Alaska Department of Environmental Conservation

Reuse & Redevelopment Initiative

Brownfield Assessment

Former Chamai Center Assessment
and
Site Restoration Report

McGrath, Alaska

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Department of Environmental Conservation
Reuse and Redevelopment Program

By:
SLR International Corp
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FORMER CHAMAI CENTER ASSESSMENT
AND
SITE RESTORATION REPORT
MCGRATH, ALASKA

Prepared for

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This document has been prepared by SLR International Corp (SLR). The material and data in this report were prepared under the supervision and direction of the undersigned.

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CONTENTS

CONTENTS (CONTINUED)

FIGURES

TABLES

APPENDICES

ACRONYMS

AAC	Alaska Administrative Code
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CSM	Conceptual Site Model
cy	cubic yard
DEC	Department of Environmental Conservation
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
GPS	global positioning system
HOT	heating oil storage tank
mg/kg	milligrams per kilogram
MNVC	McGrath Native Village Council
PAH	polynuclear aromatic hydrocarbons
PID	photoionization detector
ppm	parts per million
SGS	SGS Environmental Services, Inc.
SLR	SLR International Corp
TPH	total petroleum hydrocarbons

1 INTRODUCTION

The McGrath Native Village Council (MNVC) plans to construct a new Multi-Purpose Community Services Center where the former Chamai Center was previously located. The Chamai Center was destroyed in a fire on December 24, 2006. Prior to the fire, a buried heating oil storage tank (HOT) had been installed on the property. During removal of the building debris following the fire, the top of the HOT was exposed. Stained soil with a fuel odor was noted around the HOT. The MNVC applied to the Alaska Department of Environmental Conservation (DEC) Reuse and Redevelopment Program for a brownfield assessment as beneficial reuse of the site would require addressing potential environmental contamination at the site.

The following sections summarize the site background. The vicinity map of McGrath and the location of the former Chamai Center are shown on Figure 1.

1.1 Purpose

DEC contracted SLR International Corp (SLR) to assess the site for potential environmental impacts in an effort to facilitate the reuse of the site. The purpose of the corrective action was to remove the HOT and impacted soil at the site originating from the HOT.

1.2 Objectives

The project objectives were to provide a professional environmental assessment of the property, remove some or all contaminated soil encountered such that the property is suitable for its intended future use, and provide recommendations for future action based on the findings.

2 SITE SETTING

The following sections describe the historical information for the site, the regional and local setting, and the applicable regulatory criteria.

2.1 Community Setting

The City of McGrath functions as a transportation, communications, and supply center in Interior Alaska. As a regional center, McGrath offers a variety of employment opportunities, but subsistence remains an important part of the local culture.

The City of McGrath was a seasonal Upper Kuskokwim Athabascan village that was used as a meeting and trading place for Big River, Nikolai, Telida and Lake Minchumina residents. The Old Town McGrath site was originally located across the river. Gold was discovered in the Innoko District in 1906 and at Ganes Creek in 1907. Since McGrath is the northernmost point on the Kuskokwim River accessible by large riverboats, it became a regional supply center. After a major flood in 1933, some residents decided to move to the south bank of the river. Changes in the course of the river eventually left the old site on a slough, useless as a river stop. In 1937, the Alaska Commercial Company opened a store at the new location. In 1940, an airstrip was cleared, the Federal Aviation Administration (FAA) built a communications complex, and a school was opened. McGrath became an important refueling stop during World War II, as part of the Lend-Lease Program between the U.S. and Russia. In 1964, a new high school was built, attracting boarding students from nearby villages. The City of McGrath was incorporated in 1975.

Slightly more than half of the population is Athabascans and Eskimos. The population of McGrath from the 2000 census is 401, with a total of 213 housing units in the City (State of Alaska, 2009).

2.2 Historical Site Information

DEC provided SLR with a Brownfields Assessment Request Form completed by MNVC that contained a brief site history and plans for redevelopment of the property (MNVC Letter, 2008). This form was reviewed prior to conducting field activities. In addition, a stakeholder meeting was held between DEC, MNVC, and SLR on September 16, 2008, in which the project objectives and site background information were discussed. The minutes of the meeting were previously summarized by SLR and delivered to DEC and MNVC stakeholders by separate copy.

The Chamai Center was previously located on the property and was destroyed by fire on December 24, 2006. A HOT was installed on the property, prior to the fire, and contained heating oil used to heat the building. After the fire, the top of the HOT was exposed and

stained soil with a fuel odor was noted. MNVC then contacted DEC for assistance. SLR is not aware of any previous environmental site assessment activities conducted on the subject property.

2.3 Proposed Future Site Use

The proposed future use of the site is as the location of the McGrath Multi-Purpose Community Services Center. The MNVC requires a modern facility space in order to either re-establish or enhance a wide variety of social services programs that are essential to the future well being of McGrath's residents. Important social service programs and providers currently have no functional facility space from which to operate in McGrath. These programs include Behavioral Health, Tribal Youth and Family Services, Elder/Teen/Youth Activities, Tribal Workforce Development, Distance Learning, and Nutrition Programs.

The proposed Multi-Purpose Community Services Center is 5,996 square feet in size. The MNVC has raised $1,005,412, and has applied to the U.S. Department of Housing and Urban Development for a Community Development Block Grant for the additional $850,000 required for construction of the planned facility.

The MNVC set out to achieve three main outcomes in the planning and designing of the McGrath Multi-Purpose Community Services Center:

1) Replace the Chamai Center which burned down in 2006.
2) Provide preventative health, training, and social services to enhance the well-being of McGrath low and moderate income residents by providing a suitable modern facility space to establish and re-establish programs.
3) Combine required services and facilities into one modern facility. This approach will result in a "one-stop" service delivery model which will serve to provide new and improved services to McGrath residents in the most efficient manner, and will also increase the MNVC's ability to oversee management and staff and operate the various programs in a cost effective manner.

The proposed McGrath Multi-Purpose Community Services Center has been designed to provide facility space as follows: an activity center for the Elders/Youth Activities program; offices for the Indian Child Welfare Act, Tribal Youth and Family Services, Tribal Workforce Development, and Environment programs; a Nutrition Program kitchen and pantry, a wellness room, a Distance Learning Program classroom, a community internet café; and facility storage, mechanical, rooms, hallways, entry, reception area, and restroom areas (MNVC, 2009).

2.4 Regional and Local Setting

The City of McGrath is defined as an interior climate. The mean annual summer temperature in McGrath ranges from 60 to 80 degrees Fahrenheit. The area has a relatively dry climate with precipitation averaging 10 inches per year and a snowfall average of approximately 86

inches (Alaska Department of Commerce, Community, and Economic Development website, 2009).

No site-specific soil or ground water historical information was available prior to SLR's site investigation. The shallow soil on site primarily consisted of silt and sand, likely river overbank deposits. Sediments consisting of primarily sand with some gravel were encountered starting at approximately 8 feet below ground surface (bgs) in the HOT excavation. Excavation at the site extended to a maximum depth of approximately 10 feet bgs during the current investigation. Ground water was not encountered at this depth.

2.5 Soil Regulatory Criteria

The DEC Method Two soil cleanup levels, as specified in Title 18 of the Alaska Administrative Code (AAC), Chapter 75 *Oil and Other Hazardous Substances Pollution Control*, as amended through October 9 (DEC, 2008), are applicable to this site. The most stringent cleanup levels from Table B, either direct contact or outdoor inhalation for the Under 40-Inch Zone, or migration to ground water, were used to evaluate soil contamination at this site. The soil cleanup levels for the petroleum hydrocarbon compounds anticipated and analyzed for at the site are:

- Benzene, 0.025 milligrams per kilograms (mg/kg) (migration to ground water);
- Toluene, 6.5 mg/kg (migration to ground water);
- Ethylbenzene, 6.9 mg/kg (migration to ground water);
- Xylenes, 63 mg/kg (outdoor inhalation and migration to ground water);
- Diesel range organics (DRO), 250 mg/kg (migration to ground water); and
- Polynuclear aromatic hydrocarbons (PAHs), various.

3 FIELD ACTIVITIES

SLR conducted HOT closure and site characterization activities between September 29 and 30, 2008. Field activities followed SLR's DEC-approved work plan (SLR, 2008). Copies of the field notebook are included as Appendix A and a photograph log is included as Appendix B. The field activities are described below.

3.1 Site Reconnaissance

A pre-characterization site reconnaissance was conducted to assess the property for potential environmental issues prior to conducting invasive site assessment activities. The results of this reconnaissance were discussed with the DEC project manager prior to SLR conducting site assessment work to prioritize and focus the field effort.

The general site layout was mapped, and work included using a hand-held global positioning system (GPS) receiver to locate key site features (Table 1). Facilities that were examined during the reconnaissance included a Quonset hut used for general storage, the HOT and associated stained soil, empty drums, and debris that was present at the site (Figure 2 and Appendix B).

