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FINAL
SITE INVESTIGATION REPORT
FOR
HAINES FUEL TERMINAL TANANI POINT BURN PIT SITE INVESTIGATION, SOIL EXCAVATION, ASSESSMENT, AND DISPOSAL
HAINES, ALASKA

USACE CONTRACT NO. DACA85-02-P-0095
BNCI PROJECT NO. 179

U.S. Army Directorate of Public Works, Alaska

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Final Site Investigation Report
Haines Fuel Terminal, Tanani Point Burn Pit, Site Investigation, Haines, Alaska
USACE Contract No. DACA85-02-P-0095

The material and data in this report were prepared under the supervision and direction of the undersigned.

BNC International, Inc.

A subsidiary of Bethel Native Corporation

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Date: _____

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APPENDICES

ACRONYMS

~ .....Approximately
°C .....Degrees Celsius
ºF .....Degrees Fahrenheit
AAC .....Alaska Administrative Code
ADEC.....Alaska Department of Environmental Conservation
AK.....Alaska
AVGAS.....Aviation Gasoline
bgs .....Below-Ground Surface
BNCI .....BNC International, Inc.
C .....Carcinogenic Effects
CAS.....Chemical Abstracts Service
CDFR .....Chemical Data Final Report
CFR.....Code of Federal Regulations
CMP .....Corrugated Metal Pipe
COC .....Chain of Custody
CQC .....Contractor Quality Control
CV .....Coefficient of Variation
DAF.....Dilution Attenuation Factor
DF-A .....Arctic Grade Diesel Fuel
DOT .....U.S. Department of Transportation
DRO .....Diesel-Range Organics
e.g.....For Example
EIHWR .....Environment Canada's Export and Import of Hazardous Waste Regulations
EPA .....U.S. Environmental Protection Agency
ERG.....Emergency Response Guide
fax .....Facsimile
GPS .....Global Positioning System
GRO .....Gasoline-Range Organics
HDPE .....High Density Polyethylene
HEPA .....High Efficiency Particulate Air
HMTA .....Hazardous Materials Transportation Act
JP-4 .....Jet Fuel
LCS .....Laboratory Control Spikes
LCSD .....Laboratory Control Spike Duplicates
LEL .....Lower Explosive Limits
LF .....Linear Feet
LOQ .....Limit of Quantitation

ACRONYMS

mg/kg .....Milligrams per Kilogram
MOGAS .....Leaded Gasoline
mph .....Miles per Hour
MRD .....Missouri River Division
MS.....Matrix Spikes
MSD.....Matrix Spike Duplicates
No.....Number
NQ.....Not Qualified
PCB .....Polychlorinated Biphenyls
PG .....Packing Group
pg/g .....Picograms per Gram (Parts per Trillion)
PID .....Photoionization Detector
POL .....Petroleum, Oil, and Lubricants
PPE.....Personal Protection Equipment
ppm .....Parts per Million
ppt .....Parts per Trillion
PQL .....Practical Quantitation Limit
PSC .....Philip Services Corporation
QA.....Quality Assurance
QAR .....Quality Assurance Representative
QC .....Quality Control
RBC.....Risk Based Concentrations
RPD.....Relative-Percent Difference
SDI .....Strategic Diagnostics, Incorporated
SGS/CT&E .....SGS/CTE Environmental Services, Inc.
SOW.....Scope of Work
SSHO .....Site Safety and Health Officer
SSHP .....Site Safety and Health Plan
SVOC.....Semi-Volatile Organic Compounds
SW.....Solid Waste
TCDD.....2,3,7,8-Tetrachlorodibenzo-*p*-Dioxin
TP.....Test Pit
TSDF.....Treatment, Storage, and Disposal Facility
ug/kg3 .....Micrograms per Cubic Meter
UN.....United Nations
U.S. .....United States

ACRONYMS

USACE .....United States Army Corps of Engineers
VOC .....Volatile Organic Compounds
WMP .....Waste Management Plan
WO .....Work Order

EXECUTIVE SUMMARY

This section presents an executive summary of the Haines Fuel Terminal Tanani Point Burn Pit Site Investigation, Soil Excavation, Assessment, and Disposal project performed by BNC International, Inc. (BNCI) in Haines Alaska. BNCI performed the fieldwork during the period from April 7, 2003 through April 18, 2003 for the United States Army Garrison, Alaska (USARGAK) Department of Public Works (DPW) under Contract DACA85-02-P-0095 administrated by the United States Army Corps of Engineers (USACE) Southern Area Office.

OVERVIEW

- BNCI excavated and sampled 13 test pits in and around the Tanani Point Burn Pit.

- BNCI traced, removed, and sampled 417.5-lineal feet (LF) of pipeline from Building 1200 to the Tanani Point Burn Pit. Fourty four (44) LF of 2-inch pipe was removed, and 373.5-LF of 3-inch pipe was removed.

- BNCI's environmental sampler collected:

  - Sixty seven (67) soil samples for semi-quantitative headspace field screening with a photoionization detector (PID). Forty one (41) of these samples were collected from the 13 test pits excavated on Tanani Point, and 26 were collected along the pipeline from Building 1200 to Tanani Point.

  - Forty one (41) soil samples from the 13 test pits on Tanani Point for immunoassay field screening analysis for polychlorinated biphenyls (PCB) by United States Environmental Protection Agency (EPA) method SW-846-4020.

  - Forty four (44) soil samples and 4 duplicate samples for laboratory analysis. Of the 48 samples collected, 14 primary and 2 duplicate samples from the Tanani Point Test Pit excavations, and 3 primary and 1 duplicate sample from the pipeline were sent for laboratory analysis. The remaining samples were eliminated from laboratory analysis through field screening and immunoassay results. Analytical samples collected from Tanani Point were analyzed for diesel-range organics (DRO) by Method Alaska (AK) 102, gasoline-range organics (GRO) by Method AK 101, volatile organic compounds (VOC's) EPA Method Solid Waste (SW) 8260B, semi-volatile organic compounds (SVOC's) by EPA Method SW 8270C, Total Lead by EPA Method SW 6020, PCB's by EPA Method SW 8082, and Dioxins by EPA Method SW 8290. Analytical samples collected from the pipeline from Building 1200 to Tanani Point Burn Pit were analyzed for DRO by Method AK 102, GRO by Method AK 101, VOC's by EPA Method SW 8260B, SVOC's by EPA Method SW 8270C, and Total Lead by EPA Method SW 6020.

- BNCI delivered:

  - Approximately 83 gallons of Investigation Derived Waste (IDW) (decontamination water) to Burlington Environmental, Inc. for disposal,

  - Forty four LF of 2-inch pipe, and 373.5 LF of 3-inch pipe (approximately 3,000 pounds (lbs.) to Seattle Iron & Metals, Corporation for recycling,

  - One hundred (100) lbs. of IDW (contaminated personal protective equipment) to Burlington Environmental, Inc. for disposal,

  - And approximately 5 gallons of waste methanol from the onsite field laboratory to to Burlington Environmental, Inc. for disposal.

FINDINGS

Only one (1) of the samples submitted for laboratory analysis from the Tanani Point test pits and pipeline exceeded the ADEC cleanup requirements for residential soils. Sample O3HNSTP009SLTP-3-6 was collected from Test Pit No. 3 on Tanani Point from 6-feet below ground surface, immediately above the groundwater elevation in the bottom of the test pit. The DRO concentration of 1,680 parts per-million (ppm) exceeded the ADEC residential cleanup requirement for the over 40-inch precipitation zone for the migration to groundwater of 230 ppm.

