

**Phase I and Limited Phase II
Environmental Site Assessment
25951 Williamson Lane
Kasilof, Alaska**

November 2014

Submitted To:
Alaska Department Transportation & Public Facilities
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Anchorage, Alaska 99508

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EXECUTIVE SUMMARY

This report documents the results of our Phase I and Limited Phase II Environmental Site Assessment (ESA) for 25951 Williamson Lane, Kasilof, Alaska (the Property). The Phase I ESA site visit was completed in September 2014. Selected areas of potential concern observed during the site visit were sampled as part of the Limited Phase II ESA.

Phase I ESA

The purpose of the Phase I ESA was to develop a professional opinion as to the presence of recognized environmental conditions (RECs), as defined by ASTM International (ASTM) Standard E 1527-13. A previous Phase I ESA was conducted for the Property by Shannon & Wilson in 2012. Information from the 2012 report is included in this report as applicable. A vicinity map is included as Figure 1, and a site plan is included as Figure 2. Aerial photographs of the Property are included as Figures 3 through 6.

This Phase I ESA included a records review and a visual evaluation of the Property grounds. Prior to the on-site evaluation, historical aerial photos were examined to identify areas of potential concern. Records at municipal and state offices and local utilities were reviewed to determine ownership information, public utility services to the Property, and incidents relating to spills or chemical releases. Representatives of the Property owner and user, and Alaska Department of Environmental Conservation (ADEC) officials were contacted to gather information about potential environmental concerns on the Property. The records review also included researching state and federal databases to determine if listed contaminated sites, underground storage tanks (USTs), or leaking USTs (LUSTs) are present in the project vicinity.

Recognized Environmental Conditions

A REC is the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to a release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. This assessment revealed no evidence of RECs in connection with the Property and the surrounding parcels except the following:

On-Site Recognized Environmental Conditions

Surface stains were observed in an outbuilding/shed in the vicinity of a drum that appeared to contain fluid and was labeled “2-cycle oil.” Several empty 5-gallon fuel containers

were also observed in this vicinity. Additional surface stains were observed on a wooden floor in the outbuilding/shed and on the ground surface at various locations throughout the Property.

A burn area is located south of the outbuilding/shed. Burn areas could pose environmental risk as petroleum hydrocarbons are often used to ignite the contents of the burn material and may impact the ground surface. In addition, combustion by-products and residuals may include hazardous materials.

Eleven vehicle batteries were observed in a storage area adjacent east of the outbuilding/shed during the July 18, 2012 site visit, although only one battery was observed during the September 30, 2014 site visit. There is a potential that weathered and corroded batteries could impact the Property's soil and/or groundwater.

Off-Site Recognized Environmental Conditions

No off-site RECs were identified in the immediate Property vicinity.

Controlled Recognized Environmental Conditions

A controlled REC is a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. No on-site or off-site controlled RECs were identified.

Historical Recognized Environmental Conditions

A historical REC is an environmental condition that may have constituted a REC in the past, but has been closed by a regulatory agency or otherwise is no longer considered to pose a material threat. No on-site or off-site historical RECs were identified.

Other Environmental Conditions

Other Environmental Conditions include known, suspected, or potential sources of hazardous substances or petroleum products that are not considered RECs due to (a) the absence of a confirmed release or other material threat, (b) insufficient information to sufficiently evaluate the condition, (c) de minimis conditions that are not expected to be subject to regulatory action or (d) exclusion from the ASTM definition of hazardous material (e.g. ACM). The following Other Environmental Conditions were identified on the Property:

- The Property was formerly used as a fox farm. Tanning chemicals (e.g. formaldehyde, etc.) may have been used and stored on the Property.
- The residential structure is serviced by heating oil stored in an AST. Incidental releases during refueling, which were not observable as surface stains at the time of the site visit, may pose environmental risk.
- Natural gas service is not available in the Kasilof area. It is possible that releases from active and/or potential on- or off-site abandoned fuel storage tanks could impact the Property's soil and/or groundwater.
- Discarded materials that may be classified as solid waste per state and federal environmental regulations were observed on the Property. Among the miscellaneous items scattered throughout the Property, potential sources of contamination include but are not limited to vehicles and equipment, mechanical fluid containers, and home appliances.
- An on-site domestic waste-water system is comprised of a septic tank and leach field. This system could pose environmental risk if chemicals are disposed through the structure's sinks and toilets.
- Due to the construction date of the residential structure (pre-1982), it is possible that ACMs or lead-based paints were used in the construction materials. ACM is a regulated hazardous air pollutant under the Clean Air Act, and is therefore subject to federal regulation as a hazardous substance. However, the ASTM standard explicitly identifies ACM as outside the base scope of the ASTM standard of practice. Prior to performing remodeling, demolition, repair, or cleaning using abrasive agents in the structure, we recommend that a comprehensive building material survey be performed by a qualified inspector.
- Five pole-mounted transformers were observed along the northern Property boundary). The pole-mounted transformers did not contain stickers indicating that they had been tested for polychlorinated biphenyls (PCBs), and a representative of HEA could not say for certain whether the transformers contain oil with less than one part per million PCBs. No evidence of releases from the transformers was observed during the site visit. It is noted that the electric utility is typically responsible for releases from their transformers or equipment.

- Wetlands are present on the Property. If construction is to occur, a wetland delineation and other associated permits for construction within wetlands or adjacent to waterways (e.g., Kenai River Center Multi-Agency Permit Application and Conditional Use Permit, National Pollutant Discharge Elimination System (NPDES), Section 404 and Section 10 Permits, Kenai ADF&G Habitat Title 6 Permit), may be required prior to construction activities.
- A documented archaeological site is present on the Property. According to HDR's 2008 report, a formal survey would be required if construction occurs.

Phase II ESA

The purpose of the Limited Phase II ESA was to further evaluate if the Property's soil or groundwater has been impacted by the RECs and other environmental conditions listed above. As part of our Limited Phase II ESA, four surface soil samples were collected, four borings were advanced and sampled, and one temporary monitoring well was installed and sampled. Note that due to the limited scope of the project, not all areas of potential concern were sampled. The results of our Limited Phase II ESA indicate the presence of petroleum hydrocarbons at concentrations greater than ADEC cleanup levels in the surface soil near the AST, in the burn area, and in an area of surface staining in the outbuilding/shed. However, the results of the soil samples collected from the borings and the groundwater sample collected from the temporary monitoring well suggest that contamination may be limited to surface soils and that groundwater has not been impacted in the area sampled.

TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	I
ACRONYMS AND ABBREVIATIONS	VIII
1.0 INTRODUCTION.....	1
2.0 PHASE I ESA	1
2.1 Special Terms and Conditions.....	1
2.2 Limitations and Exceptions.....	1
2.3 User Reliance	2
2.4 Report Viability Date	3
2.5 Site and Project Description.....	3
2.5.1 Location and Legal Description.....	3
2.5.2 Site and Vicinity Characteristics.....	3
2.5.3 Description of Improvements on the Property.....	4
2.5.4 Past and Current Use of Property.....	4
2.5.5 Environmental Assessments Conducted on the Property	4
2.5.6 Past and Current Uses of Adjoining Properties	5
2.6 User-Provided Information	5
2.7 Records Review.....	6
2.7.1 Historical Use Information	6
2.7.2 Physical Setting.....	8
2.7.3 Regulatory Database Search	9
2.8 Site Reconnaissance	11
2.8.1 Property Evaluation	11
2.8.2 Surrounding Properties Evaluation.....	13
2.8.3 Hazardous Substances and Petroleum Products	13
2.8.4 Storage Tanks.....	13
2.8.5 Drums.....	13
2.8.6 Asbestos-Containing Materials	14
2.8.7 Transformers	14
2.8.8 Solid Waste Disposal	14
2.9 Interviews	14
2.9.1 Government Official	14
2.9.2 Current Owners / Occupants of the Property	15
2.9.3 Other Interviews.....	15
2.10 Other Environmental Considerations	15
2.11 Phase I ESA Findings and Conclusions	16

2.11.1	Recognized Environmental Conditions	17
2.11.2	Controlled Recognized Environmental Conditions	17
2.11.3	Historical Recognized Environmental Conditions.....	18
2.11.4	Other Environmental Conditions	18
3.0	LIMITED PHASE II ESA.....	19
3.1	Field Activities	20
3.1.1	Surface Soil Sampling.....	20
3.1.2	Soil Boring Advancement and Sampling.....	20
3.1.3	Groundwater Sampling	21
3.2	Laboratory Analysis	22
3.3	Subsurface Conditions.....	22
3.4	Discussion of Analytical Results.....	23
3.4.1	Soil Samples.....	23
3.4.2	Groundwater Samples.....	24
3.4.3	Quality Control Samples.....	24
4.0	CONCLUSIONS AND RECOMMENDATIONS.....	24
5.0	QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS	25
6.0	CLOSURE/LIMITATIONS.....	25

TABLES

1	Sample Locations and Descriptions
2	Summary of Soil Analytical Results – Petroleum Hydrocarbons, VOCs, & Metals
3	Summary of Soil Analytical Results – Dioxins
4	Summary of Water Analytical Results

FIGURES

1	Vicinity Map
2	Site Plan
3	Aerial Photograph June 16, 1962
4	Aerial Photograph July 6, 1975
5	Aerial Photograph July 16, 1990
6	Aerial Photograph May 14, 2001
7	Aerial Photograph April 17, 2011

TABLE OF CONTENTS (continued)

APPENDICES

A	Phase I Environmental Site Assessment Questionnaires
B	Ownership Documents
C	Site Photographs
D	Boring Logs
E	Results of Analytical Testing by SGS North America Inc. of Anchorage, Alaska and ADEC Laboratory Data Review Checklist
F	Important Information About Your Environmental Site Assessment/Evaluation Report and Important Information About Your Geotechnical/Environmental Report

ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ACM	Asbestos-containing material
ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resources
ADOT&PF	Alaska Department of Transportation and Public Facilities
AK	Alaska Method
AST	Aboveground storage tank
ASTM	ASTM International
bgs	Below ground surface
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System
CORRACTs	TSD Facilities Subject to Corrective Action
Discovery	Discovery Drilling Inc.
DRO	Diesel range organics
DQO	Data quality objective
EPA	Environmental Protection Agency
ERNS	Emergency Response Notification System
ESA	Environmental site assessment
GRO	Gasoline range organics
HDR	HDR Alaska, Inc.
HEA	Homer Electric Association
KPB	Kenai Peninsula Borough
LCS/LCSD	Laboratory control sample/laboratory control sample duplicate
LOQ	Limit of quantitation
LUST	Leaking underground storage tank
MAC	Maximum Allowable Concentration
mg/kg	Milligrams per kilogram
MS/MSD	Matrix spike/matrix spike duplicate
MTG	Migration To Groundwater

NONCORRACTS	TSD Facilities Not Subject to Corrective Action
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
NRCS	National Resource Conservation Service
PAHs	Polynuclear aromatic hydrocarbons
PCBs	Polychlorinated biphenyls
PID	Photoionization detector
ppm	Parts per million
PVC	Polyvinyl chloride
Quantum	Quantum Spatial, Inc.
REC	Recognized Environmental Condition
RCRA	Resource Conservation and Recovery Act
RRO	Residual range organics
SGS	SGS North America Inc.
Tauriainen	Tauriainen Engineering & Testing
TCDD	Tetrachlorodibenzo-p-dioxin
TEQ	Toxic equivalency quotient
TSD	Treatment, Storage, and Disposal
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground storage tank
VOCs	Volatile organic compounds
WELTS	Well Log Tracking System

PHASE I ENVIRONMENTAL SITE ASSESSMENT
25951 WILLIAMSON LANE
KASILOF, ALASKA

1.0 INTRODUCTION

This report documents the results of our Phase I and Limited Phase II Environmental Site Assessment (ESA) prepared for 25951 Williamson Lane, Kasilof, Alaska (the Property). The Property encompasses 5.16 acres and is located adjacent to the east bank of the Kasilof River at River Mile 4.1.

2.0 PHASE I ESA

The purpose of the Phase I ESA was to develop a professional opinion regarding recognized environmental conditions (REC), as defined by ASTM International (ASTM) Standard E 1527-13. This term is defined by ASTM as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to a release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. A previous Phase I ESA was conducted for the Property by Shannon & Wilson in 2012.

2.1 Special Terms and Conditions

The Phase I ESA was prepared for the Alaska Department of Transportation & Public Utilities (ADOT&PF). This work was performed in general accordance with our proposal for environmental services dated August 8, 2014, and with ASTM E 1527-13. Authorization to proceed with the Phase I ESA was provided by the ADOT&PF in the form of Notice to Proceed Number 8, dated September 8, 2014 and signed by Mr. David Kemp, P.E., PMP, Chief of Statewide Public Facilities.

2.2 Limitations and Exceptions

The following elements of the Phase I ESA constitute deviations, exceptions, and/or data gaps, with respect to the standard requirements of ASTM E 1527-13. In our opinion, none of these considerations impacts our ability to identify RECs at the subject property.

- The Alaska Department of Environmental Conservation (ADEC) List of Contaminated Sites is assumed to be equivalent to a hazardous waste sites list and includes voluntary cleanup sites.
- Tribal lists of environmental concerns were not reviewed. The tribal lists are identified as “standard environmental sources” in ASTM Section 8.2.1. To our knowledge, such databases do not exist for the State of Alaska.
- Historical use of the Property is identified back to 1962, not to 1940, as required by ASTM E 1527-13. The oldest historical record is an aerial photograph from 1962 that shows the Property to be vegetated and undeveloped.
- All of the Standard Historical Sources listed in ASTM Section 8.3.4 were not researched for this ESA because they were not reasonably ascertainable and likely to be useful. For example, fire insurance maps, local street directories, building department records, and property tax files were not researched.

2.3 User Reliance

This report can be relied upon by, and has been prepared for the exclusive use of the ADOT&PF. The ADOT&PF can convey this report to an affiliate, subsidiary, lender, title insurer, regulatory/city agent or current property owner(s) and their agents, but further dissemination requires prior written approval from Shannon & Wilson, Inc. The limitations of the report are further described in Section 6.

2.4 Report Viability Date

The following table includes the date information used to calculate the report viability date.

Table of Critical Dates	
Report Issuance Date	November 19, 2014
Earliest Date of Interview of Owners and Occupants	September 17, 2014
Date of Recorded Environmental Cleanup Lien Search	September 15, 2014
Earliest Date of Government Record Review	September 15, 2014
Date of Visual Inspection of Subject and Adjoining Properties	September 30, 2014
Earliest Date of Interviews, Lien Search, Records Reviews, and Inspections	September 15, 2014
Report Viability Date	March 14, 2015

2.5 Site and Project Description

2.5.1 Location and Legal Description

The street address for the Property is 25951 Williamson Lane, Kasilof, Alaska. The Property, located in a residential/recreational area in Kasilof, comprises 5.16 acres. A Vicinity Map showing the Property and surrounding area is included as Figure 1. Figure 2 is a site plan depicting the site features of the Property and adjacent parcels.

The Property is located in the northeast $\frac{1}{4}$ northeast $\frac{1}{4}$ of Section 13, Township 3 North, Range 12 West, Seward Meridian, Alaska, as referenced by the United States Geological Society (USGS) Kenai B-4 SE quadrangle. According to the Kenai Peninsula Borough (KPB) Assessors office, the legal description of the Property is Tract A, Coal Creek Country Estates Subdivision Addition No. 6, Kasilof, Alaska. The KPB identifies the Property as Parcel No. 13354004.

2.5.2 Site and Vicinity Characteristics

The Property is located in a mostly residential/recreational area along the east bank of the Kasilof River at River Mile 4.1. The Property is bound by the Kasilof River to the west and Williamson Lane to the east. A seafood processing facility and boat launch are located to the north of the Property. A residential parcel is located to the south of the Property. The parcels to

the north, east, and south are largely forested, with the exception of areas surrounding the structures on the parcels to the north and south.

The Property is largely undeveloped and vegetated with the exception of a residential structure and an outbuilding/shed located in the western portion of the property. The structures are accessed via a gravel driveway from Williamson Lane. Topography at the site is terraced with three levels between Williamson Lane and the Kasilof River. The eastern edge of the Property, near Williamson Lane, is approximately 60 feet higher than the western portion near the Kasilof River bank.

2.5.3 Description of Improvements on the Property

Based on our aerial photograph review (see Section 2.7.1), the Property was vegetated and undeveloped in 1962. Unpaved roads extending onto western portion of the Property from the north were established between 1962 and 1975. Also between 1962 and 1975, a structure was completed in the southwest corner of the Property. This structure was removed between 1990 and 2001. The current on-site residential structure was completed between 1975 and 1982. Between 1990 and 2001, the current outbuilding/shed was constructed. The Property was previously accessed from the northwest, however between 1990 and 2001 the current driveway, which provides access to the Property from Williamson Lane, was constructed.

2.5.4 Past and Current Use of Property

The Property is located at the site of a former fox farm, which was constructed above an older Dena'ina/Tanaina village. Since the 1970s, the Property has been used residentially and/or recreationally. The Property was used as a fishing camp since the mid-1990s by the current Property owners. A parking area for a boat launch, constructed prior to 1990, extends onto the Property from the parcel to the north.

2.5.5 Environmental Assessments Conducted on the Property

Shannon & Wilson's July 2012 *Phase I Environmental Site Assessment, 25951 Williamson Lane, Kasilof, Alaska* report identified the following on-site REC:

- “Multiple 55-gallon drums and 5-gallon fuel containers were observed on the Property during the site visit. One drum appeared to contain fluid and was labeled as ‘2-cycle oil.’ Multiple fuel containers appeared to contain fluid. Evidence of leaks and spills associated with drums were not observed. However, surface stains were observed in the

vicinity of multiple 5-gallon fuel containers. Note that the drums and fuel containers are considered RECs due to the overturned nature of the containers and the threat of release of fluids.”

The report also identified 12 Other Environmental Conditions for the Property which include potential issues that are not necessarily RECs. The concerns noted in the 2012 Phase I ESA have been incorporated into this report (see Section 2.11) and were taken into consideration in determining the locations of samples collected during our Limited Phase II ESA.

Shannon & Wilson’s July 2012 Phase I ESA identifies an additional previous environmental assessment of the Property. Tauriainen Engineering & Testing (Tauriainen) of Soldotna, Alaska prepared a report for the Property titled *Preliminary Environmental Report, Lower Kasilof River Boat Launch, Kimbrough Property (North Site)* in November 2008. According to report, “no significant current contamination on the property has been identified in this preliminary investigation.” Tauriainen noted that the house and a portion of the outbuilding/shed were unable to be accessed. Open fuel containers and an open drum containing an unknown red liquid were observed during the site visit.

2.5.6 Past and Current Uses of Adjoining Properties

The surrounding parcels are located at the site of a former Dena’ina/Tanaina village. The surrounding parcels were potentially part of a former fox farm that was constructed on the Property.

Based on aerial photograph review (see Section 2.7.1), prior to 1962, the parcel north of the Property was at least partially developed with unpaved roads providing access to the Kasilof River. By 1990, three structures had been constructed in the southern portion of this parcel, and the boat launch had been constructed on the southwest portion of this parcel. The residential structure on the parcel south of the Property was constructed between 1982 and 1990.

A fish processing facility and boat launch are located north of the Property. A residential parcel is located south of the Property.

2.6 User-Provided Information

Ms. Lucille Baranko of the Alaska Department of Natural Resources (ADNR) completed the User Questionnaire. Ms. Baranko indicated that she does not know of any spills or environmental cleanups on the Property or adjacent properties, although she noted that drums of

oil are present on the Property. The completed Phase I ESA Questionnaire is included in Appendix A.

2.7 Records Review

The purpose of the records review was to identify previous activities that may have constituted environmental misuse and/or contributed to the presence of waste residuals at the Property. Standard Environmental Record Sources and the Additional Environmental Record Sources identified in ASTM E 1527-13 were reviewed to the extent reasonably ascertainable and likely to be useful.

2.7.1 Historical Use Information

Two sources were used to verify previous land use: historical aerial photographs and available land ownership information.

Aerial Photographs

Aerial photographs from Quantum Spatial, Inc. (Quantum) were reviewed to evaluate prior land use in this area. The photos that are included in this report are from 1962, 1975, 1990, and 2001. Additional aerial photographs taken between 2001 and 2014 were not available at Quantum. The aerial photos are included as Figures 3 through 6 and are each enlarged to an approximate scale of 1 inch equals 100 feet. Also included is a Google Earth image from 2011 (Figure 7). The approximate Property boundary is shown in red on the figures for reference. Although not chosen to print, aerial photographs from 1982 and 1993 were also reviewed at Quantum.

The June 16, 1962 aerial photograph is included as Figure 3. The Property and parcels east and south are vegetated and undeveloped. An unpaved trail is visible near the central portion of the Property. An object that appears to be a boat is visible in the northwest corner of the Property. The Kasilof River is visible west of the Property. Portions of land north of the Property have been cleared of vegetation, and at least one boat is visible on this parcel.

The July 6, 1975 aerial photograph is include as Figure 4. A structure is present on the southwest corner of the Property and unpaved roads from the parcel to the north provide access to the structure and the Kasilof River. Lumber, boats, and other materials are visible on the parcel north of the Property. Portions of this parcel have been cleared of vegetation and appear

to be used for agricultural purposes. The remaining parcels appear similar to the 1962 aerial photograph.

In the 1982 photograph, a residential structure is present on the western portion of the Property. The overall size and configuration of the structure appears similar to the present day structure. An unpaved road provides access to the structure from the parcel north of the Property. On the parcel north of the Property, a boat dock is visible along the east bank of the Kasilof River and a structure is visible on the south central portion of the parcel. The remaining parcels appear similar to the 1975 aerial photograph.

The July 16, 1990 aerial photograph is included as Figure 5 and shows Williamson Lane extending along the eastern Property boundary. A portion of the northeast corner of the Property is cleared of vegetation, extending from Williamson Lane to the west. Multiple vehicles are present in an unpaved boat launch parking area located in the northwestern portion of the Property. Three structures are present in the southern portion of the parcel north of the Property. What appears to be a residential structure is visible on the parcel south of the Property. The remaining parcels appear similar to the 1982 photograph. The 1993 photograph appears similar to the 1990 aerial photograph.

The May 14, 2001 aerial photograph is included as Figure 6. A driveway has been constructed on the Property providing access to the residential structure from Williamson Lane. A structure is present on the western portion of the Property, southeast of the residential structure. The overall size and configuration of the structure appears similar to the present day outbuilding/shed. What appear to be multiple vehicles and boats are visible near the Property's residential structure and outbuilding/shed. Unidentifiable materials are visible near the east-central portion of the Property. The structure on the southwest portion of the Property is no longer present. On the parcel north of the Property, two structures are visible. Additional structures have been constructed on the residential parcels south of the Property.

The 2011 Google Earth image, included as Figure 7, appears similar to the 2001 aerial photograph. In general, the Property appears much as it did during the September 30, 2014 site visit.

Public Ownership Documents

The ADNR Records Office database was reviewed on September 15, 2014 to gather historical information about the Property ownership. The current Property owners are Vernon K.

and Ann R. Kimbrough. The ownership documents are included in Appendix B. The following documents were on file at the ADNR:

- A Quitclaim Deed was recorded on March 9, 1981. The Property is transferred from Michael P. McLane to Ida M. Trujillo.
- A Plat, recorded January 12, 1990, shows the Property as Tract A, Coal Creek Country Estates Subdivision Addition No. 6. According to the plat, Ida M. Trujillo owns the Property.
- A Statutory Warranty Deed was recorded on November 30, 1995. Ida M. Trujillo conveyed the Property to Vernon K. and Ann R. Kimbrough.

Environmental Liens

According to the ADENR Recorder's Office database, viewed on September 15, 2014, the Property is not subject to environmental liens.

2.7.2 Physical Setting

Geologic, hydrogeologic, hydrologic, and topographic characteristics of the Property were researched to further develop an understanding of the previous and current uses of the Property and surrounding area.

Groundwater Characteristics

The assumed local groundwater flow is to the west, toward the Kasilof River, although this was not confirmed as part of this Phase I ESA. Groundwater was encountered at approximately 35.43 feet below ground surface (bgs) adjacent to the residential structure during the Limited Phase II ESA field activities.

The State of Alaska Well Log Tracking System (WELTS) was researched to provide information about drinking water wells on or near the Property. The WELTS database, reviewed on September 15, 2014, does not identify drinking water wells on the Property. However, according to Ms. Ann Kimbrough, part owner of the Property, the Property is serviced by a drinking water well. The well was observed during our September 30, 2014 site visit. The approximate location of the well is shown on Figure 2 and in Photo 20.

Soils/Geology

Kasilof is located approximately 30 miles west of the Border Ranges Fault. The area generally consists of glacial deposits overlying Tertiary sediments. Layers of volcanic ash are present within the subsurface soil. The soils encountered during the Limited Phase II ESA are described in Section 3.3 and in Shannon & Wilson's November 2014 *Preliminary Geotechnical Engineering Report, 25951 Williamson Lane, Kasilof, Alaska* report.

Historical Maps

A 1986 USGS 1:25,000 Topographic Map was reviewed, and the portion of the map showing the Property and vicinity is included as Figure 1. One structure is depicted in the western portion of the Property. Two structures are depicted on the parcel adjacent north of the Property. Williamson Lane is visible adjacent east of the Property and the Kasilof River is visible adjacent west of the Property. The parcel adjacent south of the Property is depicted as vegetated and does not contain structures.

A historical USGS 1:63,360 Topographic Map from 1951 with limited revisions in 1980 was also reviewed. An unimproved road oriented northwest-southeast is visible in the western portion of the Property. The Kasilof River and associated wetlands are visible along the Property's western boundary. Multiple structures are depicted on the parcel adjacent north of the Property. The parcels adjacent east and south of the Property are mapped as vegetated and undeveloped.

2.7.3 Regulatory Database Search

Federal and state database records were researched on September 15 and 18, 2014 for pertinent information regarding the environmental condition of the Property and adjacent parcels. In addition, local agency sources were contacted as part of the database search. This database search complies with ASTM E 1527-13, with the exceptions noted in Section 2.2.

Federal Records Sources

The National Priorities List (NPL) specifies those properties assigned the Environmental Protection Agency's (EPA) highest cleanup priority. The EPA website was reviewed for NPL sites in Alaska on September 15, 2014. There are currently no listed NPL sites in the Kasilof area.

The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) is also compiled by the EPA and includes sites the EPA has investigated or is currently investigating for potential hazardous substance contamination for possible inclusion on the NPL. According to the CERCLIS list, reviewed on September 15, 2014, there are no CERCLIS sites located in the Kasilof area.

According to the EPA Region 10 report, reviewed on September 15, 2014, there are no Resource Conservation and Recovery Act (RCRA) treatment, storage, or disposal (TSD) facilities subject to corrective action (CORRACTS) within 1 mile of the Property. TSD facilities not subject to corrective action (NONCORRACTS) are not located within 0.5 mile of the Property. There are three listed hazardous materials TSD facilities in the Kasilof area—these sites are not located within 0.5 mile of the Property.

The Emergency Response Notification System (ERNS) lists reported hazardous substance releases in quantities greater than the reportable quantity. As of September 15, 2014, the Property is not listed on the ERNS list.

The Brownfield list does not contain EPA Brownfield Assessment, Cleanup, and Revolving Loan Fund Grantees in the Kasilof area.

State Records Sources

The ADEC Spills List was reviewed on September 18, 2014 for information regarding spills on the Property. The list does not include the Property.

The State Landfill/Solid Waste Disposal Site List was reviewed on September 18, 2014 for landfills or solid waste disposal sites within 0.5 mile of the Property. According to the ADEC's Solid Waste Management database, no landfills or solid waste disposal sites are located in Kasilof.

Registered Underground Storage Tank Database

The ADEC registered Underground Storage Tank (UST) records, available on the ADEC website, were viewed on September 18, 2014 and did not indicate that the Property is a listed UST site. No registered UST sites were identified within 0.25 mile of the Property.

Leaking Underground Storage Tank Database

The ADEC's Leaking Underground Storage Tank (LUST) database, viewed on September 18, 2014, did not list the Property or other parcels within 0.5 mile of the Property as LUST sites.

Contaminated Sites Database

The ADEC Contaminated Sites database was reviewed on September 18, 2014 for sites within 1 mile of the Property. This list is assumed to be equivalent to a State Hazardous Waste Sites list, as required by ASTM E 1527-13. The Property is not listed as a contaminated site on the ADEC database. No contaminated sites were identified within 1 mile of the Property.

Local Agency Sources

The City of Soldotna Utilities Department was contacted on September 15, 2014 to gather information about water and sewer mains in the area. According to the representative, water and sewer lines are not present in the Kasilof area. The properties in Kasilof are serviced by individual wells and septic systems.

ENSTAR was contacted on September 15, 2014 to determine when and if natural gas service was available to the Property and the adjacent sites. According to an ENSTAR representative, there is no natural gas service in the area.

2.8 Site Reconnaissance

A Shannon & Wilson representative (Ms. Erika Knight) conducted a visual site reconnaissance on September 30, 2014. Site access was provided by Ms. Carole Okamoto, a neighbor, on behalf of Ms. Kimbrough. Significant findings observed during the site reconnaissance activities are reported below, including differences observed between Shannon & Wilson's July 18, 2012 and September 30, 2014 site visits. Photographs taken during the site reconnaissance activities are included in Appendix C.

2.8.1 Property Evaluation

A two-story, A-frame structure is currently located on the Property (Photo 1). The first floor of the structure is comprised of a kitchen, utility closet (Photo 2), and living room. General household cleaning supplies were observed in the kitchen. The second floor of the structure

comprises two bedrooms. The waste-water system comprises a septic tank and leach field and is located north of the residential structure.

The residential structure is serviced by a 300-gallon aboveground storage tank (AST) located adjacent to the south side of the structure (Photo 3). Evidence of leaks and/or spills associated with the AST was not observed during the September 30, 2014 site visit.

An outbuilding/shed is located southeast of the residential structure (Photo 4). This structure has walls on the west and south sides while the other two sides are open. An enclosed room with a wooden floor is located in the southwest portion of the structure. Small containers (less than one gallon each) containing wood finishes and mechanical fluids, including lube oil and starter fluid, were observed in the enclosed portion of the structure (Photo 5). Multiple empty 5-gallon fuel containers and three 55-gallon drums (Photo 6) were also observed in the outbuilding/shed. Two of the 55-gallon drums appeared to be empty, and one drum, labeled "2-cycle oil", appeared to contain liquid. Surface stains were visible underneath several empty fuel containers which were located adjacent to the drum labeled "2-cycle oil" (Photo 7). Evidence of leaks and spills in the vicinity of the two empty 55-gallon drums was not observed during the site visit; however, multiple surface stains were observed throughout the outbuilding/shed on the wooden floor (Photo 8) and gravel surfaces (Photos 9 and 10). Note that due to the amount of items stored within the outbuilding/shed, the entire floor/ground surface could not be observed (Photo 11).

Outside the outbuilding/shed, eleven vehicle batteries were observed in a storage area adjacent east of the outbuilding/shed during the July 18, 2012 site visit. During the September 30, 2014 site visit, only one vehicle battery was observed in this area (Photo 12). Evidence of corrosion and weathering of the batteries was not observed during the July 18, 2012 or September 30, 2014 site visits. In addition, two empty, overturned, unlabeled 55-gallon drums were observed west of the outbuilding/shed (Photo 13) during the July 18, 2012 and September 30, 2014 site visits. Evidence of leaks and spills associated with these drums was not observed.

A storage shed containing approximately 25 empty fuel containers (each with a capacity of 5 gallons or less) is located south of the residential structure and west of the outbuilding/shed (Photo 14). An empty 55-gallon drum was observed adjacent to the storage shed. Evidence of leaks and spills associated with the fuel containers and drum was not observed.

A burn area and a vehicle are located south of the outbuilding/shed (Photos 15 and 16). Overturned containers of fuel and oil and surface staining observed southeast of the

outbuilding/shed during the July 18, 2012 site visit were not observed during the September 30, 2014 site visit.

During the July 18, 2012 site visit, a boat was stored in a cleared area on the northeast corner of the Property. Although the boat was not present during the September 30, 2014 site visit, a surface stain was observed on the ground surface in this vicinity.

The remainder of the Property is forested, with the exception of a clearing in the east central portion and a grassy area in the northwest corner, adjacent to the boat launch and parking area located on the parcel north of the Property. Discarded materials (including boat parts, a refrigerator, and miscellaneous wooden and metal items) were observed throughout the Property, mostly in the cleared areas (Photos 17 and 18).

2.8.2 Surrounding Properties Evaluation

The Property is bound by the Kasilof River to the west and Williamson Lane to the east. The Property is bound to the north by a commercial fish processing facility and boat launch. Residential parcels are located south of the Property. Parcels northeast and east of the Property, beyond Williamson Lane are undeveloped and vegetated. A residential parcel is located southeast of the Property across Williamson Lane.

2.8.3 Hazardous Substances and Petroleum Products

Several containers of fuel and motor oil were observed in the vicinity of the outbuilding/shed. Additional empty fuel containers were observed in a fuel container storage shed south of the residential structure. In addition, various containers of paints, sealants, and vehicle maintenance fluids were stored in the outbuilding/shed.

2.8.4 Storage Tanks

The Property's residential structure is serviced by a 300-gallon heating oil AST as shown in Photo 3.

2.8.5 Drums

Multiple 55-gallon drums were observed on the Property during the site visit. The drums were empty with the exception of one drum labeled "2-cycle oil."

2.8.6 Asbestos-Containing Materials

Ms. Kimbrough stated that to the best of her knowledge, asbestos-containing materials (ACMs) are not located on the Property. However, due to the construction date of the residential structure (pre-1982), it is possible that ACMs and/or lead-based paint were used in construction materials. Shannon & Wilson did not conduct tests to determine whether ACMs and/or lead based paint are present on the Property.

2.8.7 Transformers

Five pole-mounted transformers were observed along the northern Property boundary (Photo 19). The pole-mounted transformers did not contain stickers indicating that they had been tested for polychlorinated biphenyls (PCBs). Homer Electric Association (HEA) was contacted July 20, 2012 to determine if the transformers contained oil with PCBs; however the representative could not say for certain whether the transformers contain oil with less than one part per million PCBs. No evidence of releases from the transformers was observed during the site visit. It is noted that the electric utility is typically responsible for releases from their transformers or equipment.

2.8.8 Solid Waste Disposal

During the July 18, 2012 and September 30, 2014 site visits discarded materials were observed throughout the Property.

2.9 Interviews

2.9.1 Government Official

On June 12, 2012, Mr. Paul Horwath, ADEC Project Manager of the Kasilof Riverview Lodge contaminated site, was contacted. The Kasilof Riverview Lodge, located approximately 3.5 miles southeast of the Property, is the closest contaminated site to the Property. According to Mr. Horwath, offsite migration was not identified at the Kasilof Riverview Lodge site. On September 18, 2014, Mr. Horwath was contacted to find out whether any information gathered between 2012 and 2014 suggests that the Property may be impacted by the Kasilof Riverview Lodge site. According to Mr. Horwath, no new information was generated between 2012 and 2014. Mr. Horwath confirmed that he does not believe that the Property will be impacted by the Kasilof Riverview Lodge site.

2.9.2 Current Owners / Occupants of the Property

During a telephone interview with Ms. Kimbrough conducted on June 6, 2012 as part of the 2012 Phase I ESA, Ms. Kimbrough stated that she and her husband Vernon purchased the Property in 1995 from James Trujillo and that Property was used as fox farm prior to Mr. Trujillo's ownership. Ms. Kimbrough was also contacted by telephone on September 17, 2014. She noted that the information she provided for the 2012 Phase I ESA generally remains current and confirmed that she has no cause to believe that any operation or equipment on or around the Property has been the cause of a spill or release of waste. She also stated that to the best of her knowledge, drums that were previously located on the Property are not currently present. Note that this conflicts with Shannon & Wilson's observations during the September 30, 2014 site visit. Ms. Kimbrough stated that she and her husband previously utilized the Property as a fishing camp but currently live out of state and do not use the Property. In addition, she noted that off-site fill was brought in to repair the driveway. Ms. Kimbrough stated that to the best of her knowledge, excavations have not taken place on the Property. The completed Phase I ESA Questionnaire is included in Appendix A.

2.9.3 Other Interviews

Mr. James Trujillo, property owner of the parcel adjacent north of the Property, was interviewed July 18, 2012 as part of the 2012 Phase I ESA. According to Mr. Trujillo, his parents sold the Property to Vernon and Ann Kimbrough in the mid 1990s. Mr. Trujillo stated that the Property and adjacent parcels were previously used as a fox farm beginning in the 1920s. Mr. Trujillo did not know specific details regarding the fox farm operations and speculated that the former owners/operators are deceased.

2.10 Other Environmental Considerations

High Voltage Power Lines. Although not likely considered high voltage, overhead power lines were observed along the northern Property boundary.

