FINAL
PROJECT SUMMARY REPORT

PCB CONTAMINATED SOIL REMOVAL AND DISPOSAL

CAPE ROMANZOF LRRS, ALASKA

Project No. CEOS-99-2024Z1

March 2003

FINAL PROJECT SUMMARY REPORT, PCB CONTAMINATED SOIL REMOVAL AND DISPOSAL
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Prepared for:
611th Civil Engineering Squadron/Civil Environmental Compliance

Project No. CEOS-99-2024Z1

March 2003

EXECUTIVE SUMMARY

This Project Summary Report describes the methods used to excavate, transport and dispose of polychlorinated biphenyl (PCB), diesel range organics (DRO), and residual range organics (RRO)- contaminated soil from the upper and lower tram terminal buildings at Cape Romanzof, Long Range Radar Site (LRRS), AK. In addition, this report summarizes analytical confirmation samples collected at each excavation area. This project was completed in accordance with the Statement of Work (SOW) and as outlined in the Final Work Plan titled*, PCB Contaminated Soil Removal and Disposal*, dated August 2002. This project was conducted under contract F41624-01-D-8548 Task Order 080 with the Air Force Center for Environmental Excellence (AFCEE) and directed by the 611th Civil Engineering Squadron/ Civil Environmental Compliance (CES/CEVC).

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LIST OF ACRONYMS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AFCEE	Air Force Center for Environmental Excellence
CES/CEVC	Civil Engineering Squadron/Civil Environmental Compliance
CFR	Code of Federal Regulations
CRZ	Contaminant Reduction Zone
cy	Cubic Yard
DOT	Department of Transportation
DRO	Diesel Range Organic
EPA	Environmental Protection Agency
LRRS	Long Range Radar Site
mg/kg	Milligrams per kilogram
OSHA	Occupational Safety and Health Act
PCB	Polychlorinated Biphenyl
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
PPM	Parts Per Million
RRO	Residual Range Organic
SAP	Sampling and Analysis Plan
SOW	Statement of Work
TSCA	Toxic Substances Control Act

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1.0 INTRODUCTION AND BACKGROUND

1.1 PROJECT PURPOSE AND SCOPE

The purpose of this project was to remove and dispose of polychlorinated biphenyl (PCB), diesel range organic (DRO) and residual range organic (RRO)-contaminated soil at the Cape Romanzof Long Range Radar Site (LRRS), AK. This Project Summary Report outlines the basic technical approach followed to complete the required scope of work (SOW) as outlined in the Final Work Plan titled, *PCB Contaminated Soil Removal and Disposal*, dated August 2002.

The SOW included:

- Excavate the contaminated soil from the Upper Tram Terminal Building Area;
- Excavate the contaminated soil from the Lower Tram Terminal Building Area and waste discharge pit;
- Place all excavated soil into 1-cubic yard (cy) super sacks and stage on site to await transport and disposal;
- Field screen excavation areas to determine limits of contamination, then collect confirmation soil samples for each excavation area; and
- Transport the contaminated soil from Cape Romanzof LRRS, AK and dispose of it at an approved disposal facility.

This project was directed and coordinated by the United States Air Force, 611th Civil Engineering Squadron/Civil Environmental Compliance (CES/CEVC) Section and the Air Force Center for Environmental Excellence (AFCEE).

1.2 BACKGROUND

Cape Romanzof is located in western Alaska, approximately 535 miles west of Anchorage. A site vicinity map is shown as Figure 1-1. A detailed site map of Cape Romanzof LRRS is shown as Figure 1-2. The 4,900-acre installation sits on a small peninsula that extends into the Bering Sea. Built in 1952, the Aircraft Control and Warning System site consists of two camps, an upper camp and a lower camp, connected by a road and a tramway. The upper camp contains long range radar equipment positioned adjacent to the peak of Towak Mountain (elevation 2,250 feet). The lower camp provides the necessary support facilities, including housing, power plant, and bulk fuel storage. A runway serving the installation is approximately four miles west of the lower camp. Up to six contract personnel are assigned to the station. The nearest settlements are Scammon Bay, located 15 miles to the east, and Hooper Bay, located 15 miles to the south. These communities are not accessible to Cape Romanzof by road. Average annual precipitation is approximately 27 inches, with over half occurring between June and September.

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FIGURE 1-1
Site Vicinity Map
Cape Romanzof LRRS, Alaska