1 PROJECT AND OVERVIEW

The United States Army Corps of Engineers (USACE) contracted and funded BNC International, Inc. (BNCI), under Contract Number DACA85-02-P-0095, to perform a site investigation and soil sampling at the Tanani Point Burn Pit site on behalf of the Unite States Army Garrison Alaska; to trace, remove, and dispose of two standard 2-inch pipelines from the Tanani Point Burn Pit back to their sources; perform clearing and grubbing in support of a soil gas survey project, prepare a technical memorandum, and to prepare and submit a Final Report for this work at the Haines Fuel Terminal, Tanani Point Burn Pit. The project was administered by the USACE, Alaska District, Southern Alaska Area Office. This Final Report summarizes the activities performed by BNCI at the Haines Fuel Terminal and the Tanani Point Burn Pit from April 2003 to May 2003.

Sampling activities were performed in accordance with the Sampling and Analysis Plan for Haines Fuel Terminal Tanani Point Burn Pit Site Investigation, Soil Excavation, Assessment, and Disposal, Haines, Alaska (BNCI, 2000). The Sampling and Analysis Plan described the procedures necessary to complete the scope of work identified in the USACE Tanani Point Burn Pit Contract.

1.1 Site Location and Background

The Haines Fuel Terminal occupies approximately 85-acres on the northeastern slope of Mt. Ripinski, approximately 300- to 1,000-feet inland and upgradient from Lutak Inlet. The property is on a long-term lease to the United States (U.S.) Army by the Department of Interior, Bureau of Land Management. Figure 1 is a site location and vicinity map and Figure 2 is the general site layout for the Tanani Point Burn Pit project. Figures are presented in Appendix A.

The Haines Fuel Terminal was constructed in 1954, to provide facilities for tanker dockage, fuel storage, and a pipeline system to deliver fuel to Eielson Air Force Base, Alaska. The Haines Fuel Terminal was an active fuel storage and pumping facility from 1955 until 1971, when use of the pipeline was discontinued. Between 1971 and 1988, the Haines Fuel Terminal was used for storage of fuel in the event of an emergency. The capacity of the tanks at the Haines Fuel Terminal was 380,000 barrels of fuel in thirteen bulk fuel storage tanks. The thirteen storage tanks were demolished and removed during previous and concurrent projects (USACE, 2001).

The Tanani Point Burn Pit is one of three burn pits that were used for disposal of waste petroleum, oil, and lubricants (POL). Substances reported to have been burned in the pits included diesel fuel, jet fuel (JP-4), leaded gasoline (MOGAS), aviation gasoline (AVGAS), and arctic-grade diesel fuel (DF-A). Transformer

fluids, possibly containing polychlorinated biphenyls (PCB), were also suspected to have been burned in the Tanani Point Burn Pit.

Previous groundwater and soil sampling activities at the Tanani Point Burn Pit indicate elevated levels of lead, petroleum compounds, volatile organic compounds (VOC), and semi-volatile organic compounds (SVOC). Previous site investigations performed by Harding Lawson Associates at the Tanani Point Burn Pit concluded the dioxin levels found during the groundwater and soil sampling activities did not exceed EPA Region III Risk-Based Concentrations.

Thin surficial alluvial deposits overlying fractured bedrock characterize soils at the Haines Fuel Terminal. Surficial deposits vary in thickness from two-feet to sixty-feet overlying the bedrock.

1.2 Project Objectives

The objectives of the site investigation at the Tanani Point Burn Pit were to identify contaminants of concern that might exist in order to ultimately remove and dispose of contaminated soil, and determine the nature and extent of any contamination present at Tanani Point. In addition, the piping used to transfer POL to the burn pit from Building 1200, the Pump House Building, was to be traced and removed. BNCI furnished all of the necessary personnel, services, equipment, materials, and facilities necessary to carry out the Haines Fuel Terminal Burn Pit Scope of Work (SOW) work assignments.

The Haines Fuel Terminal Tanani Point Burn Pit soil sampling included the collection of photoionization detector (PID) headspace field screening samples; the collection of PCB immunoassay field screening samples; and the collection and laboratory analysis of laboratory analytical soil samples from a series of test pits at the Tanani Point Burn Pit and along the two standard 2-inch piping runs. The headspace field screening samples were collected and analyzed using a PID in accordance with the ADEC approved field screening methods. The PCB immunoassay field screening samples were analyzed with a Strategic Diagnostics, Incorporated (SDI) RaPID Assay PCB immunoassay kit. The PID headspace and PCB immunoassay field screening results were used to determine the locations for the collection of laboratory analytical samples. BNCI was contracted to collect at least one sample from each test pit, therefore, the samples sent for laboratory analysis were selected using the highest PID result for each test pit. The analytical samples were analyzed for diesel-range organics (DRO) by Method Alaska (AK) 102, gasoline-range organics (GRO) by Method AK 101, VOC's by U.S. Environmental Protection Agency (EPA) Method Solid Waste (SW) 8260B, SVOC's by EPA Method SW 8270C, Total Lead by EPA Method SW 6020, PCB's by EPA Method SW 8082, and Dioxins by EPA Method SW 8290.

1.3 Climatological Conditions Encountered

Haines has a maritime climate characterized by cool summers and mild winters. Summer temperatures range from 46 to 66 degrees Fahrenheit (ºF). Winter temperatures range from 10ºF to 36ºF. Extreme temperatures have been recorded from -16ºF to 90ºF. Total precipitation averages 52-inches a year, with 133-inches of snowfall.

1.4 Regulatory Limits

The ADEC residential cleanup requirements have been adopted for the Tanani Point Burn Pit. The ADEC clean-up requirements listed in the Alaska Administrative Code (AAC)—Chapter 18, Section 75.341 (18 AAC 75.341) for the contaminants of concern are presented in Table 1.4.1. Since the ADEC has not established clean-up levels for dioxins the EPA Risk Based Concentrations for Residential Soil for dioxins (2,3,7,8-Tetrachlorodibenzodioxin) have been adopted, and are presented in Table 1.4.2.

Table 1.4.1. ADEC Soil Cleanup Levels for Contaminants of Concern

Contaminants of Concern	ADEC Soil Cleanup Levels (18 Alaska Administrative Code 75.341 Tables B-1 and B-2) (Over 40-inch Precip Zone)
	Migration to groundwater (mg/kg)
DRO	230
GRO	260
VOC[1]	
SVOC[2]	
Lead[3]	Cleanup Level – 400 mg/kg
PCB[4]	Cleanup Level – 1 mg/kg

[1] VOC cleanup levels are analyte specific, See Table B1 18AAC75.341
[2] SVOC cleanup levels are analyte specific, See Table B1 18AAC75.341
[3] State of Alaska lead cleanup levels must be determined on a site-specific basis, based on land use, See 18AAC75.341, Notes to Tables B1 and B2, Note 11
[4] State of Alaska PCB cleanup levels must be determined on a site-specific basis, based on land use, See 18AAC75.341, Notes to Tables B1 and B2, Note 9, the PCB cleanup level for residential land use in surface soils is 1 mg/kg (ppm)

Table 1.4.2 EPA Region III Risk Based Concentrations Residential Soil

Contaminants of Concern	EPA Risk Based Concentrations (RBC) Table (10/09/02)	
	Soil Residential (mg/kg)	Soil, for Groundwater Migration (Dilution Attenuation Factor [DAF] 20 mg/kg)
Dioxins (2,3,7,8-tetrachlordibenzo-*p*-dioxin ([2,3,7,8 – TCDD]) [1]	$4.3x10^{-6}$ carcinogenic effects (C) – (4.3 picograms per gram [parts per trillion] [pg/g])	$8.6x10^{-6}$ C (8.6 pg/g)

[1] State of Alaska dioxin cleanup levels must be determined on a site-specific basis, See 18AAC75.341, Notes to Tables B1 and B2

2 PROJECT ORGANIZATION AND PLANNING

2.1 Project Organization

Table 2.1-1 below lists the Haines Fuel Terminal, Tanani Point Burn Pit, Site Investigation project key personnel and their responsibilities.