Lead in Drinking Water. According to Ms. Kimbrough, the Property is serviced by a private drinking water well (see Section 2.7.2 and Photo 20). Ms. Kimbrough was not aware of whether the water currently contains concentrations of lead.

Wetlands and Surface Waters. According to the U.S. Army Corps of Engineers (USACE) and the EPA, wetlands are defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do

support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Three indicators are used to identify wetlands: (1) vegetation, (2) soil, and (3) hydrology.

According to the KPB Wetlands Mapper, accessed on September 18, 2014, tidal wetlands are present along the western portion of the Property.

Cultural, Historic, and Archeological Resources. The National Register of Historic Places is the Nation's official list of cultural resources worthy of preservation. The database, viewed on September 18, 2014, does not list cultural resource sites or cultural resource districts located on the Property.

According to an October 2008 report titled *Lower Kasilof River Boat Launch Site Investigations Final Report*, which was written by HDR Alaska, Inc. (HDR) and provided by ADOT&PF for the 2012 Phase I ESA, an archaeological site identified as KEN-00190 encompasses the Property and extends southward from the Property to Coal Creek, approximately 0.25 mile away. The archaeological site includes a historic fox farm and a prehistoric Dena'ina/Tanaina village site. An unevaluated boating dock is also located on the Property. According to the HDR report, an archaeological survey would need to be conducted prior to site construction design.

Threatened and Endangered Species. According to the U.S. Fish and Wildlife Service (USFWS), 21 threatened or endangered animal species and one endangered plant species exist in Alaska. Five animal species are considered endangered by the Alaska Department of Fish and Game, Division of Wildlife Conservation. According to the Alaska Department of Fish and Game website viewed on September 18, 2014, these federal and state recognized threatened and endangered species are not found in the Kasilof area.

Wildlife Sanctuaries and Other Natural Resource Preserves. The USFWS database, viewed on September 18, 2014, does not list the Property as a wildlife sanctuary.

2.11 Phase I ESA Findings and Conclusions

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-13, of the Property located at 25951 Williamson Lane, Kasilof, Alaska. Exceptions to, or deletions from, this practice are described in Section 1.3 of this report.

Environmental conditions were identified at the Property. Based on our opinion regarding the potential for a release, material threat of a release, or other threat to human health and the

environment, we have classified the conditions as RECs, Controlled RECs, Historical RECs, or Other Environmental Conditions.

2.11.1 Recognized Environmental Conditions

A REC is the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to a release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. This assessment revealed no evidence of RECs in connection with the Property and the surrounding parcels except the following:

On-Site Recognized Environmental Conditions

Surface stains were observed in an outbuilding/shed in the vicinity of a drum that appeared to contain fluid and was labeled “2-cycle oil.” Several empty 5-gallon fuel containers were also observed in this vicinity. Additional surface stains were observed on a wooden floor in the outbuilding/shed and on the ground surface at various locations throughout the Property.

A burn area is located south of the outbuilding/shed. Burn areas could pose environmental risk as petroleum hydrocarbons are often used to ignite the contents of the burn material and may impact the ground surface. In addition, combustion by-products and residuals may include hazardous materials.

Eleven vehicle batteries were observed in a storage area adjacent east of the outbuilding/shed during the July 18, 2012 site visit, although only one battery was observed during the September 30, 2014 site visit. There is a potential that weathered and corroded batteries could impact the Property’s soil and/or groundwater.

Off-Site Recognized Environmental Conditions

No off-site RECs were identified in the immediate Property vicinity.

2.11.2 Controlled Recognized Environmental Conditions

A controlled REC is a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to

remain in place subject to the implementation of required controls. No on-site or off-site controlled RECs were identified.

2.11.3 Historical Recognized Environmental Conditions

A Historical REC is an environmental condition that may have constituted a REC in the past, but has been closed by a regulatory agency or otherwise is no longer considered to pose a material threat. No on-site or off-site historical RECs were identified.

2.11.4 Other Environmental Conditions

Other Environmental Conditions include known, suspected, or potential sources of hazardous substances or petroleum products that are not considered RECs due to (a) the absence of a confirmed release or other material threat, (b) insufficient information to sufficiently evaluate the condition, (c) de minimis conditions that are not expected to be subject to regulatory action or (d) exclusion from the ASTM definition of hazardous material (e.g. ACM). The following Other Environmental Conditions were identified on the Property:

- The Property was formerly used as a fox farm. Tanning chemicals (e.g. formaldehyde, etc.) may have been used and stored on the Property.
- The residential structure is serviced by heating oil stored in an AST. Incidental releases during refueling, which were not observable as surface stains at the time of the site visit, may pose environmental risk.
- Natural gas service is not available in the Kasilof area. It is possible that releases from active and/or potential on- or off-site abandoned fuel storage tanks could impact the Property's soil and/or groundwater.
- Discarded materials that may be classified as solid waste per state and federal environmental regulations were observed on the Property. Among the miscellaneous items scattered throughout the Property, potential sources of contamination include but are not limited to vehicles and equipment, mechanical fluid containers, and home appliances.
- An on-site domestic waste-water system is comprised of a septic tank and leach field. This system could pose environmental risk if chemicals are disposed through the structure's sinks and toilets.

- Due to the construction date of the residential structure (pre-1982), it is possible that ACMs or lead-based paints were used in the construction materials. ACM is a regulated hazardous air pollutant under the Clean Air Act, and is therefore subject to federal regulation as a hazardous substance. However, the ASTM standard explicitly identifies ACM as outside the base scope of the ASTM standard of practice. Prior to performing remodeling, demolition, repair, or cleaning using abrasive agents in the structure, we recommend that a comprehensive building material survey be performed by a qualified inspector.
- Five pole-mounted transformers were observed along the northern Property boundary). The pole-mounted transformers did not contain stickers indicating that they had been tested for polychlorinated biphenyls (PCBs), and a representative of HEA could not say for certain whether the transformers contain oil with less than one part per million PCBs. No evidence of releases from the transformers was observed during the site visit. It is noted that the electric utility is typically responsible for releases from their transformers or equipment.
- Wetlands are present on the Property. If construction is to occur, a wetland delineation and other associated permits for construction within wetlands or adjacent to waterways (e.g., Kenai River Center Multi-Agency Permit Application and Conditional Use Permit, National Pollutant Discharge Elimination System (NPDES), Section 404 and Section 10 Permits, Kenai ADF&G Habitat Title 6 Permit), may be required prior to construction activities.
- A documented archaeological site is present on the Property. According to HDR's 2008 report, a formal survey would be required if construction occurs.

3.0 LIMITED PHASE II ESA

The purpose of the Limited Phase II ESA was to evaluate whether the Property's soil or groundwater has been impacted by the REC and Other Environmental Conditions identified during the Phase I ESA. The scope of the Limited Phase II ESA included collecting four surface soil samples, advancing four borings, and installing and sampling a temporary monitoring well. Sample locations were selected based on areas of potential concern identified during the Phase I ESA site visit; however, due to the limit scope of the sampling activities, contamination may exist in areas that were not directly sampled.

3.1 Field Activities

Prior to advancing the borings, the local utility locate center was contacted to mark buried utilities within the project area. The approximate locations of the surface soil samples, soil borings, and temporary well are shown on Figure 2. Sample descriptions and field screening results are summarized in Table 1. Site photographs are included in Appendix C.

3.1.1 Surface Soil Sampling

Based on the environmental concerns identified in the Phase I ESA, on September 30, 2014, four surface soil field screening and analytical samples were collected. The surface soil samples, designated Samples SS1 through SS4, were collected from the burn area, the battery storage area, the largest observed area of surface staining (located within the outbuilding/shed near the drum labeled “2-cycle oil” and empty fuel containers), and underneath the east end of the AST, respectively (Photos 21 through 24). The samples were collected at depths of approximately 0.4 to 0.6 foot bgs using a shovel and stainless steel sampling spoons. The soil samples were evaluated in the field using visual descriptions and semi-quantitative headspace screening. The samples were screened using an ADEC-approved headspace sampling techniques and an OVM 580B photoionization detector (PID) calibrated with 100 parts per million (ppm) isobutylene standard gas.

The analytical soil samples for volatile analysis were collected using methanol preservation. At least 25 grams of soil were placed into a laboratory supplied 4-ounce jar that had been pre-weighed. Immediately afterward, 25 milliliters of reagent grade methanol were added to submerge the soil. The methanol extracts the hydrocarbons from the soil at the time of sampling, thereby reducing the possible loss of volatile constituents prior to sample analysis. The samples were transferred to the laboratory in coolers with ice packs using chain-of-custody procedures.

3.1.2 Soil Boring Advancement and Sampling

Four soil borings, designated Borings EB1 through EB4, were advanced on October 1 and 2, 2014 by Discovery Drilling Inc. (Discovery) of Anchorage, Alaska. Boring EB1 was advanced east of the outbuilding/shed on the portion of the Property in which surface staining appeared most concentrated (Photo 4). Borings EB2 and EB4 were advanced in the east-central and northeast portions of the Property, respectively, in the vicinity of apparently discarded materials (Photos 17 and 18). Boring EB3 was advanced near the AST and Surface Sample SS4 (Photo 24).

Drilling was performed by Discovery using a truck-mounted CME-75 drill rig with a 3.25-inch inner diameter hollow stem auger. Borings EB1, EB2, and EB4 were advanced to 17 feet bgs. Boring EB3 was advanced until groundwater was encountered (approximately 37 feet bgs) in order to install a temporary monitoring well and collect a groundwater sample. A Shannon & Wilson field representative was present during field activities to identify the boring locations, log the materials encountered during drilling, and screen and sample subsurface soils. This information is presented on the individual boring logs presented in Appendix D and summarized on Table 1.

Soil samples were collected using a 3-inch outside diameter split-spoon sampler driven using a 340-pound hammer. Soil screening samples were collected at 2.5-foot intervals to 17 feet bgs. In Boring EB3, soil screening samples were collected at 5-foot intervals below 15 feet bgs. The soil samples were evaluated in the field using visual descriptions and semi-quantitative headspace screening as described in Section 3.1.1.

The sample for each boring with the highest headspace screening result was also submitted for analytical testing. Samples for volatile analysis were collected and field-preserved with methanol in accordance with method requirements, as described in Section 3.1.1. After sampling, each boring was backfilled with the soil removed from that boring, and the surface was restored to match the existing grade.

3.1.3 Groundwater Sampling

Boring EB3, located near the AST and downgradient of the observed surface stains near the outbuilding/shed, was completed as Temporary Monitoring Well TMW1. The monitoring well was constructed of 2-inch diameter schedule 40 polyvinyl chloride (PVC) pipe with threaded connections. The bottom 10-foot section of the well was constructed of PVC well screen with 0.010-inch slots.

A groundwater sample was collected from Temporary Monitoring Well TMW1 on October 2, 2014. Prior to sampling, the depth to water was measured using an electronic depth to water probe after letting the well equilibrate for approximately 10 minutes. The groundwater sample was collected using a disposable bailer without development or purging. Analytical samples were collected by transferring water from the bailer directly into laboratory-supplied containers.

3.2 Laboratory Analysis

The soil and groundwater samples were submitted to SGS North America Inc. (SGS) for analytical testing, using chain-of-custody procedures. The laboratory report and completed ADEC Laboratory Data Review Checklist are provided in Appendix E.

Eight analytical soil samples and one groundwater sample were analyzed for gasoline range organics (GRO) by Alaska Method (AK) 101, diesel range organics (DRO) by AK 102, residual range organics (RRO) by AK 103, polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270D SIMS, and volatile organic compounds (VOCs) by EPA Method 8260B. In addition, the surface soil sample collected from the burn area (Sample SS1) was analyzed for dioxins by EPA Method 8290, and the surface soil sample collected from the battery storage area (Sample SS2) was analyzed for total lead by EPA Method 6020. A methanol soil trip blank and a water trip blank accompanied the samples and were analyzed for GRO by AK 101 and VOCs by EPA 8260B. The analytical soil and groundwater sample results are summarized in Tables 2, 3, and 4.

3.3 Subsurface Conditions

Subsurface conditions observed during the drilling and monitoring well development and sampling are discussed below and provided in the borings logs included as Appendix D.

Soil encountered in Boring EB1 consisted of gravel with sand and silt to approximately 10 feet bgs (identified as apparent fill to approximately 5 feet bgs). Silt with sand graded to sand with silt from 10 feet bgs to the bottom of the boring at 17 feet bgs. In Boring EB2, sand with varying silt and gravel content was encountered to 10 feet bgs. Soil between 10 and 12.5 feet bgs consisted of gravel with sand. Silty sand was encountered from 12.5 to 17 feet bgs. Soil in Boring EB3 consisted of sand with varying amounts of silt and gravel. Sand with varying amounts of silt was encountered in Boring EB4, with the exception of a layer of gravel with sand which was encountered between approximately 4 and 7.5 feet bgs.

Groundwater was encountered during drilling at approximately 36.5 feet bgs in Boring EB3. After drilling, groundwater was measured at 35.43 feet bgs in the temporary monitoring well installed in Boring EB3. Groundwater was not encountered in Borings EB1, EB2, or EB4, which were advanced to depths of 17 feet bgs.

3.4 Discussion of Analytical Results

The analytical soil and groundwater results were compared to ADEC cleanup levels presented in the April 8, 2012, 18 Alaska Administrative Code (AAC) 75 regulations. The applicable soil criteria consist of the most stringent ADEC Method Two cleanup levels listed in Tables B1 and B2 of 18 AAC 75.341, for the “under 40-inch (precipitation) zone,” and groundwater cleanup levels are established in Table C of 18 AAC 75.345.

3.4.1 Soil Samples

DRO was detected at concentrations greater than the ADEC’s Migration to Groundwater (MTG) cleanup level of 250 milligrams per kilogram (mg/kg) in Surface Soil Samples SS1, SS3, and SS4, at concentrations of 392 mg/kg, 3,880 mg/kg, and 2,680 mg/kg, respectively. These concentrations are less than the ADEC’s human health cleanup levels. In Sample SS3, RRO and benzene were also detected at concentrations greater than the ADEC MTG cleanup levels (10,000 mg/kg and 0.025 mg/kg, respectively), at concentrations of 77,300 mg/kg RRO and 0.0315 mg/kg benzene. The RRO concentration in Sample SS3 exceeds the ADEC’s Maximum Allowable Concentration (MAC) of 22,000 mg/kg. Methylene chloride was detected at an estimated concentration of 0.0231 mg/kg, which is greater than the ADEC cleanup level of 0.016 mg/kg, in the sample collected from 5 to 7 feet bgs in Boring EB4S2. Methylene chloride is a common analytical laboratory contaminant.

DRO was not detected in the remaining soil samples, with the exception of Sample SS2, in which DRO was detected at an estimated concentration less than the ADEC cleanup level. Concentrations of RRO less than the ADEC cleanup level were detected in the remaining surface soil samples, but RRO was not detected in the soil samples from the borings. The remaining tested analytes were not detected, or were reported at concentrations at least one order of magnitude less than ADEC cleanup levels.

Sample SS1 was tested for dioxins, and Sample SS2 was tested for total lead. Lead was detected in Sample SS2 at a concentration of 7.50 mg/kg, which is less than the ADEC cleanup level of 400 mg/kg. Multiple dioxins and dioxin-like compounds were detected in Sample SS1. To assess potential risk associated with these detected compounds, we normalized the results to an index chemical, 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD), and compared the cumulative toxic equivalency quotient (TEQ) to the index chemical’s ADEC cleanup level. We calculated TEQs using both the 1989 EPA and the 1998 World Health Organization methods for handling non-detect values; results are tabulated in Table 3. For both methods, TEQs in each project

sample were at least two orders of magnitude lower than the ADEC cleanup level of 47 picograms per gram.

3.4.2 Groundwater Samples

GRO, DRO, RRO, PAH, and VOC analytes were not detected in the groundwater sample collected from the temporary monitoring well.

3.4.3 Quality Control Samples

The project laboratory follows on-going quality assurance/quality control procedures to evaluate conformance to applicable ADEC data quality objectives (DQOs). Internal laboratory controls to assess data quality for this project include surrogates, method blanks, matrix spike/matrix spike duplicates (MS/MSD), and laboratory control sample/laboratory control sample duplicates (LCS/LCSD) to assess precision, accuracy, and matrix bias. If a DQO was not met, the project laboratory provides a brief narrative concerning the problem in the case narrative of their laboratory reports (see Appendix E).

External quality controls included trip blanks. One methanol soil trip blank (Sample STB) and one water trip blank (Sample WTB) accompanied the sample jars and bottles, as appropriate, from the laboratory to the site during sampling activities and back again to SGS. GRO and VOCs were not detected in either trip blank.

Shannon & Wilson conducted a limited data assessment to review the laboratory's compliance with precision, accuracy, sensitivity, and completeness to the data quality objectives. Shannon & Wilson reviewed the SGS data deliverables and completed the ADEC's Laboratory Data Review Checklist, which is included in Appendix E. No non-conformances that would adversely affect the quality or usability of the data were noted.

4.0 CONCLUSIONS AND RECOMMENDATIONS

As part of the Phase I ESA conducted for the Property, RECs and Other Environmental Conditions were identified. These concerns were mainly associated with the storage of petroleum products, batteries, miscellaneous chemicals, and apparently discarded debris. A Limited Phase II ESA was conducted to evaluate whether these potential concerns had impacted the Property's soil or groundwater. Areas evaluated include the surface soil at the locations of a burn area, a battery storage area, an AST, and an area of surface staining. Subsurface soil

samples and a groundwater sample were collected to further evaluate these concerns and/or other potential environmental concerns.

The results of our Limited Phase II ESA indicate the presence of petroleum hydrocarbons at concentrations greater than ADEC cleanup levels in the near surface soil beneath the AST, in the burn area, and in the area of staining on the soil ground surface in the outbuilding/shed. However, the results of the soil samples collected from the borings and the groundwater sample collected from the temporary monitoring well suggest that contamination does not extend to subsurface soil and that groundwater has not been impacted at the area sampled. We recommend removing and properly disposing of containers, drums, the AST, and areas of stained soil, including the drums located west of the outbuilding/shed and stained areas not directly sampled as part of this effort. We also recommend that, following removal of the outbuilding/shed, the soil is inspected for surface stains beneath the portion of the building with a wooden floor. Confirmation soil samples may need to be collected following removal of stained soils.

5.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

This Phase I Environmental Site Assessment was prepared by Ms. Erika Knight under the direct supervision of Mr. Dan McMahon and Mr. Matthew Hemry, P.E. Ms. Knight, an Environmental Scientist, received a B.A. in Geology from Cornell University in 2009 and a M.S. in Environmental and Forest Sciences from the University of Washington in 2013. A Project Manager, Mr. McMahon received a B.A. in Environmental Conservation from University of Colorado - Boulder in 1993. Mr. Hemry, Vice President, received a B.S. in Engineering Sciences from Dartmouth College in 1990 and a M.S. in Environmental Engineering from Duke University in 1992. These individuals have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Property, and they have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312. Shannon & Wilson declares that, to the best of our professional knowledge and belief, Mr. McMahon and Mr. Hemry meet the definition of “Environmental Professional” as defined in 40 CFR 312.10.

6.0 CLOSURE/LIMITATIONS

This report is an instrument of service prepared by Shannon & Wilson for the exclusive use of the ADOT&PF, herein referred to as the Client, and its affiliates. This report was prepared for the exclusive use of the Client for evaluating the Property as it relates to the environmental aspects discussed herein. The conclusions contained in this report are based on information

provided from the observed site conditions, personal interviews, other sources identified herein, and the limited sampling and analyses that were conducted. They should not be construed as definite conclusions regarding the site's soil or groundwater quality. It is possible that our tests missed higher levels of target contaminants, although our intention was to sample areas likely to be impacted. As a result, the sampling, analyses, and data interpretations can provide you with only our professional judgment as to the environmental characteristics of this site, and in no way guarantee that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site assessment. Changes due to natural processes or human activity can occur over time. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations applicable to this Property may need to be revised.

You are advised that various state and federal agencies (ADEC, EPA, etc.) may require the reporting of this information. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore has not, and will not, disclose the results of this study unless specifically requested and authorized by Alaska Demolition, or as required by law.

In order to create a report on which the Client can rely, Shannon & Wilson worked closely with the Client and their representatives to develop the scope of services upon which all subsequent tasks have been based. No party other than the Client and its affiliates is permitted by Shannon & Wilson to rely on this instrument of Shannon & Wilson's service, except as stipulated in Section 2.3. With the permission of the Client, Shannon & Wilson will meet with a third party, approved in writing by the Client, to identify the additional services required, if any, to permit such third party to rely on the information contained in this report. Such reliance by any third party is limited to the same extent of Client's reliance, and subject to the same contractual, technological and other limitations to which the Client has agreed.

Copies of documents that may be relied upon by our client are limited to the printed copies (also known as hard copies) that are signed or sealed by Shannon & Wilson with a wet, blue ink signature. Files provided in electronic media format are furnished solely for the convenience of the client. Any conclusion or information derived from electronic files shall be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, or you question the authenticity of the report, please contact the undersigned.

Shannon & Wilson has prepared the attachments in Appendix F, "Important Information About Your Environmental Site Assessment/Evaluation Report," to assist you and others in understanding the use and limitations of our report.

Please contact Dan P. McMahon or the undersigned at (907) 561-2120 with questions or comments concerning the contents of this report.

SHANNON & WILSON, INC.

Erika J Knight
Erika Knight
Environmental Scientist



Matthew Henry, P.E.
Vice President

TABLE 1
SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number	Date	Sample Location (See Figure 2)	Depth (feet bgs)	Headspace (ppm) ^	Sample Description** (See Appendix D)
Soil Samples					
Surface Soil					
* SS1	9/30/2014	Burn area	0.4-0.6	2.1	Red-brown, <i>Sandy Silt (ML)</i> ; moist; trace organics
* SS2	9/30/2014	Battery storage area	0.4-0.6	2.1	Red-brown, <i>Sandy Silt (ML)</i> ; moist; trace organics
* SS3	9/30/2014	Area of surface staining	0.4-0.6	16	Brown, <i>Sandy Silt (ML)</i> ; moist; slight hydrocarbon odor
* SS4	9/30/2014	Beneath the AST	0.4-0.6	289	Brown, <i>Gravel with Sand (GP)</i> ; moist; hydrocarbon odor [Fill]
Boring EB1					
EB1S1	10/1/2014	Boring EB1, Sample 1	3-4	2.5	Medium dense, brown, <i>Gravel with Sand and Silt (GP-GM)</i> ; moist [Fill]
* EB1S2	10/1/2014	Boring EB1, Sample 2	5.5-6.5	2.9	Dense, brown, <i>Gravel with Sand and Silt (GP-GM)</i> ; moist
EB1S3	10/1/2014	Boring EB1, Sample 3	8-9	2.2	Dense, brown, <i>Gravel with Sand and Silt (GP-GM)</i> ; moist
EB1S4	10/1/2014	Boring EB1, Sample 4	10.5-11.5	1.4	Medium dense, brown, <i>Silt with Sand (ML)</i> ; moist; trace gravel
EB1S5	10/1/2014	Boring EB1, Sample 5	13-14	2.1	Medium dense, brown, <i>Sand with Silt (SP-SM)</i> ; moist
EB1S6	10/1/2014	Boring EB1, Sample 6	15.5-16.5	2.1	Medium dense, brown, <i>Sand (SP)</i> ; moist; trace silt
Boring EB2					
* EB2S1	10/1/2014	Boring EB2, Sample 1	3-4	2.1	Medium dense, brown, <i>Silty Sand with Gravel (SM)</i> ; moist
EB2S2	10/1/2014	Boring EB2, Sample 2	5.5-6.5	1.6	Medium dense, brown, <i>Sand with Gravel (SP)</i> ; moist; trace silt
EB2S3	10/1/2014	Boring EB2, Sample 3	8-9	0.9	Dense, brown, <i>Sand with Gravel (SP)</i> ; moist; trace silt
EB2S4	10/1/2014	Boring EB2, Sample 4	10.5-11.5	2.0	Medium dense, brown, <i>Gravel with Sand (GP)</i> ; moist
EB2S5	10/1/2014	Boring EB2, Sample 5	13-14	0.5	Medium dense, brown, <i>Silty Sand (SM)</i> ; moist
EB2S6	10/1/2014	Boring EB2, Sample 6	15.5-16.5	1.6	Medium dense, brown, <i>Silty Sand (SM)</i> ; moist

Notes:

- * = Sample analyzed by the project laboratory (See Tables 2 and 3)
- ** = Sample description and depth apply to the portion of the specified sample interval from which the sample was collected
- ^ = Field screening instrument was a Thermo Environmental Instruments 580B photoionization detector (PID)
- = Measurement not recorded or not applicable
- bgs = Below ground surface
- ppm = Parts per million

TABLE 1
SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number	Date	Sample Location (See Figure 2)	Depth (feet bgs)	Headspace (ppm) ^	Sample Description** (See Appendix D)
Boring EB3					
EB3S1	10/2/2014	Boring EB3, Sample 1	3-4	0.3	Medium dense, brown, <i>Sand with Silt (SP-SM)</i> ; moist
EB3S2	10/2/2014	Boring EB3, Sample 2	5.5-6.5	0.4	Medium dense, brown, <i>Sand with Silt and Gravel (SP-SM)</i> ; moist
EB3S3	10/2/2014	Boring EB3, Sample 3	8-9	1.2	Medium dense, brown, <i>Sand with Silt and Gravel (SP-SM)</i> ; moist
EB3S4	10/2/2014	Boring EB3, Sample 4	10.5-11	2.5	Medium dense, brown, <i>Silty Sand with Gravel (SM)</i> ; moist
* EB3S5	10/2/2014	Boring EB3, Sample 5	13-14	3.6	Medium dense, brown, <i>Sand with Silt (SP-SM)</i> ; moist
EB3S6	10/2/2014	Boring EB3, Sample 6	15.5-16.5	2.2	Medium dense, brown, <i>Sand with Silt (SP-SM)</i> ; moist
EB3S7	10/2/2014	Boring EB3, Sample 7	20.5-21.5	0.5	Medium dense, brown, <i>Sand with Silt (SP-SM)</i> ; moist
EB3S8	10/2/2014	Boring EB3, Sample 8	25.5-26.5	0.6	Medium dense, brown, <i>Sand with Silt (SP-SM)</i> ; moist
EB3S9	10/2/2014	Boring EB3, Sample 9	30.5-31.5	0.8	Medium dense, brown, <i>Sand with Silt (SP-SM)</i> ; moist
EB3S10	10/2/2014	Boring EB3, Sample 10	35.5-36.5	1.4	Medium dense, brown, <i>Sand with Silt (SP-SM)</i> ; moist to wet
Boring EB4					
EB4S1	10/2/2014	Boring EB4, Sample 1	3-4	1.8	Medium dense, brown, <i>Silty Sand (SM)</i> ; moist
* EB4S2	10/2/2014	Boring EB4, Sample 2	5.5-6.5	2.5	Dense, brown, <i>Gravel with Sand (GP)</i> ; moist
EB4S3	10/2/2014	Boring EB4, Sample 3	8-9	2.5	Medium dense, brown, <i>Sand with Silt (SP-SM)</i> ; moist
EB4S4	10/2/2014	Boring EB4, Sample 4	10.5-11.5	2.1	Medium dense, brown, <i>Sand with Silt (SP-SM)</i> ; moist
EB4S5	10/2/2014	Boring EB4, Sample 5	13-14	2.5	Medium dense, brown, <i>Sand with Silt (SP-SM)</i> ; moist
EB4S6	10/2/2014	Boring EB4, Sample 6	16-16.5	2.5	Medium dense, brown, <i>Silty Sand (SM)</i> ; moist
Water Samples					
* TMW1	10/2/2014	Temporary Monitoring Well TMW1	35.43	-	Groundwater
Quality Control Samples					
* STB	9/30/2014	Soil Trip Blank	-	-	Ottawa sand with methanol added in the laboratory
* WTB	9/30/2014	Water Trip Blank	-	-	Organic-free water supplied by the laboratory

Notes:

- * = Sample analyzed by the project laboratory (See Tables 2 and 3)
- ** = Sample description and depth apply to the portion of the specified sample interval from which the sample was collected
- ^ = Field screening instrument was a Thermo Environmental Instruments 580B photoionization detector (PID)
- = Measurement not recorded or not applicable
- bgs = Below ground surface
- ppm = Parts per million

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS - PETROLEUM HYDROCARBONS, VOCS, & METALS

Parameter Tested	Method*	Cleanup Level (mg/kg)**	Sample ID Number^ and Soil Sample Depth in Feet bgs (See Table 1, Figure 2, and Appendix D)								
			Surface Soil				Boring EB1	Boring EB2	Boring EB3	Boring EB4	Quality Control
			SS1 0.4-0.6	SS2 0.4-0.6	SS3 0.4-0.6	SS4 0.4-0.6	EB1S2 5-7	EB2S1 2.5-4.5	EB3S5 12.5-14.5	EB4S2 5-7	STB Trip Blank
PID Headspace Reading - ppm	OVM 580B	-	2.1	2.1	16	289	2.9	2.1	3.6	2.5	-
Gasoline Range Organics (GRO) - mg/kg	AK 101	300	<2.64	<2.65	1.97 J	36.8 J+	<1.03	<1.14	<1.01	<0.810	<1.26
Diesel Range Organics (DRO) - mg/kg	AK 102	250	392	16.3 J	3,880 J-	2,680	<10.5	<10.9	<10.6	<10.5	-
Residual Range Organics (RRO) - mg/kg	AK 103	10,000	1,110	152	77,300 J-	68.3 B	<21.0 B	<21.9 B	<21.2 B	<21.0 B	-
Polynuclear Aromatic Hydrocarbons (PAHs)											
Benzo[g,h,i]perylene - mg/kg	EPA 8270D SIMS	1,400	<0.0184	<0.00375	0.160 J+	<0.00267	<0.00262	<0.00275	<0.00266	<0.00262	-
Fluoranthene - mg/kg	EPA 8270D SIMS	1,400	<0.0184	<0.00375	0.163 J+	<0.00267	<0.00262	<0.00275	<0.00266	<0.00262	-
2-Methylnaphthalene - mg/kg	EPA 8270D SIMS	6.1	<0.0184	<0.00375	0.0310 J+	<0.0535	<0.00262	<0.00275	<0.00266	<0.00262	-
Naphthalene - mg/kg	EPA 8270D SIMS	20	<0.0184	<0.00375	0.0763 J+	<0.0535	<0.00262	<0.00275	<0.00266	<0.00262	-
Phenanthrene - mg/kg	EPA 8270D SIMS	3,000	<0.0184	<0.00375	<0.0337	0.0346 J+	<0.00262	<0.00275	<0.00266	<0.00262	-
Pyrene - mg/kg	EPA 8270D SIMS	1,000	<0.0184	<0.00375	0.887 J+	<0.00267	<0.00262	<0.00275	<0.00266	<0.00262	-
Other PAH analytes - mg/kg	EPA 8270D SIMS	Various	<0.0184	<0.00375	<0.0337	ND	<0.00262	<0.00275	<0.00266	<0.00262	-
Total Lead - mg/kg	EPA 6020	400	-	7.50	-	-	-	-	-	-	-
Volatile Organic Compounds (VOCs)											
Benzene - mg/kg	EPA 8260B	0.025	<0.0132	<0.0133	0.0315	<0.00555	<0.00515	<0.00570	<0.00505	<0.00404	<0.00630
Toluene - mg/kg	EPA 8260B	6.5	<0.0264	<0.0266	0.524	0.00931 J	<0.0104	<0.0114	<0.0102	0.0113 J	<0.0127
Ethylbenzene - mg/kg	EPA 8260B	6.9	<0.0264	<0.0266	0.0154 J	<0.0111	<0.0104	<0.0114	<0.0102	<0.00810	<0.0127
Xylenes - mg/kg	EPA 8260B	63	<0.0790	<0.0795	0.107	0.0319 J	<0.0311	<0.0341	<0.0304	0.0118 J	<0.0380
sec-Butylbenzene - mg/kg	EPA 8260B	12	<0.0264	<0.0266	<0.0175	0.0565	<0.0104	<0.0114	<0.0102	<0.00810	<0.0127
Chloromethane - mg/kg	EPA 8260B	0.21	<0.0264	<0.0266	<0.0350 B	<0.0111	<0.0104	<0.0114	<0.0102	<0.00810	<0.0127
4-Isopropyltoluene - mg/kg	EPA 8260B	-	<0.0264	<0.0266	<0.0175	0.279	<0.0104	<0.0114	<0.0102	<0.00810	<0.0127
Methylene chloride - mg/kg	EPA 8260B	0.016	<0.106	<0.107	<0.0700	<0.0444	<0.0414	<0.0455	<0.0405	0.0231 J	<0.0505
1,2,4-Trimethylbenzene - mg/kg	EPA 8260B	23	<0.0530	<0.0530	0.0718	0.0488	<0.0207	<0.0227	<0.0203	<0.0161	<0.0253
1,3,5-Trimethylbenzene - mg/kg	EPA 8260B	23	<0.0264	<0.0266	0.0322 J	0.115	<0.0104	<0.0114	<0.0102	<0.00810	<0.0127
Other VOC analytes - mg/kg	EPA 8260B	Various	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

* = See Appendix E for compounds tested, methods, and laboratory reporting limits

** = Soil cleanup level is the most stringent ADEC Method 2 standard listed in Table B1 or B2, 18 AAC 75 (April 2012), for the "under 40 inches (precipitation) zone"

^ = Sample ID number preceded by "17687-" on the chain of custody form

mg/kg = Milligram per kilogram

<0.0184 = Analyte not detected; laboratory limit of detection of 0.0184 mg/kg

392 = Reported concentration exceeds the ADEC cleanup level**<0.106** = Analyte not detected; laboratory limit of detection exceeds the ADEC cleanup level

J = Estimated concentration less than the limit of quantitation. See the SGS laboratory report for more details.

J+/J- = Reported concentration is an estimate (biased high/biased low) due to surrogate recovery failure. See the Laboratory Data Review Checklist for more details.

ND = Analyte not detected

bgs = Below ground surface

ppm = Parts per million

PID = Photoionization detector

B = Analyte concentration potentially affected by method blank contamination. See the ADEC Laboratory Data Review Checklist (LDRC) for details.