SLR contacted individuals knowledgeable of current and historical property use. Mr. Robert Magnuson was the contractor that removed the debris from the site and has lived in McGrath for 40 years. Mr. Magnuson stated that a fuel odor was noted while uncovering the HOT. He did not recall anything ever being on the property before the Chamai Center building was constructed. The building's use, to the best of his knowledge, was as offices.

Mrs. Matilda 'Tully' Dull, Tribal Administrator, was also interviewed. Mrs. Dull is a lifelong resident of McGrath, and indicated that nothing was present on the property before the Chamai Center building and there was only the one HOT on the property. She did not recall any drums or chemical storage at the site, just vehicle storage. She indicated that the building was used only as offices.

Mrs. Dawn Magnuson, Tribal Administrative Assistant, was also interviewed by SLR. Mrs. Magnuson had made the initial report of the surface soil contamination at the HOT on the site to DEC. Mrs. Magnuson is a lifelong resident of McGrath and is familiar with the property. Mrs. Magnuson did state that there have likely been overfills of the HOT, but she did not witness them. She does not recall seeing any chemicals or drums located at the site.

Photographs and digital video recordings with audio commentary were collected during a site walk-through. The site photographs and digital video are included as Appendix B.

3.2 Field Screening and Analysis

Field screening included using both heated headspace analysis with a photoionization detector (PID), and the PetroFlag® total petroleum hydrocarbons (TPH) analysis method (U.S. Environmental Protection Agency [EPA] Draft Method 9074). Soil screening results are shown on Table 2. The PID field screening samples were generally used to guide the excavation, and the PetroFlag® field screening samples were collected prior to collecting laboratory confirmation samples at the excavation limits to confirm soil did not remain with a DRO concentration above the DEC cleanup level. The PetroFlag® field analysis provides real time soil TPH data, roughly equivalent to the DRO concentration.

Soil screening samples were collected during the excavation activities from various depths. A representative soil sample from each of the screening locations was placed in resealable plastic bags and placed in a warm area for approximately 30 minutes to raise the soil temperature to approximately 60 degrees Fahrenheit. After warming, the screening soil sample was agitated (shaken) for about 15 to 20 seconds, after which the PID probe was inserted into the bag and the highest reading recorded.

The PetroFlag® soil samples were analyzed using a meter response factor of 7 to represent the soil and contaminant conditions. The analyses were performed in accordance with the manufacturer's directions.

3.3 HOT Closure and Excavation

The HOT was located on the northwest side of the property next to the Quonset hut (Figure 2). SLR directed the subcontractor, Paydirt Excavation, to first check the HOT for the presence of fuel, and if present, to remove as much as possible. Approximately 25 gallons of residual fuel was removed and stored in a drum for off-site use prior to excavation.

In order to remove the HOT, the soil above the top of the HOT that was visibly impacted by petroleum hydrocarbons, and had previously been disturbed during the building demolition, was excavated and placed directly into an end dump truck and hauled to the landspreading area located at the landfill. The HOT was then removed from the ground by the excavator and placed on the east side of the property. The HOT measured approximately 6.3 feet in diameter and 9.3 feet in length. Upon inspection, the HOT appeared to be in good condition. Surface rusting and some pitting were noted, but there were no holes or other signs of significant deterioration observed.

The soil adjacent to the north and south ends of the HOT was visibly impacted to a depth of approximately 5 feet bgs. Based on visual observations, impacted soil was also present near the surface on the east and west sides of the HOT, but did not appear to extend deeper than 3 feet to 4 feet bgs. The visibly impacted soil was excavated and placed directly into an end dump truck and hauled to the landspreading area.

After removing the visibly impacted soil, field screening samples were collected to aid in delineating the remaining impacted areas. Based on the field screening measurements, the bulk of the petroleum hydrocarbon-impacted soil was determined to be near the feed and

return (north end) of the HOT, and extended under the former building (Figure 2). The soil in this area was excavated and hauled to the landspreading area. Excavation continued to a maximum depth of approximately 10 feet bgs, at which point soil field screening indicated the soil was not impacted above the DEC DRO cleanup level. The soil encountered in the excavation was typically silt and sand, with trace amounts of gravel.

A total of approximately 100 cubic yards (cy) of petroleum hydrocarbon-impacted soil was removed during the HOT excavation activities between September 29 and September 30, 2008. Ground water was not encountered during excavation activities, which extended to a maximum depth of approximately 10 feet bgs. At the conclusion of the excavation activities, confirmation analytical samples were collected. A total of four confirmation soil samples (three primary samples and one duplicate sample) were collected for laboratory analysis from the excavation area. Confirmation samples were collected from discrete locations to characterize representative concentrations in the excavation, as described in 18 AAC 78 (DEC, 2006) and the DEC Underground Storage Tank Procedures Manual (DEC, 2002). The approximate limits of the excavation and locations of the excavation confirmation soil samples are shown on Figure 2.

The impacted material from the excavation was transported to the landspreading area next to the current landfill. The excavation area was backfilled with surrounding clean material. The sides of the excavation were sloped to allow for egress.

3.4 Landspreading Area

Petroleum hydrocarbon-impacted soil was placed next to the current landfill to form a landspreading area. The landspreading area detail is shown on Figure 3. Based on an aerial photo survey, the nearest surface water appears to be the Kuskokwim River, approximately 1,300 feet to the northwest. The nearest inhabitants appear to be located approximately 800 feet to the northwest as well. The impacted soil was placed directly on the ground and leveled to an approximate depth of 1 foot. The landspread soil measured approximately 42 feet by 83 feet and was roughly triangular in shape. The landfill area has a locked gate to keep trespassers out and, in particular, the road used to access the landspreading soil had a berm added to keep vehicles from entering the area. The current plan for beneficial use of the soil is for daily cover material at the landfill.

SLR collected samples of the landspread soil for PID field screening and laboratory analysis. The field screening samples were collected at a rate of approximately one sample for every ten cy of soil based on a grid on the landspreading area footprint. A total of ten PID field screening samples were analyzed, each from a depth of approximately 6 inches. Samples were collected for laboratory analysis from three locations based on elevated PID field screening results and spatial location.

3.5 Additional Investigation

One additional area of concern was noted during site characterization activities: five 55-gallon drums stacked near the property boundary (Figure 2). Two PID field screening samples were

collected from beneath the barrels at approximately 6 inches bgs. The PID field screening results did not indicate hydrocarbon impacts to soil, and soil staining was not present. No samples were collected for laboratory analysis from this area.

4 LABORATORY ANALYTICAL PROGRAM

SGS Environmental Services, Inc. (SGS) of Anchorage, Alaska, a DEC-approved laboratory, was the contract laboratory for analysis of the soil samples.

4.1 Excavation Confirmation and Landspread Soil Sampling

Three excavation confirmation samples, one duplicate sample, and three landspreading area soil samples were collected for laboratory analysis during 2008 site activities. Samples were submitted under standard chain-of-custody documentation to SGS. The soil samples were analyzed as follows:

- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8021B
- DRO by Alaska Method AK102
- PAH compounds by EPA Method 8270C with selective ion monitoring (HOT excavation confirmation samples only)

Normal turnaround times were requested for the analytical testing. The final analytical results were requested in a DEC-deliverable format.

4.2 Quality Assurance/Quality Control

Quality assurance/quality control procedures were maintained throughout sampling activities. Field duplicate samples were collected at a frequency of 10 percent, for a total of one duplicate. A trip blank for volatile parameters accompanied the shipment to and from the site and was analyzed with the collected samples. SLR prepared a quality assurance review of the laboratory analytical report and completed the DEC laboratory data review checklist. These are included in Appendix C along with the laboratory analytical report.

5 FINDINGS

The findings from the soil sampling activities are discussed below. The field screening and analytical sampling results are depicted on Tables 2 and 3, respectively.

5.1 Field Screening and Analysis Results

Thresholds for considering soil impacted with DRO above the DEC cleanup level were 25 parts per million (ppm) for PID heated headspace results, and 100 ppm for PetroFlag® TPH analysis results. The field screening and analysis results are summarized in Table 2, and discussed below.

Forty PID field screening samples were collected during the 2008 site activities as follows: 28 samples were collected from the excavation, ten samples were collected from the landspread soil, and two samples were collected from beneath the barrels (Table 2). PID field screening results ranged from 0.0 ppm to 150 ppm with only one result above 25 ppm; this sample was subsequently excavated. All ten landspread soil PID field screening results were greater than 0.0 ppm with a maximum detection of 11 ppm.

Seventeen PetroFlag® field analysis samples were collected; ten from the HOT excavation and seven from the landspread soil. PetroFlag® TPH results ranged from 0.0 ppm to 162 ppm (Table 2). Two samples were considered elevated with TPH concentrations in excess of 100 ppm; both of these samples were collected from the landspread soil.

5.2 Laboratory Analytical Results

The HOT excavation confirmation sample and the landspreading soil sample laboratory analytical results are discussed below.