Table 2.1-1 Key Personnel

Title	Name	Telephone
Project/Program Manager	Tim Finnigan	(907) 522-6103
Safety and Health Manager	Darren D. Burks	(907) 223-4807
Project Chemist	Greg DuBois	(907) 522-6103
Site Safety and Health Officer (SSHO)	Mark F. Greenough	(907) 522-6103
Environmental Sampler	Tim Weglarz / Greg Jarrell	(907) 522-6103

2.2 Project Planning

The Technical Specifications for the Tanani Point Burn Pit Decommissioning required the development of the following site-specific plans.

- Work Plan
- Sampling and Analysis Plan
- Site Safety and Health Plan

Each plan was submitted for review and approval by the USACE in accordance with the Technical Specifications prior to the commencement of the contracted field activities.

3 SITE MANAGEMENT

The BNCI SSHO, Mark Greenough, was the point of contact between the USACE and the BNCI Program Manager. He was also responsible for ensuring compliance with contract specifications, the BNCI Quality Control Program, and the implementation of the Site Safety and Health Plan, and safe work practices during the field activities. The Program Manager, Tim Finnigan, supported field personnel throughout the Tanani Point Burn Pit Site Investigation activities from the Anchorage office and with regular site visits.

The onsite USACE Representative, Tammy Phillips, inspected all work activities and safety practices to ensure compliance with regulatory and contractual requirements.

3.1 Site Documentation/Field Notes

Throughout onsite project activities, photographs were taken to document the daily progression of work at the Haines Fuel Terminal, Tanani Point Burn Pit. Photographic documentation of the site activities is presented in Appendix B, "Project Photographic History".

Project drawings for the Tanani Point Burn Pit Site Investigation showing the test pit locations, sample locations, and pipeline removed, are included in Appendix A. Control points shown on the figures consist of 12-inch rebar with metal tags stating the control point number and project name. Control points can be relocated using a metal detector in conjunction with the Global Positioning System (GPS) coordinates provided on the drawings.

Daily Field Reports were generated daily to document the progress of activities and to summarize the inspections and methods implemented to assure compliance with the contract. Copies of daily field notes, reports, monitoring and testing results, as well as daily safety meetings were attached to the daily field reports and submitted to the USACE through the onsite QAR, Tammy Phillips. Copies of the daily field reports and field notes are included in Appendix C.

3.2 Site Security

Site security measures were setup and maintained for the duration of the project work activities in an effort to ensure a safe work site. The burn pit site is located northeast of the main entrance to the Haines Fuel Terminal Tank Farm across Lutak Road, and is often used by local residents for parking and access to the beach along Lutak Inlet.

Temporary barriers were placed around the perimeter of the Tanani Point Burn Pit site to limit access. The area was cordoned off using metal fence posts and

orange snow fence material. Signage was also posted to warn residents and personnel of potential hazards.

Access areas, work zones (exclusion zone, contamination reduction zone, and support zone), and storage areas were clearly identified. Where required, access to areas where operations were in progress, were controlled using temporary barriers. Work areas were also delineated with barrier ("caution and/or danger") tape, as necessary.

3.3 Site Staging and Storage Areas

Storage space for heavy equipment, material and supply connex containers, and miscellaneous project supplies were located inside Building 1202, Warehouse Building and around the perimeter of Building 1202 within the HFT secure area. Bulk fuel supplies (gasoline and diesel) for the site investigation activities were stored in a fuel storage connex container and labeled.

3.4 Waste Storage Areas

A temporary accumulation area was constructed during the project activities at the Haines Fuel Terminal. The storage/ accumulation area was constructed using 10-mil polyethylene sheeting, demarcation ribbon, and required signage.

The waste storage area was located in Building 1202. Each container (Supersack®, or drum) was labeled and recorded on the onsite waste inventory log. Each shipping container was labeled with the appropriate labels, as they were loaded with the specific wastes.

Closed (bung) top 55-gallon 1A1 drums meeting U.S. Department of Transportation (DOT) specifications containing liquid hazardous wastes were placed on pallets and temporarily stored inside Building 1202. Each drum was labeled and recorded on the site waste inventory log. Hazard warning signage and demarcation ribbon were placed around the perimeter of the temporary accumulation area in Building 1202 to prevent access by non-authorized personnel.

The non-hazardous metal debris from the pipeline removal was stockpiled at the former steel storage area west of Buildings 1213 and 1214 within the HFT secure area. The metal debris was stockpiled onsite prior to offsite transport by the Channel Construction, Inc. barge to Seattle Iron & Metals, Corporation in Seattle, Washington for recycling.

The hazardous wastes were stored onsite within the HFT secure area until they were transported by Philip Services Corporation (PSC) to the designated

treatment, storage, and disposal facility (TSDF). PSC utilized the analytical results from soil sampling to characterize the waste stream generated during decontamination procedures. Wastes from the onsite lab were determined to be hazardous through generator knowledge. The wastes were held at the site for less than 90 days from the "out of service" date (for example [e.g.] when wastes were first placed in the drum or container).

3.5 Decontamination Areas

Due to the nature of potential contaminants at the Tanani Point Burn Pit site, extensive personnel decontamination procedures were required for the test pit excavation and sampling activities. Decontamination stations for personnel and equipment were set up within the contamination reduction zone. Equipment that had entered the exclusion zone or that was exposed to material within the burn pit was decontaminated prior to exiting the zone.

Personnel entering the exclusion zone for excavation and sampling activities were required to undergo three-stage decontamination procedures in the contamination reduction zone. A detailed description of the decontamination procedures used are provided in the *Final Work Plan, Haines Fuel Terminal Tanani Point Site Investigation, Soil Excavation, Assessment, and Disposal, Haines, Alaska*, (BNCI 2003).

Used PPE and decontamination water were containerized and disposed of offsite as described in Section 8 *Waste Transportation and Disposal.*

4 PROJECT EXECUTION

4.1 Introduction

This section describes the procedures and tasks performed for Haines Fuel Terminal Tanani Point Burn Pit Site Investigation, Soil Excavation, Assessment, and Disposal, in Haines, Alaska.

4.2 Clearing and Grubbing

BNCI performed clearing and grubbing activities for approximately 1.5 acres of land due west of Tanani Point near the old Haines Fuel Terminal truck fill stand and former drum storage area. Clearing and grubbing activities were performed in support of a soil-gas survey performed by another contractor under Contract Modification P00003.

BNCI utilized a Hitachi EX200 excavator with a hydraulic cutting attachment to perform the clearing and grubbing tasks. BNCI laborers performed final cleanup activities using a chainsaw. The trees and shrubs generated from the clearing activities were temporarily stacked in place until they were transported to the vegetation stockpile south of the former steel storage area. Clearing and grubbing commenced on April 7, 2003 and was completed on April 10, 2003.

4.3 Pipeline Excavation and Removal

BNCI removed a total of 417.5-lineal feet (LF) of pipeline from Building 1200 to the Tanani Point Burn Pit. The pipeline between Building 1200 and the Tanani Point Burn Pit consisted of 44-LF of 2-inch diameter pipe, and 373.5-LF of 3-inch diameter pipe. The pipeline went from a sump located in the floor of Building 1200 to the Tanani Point Burn Pit.

The SOW for the Tanani Point Burn Pit Site Investigation included the tracing, sampling, and removal of two reported pipelines. However, only the pipeline between the burn pit and Building 1200 was located. A second pipeline between the burn pit and the former drum storage area could not be found. The existence of this pipe was indicated in a previous environmental report from a verbal description provided by a former HFT employee, however no map or diagram depicting its location was provided. BNCI personnel were unable to locate the second pipeline using conventional pipe locating equipment. To ensure that the pipeline was not missed by the locating equipment, BNCI personnel excavated a trench down to bedrock along the northwest edge of Tanani Point parallel to

Lutak Road in order to intercept the second pipeline if it existed. No pipeline was encountered during excavation of the trench parallel to Lutak Road. Upon completion of the trench, the USACE onsite representative and the BNCI SSHO determined that the second pipeline did not exist or had been previously removed. The pipeline and sample locations between Building 1200 and the Tanani Point Burn Pit are presented in Figure 4.