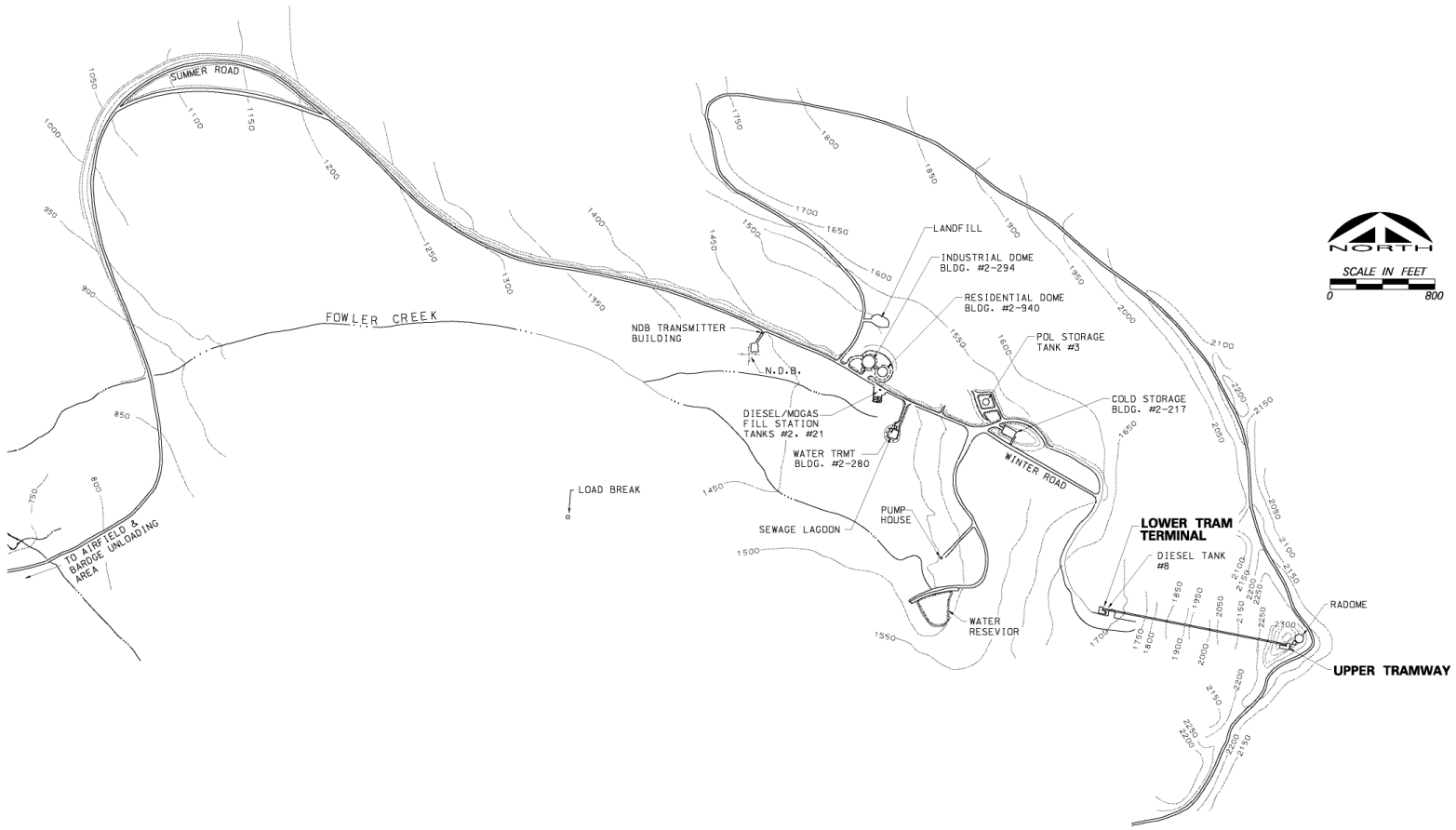

Figure 1-2
Site Map, Cape Romanzof LRRS, Alaska

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A Preliminary Assessment/Site Inspection of the Cape Romanzof LRRS tramway soils was performed in 1999 to determine whether lubrication of the tramway cables with petroleum-based oils caused soil contamination. Three areas were identified to have PCB, DRO, and RRO contamination above regulatory levels. In the Final Environmental Survey Report (United States Air Force 611th CES, 2000), it was concluded that the contaminated soil qualifies as a Toxic Substances Control Act (TSCA) PCB waste and was recommended for removal. The following locations were identified:

Upper Tram Terminal. DRO concentrations of 5,300 milligrams per kilogram (mg/kg) and a maximum PCB concentration of 1,700 mg/kg were found. It was estimated that eight cy of contaminated soil were present at the Upper Tram Terminal Building.

Lower Tram Terminal. DRO concentrations as high as 12,000 mg/kg and a maximum PCB concentration of 49 mg/kg were found. It was estimated that 37 cy of contaminated soil were present at the Lower Tram Terminal Building and another 1.5 cy of contaminated soil were present in a waste disposal pit behind the building.

1.3 GUIDANCE DOCUMENTS AND REGULATIONS

This contaminated soil removal and disposal project followed multiple environmental guidance and regulatory guidelines. A brief summary of the regulations is provided below.

Title 18 AAC Chapter 75, *Oil and Hazardous Substances Pollution Control*. This chapter of the Alaska Administrative Code (AAC) provides regulations for cleanup of contaminated sites. According to Table *B1* of the chapter, *Method Two-Soil Cleanup Levels Table*, PCBs must be cleaned up to a concentration of 10 mg/kg. According to *Table B2, Method Two - Petroleum Hydrocarbon Soil Cleanup Levels*, under the *Under 40-inch Zone Migration to Groundwater* column; the Alaska Department of Environmental Conservation (ADEC) establishes a cleanup level of 250 mg/kg for DRO and 11,000 mg/kg for RRO.

Title 40 CFR Part 761.61, *PCB Remediation Waste.* This Code of Federal Regulations (CFR) document provides regulations pertaining to the handling of TSCA PCB wastes. Specifically, these regulations were followed during this project for notification and certification, verification sampling, and disposal.

Per 40 CFR Part 761.61, any person collecting and analyzing samples to verify the cleanup and on-site disposal of bulk PCB remediation wastes must do so in accordance with Subpart O of 40 CFR 761. Additionally, any person conducting interim sampling during PCB remediation waste cleanup to determine when to sample for verification that cleanup is complete may use PCB field screening tests.

Per Subpart O of Part 761, specifically 761.283, each separate cleanup site at a PCB remediation waste location requires a minimum of three samples for each type of bulk PCB

remediation waste at the cleanup site, regardless of the amount of each type of waste that is present.

Title 49 CFR Parts 171-180, DOT Hazardous Materials Regulations. This lists United States Department of Transportation (DOT) regulations for shipping of hazardous materials, including PCB wastes. These regulations were followed for packaging, labeling and shipping of all wastes sent for disposal during this project.

Title 29 CFR Part 1910, *Occupational Safety and Health Standards*. This Occupational Safety and Health Act (OSHA) document gives guidelines for worker protection when working with hazardous substances. These guidelines were followed during this project for training, medical monitoring, reporting, and safety procedures including Personal Protective Equipment (PPE) selection and chemical exposure Permissible Exposure Limits (PELs).

1.4 DOCUMENT ORGANIZATION

This document is organized with the following sections:

- Section 1 provides the introduction and background information, including the project purpose and scope, project regulatory requirements, and the document organization;
- Section 2 provides a description of the project tasks, including contaminated soil removal, field screening, and confirmation sampling;
- Section 3 discusses waste management;
- Section 4 provides a summary of analytical results of samples collected during the project to confirm that project cleanup goals have been met and to characterize wastes;
- Section 5 provides the project summary and conclusions; and
- Section 6 provides references that were used to prepare this document.

In addition, the three following appendices are included:

- Appendix A provides copies of the certificates of disposal for the PCB soil.
- Appendix B provides the analytical reports of samples collected during the project.
- Appendix C provides project photographs.

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2.0 PROJECT TASK PROCEDURES

This section discusses the procedures used to remove and dispose of the PCB, DRO, and RRO-contaminated soil at Cape Romanzof LRRS, Alaska. The procedures and methods described in this Project Summary Report were derived from information contained in the AFCEE SOW and referenced documents, as well as standard industrial practices and/or sound engineering principles.

During all fieldwork, PPE included full saranex chemical resistant suits, steel toe boots with neoprene chemical resistant boot covers, chemical resistant gloves, hard hats, and safety glasses. Saranex suits, boot covers and gloves were removed and disposed of in the contaminant reduction zone (CRZ) after exiting the exclusion zone and new PPE was donned prior to entry into the exclusion zone.

