limit by a margin of 12%, 2%, and 1%, respectively.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Shao-Pin Yo, Ph.D.
Laboratory Director



QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER

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12710

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RECIPIENT'S COPY

From (Your Name) Please Print W. Jaime Bruton, Ph.D.		Your Phone Number (Very Important) (206) 623-1800		To (Recipient's Name) Please Print Richard Cheatham		Recipient's Phone Number (Very Important) (303) 303	
Company U.S. COMBATANT CENTER		Department/Floor No.		Company CCJM		Department/Floor No. Suite 215	
Street Address 1100 LIV...		City Seattle		Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes) 215 Union Boulevard		City Lakewood	
State WA		ZIP Required 98101		State CO		ZIP Required 80228	
YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice) 070-51 30510.12							
PAYMENT 1 ☒ Bill Sender 2 ☐ Bill Recipient's FedEx Acct No 3 ☐ Bill 3rd Party FedEx Acct No 4 ☐ Bill Credit Card				IF HOLD FOR PICK-UP, Print FEDEX Address Here Street Address City State ZIP Required			
4 SERVICES (Check only one box)		5 DELIVERY AND SPECIAL HANDLING (Check services required)		6 PACKAGES WEIGHT YOUR DECLARED VALUE		7 RELEASE Signature Date/Time	
☐ Priority Overnight (Delivery by next business morning) 11 ☐ YOUR PACKAGING 16 ☐ FEDEX LETTER 12 ☐ FEDEX PAK 13 ☐ FEDEX BOX 14 ☐ FEDEX TUBE		☐ Standard Overnight (Delivery by next business afternoon) 51 ☐ YOUR PACKAGING 56 ☐ FEDEX LETTER 52 ☐ FEDEX PAK 53 ☐ FEDEX BOX 54 ☐ FEDEX TUBE ☐ Economy Two-Day (Delivery by second business day) 30 ☐ ECONOMY ☐ Government Overnight (Delivery by next business day) 45 ☐ GOVT LETTER 41 ☒ GOVT PACKAGE		☐ 1 HOLD FOR PICK-UP (if a box) ☒ 2 DELIVER WEEKDAY ☐ 3 DELIVER SATURDAY (if a charge) ☐ 4 DANGEROUS GOODS (if a charge) ☐ 5 ☐ 6 DRY ICE ☐ 7 OTHER SPECIAL SERVICE ☐ 8 ☐ 9 SATURDAY PICK-UP (if a charge) ☐ 10 ☐ 11 ☐ 12 HOLIDAY DELIVERY (if a charge)		Total 1 20 NA Total 1 20 NA DIM SHIPMENT (Chargeable Weight) ☐ Received At ☒ Regular Stop ☐ Drop Box ☐ On Call Stop ☐ Station	
Freight Service (Use Extra Large if any package over 150 lbs) 70 ☐ OVERNIGHT FREIGHT 80 ☐ TWO-DAY FREIGHT						Emp No Date ☐ Cash Received ☐ Return Shipment ☐ Third Party ☐ Chg To Del ☐ Chg To Hold Street Address City State Zip Received By X Date/Time Received FedEx Employee Number Release Signature FedEx Emp No Date/Time	
*Declared Value Limit \$100 **Call to determine restrictions						Federal Express Use Base Charges Declared Value Charge Other 1 Other 2 Total Charges REVISION DATE 6/91 PART #137204 FXEM 9/91 FORMAT #099 099 © 1990-91 F.E.C. PRINTED IN U.S.A.	

TABLE 1 (3/90, OLM01.8)

VOA Qualifier Summary

Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed: 9/6

Instrument ID: VOA2

Method Blank ID: VBLK1

Date: 9/6 - Time: 7:42

Sample Identifier:	Hold Time		Standards: (↑, ↓; ↓↓=<10%)					
	Out		SMCs			Internal (IS)		
	Ar	All	1	2	3	1	2	3
3457								
3458								
3459								
3460								
3461								
3462								
3463								
3464								

ICal Date: 7/19/91 CCal Time: 9/6

* RRF must be ≥ .010 System Monitor Compound	MIN	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	Internal
COMPOUND:	RRF	RRF < MIN	RRSD >20.5	RRF < MIN	RD >25	Method	Trip	(+/-)	Standard
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					6 J		U J	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethane	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethane (total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049		0.049				R	2
1,1,1-Trichloroethane	.100								
Carbon Tetrachloride	.100								
Bromodichloroethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropane	.200								
Trichloroethane	.300								
Dibromochloroethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropane	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethane	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8	o *								3
Bromofluorobenzene	o .200								3
1,2-Dichloroethane-d4	o *								1

Blank Tentatively Identified Compounds

Blank ID Reported as:

RT (µg/kg or µg/L)

Qualifiers

TABLE 1 (3/90, OLM01.8)

VOA Qualifier Summary

Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed: 9/6

Instrument ID: VOA2

Method Blank ID: VBLK1

Date: 9/6 Time: 7:42

Sample Identifier:	Hold Time		Standards: (↑ ↓; ↓↑=<10%)					
	Out		✓ SMCs			Internal (IS)		
	Ar	All	1	2	3	1	2	3
8449								
8450								
8451								
8452								
8453								
8453 MS								
8453 MSD								
8454								
8455								
8456								