- = Not applicable or sample not tested for this analyte

TABLE 3
SUMMARY OF SOIL ANALYTICAL RESULTS - DIOXINS

Parameter Tested	Cleanup Level*	TEF Factor	Sample ID Number [^] and Soil Sample Depth in Feet bgs (See Table 1, Figure 2, and Appendix D)		
			SS1		
			0.4-0.6 feet bgs		
			Reported Concentration	TCDD Equivalent [†]	TCDD Equivalent ^{^^}
MOISTURE CONTENT by ASTM D2216					
Percent Moisture	-	-	37	-	-
DIOXINS by EPA METHOD 8290A					
1,2,3,4,6,7,8-HpCDD (pg/g)	-	0.01	1.83 J	0.0183	0.0183
1,2,3,4,7,8-HxCDD (pg/g)	-	0.1	<0.0771	0	0.003855
1,2,3,6,7,8-HxCDD (pg/g)	-	0.1	<0.0765	0	0.003825
1,2,3,7,8,9-HxCDD (pg/g)	-	0.1	0.119 JB EMPC	0.0119	0.0119
1,2,3,7,8-PeCDD (pg/g)	-	1	<0.07	0	0.035
2,3,7,8-TCDD (pg/g)	-	1	<0.0521	0	0.02605
OCDD (pg/g)	-	0.0003	8.92 B	0.002676	0.002676
FURANS by EPA METHOD 8290A					
2,3,7,8-TCDF (pg/g)	-	0.1	<0.0402	0	0.00201
1,2,3,7,8-PeCDF (pg/g)	-	0.03	<0.0353	0	0.0005295
2,3,4,7,8-PeCDF (pg/g)	-	0.3	<0.0408	0	0.00612
1,2,3,4,7,8-HxCDF (pg/g)	-	0.1	0.0822 J	0.00822	0.00822
1,2,3,6,7,8-HxCDF (pg/g)	-	0.1	0.0602 J EMPC	0.00602	0.00602
2,3,4,6,7,8-HxCDF (pg/g)	-	0.1	0.0735 J EMPC	0.00735	0.00735
1,2,3,7,8,9-HxCDF (pg/g)	-	0.1	<0.0792	0	0.00396
1,2,3,4,6,7,8-HpCDF (pg/g)	-	0.01	3.01	0.0301	0.0301
1,2,3,4,7,8,9-HpCDF (pg/g)	-	0.01	<0.0798	0	0.000396
OCDF (pg/g)	-	0.0003	0.468 J	0.0001	0.0001
TEQ Concentration (pg/g)	47	-	-	0.085	0.166

Notes:

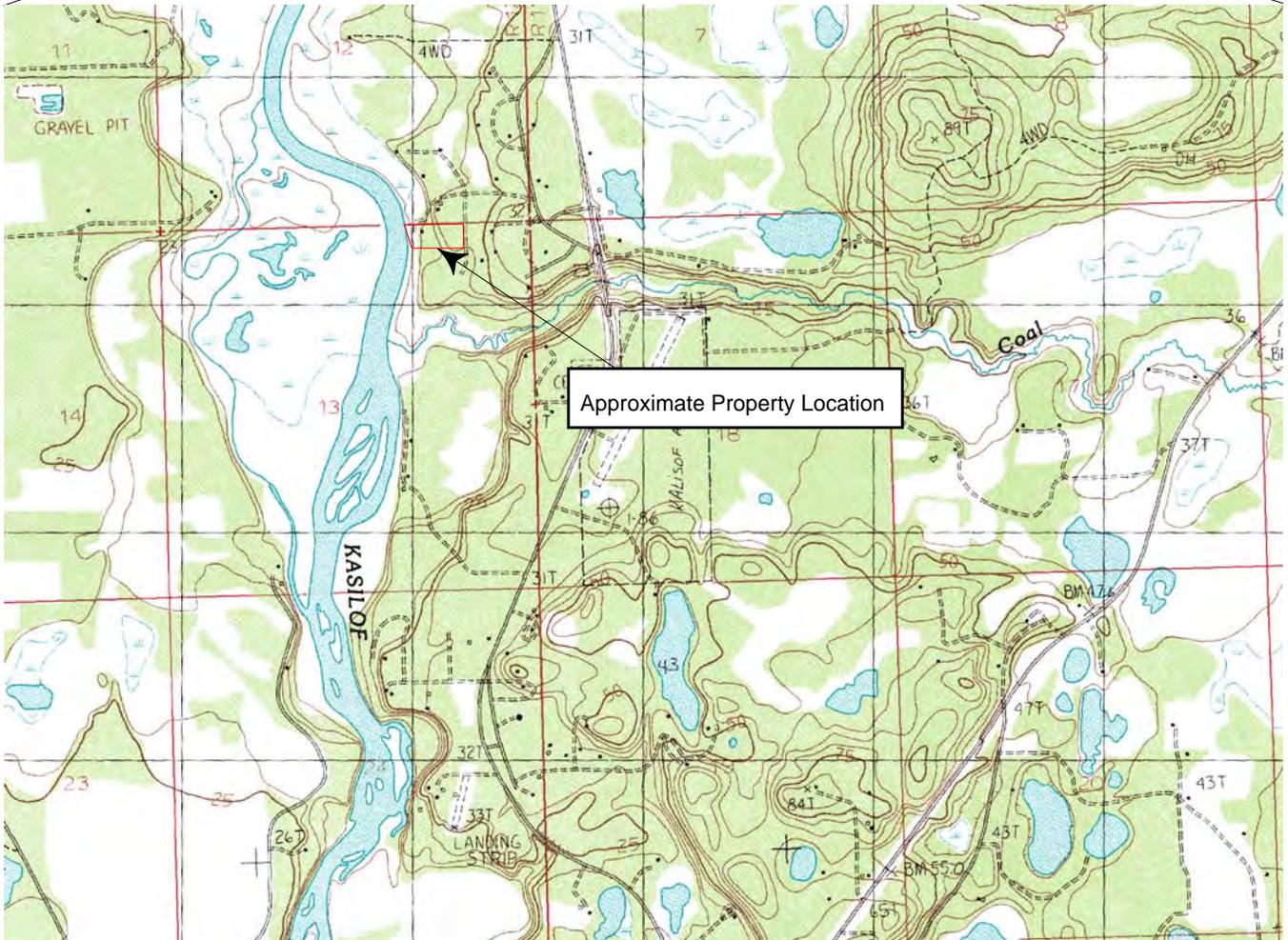
- [^] = Sample ID number preceded by "17687-" on the chain of custody form
- [†] = Equivalent concentration calculated using 1989 EPA standard. Analytes not detected are assigned a "zero" concentration for the TEQ calculation.
- ^{^^} = Equivalent concentration calculated using 1998 World Health Organization standard. Analytes not detected are assigned a concentration equal to 0.5 times the detection limit.
- * = Soil cleanup level is the most stringent ADEC Method 2 standard listed in Table B1 or B2, 18 AAC 75.341 (April 2012), for the "under 40 inch (precipitation) zone"
- bgs = Below ground surface
- TCDD = Tetrachlorodibenzo-p-dioxin
- TEF = Toxic Equivalency Factor, based on 2006 World Health Organization values for 2,3,7,8-TCDD reference
- TEQ = Toxic Equivalency Quotient
- pg/g = Picograms per gram
- J = Result is an estimated value due to a detection below the limit of quantitation or one or more quality control failures
- B = Compound detected in method blank. See the ADEC Laboratory Data Review Checklist (LDRC) for details.
- EMPC = Estimated maximum possible concentration. Indicates that a peak is identified but did not meet the method specified ion-abundance ratio.
- 8.92** = Analyte detected
- <0.0771 = Analyte not detected; laboratory detection limit of 0.0771 pg/g.
- = Measurement not recorded or not applicable

**TABLE 4
SUMMARY OF WATER ANALYTICAL RESULTS**

Parameter Tested	Method*	Cleanup Level (mg/L)**	Sample ID Number^ and Water Depth in Feet bgs (See Table 1, Figure 2, and Appendix D)	
			Temporary Monitoring Well	Quality Control
			TMW1 35.43	WTB Trip Blank
Gasoline Range Organics (GRO) - mg/L	AK 101	2.2	<0.0500	<0.0500
Diesel Range Organics (DRO) - mg/L	AK 102	1.5	<0.326	-
Residual Range Organics (RRO) - mg/L	AK 103	1.1	0.257 J	-
Polynuclear Aromatic Hydrocarbons (PAHs) - mg/L	EPA 8270D SIMS	Various	<0.0000278	-
Volatile Organic Compounds (VOCs) - mg/L	EPA 8260B	Various	ND	ND

Notes:

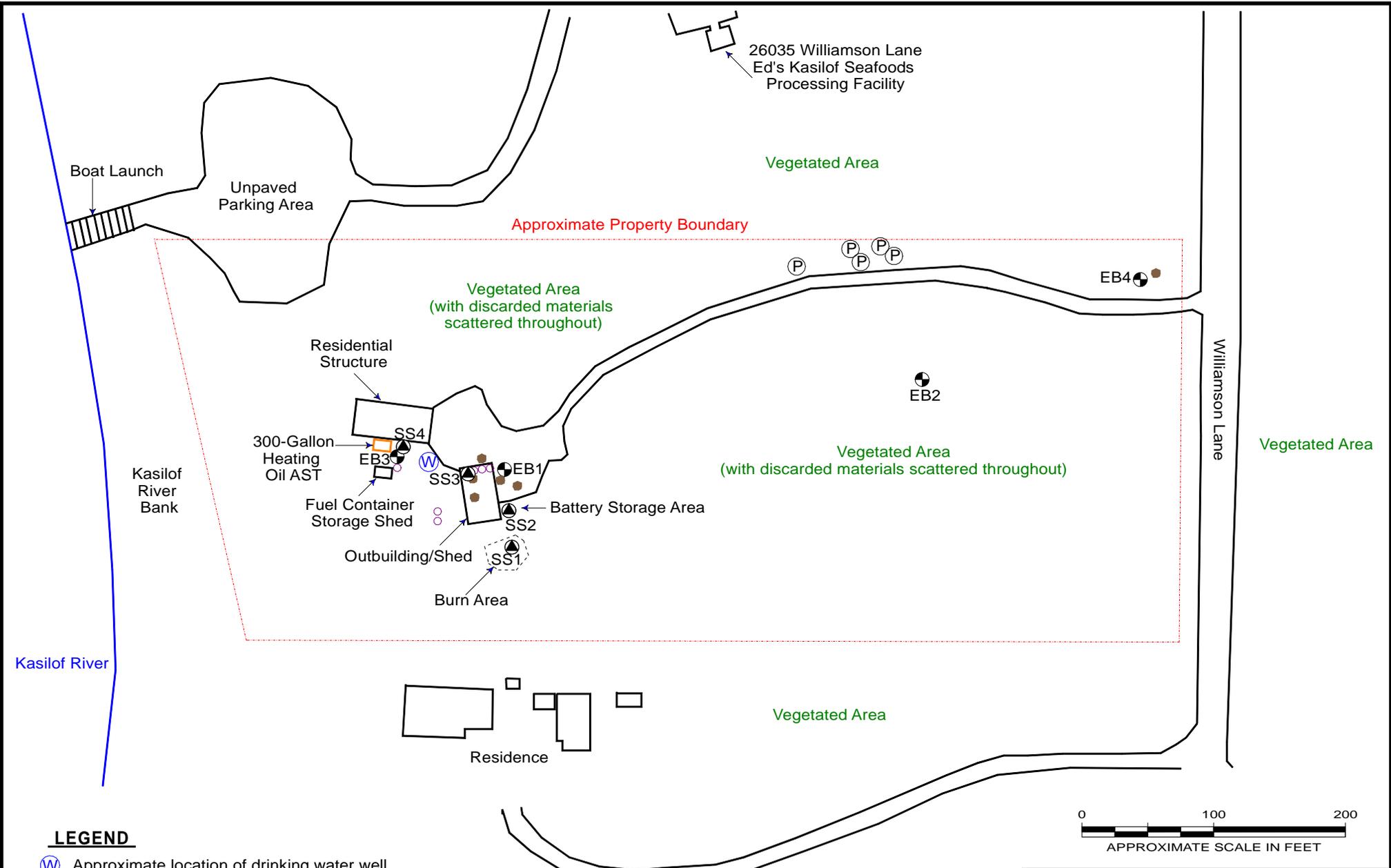
- * = See Appendix E for compounds tested, methods, and laboratory reporting limits
- ** = Groundwater cleanup levels are listed in Table C, 18 AAC 75.345 (April 2012)
- ^ = Sample ID number preceded by "17687-" on the chain of custody form
- mg/L = Milligrams per liter
- <0.0500 = Analyte not detected; laboratory limit of detection of 0.0500
- = Not applicable or sample not tested for this analyte
- J = Estimated concentration less than the limit of quantitation. See the SGS laboratory report for more details.
- bgs = Below ground surface
- ND = Not detected above laboratory's reporting limit



Elevation in Meters
 Contour Interval 5 Meters
 Taken from Kenai B-4 SE
 U.S. Geological Survey Quadrangle
 (1986)

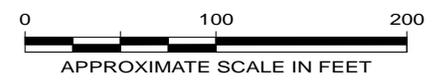


25951 Williamson Lane Kasilof, Alaska	
VICINITY MAP	
November 2014	32-1-17687
 SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	Fig. 1

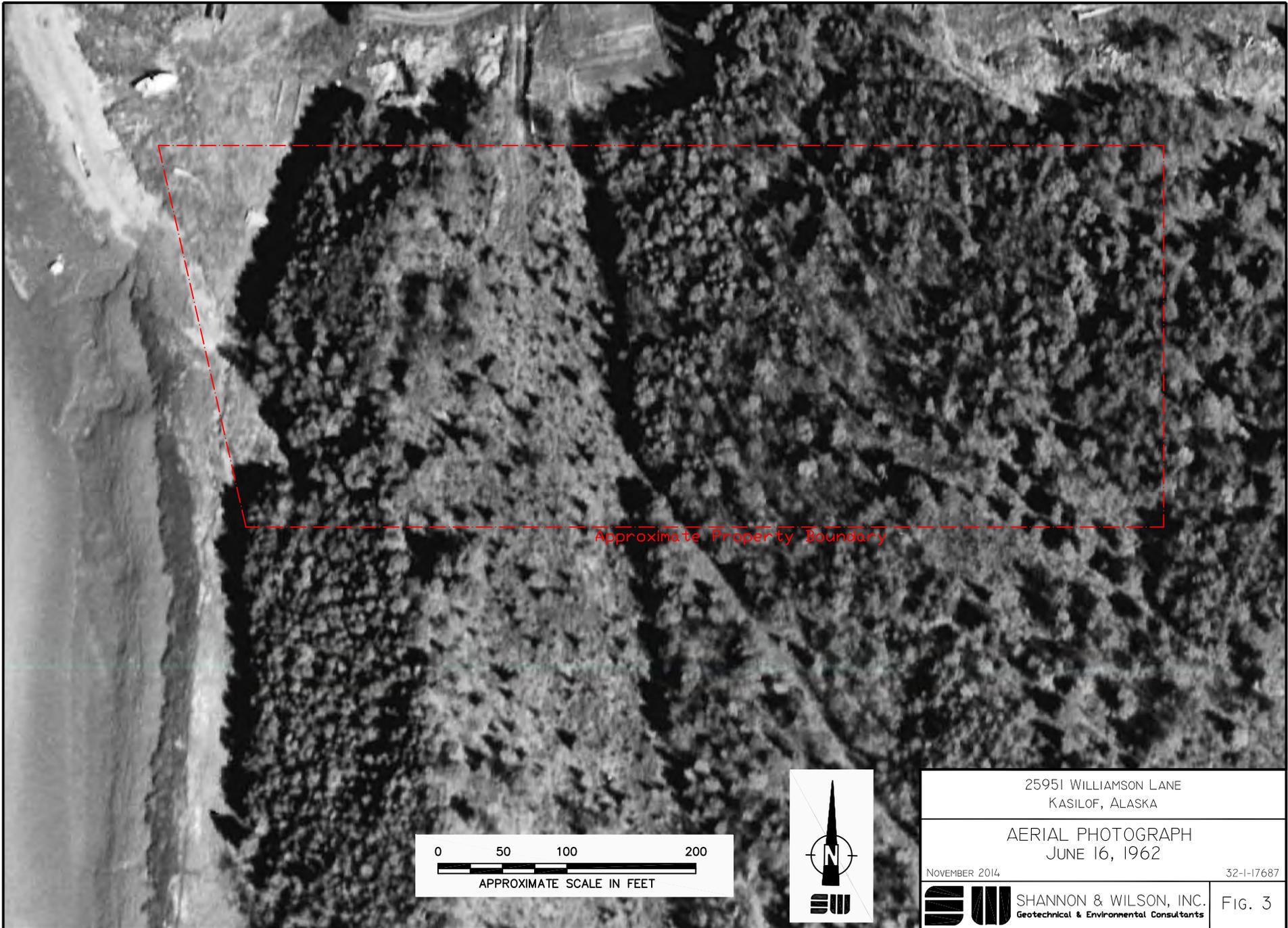


LEGEND

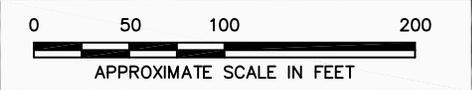
-  Approximate location of drinking water well
-  Approximate location of pole-mounted transformer
-  Approximate location of 55-gallon drum
-  Approximate location of surface stain observed on the ground surface during the September 30, 2014 site visit
-  Approximate location of Boring EB1 advanced by Shannon & Wilson in October 2014
-  Approximate location of Surface Sample SS1 collected by Shannon & Wilson in October 2014



25951 Williamson Lane Kasilof, Alaska	
SITE PLAN	
November 2014	32-1-17687
 SHANNON & WILSON, INC. <small>Geotechnical & Environmental Consultants</small>	
Fig. 2	



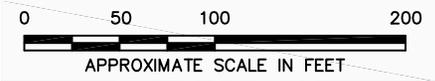
Approximate Property Boundary



25951 WILLIAMSON LANE KASLOF, ALASKA	
AERIAL PHOTOGRAPH JUNE 16, 1962	
NOVEMBER 2014	32-I-17687
 SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	FIG. 3



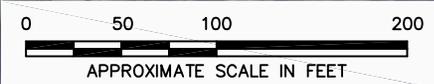
Approximate Property Boundary



2595I WILLIAMSON LANE KASILOF, ALASKA	
AERIAL PHOTOGRAPH JULY 6, 1975	
NOVEMBER 2014	32-I-17687
 SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	FIG. 4



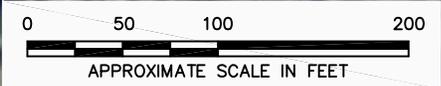
Approximate Property Boundary



25951 WILLIAMSON LANE KASLOF, ALASKA	
AERIAL PHOTOGRAPH JULY 16, 1990	
NOVEMBER 2014	32-I-17687
 SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	FIG. 5



Approximate Property Boundary

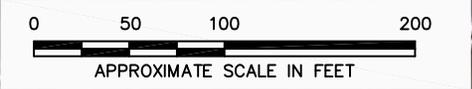


25951 WILLIAMSON LANE KASLOF, ALASKA	
AERIAL PHOTOGRAPH MAY 14, 2001	
NOVEMBER 2014	32-1-17687
 SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	FIG. 6



Approximate Property Boundary

MAP ADAPTED FROM AERIAL IMAGERY PROVIDED BY GOOGLE EARTH PRO, REPRODUCED BY PERMISSION GRANTED BY GOOGLE EARTH™ MAPPING SERVICE.



25951 WILLIAMSON LANE KASILOF, ALASKA	
AERIAL PHOTOGRAPH APRIL 17, 2011	
NOVEMBER 2014	32-I-17687
 SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	FIG. 7

APPENDIX A

PHASE I ENVIRONMENTAL SITE ASSESSMENT QUESTIONNAIRES

SHANNON & WILSON
PHASE I ENVIRONMENTAL SITE ASSESSMENT QUESTIONNAIRE
FOR SUBJECT PROPERTY

The purpose of this Environmental Assessment is to acquire sufficient information to develop a professional opinion as to the presence of petroleum hydrocarbon/hazardous substances on or near the subject property that may affect this site. This questionnaire should be completed to the fullest extent possible during an interview with the owner or the owner's representative conducted by an environmental assessor.

Date of Visit: Interviewer (if applicable): Erika Knight

Project Name/Project Number: 25951 Williamson Lane 32-1-17687

Legal Description/Site Address: 25951 Williamson Lane

City Kasilof State AK Zip 99610

Property Owner(s): Vernon and Ann Kimbrough

Owner Representative(s) Interviewed: Ann Kimbrough

Length of Time Familiar with Site: 19 years

Phone: 404-432-2336 seafox69@bellsouth.net
770-253-9852

Previous Ownership:
Please provide the following information regarding the history of past ownership of the property.

Owner	Dates From - To	Type of Business
1. Kimbrough	1995 - present	
2. Trujillo	prior to 1995	
3.		fox farm prior to Trujillo ownership
4.		
5.		
6.		

Please answer the following questions to the best of your knowledge. Circle the best answer and provide additional information if known.

- 1) Have you ever had an environmental audit or assessment completed on any of your businesses or properties?
 Yes *2012 Phase I ESA* no don't know
- 2) Did any other structures exist on this property before the present structures were built?
 Yes no don't know *Trujillos built current structure*
- 3) Are there any as-built plans of the subject property?
 Yes no don't know
- 4) Are any of the existing structures on the property built prior to 1978?
 Yes *probably but not sure* no don't know
- 5) Is there asbestos in buildings located on the property?
 Yes no *not to Ann's knowledge* don't know
- 6) Is there any evidence that the properties have seen previous commercial or industrial activities?
 Yes no don't know
- 7) Does this property have its own water well?
 Yes no don't know
- 8) Does this property have a septic system and leachfield?
 Yes no don't know
- 9) Does this property have natural gas?
 Yes no *toyo stove* don't know
- 10) Prior to having natural gas, did this property use an above ground storage tank or an underground storage tank to store heating fuel? If not, what heat source was used before natural gas was available?
 Yes *above ground propane* no don't know

11) Does the site contain above ground or buried fuel or chemical storage tanks? If yes, list which authorities the tanks were registered with, the tank capacities, the age of the tanks, the tank contents, and whether any problems such as vapors or soil contamination have been encountered.

Yes *AST for heating house* no don't know
Registered with: EPA ADEC Other
Capacity of Tanks gallons; Tank contains
Age of tank is years;
Any problems?

12) Have there been any excavations on the property?

Yes no *not to Ann's knowledge* don't know
If yes, explain:

13) Has off-site fill ever been deposited on the site?

Yes no don't know
If yes, explain: *fill for driveway*

14) Have any areas of the site been treated with petroleum products or other chemicals for dust control?

Yes no *not to Ann's knowledge* don't know
If yes, areas treated:

15) Does the site contain any 55 gallon drums or other containers?

Yes no *Ann believes that any previously present have been removed* don't know
Contents of drums:

16) Is there any cause to believe that any operation or equipment on or around the facility has been the cause of a spill or release of hazardous waste? Is there any evidence of a hazardous substance release such as stained ground areas, drums, transformers, trash, general disrepair, chemicals, areas where plants refuse to grow, or other indications of hazardous substance contamination?

Yes no don't know
If yes, nature?

- 17) Has the property been used at any time to your knowledge for the treatment, storage or disposal of hazardous substances or for illegal dumping?
- Yes no don't know
- 18) Have any unusual conditions such as containerized wastes, surface staining, filling activities, etc., ever been observed on surrounding properties?
- Yes no don't know
- 19) Do railroad facilities cross or border the site?
- Yes no don't know
- 20) Have there been any industrial accidents in the vicinity?
- Yes no *not to Ann's knowledge* don't know
- 21) Are any creeks or other drainage ways located on or around the site?
- Yes no don't know
- 22) Do you use or have you used Polychlorinated Biphenyls (PCBs) in any activities, or are there any PCBs located on the properties in question? (PCBs are commonly found in electrical transformers, fluorescent light fixtures, and in used oils from electrical components).
- Yes no *one fluorescent light in kitchen* don't know
- 23) Are you aware of any activities on this property or any surrounding properties (including the present or proposed uses) which indicate potential environmental risk?
- Yes no don't know
- 24) Within a quarter mile radius of this property, do any of the following exist?
- a) A current or former landfill?
- Yes no don't know
- b) Any property suspected of hazardous substance contamination?
- Yes no don't know
- c) Any waste discharges to surface water?
- Yes no don't know

25) Indicate if any of the following uses, stores, transports, generates or disposes of any hazardous substance.

a) Property owner's business?

Yes

no

don't know

b) All related businesses?

Yes

no

don't know

c) All tenant's businesses?

Yes

no

don't know

d) Neighboring properties?

Yes

no

don't know

26) Have you or any previous owner ever been issued a hazardous waste generator's identification number for the property or have a permit for treatment, storage or disposal of hazardous materials?

Yes

no

don't know

27) Please state all licenses and permits which you, your business, or any tenant possesses or is required to have for treatment, storage or disposal of hazardous materials or relating to environmental law matters, including any pending applications?

Licenses: _____

28) Are you or any of your property currently, ever have been, or are anticipated to be, the subject of a letter of non-compliance, administrative, legal enforcement, or any other action or actions by any federal, state, or local government agency relating to environmental laws, permits, orders, or other requirements?

Yes

no

don't know

If yes, please describe: _____

IMPORTANT!!
CLIENT/USER RESPONSIBILITIES
FOR PHASE I ENVIRONMENTAL SITE ASSESSMENTS

ASTM E 1527-13 and the All Appropriate Inquiry Rule at 40 CFR Part 312 impose upon the User of the Phase I Environmental Site Assessment the responsibility for performing certain tasks and providing certain information to the environmental professional to help identify the possibility of *recognized environmental conditions* in connection with the property. The “User” is any person seeking to use the Phase I Environmental Site Assessment to be potentially eligible for the Landowner Liability Protections under the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and may include a potential purchaser, tenant, lender or property manager of the property.

Attached for your action is a “*Phase I Assessment User Questionnaire*” which is designed to provide you with a concise list of the tasks and information that you, and any other User, must perform and/or provide to us in connection with this Phase I Environmental Site Assessment. We ask that each User (you and each party who intends to rely on this Phase I Environmental Site Assessment) complete the Questionnaire and return it to us as soon as possible so that the information may be timely considered by us as we assess the property. If you desire for us to arrange for the user-required review of land title or judicial records for environmental liens and activity/use limitations associated with the property (Item 1 on the Questionnaire), that request must be set forth in your Request for Phase I Assessment.

It is important to understand that the failure perform the user-required tasks and provide the information in the Questionnaire will be identified as a “data gap” in our report and could jeopardize our ability to form an opinion about whether recognized environmental conditions exist at the property. It could also jeopardize the User’s ability to meet the threshold “all appropriate inquiry” requirement for establishing the innocent purchaser, contiguous property owner or bona fide prospective purchaser defenses to liability (collectively, Landowner Liability Protections) under CERCLA.

Phase I Assessment User Questionnaire

The information in this User Questionnaire is prepared and provided by the *user* to the environmental professional pursuant to 40 CFR 312.22. Pursuant to ASTM E 1527-13, the "user" is the party seeking to complete the environmental site assessment of the property and also any person seeking to establish one or more of the Landowner Liability Protections (LLPs) under CERCLA. A user may include, without limitation, a potential purchaser or potential tenant of the property, a lender or a property manager.

The information on this Questionnaire must be performed and/or provided by the User of the Phase I Assessment in order to potentially qualify for one of the *Landowner Liability Protections* under the Comprehensive Environmental Response Compensation and Liability Act of 1980, as amended.

PERSON COMPLETING QUESTIONNAIRE: Lucille Baranko

SUBJECT PROPERTY (address): 25951 Williamson Lane, Kasilof, AK

USER TYPE (purchaser, tenant, lender): purchaser

* Note: Each person or entity that will rely on this Phase I ESA is considered a "User" and must also provide the information requested below. Make additional copies of this form for any additional Users.

**** (1). Environmental cleanup liens, institutional controls and engineering controls that are filed or recorded against the site (40 CFR 312.25; ASTM Section 6.2).**

Are there any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law? Yes No If yes, please describe.

Are there any institutional controls (such as land use restrictions) or engineering controls (such as cap or engineered barriers) that are in place at the site and/or have been filed or recorded in land records or a registry under federal, tribal, state or local law? Yes No If yes, please describe.

**** Important Note:** A search for environmental cleanup liens filed or recorded against the property is required, but is not the responsibility of the environmental professional. If you do not include in your Request for Phase I Assessment that Shannon & Wilson arrange for this activity, then you should engage a title company or other title professional for a comprehensive review of land title and judicial records for evidence of cleanup liens as well as any institutional or engineering controls recorded against the property. Please provide us with copies of surveys, chain of title and any other relevant land records obtained by your review. The ASTM Phase I Standard indicates that only the User commissioning the Phase I ESA must perform this task.

(2) **Specialized knowledge or experience of the person seeking to qualify for the Landowner Liability Protections (LLPs) (40 CFR 312.28; ASTM Section 6.3).**

Do you have any specialized knowledge or experience in connection with the property or nearby properties relevant to environmental matters? (For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?)

Yes / No

If you do have such knowledge or experience, please describe.

(3) **Relationship of the purchase price to the fair market value of the property if it were not contaminated (40 CFR 312.29; ASTM Section 6.5).**

If the transaction at issue involves the purchase of the property, does the proposed purchase price for this property reasonably reflect the fair market value of the property? Yes / No / NA

If you conclude that the purchase price is less than the fair market value, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property? Yes / No / NA

After such consideration, do you have reason to believe that the lower price is because of real or perceived contamination at the property? Yes / No / NA

(4) **Commonly known or reasonably ascertainable information about the property (40 CFR 312.30; ASTM Section 6.6).**

Are you aware of commonly known or reasonably ascertainable information about the property or community that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example:

Do you have information about the past uses of the property or adjoining property? Yes / No
If yes, please describe.

Do you have information about specific chemicals that are present or once were present at the property? Yes / No
If yes, please describe.

Do you know of any spills or other releases of petroleum products, oil, chemicals, solvents or other hazardous materials at the property or adjoining property? Yes/ **No**
If yes, please describe and/or attach copies of relevant documents/reports.

Do you know of any environmental cleanups or investigations that have taken place at the property or adjoining property? Yes/ **No**
If yes, please describe and/or attach copies of relevant documents/reports.

Do you have any environmental reports, permits, notices of violation or other documents concerning environmental matters at the property? Yes/ **No**
If yes, please attach copies.

- (5) **The degree of obviousness of the presence or likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31);**

Based on your knowledge and experience related to the property or the community, are you aware of any obvious indicators pointing to the presence or likely presence of contamination at the property? **Yes** / No
If yes, please describe.

oil drums present on site.

- (6) **The purpose for the Phase I Environmental Site Assessment (ASTM Section 6.7).**

Is the purpose for this Phase I to potentially qualify for the Landowner Liability Protections under CERCLA? Yes/ **No**

If not, what is the purpose for this Phase I?

Required by the state of Alaska.

- (7) Although you are not required to obtain any of the following documents, please provide us with copies of any of the following documents that you may already have in your possession or could easily obtain for our use.

ALTA Survey showing the boundary of the Property
Previous Environmental Site Assessment Reports (Phase I and/or Phase II reports)
Environmental Compliance Audit Reports
Environmental Permits (air, wastewater, stormwater, etc.)
Underground and Aboveground Storage Tank Registrations
Tank Removal or Investigation Reports
Governmental Notices relating to alleged violation of environmental laws

APPENDIX B
OWNERSHIP DOCUMENTS

QUITCLAIM DEED

Transferor, Michael P. McLane, states that he is the sole purchaser from the State of Alaska of certain property identified as Parcel No. 6 at Auction No. 256, Alaska Department of Natural Resources. Transferor has agreed to quitclaim to transferee any portion of such land that may overlap or encroach upon transferee's property. Therefore, transferor, acknowledging receipt of valuable and sufficient consideration, does remise, release and forever quitclaim unto Ida M. Trujillo, individually and as personal representative of the ^{Box 18, Kasilot, AK. 99610} Estate of Eddie C. Trujillo, real property located in the Third Judicial District, more particularly described in "Exhibit A" attached hereto and incorporated herein, with all improvements, fixtures and appurtenances thereunto belonging.

IN WITNESS WHEREOF, the Transferor has executed this instrument the 9 day of MARCH, 1981.

Michael P. McLane
Michael P. McLane

STATE OF ALASKA)
)
Third Judicial District)

On the 9th day of March, 1981, Michael P. McLane, known to me as the person whose name is subscribed to the foregoing instrument, personally appeared before me, stated that he was familiar with the contents thereof, and acknowledged to me that he executed the same. IN WITNESS WHEREOF, I have set my hand and affixed my official seal the date specified in this certificate.

Terry A. Black
Notary Public, State of Alaska
Residing at KENAI
Commission expires 2-23-82



All of the following described real property located in the Third Judicial District, State of Alaska, Kenai Recording District:

PARCEL #1: Commencing from the U.S.G.L.O. E 1/16 corner monument common to Sections 12 and 13, Township 3 North, Range 12 West, which is also the true point of beginning for the survey of this property, proceed North $89^{\circ}56'$ East along the section line common to Sections 12 and 13 for a distance of 390.00 feet to Corner #1; thence North $0^{\circ}04'$ West 300.00 feet to Corner #2; thence South $89^{\circ}56'$ West 893.00 feet to Corner #3, which is on the bank of the Kasilof River at mean high tide; thence proceed South $21^{\circ}22'$ East along the meander line of the Kasilof River at mean high tide for a distance of 322.05 feet to Corner #4, which is also on the bank of the Kasilof River, at a point of mean high tide; thence North $89^{\circ}56'$ East along the section line common to Sections 12 and 13, a distance of 386.00 feet to the East 1/16 corner common to Sections 12 and 13, and the true Point of Beginning.

PARCEL #2: Commencing from the U.S.G.L.O. East 1/16th corner monument common to Section 12 and 13, Township 3 North, Range 12 West, of the Seward Meridian, Alaska, this being the true Point of Beginning; thence North $89^{\circ}56'$ East, along the section line common to Sections 12 and 13, 390.00 feet to Corner #1, found 3/4" iron pipe; thence South $0^{\circ}04'$ East 300.00 feet to Corner #2, set 1/2' steel tube with cap stamped Property Corner, 610-S; thence South $89^{\circ}56'$ West, 722.95 feet to Corner #3, a point on the meander line of the mean high tide mark of the Kasilof River, set 1/2" x 17" iron rod; thence downstream along the said MHTM of the Kasilof River on the following, North $2^{\circ}38'$ East, 176.10 feet; thence North $27^{\circ}02'$ West, 138.90 feet to Corner #4, the point of intersection with said section line common to Sections 12 and 13; thence North $89^{\circ}56'$ East, along said section line 387.61 feet to the East 1/16th corner common to Sections 12 and 13, and the true Point of Beginning, situated within the Government Lot One (1), Section 13, Township 3 North, Range 12 West, of the Seward Meridian, Alaska.

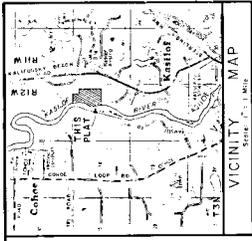
81-001551

1100

RECORDED-FILED
KENAI REC.
DISTRICT

MAR 9 2 08 PM '81

REQUESTED BY *Ida Louville*ADDRESS *Box 18, Kasilof*
3409 99670



NOTARY ACKNOWLEDGMENT
FOR: Linda M. Trujillo
Subscribed and sworn before me this 1st day of February, 1988.
My commission expires: 11/27/91
Notary Public for the State of Alaska

NOTARY ACKNOWLEDGMENT
FOR: Linda S. McLennan
Subscribed and sworn before me this 22nd day of February, 1988.
My commission expires: 11/27/91
Notary Public for the State of Alaska

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SPECIAL NOTE
Tract A as shown herein is property owned by Linda M. Trujillo which is contiguous with the east boundary of Lot 1 Block 1 Coal Country Estate Subdivision. This subdivision is being re-platted to eliminate the boundaries of A.S.L.S. 81-41. The original boundaries of said tract have not been changed by this plat. The purpose of this plat is to re-plat the boundaries and restrictions of Coal Creek Country Estates Subdivisions.

CERTIFICATE OF APPROVAL BY THE ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
This subdivision has been reviewed in accordance with 18 AAC 75.085 and is approved, subject to any note restrictions.
APPROVED: _____ DATE: 2/22/88
Signature: _____

CERTIFICATE OF APPROVAL BY THE ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
This subdivision has been reviewed in accordance with 18 AAC 75.085 and is approved, subject to any note restrictions.
APPROVED: _____ DATE: 2/22/88
Signature: _____

CERTIFICATE OF APPROVAL BY THE ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
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Signature: _____

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APPROVED: _____ DATE: 2/22/88
Signature: _____

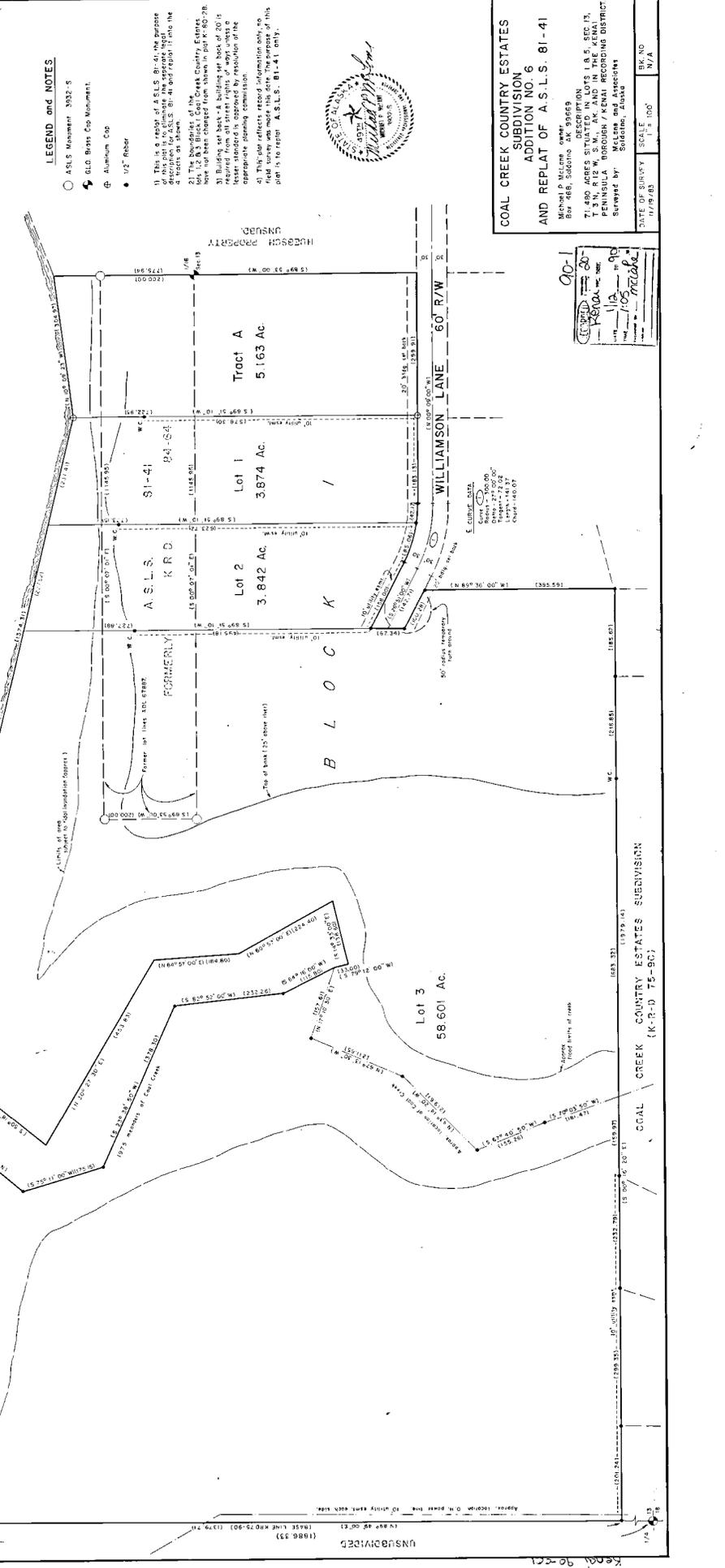
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Signature: _____



COAL CREEK COUNTRY ESTATES ADDITION NO. 6 AND REPLAT OF A.S.L.S. 81-41
Map No. 986, Subdiv. AK 93669
T. 36 N. R. 12 W. S. 1/4 AC. IN THE KENAI PENINSULA BOROUGH / KENAI RECORDING DISTRICT
Surveyed by: Miller and Associates
Subdiv. 986
Scale: 1" = 1/2 Mile
Date of Survey: 1/25/88
BK. NO. N/A

STATE OF ALASKA NOTARY PUBLIC
FOR: Linda M. Trujillo
Subscribed and sworn before me this 1st day of February, 1988.
My commission expires: 11/27/91
Notary Public for the State of Alaska

STATE OF ALASKA NOTARY PUBLIC
FOR: Linda S. McLennan
Subscribed and sworn before me this 22nd day of February, 1988.
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THIS SPACE PROVIDED FOR RECORDER'S USE:
BOOK **0475** PAGE **128**

6354

WHEN RECORDED RETURN TO
Name VERNON K. KIMBROUGH, JR. & ANN R. KIMBROUGH
Address 1109 COGGINS ROAD
City, State, ZIP NEWNAN, GA 30263

STATUTORY WARRANTY DEED

THE GRANTOR IDA M. TRUJILLO, AN UNMARRIED PERSON
P.O. BOX 18 KASILOF, ALASKA 99610

for and in consideration of TEN DOLLARS (\$10.00) AND OTHER VALUABLE CONSIDERATIONS

in hand paid, conveys and warrants to VERNON K. KIMBROUGH, JR. AND ANN R. KIMBROUGH, HUSBAND
AND WIFE 1109 COGGINS ROAD NEWNAN, GA. 30263
the following described real estate, situated in the KENAI Recording District THIRD Judicial

District, State of Alaska:

TRACT "A", COAL CREEK COUNTRY ESTATES SUBDIVISION, ADDITION NO. 6 AND REPLAT OF ALASKA STATE LAND SURVEY 84-41, ACCORDING TO PLAT NO. 90-1, IN THE KENAI RECORDING DISTRICT, THIRD JUDICIAL DISTRICT, STATE OF ALASKA.