2.1 CONTAMINATED SOIL REMOVAL

2.1.1 Upper Tram Terminal Building

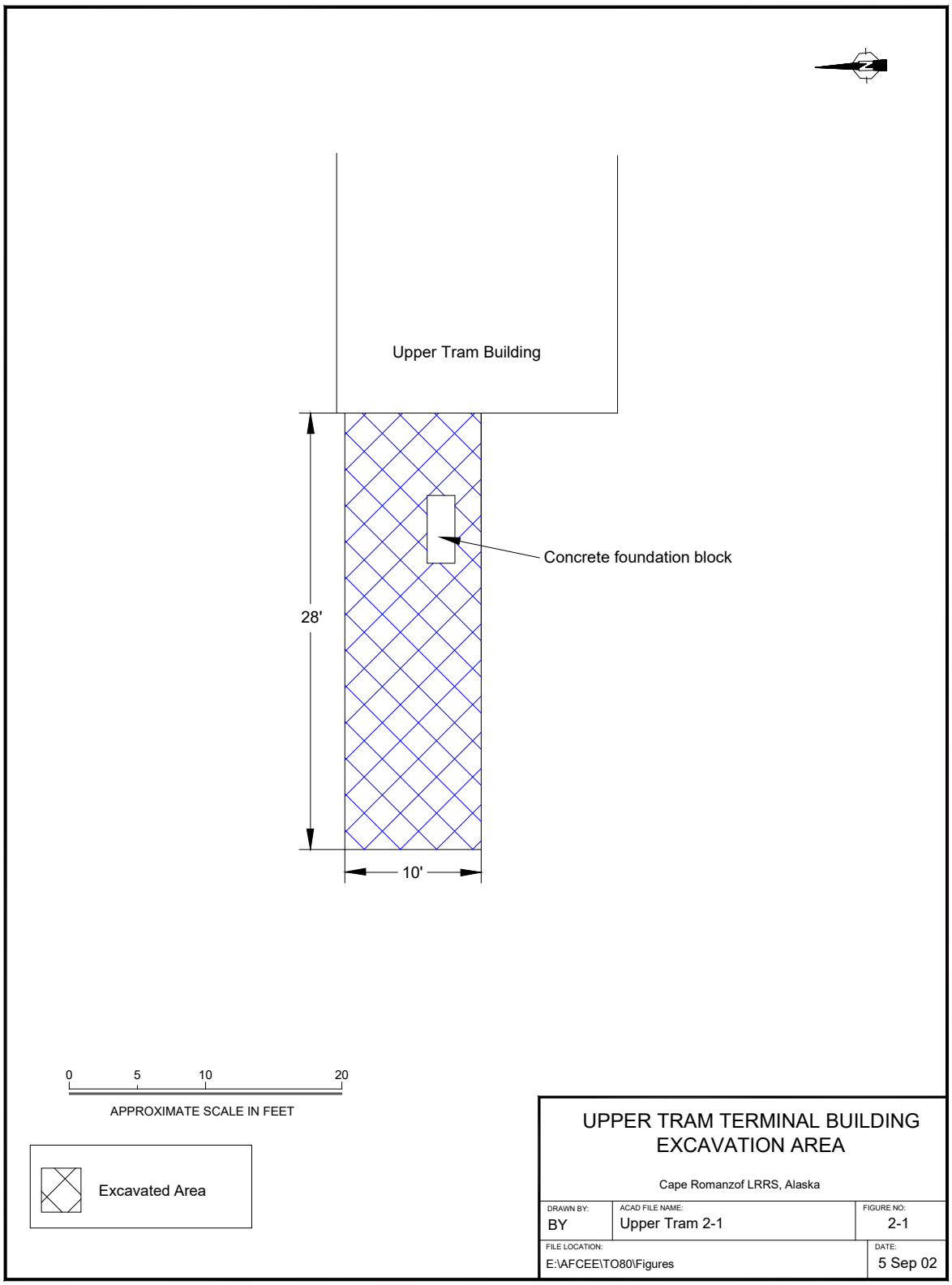
The excavated area at the Upper Tram Terminal Building was approximately 28 feet by 10 feet with an average depth of 0.75 feet for a total volume of 8 cy of soil. Figure 2-1 depicts the excavated area. The area intended for excavation was marked and an entry point for personnel was designated. Plastic sheeting was placed on the ground just outside the entry point to be used as CRZ.

Due to the steepness of the slope and the close proximity of the steel I-beams near the Upper Tram Terminal Building, hand tools were chosen as the appropriate method of excavation. Shovels and picks were used to loosen and remove the soil. Three people excavated the soil while two transported the excavated soil in 5-gallon buckets to super sacks staged near the terminal building.

Each super sack was filled to only three-quarters capacity for transportation purposes. Once each super sack was filled with contaminated soil, it was taped closed. The super sacks were labeled with PCB labels and the date was marked on each super sack. A loader and heavy-duty straps were used to place each super sack on a flatbed truck, and then the full super sacks were transported to the designated waste staging area on the beach and placed on individual pallets. Each super sack remained in the staging area until it was removed for transportation off site via barge.

2.1.2 Lower Tram Terminal Building

The excavated area near the Lower Tram Terminal Building was approximately 718 square feet. The average excavated depth was about 1.5 feet. A total volume of approximately 40 cy of contaminated soil was removed. Figure 2-2 depicts the excavated area. The area intended for