The outfall for the pipeline between Building 1200 and the Tanani Point Burn Pit was exposed in the burn pit during the excavation of Test Pit Number (No.) 3 on April 9, 2003. The pipe was exposed at approximately 4.5 to 5-feet bgs. Pipeline tracing began in earnest on April 11, 2003. BNCI personnel used a Fisher model TW-7700 utility locator to trace the pipeline from the burn pit to Building 1200. The pipe trace was marked with fluorescent paint for easy recognition during excavation activities. The Hitachi EX200 excavator was used to expose the pipe prior to removal activities.

On April 14, 2003, BNCI began exposing the 3-inch pipeline from the Tanani Point Burn Pit to Building 1200. BNCI started from the pipe outfall that had been exposed in Test Pit No. 3. BNCI's excavator operator and laborer utilized Level "C" personal protection equipment (PPE) while exposing the pipeline in the burn pit and along the west side of Test Pits 3, 4, 11, and 12. Once workers were outside the exclusion zone for the Tanani Point Test Pit area, the onsite USACE representative and BNCI's SSHO determined that the potential for worker exposure to dioxins and PCBs were negligible. Therefore, upon exiting the Site Investigation test pit excavation area, PPE requirements were downgraded to Level "D". Personnel were instructed to stop excavation if contaminated liquids or petroleum hydrocarbons were encountered. BNCI exposed approximately 105-LF of pipe from the suspected center of the burn pit westward to a location just inside the perimeter of the temporary security fencing. BNCI personnel then moved to the location on the north side of Building 1200 where the pipeline exited from the foundation of the building. The pipeline was encountered at approximately 2.5-feet bgs. BNCI exposed approximately 52-LF of pipe along the north side of Building 1200. No liquids or petroleum hydrocarbons were encountered. However, several breaks in the pipeline were discovered along the north side of Building 1200, but the pipeline was dry. At a location off the northeast corner of Building 1200, BNCI personnel exposed a valve box connecting a 2-inch pipe to the main pipeline between the building and the Tanani Point Burn Pit. The 2-inch pipeline appeared to trend in a southerly direction parallel to the eastern side of Building 1200. BNCI personnel did not expose the 2-inch pipeline along the eastern side of Building 1200.

Approximately 153-LF of 3-inch pipeline was removed between the valve box and the fence line northeast of the main gate access road west of Lutak Road. The pipeline was free of contents and the excavation did not exceed 4-feet bgs at any time. During pipeline excavation, two east-west trending (approximately 24-

inches in diameter) corrugated metal pipes (CMP) were exposed just north of the main gate access road. The two CMP's were left in place. Approximately 187-LF of 3-inch pipeline was exposed and removed between the fence line northeast of the main gate access road west of Lutak Road and the pipeline outfall in Test Pit No. 3. Approximately 60-LF of the pipeline was contained within an 8-inch steel culvert within the Lutak Road right-of-way. BNCI personnel were able to remove the 3-inch pipeline from the culvert using the excavator to slide the pipeline out of the culvert. BNCI personnel placed an 8-inch diameter blue-board insulation "cut-out" approximately 18-inches from each end of the steel culvert and packed the ends with hydrated bentonite. BNCI personnel then placed plywood on each end of the culvert to prevent the bentonite from sloughing while it hardened. Pipeline excavation and removal was completed on April 17, 2003.

All piping was removed using a reciprocating saw or demolition saw. Drip pans and liners were placed within the trench prior to pipe cutting tasks to prevent any spills. Each section was checked for contents prior to cutting using visual observation and a 5-gas meter to check for the lower explosive limit (LEL). The pipeline was found to be empty from Building 1200 to the Tanani Point Burn Pit. Prior to cutting and removing the pipe, BNCI personnel and BNCI's ADEC qualified sampler marked the locations of all welds, joints, breaks, and areas with visible impact with pin flags for field screening and sampling tasks. BNCI personnel cut the pipeline into approximately 10-foot sections for easy handling.

A PID was used to perform field screening on soil from the pipeline excavations. Field screen samples were collected from joints, tees, elbows, and "suspicious" locations with visual or olfactory impact. BNCI's ADEC qualified sampler collected and analyzed a total of twenty-six (26) field screen samples. The results of the PID field screening were used to determine which samples would be sent to the laboratory for analysis. All PID samples and laboratory analytical samples were collected from freshly uncovered soil. BNCI's ADEC qualified sampler collected three (3) primary analytical samples and one (1) duplicate sample that were sent to the laboratory for analysis. The analytcal samples were analyzed for DRO by Method AK 102, GRO by Method AK 101, VOC's by EPA Method SW 8260B, SVOC's by EPA Method SW 8270C, and Total Lead by EPA Method SW 6020. PID and Sample Collection Logs are presented in Appendix D. The PID results are presented in Table F2 in Appendix F. The pipeline samples were collected from the locations depicted in Figure 4.

The 2- and 3-inch POL pipe removed from Building 1200 to the Tanani Point Burn Pit was loaded into Channel Construction's Maxihaul end dumps and transported to the Channel Construction barge "Consuelo" docked at the "Old Sawmill" Site. The barge sailed from Haines on October 4, 2003. The 2-inch and 3-inch POL pipe was transported to Seattle, Washington and delivered to Seattle Iron & Metals, Corporation for recycling.

4.4 Test Pit Excavation

A series of 13 test pits were excavated using a Hitachi EX200 excavator. The test pits were located within and around the perimeter of the Tanani Point Burn Pit area (Figure 2). Test pit locations were determined in advance by the project team. Test pit excavation and sampling activities commenced on April 8, 2003 and were completed on April 13, 2003. All personnel within the exclusion zone were required to wear level "C" PPE consisting of hard hat, steel-toe boots, safety glasses, tyvek suits, gloves, and half-mask air purifying respirators with high efficient particulate air (HEPA)/organic vapor filters. Test pit locations are shown in Figure 3.

BNCI personnel utilized the Hitachi EX200 excavator and a Mack end dump to perform the excavation of the test pits on Tanani Point. Excavated soils from each test pit were placed in the end dump. When the soils excavated from a test pit exceeded the capacity of the end dump, a 20-mil high density polyethylene (HDPE) liner was used to stockpile test pit soils during excavation and sampling activities. Each test pit was backfilled upon completion of sampling activities and compacted with the aid of the excavator prior to moving on to the next test pit. Soil was placed back in its original location. The excavator bucket was decontaminated after each test pit was backfilled and prior to starting excavation activities on the next test pit. Each of the test pits were excavated down to bedrock refusal or groundwater.

Samples were collected at 5-foot intervals and/or the final excavation elevation (refusal). Groundwater was encountered in Test Pit No. 3 at 6-foot below ground surface (bgs) and in Test Pit No. 13 at 5-foot bgs, halting further excavation. The analytical samples were analyzed for DRO by Method AK 102, GRO by Method AK 101, VOC's by EPA Method SW 8260B, SVOC's by EPA Method SW 8270C, Total Lead by EPA Method SW 6020, PCB's by EPA Method SW 8082, and Dioxins by EPA Method SW 8290. The PID field screening and immunoassay results were used to determine which test pit samples would be sent to the USACE/ADEC qualified laboratory, SGS/CTE Environmental Services, Inc. (SGS), for analysis. Fourteen (14) primary analytical samples and two (2) duplicate analytical samples were sent for laboratory analysis from the Tanani Point Burn Pit. PID and Sample Collection Logs are presented in Appendix D.