5.2.1 HOT Excavation Confirmation Soil Samples

Four soil samples, including one duplicate, were collected from the excavation area. The sample locations are shown on Figure 2. DRO in a single sample, MNVC-EX-2, was the only target analyte detected, at an estimated concentration of 3.76 mg/kg. This concentration is well below the DEC cleanup level of 250 mg/kg. The remaining target analyte compounds were not detected (Table 3).

5.2.2 Landspread Soil Samples

Three soil samples were collected from the landspread soil. DRO was detected in all three samples, but at concentrations less than the DEC cleanup level. Total xylenes were also

detected in one sample, but at several orders of magnitude less than the applicable cleanup level. No other target analytes were detected in these samples (Table 3).

5.3 Quality Assurance Review

The SLR quality assurance review indicated that the soil data were acceptable for the intended use. The SLR quality assurance review and the completed DEC laboratory data review checklist are included in Appendix C.

6 CONCEPTUAL SITE MODEL

This Conceptual Site Model (CSM) was developed to qualitatively assess the risk to potential human and ecological receptors from petroleum hydrocarbons in soil at the former McGrath Tribal Council Hall property. This CSM is based upon site observations, field screening results, and laboratory analytical data from samples collected during the 2008 site investigation, and describes the potential exposure scenarios for current and future site receptors. This CSM was prepared in accordance with the DEC *Draft Guidance on Developing Conceptual Site Models* (DEC, 2005) using the DEC Draft Human Health Conceptual Site Model Scoping Form, which is included in Appendix D. The DEC Draft Human Health Conceptual Site Model Diagram was used to summarize the results of the checklist, and is also included in Appendix D.

6.1 Impacted Media

Impacted media at the site is the environmental substance to which a contaminant is directly released (DEC, 2005). Soil analytical and field screening results from the 2008 site characterization and remedial action (described in the preceding sections), were reviewed in order to determine what media have been impacted as a result of site activities. Samples from soil that was subsequently excavated are not included as part of this CSM, nor are the landspreading area soil samples considered. Field screening and laboratory analytical results used to support this CSM are contained in Tables 2 and 3.

6.1.1 Surface Soil

Surface soil is defined as the interval from 0 foot to 2 feet bgs (DEC, 2005). Impacted soil (as evidenced by staining, hydrocarbon odor, and elevated PID field screening results) was present above the HOT prior to excavation; therefore, for this CSM surface soil is considered to be a historically impacted media.

Two PID field screening samples were collected from this interval in 2008 after excavation was complete (see Surrounding Area Screening Samples in Table 2). Field screening results for both samples were 0.2 ppm. No analytical samples were collected from this interval; however, it is assumed that no petroleum-impacted soil remains in surface soil at the site.

6.1.2 Subsurface Soil

Subsurface soil is defined as the interval from 2 feet to 15 feet bgs (DEC, 2005); soil below 15 feet bgs is not considered in this CSM because it is below the depth interval for direct contact by human or ecological receptors. A discharge from the onsite HOT would directly affect subsurface soil, and petroleum hydrocarbon-impacted soil was encountered during the HOT excavation, so subsurface soil is considered to be a historically impacted media for this CSM.

Three PID field screening and four analytical samples were collected from this interval in 2008 after excavation was complete (Tables 2 and 3, respectively). Field screening results ranged from 0.1 ppm to 0.2 ppm. DRO was the only analyte detected in any of the analytical samples, and was found at an estimated concentration of 3.76 mg/kg in a single sample, MNVC-EX-2. This concentration is less than the DEC soil cleanup level of 250 mg/kg.

6.1.3 Ground Water

Ground water was not encountered during the 2008 site activities and no analytical samples have been collected from this site. The analytical results from soil indicate that a direct discharge would most likely not have affected ground water. However, since ground water has not been evaluated and cannot be eliminated as a potential future drinking water source according to the CSM scoping form (DEC, 2005), ground water is considered to be a potentially impacted media for this CSM.

6.1.4 Surface Water

A direct discharge from the site would not affect surface water. The nearest surface water body observed on aerial photographs is the Kuskokwim River, which is approximately 1,000 feet from the site and, therefore, it is unlikely that the amount of contamination present onsite before the HOT removal and excavation activities would have impacted surface water. For this CSM, surface water is not considered an impacted media. No surface water samples have been collected from the Kuskokwim River.

6.1.5 Sediment

A direct discharge from the site would not directly affect sediments as surface water is not present at the site and overland flow is not believed to have occurred. The nearest sediments are assumed to be associated with the Kuskokwim River as described above. Sediment is not considered an impacted media at this site, and no sediment samples have been collected from the Kuskokwim River.

6.2 Transport Mechanisms and Exposure Media

Transport mechanisms are the pathways through which contaminants may move from impacted media to other exposure media. Exposure media are the media to which contaminants are transported, which may result in exposure of human or ecological receptors to the contaminants. Four transport mechanisms were identified at this site including migration or leaching to subsurface, migration or leaching to ground water, volatilization, and update by plants or animals. Based on the impacted media and transport mechanisms, four exposure media (soil, ground water, air, and biota) are present.

Possible transport mechanisms and exposure media are depicted on the DEC Draft Human Health Conceptual Site Model Diagram (Appendix D).

6.3 Exposure Pathways

Each potential exposure pathway was evaluated using the DEC Draft Human Health Conceptual Site Model Scoping Form (Appendix D). Based on this evaluation, three potentially complete exposure pathways were identified. These pathways include incidental soil ingestion, inhalation of outdoor air, and ingestion of ground water. The determination of complete or incomplete exposure pathways is explained in the following sections.

6.3.1 Complete or Potentially Complete Exposure Pathways

The direct contact exposure pathway via incidental soil ingestion is considered complete because soil contamination exists between 0 foot and 15 feet bgs and the site is expected to be utilized by human receptors in the future. However, the concentration of the one detected contaminant is less than one tenth the Method Two soil cleanup level. Method Two soil cleanup levels are protective of human health; therefore, this pathway is considered to pose minimal risk to human receptors.

The inhalation of outdoor air exposure pathway is considered complete because of the presence of volatile contaminants in soil between 0 foot and 15 feet bgs and the future use of the site by human receptors. The volatile contaminant that makes this a complete exposure pathway is DRO. DRO was detected at less than one tenth the Method Two soil cleanup level, which makes this pathway likely to be insignificant.

The ingestion of ground water pathway is considered potentially complete because ground water has not been investigated and cannot be eliminated as a potential future drinking water source according to the CSM scoping form (DEC, 2005). However, this pathway is likely insignificant because it is not expected to be impacted due to the depth of which it is encountered and the limited use of ground water in McGrath. Ground water in McGrath is first encountered at approximately 40 feet to 100 feet bgs, depending on location, which would minimize the potential for soil contaminants to migrate or leach into ground water. In addition, the City of McGrath's public water system uses surface water as its source. This system is a piped water system that serves 178 households, which includes approximately 96 percent of the population. A few homes reportedly have individual wells or haul water, and the FAA operates an independent water system. The surface water source of almost all drinking water in McGrath limits the likelihood that human receptors would be exposed to contaminants in ground water.

6.3.2 Incomplete Exposure Pathways

The remaining exposure pathways were determined to be incomplete based on site data, features, or other pertinent information in accordance with the DEC Draft Human Health Conceptual Site Model Scoping Form (Appendix D). These incomplete exposure pathways are discussed briefly here.

The dermal absorption of contaminants from soil pathway is not complete because no soil contaminants that can permeate the skin, as defined by the CSM guidance (DEC, 2005) were detected at the site.

The ingestion of surface water pathway is not complete because contaminants are not expected to migrate to surface water based on the limited nature of the historical impact and the distance to the nearest surface water body.

The ingestion of wild foods pathway is not complete because detected analytes do not have the potential to bioaccumulate.

The inhalation of indoor air pathway is not complete because, although DRO, which is a volatile compound as defined by the CSM guidance (DEC, 2005), is present at the site, it is not considered a chemical of concern for vapor migration.

None of the additional exposure pathways are considered completed based on site data, features, or other pertinent information as described in the preceding sections.

6.4 Current and Future Receptors

The site is currently unoccupied, but is expected to become the location of a new Multi-Purpose Community Services Center and as such, construction workers, commercial/ industrial workers, site visitors, and trespassers are considered potential receptors.

7 CONCLUSIONS AND RECOMMENDATIONS

The HOT and approximately 100 cy of petroleum hydrocarbon-impacted soil were successfully removed during the 2008 site activities. The excavated soil was placed in a landspreading area adjacent to the landfill and samples collected from the landspread soil indicate that it meets DEC Method Two soil cleanup levels. The landspread soil will be used for cover material at the landfill.