ICal Date: 7/19 CCal Time: 7/6

* RRF must be ≥ .010 System Monitor Compound COMPOUND:	MIN RRF	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	Internal Standard
		RRF < MIN	RRSD >20.5	RRF < MIN	RRSD >25	Method	Trip		
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					6 J		UJ	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethane	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethane (total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	* 0.049							R	
1,1,1-Trichloroethane	.100								2
Carbon Tetrachloride	.100								
Bromodichloromethane	.200								
1,2-Dichloropropene	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8	o *								3
Bromofluorobenzene	o .200								3
1,2-Dichloroethane-d4	o *								1

Blank Tentatively Identified Compounds

Blank ID Reported as:

RT

(µg/kg or µg/L)

Qualifiers

VOA Qualifier Summary

Date Analyzed: 9/5

Instrument ID: VOA2

Method Blank ID: VBLK2

Date: 7/5 - Time: 16:35

[illegible]

1Cal

Date: 7/19/91

CCal

Time: 9/5/91

16:03

* RRF must be ≥ .010		Initial Cal.		Continuing Cal.		Blanks		Qualifiers	Internal
eSystem Monitor Compound	MIN	RRF	%SD	RRF	%SD			(+/-)	Standard
COMPOUND:	RRF	< MIN	>20.5	< MIN	>25	Method	Trip		
Chloromethane	*								1
Bromomethane	.100								
Vinyl Chloride	.100								
Chloroethane	*								
Methylene Chloride	*					8 J		UJ	
Acetone	*								
Carbon Disulfide	*								
1,1-Dichloroethene	.100								
1,1-Dichloroethane	.200								
1,2-Dichloroethene(total)	*								
Chloroform	.200								
1,2-Dichloroethane	.100								
2-Butanone	*	0.049		0.049				R	2
1,1,1-Trichloroethane	.100								
Carbon Tetrachloride	.100								
Bromo-dichloromethane	.200								
1,2-Dichloropropane	*								
cis-1,3-Dichloropropene	.200								
Trichloroethene	.300								
Dibromochloromethane	.100								
1,1,2-Trichloroethane	.100								
Benzene	.500								
trans-1,3-Dichloropropene	.100								
Bromoform	.100								
4-Methyl-2-Pentanone	*								3
2-Hexanone	*								
Tetrachloroethene	.200								
1,1,2,2-Tetrachloroethane	.500								
Toluene	.400								
Chlorobenzene	.500								
Ethylbenzene	.100								
Styrene	.300								
Xylene (total)	.300								
Toluene-d8	o *								3
Bromofluorobenzene	o .200								3
1,2-Dichloroethene-d4	o *								1

Blank Tentatively Identified Compounds

Blank ID

Reported as:

RT

($\mu\text{g}/\text{kg}$ or $\mu\text{g}/\text{L}$)

qualifiers

Yabka

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24

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

09/28/91 - 09/29/91

Instrument ID:

HP 5890

Method Blank ID(s):

PBLK1

Extract Date(s):

09/04/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
8449 DL						X					
8450						X					
8452						X					
8453						X					
8454 DL						X					
8455						X					
8456						X					
8457						X					
8458						X					
8459						X					

≥60% Resolved ☒ ≥60% Resolved ☒ ≥60% Resolved ☒
in Initial Resolution Check

DB-608 or Equivalent	09/27/91 Calibrations:								Blank Conc.	Qualifiers (+/-)
	Initial %RSD>20	Continuing: RPD > 25% *								
		PEM	INDs	PEM	INDs	PEM	INDs	PEM		
Cont. Cal. Date, Month+ Day+ Time+	1	1	2	3	4	5	6	7		
COMPOUND	29	27	28	25	29	29				
alpha-BHC	Time+	2119	1006	2114	2119	7123				
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I	20.5									5.61-
Dieldrin										
4,4'-DDE										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor										
Endrin Ketone										
Endrin Aldehyde										
alpha-Chlordane										
gamma-Chlordane										
Toxaphene										
Anaclar-1016										
Anaclar-1221										
Anaclar-1232										
Anaclar-1242										
Anaclar-1248										
Anaclar-1254										
Anaclar-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene (TCX)										
Decachlorobiphenyl (DCB)										

* Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column

RPD < 25%

RPD < 25%

and

or

Confirmation Column

RPD < 25%

RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

07/28/91 - 09/29/91

Instrument ID: HP5890

Method Blank ID(s): PBLK1

Extract Date(s): 09/04/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
8461							X				
8462							X				
8463							X				
8464							X				
8465							X				
8466							X				
8467							X				
8468							X				
84510L							X				
8466MS							X				

≥60% Resolved ☒ ≥60% Resolved ☒ ≥60% Resolved ☒
in Initial Resolution Check

DB-608 or Equivalent		09/27/91 Calibrations:									
		Initial 20SD>20	Continuing: RPD > 25% *								
			PEM	INDs	PEM	INDs	PEM	INDs	PEM		
Cont. Cal. Date, Month+ 09		Day+	27	28	28	29	29			Blank	
COMPOUND:		Time+	2219	1006	2114	0849	3129			Conc.	
alpha-BHC										Qualifiers	
beta-BHC										(+/-)	
delta-BHC											
gamma-BHC (Lindane)											
Heptachlor											
Aldrin											
Heptachlor epoxide											
Endosulfan I *		20.5								5-C/-	
Dieldrin											
4,4'-DDE											
Endrin											
Endosulfan II											
4,4'-DDD											
Endosulfan sulfate											
4,4'-DDT											
Methoxychlor *											
Endrin Ketone *											
Endrin Aldehyde											
alpha-Chlordane											
gamma-Chlordane *											
Toxaphene											
Aroclor-1016											
Aroclor-1221											
Aroclor-1232											
Aroclor-1242											
Aroclor-1248											
Aroclor-1254											
Aroclor-1260											
Surrogates - 20SD > 30%			Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene(TCX)											
Decachlorobiphenyl (DCB)											

* Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column
RPD% < 25%
RPD% < 25%

and
or

Confirmation Column
RPD < 25%
RPD < 25%

Calibrations, Method Blank, Holding Time, Surrogate Recovery

09/28/91 - 09

HP 5850

FBK1

Extract Date(s): 09/04/91

[illegible][illegible]

Compound Detected
Compound Undetected

RPO% < 25%

RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

10/03/91 - 10/04/91

Instrument ID:

VARIAN 6000

Method Blank ID(s):

P8LE1

Extract Date(s):

09/04/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
84490L						X					
8450						X					
84510L						X					
8452						X					
8453						X					
84540L						X					
8455						X					
8456						NONE					
8457											
8458											

±50% Resolved ☒ ±50% Resolved ☒
in Initial Resolution Check

DB-1701 or Equivalent	Calibrations:								Blank Conc.	Qualifiers
	Initial %RSD>20	Continuing: RPD > 25% *								
		1	2	3	4	5	6	7		
Cont. Cal. Date, Month	Day									
COMPOUND:	Time									
alpha-BHC										
beta-BHC	20.2									
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I										
Dieldrin										
4,4'-DDE										
Endrin	21.4									
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate *	26.0									
4,4'-DDT										
Methoxychlor *										
Endrin Ketone	34.7									
Endrin Aldehyde	26.0									
alpha-Chlordane										
gamma-Chlordane *										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%								
Tetrachloro-m-Xylene (TOX)										
Decachlorobiphenyl (DCB)										

* Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column
RPD < 25%
RPD < 25%

and
or

Confirmation Column
RPD < 25%
RPD < 25%

TABLE 1 - P
Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

10/03/91-10/04/91

Instrument ID: VARIAN 6100

Method Blank ID(s): FBLK1

Extract Date(s): 05/04/91

Sample Identifier:	HoldTime		Surr. Rec. (%)		Standard(s) After Sample Analysis:						
	Ext	Anal	TCX	DCB	1	2	3	4	5	6	7
8459					NONE						
8460											
8461											
8462											
8463											
8464											
8465											
8466											
8467											
8468											

≥60% Resolved ☒ ≥60% Resolved ☒
in Initial Resolution Check

DB-1701 or Equivalent <u>DB-17</u>	10/03/91									
	Calibrations:									
	Initial %RSD > 20	Continuing: RPD > 25% *								
	1	2	3	4	5	6	7			
Cont. Cal. Date, Month	Day	03	03							
COMPOUND	Time	0522	1707							
alpha-BHC		26.1								
beta-BHC	20.2									
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I ♦										
Dieldrin										
4,4'-DDE										
Endrin	21.4									
Endosulfan II		33.0								
4,4'-DDD										
Endosulfan sulfate ♦	26.0	380								
4,4'-DDT										
Methoxychlor ♦										
Endrin Ketone	34.7									
Endrin Aldehyde	28.0	NONE								
alpha-Chlordane										
gamma-Chlordane ♦										
Toxaphene										
Anroclor-1016										
Anroclor-1221										
Anroclor-1232										
Anroclor-1242										
Anroclor-1248										
Anroclor-1254										
Anroclor-1260										
Surrogates - %RSD > 30%	Surrogate RPDs must also be ≤ 25%									
Tetrachloro-m-Xylene (TCX)		RT	RT							
Decachlorobiphenyl (DCB)		RT								

* Validation Criteria:
Compound Detected
Compound Undetected

Quantitation Column
RPD < 25%
RPD < 25%

and
or

Confirmation Column
RPD < 25%
RPD < 25%

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Extract Date(s): 09/04/91

[illegible]

		Calibrations:									
DB-1701 or Equivalent <u>DB-17</u>		Initial %RSD > 20	Continuing: RPD > 25% *								
			PEM	INDs	PEM	INDs	PEM	INDs	PEM		
		1	2	3	4	5	6	7			
Cont. Cal. Date, Month+ Day+	10									Blank Conc.	Qualifiers
COMPOUND	Time										(+/-)
alpha-BHC		25.22	26.1								J-C/-
beta-BHC	20.2										J-C/-
delta-BHC	X N/A										
gamma-BHC (Lindane)											
Heptachlor											
Aldrin											
Heptachlor epoxide											
Endosulfan I +											
Dieldrin											
4,4'-DDE											
Endrin	21.4										J-C/-
Endosulfan II			35.0								J-C/-
4,4'-DDD											
Endosulfan sulfate o	26.0		38.0								J-C/-
4,4'-DDT											
Methoxychlor o											
Endrin Ketone	34.7										J-C/-
Endrin Aldehyde	26.2		NONE								J-C/-
alpha-Chlordane											
gamma-Chlordane +											
Toxaphene											
Aroclor-1016											
Aroclor-1221											
Aroclor-1232											
Aroclor-1242											
Aroclor-1248											
Aroclor-1254											
Aroclor-1260											
Surrogates - %RSD > 30%		Surrogate RPDs must also be ≤ 25%									
Tetrachloro-m-Xylene(TCX)			RT							RT	
Decachlorobiphenyl (DCB)			RT								