SUBJECT TO TAXES, EASEMENTS, COVENANTS, RESTRICTIONS, RESERVATIONS AND RIGHTS OF WAY OF RECORD, IF ANY.

95-9470
KENAI REC 15
DISTRICT
REQUESTED BY SET

Dated 11/30/95, 19
IDA M. TRUJILLO

'95 NOV 30 AM 9 55

STATE OF ALASKA

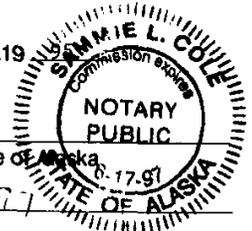
KENAI Recording District)
THIRD Judicial District) ss.

On this day personally appeared before me: IDA M. TRUJILLO

to me known to be the individual described in and who executed the within and foregoing instrument, and acknowledged that
SHE signed the same as HER free and voluntary
act and deed, for the uses and purposes therein mentioned.

GIVEN under my hand and official seal this 27th day of NOVEMBER 1995

Sammie L. Cove
Notary Public in and for the State of Alaska
My Commission Expires: June 17, 1997



APPENDIX C
SITE PHOTOGRAPHS

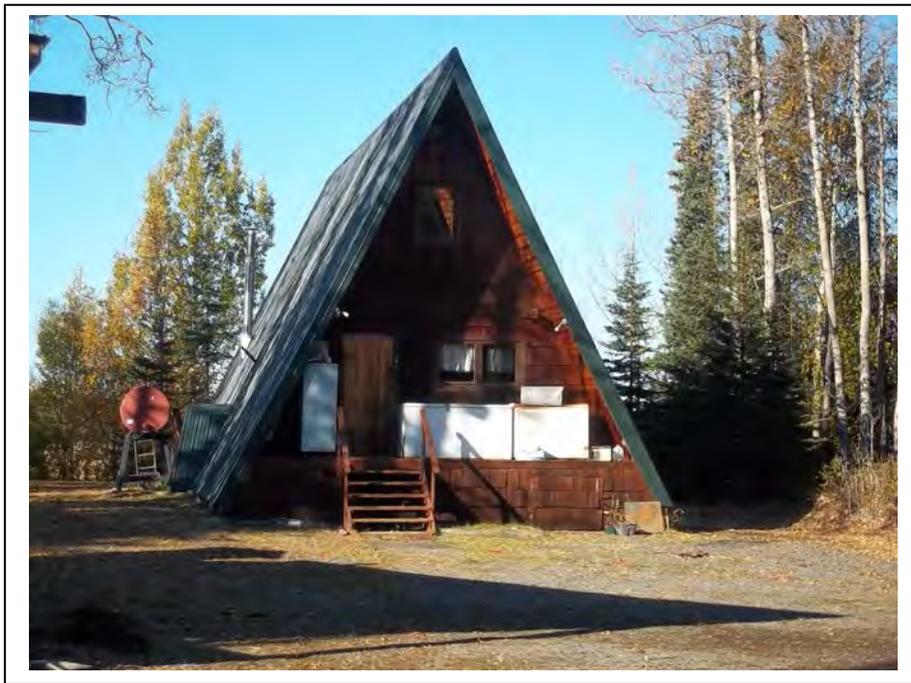


Photo 1: Exterior of the Property's residential structure; looking west. (September 30, 2014)



Photo 2: Utility closet in the residential structure. (September 30, 2014)

25951 Williamson Lane
Kasilof, Alaska

PHOTOS 1 AND 2

November 2014

32-1-17687



SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

C-1



Photo 3: The Property's residential structure is serviced by heating oil stored in an aboveground storage tank; looking northwest. (September 30, 2014)

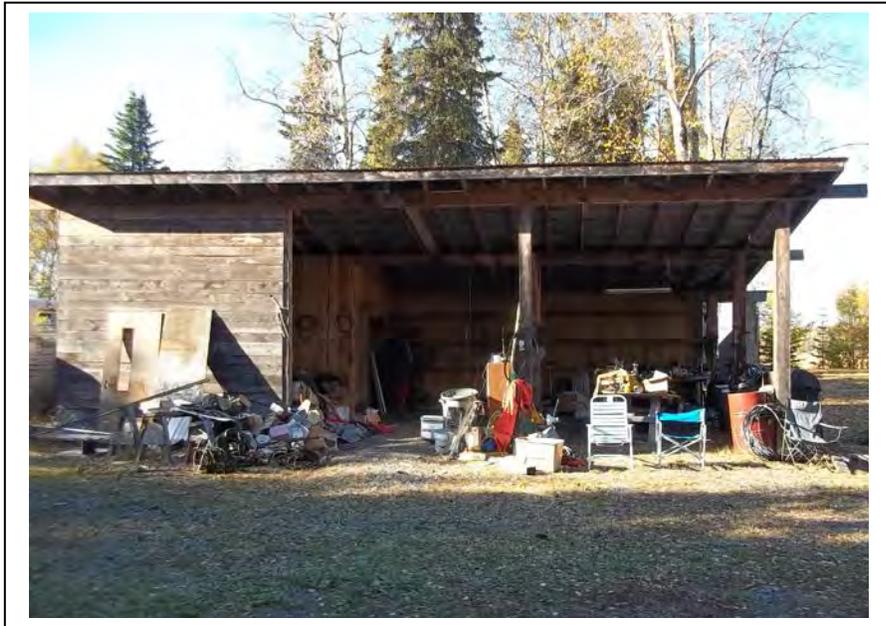


Photo 4: An outbuilding/shed is located southeast of the Property's residential structure; looking west. Boring EB1 was advanced outside this structure approximately 5 feet from the orange drum. (September 30, 2014)

25951 Williamson Lane
Kasilof, Alaska

PHOTOS 3 AND 4

November 2014

32-1-17687



SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

C-2

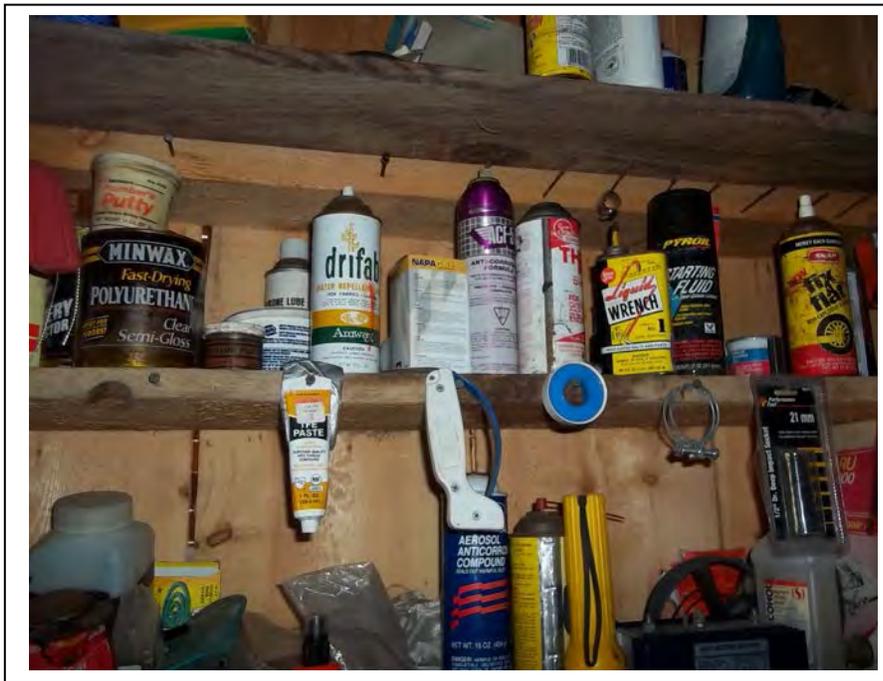


Photo 5: Wood finishes and mechanical fluids, including lube oil and starter fluid, stored in the outbuilding/shed. (September 30, 2014)

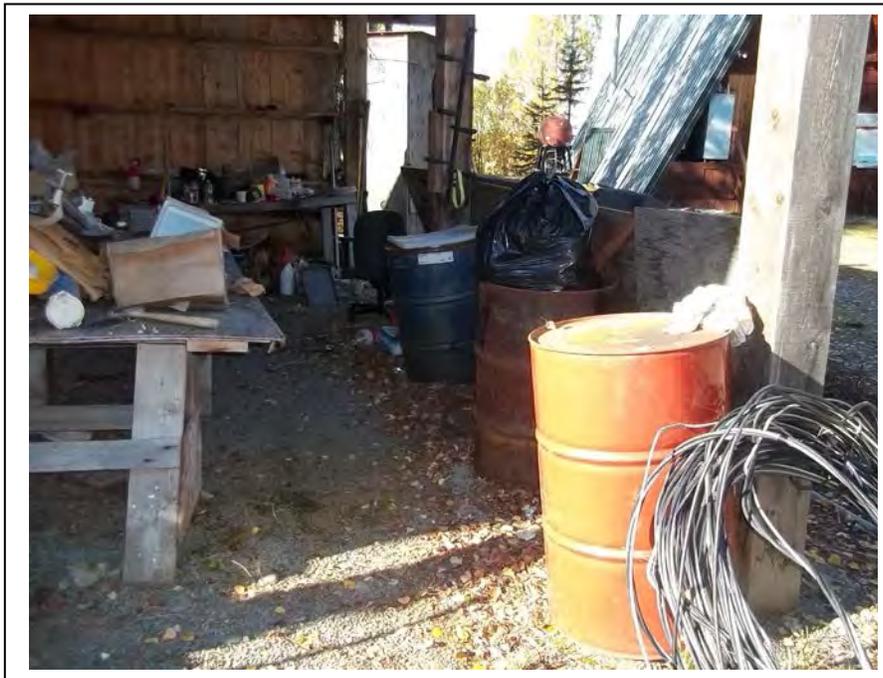


Photo 6: Three 55-gallon drums were observed in the outbuilding/shed. (September 30, 2014)

25951 Williamson Lane
Kasilof, Alaska

PHOTOS 5 AND 6

November 2014

32-1-17687



SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

C-3



Photo 7: Surface stains observed near the empty gas cans and drum labeled “2-cycle oil” in the outbuilding/shed. Surface soil Sample SS3 was collected from this area. (September 30, 2014)



Photo 8: Surface stains were observed on a wood surface in the outbuilding/shed. (September 30, 2014)

25951 Williamson Lane
Kasilof, Alaska

PHOTOS 7 AND 8

November 2014

32-1-17687



SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

C-4



Photo 9: Surface stains observed on the unpaved surfaces in and around the outbuilding/shed; looking west. (September 30, 2014)



Photo 10: Surface stains observed on the unpaved surfaces in and around the outbuilding/shed; looking south. (September 30, 2014)

25951 Williamson Lane
Kasilof, Alaska

PHOTOS 9 AND 10

November 2014

32-1-17687



SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

C-5



Photo 11: Due to the amount of items stored within the outbuilding/shed, the entire ground surface could not be assessed. (September 30, 2014)



Photo 12: Looking west, eleven vehicle batteries were observed in a storage area adjacent east of the outbuilding/shed during the July 18, 2012 site visit. During the September 30, 2014 site visit, one battery was stored in this area. (September 30, 2014).

25951 Williamson Lane
Kasilof, Alaska

PHOTOS 11 AND 12

November 2014

32-1-17687



SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

C-6



Photo 13: Two overturned, empty 55-gallon drums were observed west of the outbuilding/shed; looking northwest. (September 30, 2014)



Photo 14: A storage shed containing approximately 25 fuel containers is located south of the residential structure. (September 30, 2014)

25951 Williamson Lane
Kasilof, Alaska

PHOTOS 13 AND 14

November 2014

32-1-17687



SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

C-7



Photo 15: A burn area is located south of the outbuilding/shed; looking west. Surface soil Sample SS1 was collected from the burn area. (September 30, 2014)



Photo 16: An unused vehicle is located between the outbuilding/shed and the burn area; looking southwest. (September 30, 2014)

25951 Williamson Lane
Kasilof, Alaska

PHOTOS 15 AND 16

November 2014

32-1-17687



SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

C-8



Photo 17: Looking southwest at various discarded materials stored on the east-central portion of the Property. Boring EB2 was advanced in the foreground of the photo. (September 30, 2014)



Photo 18: Looking west at various discarded materials stored on the northeast portion of the Property. Boring EB4 was advanced in this vicinity (September 30, 2014)

25951 Williamson Lane
Kasilof, Alaska

PHOTOS 17 AND 18

November 2014

32-1-17687



SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

C-9

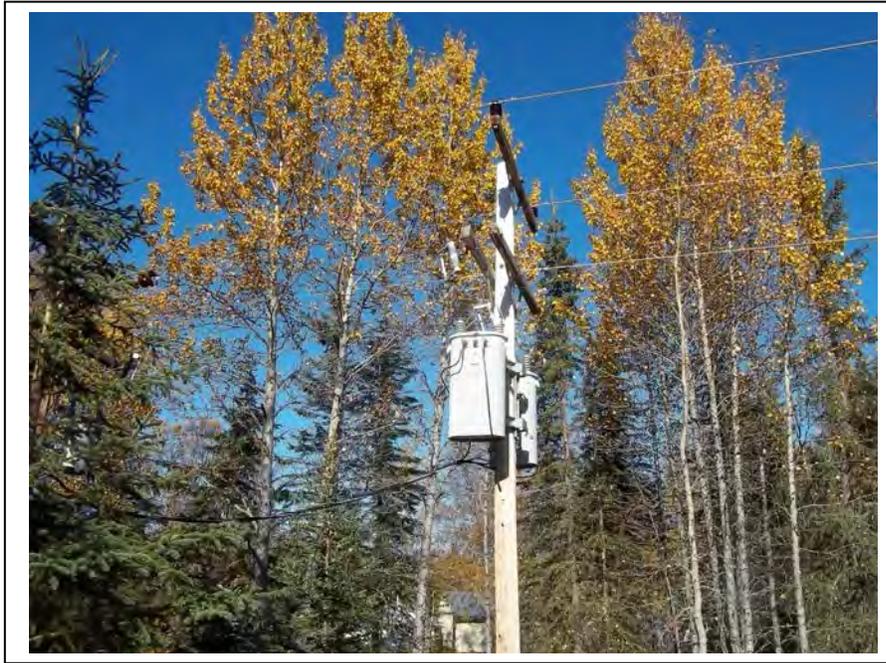


Photo 19: Five pole-mounted transformers are located along the northern Property boundary; looking north. (September 30, 2014)



Photo 20: The Property is serviced by a private drinking water well. (September 30, 2014)

25951 Williamson Lane
Kasilof, Alaska

PHOTOS 19 AND 20

November 2014

32-1-17687



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C-10



Photo 21: Looking south, Sample SS1 was collected from the burn area. (September 30, 2014)

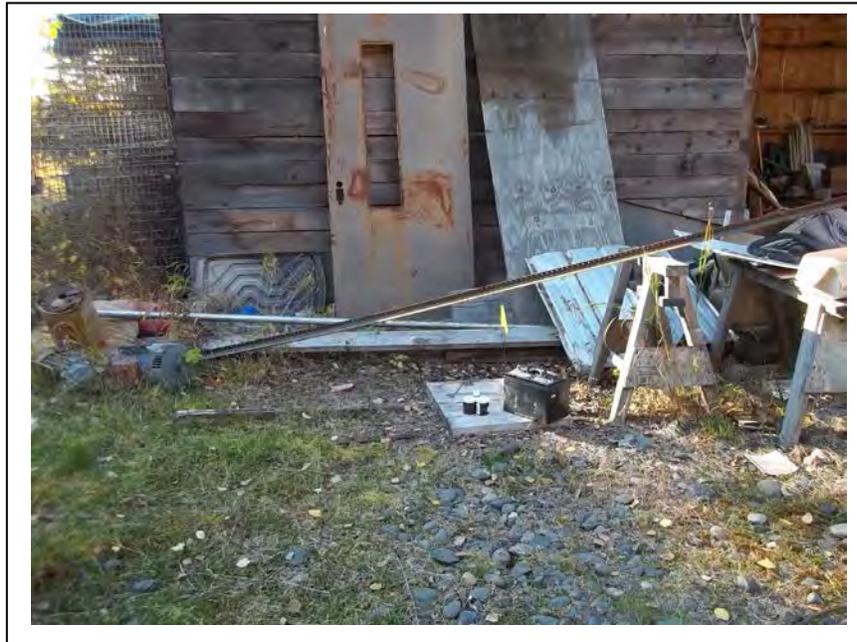


Photo 22: Looking west, Sample SS2 was collected from the battery storage area identified in the 2012 Phase I ESA. (September 30, 2014)

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PHOTOS 21 AND 22

November 2014

32-1-17687



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C-11

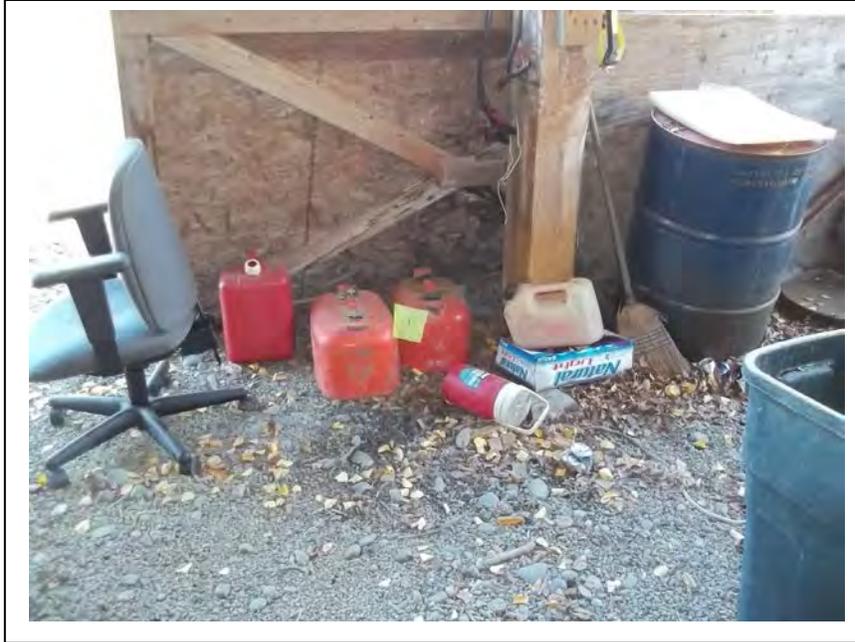


Photo 23: Looking north, Sample SS3 was collected from surface staining observed near the 55-gallon drums and empty fuel containers in the outbuilding/shed. (September 30, 2014)



Photo 24: Looking west, Sample SS4 was collected from beneath the east end of the AST. Boring EB3 was advanced approximately three feet south of Sample SS4. (September 30, 2014)

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PHOTOS 23 AND 24

November 2014

32-1-17687

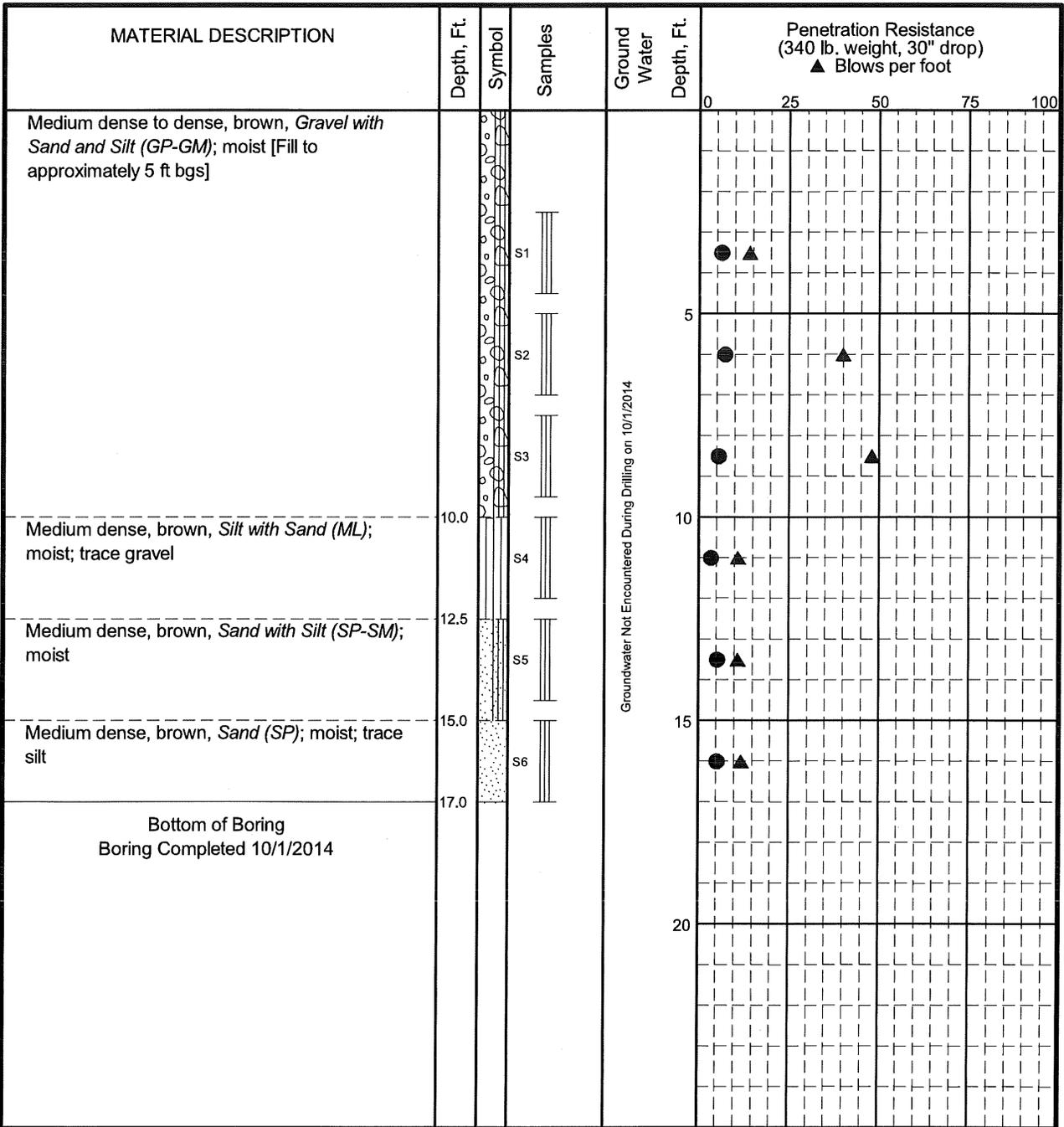


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C-12

APPENDIX D
BORING LOGS

ENVIRONMENTAL LOG BORING LOGS.GPJ S&W_GEO1.GDT 11/6/14



Groundwater Not Encountered During Drilling on 10/1/2014

LEGEND

- * Sample not recovered
- III 3" O.D. Split Spoon Sample

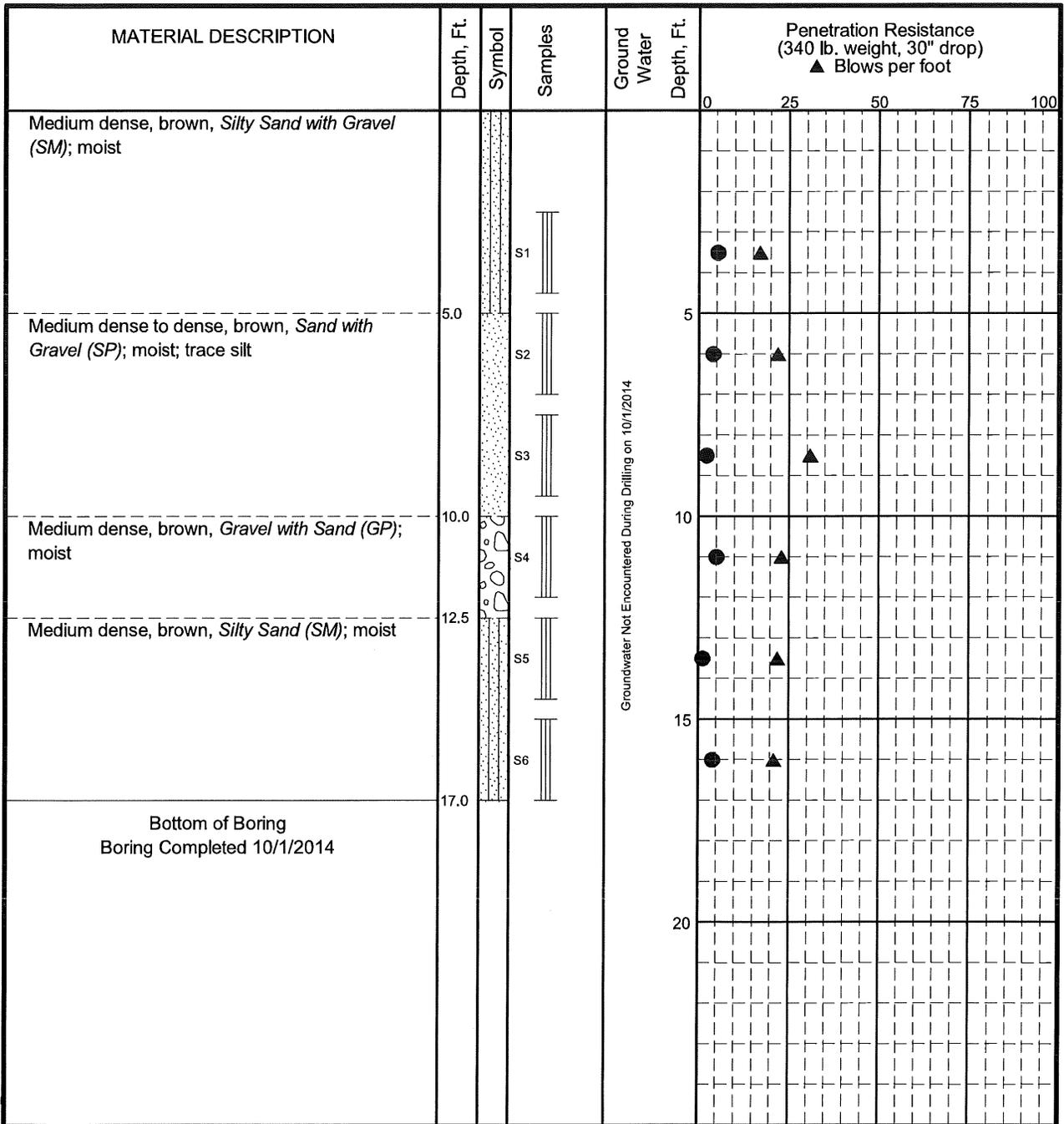
● PID Reading (ppm)

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

25951 Williamson Lane Kasilof, Alaska	
LOG OF BORING EB1	
November 2014	32-1-17687
SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	Fig. D-1

ENVIRONMENTAL LOG ENVIRONMENTAL BORING LOGS.GPJ S&W GEO1.GDT 11/6/14



LEGEND

- * Sample not recovered
- III 3" O.D. Split Spoon Sample

● PID Reading (ppm)

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

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Kasilof, Alaska

LOG OF BORING EB2

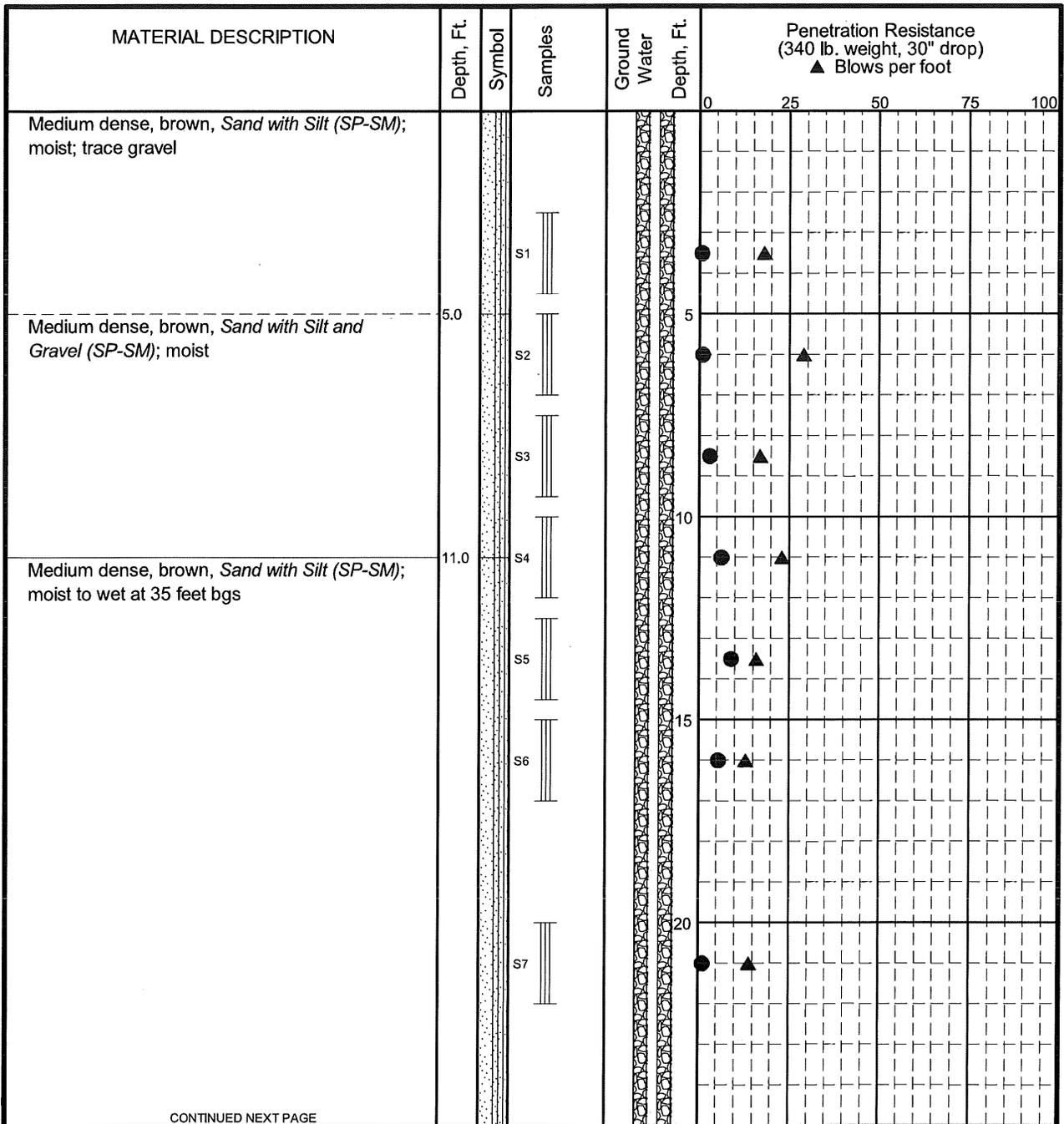
November 2014

32-1-17687

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Geotechnical and Environmental Consultants

Fig. D-2

ENVIRONMENTAL LOG ENVIRONMENTAL BORING LOGS.GPJ S&W GEO1.GDT 11/17/14



CONTINUED NEXT PAGE

LEGEND

- * Sample not recovered
- III 3" O.D. Split Spoon Sample

- ▽ Ground Water Level At Time Of Drilling
- ▼ Static Water Level

● PID Reading (ppm)

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

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Kasilof, Alaska

LOG OF BORING EB3

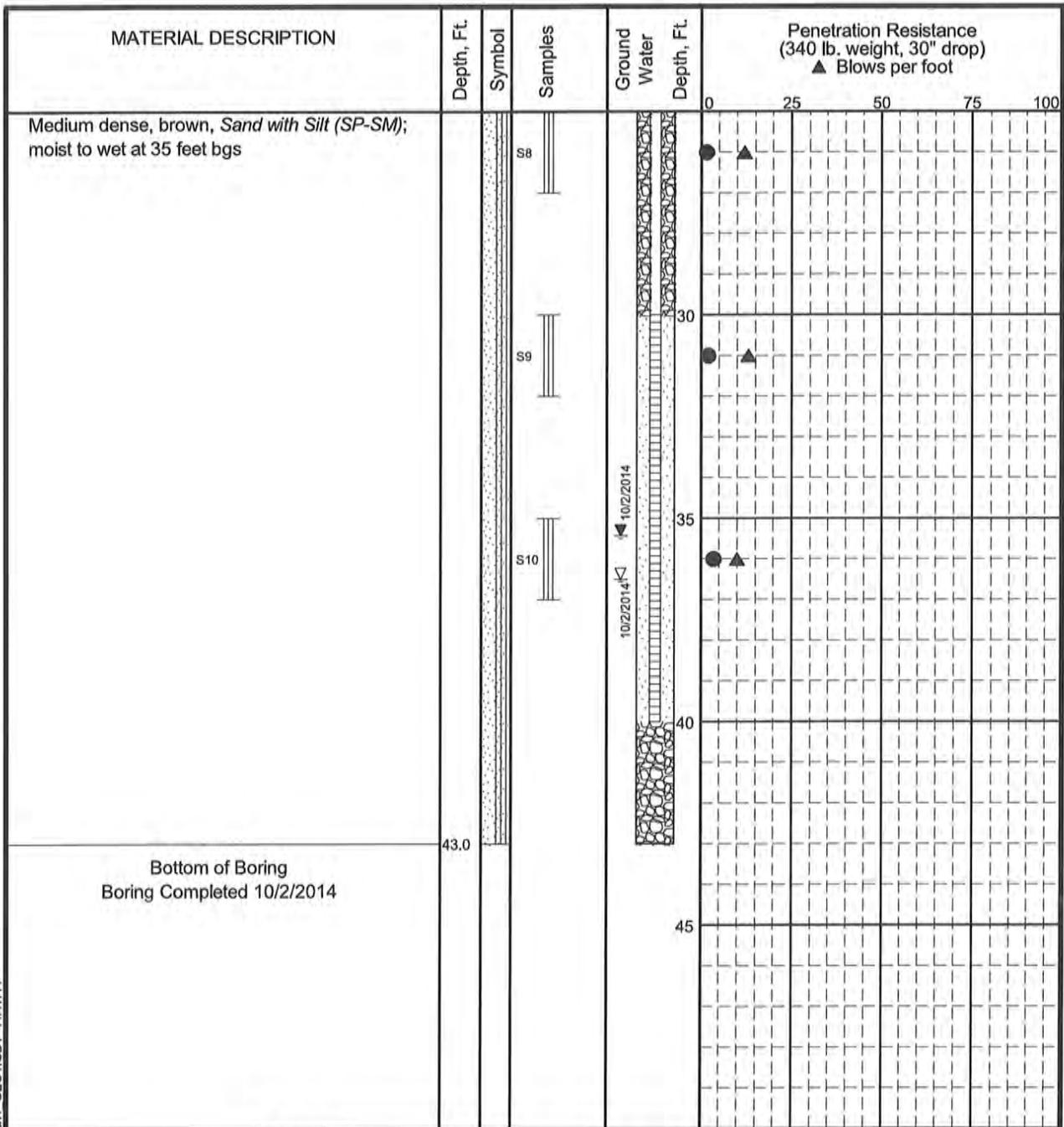
November 2014

32-1-17687

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Geotechnical and Environmental Consultants