Upper Tram Building
Concrete foundation block
28'
10'
0
5
10
20
APPROXIMATE SCALE IN FEET
Excavated Area
UPPER TRAM TERMINAL BUILDING
EXCAVATION AREA
Cape Romanzof LRRS, Alaska
DRAWN BY:
BY
ACAD FILE NAME:
Upper Tram 2-1
FIGURE NO:
2-1
FILE LOCATION:
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DATE:
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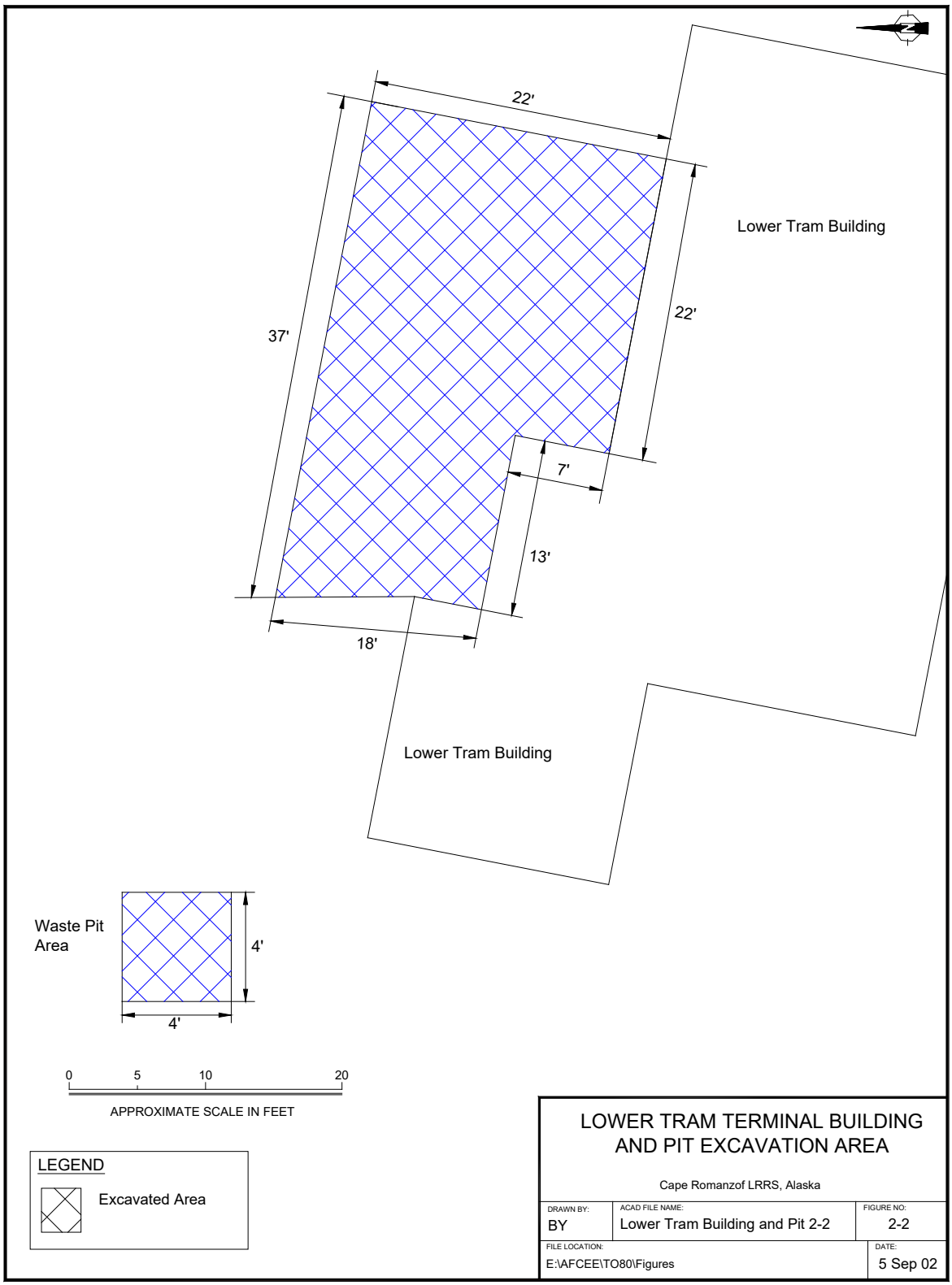
N
22'
37'
22'
7'
13'
18'
Lower Tram Building
Lower Tram Building
Waste Pit Area
4'
4'
0
5
10
20
APPROXIMATE SCALE IN FEET
LEGEND
Excavated Area
LOWER TRAM TERMINAL BUILDING AND PIT EXCAVATION AREA
Cape Romanzof LRRS, Alaska
DRAWN BY: BY
ACAD FILE NAME: Lower Tram Building and Pit 2-2
FIGURE NO: 2-2
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excavation was marked and an entry point was designated for personnel. Plastic sheeting was placed on the ground just outside the entry point to be used as the CRZ.

Excavation was completed using an excavator in open areas and hand tools in areas near the building and footings. Excavated soil was placed into super sacks. Each super sack was filled to only three-quarters capacity for transportation purposes. Once each super sack was filled with contaminated soil, it was taped closed. The super sacks were labeled with PCB labels and the date was clearly marked on each super sack. A loader and heavy-duty straps were used to place each super sack on a flatbed truck, and then the full super sacks were transported to the designated waste staging area on the beach and placed on individual pallets. Each super sack remained in the staging area until it was removed for transportation off site via barge.

2.1.3 Lower Tram Terminal Waste Pit

The excavated area at the Lower Tram Terminal Pit was approximately 16 square feet. The average excavated depth was about 1.5 feet. A volume of approximately 1 cy of contaminated soil was removed. Figure 2-2 depicts the excavated area. The area intended for excavation was marked and an entry point was designated for personnel. Plastic sheeting was placed on the ground just outside the entry point to be used as the CRZ.

Excavation was completed using an excavator and hand tools, such as picks and shovels. Excavated soil was placed into super sacks.

Each super sack was filled to only three-quarters capacity for transportation purposes. Once each super sack was filled with contaminated soil, it was taped closed. The super sacks were labeled with PCB labels and the date was marked on each super sack. A loader and heavy-duty straps was used to place each super sack on a flatbed truck, and then the full super sacks were transported to the designated waste staging area on the beach and placed on individual pallets. Each super sack remained in the staging area until it was removed for transportation off site via barge.

2.2 DEVIATIONS TO THE WORK PLAN

Prior to excavation activities, the field team noticed that there was a large quantity of sand blast material on the ground surface around the upper and lower tram terminal buildings. The sand blast material was from sand blasting the metal frame structure of the tram terminal buildings for repainting by another contractor. This was not originally a concern until field-screening results showed very high levels of PCBs in the early stages of field screening and testing of the equipment (higher than the original assessment findings). This prompted the field team to collect a field screen sample of the sand blast material for information and further testing. The result of the field screen was 298parts per million (ppm) of PCBs.

At this point the field superintendent notified the project manager, who in turn notified the Air Force. The situation was conveyed to the Air Force in a letter dated 21 August 2002,

describing the above scenario. The letter was a notification of a changed condition at the site. Due to the presence of what appeared to be PCB-contaminated sand blast material in and around the excavation it was recommended that the excavations not be backfilled until proper characterization of the sand blast material was completed. The field team also collected a sample of the sand blast material for laboratory analysis; the results of the sample are presented in Section 4.4. The Contractor excavated the specified amount of soil, approximately 50 cy, from the site and left the excavations open pending further investigation of the sand blast material. All equipment and personnel were demobilized from the site before a decision was made regarding the sand blast material.

2.3 FIELD SCREENING

Field-screening methods were used to help guide the removal of the contaminated soil. Specific field screening tools included a Dexsil L2000DX PCB Analyzer and a HANBY immunoassay test kit for the detection of petroleum hydrocarbons in soil. Manufacturers' instructions were followed when using these field-screening methods. The instruments were calibrated each day in accordance with the manufacturers' instructions. The Dexsil L2000DX PCB Analyzer is capable of detecting PCBs in soil as low as 2 ppm. The HANBY immunoassay test kit detects DRO from 1 to 1,000 ppm.