Confirmation Column
RFD < 25%
RFD < 25%

TABLE 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 1 of 36

VOA FRACTION

All OK

A. Sample Numbers

B. Surrogate(s) outside QC limits (show XR)

C. Compound less than 10X? (Y/N)

D. Initial Analysis Qualifiers

E. Reanalysis required? (Y/N)

o If blank, were associated samples reanalyzed? (Y/N)

F. Sample Number for reanalysis.

G. Reanalysis surrogates outside limits (show % R)

H. Reanalysis qualifiers.

QC Limits (XR)

VOA S1 = Toluene-d8

VOA S2 = Bromofluorobenzene

VOA S3 = 1,2-Dichloroethane-d4

A:\SURROG-1.WK3

SOIL WATER

84-138 88-110

59-113 86-115

70-121 76-114

NOTE: The circled sample number is the analysis/reanalysis recommended for use.

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside QC limits (show XR)																								
Compound less than 10%? (Y/N)																								
Reanalysis required? (Y/N)																								
If blank, were associated samples reanalyzed? (Y/N)																								
Initial Analysis Qualifiers																								
Sample Number for reanalysis.																								
Reanalysis surrogates outside limits (show X R)																								
Re-extraction required? (Y/N)																								
If blank, were associated samples re-extracted? (Y/N)																								
Sample number for re-extract.																								
Re-extraction outside limits (show X R)																								
Reanalysis qualifiers.																								

QC Limits (XR)	SOIL	WATER
id S4 = Phenol-d6	25-113	10-110
id S5 = 2-fluorophenol	25-121	21-110
id S6 = 2,4,6-tribromophenol	10-122	10-123
id S7 = 2-chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show XR)	-1+	27.2/227	-1-	454/-	-1-	-1/166	-1-	-1-	-1-	37/160	-1-	-1-
Qualifier, if applied.												

Limits (XR)	SOIL	WATER
sticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
sticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

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AKA

~~8454~~
8454 DL
-1- 269/18

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside QC limits (show %R)																				
Compound less than 10%? (Y/N)																				
Reanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analysis Qualifiers																				
Sample Number for reanalysis.																				
Reanalysis surrogates outside limits (show %R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract.																				
Re-extraction outside limits (show %R)																				
Reanalysis qualifiers.																				

QC Limits (%R)	SOIL	WATER
100 S4 = Phenol-d6	24-113	10-110
100 S5 = 2-fluorophenol	25-121	21-110
100 S6 = 5-Fluorophenol	16-122	10-123
100 S7 = 2-chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	-/-	-/-	-/-	44.7/-	36.8/35.6	44.4/-	-/-	45.3/-	-/-	43.1/183	-/-	46.2/-
Qualifier, if applied.												

Limits (%R)	SOIL	WATER
pesticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
pesticide S2 = Decachlorobiphenyl (DCB)		

\\SHELL\\SURROG-2.WK3

ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside QC limits (show %R)																				
Compound less than 10%? (Y/N)																				
Reanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analysis Qualifiers																				
Sample Number for reanalysis.																				
Reanalysis surrogate outside limits (show %R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract.																				
Re-extraction outside limits (show %R)																				
Reanalysis qualifiers.																				

QC Limits (%R)	SOIL	WATER
1,2,4,5-Phenol-d6	24-113	10-110
1,2,4,5-Fluorophenol	18-123	10-123
1,2,4,5-Tribromophenol	18-123	10-123
1,2,4,5-Tetrachlorophenol-d4	20-130 (advisory)	13-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	8461	8462	8463	8464	8465	8466
	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	-/-	43.2/-	-/-	40.1/-	45.9/44.1	-/-
Qualifier, if applied.						

Limits (%R)	SOIL	WATER
Pesticide S1 = Tetrachloro-m-xylene (TCX)	80-130 (advisory)	80-150 (advisory)
Pesticide S2 = Decachlorobiphenyl (DCB)		

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ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside QC limits (show %R)																				
Compound less than 10% (Y/N)																				
Reanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analysis Qualifiers																				
Sample Number for reanalysis																				
Reanalysis surrogate outside limits (show %R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract																				
Re-extraction outside limits (show %R)																				
Reanalysis qualifiers																				

QC Limits (%R)	SOIL	WATER
id S5 = Phenol-d6	22-113	10-110
id S6 = 2-Fluorophenol	18-143	10-110
id S7 = 2,4,6-Tribromophenol	18-143	10-110
id S9 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	S466 ms		S466 ms		S467		S468		PBL2.1		BLSF (CERAT)	
QC limits exceeded (show %R)	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
Qualifier, if applied.	51.0/48.8	48.8/-	17.8/16.3	36.1/-	59.6/-	32.5/-	46.1/43.0	49.2/-	27.5/30.0	13.5/30.5	-/0	44.3/2

QC Limits (%R)	SOIL	WATER
esticide S1 = Tetrachloro-m-xylene (TCX)	68-150 (advisory)	68-150 (advisory)
esticide S2 = Decachlorobiphenyl (DCB)		