Fig. D-3
Sheet 1 of 2

ENVIRONMENTAL LOG ENVIRONMENTAL BORING LOGS.GPJ S&W GEO1.GDT 11/17/14



LEGEND

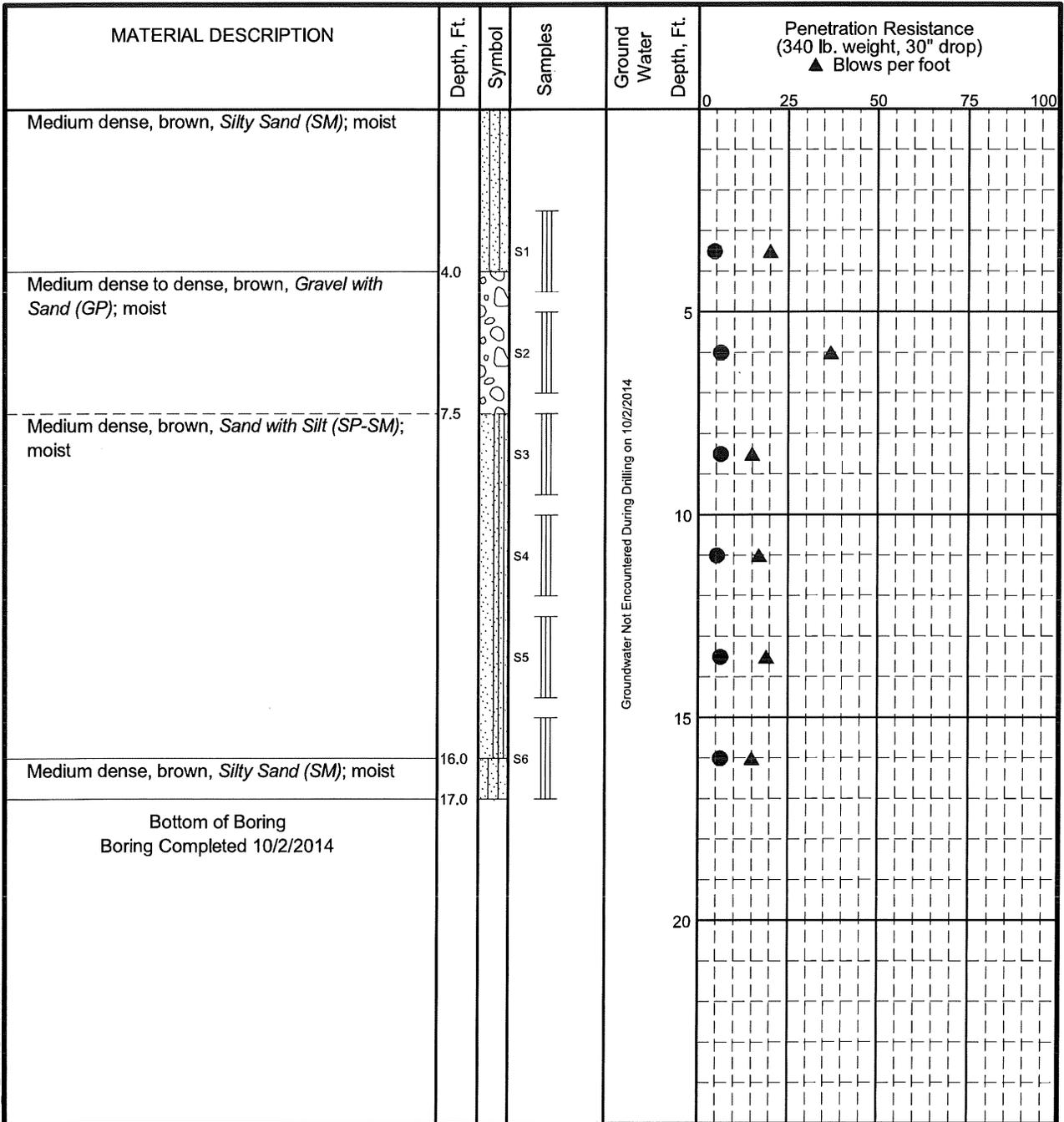
- * Sample not recovered
- III 3" O.D. Split Spoon Sample
- ∇ Ground Water Level At Time Of Drilling
- ▼ Static Water Level
- PID Reading (ppm)

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

25951 Williamson Lane Kasilof, Alaska	
LOG OF BORING EB3	
November 2014	32-1-17687
SHANNON & WILSON, INC. <small>Geotechnical and Environmental Consultants</small>	Fig. D-3 Sheet 2 of 2

ENVIRONMENTAL LOG ENVIRONMENTAL BORING LOGS.GPJ S&W GEO1.GDT 11/6/14



LEGEND

- * Sample not recovered
- 3" O.D. Split Spoon Sample

● PID Reading (ppm)

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

25951 Williamson Lane
Kasilof, Alaska

LOG OF BORING EB4

November 2014

32-1-17687

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. D-4

APPENDIX E

RESULTS OF ANALYTICAL TESTING BY SGS NORTH AMERICA INC. OF

ANCHORAGE, ALASKA

AND

ADEC LABORATORY DATA REVIEW CHECKLIST

Laboratory Report of Analysis

To: Shannon & Wilson, Inc.
5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907)433-3223

Report Number: **1144938** [Amended report \(see narrative\)](#)

Client Project: **32-1-17687 25951 Williamson**

Dear Dan McMahon,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Victoria at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.


SGS North America Inc.
Environmental Services – Alaska Division
Project Manager

Victoria Pennick

2014.10.31

14:48:23 -08'00'

Victoria Pennick
Project Manager
Victoria.Pennick@sgs.com

Date



Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
SGS Project: **1144938**
Project Name/Site: **32-1-17687 25951 Williamson**
Project Contact: **Dan McMahon**

Refer to sample receipt form for information on sample condition.

10/29/14 VLP: This report has been amended to include full list VOCs on sample 1144938-011 (TB).

10/31/14 VLP: this report has been amended to include full list VOCs on sample 1144938-010 (TMW1).

17687-SS1 (1144938005) PS

8290 - Dioxins were analyzed by SGS of Wilmington, NC.

8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

AK102/103 - Possible lube oil pattern is present.

17687-SS2 (1144938006) PS

AK102/103 - Unknown hydrocarbon with several peaks is present.

17687-SS3 (1144938007) PS

8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

8270D SIM - Surrogate (2-fluorobiphenyl and terphenyl-d14) recovery is outside of QC criteria due to sample dilution.

AK102/103 - 5a-Androstane (surrogate) recovery is outside QC criteria due to sample dilution.

AK102/103 - Possible lube oil pattern is present.

17687-SS4 (1144938008) PS

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference.

8260B - 1,2-dichloroethane-D4 (surrogate) recovery does not meet QC criteria (biased high). The analytes associated with this surrogate were not detected above the LOQ.

8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

8270D SIM - Surrogate (2-fluorobiphenyl) recovery is outside of QC criteria due to sample dilution.

AK102 - The pattern is consistent with a weathered middle distillate.

1144972001MS#A G8 (1238802#) MS#A G8

8260B - MS/MSD recoveries for hexachlorobutadiene do not meet QC criteria. Refer to LCS for accuracy.

1144952001(1240677MS) (1238877) MS

8270D SIM - MS/MSD recovery for multiple analytes is outside of QC criteria. Refer to LCS for accuracy.

8270D SIM - Surrogate (2-fluorobiphenyl and terphenyl-d14) recovery is outside of QC criteria due to sample dilution.

8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

1144938001MSD (1238618) MSD

8260B - MS/MSD RPD for trichlorofluoromethane and trans-1,2-dichloroethene does not meet QC criteria. These analytes were not detected above the LOQ in the associated samples.

Print Date: 10/20/2014 8:32:49AM

Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
SGS Project: **1144938**
Project Name/Site: **32-1-17687 25951 Williamson**
Project Contact: **Dan McMahon**

1144952001(1240677MSD) (1238878) MSD

8270D SIM - MS/MSD recovery for multiple analytes is outside of QC criteria. Refer to LCS for accuracy.
8270D SIM - Surrogate (2-fluorobiphenyl) recovery is outside of QC criteria due to sample dilution.
8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 10/20/2014 8:32:49AM

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
8270D SIMS (PAH)				
1144938007	17687-SS3	XMS8322	Benzo[g,h,i]perylene	RP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Print Date: 10/31/2014 2:36:48PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.



Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
17687-EB1S2	1144938001	10/01/2014	10/03/2014	Soil/Solid (dry weight)
17687-EB2S1	1144938002	10/01/2014	10/03/2014	Soil/Solid (dry weight)
17687-EB3S5	1144938003	10/02/2014	10/03/2014	Soil/Solid (dry weight)
17687-EB4S2	1144938004	10/02/2014	10/03/2014	Soil/Solid (dry weight)
17687-SS1	1144938005	09/30/2014	10/03/2014	Soil/Solid (dry weight)
17687-SS2	1144938006	09/30/2014	10/03/2014	Soil/Solid (dry weight)
17687-SS3	1144938007	09/30/2014	10/03/2014	Soil/Solid (dry weight)
17687-SS4	1144938008	09/30/2014	10/03/2014	Soil/Solid (dry weight)
17687-STB	1144938009	09/30/2014	10/03/2014	Soil/Solid (dry weight)
17687-TMW1	1144938010	10/02/2014	10/03/2014	Water (Surface, Eff., Ground)
17687-WTB	1144938011	09/30/2014	10/03/2014	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIMS (PAH)	8270 PAH SIM Semi-Vol GC/MS Liq/Liq ext.
8270D SIMS (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
AK102	Diesel/Residual Range Organics Water
AK103	Diesel/Residual Range Organics Water
AK101	Gasoline Range Organics (S)
AK101	Gasoline Range Organics (W)
SW6020A	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G
SW8260B	VOC 8260 (S) Field Extracted
SW8260B	Volatile Organic Compounds (W) FULL

Print Date: 10/31/2014 2:36:51PM



Detectable Results Summary

Client Sample ID: **17687-EB1S2**

Lab Sample ID: 1144938001

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Residual Range Organics	20.2J	mg/Kg

Client Sample ID: **17687-EB2S1**

Lab Sample ID: 1144938002

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Residual Range Organics	21.7J	mg/Kg

Client Sample ID: **17687-EB3S5**

Lab Sample ID: 1144938003

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Residual Range Organics	12.2J	mg/Kg

Client Sample ID: **17687-EB4S2**

Lab Sample ID: 1144938004

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Residual Range Organics	11.6J	mg/Kg

Volatile Gas Chromatography/Mass Spectrom

Methylene chloride	23.1J	ug/Kg
P & M -Xylene	11.8J	ug/Kg
Toluene	11.3J	ug/Kg

Client Sample ID: **17687-SS1**

Lab Sample ID: 1144938005

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	392	mg/Kg
Residual Range Organics	1110	mg/Kg

Client Sample ID: **17687-SS2**

Lab Sample ID: 1144938006

Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	7.50	mg/Kg

Semivolatile Organic Fuels

Diesel Range Organics	16.3J	mg/Kg
Residual Range Organics	152	mg/Kg

Client Sample ID: **17687-SS3**

Lab Sample ID: 1144938007

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
2-Methylnaphthalene	31.0J	ug/Kg
Benzo[g,h,i]perylene	160	ug/Kg
Fluoranthene	163	ug/Kg
Naphthalene	76.3	ug/Kg
Pyrene	887	ug/Kg

Semivolatile Organic Fuels

Diesel Range Organics	3880	mg/Kg
Residual Range Organics	77300	mg/Kg

Volatile Fuels

Gasoline Range Organics	1.97J	mg/Kg
-------------------------	-------	-------

Volatile Gas Chromatography/Mass Spectrom

1,2,4-Trimethylbenzene	71.8	ug/Kg
1,3,5-Trimethylbenzene	32.2J	ug/Kg
Benzene	31.5	ug/Kg
Chloromethane	13.7J	ug/Kg
Ethylbenzene	15.4J	ug/Kg
o-Xylene	37.8	ug/Kg
P & M -Xylene	68.7J	ug/Kg
Toluene	524	ug/Kg
Xylenes (total)	107	ug/Kg

Print Date: 10/31/2014 2:36:52PM

SGS North America Inc.

200 West Potter Drive, Anchorage, AK 99518
 t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group

Detectable Results Summary

Client Sample ID: **17687-SS4**

Lab Sample ID: 1144938008

Polynuclear Aromatics GC/MS

Semivolatile Organic Fuels

Volatile Fuels

Volatile Gas Chromatography/Mass Spectrom

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Phenanthrene	34.6J	ug/Kg
Diesel Range Organics	2680	mg/Kg
Residual Range Organics	68.3	mg/Kg
Gasoline Range Organics	36.8	mg/Kg
1,2,4-Trimethylbenzene	48.8	ug/Kg
1,3,5-Trimethylbenzene	115	ug/Kg
4-Isopropyltoluene	279	ug/Kg
o-Xylene	11.1J	ug/Kg
P & M -Xylene	20.8J	ug/Kg
sec-Butylbenzene	56.5	ug/Kg
Toluene	9.31J	ug/Kg
Xylenes (total)	31.9J	ug/Kg

Client Sample ID: **17687-TMW1**

Lab Sample ID: 1144938010

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Residual Range Organics	0.257J	mg/L



Results of 17687-EB1S2

Client Sample ID: 17687-EB1S2
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938001
Lab Project ID: 1144938

Collection Date: 10/01/14 15:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 94.9
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated values.

Batch Information

Analytical Batch: XMS8322
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 10/07/14 22:08
Container ID: 1144938001-A

Prep Batch: XXX32138
Prep Method: SW3550C
Prep Date/Time: 10/06/14 09:19
Prep Initial Wt./Vol.: 22.648 g
Prep Extract Vol: 1 mL



Results of 17687-EB1S2

Client Sample ID: 17687-EB1S2
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938001
Lab Project ID: 1144938

Collection Date: 10/01/14 15:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 94.9
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 10.5 U, 21.0, 6.52, mg/Kg, 1, 10/09/14 21:12

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane, 90.9, 50-150, %, 1, 10/09/14 21:12

Batch Information

Analytical Batch: XFC11622
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/09/14 21:12
Container ID: 1144938001-A

Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.054 g
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 20.2 J, 21.0, 6.52, mg/Kg, 1, 10/09/14 21:12

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62, 86.1, 50-150, %, 1, 10/09/14 21:12

Batch Information

Analytical Batch: XFC11622
Analytical Method: AK103
Analyst: MCM
Analytical Date/Time: 10/09/14 21:12
Container ID: 1144938001-A

Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.054 g
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB1S2

Client Sample ID: **17687-EB1S2**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938001
Lab Project ID: 1144938

Collection Date: 10/01/14 15:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 94.9
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.03 U	2.07	0.621	mg/Kg	1		10/04/14 05:03
Surrogates							
4-Bromofluorobenzene	105	50-150		%	1		10/04/14 05:03

Batch Information

Analytical Batch: VFC12155
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/14 05:03
Container ID: 1144938001-B

Prep Batch: VXX26572
Prep Method: SW5035A
Prep Date/Time: 10/01/14 15:05
Prep Initial Wt./Vol.: 73.11 g
Prep Extract Vol: 28.7194 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB1S2

Client Sample ID: 17687-EB1S2
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938001
Lab Project ID: 1144938

Collection Date: 10/01/14 15:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 94.9
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB1S2

Client Sample ID: 17687-EB1S2
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938001
Lab Project ID: 1144938

Collection Date: 10/01/14 15:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 94.9
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 17687-EB1S2

Client Sample ID: **17687-EB1S2**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938001
Lab Project ID: 1144938

Collection Date: 10/01/14 15:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 94.9
Location:

Results by Volatile Gas Chromatography/Mass Spectrometry

Batch Information

Analytical Batch: VMS14528
Analytical Method: SW8260B
Analyst: KCT
Analytical Date/Time: 10/06/14 18:24
Container ID: 1144938001-B

Prep Batch: VXX26581
Prep Method: SW5035A
Prep Date/Time: 10/01/14 15:05
Prep Initial Wt./Vol.: 73.11 g
Prep Extract Vol: 28.7194 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB2S1

Client Sample ID: 17687-EB2S1
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938002
Lab Project ID: 1144938

Collection Date: 10/01/14 16:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 90.9
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated values.

Batch Information

Analytical Batch: XMS8322
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 10/07/14 22:23
Container ID: 1144938002-A

Prep Batch: XXX32138
Prep Method: SW3550C
Prep Date/Time: 10/06/14 09:19
Prep Initial Wt./Vol.: 22.537 g
Prep Extract Vol: 1 mL



Results of 17687-EB2S1

Client Sample ID: 17687-EB2S1
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938002
Lab Project ID: 1144938

Collection Date: 10/01/14 16:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 90.9
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC11622
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/09/14 21:33
Container ID: 1144938002-A
Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.115 g
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC11622
Analytical Method: AK103
Analyst: MCM
Analytical Date/Time: 10/09/14 21:33
Container ID: 1144938002-A
Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.115 g
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:36:53PM



Results of **17687-EB2S1**

Client Sample ID: **17687-EB2S1**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938002
Lab Project ID: 1144938

Collection Date: 10/01/14 16:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 90.9
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.14 U	2.27	0.682	mg/Kg	1		10/04/14 05:22
Surrogates							
4-Bromofluorobenzene	103	50-150		%	1		10/04/14 05:22

Batch Information

Analytical Batch: VFC12155
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/14 05:22
Container ID: 1144938002-B

Prep Batch: VXX26572
Prep Method: SW5035A
Prep Date/Time: 10/01/14 16:05
Prep Initial Wt./Vol.: 77.745 g
Prep Extract Vol: 32.105 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB2S1

Client Sample ID: 17687-EB2S1
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938002
Lab Project ID: 1144938

Collection Date: 10/01/14 16:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 90.9
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB2S1

Client Sample ID: 17687-EB2S1
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938002
Lab Project ID: 1144938

Collection Date: 10/01/14 16:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 90.9
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of **17687-EB2S1**

Client Sample ID: **17687-EB2S1**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938002
Lab Project ID: 1144938

Collection Date: 10/01/14 16:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 90.9
Location:

Results by **Volatile Gas Chromatography/Mass Spectrometry**

Batch Information

Analytical Batch: VMS14528
Analytical Method: SW8260B
Analyst: KCT
Analytical Date/Time: 10/06/14 18:40
Container ID: 1144938002-B

Prep Batch: VXX26581
Prep Method: SW5035A
Prep Date/Time: 10/01/14 16:05
Prep Initial Wt./Vol.: 77.745 g
Prep Extract Vol: 32.105 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB3S5

Client Sample ID: 17687-EB3S5
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938003
Lab Project ID: 1144938

Collection Date: 10/02/14 09:25
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 93.6
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated data.

Batch Information

Analytical Batch: XMS8322
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 10/07/14 22:39
Container ID: 1144938003-A

Prep Batch: XXX32138
Prep Method: SW3550C
Prep Date/Time: 10/06/14 09:19
Prep Initial Wt./Vol.: 22.593 g
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB3S5

Client Sample ID: 17687-EB3S5
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938003
Lab Project ID: 1144938

Collection Date: 10/02/14 09:25
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 93.6
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC11622
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/09/14 21:54
Container ID: 1144938003-A
Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.209 g
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC11622
Analytical Method: AK103
Analyst: MCM
Analytical Date/Time: 10/09/14 21:54
Container ID: 1144938003-A
Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.209 g
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB3S5

Client Sample ID: **17687-EB3S5**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938003
Lab Project ID: 1144938

Collection Date: 10/02/14 09:25
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 93.6
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.01 U	2.03	0.608	mg/Kg	1		10/04/14 05:41
Surrogates							
4-Bromofluorobenzene	116	50-150		%	1		10/04/14 05:41

Batch Information

Analytical Batch: VFC12155
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/14 05:41
Container ID: 1144938003-B

Prep Batch: VXX26572
Prep Method: SW5035A
Prep Date/Time: 10/02/14 09:25
Prep Initial Wt./Vol.: 79.312 g
Prep Extract Vol: 30.0886 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB3S5

Client Sample ID: 17687-EB3S5
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938003
Lab Project ID: 1144938

Collection Date: 10/02/14 09:25
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 93.6
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB3S5

Client Sample ID: 17687-EB3S5
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938003
Lab Project ID: 1144938

Collection Date: 10/02/14 09:25
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 93.6
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of **17687-EB3S5**

Client Sample ID: **17687-EB3S5**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938003
Lab Project ID: 1144938

Collection Date: 10/02/14 09:25
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 93.6
Location:

Results by **Volatile Gas Chromatography/Mass Spectrometry**

Batch Information

Analytical Batch: VMS14528
Analytical Method: SW8260B
Analyst: KCT
Analytical Date/Time: 10/06/14 18:56
Container ID: 1144938003-B

Prep Batch: VXX26581
Prep Method: SW5035A
Prep Date/Time: 10/02/14 09:25
Prep Initial Wt./Vol.: 79.312 g
Prep Extract Vol: 30.0886 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB4S2

Client Sample ID: 17687-EB4S2
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938004
Lab Project ID: 1144938

Collection Date: 10/02/14 11:40
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 95.1
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated values.

Batch Information

Analytical Batch: XMS8322
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 10/07/14 22:54
Container ID: 1144938004-A

Prep Batch: XXX32138
Prep Method: SW3550C
Prep Date/Time: 10/06/14 09:19
Prep Initial Wt./Vol.: 22.581 g
Prep Extract Vol: 1 mL



Results of 17687-EB4S2

Client Sample ID: 17687-EB4S2
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938004
Lab Project ID: 1144938

Collection Date: 10/02/14 11:40
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 95.1
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC11622
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/09/14 22:14
Container ID: 1144938004-A
Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.107 g
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC11622
Analytical Method: AK103
Analyst: MCM
Analytical Date/Time: 10/09/14 22:14
Container ID: 1144938004-A
Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.107 g
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:36:53PM



Results of **17687-EB4S2**

Client Sample ID: **17687-EB4S2**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938004
Lab Project ID: 1144938

Collection Date: 10/02/14 11:40
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 95.1
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.810 U	1.62	0.485	mg/Kg	1		10/04/14 06:00
Surrogates							
4-Bromofluorobenzene	107	50-150		%	1		10/04/14 06:00

Batch Information

Analytical Batch: VFC12155
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/14 06:00
Container ID: 1144938004-B

Prep Batch: VXX26572
Prep Method: SW5035A
Prep Date/Time: 10/02/14 11:40
Prep Initial Wt./Vol.: 96.677 g
Prep Extract Vol: 29.7329 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB4S2

Client Sample ID: 17687-EB4S2
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938004
Lab Project ID: 1144938

Collection Date: 10/02/14 11:40
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 95.1
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of 17687-EB4S2

Client Sample ID: 17687-EB4S2
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938004
Lab Project ID: 1144938

Collection Date: 10/02/14 11:40
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 95.1
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of **17687-EB4S2**

Client Sample ID: **17687-EB4S2**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938004
Lab Project ID: 1144938

Collection Date: 10/02/14 11:40
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 95.1
Location:

Results by **Volatile Gas Chromatography/Mass Spectrometry**

Batch Information

Analytical Batch: VMS14528
Analytical Method: SW8260B
Analyst: KCT
Analytical Date/Time: 10/06/14 19:12
Container ID: 1144938004-B

Prep Batch: VXX26581
Prep Method: SW5035A
Prep Date/Time: 10/02/14 11:40
Prep Initial Wt./Vol.: 96.677 g
Prep Extract Vol: 29.7329 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS1

Client Sample ID: 17687-SS1
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938005
Lab Project ID: 1144938

Collection Date: 09/30/14 15:44
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 67.6
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated values.

Batch Information

Analytical Batch: XMS8322
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 10/07/14 23:41
Container ID: 1144938005-A

Prep Batch: XXX32138
Prep Method: SW3550C
Prep Date/Time: 10/06/14 09:19
Prep Initial Wt./Vol.: 22.525 g
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS1

Client Sample ID: 17687-SS1
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938005
Lab Project ID: 1144938

Collection Date: 09/30/14 15:44
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 67.6
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC11623
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/10/14 15:05
Container ID: 1144938005-A

Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.077 g
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC11623
Analytical Method: AK103
Analyst: MCM
Analytical Date/Time: 10/10/14 15:05
Container ID: 1144938005-A

Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.077 g
Prep Extract Vol: 1 mL



Results of 17687-SS1

Client Sample ID: **17687-SS1**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938005
Lab Project ID: 1144938

Collection Date: 09/30/14 15:44
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 67.6
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.64 U	5.28	1.58	mg/Kg	1		10/04/14 06:19
Surrogates							
4-Bromofluorobenzene	98.6	50-150		%	1		10/04/14 06:19

Batch Information

Analytical Batch: VFC12155
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/14 06:19
Container ID: 1144938005-C

Prep Batch: VXX26572
Prep Method: SW5035A
Prep Date/Time: 09/30/14 15:44
Prep Initial Wt./Vol.: 64.103 g
Prep Extract Vol: 45.77 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS1

Client Sample ID: 17687-SS1
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938005
Lab Project ID: 1144938

Collection Date: 09/30/14 15:44
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 67.6
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS1

Client Sample ID: 17687-SS1
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938005
Lab Project ID: 1144938

Collection Date: 09/30/14 15:44
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 67.6
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of **17687-SS1**

Client Sample ID: **17687-SS1**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938005
Lab Project ID: 1144938

Collection Date: 09/30/14 15:44
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 67.6
Location:

Results by **Volatile Gas Chromatography/Mass Spectrometry**

Batch Information

Analytical Batch: VMS14528
Analytical Method: SW8260B
Analyst: KCT
Analytical Date/Time: 10/06/14 19:28
Container ID: 1144938005-C

Prep Batch: VXX26581
Prep Method: SW5035A
Prep Date/Time: 09/30/14 15:44
Prep Initial Wt./Vol.: 64.103 g
Prep Extract Vol: 45.77 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS2

Client Sample ID: **17687-SS2**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938006
Lab Project ID: 1144938

Collection Date: 09/30/14 15:56
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 66.0
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	7.50	0.283	0.0879	mg/Kg	10		10/08/14 17:57

Batch Information

Analytical Batch: MMS8705
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 10/08/14 17:57
Container ID: 1144938006-A

Prep Batch: MXX28178
Prep Method: SW3050B
Prep Date/Time: 10/08/14 11:50
Prep Initial Wt./Vol.: 1.069 g
Prep Extract Vol: 50 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS2

Client Sample ID: 17687-SS2
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938006
Lab Project ID: 1144938

Collection Date: 09/30/14 15:56
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 66.0
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS8322
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 10/07/14 23:10
Container ID: 1144938006-A

Prep Batch: XXX32138
Prep Method: SW3550C
Prep Date/Time: 10/06/14 09:19
Prep Initial Wt./Vol.: 22.713 g
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS2

Client Sample ID: 17687-SS2
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938006
Lab Project ID: 1144938

Collection Date: 09/30/14 15:56
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 66.0
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 16.3 J, 30.2, 9.35, mg/Kg, 1, 10/09/14 22:55

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane, 82.7, 50-150, %, 1, 10/09/14 22:55

Batch Information

Analytical Batch: XFC11622
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/09/14 22:55
Container ID: 1144938006-A

Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.137 g
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 152, 30.2, 9.35, mg/Kg, 1, 10/09/14 22:55

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62, 86.1, 50-150, %, 1, 10/09/14 22:55

Batch Information

Analytical Batch: XFC11622
Analytical Method: AK103
Analyst: MCM
Analytical Date/Time: 10/09/14 22:55
Container ID: 1144938006-A

Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.137 g
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:36:53PM



Results of **17687-SS2**

Client Sample ID: **17687-SS2**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938006
Lab Project ID: 1144938

Collection Date: 09/30/14 15:56
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 66.0
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.65 U	5.31	1.59	mg/Kg	1		10/04/14 06:37
Surrogates							
4-Bromofluorobenzene	81	50-150		%	1		10/04/14 06:37

Batch Information

Analytical Batch: VFC12155
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/14 06:37
Container ID: 1144938006-B

Prep Batch: VXX26572
Prep Method: SW5035A
Prep Date/Time: 09/30/14 15:56
Prep Initial Wt./Vol.: 69.125 g
Prep Extract Vol: 48.492 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS2

Client Sample ID: 17687-SS2
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938006
Lab Project ID: 1144938

Collection Date: 09/30/14 15:56
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 66.0
Location:

Results by Volatile Gas Chromatography/Mass Spectrometry

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,1,1-Trichloroethane	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,1,2,2-Tetrachloroethane	13.3 U	26.6	8.29	ug/Kg	1		10/06/14 19:44
1,1,2-Trichloroethane	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,1-Dichloroethane	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,1-Dichloroethene	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,1-Dichloropropene	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,2,3-Trichlorobenzene	53.0 U	106	31.9	ug/Kg	1		10/06/14 19:44
1,2,3-Trichloropropane	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,2,4-Trichlorobenzene	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,2,4-Trimethylbenzene	53.0 U	106	31.9	ug/Kg	1		10/06/14 19:44
1,2-Dibromo-3-chloropropane	107 U	213	65.9	ug/Kg	1		10/06/14 19:44
1,2-Dibromoethane	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,2-Dichlorobenzene	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,2-Dichloroethane	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,2-Dichloropropane	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,3,5-Trimethylbenzene	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,3-Dichlorobenzene	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,3-Dichloropropane	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
1,4-Dichlorobenzene	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
2,2-Dichloropropane	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
2-Butanone (MEK)	266 U	531	166	ug/Kg	1		10/06/14 19:44
2-Chlorotoluene	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
2-Hexanone	266 U	531	166	ug/Kg	1		10/06/14 19:44
4-Chlorotoluene	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
4-Isopropyltoluene	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
4-Methyl-2-pentanone (MIBK)	266 U	531	166	ug/Kg	1		10/06/14 19:44
Benzene	13.3 U	26.6	8.29	ug/Kg	1		10/06/14 19:44
Bromobenzene	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
Bromochloromethane	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
Bromodichloromethane	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
Bromoform	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
Bromomethane	213 U	425	132	ug/Kg	1		10/06/14 19:44
Carbon disulfide	107 U	213	65.9	ug/Kg	1		10/06/14 19:44
Carbon tetrachloride	13.3 U	26.6	8.29	ug/Kg	1		10/06/14 19:44
Chlorobenzene	26.6 U	53.1	16.6	ug/Kg	1		10/06/14 19:44
Chloroethane	213 U	425	132	ug/Kg	1		10/06/14 19:44

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS2

Client Sample ID: 17687-SS2
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938006
Lab Project ID: 1144938

Collection Date: 09/30/14 15:56
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 66.0
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 17687-SS2

Client Sample ID: **17687-SS2**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938006
Lab Project ID: 1144938

Collection Date: 09/30/14 15:56
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 66.0
Location:

Results by Volatile Gas Chromatography/Mass Spectrometry

Batch Information

Analytical Batch: VMS14528
Analytical Method: SW8260B
Analyst: KCT
Analytical Date/Time: 10/06/14 19:44
Container ID: 1144938006-B

Prep Batch: VXX26581
Prep Method: SW5035A
Prep Date/Time: 09/30/14 15:56
Prep Initial Wt./Vol.: 69.125 g
Prep Extract Vol: 48.492 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS3

Client Sample ID: 17687-SS3
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938007
Lab Project ID: 1144938

Collection Date: 09/30/14 16:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 84.2
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS8322
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 10/07/14 23:56
Container ID: 1144938007-A

Prep Batch: XXX32138
Prep Method: SW3550C
Prep Date/Time: 10/06/14 09:19
Prep Initial Wt./Vol.: 22.787 g
Prep Extract Vol: 2.3 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS3

Client Sample ID: 17687-SS3
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938007
Lab Project ID: 1144938

Collection Date: 09/30/14 16:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 84.2
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 3880, 246, 76.4, mg/Kg, 4, 10/09/14 23:16

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane, 4.4, *, 50-150, %, 4, 10/09/14 23:16

Batch Information

Analytical Batch: XFC11622
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/09/14 23:16
Container ID: 1144938007-A

Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.073 g
Prep Extract Vol: 2.6 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 77300, 3080, 955, mg/Kg, 50, 10/12/14 21:13

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62, 0, *, 50-150, %, 50, 10/12/14 21:13

Batch Information

Analytical Batch: XFC11624
Analytical Method: AK103
Analyst: AYC
Analytical Date/Time: 10/12/14 21:13
Container ID: 1144938007-A

Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.073 g
Prep Extract Vol: 2.6 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS3

Client Sample ID: **17687-SS3**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938007
Lab Project ID: 1144938

Collection Date: 09/30/14 16:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 84.2
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.97 J	3.50	1.05	mg/Kg	1		10/04/14 06:56
Surrogates							
4-Bromofluorobenzene	51.6	50-150		%	1		10/04/14 06:56

Batch Information

Analytical Batch: VFC12155
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/14 06:56
Container ID: 1144938007-B

Prep Batch: VXX26572
Prep Method: SW5035A
Prep Date/Time: 09/30/14 16:05
Prep Initial Wt./Vol.: 57.839 g
Prep Extract Vol: 34.1362 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS3

Client Sample ID: 17687-SS3
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938007
Lab Project ID: 1144938

Collection Date: 09/30/14 16:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 84.2
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS3

Client Sample ID: 17687-SS3
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938007
Lab Project ID: 1144938

Collection Date: 09/30/14 16:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 84.2
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS3

Client Sample ID: **17687-SS3**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938007
Lab Project ID: 1144938

Collection Date: 09/30/14 16:05
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 84.2
Location:

Results by Volatile Gas Chromatography/Mass Spectrometry

Batch Information

Analytical Batch: VMS14531
Analytical Method: SW8260B
Analyst: KCT
Analytical Date/Time: 10/07/14 17:37
Container ID: 1144938007-B

Prep Batch: VXX26587
Prep Method: SW5035A
Prep Date/Time: 09/30/14 16:05
Prep Initial Wt./Vol.: 57.839 g
Prep Extract Vol: 34.1362 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS4

Client Sample ID: **17687-SS4**
 Client Project ID: **32-1-17687 25951 Williamson**
 Lab Sample ID: 1144938008
 Lab Project ID: 1144938

Collection Date: 09/30/14 16:15
 Received Date: 10/03/14 10:48
 Matrix: Soil/Solid (dry weight)
 Solids (%): 93.3
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	53.5 U	107	32.1	ug/Kg	20		10/08/14 17:25
2-Methylnaphthalene	53.5 U	107	32.1	ug/Kg	20		10/08/14 17:25
Acenaphthene	53.5 U	107	32.1	ug/Kg	20		10/08/14 17:25
Acenaphthylene	53.5 U	107	32.1	ug/Kg	20		10/08/14 17:25
Anthracene	53.5 U	107	32.1	ug/Kg	20		10/08/14 17:25
Benzo(a)Anthracene	2.67 U	5.35	1.61	ug/Kg	1		10/07/14 23:25
Benzo[a]pyrene	2.67 U	5.35	1.61	ug/Kg	1		10/07/14 23:25
Benzo[b]Fluoranthene	2.67 U	5.35	1.61	ug/Kg	1		10/07/14 23:25
Benzo[g,h,i]perylene	2.67 U	5.35	1.61	ug/Kg	1		10/07/14 23:25
Benzo[k]fluoranthene	2.67 U	5.35	1.61	ug/Kg	1		10/07/14 23:25
Chrysene	2.67 U	5.35	1.61	ug/Kg	1		10/07/14 23:25
Dibenzo[a,h]anthracene	2.67 U	5.35	1.61	ug/Kg	1		10/07/14 23:25
Fluoranthene	2.67 U	5.35	1.61	ug/Kg	1		10/07/14 23:25
Fluorene	53.5 U	107	32.1	ug/Kg	20		10/08/14 17:25
Indeno[1,2,3-c,d] pyrene	2.67 U	5.35	1.61	ug/Kg	1		10/07/14 23:25
Naphthalene	53.5 U	107	32.1	ug/Kg	20		10/08/14 17:25
Phenanthrene	34.6 J	107	32.1	ug/Kg	20		10/08/14 17:25
Pyrene	2.67 U	5.35	1.61	ug/Kg	1		10/07/14 23:25
Surrogates							
2-Fluorobiphenyl	420	*	45-105	%	20		10/08/14 17:25
Terphenyl-d14	99.3		30-125	%	1		10/07/14 23:25