Decontamination water for both equipment and personnel was collected and consolidated into DOT approved 55-gallon 1A1 closed (bung) top drums, and labeled as investigation derived waste (decontamination water). Two drums (approximately 83 gallons total) of decontamination water contaminated with lead were disposed of by Burlington Environmental, Inc. a subsidiary of PSC. PSC used the laboratory analytical results from the soil sampling to characterize the waste stream. Treatment and disposal was performed at Burlington Environmental's facility in Kent, Washington. The final disposition of the waste

streams generated during the Tanani Point Burn Pit Site Investigation is presented in Sections 8.1 and 8.2.

5 SAMPLING PROCEDURES

5.1 Introduction

This section describes the general procedures used to collect environmental samples during the Tanani Point Site Investigation project. Sample collection and analysis is described in further detail in the *Final Sampling and Analysis Plan for Haines Fuel Terminal Tanani Point Burn Pit Site Investigation, Soil Excavation, Assessment, and Disposal; Haines, Alaska,* (BNCI 2003).

5.2 Headspace Field Screening Sample Collection

PID headspace field screening was conducted at depths outlined in Table D-5 and Table D-6 in Appendix D. Headspace field screening was performed on each of the samples collected. A representative sample of soil was placed in a Ziploc bag and placed in a warm area for at least 10 minutes in order to raise the soil temperature above 40°F. All PID field screen samples were collected from freshly uncovered soil and analyzed within one hour of collection. After warming, the sealed soil sample was agitated (shaken) for 15 to 20 seconds, then the probe tip of the screening instrument was inserted into the bag and the highest reading recorded. The field-screening instrument was configured to hold the maximum reading; the maximum reading was reset after each sample was screened. The field-screening instrument was fully charged and calibrated prior to use each day. The calibration procedure and results were recorded in the site sample log.

Analytical soil samples were submitted for laboratory analysis based on areas with the highest PID headspace field screening results and PCB immunoassay results. The PID calibration log, Tanani Point Burn Pit PID Log, and the Tanani Point Pipeline PID Log are presented in Appendix D as Tables D-4, D-5, and D-6, respectively.

5.3 Tanani Point Burn Pit Site Investigation PCB Immunoassay Field Screening Soil Sample Collection

The PCB immunoassay field screening soil samples were collected concurrently with the headspace field screening samples and the laboratory analytical samples from the test pit excavations in the Tanani Point Burn Pit from the depths outlined in Table D-2 and Table D-3 in Appendix D. The samples were analyzed for PCBs using EPA Method SW846-4020 with a Strategic Diagnostic, Inc., RaPID Assay Kit. Immunoassay samples were collected from each test pit in the Tanani

Point Burn Pit from the same locations as the laboratory analytical samples. Samples were placed into containers and labeled with the test pit identification number, sample collection depth, date, and time of sample collection to ensure correlation between PCB immunoassay samples and analytical samples. The immunoassay samples were placed into a cooler with gel ice immediately after collection. The samples were then transferred to a refrigerator in BNCI's onsite field lab. The refrigerator temperature was frequently monitored in order to ensure that the temperature remained at 4˚C ± 2˚C.

Prior to performing the immunoassay analysis, excess twigs, organic matter, and large rocks and pebbles were removed from each sample. Sample analysis was performed as per manufacturer's recommendations. The SDI EPA Method 4020, *Screening for PCB's by Immunoassay*, Strategic Diagnostic, Inc., *Use of PCB RaPID Assay Kits for Semi-Quantitative Screening Consistent with Solid Waste-846 Method 4020*, Strategic Diagnostic, Inc., Start-*Up Manual for the RaPID Assay System*, and the Strategic Diagnostic, Inc., *RaPID Assay PCB Test Kit A00133/A00134* are included in Appendix E.

A total of forty-one (41) primary samples and four (4) duplicate soil samples were analyzed using the immunoassay kit. The immunoassay results and corresponding analytical sample locations are presented in Tables D-2 and D-3 in Appendix D.

5.4 Analytical Soil Sample Collection

Soil samples were collected at depths outlined in the Analytical Soil Sampling Log, Table D-1 presented in Appendix D. Samples were collected from the freshly exposed surface of the excavation floors and sidewalls, or from the excavator bucket when excavations exceeded four-feet in depth. Samples collected from the excavator bucket were collected from the center of the bucket away from the sides; at least six-inches of soil was removed from the bucket surface immediately prior to sample collection. A clean pair of sampling gloves and a new clean stainless steel spoon was used to collect each sample.

Samples were stored in a cooler immediately after sample collection. Sample temperatures were maintained at approximately 4-degrees Celsius (°C) ± 2°C during transportation to the laboratory. Samples were handled and transported in a manner that maintained sample integrity and did not exceed specified holding times. Proper Chain of Custody (COC) procedures and documentation were maintained throughout sample collection, shipment, and receipt by the laboratory. Copies of the completed COC forms are provided in Appendix X.

6 ANALYTICAL RESULTS

6.1 Introduction

This section details the results of the immunoassay soil sample results and the laboratory analytical soil sample results for the Tanani Point Burn Pit Excavation, and the Pipeline Investigation. The analytical laboratories data quality objectives (DQOs) were adopted for this project. The QA/QC for the Tanani Point Burn Pit Site Investigation is discussed in Section 7 and the Data Validation Reviews are presented in Appendix G. Sample summary tables for dioxins and for all other analytes are presented in Table F-1 and Table F-2 respectively, in Appendix F.

The Sample collection and analysis procedures, sample packaging, shipping, and DQOs are described in further detail in the *Final Sampling and Analysis Plan for Haines Fuel Terminal Tanani Point Burn Pit Site Investigation, Soil Excavation, Assessment, and Disposal; Haines, Alaska,* (BNCI 2003).

6.2 Tanani Point Burn Pit Investigation Results

A total of 41 primary laboratory and four (4) duplicate analytical soil samples were collected from the test pits on Tanani Point and held pending PID screening and immunoassay results. This total reflects the collection of approximately three times the actual number of analytical samples that were ultimately submitted for laboratory testing. The sampling methodology necessitated the collection of all samples at the time of excavation (i.e. before immunoassay soil sample results were available for guidance), therefore analytical samples were collected from all potential sites as predetermined by the project team. Screening and immunoassay results were then used to determine which analytical samples warranted laboratory analysis. Based on PID headspace screening and immunoassay soil sample results, the number of analytical soil samples was pared down to 14 primary and two (2) duplicate analytical soil samples which were sent to SGS for laboratory analysis. Each of the 13 test pits had one set of primary samples submitted for laboratory analysis, with the exception of Test Pit No. 13, which had two (2) sets of primary samples submitted to the laboratory.

The criteria used to determine which analytical samples were submitted for laboratory analysis include:

- At least one analytical sample from each excavation
- Site with highest PID headspace reading at each excavation

- Site with highest immunoassay result (if any) at each excavation

6.2.1 Tanani Point Burn Pit Dioxin Results

The term "Dioxin" refers to several chemical compounds that share similar structures and biological characteristics. However, the term is often used synonymously for 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) (Chemical Abstracts Service [CAS] No. 1746-01-6) which is considered the most toxic of the dioxin compounds (EPA, 2003). Dioxins are typically formed as a result of incomplete combustion processes and are considered by-products of other processes. Studies have shown a link between the incomplete combustion of PCB containing substances to the production of dioxin and dioxin-like compounds. Dioxin levels are regulated by the ADEC on a site specific basis. The cleanup level used for the Tanani Point Burn Pit is 4.3×10^{-6} mg/kg (equivalent to parts per-million (ppm)) or 4.3 parts per-trillion (ppt), which is the EPA Region III RBC for residential soil for TCDD. TCDD is the primary dioxin compound of concern at the Tanani Point Burn Pit and is the primary focus of the dioxin portion of this report.

Fourteen primary analytical soil samples and two (2) duplicate analytical soil samples were submitted from the thirteen test pits and sent to SGS for analysis. SGS subcontracted the dioxin analyses to Paradigm Analytical Laboratories, Inc. (Paradigm). Paradigm is an EPA and USACE certified laboratory.