The CSM identified three potentially complete pathways, which include incidental soil ingestion, inhalation of outdoor air, and ingestion of ground water. However, due to the low concentration of soil contaminants, at less than one tenth of DEC cleanup levels, both the incidental soil ingestion and inhalation of outdoor air pathways pose minimal risk to current and future human receptors which include construction workers, commercial/industrial workers, site visitors, and trespassers. The ingestion of ground water pathway is also likely insignificant as ground water is not expected to be impacted by historical site contamination due to the depth of which it is encountered and the limited use of ground water in McGrath.

The results of the 2008 site activities indicate that contaminated soil at the site originating from the HOT have been removed, and petroleum hydrocarbon concentrations remaining at the site are far below applicable DEC cleanup levels and pose little to no risk to human receptors. SLR's interview of local residents knowledgeable about the site history, site reconnaissance, and soil field screening did not identify any other potentially impacted areas on the site.

8 REFERENCES

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LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

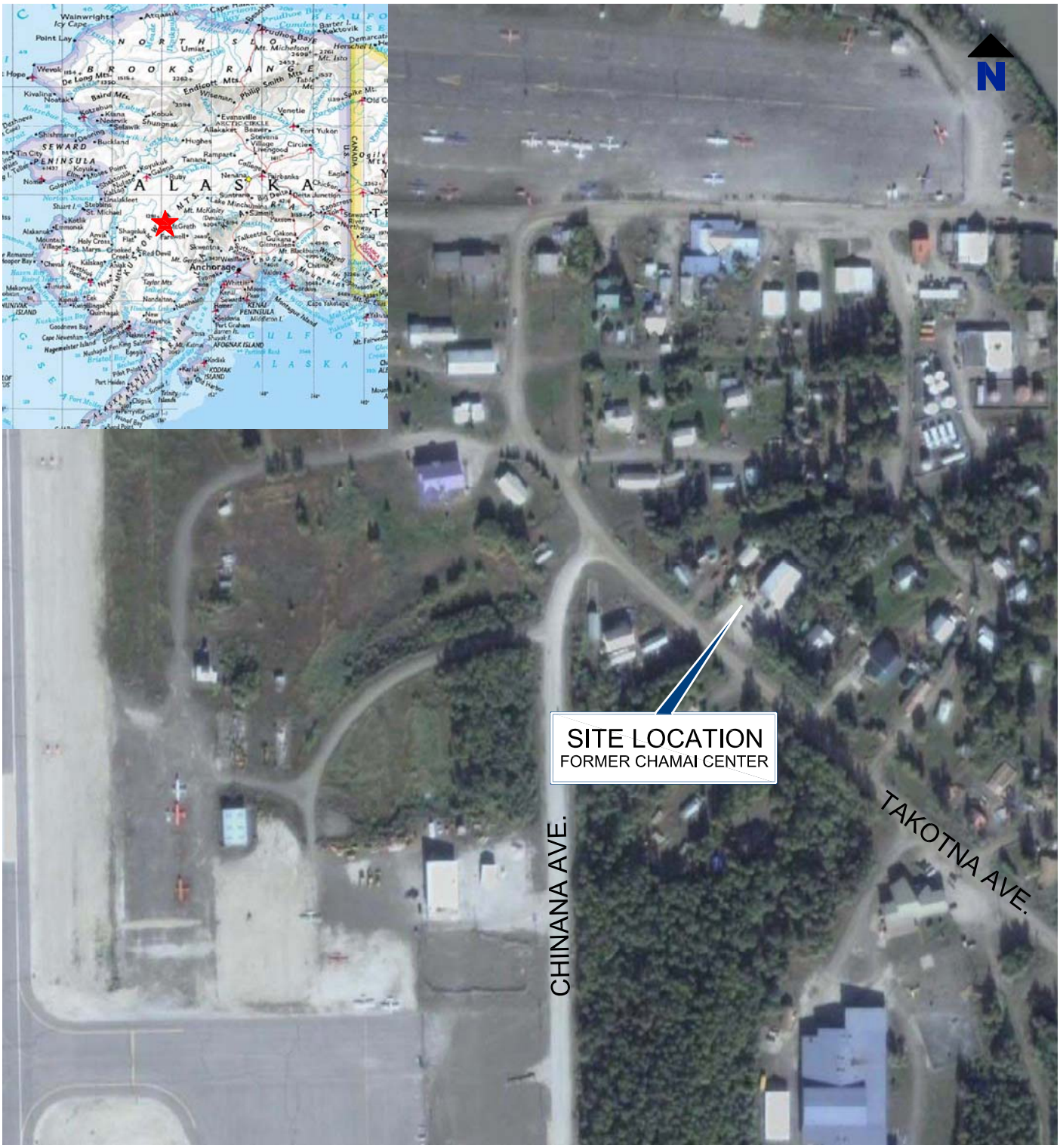
The purpose of an environmental assessment is to reasonably evaluate the potential for or actual impact of past practices on a given site area. In performing an environmental assessment, it is understood that a balance must be struck between a reasonable inquiry into the environmental issues and an exhaustive analysis of each conceivable issue of potential concern. The following paragraphs discuss the assumptions and parameters under which such an opinion is rendered.

No investigation is thorough enough to exclude the presence of hazardous materials at a given site. If hazardous conditions have not been identified during the assessment, such a finding should not therefore be construed as a guarantee of the absence of such materials on the site, but rather as the result of the services performed within the scope, limitations, and cost of the work performed.

Environmental conditions may exist at the site that cannot be identified by visual observation. Where subsurface work was performed, our professional opinions are based in part on interpretation of data from discrete sampling locations that may not represent actual conditions at unsampled locations.

Except where there is express concern of our client, or where specific environmental contaminants have been previously reported by others, naturally occurring toxic substances, potential environmental contaminants inside buildings, or contaminant concentrations that are not of current environmental concern may not be reflected in this document.

FIGURES



REFERENCED FROM : ©2008 Google Earth Pro

SCALE: 1" = 250'
WHEN PLOTTED AT 8.5 x 11 PAGE SIZE
0 250 500 750'

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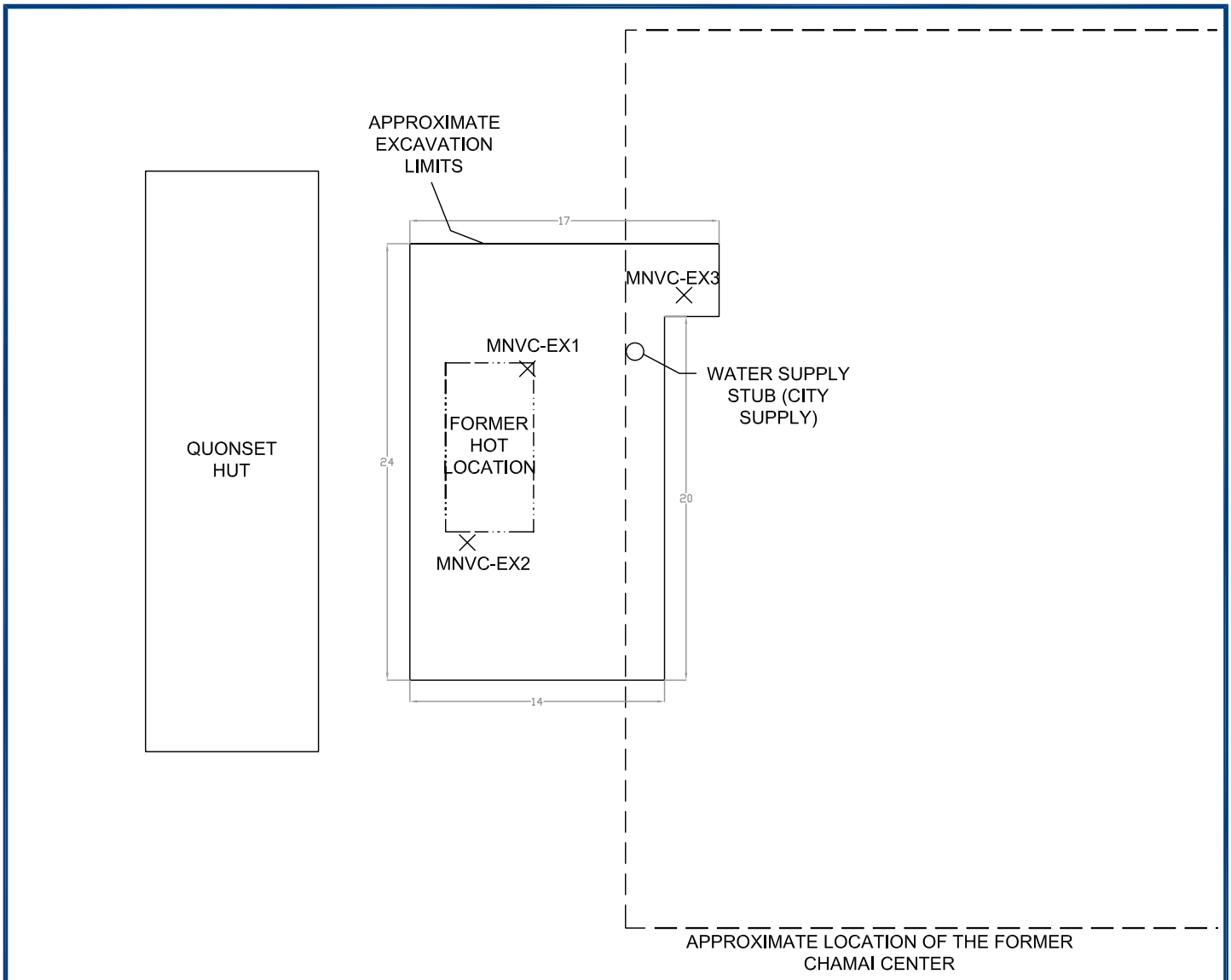
SLR