2.4 CONFIRMATION SAMPLING

Confirmation soil samples were collected from the excavated areas to confirm contamination had been removed to cleanup levels (10 mg/kg for PCBs, 250 mg/kg for DRO, and 11,000 mg/kg for RRO). A total of 13 composite soil samples (12 field and 1 duplicate) were collected for laboratory analysis. Each sample was analyzed for PCBs and DRO/RRO. PCBs were analyzed using Environmental Protection Agency (EPA) Method SW8082; DRO/RRO was analyzed using AK Method 102/103. Further discussion of sampling procedures, including sample identification, sample preservatives, and documentation are discussed in the project specific Sampling and Analysis Plan (SAP). Specific sample collection procedures for each site are discussed separately below.

2.4.1 Upper Tram Terminal Building

In accordance with 40 CFR Part 761 Subpart O; a square-based grid system was used to identify sample locations. A sampling grid was set up as follows:

(1) A square-based grid system was used to overlay the entire area excavated. The grid axes were verified on a magnetic north-south line centered in the area with the east-west axis perpendicular to the magnetic north-south axis also centered in the area.

(2) A series of sampling points approximately 1.5 (4 feet) meters apart were marked oriented to the east-west direction and 1 meter (3.33 feet) apart in the north-south direction. The sampling points proceeded in every direction to the extent sufficient to result in a two-dimensional grid completely overlaying the excavated area.

(3) Twenty-one sample points were within the grid. Three composite samples were collected from the 21 points. The seven most westerly sample points were composited; the seven most easterly sample points were composited, etc., to make three composite samples collected from the Upper Tram Terminal Building area (see Figure 4-1).

Composite soil samples were collected using sampling spoons and tin bowls. An equal amount of soil was placed into the bowl from each sample point within the grid. The soil was homogenized in the bowl and then the appropriate sample jars were filled. Disposable sampling equipment was used, minimizing the chance of cross contamination between samples.

2.4.2 Lower Tram Terminal Building

In accordance with 40 CFR Part 761 Subpart O, a square-based grid system was used to identify sample locations. A sampling grid was set up as follows:

(1) A square-based grid system was used to overlay the entire area excavated. The grid axes were orientated on a magnetic north-south line centered in the area with the east-west axis perpendicular to the magnetic north-south axis also centered in the area.

(2) A series of sampling points 1.5 meters apart were marked oriented in the east-west direction and 1 meter in the north-south direction. An additional two sampling points were added to the area directly below the tram cable entrance/exit to the tram terminal building. The sampling points proceed in every direction to the extent sufficient to result in a two-dimensional grid completely overlaying the excavated area.

(3) Forty-eight sample points were within the grid. Six composite soil samples were collected from the 48 points. The 8 most westerly sample points were composited; the eight most easterly sample points were composited, etc., to make up a total of six composite samples from the Lower Tram Terminal Building area (see Figure 4-2).

Composite soil samples were collected using sampling spoons and tin bowls. An equal amount of soil was placed into the bowl from each sample point within the grid. The soil was homogenized in the bowl and then the appropriate sample jars were filled. Disposable sampling equipment was used, minimizing the chance of cross contamination between samples.

2.4.3 Lower Tram Terminal Waste Pit

In accordance with 40 CFR Part 261 Subpart O; a square-based grid system was used to identify sample locations. A sampling grid was set up as follows:

(1) A square-based grid system was used to overlay the entire area excavated. The grid axes were verified on a magnetic north-south line centered in the area with the east-west axis perpendicular to the magnetic north-south axis also centered in the area.

(2) Marked out a series of sampling points 0.2 meters apart oriented in the east west direction and 0.25 meters apart in the north south direction. The sampling points proceeded in every direction to the extent sufficient to result in a two-dimensional grid completely overlaying the excavated area, including the excavation sidewalls.

(3) Twenty-one sample points were within the grid. Three composite samples were collected from the 21 points. The seven most westerly sample points were composited; the seven most easterly sample points were composited and etc., to make up a total of three composite samples from the Lower Tram Terminal Waste Pit area (see Figure 4-2).

Composite soil samples were collected using sampling spoons and tin bowls. An equal amount of soil was placed into the bowl from each sample point within the grid. The soil was homogenized in the bowl and then the appropriate sample jars were filled. Disposable sampling equipment was used, minimizing the chance of cross contamination between samples.

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3.0 WASTE MANAGEMENT

Waste generated during this project included PCB, DRO, and RRO-contaminated soil, expended PPE, decontamination water, and plastic sheeting. The contaminated soil was contained in 60 1-cy super sacks, weighing approximately 1,900 pounds each after filling. Expended PPE, decontamination water and plastic sheeting (generated from use in the CRZ) was placed in the super sacks and disposed of with the soil. General trash was placed in garbage bags and disposed of at the Cape Romanzof LRRS Landfill.

Decontamination water came from the decontamination of small tools, the excavator bucket, and personnel decontamination. The water was placed into the super sacks with soil and allowed to absorb into the soil. PPE and any plastic sheeting used to protect the CRZ or other areas where personnel or equipment may have come into contact with the contaminated soil was placed into the super sacks, as well, to be disposed of with the soil. In addition, waste generated from the field screening of soil was placed into the super sacks for disposal with the soil, this included rinse solutions and expended soil from the Dexsil L2000DX PCB Analyzer and a HANBY immunoassay test kit.

PCBs were the disposal driver for selection of disposal methods for the contaminated soil. The DRO/RRO contamination did not influence the selection of disposal methods. No waste characterization samples were collected from the soil. Results from previous sampling events were used to properly characterize and profile the soil for disposal (see Section 1.2). The super sacks were shipped to a TSCA-permitted landfill for final disposal.

The super sacks were transported using a loader and heavy-duty straps to place them on a flatbed truck. The super sacks were first moved from the staging area to the barge loading area where they were then transferred onto a barge landing craft. The super sacks were manifested for transport from Cape Romanzof LRRS, AK to their final destination, the Grassy Mountain TSCA-permitted Landfill (EPA ID# UTD991301748) in Clive, Utah. From Cape Romanzof, the truck was transported via barge to the Port of Seattle where it was offloaded onto trucks and transported to Clive, Utah for disposal. The waste was manifested for transport in four connex containers, three containers containing 16 super sacks and one container containing 12 super sacks. The waste was manifested on Uniform Hazardous Waste Manifest document numbers CZF06, CZF07, CZF08, and CZF09. The soil was transported in accordance with 49 CFR 172, 173, 178, 179, and all other applicable local, state, and federal transportation regulations.

The disposal company issued certificates of disposal for the contaminated soil. Copies of the certificates of disposal are included as Appendix A.