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ACID FRACTION

Sample Numbers	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7	S4	S5	S6	S7
Surrogate(s) outside QC limits (show %R)																				
Compound less than 10% (Y/N)																				
Reanalysis required? (Y/N)																				
If blank, were associated samples reanalyzed? (Y/N)																				
Initial Analysis Qualifiers																				
Sample Number for reanalysis																				
Reanalysis surrogates outside limits (show % R)																				
Re-extraction required? (Y/N)																				
If blank, were associated samples re-extracted? (Y/N)																				
Sample number for re-extract																				
Re-extraction outside limits (show % R)																				
Reanalysis Qualifiers																				

QC Limits (%R)	SOIL	WATER
id S4 = Phenol-d6	24-113	10-110
id S5 = 2-Fluorophenol	22-113	21-110
id S6 = 2,4-Dibromophenol	18-122	10-123
id S7 = 2-Chlorophenol-d4	20-130 (advisory)	33-110 (advisory)

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

Sample Numbers	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
QC limits exceeded (show %R)	-10	-10								
Qualifier, if applied										

Limits (%R)	SOIL	WATER
esticide S1 = Tetrachloro-m-xylene (TCX)	60-150 (advisory)	60-150 (advisory)
esticide S2 = Decachlorobiphenyl (DCB)	60-150 (advisory)	60-150 (advisory)

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URS Technical Document Center

Form 89 TDCN: 0000070

Project Number: 0051

Revision: 01

DOCUMENT NO.: 067N00DS.RW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

Case No. 0051 URS TDCN 3001210 Project No. CTO-051

Site Name St. Lawrence Island, AK Project Name N.E. Cape

Contract Laboratory Eureka Laboratories, Inc.

Sample Delivery Group (SDG) 8484 Sampling Date (Month/Year) 8/91

Sample Matrix 5 low waters

Type of Analyses Volatiles (see page 2)

Data Reviewer Roger Simon Date 12/28/91

QA Review by Jeralyn Guthrie Date 12/28/91

CCJM Approval by Richard Cheatham Date 12/28/91

Telephone logs/correspondence attached? Yes No Not Appl. X

Laboratory case narrative attached? Yes X No Not Avail.

Required deliverables provided? Yes No X Not Appl.

Airbill enclosed? Yes X No Not Avail.

CLP SOW used by laboratory for analysis 3/90

Remarks: Report is based on resubmissions (rec'd 12/19/91) and is considered final.

Note:

- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, the EPA's Functional Guidelines for Organic Analyses and method specific references have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.
- Please see data flagging definitions on the last page of this report.

(Revised 12/91) C.C. JOHNSON & MALHOTRA, P.C.

215 UNION BOULEVARD, SUITE 215 • LAKEWOOD, COLORADO 80228 • (303) 987-2928

- X = Analysis has been provided for validation.
- 0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. Deliverables

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes ____ No X

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY

- X Included in package
O Not included and/or Not available
NA Not applicable or Not required
RS Provided as resubmission

- X Method blank spikes with each batch
X/O Control chart developed by lab
X Sample results - Form 1 or spreadsheet
X CLP data flags used by laboratory
X Sample chromatograms and mass spectra
RS Holding times (sampling, prep and analysis dates provided)
X Surrogate recoveries - Form 2
X Matrix spike/matrix spike duplicate (MS/MSD) - Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
X Method blank summary - Form 4
X Report form for method blank results (Form 1 or spreadsheet)
X GC/MS tuning - Form 5
X Initial calibration data, GC/MS - Form 6
NA Pesticide/PCB calibration standards summary - Form 8D (listed as Form 9 on NEESA Table 7.6)
X Continuing calibration data, GC/MS - Form 7
X Internal standard area summary, GC/MS - Form 8A, 8B, or 8C
NA Pesticide/PCB continuing calibration data - Form 9
NA Pesticide/PCB 2nd column confirmation - chromatograms

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines. See the following table for a summarization of sample holding times.

Yes X No

Comments:

Holding Time Summary

<u>Sample Number</u>	<u>Sampling Date</u>	<u>VISR</u>	<u>VOA Analysis</u>
8484	8/23/91		8/29
8484 MS			X
8484 MSD			X
8485	8/23/91	8/28	8/29
8486	8/24/91	8/27	8/29
8487	8/24/91	8/27	8/29
8488	8/23/91	8/28	8/29

X - indicates MS/MSD was performed

Chain of Custody records were provided as a resubmission.

III. GC/MS Tuning and Mass Calibration

The BFB and/or DFTPP performance results summaries were included for all samples, and were reported to be within specified criteria at the appropriate frequency.

Yes No X

Comments:

1. In the original submission the value reported for the relative absorbance determined at 8:15 on 7/19/91 for mass 177 relative to mass 176 was incorrectly reported as 100%. It should have been 8.1% (ratio of 7.2 to 89.6 for masses 177/176). The laboratory has provided the corrected Form 5A as a resubmission.

2. In the original data package for the instrument tune on 8/29/91 at 14:19 the relative abundance for masses 176/174 was reported as 119.4% which was outside of tuning control limits. The laboratory has provided a new Form 5A as a resubmission showing the tune for that date to be within control limits. No data has been qualified on this basis.

IV. A. Instrument Calibration (Volatiles)

1. The instrument response factor (RRF) data summaries were reviewed for the initial and continuing calibrations. All information was present and reported on the required summary forms. Response factors met the required criteria for volatile analyses, thus no data have been qualified.