DEC BROWNFIELD ASSESSMENTS
C/O JOHN CARNAHAN OR SONJA BENSON
ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
610 UNIVERSITY AVENUE
FAIRBANKS, ALASKA

Report: FORMER CHAMAI CENTER ASSESSMENT AND SITE RESTORATION REPORT
MCGRATH, ALASKA

Drawing: SITE VICINITY MAP

Date	March 2009	Scale	1" = 250'	Fig. No. 1
File Name	McGrath RP Fig 1	Project No.	005.0065.08007	



LEGEND

MNVC–EX1 SOIL SAMPLE LOCATION

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DEC BROWNFIELD ASSESSMENTS
C/O JOHN CARNAHAN OR SONJA BENSON
ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
610 UNIVERSITY AVENUE
FAIRBANKS, ALASKA

Report: FORMER CHAMAI CENTER ASSESSMENT AND SITE RESTORATION REPORT
MCGRATH, ALASKA

Drawing: SITE DETAIL MAP

Date: March 2009	Scale: Not To Scale	Fig. No. 2
File Name: McGrath RP Fig 2	Project No.: 005.0065.08007	

REFERENCED FROM : ©2008 Google Earth Pro

N

SCALE: 1" = 150'

WHEN PLOTTED AT 8.5 x 11 PAGE SIZE

0 150 300 450'

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SLR

DEC BROWNFIELD ASSESSMENTS
C/O JOHN CARNAHAN OR SONJA BENSON
ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
610 UNIVERSITY AVENUE
FAIRBANKS, ALASKA

Report: FORMER CHAMAI CENTER ASSESSMENT AND SITE RESTORATION REPORT
MCGRATH, ALASKA

Drawing: LAND SPREADING AREA DETAIL

Date	March 2009	Scale	1" = 150'	Fig. No. 3
File Name	McGrath RP Fig 3	Project No.	005.0065.08007	

TABLES

Table 1
GPS Coordinates
DEC - McGrath Former Chamai Center Assessment and Site Restoration Report

Location	Northing	Easting
HOT	N 62.95589	W 155.59698
Landspread Area	N 62.94235	W 155.56189

Notes:

Datum is WGS 84

Table 2
Soil Sample Screening Results
DEC - McGrath Former Chamai Center Assessment
and Site Restoration Report

Sample Designation	Date Sampled	Depth (feet bgs)	PID (ppm)	TPH (ppm)	Comments
Excavation Screening Locations					
HS1	9/29/2008	2.0	150	--	Hydrocarbon odor
HS2	9/29/2008	5.0	0.0	--	Trace organics
HS3	9/29/2008	3.0	0.0	--	
HS4	9/29/2008	4.0	0.0	--	
HS5	9/29/2008	5.0	0.0	--	
HS6	9/29/2008	3.0	0.0	--	
HS7	9/29/2008	4.0	0.0	--	
HS8	9/29/2008	5.0	0.0	--	
HS9	9/29/2008	5.0	4.1	--	
HS10	9/29/2008	7.0	6.3	--	
HS11	9/29/2008	7.0	5.4	--	
HS12	9/29/2008	5.0	1.8	--	Trace organics
HS13	9/29/2008	8.0	0.0	--	
HS14	9/29/2008	8.0	0.0	--	
HS15	9/29/2008	7.0	0.0	--	
HS16	9/29/2008	6.0	0.0	17	
HS17	9/29/2008	7.0	0.0	27	
HS18	9/29/2008	6.0	0.0	24	
HS19	9/29/2008	8.0	0.0	69	
HS20	9/29/2008	8.0	0.0	9.0	
HS21	9/29/2008	8.0	0.0	10	
HS22	9/29/2008	6.0	0.0	32	
HS23	9/29/2008	7.0	0.0	53	
HS24	9/29/2008	10.0	0.0	31	
HS25	9/29/2008	10.0	0.0	25	
Excavation Screening and Confirmation Sample Locations					
MNVC-EX-1	9/30/2008	8.0	0.1	--	
MNVC-EX-2	9/30/2008	8.0	0.1	--	
MNVC-EX-3	9/30/2008	7.0	0.2	--	
Landspreading Screening Sample Locations					
Land 1	9/30/2008	0.5	3.2	0.0	
Land 2	9/30/2008	0.5	3.4	--	Analytical Sample Land-S-2
Land 3	9/30/2008	0.5	11	162	
Land 4	9/30/2008	0.5	2.7	0.0	
Land 5	9/30/2008	0.5	1.8	--	
Land 6	9/30/2008	0.5	11	0.0	Analytical Sample Land-S-6
Land 7	9/30/2008	0.5	1.2	42	
Land 8	9/30/2008	0.5	6.4	89	
Land 9	9/30/2008	0.5	11	149	Analytical Sample Land-S-9
Land 10	9/30/2008	0.5	2.1	--	
Surrounding Area Screening Locations					
Barrels-1	9/30/2008	0.5	0.2	--	
Barrels-2	9/30/2008	0.5	0.2	--	

Abbreviations:

-- = not analyzed
bgs = below ground surface
ppm = parts per million
PID = photoionization detector
TPH = total petroleum hydrocarbons

Table 3
Soil Sample Analytical Results
(all units in mg/kg)
DEC - McGrath Former Chamai Center

Sample Identification	Sample Date	Sample Depth (feet bgs)	DRO by AK 102	BTEX by EPA Method 8021B				PAHs by EPA Method 8270C SIM
				Benzene	Toluene	Ethylbenzene	Total Xylenes	
DEC Cleanup Levels[1]			**230**	**0.025**	**6.5**	**6.9**	**63**	**--**
Excavation Confirmation Sample Results								
MNVC-EX-1	9/30/2008	8.0	ND [20.6]	ND [0.0101]	ND [0.0403]	ND [0.0403]	ND [0.0403]	ND
MNVC-EX-4[2]	9/30/2008	8.0	ND [20.6]	ND [0.00672]	ND [0.0269]	ND [0.0269]	ND [0.0269]	ND
MNVC-EX-2	9/30/2008	8.0	3.76 J	ND [0.0185]	ND [0.0742]	ND [0.0742]	ND [0.0742]	ND
MNVC-EX-3	9/30/2008	7.0	ND [20.5]	ND [0.00698]	ND [0.0279]	ND [0.0279]	ND [0.0279]	ND
Landspreading Area Sample Results								
Land-S-2	9/30/2008	0.5	5.80 J	ND [0.0169]	ND [0.0675]	ND [0.0675]	ND [0.0675]	--
Land-S-6	9/30/2008	0.5	34.7	ND [0.0118]	ND [0.0470]	ND [0.0470]	ND [0.0470]	--
Land-S-9	9/30/2008	0.5	37.5	ND [0.0139]	ND [0.0555]	ND [0.0555]	0.0256 J	--

Abbreviations:

-- = not analyzed or not applicable
bgs = below ground surface
BTEX = benzene, toluene, ethylbenzene, and xylenes
DEC = Alaska Department of Environmental Conservation
DRO = diesel range organics
EPA = U.S. Environmental Protection Agency
J = estimated value
mg/kg = milligrams per kilogram
ND = not detected [reporting limit value]
PAH = polynuclear aromatic hydrocarbon
SIM = selective ion monitoring

Notes:

Water
[2]Duplicate of MNVC-EX-1

APPENDIX A

FIELD NOTES

9.29.05 ADEC McGrath

At McGrath @ 9:00 Dawson Lanphear + Kristine Foley

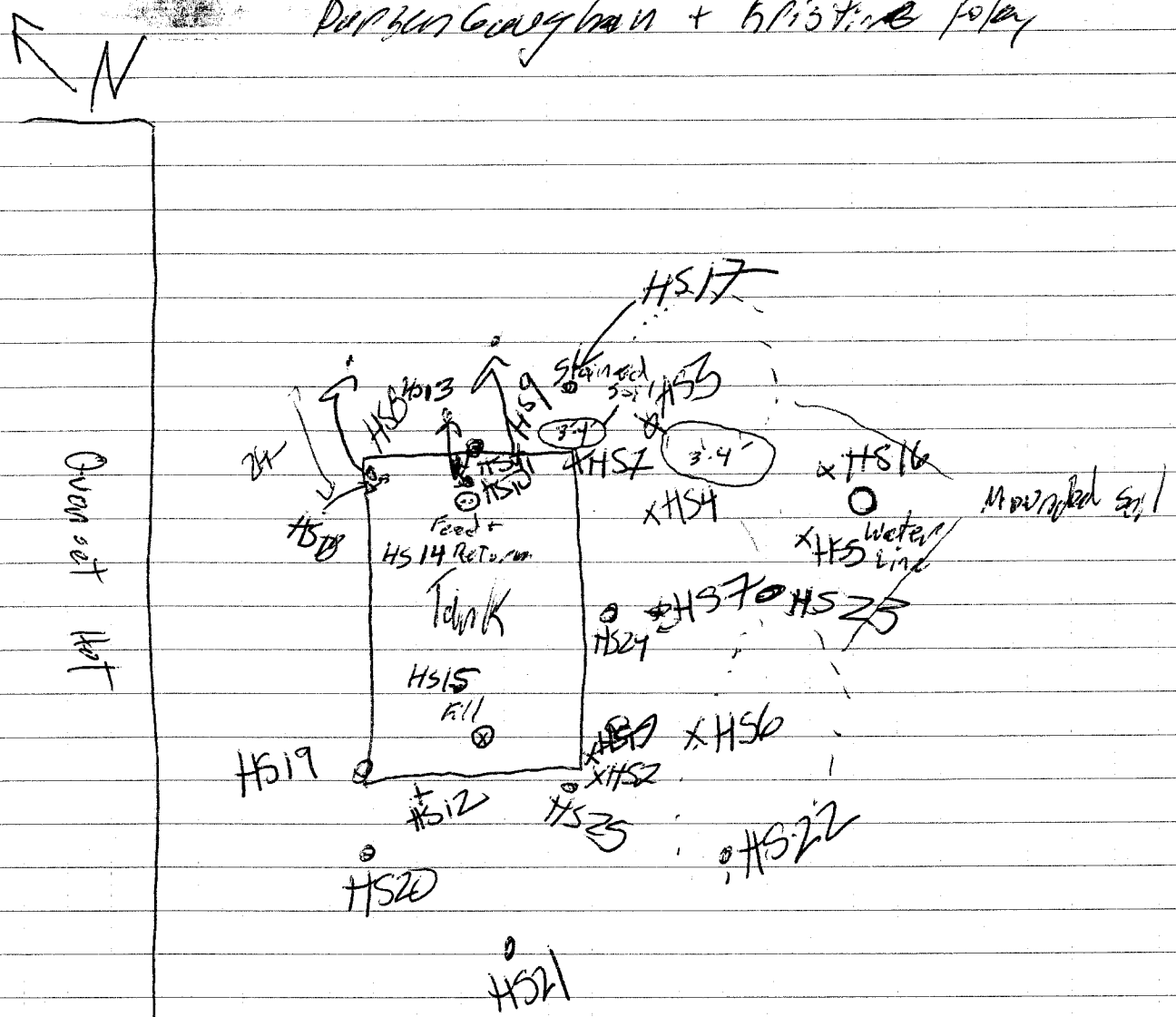
- Equip picked up.
- Talked with Robert Paydirt
- Talked with Tom at Public works
  - outlined on area for disposal
  - talked with Tom about locate for sewer + water
  → cut off at the main line.
- Talked with United Utilities - nothing on property - two power
- Picked up cargo at Ken Air
- Called Robert to arrange equipment should be ready by 14:00
- Renita stopped by - Inbound at ~1600 for equipment
- Took video of the site and GPS coordinates
- Robert back at 15:30
  - grab down + pump to remove remaining liquid
  - pulled out ~25 gallons
  - excavator on-site at 1545
- PID calibrated reading 1000 ppm
- Removed soil around the tanks - impacted on ends
- Removed the tanks and put on side of property
- Excavating + screening road to 1800.
- Removed ~2 ~~cc~~ yd³ soil to landfill
- Excavation Petroflag samples collected @ 1800 to 1830
- Analyzed samples + quit for the day @ 1930

9-29-05
Dawson Lanphear

Scale: 1 square = _____

ADEC McGrath 9-29-08 (2)

Duncan Geoghan + Kristine Foley



HS1-7 @1045 Donna Duncan

9-29-08

Scale: 1 square = _____

ADEC McGrath 9-29-08

(3)

SAMPLE ID	DESCRIPTION	PID	DEPTH
HS1	Brown silty sand; moist; hydrocarbon odor.	150	2'
HS2	Brown, sandy silty gravel w/trace organics; moist	0.0	5'
HS3	Brown slightly silty sand; moist	0.0	3'
HS4	Brown silty sand w/trace gravel, moist.	0.0	4'
HS5	" " " " " "	0.0	5'
HS6	Same with trace organics.	0.0	3'
HS7	Brown silty sand to sandy silt, moist	0.0	4'
HS8	Brown sand; moist	0.0	5'
HS9	Brown silt slightly sandy silt; moist	4.1	5'
HS10	Brown sand w/trace gravel; moist	6.3	7'
HS11	Brown sand w/trace gravel; moist	5.4	7'
HS12	Brown silty sand w/organics; moist	1.8	5'
HS13	Brown sand w/gravel; moist	0.0	8'
HS14	Brown gravelly sand; moist	0.0	8'
HS15	Brown sand; moist	0.0	7'
HS16	Brown sandy silt; moist	0.0	6'
HS17	Brown sand w/slight silt; moist	0.0	7'
HS18	Brown sandy silt; moist	0.0	6'
HS19	Brown silt; moist	0.0	8'
HS20	Brown sandy silt; moist	0.0	8'
HS21	Brown silty sand; moist	0.0	8'
HS22	Brown sand; moist	0.0	6'
HS23	Brown sand w/trace fine gravel; moist	0.0	7'
HS24	Brown gravelly sand; moist	0.0	10'
HS25	Brown silt; moist.	0.0	10'

Dean Baughn
9-29-08

Scale: 1 square = _____

PetroFlag Screening ADEC McGrath 9-29-08 (4)

1845 to 1930

Calibrated to 1000 ppm following PetroFlag procedures.
Blanked @ 0 ppm.

Sample	PPM
HS16	17
HS17	27
HS18	24
HS19	69
HS20	9
HS21	10
HS22	32
HS23	53
HS24	31
HS25	25

- Completed screening. Done for the day

9-29-08
Dawn Hang

Scale: 1 square = _____

9-30-08 ADEC McGrath (5)

Darstin Gaughan + Kristine Foley

8:30 Safety meeting

8:45 Move equipment + re-fuel

9:00 Start Excavating

Excavated 1 truckload

Measured excavation 14' x 24'

9:30 Started sampling

→ noted an additional impacted area by the water line

→ excavated an additional truckload.

10:00 Finished up sampling

10:15 Calibrated PID 0.0 and 100 ppm

10:30 Backfilling excavation and sloping the sides

~~Sed~~-3228 Benny + Dawn Magnuson & Jim Robert

used to fill the tank

11:00 Completed the backfilling, sloped ~~excavation~~

- Total of 6 loads to landfill

- Measured the tank 6.3' ~~length~~ diameter

9.3' length

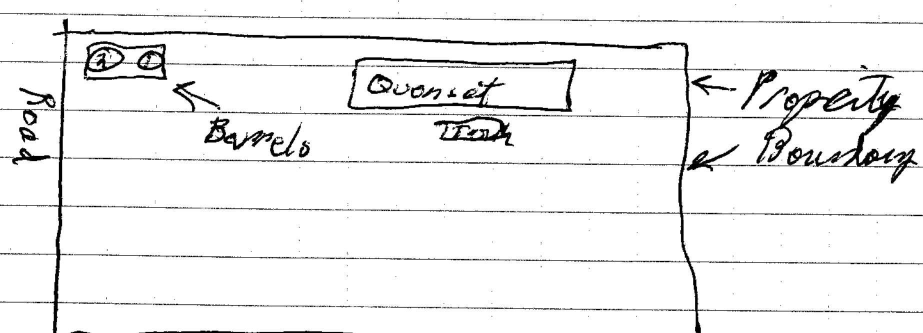
11:15 - Collected the video of the tank and site after backfilling