Primary sample 03HNSTP041SL and its corresponding duplicate sample 03HNSTP903SL had detectable concentrations of 0.592 pg/g and 0.593 pg/g respectively. This is equivalent to 5.92×10^{-7} ppm and 5.93×10^{-7} ppm, respectively, and both results are lower than the EPA Region III residential soil RBC for TCDD listed in Table 1.4.2. These two samples were collected from 5-foot bgs in Test Pit No. 13 which is in the approximate center of the Tanani Point Burn Pit. None of the remaining samples had detectable concentrations of TCDD

6.2.2 . Tanani Point Burn Pit PCB Results

Analytical soil sample results for PCB are presented in Table F-2 in Appendix F. Immunoassay PCB results are provided in Table D-2 and D-3 in Appendix D. Summary analytical soil sample results for only those samples where PCB was detected are presented in Table 6.2.2, below. Two (2) of the analytical soil samples from the Tanani Point Burn Pit test pit excavations had detectable levels of PCB. Sample 03HNSTP021SL had a concentration of 0.20 ppm of PCB in the form of Aroclor-1254, and sample 03HNSTP028SL had 0.425 ppm of Aroclor-1254. Sample 03HNSTP021SL was collected from 5-foot bgs in Test Pit No. 7 and sample 03HNSTP028SL was collected from 8-foot bgs in Test Pit No. 9. Both concentrations are below the ADEC residential cleanup level of 1 ppm.

Table 6.2.2 Summary Analytical Soil Results, Detected PCB's

Sample ID	Aroclor-1254 by Method SW8082 (ppm)
03HNSTP021SL	0.200
03HNSTP028SL	0.425
ADEC Residential Soil Cleanup Level[1] (ppm)	1.0

[1] ADEC Residential Soil Cleanup Levels (18 Alaska Administrative Code 75.341 Tables B-1); Over 40-inch Precip Zone; Inhalation/Ingestion.

A PCB immunoassay field screening kit was used to anlyze samples that were collected concurrently with the PID headspace field screening samples from the test pit excavations in the Tanani Point Burn Pit. Samples were collected from contract specific depths from ground surface zero (0), 5-, 10-, and 15-feet bgs. The samples were analyzed for PCBs using EPA Method SW846-4020 with a Strategic Diagnostics RaPID Assay Kit for Semi-Quantitative Screening of PCB.

The immunoassay results were used in conjunction with the PID headspace field screening results to help determine which analytical samples to send for laboratory analysis.

6.2.3 Tanani Point Burn Pit Total Lead Results

Analytical total lead results for soil samples from the Tanani Point Burn Pit are presented in Table 6.2.3, below. Lead concentrations ranged from 0.66 ppm in sample 03HNSTP039SL to 87.6 ppm in sample 03HNSTP009SLTP-3-6. The lead concentrations were below the ADEC residential cleanup level of 400 ppm and the industrial soil cleanup level of 1,000 ppm.

Table 6.2.3 Summary Analytical Soil Lead Results

Sample ID	Total Lead by Method SW6020 (ppm)
03HNSTP002SLTP-1-5	3.0
03HNSTP006SLTP-2-7	8.91
03HNSTP009SLTP-3-6	87.6
03HNSTP010SLTP-4-1	8.15
03HNSTP015SLTP-5-5	4.8
03HNSTP019SLTP-6-10	9.4
03HNSTP021SL	9.70
03HNSTP025SL	1.1
03HNSTP028SL	0.7

Table 6.2.3 Summary Analytical Soil Lead Results (Continued)

Sample ID	Total Lead by Method SW6020 (ppm)
03HNSTP030SL	0.925
03HNSTP033SL	0.571
03HNSTP039SL	0.660
03HNSTP040SL	3.44
03HNSTP041SL	8.40
ADEC Residential Soil Cleanup Level[1] (ppm)	400

[1] ADEC Soil Cleanup Levels (18 Alaska Administrative Code 75.341 Tables B-1); Over 40-inch Precip Zone; Inhalation/Ingestion

6.2.4 Tanani Point Burn Pit GRO (AK 101) and DRO (AK 102) Results

Summary analytical results (detections only) for GRO and DRO are presented in Table 6.2.4, below. None of analytical soil samples collected from the Tanani Point Burn Pit excavations yielded analytical results in excess of ADEC cleanup levels for GRO. One sample did exceed the ADEC cleanup level for DRO in soil. This was sample O3HNSTP009SLTP-3-6 with a DRO concentration of 1,680 ppm, which was collected from Test Pit No. 3 from 6-foot bgs approximately 6-inches above the groundwater interface. Complete analytical results are presented in Table F-2 in Appendix F.

Table 6.2.3 Summary Analytical Soil Results, Detected GRO and DRO

Sample ID	GRO by AK101 (ppm)	DRO by AK102 (ppm)
03HNSTP009SLTP-3-6	10.7	**1,680**
03HNSTP010SLTP-4-1	ND	30.0
ADEC Residential Soil Cleanup Level[1] (ppm)	260	230

[1] ADEC Soil Cleanup Levels (18 Alaska Administrative Code 75.341 Tables B-1); Over 40-inch Precip Zone; Migration to groundwate[1]
ND = Not Detected
Concentrations in **bold** type exceed the ADEC cleanup requirements

6.2.5 Tanani Point Burn Pit VOC (EPA 8260B) and SVOC (EPA 8270C) Results

Summary analytical results for detected VOC's are presented in Table 6.2.5, below. Complete analytical results are presented in Table F-2 in Appendix F. None of the analytical results from soil samples collected from the Tanani Point Burn Pit exceeded ADEC cleanup levels for any VOC analytes.

Table 6.2.5 Summary Analytical Soil Results, Detected VOC's

VOC Analyte Detected	ADEC Residential Soil Cleanup Level[1] (ppm)	Analytical Results (Method 8260B) (ppm)
Sample 03HNSTP009SLTP-3-6		
Benzene	0.02	0.0115 UJ
Toluene	4.8	0.093 UJ
Tetrachloroethene	0.025	0.0217 UJ
Total Xylenes	69	0.227 UJ
N-Propylbenzene[2]	-	0.0256 UJ
1,3,5-Trimethylbenzene[2]	-	0.0669 UJ
1,2,4-Trimethylbenzene[2]	-	0.156 UJ
Napthalene	19	0.0547 UJ

[1] ADEC Soil Cleanup Levels (18 Alaska Administrative Code 75.341 Tables B-1); Over 40-inch Precip Zone; Migration to groundwater
[2] Analyte not regulated by the ADEC
UJ Estimated PQL

6.3 Tanani Point Pipeline Investigation Results

A total of three (3) primaryanalytical soil samples and one (1) duplicate analytical soil sample were collected from the soils along the pipeline at Tanani Point. The samples were collected along the pipeline from Stations 200+38, 300+04, and 300+66. The samples were sent to SGS for laboratory analysis. The samples were analyzed for DRO by Method AK 102, GRO by Method AK 101, VOC's by EPA Method SW 8260B, SVOC's by EPA Method SW 8270C, and Total Lead by EPA Method SW 6020. Samples were collected from stations along the pipeline as depicted in Figure 4.

6.3.1 Tanani Point Pipeline Total Lead Results

None of the soil samples collected from the Tanani Point Pipeline exceeded the ADEC residential soil cleanup level of 400 ppm, or the industrial soil cleanup level of 1,000 ppm. Summary analytical lead results are provided in Table 6.3.1, below. Complete analytical lead results are provided in Table F-2 in Appendix F.

Table 6.3.1 Summary Analytical Soil Lead Results

Sample ID	Total Lead by Method SW6020 (ppm)
03HNSTP042SL	74.4
03HNSTP043SL	2.02
ADEC Residential Soil Cleanup Level[1] (ppm)	400

[1] ADEC Soil Cleanup Levels (18 Alaska Administrative Code 75.341 Tables B-1); Over 40-inch Precip Zone; Inhalation/Ingestion

6.3.2 Tanani Point Pipeline GRO (AK 101) and DRO (AK 102) Results

None of the pipelineanalytical soil samples submitted to the laboratory had detectable concentrations of GRO.