Batch Information

Analytical Batch: XMS8322
 Analytical Method: 8270D SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 10/07/14 23:25
 Container ID: 1144938008-A

Prep Batch: XXX32138
 Prep Method: SW3550C
 Prep Date/Time: 10/06/14 09:19
 Prep Initial Wt./Vol.: 22.524 g
 Prep Extract Vol: 1 mL

Analytical Batch: XMS8324
 Analytical Method: 8270D SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 10/08/14 17:25
 Container ID: 1144938008-A

Prep Batch: XXX32138
 Prep Method: SW3550C
 Prep Date/Time: 10/06/14 09:19
 Prep Initial Wt./Vol.: 22.524 g
 Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS4

Client Sample ID: 17687-SS4
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938008
Lab Project ID: 1144938

Collection Date: 09/30/14 16:15
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 93.3
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	2680	213	66.1	mg/Kg	10		10/10/14 15:46

Surrogates

5a Androstane	100	50-150		%	10		10/10/14 15:46
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Batch Information

Analytical Batch: XFC11623
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/10/14 15:46
Container ID: 1144938008-A

Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.17 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	68.3	21.3	6.61	mg/Kg	1		10/09/14 23:37

Surrogates

n-Triacontane-d62	100	50-150		%	1		10/09/14 23:37
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Batch Information

Analytical Batch: XFC11622
Analytical Method: AK103
Analyst: MCM
Analytical Date/Time: 10/09/14 23:37
Container ID: 1144938008-A

Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/04/14 09:30
Prep Initial Wt./Vol.: 30.17 g
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:36:53PM



Results of **17687-SS4**

Client Sample ID: **17687-SS4**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938008
Lab Project ID: 1144938

Collection Date: 09/30/14 16:15
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 93.3
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	36.8		22.2	6.65	mg/Kg	10		10/04/14 07:15
Surrogates								
4-Bromofluorobenzene	167	*	50-150		%	10		10/04/14 07:15

Batch Information

Analytical Batch: VFC12155
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/14 07:15
Container ID: 1144938008-B

Prep Batch: VXX26572
Prep Method: SW5035A
Prep Date/Time: 09/30/14 16:15
Prep Initial Wt./Vol.: 72.188 g
Prep Extract Vol: 29.8558 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS4

Client Sample ID: 17687-SS4
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938008
Lab Project ID: 1144938

Collection Date: 09/30/14 16:15
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 93.3
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of 17687-SS4

Client Sample ID: 17687-SS4
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938008
Lab Project ID: 1144938

Collection Date: 09/30/14 16:15
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 93.3
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 17687-SS4

Client Sample ID: **17687-SS4**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938008
Lab Project ID: 1144938

Collection Date: 09/30/14 16:15
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%): 93.3
Location:

Results by Volatile Gas Chromatography/Mass Spectrometry

Batch Information

Analytical Batch: VMS14531
Analytical Method: SW8260B
Analyst: KCT
Analytical Date/Time: 10/07/14 18:09
Container ID: 1144938008-B

Prep Batch: VXX26587
Prep Method: SW5035A
Prep Date/Time: 09/30/14 16:15
Prep Initial Wt./Vol.: 72.188 g
Prep Extract Vol: 29.8558 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-STB

Client Sample ID: **17687-STB**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938009
Lab Project ID: 1144938

Collection Date: 09/30/14 09:00
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.26 U	2.53	0.759	mg/Kg	1		10/04/14 07:53
Surrogates							
4-Bromofluorobenzene	86.3	50-150		%	1		10/04/14 07:53

Batch Information

Analytical Batch: VFC12155
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/14 07:53
Container ID: 1144938009-A

Prep Batch: VXX26572
Prep Method: SW5035A
Prep Date/Time: 09/30/14 09:00
Prep Initial Wt./Vol.: 49.432 g
Prep Extract Vol: 25 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-STB

Client Sample ID: 17687-STB
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938009
Lab Project ID: 1144938

Collection Date: 09/30/14 09:00
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of 17687-STB

Client Sample ID: **17687-STB**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938009
Lab Project ID: 1144938

Collection Date: 09/30/14 09:00
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
Chloromethane	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
cis-1,2-Dichloroethene	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
cis-1,3-Dichloropropene	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
Dibromochloromethane	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
Dibromomethane	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
Dichlorodifluoromethane	25.3 U	50.6	15.2	ug/Kg	1		10/06/14 18:08
Ethylbenzene	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
Hexachlorobutadiene	25.3 U	50.6	15.2	ug/Kg	1		10/06/14 18:08
Isopropylbenzene (Cumene)	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
Methylene chloride	50.5 U	101	31.4	ug/Kg	1		10/06/14 18:08
Methyl-t-butyl ether	50.5 U	101	31.4	ug/Kg	1		10/06/14 18:08
Naphthalene	25.3 U	50.6	15.2	ug/Kg	1		10/06/14 18:08
n-Butylbenzene	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
n-Propylbenzene	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
o-Xylene	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
P & M -Xylene	25.3 U	50.6	15.2	ug/Kg	1		10/06/14 18:08
sec-Butylbenzene	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
Styrene	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
tert-Butylbenzene	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
Tetrachloroethene	6.30 U	12.6	3.94	ug/Kg	1		10/06/14 18:08
Toluene	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
trans-1,2-Dichloroethene	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
trans-1,3-Dichloropropene	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
Trichloroethene	6.30 U	12.6	3.94	ug/Kg	1		10/06/14 18:08
Trichlorofluoromethane	25.3 U	50.6	15.2	ug/Kg	1		10/06/14 18:08
Vinyl chloride	12.7 U	25.3	7.89	ug/Kg	1		10/06/14 18:08
Xylenes (total)	38.0 U	75.9	23.1	ug/Kg	1		10/06/14 18:08
Surrogates							
1,2-Dichloroethane-D4	107	79-118		%	1		10/06/14 18:08
4-Bromofluorobenzene	103	67-138		%	1		10/06/14 18:08
Toluene-d8	107	85-115		%	1		10/06/14 18:08

Print Date: 10/31/2014 2:36:53PM



Results of 17687-STB

Client Sample ID: **17687-STB**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938009
Lab Project ID: 1144938

Collection Date: 09/30/14 09:00
Received Date: 10/03/14 10:48
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile Gas Chromatography/Mass Spectrometry

Batch Information

Analytical Batch: VMS14528
Analytical Method: SW8260B
Analyst: KCT
Analytical Date/Time: 10/06/14 18:08
Container ID: 1144938009-A

Prep Batch: VXX26581
Prep Method: SW5035A
Prep Date/Time: 09/30/14 09:00
Prep Initial Wt./Vol.: 49.432 g
Prep Extract Vol: 25 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-TMW1

Client Sample ID: 17687-TMW1
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938010
Lab Project ID: 1144938

Collection Date: 10/02/14 11:05
Received Date: 10/03/14 10:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS8322
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 10/07/14 17:13
Container ID: 1144938010-I

Prep Batch: XXX32134
Prep Method: SW3520C
Prep Date/Time: 10/05/14 09:00
Prep Initial Wt./Vol.: 900 mL
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-TMW1

Client Sample ID: 17687-TMW1
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938010
Lab Project ID: 1144938

Collection Date: 10/02/14 11:05
Received Date: 10/03/14 10:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC11614
Analytical Method: AK102
Analyst: MCM
Analytical Date/Time: 10/06/14 22:34
Container ID: 1144938010-G

Prep Batch: XXX32127
Prep Method: SW3520C
Prep Date/Time: 10/04/14 08:55
Prep Initial Wt./Vol.: 920 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC11614
Analytical Method: AK103
Analyst: MCM
Analytical Date/Time: 10/06/14 22:34
Container ID: 1144938010-G

Prep Batch: XXX32127
Prep Method: SW3520C
Prep Date/Time: 10/04/14 08:55
Prep Initial Wt./Vol.: 920 mL
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-TMW1

Client Sample ID: **17687-TMW1**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938010
Lab Project ID: 1144938

Collection Date: 10/02/14 11:05
Received Date: 10/03/14 10:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		10/04/14 02:48
Surrogates							
4-Bromofluorobenzene	92.5	50-150		%	1		10/04/14 02:48

Batch Information

Analytical Batch: VFC12153
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/14 02:48
Container ID: 1144938010-A

Prep Batch: VXX26564
Prep Method: SW5030B
Prep Date/Time: 10/03/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-TMW1

Client Sample ID: 17687-TMW1
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938010
Lab Project ID: 1144938

Collection Date: 10/02/14 11:05
Received Date: 10/03/14 10:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of 17687-TMW1

Client Sample ID: 17687-TMW1
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938010
Lab Project ID: 1144938

Collection Date: 10/02/14 11:05
Received Date: 10/03/14 10:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of 17687-TMW1

Client Sample ID: **17687-TMW1**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938010
Lab Project ID: 1144938

Collection Date: 10/02/14 11:05
Received Date: 10/03/14 10:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Gas Chromatography/Mass Spectrometry

Batch Information

Analytical Batch: VMS14534
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 10/07/14 21:43
Container ID: 1144938010-D

Prep Batch: VXX26590
Prep Method: SW5030B
Prep Date/Time: 10/07/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-WTB

Client Sample ID: **17687-WTB**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938011
Lab Project ID: 1144938

Collection Date: 09/30/14 09:00
Received Date: 10/03/14 10:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		10/04/14 00:54
Surrogates							
4-Bromofluorobenzene	92.8	50-150		%	1		10/04/14 00:54

Batch Information

Analytical Batch: VFC12153
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/04/14 00:54
Container ID: 1144938011-A

Prep Batch: VXX26564
Prep Method: SW5030B
Prep Date/Time: 10/03/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/31/2014 2:36:53PM



Results of 17687-WTB

Client Sample ID: 17687-WTB
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938011
Lab Project ID: 1144938

Collection Date: 09/30/14 09:00
Received Date: 10/03/14 10:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Gas Chromatography/Mass Spectromer

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of 17687-WTB

Client Sample ID: 17687-WTB
Client Project ID: 32-1-17687 25951 Williamson
Lab Sample ID: 1144938011
Lab Project ID: 1144938

Collection Date: 09/30/14 09:00
Received Date: 10/03/14 10:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Gas Chromatography/Mass Spectrometry

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 10/31/2014 2:36:53PM



Results of 17687-WTB

Client Sample ID: **17687-WTB**
Client Project ID: **32-1-17687 25951 Williamson**
Lab Sample ID: 1144938011
Lab Project ID: 1144938

Collection Date: 09/30/14 09:00
Received Date: 10/03/14 10:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Gas Chromatography/Mass Spectrometry

Batch Information

Analytical Batch: VMS14534
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 10/07/14 18:10
Container ID: 1144938011-B

Prep Batch: VXX26590
Prep Method: SW5030B
Prep Date/Time: 10/07/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/31/2014 2:36:53PM



Method Blank

Blank ID: MB for HBN 1656342 [MXX/28178]
Blank Lab ID: 1238832

Matrix: Soil/Solid (dry weight)

QC for Samples:
1144938006

Results by SW6020A

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Lead	0.100U	0.200	0.0620	mg/Kg

Batch Information

Analytical Batch: MMS8705
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: ACF
Analytical Date/Time: 10/8/2014 5:52:26PM

Prep Batch: MXX28178
Prep Method: SW3050B
Prep Date/Time: 10/8/2014 11:50:44AM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

Print Date: 10/31/2014 2:36:57PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [MXX28178]
Blank Spike Lab ID: 1238833
Date Analyzed: 10/08/2014 17:54

Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938006

Results by SW6020A

Parameter	Blank Spike (mg/Kg)			CL
	Spike	Result	Rec (%)	
Lead	50	55.1	110	(80-120)

Batch Information

Analytical Batch: **MMS8705**
Analytical Method: **SW6020A**
Instrument: **Perkin Elmer Sciex ICP-MS P3**
Analyst: **ACF**

Prep Batch: **MXX28178**
Prep Method: **SW3050B**
Prep Date/Time: **10/08/2014 11:50**
Spike Init Wt./Vol.: 50 mg/Kg Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 10/31/2014 2:36:59PM



Matrix Spike Summary

Original Sample ID: 1238841
MS Sample ID: 1238836 MS
MSD Sample ID: 1238837 MSD

Analysis Date: 10/08/2014 17:57
Analysis Date: 10/08/2014 18:01
Analysis Date: 10/08/2014 18:04
Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938006

Results by SW6020A

Parameter	Sample	Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Lead	4.95	48.9	57.1	107	47.8	57.3	109	80-120	0.22	(< 20)

Batch Information

Analytical Batch: MMS8705
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: ACF
Analytical Date/Time: 10/8/2014 6:01:53PM

Prep Batch: MXX28178
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 10/8/2014 11:50:44AM
Prep Initial Wt./Vol.: 1.02g
Prep Extract Vol: 50.00mL

Print Date: 10/31/2014 2:37:00PM



Method Blank

Blank ID: MB for HBN 1654961 [SPT/9464]
Blank Lab ID: 1238298

Matrix: Soil/Solid (dry weight)

QC for Samples:

1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938007, 1144938008

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT9464
Analytical Method: SM21 2540G
Instrument:
Analyst: MJN
Analytical Date/Time: 10/3/2014 5:40:00PM

Print Date: 10/31/2014 2:37:01PM



Duplicate Sample Summary

Original Sample ID: 1144925001

Duplicate Sample ID: 1238299

QC for Samples:

1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938007, 1144938008

Analysis Date: 10/03/2014 17:40

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original ()</u>	<u>Duplicate ()</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	90.6	90.4	0.22	15.00

Batch Information

Analytical Batch: SPT9464

Analytical Method: SM21 2540G

Instrument:

Analyst: MJN

Print Date: 10/31/2014 2:37:02PM



Method Blank

Blank ID: MB for HBN 1654878 [VXX/26564]
Blank Lab ID: 1238222

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1144938010, 1144938011

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene	89.5	50-150		%

Batch Information

Analytical Batch: VFC12153
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/3/2014 8:48:00PM

Prep Batch: VXX26564
Prep Method: SW5030B
Prep Date/Time: 10/3/2014 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/31/2014 2:37:05PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [VXX26564]
 Blank Spike Lab ID: 1238225
 Date Analyzed: 10/04/2014 00:16

Spike Duplicate ID: LCSD for HBN 1144938 [VXX26564]
 Spike Duplicate Lab ID: 1238226
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144938010, 1144938011

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.969	97	1.00	0.999	100	(60-120)	3.10	(< 20)

Surrogates

4-Bromofluorobenzene	0.0500	100	100	0.0500	101	101	(50-150)	0.66	
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Batch Information

Analytical Batch: VFC12153
 Analytical Method: AK101
 Instrument: Agilent 7890A PID/FID
 Analyst: ST

Prep Batch: VXX26564
 Prep Method: SW5030B
 Prep Date/Time: 10/03/2014 08:00
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 10/31/2014 2:37:06PM



Method Blank

Blank ID: MB for HBN 1655461 [VXX/26572]
Blank Lab ID: 1238373

Matrix: Soil/Solid (dry weight)

QC for Samples:

1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938007, 1144938008, 1144938009

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene	109	50-150		%

Batch Information

Analytical Batch: VFC12155
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 10/3/2014 10:25:00PM

Prep Batch: VXX26572
Prep Method: SW5035A
Prep Date/Time: 10/3/2014 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 10/31/2014 2:37:08PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [VXX26572]
 Blank Spike Lab ID: 1238376
 Date Analyzed: 10/03/2014 23:21

Spike Duplicate ID: LCSD for HBN 1144938 [VXX26572]
 Spike Duplicate Lab ID: 1238377
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938007, 1144938008, 1144938009

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	10.0	9.85	99	10.0	10.4	104	(60-120)	5.20	(< 20)

Surrogates

4-Bromofluorobenzene	1.25	110	110	1.25	110	110	(50-150)	0.38	
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Batch Information

Analytical Batch: VFC12155
 Analytical Method: AK101
 Instrument: Agilent 7890 PID/FID
 Analyst: ST

Prep Batch: VXX26572
 Prep Method: SW5035A
 Prep Date/Time: 10/03/2014 08:00
 Spike Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL

Print Date: 10/31/2014 2:37:10PM

Method Blank

Blank ID: MB for HBN 1656286 [VXX/26581]

Matrix: Soil/Solid (dry weight)

Blank Lab ID: 1238615

QC for Samples:

1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938009

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	12.5U	25.0	7.80	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	6.25U	12.5	3.90	ug/Kg
1,1,2-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	12.5U	25.0	7.80	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	12.5U	25.0	7.80	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	12.5U	25.0	7.80	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	125U	250	78.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	12.5U	25.0	7.80	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	12.5U	25.0	7.80	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Bromomethane	100U	200	62.0	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg
Chloroform	12.5U	25.0	7.80	ug/Kg

Print Date: 10/31/2014 2:37:11PM



Method Blank

Blank ID: MB for HBN 1656286 [VXX/26581]

Matrix: Soil/Solid (dry weight)

Blank Lab ID: 1238615

QC for Samples:

1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938009

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	17.3J	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	12.5U	25.0	7.80	ug/Kg
Dibromochloromethane	12.5U	25.0	7.80	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Hexachlorobutadiene	25.0U	50.0	15.0	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methylene chloride	50.0U	100	31.0	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	25.0U	50.0	15.0	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
n-Propylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	12.5U	25.0	7.80	ug/Kg
Trichloroethene	6.25U	12.5	3.90	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl chloride	12.5U	25.0	7.80	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4	107	79-118		%
4-Bromofluorobenzene	99.3	67-138		%
Toluene-d8	106	85-115		%

Print Date: 10/31/2014 2:37:11PM



Method Blank

Blank ID: MB for HBN 1656286 [VXX/26581]
Blank Lab ID: 1238615

Matrix: Soil/Solid (dry weight)

QC for Samples:

1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938009

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS14528
Analytical Method: SW8260B
Instrument: Agilent 7890-75MS
Analyst: KCT
Analytical Date/Time: 10/6/2014 3:25:00PM

Prep Batch: VXX26581
Prep Method: SW5035A
Prep Date/Time: 10/6/2014 12:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 10/31/2014 2:37:11PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [VXX26581]

Blank Spike Lab ID: 1238616

Date Analyzed: 10/06/2014 15:55

Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938009

Results by SW8260B

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
1,1,1,2-Tetrachloroethane	750	801	107	(75-125)
1,1,1-Trichloroethane	750	803	107	(70-135)
1,1,2,2-Tetrachloroethane	750	758	101	(55-130)
1,1,2-Trichloroethane	750	777	104	(60-125)
1,1-Dichloroethane	750	734	98	(75-125)
1,1-Dichloroethene	750	689	92	(65-135)
1,1-Dichloropropene	750	783	104	(70-135)
1,2,3-Trichlorobenzene	750	673	90	(60-135)
1,2,3-Trichloropropane	750	754	101	(65-130)
1,2,4-Trichlorobenzene	750	698	93	(65-130)
1,2,4-Trimethylbenzene	750	767	102	(65-135)
1,2-Dibromo-3-chloropropane	750	689	92	(40-135)
1,2-Dibromoethane	750	805	107	(70-125)
1,2-Dichlorobenzene	750	751	100	(75-120)
1,2-Dichloroethane	750	763	102	(70-135)
1,2-Dichloropropane	750	801	107	(70-120)
1,3,5-Trimethylbenzene	750	772	103	(65-135)
1,3-Dichlorobenzene	750	735	98	(70-125)
1,3-Dichloropropane	750	781	104	(75-125)
1,4-Dichlorobenzene	750	736	98	(70-125)
2,2-Dichloropropane	750	702	94	(65-135)
2-Butanone (MEK)	2250	2300	102	(30-160)
2-Chlorotoluene	750	736	98	(70-130)
2-Hexanone	2250	2440	109	(45-145)
4-Chlorotoluene	750	753	100	(75-125)
4-Isopropyltoluene	750	766	102	(75-135)
4-Methyl-2-pentanone (MIBK)	2250	2510	112	(45-145)
Benzene	750	779	104	(75-125)
Bromobenzene	750	727	97	(65-120)
Bromochloromethane	750	760	101	(70-125)
Bromodichloromethane	750	858	114	(70-130)
Bromoform	750	817	109	(55-135)
Bromomethane	750	816	109	(30-160)
Carbon disulfide	1130	1140	101	(45-160)

Print Date: 10/31/2014 2:37:13PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [VXX26581]

Blank Spike Lab ID: 1238616

Date Analyzed: 10/06/2014 15:55

Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938009

Results by SW8260B

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
Carbon tetrachloride	750	841	112	(65-135)
Chlorobenzene	750	748	100	(75-125)
Chloroethane	750	931	124	(40-155)
Chloroform	750	708	94	(70-125)
Chloromethane	750	758	101	(50-130)
cis-1,2-Dichloroethene	750	729	97	(65-125)
cis-1,3-Dichloropropene	750	718	96	(70-125)
Dibromochloromethane	750	724	97	(65-130)
Dibromomethane	750	782	104	(75-130)
Dichlorodifluoromethane	750	827	110	(35-135)
Ethylbenzene	750	753	100	(75-125)
Hexachlorobutadiene	750	737	98	(55-140)
Isopropylbenzene (Cumene)	750	768	102	(75-130)
Methylene chloride	750	705	94	(55-140)
Methyl-t-butyl ether	1130	1110	99	(63-149)
Naphthalene	750	710	95	(40-125)
n-Butylbenzene	750	767	102	(65-140)
n-Propylbenzene	750	748	100	(65-135)
o-Xylene	750	768	102	(75-125)
P & M -Xylene	1500	1590	106	(80-125)
sec-Butylbenzene	750	775	103	(65-130)
Styrene	750	809	108	(75-125)
tert-Butylbenzene	750	743	99	(65-130)
Tetrachloroethene	750	732	98	(65-140)
Toluene	750	761	102	(70-125)
trans-1,2-Dichloroethene	750	821	110	(65-135)
trans-1,3-Dichloropropene	750	720	96	(65-125)
Trichloroethene	750	784	105	(75-125)
Trichlorofluoromethane	750	741	99	(25-185)
Vinyl chloride	750	778	104	(60-125)
Xylenes (total)	2250	2350	105	(80-125)
Surrogates				
1,2-Dichloroethane-D4	750	100	100	(79-118)

Print Date: 10/31/2014 2:37:13PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [VXX26581]

Blank Spike Lab ID: 1238616

Date Analyzed: 10/06/2014 15:55

Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938009

Results by SW8260B

Parameter	Blank Spike (%)			CL
	Spike	Result	Rec (%)	
4-Bromofluorobenzene	750	93.2	93	(67-138)
Toluene-d8	750	104	104	(85-115)

Batch Information

Analytical Batch: **VMS14528**

Analytical Method: **SW8260B**

Instrument: **Agilent 7890-75MS**

Analyst: **KCT**

Prep Batch: **VXX26581**

Prep Method: **SW5035A**

Prep Date/Time: **10/06/2014 00:00**

Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1144938001
 MS Sample ID: 1238617 MS
 MSD Sample ID: 1238618 MSD

Analysis Date: 10/06/2014 18:24
 Analysis Date: 10/06/2014 16:32
 Analysis Date: 10/06/2014 16:48
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938009

Results by SW8260B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	10.4U	541	588	109	541	585	108	75-125	0.68	(< 20)
1,1,1-Trichloroethane	10.4U	541	582	108	541	571	106	70-135	1.80	(< 20)
1,1,2,2-Tetrachloroethane	5.15U	541	564	104	541	573	106	55-130	1.50	(< 20)
1,1,2-Trichloroethane	10.4U	541	570	105	541	564	104	60-125	1.10	(< 20)
1,1-Dichloroethane	10.4U	541	525	97	541	526	97	75-125	0.10	(< 20)
1,1-Dichloroethene	10.4U	541	481	89	541	534	99	65-135	10.70	(< 20)
1,1-Dichloropropene	10.4U	541	567	105	541	560	103	70-135	1.50	(< 20)
1,2,3-Trichlorobenzene	20.7U	541	517	96	541	571	106	60-135	9.80	(< 20)
1,2,3-Trichloropropane	10.4U	541	576	107	541	575	106	65-130	0.16	(< 20)
1,2,4-Trichlorobenzene	10.4U	541	532	98	541	573	106	65-130	7.50	(< 20)
1,2,4-Trimethylbenzene	20.7U	541	574	106	541	582	108	65-135	1.40	(< 20)
1,2-Dibromo-3-chloropropane	41.4U	541	524	97	541	558	103	40-135	6.50	(< 20)
1,2-Dibromoethane	10.4U	541	597	111	541	583	108	70-125	2.60	(< 20)
1,2-Dichlorobenzene	10.4U	541	552	102	541	554	102	75-120	0.36	(< 20)
1,2-Dichloroethane	10.4U	541	552	102	541	548	101	70-135	0.85	(< 20)
1,2-Dichloropropane	10.4U	541	572	106	541	569	105	70-120	0.66	(< 20)
1,3,5-Trimethylbenzene	10.4U	541	572	106	541	582	108	65-135	1.70	(< 20)
1,3-Dichlorobenzene	10.4U	541	542	100	541	547	101	70-125	1.00	(< 20)
1,3-Dichloropropane	10.4U	541	574	106	541	574	106	75-125	0.13	(< 20)
1,4-Dichlorobenzene	10.4U	541	548	101	541	544	101	70-125	0.76	(< 20)
2,2-Dichloropropane	10.4U	541	517	96	541	515	95	65-135	0.31	(< 20)
2-Butanone (MEK)	104U	1623	1697	105	1623	1812	112	30-160	6.50	(< 20)
2-Chlorotoluene	10.4U	541	543	100	541	558	103	70-130	2.80	(< 20)
2-Hexanone	104U	1623	1855	115	1623	1876	116	45-145	1.10	(< 20)
4-Chlorotoluene	10.4U	541	564	104	541	563	104	75-125	0.35	(< 20)
4-Isopropyltoluene	10.4U	541	580	107	541	572	106	75-135	1.40	(< 20)
4-Methyl-2-pentanone (MIBK)	104U	1623	1781	110	1623	1907	117	45-145	6.50	(< 20)
Benzene	5.15U	541	561	104	541	570	106	75-125	1.80	(< 20)
Bromobenzene	10.4U	541	527	97	541	532	98	65-120	1.10	(< 20)
Bromochloromethane	10.4U	541	546	101	541	540	100	70-125	1.30	(< 20)
Bromodichloromethane	10.4U	541	621	115	541	604	112	70-130	2.80	(< 20)
Bromoform	10.4U	541	597	111	541	576	107	55-135	3.50	(< 20)
Bromomethane	83.0U	541	509	94	541	585	108	30-160	13.80	(< 20)
Carbon disulfide	41.4U	810	786	97	810	829	102	45-160	5.40	(< 20)
Carbon tetrachloride	5.15U	541	601	111	541	592	110	65-135	1.30	(< 20)
Chlorobenzene	10.4U	541	540	100	541	542	100	75-125	0.43	(< 20)
Chloroethane	83.0U	541	639	118	541	599	111	40-155	6.40	(< 20)

Print Date: 10/31/2014 2:37:15PM



Matrix Spike Summary

Original Sample ID: 1144938001
 MS Sample ID: 1238617 MS
 MSD Sample ID: 1238618 MSD

Analysis Date: 10/06/2014 18:24
 Analysis Date: 10/06/2014 16:32
 Analysis Date: 10/06/2014 16:48
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938009

Results by SW8260B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroform	10.4U	541	508	94	541	508	94	70-125	0.04	(< 20)
Chloromethane	10.4U	541	550	102	541	540	100	50-130	1.90	(< 20)
cis-1,2-Dichloroethene	10.4U	541	524	97	541	517	96	65-125	1.40	(< 20)
cis-1,3-Dichloropropene	10.4U	541	517	96	541	516	96	70-125	0.21	(< 20)
Dibromochloromethane	10.4U	541	536	99	541	519	96	65-130	3.20	(< 20)
Dibromomethane	10.4U	541	560	104	541	558	103	75-130	0.32	(< 20)
Dichlorodifluoromethane	20.7U	541	597	110	541	560	104	35-135	6.40	(< 20)
Ethylbenzene	10.4U	541	534	99	541	542	100	75-125	1.40	(< 20)
Hexachlorobutadiene	20.7U	541	552	102	541	550	102	55-140	0.26	(< 20)
Isopropylbenzene (Cumene)	10.4U	541	558	103	541	553	102	75-130	0.91	(< 20)
Methylene chloride	41.4U	541	528	98	541	538	100	55-140	2.00	(< 20)
Methyl-t-butyl ether	41.4U	810	799	99	810	800	99	63-149	0.16	(< 20)
Naphthalene	20.7U	541	560	104	541	619	115	40-125	10.10	(< 20)
n-Butylbenzene	10.4U	541	570	106	541	568	105	65-140	0.47	(< 20)
n-Propylbenzene	10.4U	541	553	102	541	557	103	65-135	0.75	(< 20)
o-Xylene	10.4U	541	564	104	541	555	103	75-125	1.70	(< 20)
P & M -Xylene	20.7U	1085	1159	107	1085	1149	106	80-125	1.30	(< 20)
sec-Butylbenzene	10.4U	541	571	106	541	575	107	65-130	0.79	(< 20)
Styrene	10.4U	541	584	108	541	584	108	75-125	0.12	(< 20)
tert-Butylbenzene	10.4U	541	567	105	541	573	106	65-130	1.30	(< 20)
Tetrachloroethene	5.15U	541	547	101	541	542	100	65-140	1.00	(< 20)
Toluene	10.4U	541	552	102	541	567	105	70-125	2.60	(< 20)
trans-1,2-Dichloroethene	10.4U	541	501	93	541	634	117	65-135	23.50	* (< 20)
trans-1,3-Dichloropropene	10.4U	541	525	97	541	527	98	65-125	0.55	(< 20)
Trichloroethene	5.15U	541	568	105	541	566	105	75-125	0.41	(< 20)
Trichlorofluoromethane	20.7U	541	486	90	541	607	112	25-185	22.20	* (< 20)
Vinyl chloride	10.4U	541	563	104	541	547	101	60-125	2.90	(< 20)
Xylenes (total)	31.1U	1623	1728	106	1623	1697	105	80-125	1.40	(< 20)
Surrogates										
1,2-Dichloroethane-D4		541	533	99	541	529	98	79-118	0.64	
4-Bromofluorobenzene		1444	1328	92	1444	1338	93	67-138	1.20	
Toluene-d8		541	548	101	541	548	101	85-115	0.13	

Print Date: 10/31/2014 2:37:15PM



Matrix Spike Summary

Original Sample ID: 1144938001
MS Sample ID: 1238617 MS
MSD Sample ID: 1238618 MSD

Analysis Date:
Analysis Date: 10/06/2014 16:32
Analysis Date: 10/06/2014 16:48
Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938009

Results by SW8260B

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS14528
Analytical Method: SW8260B
Instrument: Agilent 7890-75MS
Analyst: KCT
Analytical Date/Time: 10/6/2014 4:32:00PM

Prep Batch: VXX26581
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 10/6/2014 12:00:00AM
Prep Initial Wt./Vol.: 73.11g
Prep Extract Vol: 25.00mL

Print Date: 10/31/2014 2:37:15PM



Method Blank

Blank ID: MB for HBN 1656325 [VXX/26587]

Blank Lab ID: 1238800

QC for Samples:

1144938007, 1144938008

Matrix: Soil/Solid (dry weight)

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	12.5U	25.0	7.80	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	6.25U	12.5	3.90	ug/Kg
1,1,2-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	12.5U	25.0	7.80	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	12.5U	25.0	7.80	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	12.5U	25.0	7.80	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	125U	250	78.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	12.5U	25.0	7.80	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	12.5U	25.0	7.80	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Bromomethane	100U	200	62.0	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg
Chloroform	12.5U	25.0	7.80	ug/Kg

Print Date: 10/31/2014 2:37:16PM

Method Blank

Blank ID: MB for HBN 1656325 [VXX/26587]

Blank Lab ID: 1238800

QC for Samples:

1144938007, 1144938008

Matrix: Soil/Solid (dry weight)

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	10.0J	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	12.5U	25.0	7.80	ug/Kg
Dibromochloromethane	12.5U	25.0	7.80	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Hexachlorobutadiene	25.0U	50.0	15.0	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methylene chloride	50.0U	100	31.0	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	25.0U	50.0	15.0	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
n-Propylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	12.5U	25.0	7.80	ug/Kg
Trichloroethene	6.25U	12.5	3.90	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl chloride	12.5U	25.0	7.80	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4	99.9	79-118		%
4-Bromofluorobenzene	99.4	67-138		%
Toluene-d8	103	85-115		%



Method Blank

Blank ID: MB for HBN 1656325 [VXX/26587]
Blank Lab ID: 1238800

Matrix: Soil/Solid (dry weight)

QC for Samples:
1144938007, 1144938008

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS14531
Analytical Method: SW8260B
Instrument: VQA 7890/5975 GC/MS
Analyst: KCT
Analytical Date/Time: 10/7/2014 2:12:00PM

Prep Batch: VXX26587
Prep Method: SW5035A
Prep Date/Time: 10/7/2014 12:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 10/31/2014 2:37:16PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [VXX26587]

Blank Spike Lab ID: 1238801

Date Analyzed: 10/07/2014 14:35

Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938007, 1144938008

Results by SW8260B

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
1,1,1,2-Tetrachloroethane	750	836	112	(75-125)
1,1,1-Trichloroethane	750	839	112	(70-135)
1,1,2,2-Tetrachloroethane	750	811	108	(55-130)
1,1,2-Trichloroethane	750	811	108	(60-125)
1,1-Dichloroethane	750	766	102	(75-125)
1,1-Dichloroethene	750	843	112	(65-135)
1,1-Dichloropropene	750	843	112	(70-135)
1,2,3-Trichlorobenzene	750	789	105	(60-135)
1,2,3-Trichloropropane	750	784	105	(65-130)
1,2,4-Trichlorobenzene	750	812	108	(65-130)
1,2,4-Trimethylbenzene	750	804	107	(65-135)
1,2-Dibromo-3-chloropropane	750	799	107	(40-135)
1,2-Dibromoethane	750	832	111	(70-125)
1,2-Dichlorobenzene	750	790	105	(75-120)
1,2-Dichloroethane	750	777	104	(70-135)
1,2-Dichloropropane	750	807	108	(70-120)
1,3,5-Trimethylbenzene	750	802	107	(65-135)
1,3-Dichlorobenzene	750	800	107	(70-125)
1,3-Dichloropropane	750	810	108	(75-125)
1,4-Dichlorobenzene	750	805	107	(70-125)
2,2-Dichloropropane	750	795	106	(65-135)
2-Butanone (MEK)	2250	2220	99	(30-160)
2-Chlorotoluene	750	796	106	(70-130)
2-Hexanone	2250	2180	97	(45-145)
4-Chlorotoluene	750	798	106	(75-125)
4-Isopropyltoluene	750	809	108	(75-135)
4-Methyl-2-pentanone (MIBK)	2250	2310	103	(45-145)
Benzene	750	807	108	(75-125)
Bromobenzene	750	808	108	(65-120)
Bromochloromethane	750	801	107	(70-125)
Bromodichloromethane	750	819	109	(70-130)
Bromoform	750	812	108	(55-135)
Bromomethane	750	747	100	(30-160)
Carbon disulfide	1130	1220	109	(45-160)

Print Date: 10/31/2014 2:37:17PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [VXX26587]