Yes _____ No X

Comments: Although within the SOW criteria (Min RRF = 0.010), 2-butanone had a min. RRF of 0.049. Volatile compounds have been reviewed with a control limit of 0.050 being used as a minimum response factor. While contractually compliant, a calibration problem is demonstrated and all 2-butanone results have been qualified per Functional Guidelines criteria.

2. The percent relative standard deviation (%RSD) for the initial calibrations and the percent difference (%D) for the continuing calibrations were reviewed for all compounds. The %RSD and %D values reported met the data validation criteria (i.e., < 30 %RSD and < 25 %D) for volatile analyses, thus no data have been qualified.

Yes X No _____

Comments: No comments.

V. Blanks

- A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes ☐ No ☒

Comments: Contaminant quantities reported in the laboratory preparation blanks are listed below. Associated samples which have been flagged "U" due to the blank contaminants are shown below.

<u>Blank ID</u>	<u>Compound</u>	<u>Amount</u> <u>(μg/L)</u>	<u>Associated</u> <u>Samples</u>
VBLK	methylene chloride	11	all except 8485

- B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes ☐ No ☒ Not Identified ☐

Comments: All samples in this SDG were identified as trip blanks. Contaminants reported in these trip blanks typically included methylene chloride, chloroform and an occasional unknown TIC.

- C. Other Blanks - No other types of blanks have been identified in the data package.

VI. Surrogate Recovery

The surrogate recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes ☒ No ☐

Comments: No comments.

VII. Blank Spike - Laboratory Control Sample(s)

- A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes X No

Comments:

1. All recoveries for non-surrogate compounds found in the blank spike/blank spike duplicate were calculated incorrectly by the laboratory. For example, a spike with a sample value of 0 $\mu\text{g/L}$, a spike value of 53 $\mu\text{g/L}$ and a true value of 50 $\mu\text{g/L}$ for the spike added, was reported by the laboratory as a recovery of 90% instead of 106%.
2. The blank spike was spiked with the matrix spike compounds, so the matrix spike control limits were applied by the reviewer for assessment purposes.

- B. Laboratory control charts were provided in the package and the limits specified by the control charts were used for review.

Yes No X

Comments: The control charts provided with the data package were for surrogate compounds instead of the compounds found in the blank spike, thus were not used for review.

VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes X No

Comments: Sample 8484 was used for MS/MSD.

IX. Additional Comments

1. All internal standards showed acceptable performance.
2. It was noted by the reviewer that CRQL's have not been adjusted to SOW 3/90 levels for most VOA compounds.

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

- U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
- R - Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.
- J - The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.
- B - The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.
- JN - Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

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State SC		State CO	
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YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice) C76-51 30510.12		IF HOLD FOR PICK-UP, Print FEDEX Address Here Street Address City State ZIP Required	
PAYMENT 1 ☒ Bill Sender 2 ☐ Bill Recipient's FedEx Acct No 3 ☐ Bill 3rd Party FedEx Acct No 4 ☐ Bill Credit Card		Emp. No. Date	
5 ☐ Cash Check		Federal Express Use Base Charges Declared Value Charge Other 1 Other 2 Total Charges	
4 SERVICES (Check only one box) Priority Overnight (Delivery by next business day) 11 ☐ YOUR PACKAGING 16 ☐ FEDEX LETTER 12 ☐ FEDEX PAK 13 ☐ FEDEX BOX 14 ☐ FEDEX TUBE Economy Two-Day (Delivery by second business day) 30 ☐ ECONOMY Government Overnight (Delivery by next business day) 46 ☐ GOVT LETTER 41 ☒ GOVT PACKAGE Freight Service (For 100 lbs and over only) 10 ☐ OVERNIGHT FREIGHT 18 ☐ TWO DAY FREIGHT		5 DELIVERY AND SPECIAL HANDLING (Check services required) 1 ☐ HOLD FOR PICK-UP (if in box) 2 ☐ DELIVER WEEKDAY 3 ☐ DELIVER SATURDAY (if no charge) 4 ☐ DANGEROUS GOODS (if no charge) 5 ☐ 6 ☐ DRY ICE 7 ☐ OTHER SPECIAL SERVICE 8 ☐ 9 ☐ SATURDAY PICK-UP (if no charge) 10 ☐ 11 ☐ 12 ☐ HOLIDAY DELIVERY (if no charge) 6 PACKAGES 1 20 NA Total Total Total 1 20 NA DIM SHIPMENT (Chargeable Weight) 1 ☐ 2 ☐ On Call Stop 3 ☐ Drop Box 4 ☐ BSC 5 ☐ Station	
		7 Release Signature FedEx Emp No Date/Time	

REVISION DATE 8/91
PART #137204 FXEM 9/91
FORMAT #099

099

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I. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc.
Lab Certification Number: E765
SDG Number: 8484
Purchase Order Number: AN-91-P-0019
Contract Task Order Number: 0051
NEESA QA/QC Level C
Analysis: Initial
Sample Numbers: 5

A. Sample Description/Analytical Description

<u>Client ID</u>	<u>Lab ID</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Matrix</u>	<u>Analysis/Method</u>
8484	9108214-1A	08/23/91	08/27/91	Water	VOA/3-90 CLP SOW
8485	9108219-2A	08/23/91	08/28/91	Water	Same as above
8486	9108214-3A	08/24/91	08/27/91	Water	Same as above
8487	9108214-4A	08/24/91	08/27/91	Water	Same as above
8488	9108219-4A	08/23/91	08/28/91	Water	Same as above

B. Sample Receipt

Samples were received in two delivery batch on August 27 & 28, 1991. Samples were in good condition. Sample receipt conditions, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bills. For Order Numbers 91-08-214 and 91-08-219, the following discrepancy is observed:

For several samples, "Trip" was indicated as the analysis on the Chain-of-Custody forms.