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4.0 POST-REMEDIAL CONFIRMATION SAMPLING RESULTS

4.1 UPPER TRAM TERMINAL BUILDING SAMPLE RESULTS

A square-based grid system was overlain over the entire area excavated as described in Section 3.3. Four composite soil samples were collected from the 21 grid points. One composite sample was collected from the seven easterly grid points, two composite samples were collected from the middle seven grid points (one as a duplicate), and one composite sample was collected from the westerly seven grid points. The grid point locations are depicted in Figure 4-1. Sample results are summarized in Table 4-1. Complete Analytical Reports are provided as Appendix B.

Table 4-1 - Upper Tram Terminal Building Sample Results

	Result (mg/kg)		
	DRO	RRO	Total PCBs
ADEC Maximum Allowable Level	250	11,000	10
CR01-01-081902	**3,130**	2,550	**964**
CR01-02-081902	**1,250**	771	**270**
CR01-03-081902*	**845***	527*	**196***
CR01-04-081902	**451**	271	2.74

Notes:
*CR01-03-081902 is a duplicate of CR01-02-081902.
Items in bold exceed the ADEC maximum allowable level.
DRO = diesel range organics
RRO = residual range organics
PCBs = polychlorinated biphenyls

According to the results, concentrations of DRO and PCBs still exist in the soil above ADEC regulatory levels. DRO concentrations were present in all four samples, as high as 3,130 mg/kg, which exceeds the maximum allowable level of 250 mg/kg. RRO concentrations were present in all four samples, as high as 2,550 mg/kg, which does not exceed the maximum allowable level of 11,000 mg/kg.

PCB concentrations were also present in all four samples, as high as 964 mg/kg, which exceeds the maximum allowable level of 10 mg/kg. PCB concentrations did not exceed the maximum allowable level in one of the four samples. Sample No. CR01-04-081902, collected from the seven westerly grid points, was reported with a total PCB concentration of 2.71 mg/kg. The highest results for DRO, RRO and PCBs were all from the sample collected from the easterly seven grid points, Sample No. CR01-01-081902.

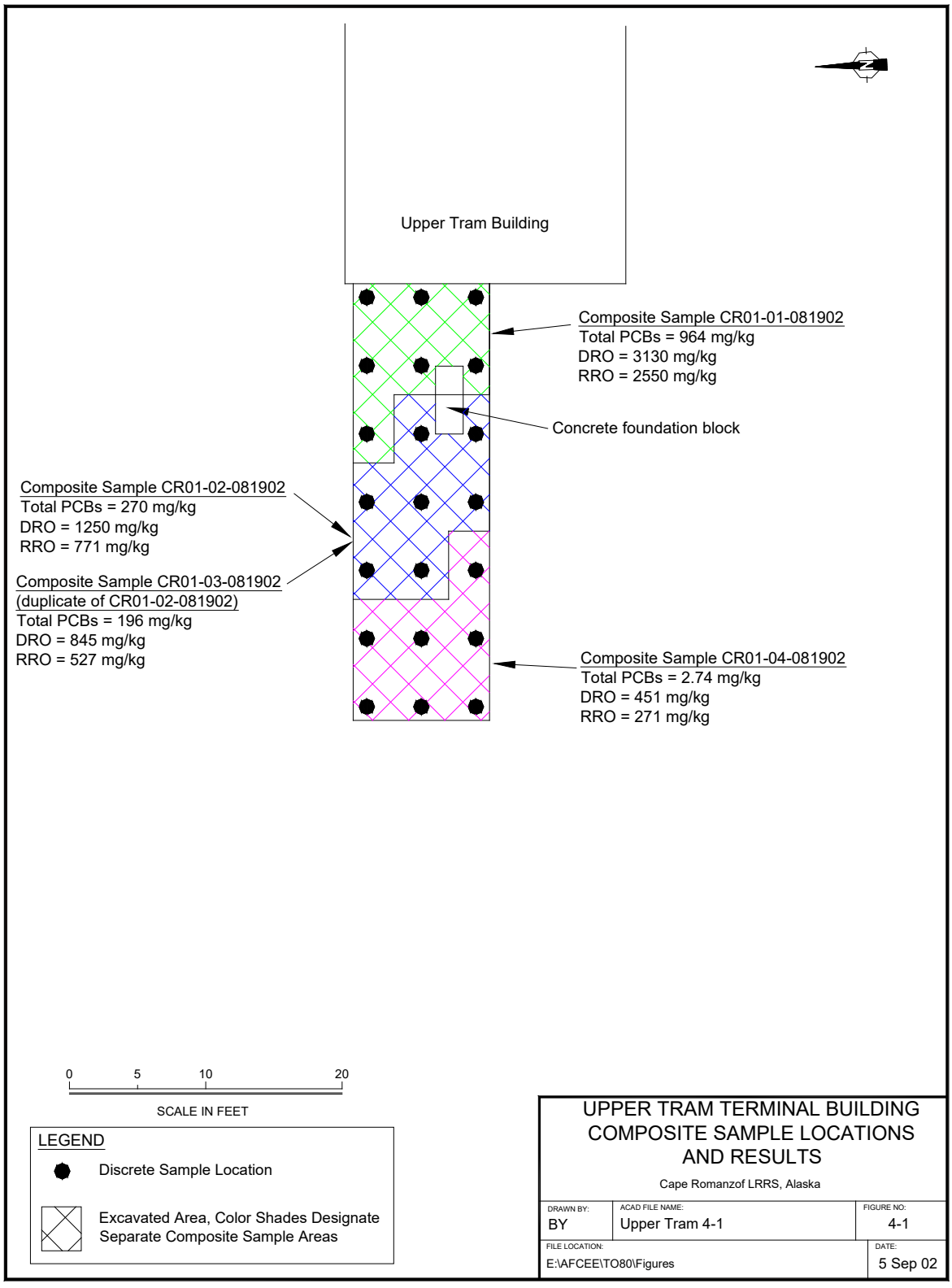
N
Upper Tram Building
Composite Sample CR01-01-081902
Total PCBs = 964 mg/kg
DRO = 3130 mg/kg
RRO = 2550 mg/kg
Concrete foundation block
Composite Sample CR01-02-081902
Total PCBs = 270 mg/kg
DRO = 1250 mg/kg
RRO = 771 mg/kg
Composite Sample CR01-03-081902
(duplicate of CR01-02-081902)
Total PCBs = 196 mg/kg
DRO = 845 mg/kg
RRO = 527 mg/kg
Composite Sample CR01-04-081902
Total PCBs = 2.74 mg/kg
DRO = 451 mg/kg
RRO = 271 mg/kg
0 5 10 20
SCALE IN FEET
LEGEND
Discrete Sample Location
Excavated Area, Color Shades Designate Separate Composite Sample Areas
UPPER TRAM TERMINAL BUILDING
COMPOSITE SAMPLE LOCATIONS AND RESULTS
Cape Romanzof LRRS, Alaska
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FIGURE NO: 4-1
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DATE: 5 Sep 02

4.2 LOWER TRAM TERMINAL BUILDING SAMPLE RESULTS

A square-based grid system was overlain over the entire area excavated as described in Section 3.3. Seven composite soil samples were collected from the 48 grid points, including one duplicate. One composite sample was collected from the eight easterly grid points; one composite sample was collected from the westerly eight grid points, etc. The grid point locations are depicted in Figure 4-2. Sample results are summarized in Table 4-2. Complete Analytical Reports are provided as Appendix B.