Blank Spike Lab ID: 1238801

Date Analyzed: 10/07/2014 14:35

Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938007, 1144938008

Results by SW8260B

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
Carbon tetrachloride	750	863	115	(65-135)
Chlorobenzene	750	788	105	(75-125)
Chloroethane	750	899	120	(40-155)
Chloroform	750	762	102	(70-125)
Chloromethane	750	686	91	(50-130)
cis-1,2-Dichloroethene	750	787	105	(65-125)
cis-1,3-Dichloropropene	750	840	112	(70-125)
Dibromochloromethane	750	823	110	(65-130)
Dibromomethane	750	736	98	(75-130)
Dichlorodifluoromethane	750	765	102	(35-135)
Ethylbenzene	750	792	106	(75-125)
Hexachlorobutadiene	750	890	119	(55-140)
Isopropylbenzene (Cumene)	750	790	105	(75-130)
Methylene chloride	750	746	100	(55-140)
Methyl-t-butyl ether	1130	1240	110	(63-149)
Naphthalene	750	775	103	(40-125)
n-Butylbenzene	750	801	107	(65-140)
n-Propylbenzene	750	810	108	(65-135)
o-Xylene	750	786	105	(75-125)
P & M -Xylene	1500	1570	105	(80-125)
sec-Butylbenzene	750	823	110	(65-130)
Styrene	750	786	105	(75-125)
tert-Butylbenzene	750	797	106	(65-130)
Tetrachloroethene	750	854	114	(65-140)
Toluene	750	799	106	(70-125)
trans-1,2-Dichloroethene	750	809	108	(65-135)
trans-1,3-Dichloropropene	750	821	109	(65-125)
Trichloroethene	750	837	112	(75-125)
Trichlorofluoromethane	750	827	110	(25-185)
Vinyl chloride	750	779	104	(60-125)
Xylenes (total)	2250	2360	105	(80-125)
Surrogates				
1,2-Dichloroethane-D4	750	102	102	(79-118)

Print Date: 10/31/2014 2:37:17PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [VXX26587]

Blank Spike Lab ID: 1238801

Date Analyzed: 10/07/2014 14:35

Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938007, 1144938008

Results by SW8260B

Parameter	Blank Spike (%)			CL
	Spike	Result	Rec (%)	
4-Bromofluorobenzene	750	103	103	(67-138)
Toluene-d8	750	110	110	(85-115)

Batch Information

Analytical Batch: VMS14531

Analytical Method: SW8260B

Instrument: VQA 7890/5975 GC/MS

Analyst: KCT

Prep Batch: VXX26587

Prep Method: SW5035A

Prep Date/Time: 10/07/2014 00:00

Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 10/31/2014 2:37:17PM



Matrix Spike Summary

Original Sample ID: 1144972001
 MS Sample ID: 1238802 MS
 MSD Sample ID: 1238803 MSD

Analysis Date: 10/07/2014 16:18
 Analysis Date: 10/07/2014 14:58
 Analysis Date: 10/07/2014 15:14
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938007, 1144938008

Results by SW8260B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	13.8U	745	836	112	745	832	112	75-125	0.48	(< 20)
1,1,1-Trichloroethane	13.8U	745	821	110	745	815	109	70-135	0.82	(< 20)
1,1,2,2-Tetrachloroethane	6.85U	745	805	108	745	799	107	55-130	0.68	(< 20)
1,1,2-Trichloroethane	13.8U	745	822	110	745	808	108	60-125	1.70	(< 20)
1,1-Dichloroethane	13.8U	745	744	100	745	741	100	75-125	0.37	(< 20)
1,1-Dichloroethene	13.8U	745	815	109	745	813	109	65-135	0.34	(< 20)
1,1-Dichloropropene	13.8U	745	831	111	745	821	110	70-135	1.10	(< 20)
1,2,3-Trichlorobenzene	27.5U	745	781	105	745	783	105	60-135	0.25	(< 20)
1,2,3-Trichloropropane	13.8U	745	786	105	745	793	106	65-130	0.82	(< 20)
1,2,4-Trichlorobenzene	13.8U	745	814	109	745	799	107	65-130	1.90	(< 20)
1,2,4-Trimethylbenzene	27.5U	745	794	107	745	777	104	65-135	2.20	(< 20)
1,2-Dibromo-3-chloropropane	55.0U	745	783	105	745	787	106	40-135	0.54	(< 20)
1,2-Dibromoethane	13.8U	745	834	112	745	822	110	70-125	1.40	(< 20)
1,2-Dichlorobenzene	13.8U	745	780	105	745	777	104	75-120	0.48	(< 20)
1,2-Dichloroethane	13.8U	745	754	101	745	749	100	70-135	0.66	(< 20)
1,2-Dichloropropane	13.8U	745	788	106	745	779	105	70-120	1.10	(< 20)
1,3,5-Trimethylbenzene	13.8U	745	788	106	745	787	106	65-135	0.13	(< 20)
1,3-Dichlorobenzene	13.8U	745	764	102	745	762	102	70-125	0.23	(< 20)
1,3-Dichloropropane	13.8U	745	806	108	745	795	107	75-125	1.50	(< 20)
1,4-Dichlorobenzene	13.8U	745	779	104	745	772	104	70-125	0.90	(< 20)
2,2-Dichloropropane	13.8U	745	782	105	745	773	104	65-135	1.30	(< 20)
2-Butanone (MEK)	138U	2232	2347	105	2232	2389	107	30-160	1.80	(< 20)
2-Chlorotoluene	13.8U	745	776	104	745	766	103	70-130	1.20	(< 20)
2-Hexanone	138U	2232	2263	101	2232	2305	103	45-145	1.70	(< 20)
4-Chlorotoluene	13.8U	745	768	103	745	774	104	75-125	0.71	(< 20)
4-Isopropyltoluene	13.8U	745	808	108	745	817	110	75-135	0.98	(< 20)
4-Methyl-2-pentanone (MIBK)	138U	2232	2347	105	2232	2379	106	45-145	1.20	(< 20)
Benzene	6.85U	745	797	107	745	798	107	75-125	0.16	(< 20)
Bromobenzene	13.8U	745	778	104	745	783	105	65-120	0.67	(< 20)
Bromochloromethane	13.8U	745	762	102	745	762	102	70-125	0.03	(< 20)
Bromodichloromethane	13.8U	745	786	105	745	784	105	70-130	0.25	(< 20)
Bromoform	13.8U	745	789	106	745	801	107	55-135	1.50	(< 20)
Bromomethane	110U	745	699	94	745	715	96	30-160	2.30	(< 20)
Carbon disulfide	55.0U	1116	1179	105	1116	1179	105	45-160	0.21	(< 20)
Carbon tetrachloride	6.85U	745	844	113	745	831	111	65-135	1.70	(< 20)
Chlorobenzene	13.8U	745	777	104	745	773	104	75-125	0.67	(< 20)
Chloroethane	110U	745	782	105	745	784	105	40-155	0.22	(< 20)

Print Date: 10/31/2014 2:37:18PM



Matrix Spike Summary

Original Sample ID: 1144972001
 MS Sample ID: 1238802 MS
 MSD Sample ID: 1238803 MSD

Analysis Date: 10/07/2014 16:18
 Analysis Date: 10/07/2014 14:58
 Analysis Date: 10/07/2014 15:14
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938007, 1144938008

Results by SW8260B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroform	13.8U	745	740	99	745	738	99	70-125	0.17	(< 20)
Chloromethane	13.8U	745	671	90	745	667	90	50-130	0.52	(< 20)
cis-1,2-Dichloroethene	13.8U	745	767	103	745	766	103	65-125	0.10	(< 20)
cis-1,3-Dichloropropene	13.8U	745	822	110	745	817	110	70-125	0.70	(< 20)
Dibromochloromethane	13.8U	745	808	109	745	799	107	65-130	1.20	(< 20)
Dibromomethane	13.8U	745	711	95	745	715	96	75-130	0.49	(< 20)
Dichlorodifluoromethane	27.5U	745	754	101	745	743	100	35-135	1.40	(< 20)
Ethylbenzene	13.8U	745	782	105	745	786	106	75-125	0.54	(< 20)
Hexachlorobutadiene	27.5U	745	1147	154 *	745	1105	148 *	55-140	3.90	(< 20)
Isopropylbenzene (Cumene)	13.8U	745	780	105	745	775	104	75-130	0.77	(< 20)
Methylene chloride	55.0U	745	717	96	745	720	97	55-140	0.41	(< 20)
Methyl-t-butyl ether	55.0U	1116	1211	109	1116	1211	108	63-149	0.57	(< 20)
Naphthalene	33.8J	745	795	102	745	809	104	40-125	1.90	(< 20)
n-Butylbenzene	13.8U	745	820	110	745	821	110	65-140	0.12	(< 20)
n-Propylbenzene	13.8U	745	794	106	745	777	104	65-135	2.10	(< 20)
o-Xylene	18.7J	745	781	102	745	791	103	75-125	1.10	(< 20)
P & M -Xylene	30.8J	1495	1579	104	1495	1589	104	80-125	0.88	(< 20)
sec-Butylbenzene	13.8U	745	811	109	745	794	106	65-130	2.00	(< 20)
Styrene	13.8U	745	777	104	745	768	103	75-125	1.10	(< 20)
tert-Butylbenzene	13.8U	745	793	106	745	784	105	65-130	0.98	(< 20)
Tetrachloroethene	6.85U	745	840	113	745	856	115	65-140	1.80	(< 20)
Toluene	15.9J	745	800	105	745	797	105	70-125	0.34	(< 20)
trans-1,2-Dichloroethene	13.8U	745	795	107	745	781	105	65-135	1.70	(< 20)
trans-1,3-Dichloropropene	13.8U	745	807	108	745	808	108	65-125	0.12	(< 20)
Trichloroethene	6.85U	745	827	111	745	820	110	75-125	0.88	(< 20)
Trichlorofluoromethane	27.5U	745	758	102	745	767	103	25-185	1.20	(< 20)
Vinyl chloride	13.8U	745	771	103	745	762	102	60-125	1.10	(< 20)
Xylenes (total)	49.5J	2232	2358	103	2232	2379	104	80-125	0.94	(< 20)
Surrogates										
1,2-Dichloroethane-D4		745	737	99	745	735	99	79-118	0.41	
4-Bromofluorobenzene		1989	1800	91	1989	1789	90	67-138	0.73	
Toluene-d8		745	809	109	745	812	109	85-115	0.18	

Print Date: 10/31/2014 2:37:18PM



Matrix Spike Summary

Original Sample ID: 1144972001
MS Sample ID: 1238802 MS
MSD Sample ID: 1238803 MSD

Analysis Date:
Analysis Date: 10/07/2014 14:58
Analysis Date: 10/07/2014 15:14
Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938007, 1144938008

Results by SW8260B

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS14531
Analytical Method: SW8260B
Instrument: VQA 7890/5975 GC/MS
Analyst: KCT
Analytical Date/Time: 10/7/2014 2:58:00PM

Prep Batch: VXX26587
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 10/7/2014 12:00:00AM
Prep Initial Wt./Vol.: 52.95g
Prep Extract Vol: 25.00mL

Print Date: 10/31/2014 2:37:18PM



Method Blank

Blank ID: MB for HBN 1656351 [VXX/26590]

Blank Lab ID: 1238881

QC for Samples:

1144938010, 1144938011

Matrix: Water (Surface, Eff., Ground)

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.500U	1.00	0.310	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	5.00U	10.0	3.10	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.300	ug/L

Print Date: 10/31/2014 2:37:19PM



Method Blank

Blank ID: MB for HBN 1656351 [VXX/26590]

Blank Lab ID: 1238881

QC for Samples:

1144938010, 1144938011

Matrix: Water (Surface, Eff., Ground)

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	5.00U	10.0	3.10	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl chloride	0.500U	1.00	0.310	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4	107	70-120		%
4-Bromofluorobenzene	100	75-120		%
Toluene-d8	96.5	85-120		%

Print Date: 10/31/2014 2:37:19PM



Method Blank

Blank ID: MB for HBN 1656351 [VXX/26590]
Blank Lab ID: 1238881

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1144938010, 1144938011

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS14534
Analytical Method: SW8260B
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 10/7/2014 3:47:00PM

Prep Batch: VXX26590
Prep Method: SW5030B
Prep Date/Time: 10/7/2014 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/31/2014 2:37:19PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [VXX26590]
 Blank Spike Lab ID: 1238882
 Date Analyzed: 10/07/2014 16:12

Spike Duplicate ID: LCSD for HBN 1144938 [VXX26590]
 Spike Duplicate Lab ID: 1238883
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144938010, 1144938011

Results by SW8260B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	29.3	98	30	32.9	110	(80-130)	11.50	(< 20)
1,1,1-Trichloroethane	30	34.5	115	30	35.7	119	(65-130)	3.20	(< 20)
1,1,2,2-Tetrachloroethane	30	29.7	99	30	31.6	105	(65-130)	6.20	(< 20)
1,1,2-Trichloroethane	30	28.0	93	30	30.9	103	(75-125)	9.80	(< 20)
1,1-Dichloroethane	30	31.2	104	30	31.6	105	(70-135)	1.30	(< 20)
1,1-Dichloroethene	30	31.6	105	30	33.6	112	(70-130)	6.10	(< 20)
1,1-Dichloropropene	30	33.1	110	30	33.9	113	(75-130)	2.40	(< 20)
1,2,3-Trichlorobenzene	30	29.4	98	30	33.8	113	(55-140)	13.80	(< 20)
1,2,3-Trichloropropane	30	29.7	99	30	32.2	107	(75-125)	7.90	(< 20)
1,2,4-Trichlorobenzene	30	26.1	87	30	30.8	103	(65-135)	16.70	(< 20)
1,2,4-Trimethylbenzene	30	27.9	93	30	29.0	97	(75-130)	4.10	(< 20)
1,2-Dibromo-3-chloropropane	30	32.5	108	30	33.9	113	(50-130)	4.10	(< 20)
1,2-Dibromoethane	30	28.3	94	30	32.1	107	(80-120)	12.60	(< 20)
1,2-Dichlorobenzene	30	29.4	98	30	29.5	99	(70-120)	0.48	(< 20)
1,2-Dichloroethane	30	31.3	104	30	32.3	108	(70-130)	3.30	(< 20)
1,2-Dichloropropane	30	33.5	112	30	34.1	114	(75-125)	1.80	(< 20)
1,3,5-Trimethylbenzene	30	33.7	112	30	33.7	112	(75-130)	0.06	(< 20)
1,3-Dichlorobenzene	30	30.9	103	30	30.8	103	(75-125)	0.55	(< 20)
1,3-Dichloropropane	30	31.5	105	30	33.5	112	(75-125)	6.20	(< 20)
1,4-Dichlorobenzene	30	31.1	104	30	31.4	105	(75-125)	0.96	(< 20)
2,2-Dichloropropane	30	34.1	114	30	35.2	117	(70-135)	3.30	(< 20)
2-Butanone (MEK)	90	98.6	110	90	110	122	(30-150)	10.90	(< 20)
2-Chlorotoluene	30	32.1	107	30	31.3	104	(75-125)	2.60	(< 20)
2-Hexanone	90	93.6	104	90	103	115	(55-130)	9.90	(< 20)
4-Chlorotoluene	30	31.1	104	30	31.6	105	(75-130)	1.70	(< 20)
4-Isopropyltoluene	30	29.0	97	30	29.6	99	(75-130)	2.00	(< 20)
4-Methyl-2-pentanone (MIBK)	90	93.6	104	90	105	117	(60-135)	11.70	(< 20)
Benzene	30	31.5	105	30	32.0	107	(80-120)	1.50	(< 20)
Bromobenzene	30	30.5	102	30	30.2	101	(75-125)	1.10	(< 20)
Bromochloromethane	30	33.5	112	30	35.7	119	(65-130)	6.30	(< 20)
Bromodichloromethane	30	35.5	118	30	36.5	122	* (75-120)	2.70	(< 20)
Bromoform	30	30.2	101	30	35.4	118	(70-130)	15.90	(< 20)
Bromomethane	30	25.4	85	30	30.4	101	(30-145)	18.00	(< 20)
Carbon disulfide	45	51.4	114	45	53.2	118	(35-160)	3.50	(< 20)

Print Date: 10/31/2014 2:37:21PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [VXX26590]
 Blank Spike Lab ID: 1238882
 Date Analyzed: 10/07/2014 16:12

Spike Duplicate ID: LCSD for HBN 1144938
 [VXX26590]
 Spike Duplicate Lab ID: 1238883
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144938010, 1144938011

Results by SW8260B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	35.5	118	30	36.6	122	(65-140)	3.10	(< 20)
Chlorobenzene	30	31.2	104	30	31.7	106	(80-120)	1.60	(< 20)
Chloroethane	30	34.1	114	30	32.1	107	(60-135)	6.30	(< 20)
Chloroform	30	30.6	102	30	30.8	103	(65-135)	0.72	(< 20)
Chloromethane	30	31.0	103	30	31.5	105	(40-125)	1.50	(< 20)
cis-1,2-Dichloroethene	30	31.0	103	30	32.4	108	(70-125)	4.40	(< 20)
cis-1,3-Dichloropropene	30	32.4	108	30	33.9	113	(70-130)	4.60	(< 20)
Dibromochloromethane	30	31.8	106	30	33.1	110	(60-135)	4.00	(< 20)
Dibromomethane	30	31.6	105	30	33.0	110	(75-125)	4.60	(< 20)
Dichlorodifluoromethane	30	32.3	108	30	32.0	107	(30-155)	0.96	(< 20)
Ethylbenzene	30	34.7	116	30	33.4	111	(75-125)	3.60	(< 20)
Hexachlorobutadiene	30	29.8	99	30	30.7	102	(50-140)	2.90	(< 20)
Isopropylbenzene (Cumene)	30	36.3	121	30	34.2	114	(75-125)	6.10	(< 20)
Methylene chloride	30	32.1	107	30	31.6	105	(55-140)	1.40	(< 20)
Methyl-t-butyl ether	45	49.4	110	45	51.1	114	(65-125)	3.60	(< 20)
Naphthalene	30	25.1	84	30	32.5	108	(55-140)	25.70	* (< 20)
n-Butylbenzene	30	25.0	83	30	30.2	101	(70-135)	19.00	(< 20)
n-Propylbenzene	30	33.2	111	30	31.9	106	(70-130)	4.10	(< 20)
o-Xylene	30	34.6	115	30	34.8	116	(80-120)	0.43	(< 20)
P & M -Xylene	60	71.4	119	60	67.4	112	(75-130)	5.70	(< 20)
sec-Butylbenzene	30	33.9	113	30	33.3	111	(70-125)	1.80	(< 20)
Styrene	30	31.5	105	30	31.0	103	(65-135)	1.70	(< 20)
tert-Butylbenzene	30	33.2	111	30	32.0	107	(70-130)	3.60	(< 20)
Tetrachloroethene	30	30.1	100	30	33.0	110	(45-150)	9.20	(< 20)
Toluene	30	27.5	92	30	30.4	101	(75-120)	10.00	(< 20)
trans-1,2-Dichloroethene	30	33.0	110	30	34.0	113	(60-140)	3.10	(< 20)
trans-1,3-Dichloropropene	30	30.8	103	30	32.7	109	(55-140)	6.00	(< 20)
Trichloroethene	30	31.7	106	30	31.4	105	(70-125)	1.00	(< 20)
Trichlorofluoromethane	30	35.3	118	30	33.2	111	(60-145)	6.10	(< 20)
Vinyl chloride	30	33.1	110	30	32.1	107	(50-145)	3.20	(< 20)
Xylenes (total)	90	106	118	90	102	114	(80-120)	3.70	(< 20)
Surrogates									
1,2-Dichloroethane-D4	30	105	105	30	105	105	(70-120)	0.73	

Print Date: 10/31/2014 2:37:21PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [VXX26590]
Blank Spike Lab ID: 1238882
Date Analyzed: 10/07/2014 16:12

Spike Duplicate ID: LCSD for HBN 1144938 [VXX26590]
Spike Duplicate Lab ID: 1238883
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144938010, 1144938011

Results by SW8260B

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
4-Bromofluorobenzene	30	98.5	99	30	97.4	97	(75-120)	1.10	
Toluene-d8	30	93.1	93	30	102	102	(85-120)	9.30	

Batch Information

Analytical Batch: VMS14534
Analytical Method: SW8260B
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB

Prep Batch: VXX26590
Prep Method: SW5030B
Prep Date/Time: 10/07/2014 06:00
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/31/2014 2:37:21PM



Method Blank

Blank ID: MB for HBN 1654864 [XXX/32127]
Blank Lab ID: 1238144

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1144938010

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane	82.3	60-120		%

Batch Information

Analytical Batch: XFC11614
Analytical Method: AK102
Instrument: HP 7890A FID SV E R
Analyst: MCM
Analytical Date/Time: 10/6/2014 1:35:00PM

Prep Batch: XXX32127
Prep Method: SW3520C
Prep Date/Time: 10/4/2014 8:55:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:37:23PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [XXX32127]
 Blank Spike Lab ID: 1238145
 Date Analyzed: 10/06/2014 14:40

Spike Duplicate ID: LCSD for HBN 1144938
 [XXX32127]
 Spike Duplicate Lab ID: 1238146
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144938010

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Diesel Range Organics	5	4.51	90	5	4.75	95	(75-125)	5.30	(< 20)	
Surrogates										
5a Androstane	0.1	88.7	89	0.1	96.4	96	(60-120)	8.30		

Batch Information

Analytical Batch: **XFC11614**
 Analytical Method: **AK102**
 Instrument: **HP 7890A FID SV ER**
 Analyst: **MCM**

Prep Batch: **XXX32127**
 Prep Method: **SW3520C**
 Prep Date/Time: **10/04/2014 08:55**
 Spike Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL

Print Date: 10/31/2014 2:37:25PM



Method Blank

Blank ID: MB for HBN 1654864 [XXX/32127]
Blank Lab ID: 1238144

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1144938010

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62	87.1	60-120		%

Batch Information

Analytical Batch: XFC11614
Analytical Method: AK103
Instrument: HP 7890A FID SV E R
Analyst: MCM
Analytical Date/Time: 10/6/2014 1:35:00PM

Prep Batch: XXX32127
Prep Method: SW3520C
Prep Date/Time: 10/4/2014 8:55:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:37:26PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [XXX32127]
 Blank Spike Lab ID: 1238145
 Date Analyzed: 10/06/2014 14:40

Spike Duplicate ID: LCSD for HBN 1144938 [XXX32127]
 Spike Duplicate Lab ID: 1238146
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144938010

Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Residual Range Organics	5	4.59	92	5	4.95	99	(60-120)	7.60	(< 20)	
Surrogates										
n-Triacontane-d62	0.1	89.3	89	0.1	98.5	99	(60-120)	9.80		

Batch Information

Analytical Batch: **XFC11614**
 Analytical Method: **AK103**
 Instrument: **HP 7890A FID SV ER**
 Analyst: **MCM**

Prep Batch: **XXX32127**
 Prep Method: **SW3520C**
 Prep Date/Time: **10/04/2014 08:55**
 Spike Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL

Print Date: 10/31/2014 2:37:28PM



Method Blank

Blank ID: MB for HBN 1654865 [XXX/32128]
Blank Lab ID: 1238147

Matrix: Soil/Solid (dry weight)

QC for Samples:

1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938007, 1144938008

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane	88.9	60-120		%

Batch Information

Analytical Batch: XFC11622
Analytical Method: AK102
Instrument: HP 7890A FID SV E R
Analyst: MCM
Analytical Date/Time: 10/9/2014 7:09:00PM

Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/4/2014 9:30:44AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:37:30PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [XXX32128]
 Blank Spike Lab ID: 1238148
 Date Analyzed: 10/09/2014 19:29

Spike Duplicate ID: LCSD for HBN 1144938
 [XXX32128]
 Spike Duplicate Lab ID: 1238149
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938007, 1144938008

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Diesel Range Organics	167	166	99	167	166	100	(75-125)	0.48	(< 20)	
Surrogates										
5a Androstane	3.33	96.2	96	3.33	99	99	(60-120)	2.90		

Batch Information

Analytical Batch: **XFC11622**
 Analytical Method: **AK102**
 Instrument: **HP 7890A FID SV E R**
 Analyst: **MCM**

Prep Batch: **XXX32128**
 Prep Method: **SW3550C**
 Prep Date/Time: **10/04/2014 09:30**
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Print Date: 10/31/2014 2:37:32PM



Method Blank

Blank ID: MB for HBN 1654865 [XXX/32128]
Blank Lab ID: 1238147

Matrix: Soil/Solid (dry weight)

QC for Samples:

1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938007, 1144938008

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	7.40J	20.0	6.20	mg/Kg
Surrogates				
n-Triacontane-d62	84	60-120		%

Batch Information

Analytical Batch: XFC11622
Analytical Method: AK103
Instrument: HP 7890A FID SV E R
Analyst: MCM
Analytical Date/Time: 10/9/2014 7:09:00PM

Prep Batch: XXX32128
Prep Method: SW3550C
Prep Date/Time: 10/4/2014 9:30:44AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:37:34PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [XXX32128]
 Blank Spike Lab ID: 1238148
 Date Analyzed: 10/09/2014 19:29

Spike Duplicate ID: LCSD for HBN 1144938
 [XXX32128]
 Spike Duplicate Lab ID: 1238149
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938007,
 1144938008

Results by AK103

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Residual Range Organics	167	168	101	167	174	104	(60-120)	3.40	(< 20)	
Surrogates										
n-Triacontane-d62	3.33	93.8	94	3.33	99	99	(60-120)	5.40		

Batch Information

Analytical Batch: **XFC11622**
 Analytical Method: **AK103**
 Instrument: **HP 7890A FID SV E R**
 Analyst: **MCM**

Prep Batch: **XXX32128**
 Prep Method: **SW3550C**
 Prep Date/Time: **10/04/2014 09:30**
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Print Date: 10/31/2014 2:37:37PM



Method Blank

Blank ID: MB for HBN 1654887 [XXX/32134]
Blank Lab ID: 1238257

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1144938010

Results by 8270D SIMS (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0250U	0.0500	0.0150	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0250U	0.0500	0.0150	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Fluorobiphenyl	85.1	50-110		%
Terphenyl-d14	95.8	50-135		%

Batch Information

Analytical Batch: XMS8322
Analytical Method: 8270D SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 10/7/2014 4:26:00PM

Prep Batch: XXX32134
Prep Method: SW3520C
Prep Date/Time: 10/5/2014 9:00:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:37:38PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [XXX32134]
 Blank Spike Lab ID: 1238258
 Date Analyzed: 10/07/2014 16:42

Spike Duplicate ID: LCSD for HBN 1144938
 [XXX32134]
 Spike Duplicate Lab ID: 1238259
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144938010

Results by 8270D SIMS (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	0.5	0.421	84	0.5	0.468	94	(47-107)	10.60	(< 30)
2-Methylnaphthalene	0.5	0.396	79	0.5	0.427	85	(45-105)	7.50	(< 30)
Acenaphthene	0.5	0.442	89	0.5	0.462	92	(45-110)	4.30	(< 30)
Acenaphthylene	0.5	0.422	84	0.5	0.454	91	(50-105)	7.20	(< 30)
Anthracene	0.5	0.443	89	0.5	0.491	98	(55-110)	10.30	(< 30)
Benzo(a)Anthracene	0.5	0.488	98	0.5	0.491	98	(55-110)	0.64	(< 30)
Benzo[a]pyrene	0.5	0.402	80	0.5	0.448	90	(55-110)	10.80	(< 30)
Benzo[b]Fluoranthene	0.5	0.533	107	0.5	0.510	102	(45-120)	4.50	(< 30)
Benzo[g,h,i]perylene	0.5	0.493	99	0.5	0.506	101	(40-125)	2.60	(< 30)
Benzo[k]fluoranthene	0.5	0.478	96	0.5	0.504	101	(45-125)	5.10	(< 30)
Chrysene	0.5	0.526	105	0.5	0.515	103	(55-110)	2.20	(< 30)
Dibenzo[a,h]anthracene	0.5	0.506	101	0.5	0.510	102	(40-125)	0.71	(< 30)
Fluoranthene	0.5	0.494	99	0.5	0.504	101	(55-115)	2.00	(< 30)
Fluorene	0.5	0.435	87	0.5	0.468	94	(50-110)	7.30	(< 30)
Indeno[1,2,3-c,d] pyrene	0.5	0.505	101	0.5	0.510	102	(45-125)	1.10	(< 30)
Naphthalene	0.5	0.402	80	0.5	0.446	89	(40-100)	10.40	(< 30)
Phenanthrene	0.5	0.463	93	0.5	0.492	98	(50-115)	6.00	(< 30)
Pyrene	0.5	0.468	94	0.5	0.479	96	(50-130)	2.30	(< 30)
Surrogates									
2-Fluorobiphenyl	0.5	89.4	89	0.5	95	95	(50-110)	6.10	
Terphenyl-d14	0.5	99.9	100	0.5	99.4	99	(50-135)	0.43	

Batch Information

Analytical Batch: XMS8322
 Analytical Method: 8270D SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS

Prep Batch: XXX32134
 Prep Method: SW3520C
 Prep Date/Time: 10/05/2014 09:00
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Print Date: 10/31/2014 2:37:40PM



Method Blank

Blank ID: MB for HBN 1655161 [XXX/32138]
Blank Lab ID: 1238315

Matrix: Soil/Solid (dry weight)

QC for Samples:

1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938007, 1144938008

Results by 8270D SIMS (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	2.50U	5.00	1.50	ug/Kg
2-Methylnaphthalene	2.50U	5.00	1.50	ug/Kg
Acenaphthene	2.50U	5.00	1.50	ug/Kg
Acenaphthylene	2.50U	5.00	1.50	ug/Kg
Anthracene	2.50U	5.00	1.50	ug/Kg
Benzo(a)Anthracene	2.50U	5.00	1.50	ug/Kg
Benzo[a]pyrene	2.50U	5.00	1.50	ug/Kg
Benzo[b]Fluoranthene	2.50U	5.00	1.50	ug/Kg
Benzo[g,h,i]perylene	2.50U	5.00	1.50	ug/Kg
Benzo[k]fluoranthene	2.50U	5.00	1.50	ug/Kg
Chrysene	2.50U	5.00	1.50	ug/Kg
Dibenzo[a,h]anthracene	2.50U	5.00	1.50	ug/Kg
Fluoranthene	2.50U	5.00	1.50	ug/Kg
Fluorene	2.50U	5.00	1.50	ug/Kg
Indeno[1,2,3-c,d] pyrene	2.50U	5.00	1.50	ug/Kg
Naphthalene	2.50U	5.00	1.50	ug/Kg
Phenanthrene	2.50U	5.00	1.50	ug/Kg
Pyrene	2.50U	5.00	1.50	ug/Kg
Surrogates				
2-Fluorobiphenyl	79.3	45-105		%
Terphenyl-d14	95.8	30-125		%

Batch Information

Analytical Batch: XMS8322
Analytical Method: 8270D SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 10/7/2014 8:50:00PM

Prep Batch: XXX32138
Prep Method: SW3550C
Prep Date/Time: 10/6/2014 9:19:44AM
Prep Initial Wt./Vol.: 22.5 g
Prep Extract Vol: 1 mL

Print Date: 10/31/2014 2:37:42PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144938 [XXX32138]

Blank Spike Lab ID: 1238316

Date Analyzed: 10/07/2014 21:06

Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938007, 1144938008

Results by 8270D SIMS (PAH)

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	22.2	15.9	71	(44-107)
2-Methylnaphthalene	22.2	13.9	62	(45-105)
Acenaphthene	22.2	16.3	74	(45-110)
Acenaphthylene	22.2	15.4	69	(45-105)
Anthracene	22.2	16.0	72	(55-105)
Benzo(a)Anthracene	22.2	18.8	85	(50-110)
Benzo[a]pyrene	22.2	16.0	72	(50-110)
Benzo[b]Fluoranthene	22.2	19.2	86	(45-115)
Benzo[g,h,i]perylene	22.2	18.8	85	(40-125)
Benzo[k]fluoranthene	22.2	19.7	89	(45-125)
Chrysene	22.2	20.6	93	(55-110)
Dibenzo[a,h]anthracene	22.2	18.6	84	(40-125)
Fluoranthene	22.2	20.0	90	(55-115)
Fluorene	22.2	16.4	74	(50-110)
Indeno[1,2,3-c,d] pyrene	22.2	18.9	85	(40-120)
Naphthalene	22.2	14.9	67	(40-105)
Phenanthrene	22.2	17.8	80	(50-110)
Pyrene	22.2	19.1	86	(45-125)

Surrogates

2-Fluorobiphenyl	22.2	72.4	72	(45-105)
Terphenyl-d14	22.2	88.3	88	(30-125)

Batch Information

Analytical Batch: XMS8322

Analytical Method: 8270D SIMS (PAH)

Instrument: HP 6890/5973 MS SVQA

Analyst: RTS

Prep Batch: XXX32138

Prep Method: SW3550C

Prep Date/Time: 10/06/2014 09:19

Spike Init Wt./Vol.: 22.2 ug/Kg Extract Vol: 1 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 10/31/2014 2:37:44PM



Matrix Spike Summary

Original Sample ID: 1240677
 MS Sample ID: 1238877 MS
 MSD Sample ID: 1238878 MSD

Analysis Date: 10/07/2014 21:21
 Analysis Date: 10/07/2014 21:37
 Analysis Date: 10/07/2014 21:52
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1144938001, 1144938002, 1144938003, 1144938004, 1144938005, 1144938006, 1144938007, 1144938008

Results by 8270D SIMS (PAH)

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	12.4U	22.1	32.3	146 *	22.2	33.2	150 *	44-107	2.90	(< 30)
2-Methylnaphthalene	12.4U	22.1	23.1J	104	22.2	23.6J	106 *	45-105	2.30	(< 30)
Acenaphthene	12.4U	22.1	12.4U	0 *	22.2	12.4U	0 *	45-110	0.00	(< 30)
Acenaphthylene	12.4U	22.1	12.4U	0 *	22.2	12.4U	0 *	45-105	0.00	(< 30)
Anthracene	12.4U	22.1	12.4U	0 *	22.2	12.4U	0 *	55-105	0.00	(< 30)
Benzo(a)Anthracene	12.4U	22.1	23.7J	107	22.2	25.9	117 *	50-110	8.90	(< 30)
Benzo(a)pyrene	12.4U	22.1	26.1	118 *	22.2	27.0	122 *	50-110	3.30	(< 30)
Benzo(b)Fluoranthene	12.4U	22.1	12.4U	0 *	22.2	12.4U	0 *	45-115	0.00	(< 30)
Benzo(g,h,i)perylene	16.8J	22.1	29	55	22.2	28.7	53	40-125	1.20	(< 30)
Benzo(k)fluoranthene	12.4U	22.1	12.4U	0 *	22.2	12.4U	0 *	45-125	0.00	(< 30)
Chrysene	12.4U	22.1	39.9	180 *	22.2	37.4	168 *	55-110	6.40	(< 30)
Dibenzo(a,h)anthracene	12.4U	22.1	16.4J	74	22.2	16.3J	73	40-125	0.81	(< 30)
Fluoranthene	12.4U	22.1	31.8	144 *	22.2	37.3	168 *	55-115	16.10	(< 30)
Fluorene	12.4U	22.1	12.4U	0 *	22.2	12.4U	0 *	50-110	0.00	(< 30)
Indeno[1,2,3-c,d] pyrene	12.4U	22.1	23.5J	106	22.2	23.4J	105	40-120	0.51	(< 30)
Naphthalene	12.4U	22.1	20.5J	93	22.2	22.5J	101	40-105	9.30	(< 30)
Phenanthrene	12.4U	22.1	12.4U	0 *	22.2	12.4U	0 *	50-110	0.00	(< 30)
Pyrene	36.6	22.1	58.8	100	22.2	58.1	97	45-125	1.20	(< 30)
Surrogates										
2-Fluorobiphenyl		22.1	31.8	144 *	22.2	26.7	120 *	45-105	17.40	
Terphenyl-d14		22.1	28	127 *	22.2	27.6	124	30-125	1.20	

Batch Information

Analytical Batch: XMS8322
 Analytical Method: 8270D SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS
 Analytical Date/Time: 10/7/2014 9:37:00PM

Prep Batch: XXX32138
 Prep Method: Sonication Extraction Soil 8270 PAH SIM
 Prep Date/Time: 10/6/2014 9:19:44AM
 Prep Initial Wt./Vol.: 22.62g
 Prep Extract Vol: 1.00mL

Print Date: 10/31/2014 2:37:46PM

1144938



SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Laboratory SGS Page 1 of 2
Attn: Terri

400 N. 34th Street, Suite 100 Seattle, WA 98103 (206) 632-8020
2355 Hill Road Fairbanks, AK 99709 (907) 479-0600
2255 S.W. Canyon Road Portland, OR 97201-2498 (503) 223-6147

2043 Westport Center Drive St. Louis, MO 63146-3564 (314) 699-9660
5430 Fairbanks Street, Suite 3 Anchorage, AK 99518 (907) 561-2120
1200 17th Street, Suite 1024 Denver, Co 80202 (303) 825-3800

303 Wellsian Way Richland, WA 99352 (509) 946-6309

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GR0 AK 101	VOCs EPA 8260B	DR0/RP0 AK 102/103	PAHs EPA 8270D SIMS	Lead EPA 6020	Dioxins EPA 8290	Total Number of Containers	Remarks/Matrix
17687 - EB152	① A-B	1505	10/1/14			X	X	X	X			2	soil
- EB251	② A-B	1605	10/1/14			X	X	X	X			2	
- EB355	③ A-B	925	10/2/14			X	X	X	X			2	
- EB452	④ A-B	1140	10/2/14			X	X	X	X			2	
- SS1	⑤ A-C	1544	9/30/14			X	X	X	X	X		3	
- SS2	⑥ A-B	1556				X	X	X	X	X		2	
- SS3	⑦ A-B	1605				X	X	X	X			2	
- SS4	⑧ A-B	1615				X	X	X	X			2	
- STB	⑨ A	900				X	X					1	trip blank
- TMW1	⑩ A-J	1105	10/2/14			X	X	X	X			10	groundwater

Project Information	Sample Receipt
Project Number: <u>321-17687</u>	Total Number of Containers
Project Name: <u>25951 Williamson</u>	COC Seals/Intact? Y/N/NA
Contact: <u>Dan McMahon</u>	Received Good Cond./Cold
Ongoing Project? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Delivery Method:
Sampler: <u>EJK</u>	(attach shipping bill, if any)

Instructions
Requested Turnaround Time: <u>standard</u>
Special Instructions:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>Erika Knight</u> Time: <u>10:47</u>	Signature: _____ Time: _____	Signature: _____ Time: _____
Printed Name: <u>Erika Knight</u> Date: <u>10/3/14</u>	Printed Name: _____ Date: _____	Printed Name: _____ Date: _____
Company: <u>Shannon + Wilson</u>	Company: _____	Company: _____
Received By: 1.	Received By: 2.	Received By: 3.
Signature: _____ Time: _____	Signature: _____ Time: _____	Signature: <u>Terri Draeger</u> Time: <u>10:48</u>
Printed Name: _____ Date: _____	Printed Name: _____ Date: _____	Printed Name: <u>Terri Draeger</u> Date: <u>10/3/14</u>
Company: _____	Company: _____	Company: <u>SGS</u>

2.1 #11
10.3 #11



Returned Bottles Inventory

Name of individual returning bottles:

Dan McMahon

Date Received:

10/3/14

Client Name:

Shannon & Wilson

Received by:

CRD

Project Name:

32-1-17687 25951 Williamson

SGS PM:

Tori Pennick

HDPE/Nalgene:	1-L	
	500-ml	
	250-ml or 8-oz	
	125-ml or 4-oz	
	60-ml or 2-oz	
	other	
amber glass:	1-L	
	500-ml	
	250-ml or 8-oz	
	125-ml or 4-oz with or without septa	40
	40-ml VOA vial	
	other	
Subtotal:		40

Note: Returned bottles (regardless of size/pres.) are billed back at \$4/bottle unless otherwise quoted.