A memo was faxed to ELI by URS with approved signature to clarify that all samples with the "Trip" analysis should be analyzed for V-CLP only.

C. Quality Control Report

Method Blank

Methylene Chloride, a common laboratory introduced contaminant, was found in the method blank as well as in the samples. The concentration of Methylene Chloride found in the method blank was 11 ug/L (ppb) as compared to 5 ug/L (ppb) detected in Samples Nos. 8484, 8486, 8487, and 8488.

QC Chromatograms

QC Chromatograms for all samples as well as the blank are presented in this package. Calibration chromatograms and QC chromatograms are not presented in this package but will be available for checking if a problem arises or during on-site audits.

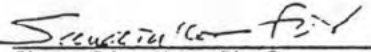
3. Deliverable

Level C data package is presented for this SDG per contract requirement.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.


Shao-Pin Yo, Ph.D.
Laboratory Director

CCJM

ENVIRONMENTAL ENGINEERS & SCIENTISTS

SILVER SPRING
CHICAGO
DENVER
DETROIT
GRAND RAPIDS

MEMORANDUM

C.C.J.M.
FILE
COPY

TO: Jamie Bruton, URS/Seattle
FROM: Roger Simon, Jeralyn Guthrie, Richard Cheatham, CCJM/Denver
DATE: December 5, 1991
DOCUMENT NO: 0721NCRAI.MEM
SUBJECT: Volatile Organics Tuning Problems for CTO-051

Per our conversation of 12/5/91, please find herein a detailed description of tuning problems found with all volatile organics analyses performed at Eureka Laboratories for CTO-051. These data packages are considered "on hold" until these issues have been resolved. Data packages have been identified by TDCN numbers and SDG.

1. For all CTO-051 data packages with volatile organics analyses (SDG 8449/TDCN 3001421, SDG 8484/TDCN 301210, SDG 8401/TDCN 3001436 and SDG 8416/TDCN 3001439), the values reported for the percent relative abundance of masses 177/176 were incorrectly reported as 100% on the Form V Tuning Summaries. This appeared to be a computer error since calculation of this ratio by the reviewer resulted in acceptable tunes. The laboratory should provide corrected summary forms.
2. In SDG 8484/TDCN 3001210, the relative abundance for masses 176/174 was reported and found by the reviewer to be 119.4%. Since there is no expanded criteria for this critical ratio, all data will have to be qualified as unusable (R); raw data to verify the values reported on the Form V Tuning Summary were not included with the Level C data package, so it could not be determined whether the reported ratio was a transcription problem with the base mass percentages reported for m/z 174 and 176, software problem or something else. Please indicate if a calculation/transcription problem existed and provide a corrected summary form or the correct values for masses 176 and 174.

If you should have any questions, please do not hesitate to call us at (303) 987-2928.

cc: URS / Navy Clean PP
C.C. JOHNSON & MALHOTRA, P.C.

RESUBMISSION 12/14/91

URS

MEMORANDUM C.C.J.M.

Date

12-18-91

Page

of

1

TO:

CCJM

FROM:

12/18/1991

URS Consultants, Inc.

215 Union Blvd. Suite 215

RECEIVED 1100 Olive Way, Suite 200

Lake wood, CO 80228

Seattle, Washington 98101-1832

ATTENTION:

~~Rolf Reindt~~ Geraldyn Guthrie

BY:

Analytical Support Activities

PHONE:

(206) 623-1800

FAX:

(206) 233-9570

SUBJECT:

Resubmitted FORM I for Volatile Analysis by Eureka Laboratories Inc for CTO-51

Please find the above referenced resubmitted Form I for volatile analysis's. They are for four (4) separate SDG numbers and are as follows:

- | | | |
|-----------|-----------|-------------------|
| 1. Eureka | SDG: 8401 | URS IDCN: 3001436 |
| 2. Eureka | SDG: 8416 | URS IDCN: 3001439 |
| 3. Eureka | SDG: 8449 | URS IDCN: 3001421 |
| 4. Eureka | SDG: 8404 | URS IDCN: 3001210 |

C.C.J.M.

12/18/1991

RECEIVED

If you have any questions, please feel free to call any time.