One (1) pipeline sample had detectable concentrations of DRO (Table 6.3.2). Sample 03HNSTP044SL (Station 300+66) had a DRO concentration of 121 ppm. The DRO concentration in sample 03HNSTP044SL is below the ADEC soil cleanup level of 230 ppm for migration to groundwater in the over 40-inch precipitation zone.

Table 6.3.2 Summary Analytical Soil Results, Detected DRO

Sample ID	DRO by AK102 (ppm)
03HNSTP044SL	121
ADEC Residential Soil Cleanup Level[1] (ppm)	230

[1] ADEC Soil Cleanup Levels (18 Alaska Administrative Code 75.341 Tables B-1); Over 40-inch Precip Zone; Migration to groundwater

6.3.3 Tanani Point Pipeline VOC (EPA 8260B) and SVOC (EPA 8270C) Results

None of the pipeline analytical soil samples submitted to the laboratory had detectable concentrations of VOC's or SVOC's.

6.3.4 Analytical Results Summary

Only one (1) of the twenty (20) samples submitted for laboratory analysis from the Tanani Point test pits and pipeline exceeded the ADEC cleanup requirements for residential soils. Sample O3HNSTP009SLTP-3-6 was collected from Test Pit No. 3 from 6-feet bgs immediately above the groundwater elevation in the bottom of the test pit. The DRO concentration of 1,680 ppm exceeded the ADEC

cleanup requirement for the over 40-inch precipitation zone for the migration to groundwater of 230 ppm.

7 CHEMICAL DATA FINAL REPORT

BNCI has prepared this Chemical Data Final Report (CDFR) to summarize the data quality assessment performed on the analytical data for the Tanani Point project. The Quality Assurance Reports for each laboratory report are presented in Appendix G. The following laboratories performed analytical work for this project:

SGS/CT&E Environmental Services, Inc. (SGS/CT&E)
200 West Potter Drive
Anchorage, Alaska 99518-1605

And

Paradigm Analytical Laboratories, Inc.
2627 Northchase Parkway S.E.
Wilmington, North Carolina 28405

SGS is USACE Missouri River Division (MRD) validated, and certified by the ADEC.

Data review at EPA Level III was performed according to the following documents.

- *Sampling and Analysis Plan for Tanani Point, Alaska, BNCI,* January 2003
- *EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, Final, EPA 540-R-01-008, 2002*
- *EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA 540-R-99-008, 1999*

Samples were analyzed using one or more of the following methods:

- DRO by Method AK102;
- GRO by ADEC Method AK 101;
- VOC by EPA Method SW846-8260B;
- SVOC by EPA Method SW846-8270C
- Total Lead by EPA Method 6020;

- PCB by EPA Method SW846-8082;
- Dioxins by EPA Method 8290 (to USACE specifications).

This report includes Quality Assurance (QA) reviews for analytical samples analyzed under SGS/CT&E Work Order (WO) Numbers 1031980, 1032980, and 1032163. Paradigm Work Order Numbers are G450-315 and G450-305.

7.1 Data Qualifiers

Sample results were evaluated for the following criteria.

- Sample preservation and shipment
- Holding times
- Reporting limits
- Method blanks
- Surrogate standard recoveries
- Laboratory control spikes (LCS), laboratory control spike duplicates (LCSD) (precision and accuracy)
- Matrix spikes (MS), matrix spike duplicates (MSD) (precision and accuracy)
- Continuing Calibration Verification

The analytical sample data was qualified as follows.

- "UJ"-The analyte was not detected above the practical quantitation limit (PQL). However, the report PQL is approximate and may or may not represent the actual PQL necessary to accurately and precisely measure the analyte in the sample.
- "J"-The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample, and may be biased high or low as specified.

The absence of a qualifier or an NQ (not qualified) for an analytical result is an indication that the reported quantity is an accurate assessment of the analyte present in the sample.

7.2 Shipping and Sample Receipt

All project analytical samples were shipped in appropriate containers and packed to prevent breakage. Samples were preserved according to guidelines when applicable. Extraction and analysis of all samples occurred within the required holding times with two exceptions. Samples from SGS reports 1032163 and 1031980 were re-analyzed for SVOC's outside of hold time after LCS recovery results for the original SVOC analyses failed to meet acceptance limits. Chain of Custody seals were received by SGS/CT&E intact. The analytical samples were received by SGS/CT&E within the appropriate temperature range of (4±2ºC). However, the cooler temperature for dioxin samples analyzed under Paradigm work order G-450-305, exceeded the laboratories internal recommended temperature of 4ºC by 0.9ºC. No action was taken as 4.9ºC is within the acceptable limits required by the U.S. EPA. The Chain of Custody (COC) forms were filled out properly and enclosed in the sealed coolers.

7.3 Soil Sample Summary

Seventeen (17) primary analytical soil samples and three (3) Quality Control (QC) (duplicate) samples were collected for soil characterization purposes during the Tanani Point project.

7.3.1 VOC EPA Method SW846-8260B Summary

Analytical soil samples analyzed for VOC by EPA Method SW846-8260B were appropriately preserved, and met precision and accuracy goals with the following exception. Trip blanks contained benzene at concentrations greater than the PQL. Therefore, the benzene detection in the sample Test Pit No.-3-6 was assigned a "J" qualifier and may be biased high. No other samples contained benzene.

Continuing calibration verification samples had detected analytes for 8260, however, none of those analytes were detected in the associated samples, and therefore, no data qualifiers were assigned.

In Method Blank 488202 2-butanone was detected at 0.0420 milligrams per kilograms, however, no analytes were detected in associated samples at or above the PQLs. No data qualifiers were assigned.

The VOC MS/MSD results were biased high for several analytes. No analytes of interest were found in these samples above the PQL. No data qualifiers were assigned.

Comparisons between the results for primary analytical samples and QC (duplicate) samples were within the acceptable precision criteria for the relative-percent difference (RPD).

7.3.2 GRO ADEC Method AK101 Summary

The analytical soil samples analyzed for GRO by ADEC Method AK101 were appropriately preserved meeting the precision and accuracy goals.

The recovery for GRO surrogate 4-bromofluorbenzene in samples Test Pit (TP)-8-9 and TP-9-8 were outside laboratory acceptance limits and biased low, however, the samples were run again and the results were confirmed. No data qualifiers were assigned.

Comparisons between the results for primary analytical samples and QC (duplicate) samples were within the acceptable precision criteria for the RPD.

7.3.3 SVOC EPA Method SW846-8270

The lab control sample (LCS) recovery result for SVOC analyses failed to meet acceptance limits due to low bias in samples from the SGS reports 1032163 and 1031980. All of the samples in these batches were re-analyzed outside of hold time and the re-analysis confirmed the original result. However, to be conservative, since the re-extraction occurred after holding times, these samples have been qualified with a "UJ", indicating that the PQLs are estimated.

In the SGS report 1032163 and 1031980, the SVOC MS/MSD results were biased low for several analytes. However, all of the sample surrogate recoveries were within acceptance limits. Because there is a potential that the PQLs for some of the SVOC analytes were biased low, this data was given a UJ qualifier.

The recovery for SVOC surrogates 2-Fluorophenol in samples TP-5-5 and TP-2-7 (Laboratory Identification 1031980007, a duplicate sample of 1031980005, and 1031980002) and both 2-Fluorophenol and Phenol-d6 for sample TP-4-1 (103198004) were outside of laboratory acceptance limits (biased low). Although the samples were re-analyzed and the original results found to be consistent, the samples were re-extracted after holding times. Therefore, the data is qualified with a "UJ" indicating that the PQLs are estimated.

7.3.4 DRO ADEC Method AK102 Summary

The analytical soil samples analyzed for DRO by ADEC Methods AK102/103 met precision and accuracy.