11:30 - Collected screening samples under stack of drums

- 2 samples

Barrels 1 Brown sandy SILT, moist 6" ~~depth~~ 0.2 PID

Barrels 2 Brown silty SAND, moist 6" depth 0.2 PID



12:00 - Lunch

12:30 - Traveled to landfill to collect landspreading area samples

- Screened + sampled soil

15:15 - Completed sampling efforts and packaged up supplies

1600 - Shipped supplies with Pen Air

1630 - Conducted interviews and closed out for the night

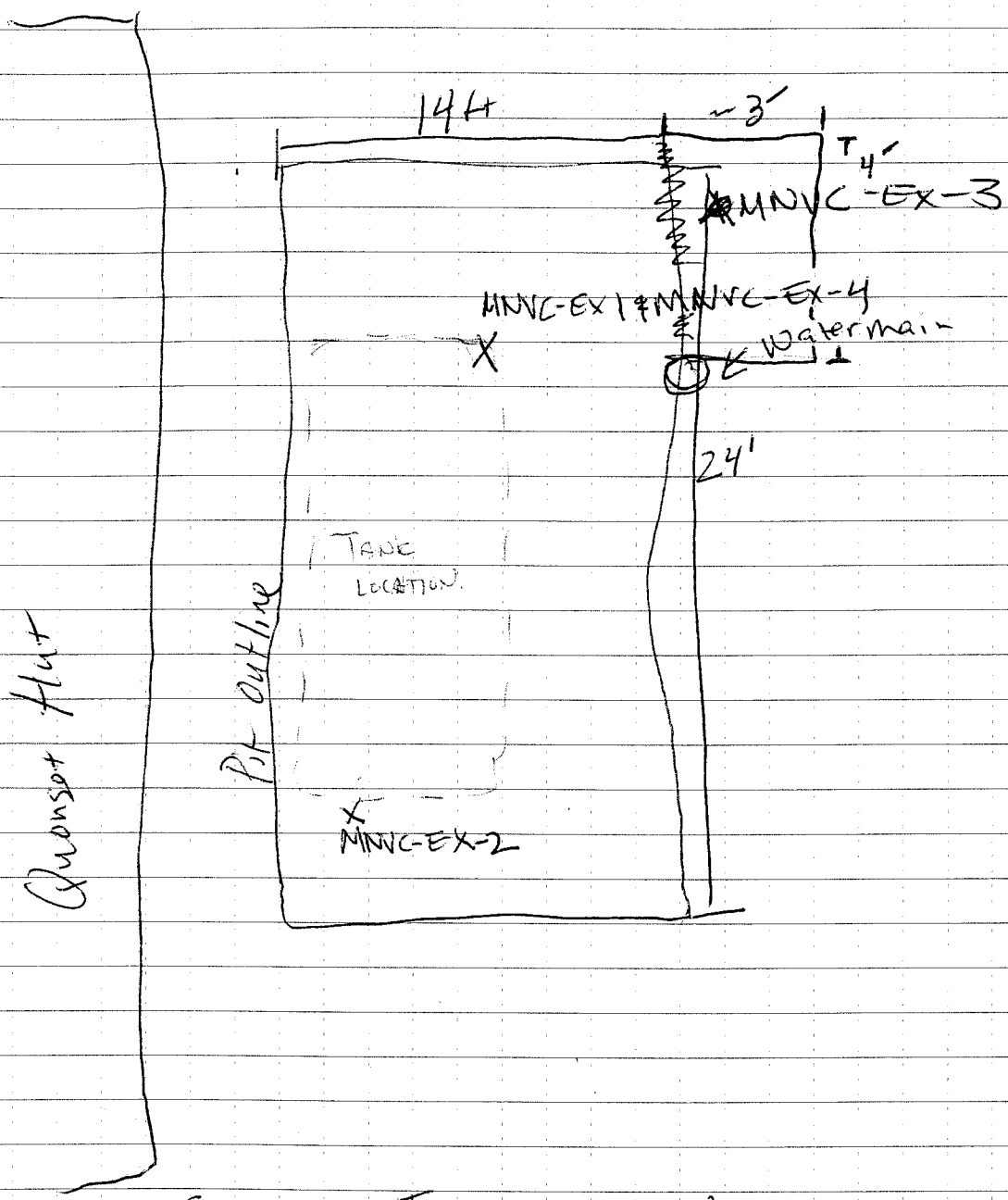
Scale: 1 square = ____________

9-30-08 ADEC McGrath (6)

Parsons Dougherty + Kristine √ Foley

N

8ft Deep



Sample	Time	Notes
MNVC-EX-1	0935	Collected dup: MNVC-EX-4 - noted time as 0930. @ 8ft (Both)
MNVC-EX-2	0940	@ 8ft
MNVC-EX-3	1000	@ 7ft

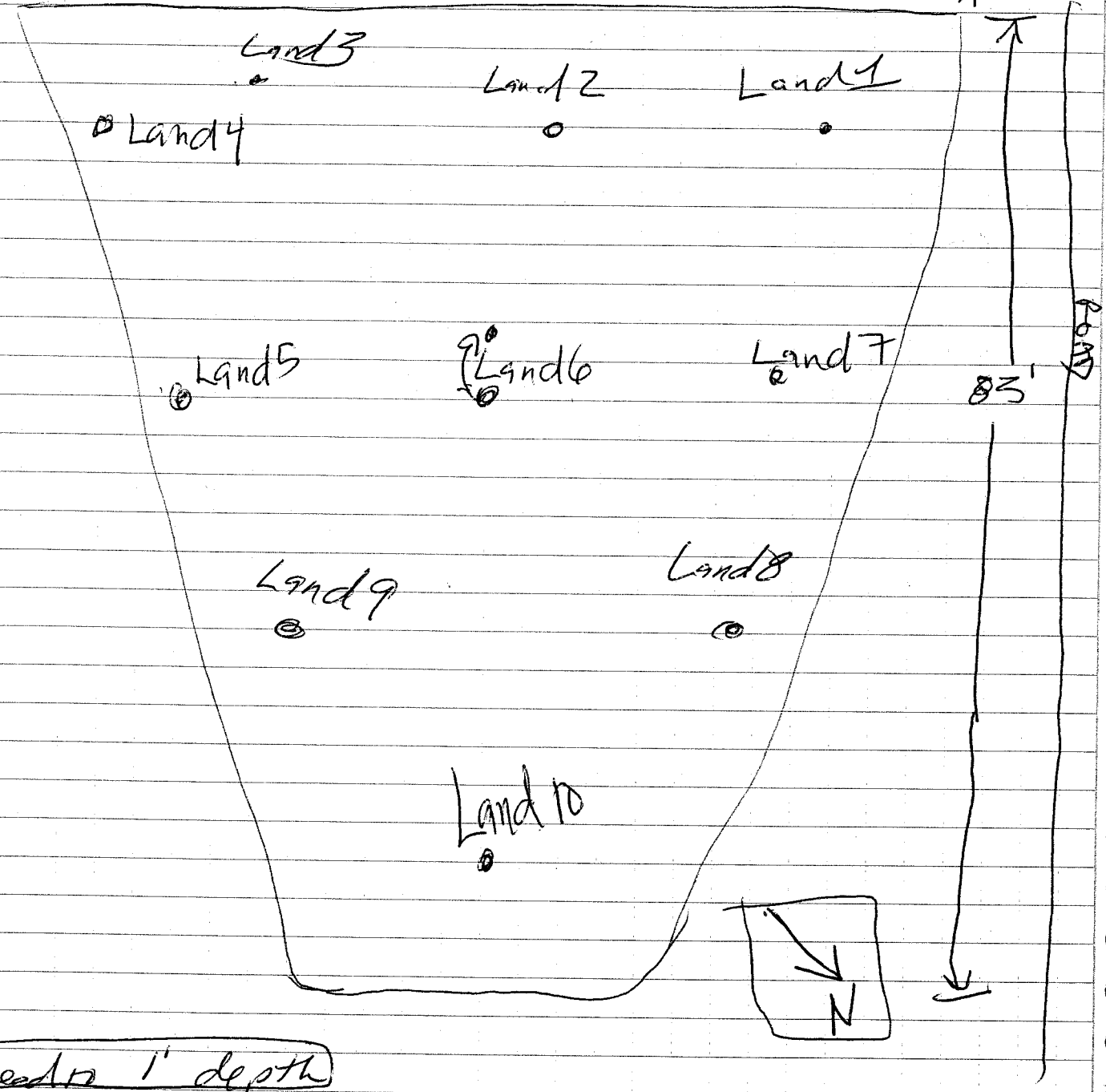
	PID	Depth
MNVC-EX-1 Brown SAND with gravel; moist	0.1	8'
MNVC-EX-2 Brown sandy SILT; moist	0.1	8'
MNVC-EX-3 Brown SAND with gravel	0.2	7'

9-30-08 Done through

Scale: 1 square = _____

Landfill Plot 9-30-08 405c McGrath (7)

Darren Langham Assistant Coley



Spreads 1' depth

9-30-08
Darren Langham

Scale: 1 square = _____

9-30-08 ADEC to Garth

Landfill PID — Dawn Baughman & Kristine Foley

Sample	PID	Description	Depth
Land 1	5.2	Brown silty sand; moist	0.5'
Land 2	3.4	" " " "	0.5'
Land 3	10.6	" " " trace organic + gravel	0.5'
Land 4	2.7	Brown silty sand; moist, trace gravel	0.5'
Land 5	1.8	Brown silty sand; moist	0.5'
Land 6	10.8	Brown slightly silty sand; moist	0.5'
Land 7	1.2	Brown sand; moist	0.5'
Land 8	6.4	Brown slightly silty sand w/trace gravel; moist	0.5'
Land 9	10.9	Brown silty sand; moist	0.5
Land 10	2.1	" " "	0.5