DISTRIBUTION:

Lab File

Sincerely Yours,

W. J. Burton, PhD
URS CONSULTANTS

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

RESUBMISSION

12/19/91

RMT

Lab Name: EUREKA LABS

Contract: URS WA

Lab Code: 000001

Case No.: 0051

SAS No.: PR215A

SDG No.: 8484

Lab File ID: GE573

BFB Injection Date: 7/19/91

Instrument ID: VOA2

BFB Injection Time: 0815

GC Column: DB-624

ID: 0.53 (mm)

Heated Purge: (Y/N) N

m/e	- ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	20.2
75	30.0 - 66.0% of mass 95	49.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0) 1
174	50.0 - 120.0% of mass 95	91.6
175	4.0 - 9.0% of mass 174	7.3 (8.0) 1
176	93.0 - 101.0% of mass 174	89.6 (97.8) 1
177	5.0 - 9.0% of mass 176	7.2 (8.0) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD, BLANKS AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	GE574	GE574	7/19/91	0841
02	VSTD010	GE575	GE575	7/19/91	0913
03	VSTD020	GE577	GE577	7/19/91	1023
04	VSTD100	GE580	GE580	7/19/91	1206
05	VSTD200	GE584	GE584	7/19/91	1424
06					
07					
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21					
22					

URS Technical Document Control
Type: 61 TDCN: 3002096
Project Number: 30510
Project Name: CTO-51

00063

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

RESUBMISSION
12/19/91

Lab Name: EUREKA LABS

Contract: URS WA

Lab Code: 000001

Case No.: 0051

SAS No.: PR215A

SDG No.: 8484

Lab File ID: GE965

BFB Injection Date: 8/29/91

Instrument ID: VOA2

BFB Injection Time: 1419

GC Column: DB-624

ID: 0.53 (mm)

Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	22.3
75	30.0 - 66.0% of mass 95	52.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.6
173	Less than 2.0% of mass 174	0.0 (0.0) 1
174	50.0 - 120.0% of mass 95	81.5
175	4.0 - 9.0% of mass 174	7.0 (8.6) 1
176	93.0 - 101.0% of mass 174	79.3 (97.3) 1
177	5.0 - 9.0% of mass 176	5.1 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD, BLANKS AND STANDARDS

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	GE969	GE969	8/29/91	1457
02	VBLK	9108214-30A	GE970	8/29/91	1529
03	RS	9108214-34A	GE971	8/29/91	1601
04	RSD	9108214-35A	GE972	8/29/91	1633
05	8484	9108214-23A	GE973	8/29/91	1707
06	8484MS	9108214-32A	GE974	8/29/91	1739
07	8484MSD	9108214-33A	GE975	8/29/91	1818
08	8486	9108214-07A	GE976	8/29/91	1851
09	8487	9108214-10A	GE977	8/29/91	1924
10	8485	9108219-17A	GE982	8/29/91	2206
11	8488	9108219-21A	GE983	8/29/91	2230
12					
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21					
22					

00064

VOA Qualifier Summary

Date Analyzed:

Instrument ID:

Method Blank ID: VBLK

Date: 8/29/91 Time:

[illegible]

Cal B/29/91

Time: 14:57

* RRF must be $\geq .010$	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	Internal
eSystem Monitor Compound	MIN	RRF	RRF	RRF	Method	Trip	(+/-)	Standard
COMPOUND:	RRF	< MIN	>20.5	< MIN	>25			
Chloromethane	*							1
Bromomethane	.100							
Vinyl Chloride	.100							
Chloroethane	*							
Methylene Chloride	*					11	5/15	
Acetone	*							
Carbon Disulfide	*							
1,1-Dichloroethene	.100							
1,1-Dichloroethane	.200							
1,2-Dichloroethene(total)	*							
Chloroform	.200							
1,2-Dichloroethane	.100							
2-Butanone	*	0.049					5/12	2
1,1,1-Trichloroethane	.100							
Carbon Tetrachloride	.100							
Bromodichloromethane	.200							
1,2-Dichloropropane	*							
cis-1,3-Dichloropropene	.200							
Trichloroethene	.300							
Dibromochloromethane	.100							
1,1,2-Trichloroethane	.100							
Benzene	.500							
trans-1,3-Dichloropropene	.100							
Bromoform	.100							3
4-Methyl-2-Pentanone	*							
2-Hexanone	*							
Tetrachloroethene	.200							
1,1,2,2-Tetrachloroethane	.500							
Toluene	.400							
Chlorobenzene	.500							
Ethylbenzene	.100							
Styrene	.300							
Xylene (total)	.300							
Toluene-d8	o *							3
Bromofluorobenzene	o .200							3
1,2-Dichloroethane-d4	o *							1

Blank Tentatively Identified Compounds

Blank ID Reported as:

RT	($\mu\text{g/kg}$ or $\mu\text{g/L}$)
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Qualifiers

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EUREKA LABS

Contract: URS WA

Lab Code: 000001 Case No.: 0051 SAS No.: PR215A SDG No.: 8484

Lab File ID: GE965

BFB Injection Date: 8/29/91

Instrument ID: VOA2

BFB Injection Time: 1419

GC Column: DB-624

ID: 0.53 (mm)

Heated Purge: (Y/N) N

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175	4.0 - 9.0% of mass 174	8.6 (10.6) 1
176	93.0 - 101.0% of mass 174	97.3 (119.4) 1
177	5.0 - 9.0% of mass 176	6.5 (100.0) 2

1-Value is % mass 174

2-Value is % mass 176

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03	RS	9108214-34A	GE971	8/29/91	1601
04	RSD	9108214-35A	GE972	8/29/91	1633
05	8484	9108214-23A	GE973	8/29/91	1707
06	8484MS	9108214-32A	GE974	8/29/91	1739
07	8484MSD	9108214-33A	GE975	8/29/91	1818
08	8486	9108214-07A	GE976	8/29/91	1851
09	8487	9108214-10A	GE977	8/29/91	1924
10	8485	9108219-17A	GE982	8/29/91	2206
11	8488	9108219-21A	GE983	8/29/91	2230
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000064