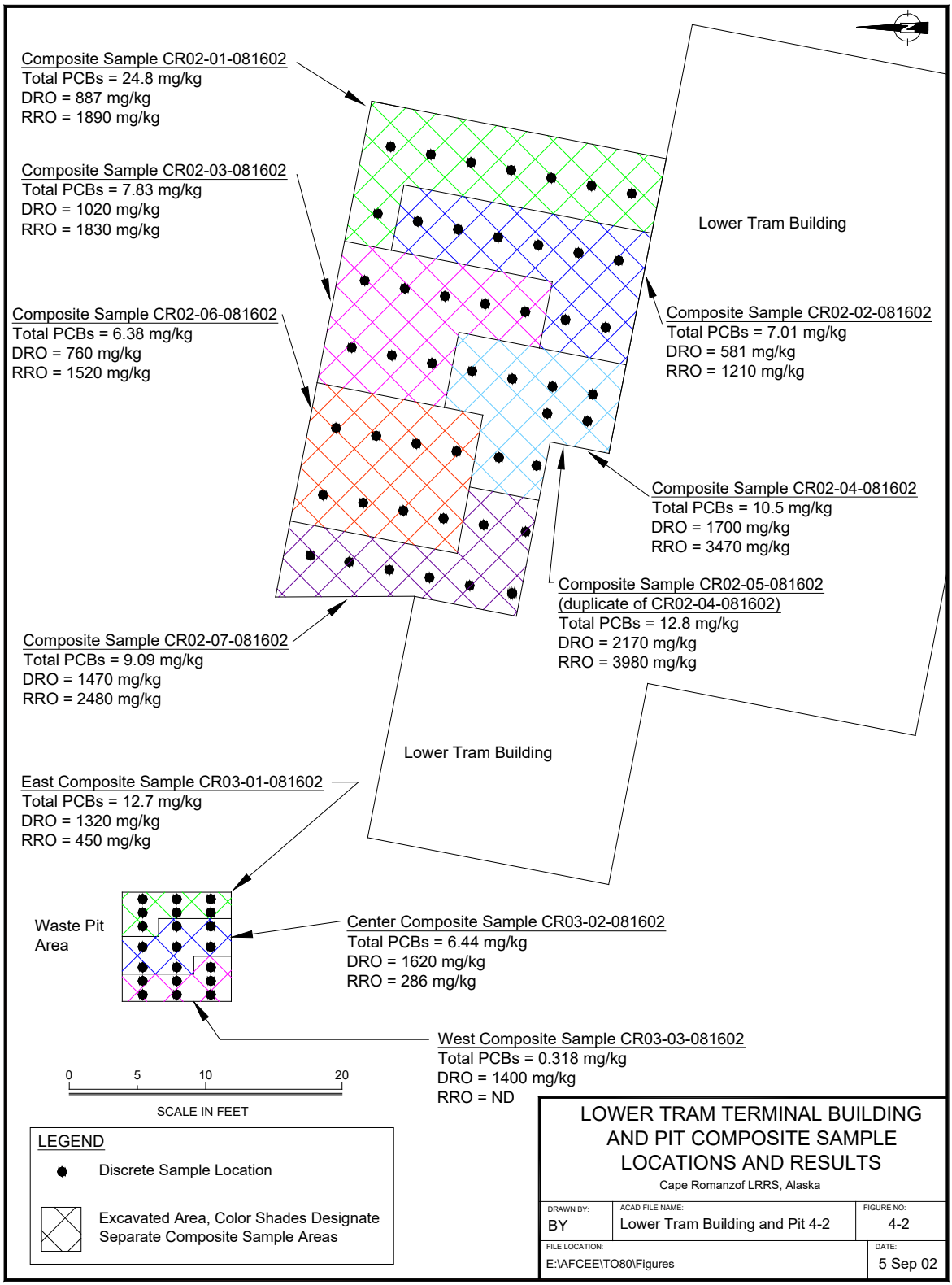
Table 4-2 - Lower Tram Terminal Building Sample Results

	Result (mg/kg)		
	DRO	RRO	Total PCBs
ADEC Maximum Allowable Level	250	11,000	10
CR02-01-081602	**887**	1,890	**24.8**
CR02-02-081602	**581**	1,210	7.01
CR02-03-081602*	**1,020***	1,830*	7.83*
CR02-04-081602	**1,700**	3,470	**10.5**
CR02-05-081602	**2,170**	3,980	**12.8**
CR02-06-081602	**760**	1,520	6.38
CR02-07-081602	**1,470**	2,480	9.09

Notes:
*CR01-03-081902 is a duplicate of CR01-02-081902.
Items in bold exceed the ADEC maximum allowable level.
Value in parenthesis is the PQL.
DRO = diesel range organics
RRO = residual range organics
PCBs = polychlorinated biphenyls

According to the results, concentrations of DRO and PCBs still exist in the soil above ADEC maximum allowable levels. DRO concentrations were present in all four samples, as high as 2,170 mg/kg, which exceeds the maximum allowable level of 250 mg/kg. RRO concentrations were present in all four samples, as high as 3,980 mg/kg, which does not exceed the maximum allowable level of 11,000 mg/kg.

PCB concentrations were present in all seven samples, three exceeding ADEC allowable levels. PCBs were reported as high as 24.8 mg/kg, from the sample collected from the eight easterly grid points (Sample No. CR02-01-081602), which exceeds the maximum allowable level of 10 mg/kg.