Amount to Invoice Client \$:

160.00

WO#: _

1144938





SAMPLE RECEIPT FORM

SGS WO# 1144938

Table with 3 columns: Review Criteria, Conditions, and Comments/Action Taken. Rows include questions about custody seals, temperature blanks, delivery methods, and sample conditions.

Note to Client: Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1144938001-A	No Preservative Required	OK			
1144938001-B	Methanol field pres. 4 C	OK			
1144938002-A	No Preservative Required	OK			
1144938002-B	Methanol field pres. 4 C	OK			
1144938003-A	No Preservative Required	OK			
1144938003-B	Methanol field pres. 4 C	OK			
1144938004-A	No Preservative Required	OK			
1144938004-B	Methanol field pres. 4 C	OK			
1144938005-A	No Preservative Required	OK			
1144938005-B	No Preservative Required	OK			
1144938005-C	Methanol field pres. 4 C	OK			
1144938006-A	No Preservative Required	OK			
1144938006-B	Methanol field pres. 4 C	OK			
1144938007-A	No Preservative Required	OK			
1144938007-B	Methanol field pres. 4 C	OK			
1144938008-A	No Preservative Required	OK			
1144938008-B	Methanol field pres. 4 C	OK			
1144938009-A	Methanol field pres. 4 C	OK			
1144938010-A	HCL to pH < 2	OK			
1144938010-B	HCL to pH < 2	OK			
1144938010-C	HCL to pH < 2	OK			
1144938010-D	HCL to pH < 2	OK			
1144938010-E	HCL to pH < 2	OK			
1144938010-F	HCL to pH < 2	OK			
1144938010-G	HCL to pH < 2	OK			
1144938010-H	HCL to pH < 2	OK			
1144938010-I	No Preservative Required	OK			
1144938010-J	No Preservative Required	OK			
1144938011-A	HCL to pH < 2	OK			
1144938011-B	HCL to pH < 2	OK			
1144938011-C	HCL to pH < 2	OK			

Container Condition Glossary

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.



FINAL LAB REPORT

Prepared by

SGS NORTH AMERICA

Prepared for

This report is approved by

This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

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17 OCTOBER 2014

JULIE SHUMWAY
SGS NORTH AMERICA – AK

200 W. Potter Drive
Anchorage, AK 99518
t. 907 562 2343
e. Julie.Shumway@sgs.com

SUBJECT: CERTIFICATE OF RESULTS

Dear Julie;

Attached to this narrative are the analytical results for sample(s) submitted for the determination of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans. The insert below summarizes information about the project. If applicable, QC annotations below highlight specific analytical observations and assessments made during the sample handling and data interpretation phases.

Results reported relate only to the items tested.

PROJECT INFORMATION SUMMARY *(When applicable, see QC Annotations for details)*

Client Project	1144938
SGS Project #	A7205
Analytical Protocol(s)	Method 8290A
No. Samples Submitted	1
Additional QC Sample(s)	0
No. Laboratory Method Blanks	1
No. OPRs / Batch CS3	1
Date Received	7-Oct-14
Condition Received	good
Temperature upon Receipt (°C)	1
Extraction within Holding Time	yes
Analysis within Holding Time	yes

QC ANNOTATIONS:

- | | |
|----|--|
| 1. | Please see Appendices attached for data qualifier/attribute and lab identifier descriptions which may be contained in the project. |
|----|--|

SGS remains committed to serving you in the most effective manner. Should you have any questions or need additional information and technical support, please do not hesitate to contact us.

The management and staff of SGS welcomes customer feedback, both positive and negative, as we continually improve our services. Please visit our web site at www.sgs.com/ultratrace and click on the 'Email Us' link or go to our survey [here](#). Thank you for choosing SGS.

All services are rendered in accordance with the applicable SGS General Conditions of Service accessible via: http://www.sgs.com/terms_and_conditions.htm.

Sincerely,



Amy J. Boehm

Senior Project Manager

APPENDIX A: GENERAL DATA QUALIFIERS / DATA ATTRIBUTES

B	The analyte was found in the method blank, at a concentration that was at least 10% of the concentration in the sample.
C	Two or more congeners co-elute. In EDDs, C denotes the lowest IUPAC congener in a co-elution group and additional co-eluters for the group are shown with the number of the lowest IUPAC co-eluter.
E	The reported concentration exceeds the calibration range (upper point of the calibration curve) and is an estimated value.
EMPC	Represents an Estimated Maximum Possible Concentration. EMPCs arise in cases where the signal/noise ratio is not sufficient for peak identification (the determined ion-abundance ratio is outside the allowed theoretical range), or where there is a co-eluting interference.
H/h	If the standard recovery is below the method or SOP specified value "H" is assigned. If the obtained value is less than half the specified value "h" is assigned.
J	Indicates that an analyte has a concentration below the reporting limit (lowest point of the calibration curve) and is an estimated value.
ND	Indicates a non-detect.
NR or R	Indicates a value that is not reportable.
PR	Due to interference, the associated congener is poorly resolved.
QI	Indicates the presence of a quantitative interference.
SI	Denotes "Single Ion Mode" and is utilized for PCBs where the secondary ion trace has a significantly elevated noise level due to background PFK. Responses for such peaks are calculated using an EMPC approach based solely on the primary ion area(s) and may be considered estimates.
U	The analyte was not detected. The estimated detection limit (EDL) may be reported for this analyte.
V	The labeled standard recovery was found to be outside of the method control limits.

APPENDIX B: DRBC/TMDL SPECIFIC DATA QUALIFIERS / DATA ATTRIBUTES

J	The reported result is an estimate. The value is less than the minimum calibration level but greater than the estimated detection limit (EDL).
U	The analyte was not detected in the sample at the estimated detection limit (EDL).
E	The reported concentration is an estimate. The value exceeds the upper calibration range (upper point of the calibration curve).
D	Dilution Data. Result was obtained from the analysis of a dilution.
B	Analyte found in the sample and associated method blank.
C	Co-eluting congener
Cxx	Co-elutes with the indicated congener, data is reported under the lowest IUPAC congener. 'Xx' denotes the IUPAC number with the lowest numerical designated congener.
NR	Analyte is not reportable because of problems in sample preparation or analysis.
V	Labeled standard recovery is not within method control limits.
X	Results from re-injection/repeat/second-column analysis.
EMPC	Estimated maximum possible concentration. Indicates that a peak is identified but did not meet the method specified ion-abundance ratio.

APPENDIX C: LAB IDENTIFIERS

AR	Indicates use of the archived portion of the sample extract.
CU	Indicates a sample that required additional clean-up prior to MS injection/processing.
D	Indicates a dilution of the sample extract. The number that follows the "D" indicates the dilution factor.
DE	Indicates a dilution performed with the addition of ES (extraction standard) solution.
DUP	Designation for a duplicate sample.
MS	Designation for a matrix spike.
MSD	Designation for a matrix spike duplicate.
RJ	Indicates a reinjection of the sample extract.
S	Indicates a sample split. The number that follows the "S" indicates the split factor.

SGS CERTIFICATIONS

Arkansas	88-0682
California (ELAP)	Interim ELAP Cert #2914
CLIA	34D1013708
Connecticut	PH-0258
USDA Soil Permit	P330-14-00135
DoD	2726.01
Florida (Primary NELAP)	E87634
ISO 17025/IEC	2726.01
Louisiana	4115
Maine	#2014020
Massachusetts	M-NC919
Minnesota (Primary NELAP For Method 23)	Lab #037-999-459 Cert #688823
New Jersey	NC100
New York	11685
North Carolina DWR	481
North Dakota	R-197
Oregon	NC200002
Pennsylvania	68-03675
South Carolina	Lab #99029 Cert #99029002
Texas	T104704260-13-5
US Coast Guard	16714/159.317/SGS
Virginia	Lab #460214 Cert #3006
Washington	C913
West Virginia	293

Sample ID: 17687-SS1

Method 8290A

Client Data		Sample Data		Laboratory Data			
Name:	SGS-AK	Matrix:	Solid	Lab Project ID:	A7205	Date Received:	07-Oct-2014
Project ID:	1144938	Weight/Volume:	10.02 g	Lab Sample ID:	A7205_12627_DF_001	Date Extracted:	10-Oct-2014
Date Collected:	30-Sep-2014	% Solid:	63.0 %	QC Batch No:	12627	Date Analyzed:	16-Oct-2014
		Split:	-	Dilution:	-	Time Analyzed:	04:12:29
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2378-TCDD	ND	0.0521			ES 2378-TCDD	87.4	
12378-PeCDD	ND	0.07			ES 12378-PeCDD	87.3	
123478-HxCDD	ND	0.0771			ES 123478-HxCDD	83.4	
123678-HxCDD	ND	0.0765			ES 123678-HxCDD	81.2	
123789-HxCDD	EMPC		0.119	J B	ES 123789-HxCDD	82.5	
1234678-HpCDD	1.83			J	ES 1234678-HpCDD	82	
OCDD	8.92				ES OCDD	57.5	
2378-TCDF	ND	0.0402			ES 2378-TCDF	87.5	
12378-PeCDF	ND	0.0353			ES 12378-PeCDF	92.1	
23478-PeCDF	ND	0.0408			ES 23478-PeCDF	82	
123478-HxCDF	0.0822			J	ES 123478-HxCDF	75.7	
123678-HxCDF	EMPC		0.0602	J	ES 123678-HxCDF	81.7	
234678-HxCDF	EMPC		0.0735	J	ES 234678-HxCDF	83.5	
123789-HxCDF	ND	0.0792			ES 123789-HxCDF	70.5	
1234678-HpCDF	3.01				ES 1234678-HpCDF	86	
1234789-HpCDF	ND	0.0798			ES 1234789-HpCDF	76.9	
OCDF	0.468			J	ES OCDF	52.7	
Totals					Standard	CS/AS Recoveries	
Total TCDD	0.187		0.187		CS 37Cl-2378-TCDD	84.5	
Total PeCDD	ND	0.07	ND		CS 12347-PeCDD	88.8	
Total HxCDD	0.687		0.806		CS 12346-PeCDF	88.4	
Total HpCDD	2.57		2.57		CS 123469-HxCDF	78.3	
Total TCDF	4.06		4.06		CS 1234689-HpCDF	79	
Total PeCDF	0.271		0.271		AS 1368-TCDD	88.4	
Total HxCDF	0.158		0.643		AS 1368-TCDF	89.9	
Total HpCDF	3.01		3.01				
Total PCDD/Fs	20.3		20.9				
ITEF TEQs							
TEQ: ND=0	0.0659		0.0911				
TEQ: ND=DL/2	0.144	0.0819	0.16				
TEQ: ND=DL	0.222	0.164	0.229				



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Sample ID: Method Blank A7205_12627

Method 8290A

Client Data		Sample Data		Laboratory Data			
Name:	SGS-AK	Matrix:	Solid	Lab Project ID:	A7205	Date Received:	n/a
Project ID:	1144938	Weight/Volume:	10.00 g	Lab Sample ID:	MB1_12627_DF_SDS	Date Extracted:	10-Oct-2014
Date Collected:	n/a	% Solid:	n/a	QC Batch No:	12627	Date Analyzed:	16-Oct-2014
		Split:	-	Dilution:	-	Time Analyzed:	02:25:50
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2378-TCDD	ND	0.0517			ES 2378-TCDD	90.6	
12378-PeCDD	ND	0.0661			ES 12378-PeCDD	89.5	
123478-HxCDD	ND	0.0528			ES 123478-HxCDD	91.4	
123678-HxCDD	ND	0.0537			ES 123678-HxCDD	84.5	
123789-HxCDD	0.102			J	ES 123789-HxCDD	89.1	
1234678-HpCDD	EMPC		0.0938	J	ES 1234678-HpCDD	86.7	
OCDD	0.42			J	ES OCDD	68.5	
2378-TCDF	ND	0.0382			ES 2378-TCDF	88.4	
12378-PeCDF	ND	0.0312			ES 12378-PeCDF	95.4	
23478-PeCDF	ND	0.0374			ES 23478-PeCDF	83.5	
123478-HxCDF	ND	0.0393			ES 123478-HxCDF	82.6	
123678-HxCDF	ND	0.0366			ES 123678-HxCDF	86.9	
234678-HxCDF	ND	0.0362			ES 234678-HxCDF	89.7	
123789-HxCDF	ND	0.0605			ES 123789-HxCDF	73.7	
1234678-HpCDF	0.0449			J	ES 1234678-HpCDF	92.1	
1234789-HpCDF	ND	0.0583			ES 1234789-HpCDF	84.4	
OCDF	ND	0.156			ES OCDF	59.7	
Totals					Standard	CS/AS Recoveries	
Total TCDD	0.0742		0.0742		CS 37Cl-2378-TCDD	90.2	
Total PeCDD	ND	0.0661	ND		CS 12347-PeCDD	90.2	
Total HxCDD	0.102		0.102		CS 12346-PeCDF	91.2	
Total HpCDD	ND		0.231		CS 123469-HxCDF	85.3	
Total TCDF	ND	0.0382	ND		CS 1234689-HpCDF	83.1	
Total PeCDF	ND	0.034	ND		AS 1368-TCDD	95.6	
Total HxCDF	ND	0.0419	ND		AS 1368-TCDF	94	
Total HpCDF	0.0449		0.0449				
Total PCDD/Fs	0.641		0.871				
ITEF TEQs							
TEQ: ND=0	0.011		0.012				
TEQ: ND=DL/2	0.0801	0.0721	0.0807				
TEQ: ND=DL	0.149	0.144	0.15				



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METHOD 1613B**PCDD/F ONGOING PRECISION AND RECOVERY (OPR)****FORM 8A**

Lab Name: SGS Environmental Services
 Initial Calibration: ICAL: MM3_DF_01172014_23AUG2014
 Instrument ID: MM3 GC Column ID: ZB-5ms
 VER Data Filename: 141016R02 Analysis Date: 16-OCT-2014 00:39:16
 Lab ID: OPR1_12627_DF

NATIVE ANALYTES	SPIKE CONC.	CONC. FOUND	RANGE (ng/mL)		OK
2,3,7,8-TCDD	10	9.36	6.7	- 15.8	Y
1,2,3,7,8-PeCDD	50	49.1	35	- 71	Y
1,2,3,4,7,8-HxCDD	50	52.3	35	- 82	Y
1,2,3,6,7,8-HxCDD	50	52.4	38	- 67	Y
1,2,3,7,8,9-HxCDD	50	50.1	32	- 81	Y
1,2,3,4,6,7,8-HpCDD	50	50.7	35	- 70	Y
OCDD	100	103	78	- 144	Y
2,3,7,8-TCDF	10	10.5	7.5	- 15.8	Y
1,2,3,7,8-PeCDF	50	49.7	40	- 67	Y
2,3,4,7,8-PeCDF	50	51.4	34	- 80	Y
1,2,3,4,7,8-HxCDF	50	49.5	36	- 67	Y
1,2,3,6,7,8-HxCDF	50	49.1	42	- 65	Y
2,3,4,6,7,8-HxCDF	50	50.6	35	- 78	Y
1,2,3,7,8,9-HxCDF	50	49.7	39	- 65	Y
1,2,3,4,6,7,8-HpCDF	50	51.8	41	- 61	Y
1,2,3,4,7,8,9-HpCDF	50	50.2	39	- 69	Y
OCDF	100	104	63	- 170	Y

Contract-required concentration limits for OPR as specified in Table 6,
 Method 1613. 10/94

Processed: 16 Oct 2014 15:52 Analyst: AP

METHOD 1613B**PCDD/F ONGOING PRECISION AND RECOVERY (OPR)****FORM 8B**

Lab Name: SGS Environmental Services
 Initial Calibration: ICAL: MM3_DF_01172014_23AUG2014
 Instrument ID: MM3 GC Column ID: ZB-5ms
 VER Data Filename: 141016R02 Analysis Date: 16-OCT-2014 00:39:16
 Lab ID: OPR1_12627_DF

LABELED ANALYTES	SPIKE CONC.	CONC. FOUND	RANGE (ng/mL)			OK
13C-2,3,7,8-TCDD	100	89.6	20	-	175	Y
13C-1,2,3,7,8-PeCDD	100	90	21	-	227	Y
13C-1,2,3,4,7,8-HxCDD	100	84.9	21	-	193	Y
13C-1,2,3,6,7,8-HxCDD	100	81.4	25	-	163	Y
13C-1,2,3,7,8,9-HxCDD	100	80.4	26	-	166	Y
13C-1,2,3,4,6,7,8-HpCDD	100	84.6	26	-	166	Y
13C-OCDD	200	135	26	-	397	Y
13C-2,3,7,8-TCDF	100	81.4	22	-	152	Y
13C-1,2,3,7,8-PeCDF	100	91.6	21	-	192	Y
13C-2,3,4,7,8-PeCDF	100	78.3	13	-	328	Y
13C-1,2,3,4,7,8-HxCDF	100	73.9	19	-	202	Y
13C-1,2,3,6,7,8-HxCDF	100	81.2	21	-	159	Y
13C-2,3,4,6,7,8-HxCDF	100	81.7	22	-	176	Y
13C-1,2,3,7,8,9-HxCDF	100	65.9	17	-	205	Y
13C-1,2,3,4,6,7,8-HpCDF	100	92.1	21	-	158	Y
13C-1,2,3,4,7,8,9-HpCDF	100	75.5	20	-	186	Y
13C-OCDF	200	110	26	-	397	Y
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	40	36	12.4	-	76.4	Y

Contract-required concentration limits for OPR as specified in Table 6,
 Method 1613. 10/94

Processed: 16 Oct 2014 15:52 Analyst: AP



SGS North America Inc.
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1 CLIENT: SGS - AK					SGS Reference: SGS-Wilmington, NC					Page <u>1</u> of <u>1</u>					
CONTACT: Julie Shumway PHONE NO: (907) 562-2343					Additional Comments: All soils report out in dry weight unless otherwise requested.										
PROJECT NAME: 1144938 PWSID/PERMIT#:															
REPORTS TO: Julie Shumway E-MAIL: Julie.Shumway@sgs.com															
INVOICE TO: SGS QUOTE #: 1144938 P.O. #: 1144938															
RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/MATRIX	# CONTAINERS	Preservative Used: 3	None				MS	MSD	SGS lab #	Loc ID	REMARKS
	17687-SS1	9/30/2014	15:44 PM	Soil	1	X	Dioxins by SW8290						1144938005		
5 Relinquished By: (1) <i>[Signature]</i>					Date	Time	Received By:					4 DOD Project? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		Data Deliverable Requirements: Level II Report + Excel EDD	
Relinquished By: (2)					Date	Time	Received By:					Requested Turnaround Time and-or Special Instructions:			
Relinquished By: (3)					Date	Time	Received By:					Temp Blank °C: <u>10</u>		Chain of Custody Seal: (Circle)	
Relinquished By: (4)					Date	Time	Received For Laboratory By: <i>Barbara Lager</i>					or Ambient []		<input checked="" type="radio"/> INTACT <input type="radio"/> BROKEN <input type="radio"/> ABSENT (See attached Sample Receipt Form) (See attached Sample Receipt Form)	

[] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
 [] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms_and_conditions.htm

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: Phase I & Limited Phase II Environmental Site Assessment, 25951
Williamson Lane, Kasilof, Alaska

Date: November 2014

Laboratory Report Date: October 31, 2014

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Erika Knight

Title: Environmental Scientist

Laboratory Name: SGS North America Inc.

Work Order Number: 1144938

ADEC File Number: NA

(NOTE: NA = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes** / No / NA (Please explain.)

Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS-approved?

Yes / No / NA

Comments: *Dioxin analysis by EPA 8290 was performed by SGS of Wilmington, NC.*

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?

Yes / No / NA (Please explain.)

Comments:

- b. Correct analyses requested? **Yes** / No / NA (Please explain.)

Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ} \text{C}$)?

Yes / **No** / NA (Please explain.)

Comments: *The temperature of cooler 1 was 2.1° C. The temperature of cooler 2 was 6.3° C.*

- b. Sample preservation acceptable - acidified waters, Methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? **Yes** / No / NA (Please explain.)

Comments:

- c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes** / No / NA (Please explain.)

Comments: *The sample receipt form notes that the samples were received in good condition.*

- d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? **Yes** / No / NA (Please explain.)

Comments: *The lab noted that the temperature of cooler 2 was outside range.*

- e. Data quality or usability affected? (Please Explain.)

Comments: *The cooler 2 temperature was 0.3° C outside range. It is our opinion that the samples' slightly elevated storage temperature does not affect their results.*

4. Case Narrative

- a. Present and understandable? **Yes** / No / NA (Please explain.)

Comments:

- b. Discrepancies, errors or QC failures noted by the lab? Yes / No / **NA** (Please explain.)

Comments: *The case narrative notes that:*

- *Method 8270D SIM LOQs for Samples SS1, SS3, SS4, and an MS/MSD are elevated due to sample dilution. The samples were analyzed at a dilution due to matrix interference with internal standards.*
- *Method 8270D SIM surrogate recoveries of 2-fluorobiphenyl and/or terphenyl-d14 are outside QC criteria (biased high) for Samples SS3, SS4, and an MS/MSD due to sample dilution.*
- *Method 8270D SIM MS/MSD recoveries of multiple analytes are outside QC criteria. The case narrative refers to the LCS for accuracy.*
- *Method AK102/103 surrogate recoveries of 5 α -androstane and n-triacontane are outside QC criteria (biased low) for Sample SS3 due to sample dilution.*
- *Method AK101 surrogate recovery of BFB does not meet QC criteria (biased high) due to matrix interference for Sample SS4.*
- *Method 8260B surrogate recovery of 1,2-dichloroethane-D4 does not meet QC criteria (biased high) for Sample SS4. The analytes associated with this surrogate were not detected above the LOQ.*
- *Method 8260B MS/MSD recoveries of hexachlorobutadiene are outside QC criteria. The case narrative refers to the LCS for accuracy.*
- *Method 8260B MS/MSD RPD for trichlorofluoromethane and trans-1,2-dichloroethene are outside QC criteria. These analytes were not detected above the LOQ in the associated samples.*

- c. Were corrective actions documented? Yes / No / **NA** (Please explain.)

Comments: *No corrective actions were taken.*

- d. What is the effect on data quality/usability, according to the case narrative? **NA**

Comments: *The case narrative does not discuss data quality/usability, except to refer to the LCS for accuracy in the case of MS/MSD recovery failures and to note that associated analytes were not detected above the LOQ in the case of the Method 8260B surrogate recovery and MS/MSD RPD failures.*

5. Sample Results

- a. Correct analyses performed/reported as requested on COC? **Yes** / No / NA (Please explain.)

Comments: *The full list of Method 8260B analytes was not initially reported for Sample TMW1 and the water trip blank, however the lab report was amended to include these results.*

- b. All applicable holding times met? **Yes** / No / NA (Please explain.)

Comments:

- c. All soils reported on a dry-weight basis? **Yes** / No / NA (Please explain.)

Comments:

- d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project? Yes / **No** / NA (Please explain.)

Comments:

- *The LOQs for multiple soil analytes exceed the ADEC cleanup levels. With the exception of 1,2-dibromoethane (EDB), 1,2-dichloroethane, 1,2,3-trichloropropane, methylene chloride, and vinyl chloride, the reporting limits (LODs) for these analytes are less than ADEC cleanup levels. These analytes were not detected in the project samples, with the exception of methylene chloride which was detected at an estimated concentration in Sample EB4S2.*
- *The 1,2,3-trichloropropane and 1,2-dibromoethane LOQs for groundwater exceeds the ADEC cleanup levels.*

- e. Data quality or usability affected? (Please explain.)

Comments:

- *There is a potential that 1,2-dibromoethane (EDB), 1,2-dichloroethane, 1,2,3-trichloropropane, methylene chloride, and vinyl chloride are present in the project soil samples at concentrations less than the LOQ but greater than ADEC cleanup levels.*
- *There is a potential that 1,2-dibromoethane (EDB), and 1,2,3-trichloropropane, are present in the groundwater sample at concentrations less than the LOQ but greater than ADEC cleanup levels.*

6. QC Samples

a. Method Blank

- i. One method blank reported per matrix, analysis, and 20 samples?

Yes / No / NA (Please explain.)

Comments:

- ii. All method blank results less than LOQ? Yes / No / NA (Please explain.)

Comments: *However, estimated (J-flagged) concentrations of chloromethane and RRO were detected in the soil method blanks. In addition, estimated (J-flagged) concentrations of 4 dioxins were detected in the method blank.*

- iii. If above LOQ, what samples are affected? NA

Comments: *RRO results for Samples EB1S2, EB2S1, EB3S5, and EB4S2 are affected. Chloromethane results for Sample SS3 are affected. The 1,2,3,7,8,9-HxCDD dioxin results were affected for Sample SS1.*

- iv. Do the affected sample(s) have data flags? Yes / No / NA

Comments:

If so, are the data flags clearly defined? Yes / No / NA

Comments: *RRO, chloromethane, and 1,2,3,7,8,9-HxCDD were detected at estimated concentrations in the method blanks. Therefore, results for the affected samples within five times the method blank concentrations are reported as non-detect at the LOQ and B-qualified in Table 2 of the Phase I & Limited Phase II ESA report. In addition, results for the affected samples within 10 times the method blank detections are reported at the detected concentration and B-qualified in Table 2.*

- v. Data quality or usability affected? (Please explain.) NA

Comments: *Each of the affected samples had RRO or chloromethane concentrations less than the ADEC cleanup levels. Therefore, the affected data are acceptable for the purposes of this report.*

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?

(LCS/LCSD required per AK methods, LCS required per SW846) Yes / No / NA (Please explain.)

Comments:

- ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? Yes / No / NA (Please explain.)

Comments: *One sample was analyzed for total lead; an LCS and MS/MSD were reported for this analysis. The remaining samples were not tested for*

metals/inorganics.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages) Yes **No**/ NA (Please explain.)

Comments:

- *The LCS/LCSD recovery of bromodichloromethane was outside QC limits (biased high) for the 8260B analysis for groundwater.*
- *MS/MSD recoveries of hexachlorobutadiene (for Method 8260B) and multiple PAH analytes were outside QC criteria for soil.*

- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) Yes **No**/ NA (Please explain.)

Comments:

- *The LCS/LCSD RPD for naphthalene was outside QC limits for the 8260B analysis for groundwater.*
- *The MS/MSD RPDs for trichlorofluoromethane and trans-1,2-dichlorethene were outside QC criteria for soil.*

If %R or RPD is outside of acceptable limits, what samples are affected? NA

Comments:

- *For the groundwater LCS/LCSD %R and RPD failures, these analytes were not detected in the associated samples.*
- *For the soil MS/MSD %R and RPD failures, the case narrative refers to the LCS for accuracy. The associated LCS %R and RPD results were within acceptable limits; therefore we do not consider the project samples to be affected.*

- v. Do the affected samples(s) have data flags? Yes **No**/ NA

Comments: *Data flagging is not required.*

If so, are the data flags clearly defined? Yes / No **NA**

Comments:

- vi. Data quality or usability affected? Explain. NA

Comments: *Data quality/usability is unaffected (see above).*

c. Surrogates - Organics Only

- i. Are surrogate recoveries reported for organic analyses, field, QC, and laboratory samples? **Yes** No / NA (Please explain.)

Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) **Yes** / **No** / **NA** (Please explain.)

Comments:

The following surrogate recovery failures were identified for the soil samples:

- *Method 8270D SIM surrogate recoveries of 2-fluorobiphenyl and/or terphenyl-d14 are outside QC criteria (biased high) for Samples SS3, SS4, and an MS/MSD due to sample dilution.*
- *Method AK102/103 surrogate recoveries of 5 α -androstane and n-triacontane are outside QC criteria (biased low) for Sample SS3 due to sample dilution.*
- *Method AK101 surrogate recovery of BFB does not meet QC criteria (biased high) due to matrix interference for Sample SS4.*
- *Method 8260B surrogate recovery of 1,2-dichloroethane-D4 does not meet QC criteria (biased high) for Sample SS4. The analytes associated with this surrogate were not detected above the LOQ.*

- iii. Do the sample results with failed surrogate recoveries have data flags? **Yes** / **No** / **NA** (Please explain.)

Comments: *Affected analytes for Methods 8270D SIM, 8260B, and AK101 are flagged J+ to indicate potential high bias. Affected analytes for Method AK102/103 are flagged J- to indicate potential low bias.*

If so, are the data flags clearly defined? **Yes** / **No** / **NA**

Comments:

- iv. Data quality or usability affected? Explain.

Comments: *The affected data are qualified J+/J- in Table 2 of the report.*

d. **Trip Blank** - Volatile analyses only (GRO, BTEX, VOCs, etc.) Water and Soil

- i. One trip blank reported per matrix, analysis and cooler? **Yes** / **No** / **NA** (Please explain.)

Comments:

- ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? **Yes** / **No** / **NA** (Please explain if NA or no.)

Comments: *However, the sample receipt form notes that the trip blanks were submitted in the cooler with the samples for volatile analysis.*

- iii. All results less than LOQ? **Yes** / **No** / **NA** (Please explain.)

Comments:

- iv. If above LOQ, what samples are affected? **NA**

Comments:

- v. Data quality or usability affected? Explain.
Comments: *Data quality/usability is unaffected.*

e. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / No / NA (Please explain.)
Comments: *A field duplicate was not part of the project scope.*
- ii. Were the field duplicates submitted blind to the lab? **Yes / No / NA (Please explain.)**
Comments:
- iii. Precision – All relative percent differences (RPDs) less than specified DQOs?
(Recommended: 30% for water, 50% for soil) **Yes / No / NA (Please explain.)**
Comments:
- iv. Data quality or usability affected? Explain. **NA**
Comments:

f. Decontamination or Equipment Blank (if not applicable, a comment stating why must be entered below)

Yes / No / NA (Please explain.) *An equipment blank was not part of the project scope.*

- i. All results less than LOQ? **Yes / No / NA (Please explain.)**
Comments:
- ii. If results are above LOQ, what samples are affected? **NA**
Comments:
- iii. Data quality or usability affected? Explain. **NA**
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

- a. Are they defined and appropriate? **Yes / No / NA**
Comments: *Laboratory-specific flags are defined on in the laboratory report.*

APPENDIX F

IMPORTANT INFORMATION ABOUT YOUR ENVIRONMENTAL

SITE ASSESSMENT/EVALUATION REPORT

AND

IMPORTANT INFORMATION ABOUT YOUR

GEOTECHNICAL/ENVIRONMENTAL REPORT



Important Information About Your Environmental Site Assessment/Evaluation Report

ENVIRONMENTAL SITE ASSESSMENTS/EVALUATIONS ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

This report was prepared to meet the needs you specified with respect to your specific site and your risk management preferences. Unless indicated otherwise, we prepared your report expressly for you and for the purposes you indicated. No one other than you should use this report for any purpose without first conferring with us. No one is authorized to use this report for any purpose other than that originally contemplated without our prior written consent.

The findings and conclusions documented in this site assessment/evaluation have been prepared for specific application to this project and have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in this area. The conclusions presented are based on interpretation of information currently available to us and are made within the operational scope, budget, and schedule constraints of this project. No warranty, express or implied, is made.

OUR REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

Our environmental site assessment is based on several factors and may include (but not be limited to): reviewing public documents to chronicle site ownership for the past 30, 40, or more years; investigating the site's regulatory history to learn about permits granted or citations issued; determining prior uses of the site and those adjacent to it; reviewing available topographic and real estate maps, historical aerial photos, geologic information, and hydrologic data; reviewing readily available published information about surface and subsurface conditions; reviewing federal and state lists of known and potentially contaminated sites; evaluating the potential for naturally occurring hazards; and interviewing public officials, owners/operators, and/or adjacent owners with respect to local concerns and environmental conditions.

Except as noted within the text of the report, no sampling or quantitative laboratory testing was performed by us as part of this site assessment. Where such analyses were conducted by an outside laboratory, Shannon & Wilson relied upon the data provided and did not conduct an independent evaluation regarding the reliability of the data.

CONDITIONS CAN CHANGE.

Site conditions, both surface and subsurface, may be affected as a result of natural processes or human influence. An environmental site assessment/evaluation is based on conditions that existed at the time of the evaluation. Because so many aspects of a historical review rely on third party information, most consultants will refuse to certify (warrant) that a site is free of contaminants, as it is impossible to know with absolute certainty if such a condition exists. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas that showed no signs of contamination at the time they were studied.

Unless your consultant indicates otherwise, your report should not be construed to represent geotechnical subsurface conditions at or adjacent to the site and does not provide sufficient information for construction-related activities. Your report also should not be used following floods, earthquakes, or other acts of nature; if the size or configuration of the site is altered; if the location of the site is modified; or if there is a change of ownership and/or use of the property.

INCIDENTAL DAMAGE MAY OCCUR DURING SAMPLING ACTIVITIES.

Incidental damage to a facility may occur during sampling activities. Asbestos and lead-based paint sampling often require destructive sampling of pipe insulation, floor tile, walls, doors, ceiling tile, roofing, and other building materials. Shannon & Wilson does not provide for paint repair. Limited repair of asbestos sample locations are provided. However, Shannon & Wilson neither warrants repairs made by our field personnel, nor are we held liable for injuries or damages as a result of those repairs. If you desire a specific form of repair, such as those provided by a licensed roofing contractor, you need to request the specific repair at the time of the proposal. The owner is responsible for repair methods that are not specified in the proposal.

READ RESPONSIBILITY CLAUSES CAREFULLY.

Environmental site assessments/evaluations are less exact than other design disciplines because they are based extensively on judgment and opinion, and there may not have been any (or very limited) investigation of actual subsurface conditions. Wholly unwarranted claims have been lodged against consultants. To limit this exposure, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses may appear in this report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

Consultants cannot accept responsibility for problems that may develop if they are not consulted after factors considered in their reports have changed, or conditions at the site have changed. Therefore, it is incumbent upon you to notify your consultant of any factors that may have changed prior to submission of the final assessment/evaluation.

An assessment/evaluation of a site helps reduce your risk, but does not eliminate it. Even the most rigorous professional assessment may fail to identify all existing conditions.

ONE OF THE OBLIGATIONS OF YOUR CONSULTANT IS TO PROTECT THE SAFETY, HEALTH, PROPERTY, AND WELFARE OF THE PUBLIC.

If our environmental site assessment/evaluation discloses the existence of conditions that may endanger the safety, health, property, or welfare of the public, we may be obligated under rules of professional conduct, statutory law, or common law to notify you and others of these conditions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland



Date: November 2014
To: Alaska Department of
Transportation & Public Facilities
Re: Phase I & Limited Phase II ESA, 25951
Williamson Lane, Kasilof, Alaska

Important Information About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors, which were considered in the development of the report, have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

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