Comparisons between the results for primary analytical samples and QC (duplicate) samples were within the acceptable precision criteria for the RPD.

7.3.5 Lead EPA Method SW846-6020 Summary

The analytical soil samples analyzed for lead by EPA Method SW846-6020 met precision and accuracy goals.

7.3.6 PCB EPA Method SW846-8082 Summary

The analytical soil samples analyzed for PCBs by EPA Method 8080 met precision and accuracy goals.

7.4 Overall Analytical Data Assessment

The data is considered to be acceptable for its intended use. Although some of the initial QC data for SVOCs did not meet acceptance criteria and the re-extractions and re-analyses were completed after holding times, there would have been little or no change in the analytical results and the results would all have remained below cleanup levels. Therefore, the data is acceptable for use in making decisions related to this site.

The benzene detection in sample TP-3-6 is estimated (potentially biased high) due to the detected benzene in the trip blank. However, none of the other samples contained benzene, and the trip blank did not contain any other analytes, yet sample TP-3-6 did contain other VOC analytes. In conclusion, the benzene in sample TP-3-6 may be biased high, but the presence of other VOCs in the same sample are indications that benzene was probably present in the sample. Even with a potentially high biased result, the result is below the cleanup and appropriate for decision making purposes.

8 WASTE TRANSPORTATION AND DISPOSAL

8.1 Waste Streams

The following wastes were generated during the site investigation activities at the Haines Fuel Terminal, Tanani Point Burn Pit site.

- Scrap metal generated from steel pipeline removed between Building 1200 (Warehouse Building) and the Tanani Point Burn Pit.
- PPE generated during site investigation sampling activities.
- Waste methanol from onsite lab performing immunoassay analysis.
- Decontamination water from site investigation (personnel & equipment)

The packaging, labeling, placarding, manifesting, and transportation of the wastes were regulated by the Hazardous Materials Transportation Act (HMTA) (49 Code of Federal Regulations [CFR] 172, 173, and 178). The proper shipping name designated in the "Hazardous Materials Table" (49 CFR 172.101) was assigned to each waste stream prior to off-site transportation.

Environment Canada's Export and Import of Hazardous Waste Regulations (EIHWR) required notifications and pre-approval to transport hazardous wastes through Canadian waters. Transport Canada's Transport Dangerous Goods Regulations also defined the packaging, labeling, placarding, and manifest requirements for transporting dangerous goods through Canadian waters by barge. Copies of the manifests for the Haines Fuel Terminal Tanani Point Burn Pit Site Investigation are presented in Appendix H. Final manifests will be provided in the final copy of this report.

8.2 Identification and Characterization of Waste Streams

PSC chose to use the laboratory analytical results from the soil samples taken from the Tanani Point Burn Pit to characterize the waste/decontamination water.

The following non-hazardous metal recycling facility was selected for the disposal/recycling of the scrap metal from the POL pipeline removal.

- Seattle Iron & Metals, Corporation – Metal Recycling (Channel Construction – Scrap Metal Transport)

BNCI procured the following TSDF vendor for the disposal of waste decontamination water, contaminated PPE, and waste methanol from the onsite laboratory.

- Philip Services Corporation (PSC), Seattle, Washington (subsidiary – Burlington Environmental, Inc.)

The hazardous waste manifest was completed by Phillips Services and forwarded to the DPW for review and signature prior to transportation and disposal of the wastes.

8.3 Management of Waste Streams

Standard industry practices as per previous USACE Project activities at the Haines Fuel Terminal, Tanani Point Burn Pit generated four waste streams. Previously identified wastes were managed according to the Haines Fuel Terminal Building Demolition Waste Management Plan (WMP).

Table 8.1, "Source, Accumulation Container, Characterization, and Estimated Quantities," identifies the waste streams encountered and their regulatory classifications. Table 8.2, "Transportation and Disposal Summary," provides an overview of transportation and disposal activities.

Table 8.1
Source, Accumulation Container, Characterization, and Estimated Quantities

Waste Stream	Source	Accumulation Container	Characterization	Estimated Quantity
Decontamination Water	Decontamination water, Tanani Point Burn Pit Investigation	United Nations (UN) 1A1 drums 55-gallon	EPA: Environmentally hazardous substance, liquid, (lead); DOT: Class 9, Packing Group (PG) III, UN3082, Emergency Response Guide (ERG) 171	Approximately (~) 2 drums (~83 gallons)
Scrap Metal	Pipeline Removal Between Building 1200 & Tanani Point Burn Pit	Palletized and banded	EPA: Recyclable material; DOT: Non-regulated waste	44 LF 2-inch and 373.5 LF 3-inch ~3,000 lbs. total
Contaminated PPE	Investigation derived waste, Tanani Point Burn Pit site investigation and sampling	UN 13H bags (1-cubic yard Supersacks) in connex container	EPA: Environmentally hazardous substance, solid, (lead); DOT: Class 9, UN3077, PGIII, ERG(171)	~100 lbs. in double-lined Supersack
Waste Methanol	Onsite laboratory, immunoassay analysis (sample preservative)	UN 1A1 5-gallon lab-pack tight-head drum	EPA: Waste Methanol 3, DOT: UN3077, Class 9, PGIII	1 5-gallon drum, (~5 gallons)

Table 8.2 Transportation and Disposal Summary

Waste Stream	Transporters	Disposal Facility/Location and Party Responsible for Disposal	Type of Disposal
Decontamination Water	Burlington Environmental, Inc./Alaska Railroad Corporation	Burlington Environmental, Inc./Kent, Washington/USACE	Flocculation and Carbon filtration
Scrap Metal	Channel Construction	Seattle Iron & Metals, Corp. / BNCI	Recycle
Contaminated PPE	Burlington Environmental, Inc./Alaska Railroad Corporation	Burlington Environmental, Inc./Kent, Washington/USACE	Stabilization and subsequent disposal at Subtitle "D" Lined Landfill
Waste Methanol	Burlington Environmental, Inc./Alaska Railroad Corporation	Burlington Environmental, Inc./Kent, Washington/USACE	Recycle-Alternative Fuel Blending

9 CONCLUSIONS

9.1 Conclusions

Laboratory analytical results from soil samples collected during the Tanani Point Burn Pit Site Investigation project indicate the presence of hydrocarbon contamination remaining at the Tanani Point Burn Pit site. Analytical soil sample results taken from Test Pit No. 3 show elevated levels of DRO at this location. The DRO concentration in the sample from Test Pit No. 3 was 1,680 mg/kg (1,680 ppm) which is above the ADEC Method 2 cleanup level of 230 mg/kg (230 ppm) for migration to groundwater in locations receiving over 40-inches of annual precipitation. Test Pit No. 3 also had detectable concentrations of GRO, VOC, lead, and Dioxins, but the concentrations for these analytes were below regulatory limits.

BNCI also recommends further investigation to determine bedrock configuration and the occurrence of groundwater in the area of Test Pit No. 3. The investigation may require additional excavation and sampling activities.

10 LIMITATIONS

The statements, opinions, and conclusions contained in this report are based upon the services performed by BNCI in accordance with the SOW and information provided by others, including public agencies, whose information is not guaranteed by BNCI. The opinions and conclusions contained in this report are those of BNCI, based on the available data. The SOW was limited contractually by the client. No representations are made regarding the absence or presence of contamination, except those determined from the field and laboratory testing. The absence of apparent contamination in one location does not necessarily preclude finding contamination in other locations, not investigated or tested in preparing this report. The work was performed in accordance with the contract SOW and generally accepted practices for the nature of the work at the time and in the location of the work. No other representations or warranties, implied or express, are made by BNCI.

11 REFERENCES

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APPENDIX A

FIGURES

APPENDIX B

PHOTOGRAPHIC LOG

APPENDIX C

DAILY REPORTS & FIELD NOTES

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