N
Composite Sample CR02-01-081602
Total PCBs = 24.8 mg/kg
DRO = 887 mg/kg
RRO = 1890 mg/kg
Composite Sample CR02-03-081602
Total PCBs = 7.83 mg/kg
DRO = 1020 mg/kg
RRO = 1830 mg/kg
Composite Sample CR02-06-081602
Total PCBs = 6.38 mg/kg
DRO = 760 mg/kg
RRO = 1520 mg/kg
Lower Tram Building
Composite Sample CR02-02-081602
Total PCBs = 7.01 mg/kg
DRO = 581 mg/kg
RRO = 1210 mg/kg
Composite Sample CR02-04-081602
Total PCBs = 10.5 mg/kg
DRO = 1700 mg/kg
RRO = 3470 mg/kg
Composite Sample CR02-05-081602
(duplicate of CR02-04-081602)
Total PCBs = 12.8 mg/kg
DRO = 2170 mg/kg
RRO = 3980 mg/kg
Composite Sample CR02-07-081602
Total PCBs = 9.09 mg/kg
DRO = 1470 mg/kg
RRO = 2480 mg/kg
Lower Tram Building
East Composite Sample CR03-01-081602
Total PCBs = 12.7 mg/kg
DRO = 1320 mg/kg
RRO = 450 mg/kg
Waste Pit
Area
Center Composite Sample CR03-02-081602
Total PCBs = 6.44 mg/kg
DRO = 1620 mg/kg
RRO = 286 mg/kg
West Composite Sample CR03-03-081602
Total PCBs = 0.318 mg/kg
DRO = 1400 mg/kg
RRO = ND
0 5 10 20
SCALE IN FEET
LEGEND
Discrete Sample Location
Excavated Area, Color Shades Designate Separate Composite Sample Areas
LOWER TRAM TERMINAL BUILDING AND PIT COMPOSITE SAMPLE LOCATIONS AND RESULTS
Cape Romanzof LRRS, Alaska
DRAWN BY: BY
ACAD FILE NAME: Lower Tram Building and Pit 4-2
FIGURE NO: 4-2
FILE LOCATION: E:\AFCEE\TO80\Figures
DATE: 5 Sep 02

4.3 LOWER TRAM TERMINAL PIT SAMPLE RESULTS

A square-based grid system was overlain over the entire area excavated as described in Section 3.3. Three composite soil samples were collected from the 21 grid points. One composite sample was collected from the seven easterly grid points, one composite samples was collected from the middle seven grid points, and one composite sample was collected from the easterly seven grid points. The grid point locations are depicted in Figure 4-2. Sample results are summarized in Table 4-3. Complete Analytical Reports are provided as Appendix B.

Table 4-3 – Lower Tram Terminal Pit Sample Results

	Result (mg/kg)		
	DRO	RRO	Total PCBs
ADEC Maximum Allowable Level	250	11,000	10
CR03-01-081602	**1,320**	450	**12.7**
CR03-02-081602	**1,620**	286	6.44
CR03-03-081602	**1,400**	U (234)	0.318

Notes:
Items in bold exceed the ADEC Maximum allowable level.
Value in parenthesis is the PQL.
DRO = diesel range organics
RRO = residual range organics
PCBs = polychlorinated biphenyls
U = Not detected above the PQL

According to the results, concentrations of DRO and PCBs still exist in the soil above ADEC maximum allowable levels. DRO concentrations were present in all three samples, as high as 1,620 mg/kg, which exceeds the maximum allowable level of 250 mg/kg. RRO concentrations were reported in two of the three samples, as high as 450 mg/kg, which does not exceed the maximum allowable level of 11,000 mg/kg.

PCB concentrations were present in all three samples, however, only one exceeding the maximum allowable level of 10 mg/kg. Sample No. CR03-01-081602, collected from the seven easterly grid points, was reported with a total PCB concentration of 12.7 mg/kg.

4.4 SAND BLAST MATERIAL SAMPLE RESULTS

One sample was collected from the sand blast material from the Lower Tram Terminal Building, on the easterly edge of the excavation and analyzed it for DRO, RRO, and PCBs. Sample results are summarized in Table 4-4. Complete Analytical Reports are provided as Appendix B.

Table 4-4 – Sand Blast Material Sample Results

	Result (mg/kg)		
	DRO	RRO	Total PCBs
ADEC Maximum Allowable Level	250	11,000	10
CR02-08-082002	**335**	473	**108**

Notes:
Items in bold exceed the ADEC Maximum allowable level.
DRO = diesel range organics.
RRO = residual range organics.
PCBs = polychlorinated biphenyls.

According to the results, the DRO concentration in the sandblast material was 335 mg/kg, and the RRO concentration was 473 mg/kg. The PCB concentration was reported at 108 mg/kg, which exceeds the allowable level 10 mg/kg. Photographs showing the sand blast material are provided in Appendix C.

The cause of there being DRO and RRO in the sand blast material is unknown. However, it may be due to over spray of fuel/exhaust from the air compressors that were used to power the sand blaster.

5.0 PROJECT SUMMARY AND CONCLUSIONS

The Contractor removed approximately 50 cy of PCB and DRO/RRO-contaminated soil from the upper and lower Tram Terminal Building areas as designated in the work plan and the SOW. The contaminated soil was properly labeled and manifested for transportation and disposal at the TSCA permitted landfill at Clive, Utah. The waste was manifested and transported in four separate containers. The waste was disposed of at the facility in accordance with their Uniform Hazardous Waste Manifest Document Number. Table 5-1 shows the manifest document number, the weight and date of disposal.

Table 5-1 – Waste Disposal Details

Manifest Document Number	Weight (Kg)	Disposal Date
CZF06	15,150.00	25 October 2002
CZF07	14,923.03	15 October 2002
CZF08	13,799.98	18 October 2002
CZF09	10,450.01	15 October 2002

The Contractor did not backfill the excavated areas as there was additional contamination based on field screening and due to the unresolved determination of the sand blast material contamination.

Based on the analytical results presented in Section 4.0, additional excavation is required at the lower and upper tram terminal buildings to reach compliance with the regulatory levels for PCBs and DRO in the grid sections indicated in the figures. Additionally, it is recommended that the sand blast material be investigated and removed prior to additional excavation.

Based on field observations and excavation activities at the upper tram terminal area, additional excavation and backfill of the excavation is not recommended. Due to the high degree of the slope and the large number of very large boulders additional excavation would be difficult. The large boulders can only be excavated using heavy equipment and placing heavy equipment on the slope is not recommended unless the hillside is altered to support the use of such equipment. Negotiation with the regulators may be required to close this site.

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6.0 REFERENCES

Alaska Administrative Code, Title 18, Chapter 75, *Oil and Other Hazardous Substances Pollution Control*, July 1999.

Code of Federal Regulations, Title 29, Part 1910, *Occupational Safety and Health Standards*, July 1, 1998.

Code of Federal Regulations, Title 40, Part 261, *Identification and listing of Hazardous Waste*, July 2001.

United States Air Force 354th CES/CEVQ, Draft Work Plan, *PCB Contaminated Soil Removal and Disposal*, July 2002.

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APPENDIX A — CERTIFICATES OF DISPOSAL

APPENDIX B — ANALYTICAL REPORTS

APPENDIX C — PROJECT PHOTOGRAPHS