PetroFlag -> L = Land = from Landfill

Sample	PPM	
Blank	0	
Calibration	1106	Machine won't calibrate, the standard, but reads it @ 1106
Barrells	141	
MWC Et-3	57	Analyzer read Err 0 when attempting to Calibrate w/ the standard.
~~L1~~	0	
L3	162	
L4	0	
L6	0	
L7	42	
L8	89	
L9	149	
Blank	13	
Calibration Std.	1085	

Collected samples @ Land-2, Land-

Landfill Sample	Time	Depth
Land-S-2	1445	0.5'
Land-S-6	1450	0.5'
Land-S-9	1455	0.5'

9-30-08 Dawn Baughman

Scale: 1 square = ____

9-30-08 ADEC McGrath Interviews

- Robert Magnuson
  - 4 years in McGrath
  Pw Dist
  524-3738

- Open lot with building - only used as office

- No other concerns with building or lot by Public Safety dept.
- No equipment stored on-site
- Cleared out debris other than. No noted concerns other than the tank + overfill information

---

Matilda Dull
- Bon + Ronda 1985 to 2002 - out
  - Tribal Administration
  - 524-3024
- Property base before building
- No other environmental concerns No drums or other tanks
- New Furnace installed heating oil fired
- Office building - no other use
- Current - general storage - files + office stuff

ANA Project Pam Magnuson
Environmental Clerk
524-3038
- Nothing else on property
- Ground was disturbed
- Never did see overfill
- Office building
- No other concerns - no other tanks or drums
- Current lot for general storage
- No equipment stored on site

- completed interviews by 1730

9-30-08 Dawn Stanyl

Scale: 1 square = _____

APPENDIX B

PHOTOGRAPH LOG AND VIDEO

Photograph 1 – View of impacted soil being removed from around tank.

Photograph 2 – Completed excavation with tank removed.

Photograph 3 – Soil sampling activities near empty drums.

Photograph 4 – View of land spreading area at local landfill.

APPENDIX C

QUALITY ASSURANCE REVIEW, DEC CHECKLIST, AND LABORATORY DATA

LABORATORY DATA
QUALITY ASSURANCE SUMMARY

DEC MCGRATH

Project Number: 005.0065.08007

This report summarizes a review of analytical results for work order number 1085401 for samples collected on 9/30/2008. Samples were collected by SLR International Corp (SLR), and submitted to SGS Environmental Services (SGS), Alaska. Samples were analyzed for the following parameters:

- Polynuclear Aromatics (PAHs), using EPA Method 8270C
- Diesel Range Organics (DRO), using Alaska Method 102
- Benzene, Toluene, Ethylbenzene, Xylenes, using EPA Methods 8021B
- Total Solids, using EPA Method SM20 2540G

Quality Assurance Program

A quality assurance (QA) program was followed that addressed project administration, sampling protocols, data review, and data QA. Sample QA was provided by SLR through strict adherence to sampling protocols. Chain-of-custody (COC) procedures were followed as an integral part of the QA program.

Data validation consisted of the following:

- Verifying that quality control (QC) blanks were properly prepared, identified, and analyzed.
- Reviewing COC records for completeness, signatures, and dates.
- Verifying that surrogate analyses (when applicable) are within recovery acceptance limits.
- Verifying that Laboratory Control Samples (LCS) and Laboratory Control Sample Duplicates (LCSD) are within recovery acceptance limits.
- Reviewing the Continuing Calibration Verification (CCV) recoveries are within recovery acceptance levels.
- Evaluating the result RPD between original and duplicate (QC) samples.
- Providing an overall assessment of laboratory data quality and qualifying sample results if necessary.

Data Qualifications

The comments presented in this report refer to the field procedures and the laboratory's performance in meeting the QC specifications. The sample results were reviewed using the following documents:

- DEC, 18 AAC 75 *Oil and Other Hazardous Substances Pollution Control* (DEC, Revised as of October 9, 2008).
- DEC, 18AAC 70 *Water Quality Standards* (DEC, Revised as of July 1, 2008).
- DEC, *Underground Storage Tanks Procedure Manual Guidance for Treatment of Petroleum – Contaminated Soil and Water and Standard Sampling Procedures* (DEC, November 2002).
- DEC, Technical Memorandum – 06-002, Environmental Laboratory Data and Quality Assurance Requirements (DEC, August 2008).
- EPA Document 530/SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, fourth edition (EPA, November 1991).
- EPA Document 540//R-94/012, USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA, February 1994).

Data Validation

Data Package

The data packages were checked for transcription errors, omissions, or other anomalies. No anomalies were found, except as noted below.

- The type of data package was not identified on the Sample Receipt Form.
- Total Solids were analyzed; however they were not recorded on the COC.
- The Sample Receipt Form states that all sample bottles are labeled for BTEX and DRO; however, this is not correct. The COC says to hold BTEX for three samples, Land-S-2, Land-S-6, and Land-S-9, however, SLR later communicated to SGS that the BTEX samples should be analyzed after all.

Holding Times and Preservation

Samples were appropriately preserved upon collection and were submitted to SGS. Sample analyses were conducted within holding time criteria. No issues were noted in regard to sample preservation.

Laboratory Method Blanks

Laboratory method blanks were analyzed at the appropriate frequencies. No analytes were detected in method blanks at or above the method reporting limits (MRL).

Trip Blanks

One trip blank was included in this work order. No analytes were detected in the trip blank at or above the method reporting limit (MRL). Surrogates for the trip blank were within allowable limits.

Surrogate Recovery Results

Surrogate analyses were performed at the required frequencies, and the results were within EPA and SGS percent recovery acceptance limits.

Continuing Calibration Verification

Continuing calibration verifications (CCV) were performed at the required frequencies, and percent recoveries were within EPA and SGS percent recovery acceptance limits.

Field Duplicates

The following field duplicates were collected:

- MNVC-EX-4 is the duplicate for MNVC-EX-1.

For analytes detected above the MRL, duplicate/parent relative percent differences (RPD) are summarized below.

RELATIVE PERCENT DIFFERENCES		
Parent sample (Duplicate sample)	**Analyte**	**RPD (%)**
MNVC-EX-1 (MNVC-EX-4)	Total Solids	0.2079

None of the analytes except for Total Solids appear in the table above because the results were ND for each sample (the parent and the duplicate). All analytes are in compliance because the results are either ND or less than the 50% RPD required for soil.

Laboratory Control Samples/Laboratory Control Duplicate Samples

Laboratory Control Samples (LCS) and Laboratory Control Duplicate Samples (LCSD) were analyzed at the appropriate frequencies and all LCS/LCSD results met percent recovery acceptance limits.

Laboratory Duplicate Samples

Laboratory duplicate sample was analyzed for Total Solids only. Results were within acceptance criteria.

Matrix Spike/Matrix Spike Duplicate Samples

Matrix Spike (MS) and Matrix Spike Duplicate Samples (MSD) were analyzed at the appropriate frequencies and all MS/MSD results met percent recovery acceptance limits, with exceptions noted below.

- The MS recovery is outside of QC criteria for Phenanthrene and Pyrene (biased high) using EPA Method 8270D SIMS. This affects samples MNVC-Ex-1, MNVC-Ex-2, MNVC-Ex-3, and MNVC-EX-4. The LCS is within QC criteria.
- The MSD recovery is outside of QC criteria (biased high) for Phenanthrene, Fluoranthene, Pyrene, Chrysene, and Benzo[b]Fluorantene using EPA Method 8270D SIMS. This affects samples MNVC-Ex-1, MNVC-Ex-2, MNVC-Ex-3, and MNVC-EX-4. The LCS is within QC criteria.
- The MS/MSD RPD is outside of QC criteria for phenanthrene, using EPA Method 8270D SIMS.

Reporting Limits

Method reporting limits (MRLs) were compared to applicable cleanup levels for the site. The analytes with results of ND had MRLs below applicable cleanup levels.

Other

According to the Case Narrative, the MS/MSD samples had elevated PQLs due to the dark sample extract. This affects samples MNVC-Ex-1, MNVC-Ex-2, MNVC-Ex-3, and MNVC-EX-4.

Overall Assessment

The data are judged to be acceptable for use.

Precision, Accuracy, and Completeness

- Precision: Precision goals were met, except as noted in the MS/MSD narrative.
- Accuracy: Accuracy goals were met, except as noted in the MS/MSD narrative.
- Completeness: Completeness goals were met.

Laboratory Data Review Checklist

Completed by: Kirsten Hoppe

Title: Geologist

Date: October 02, 2008

CS Report Name: ADEC McGrath

Report Date: October 22, 2008

Consultant Firm: SLR International Corp

Laboratory Name: SGS Environmental

Laboratory Report Number: 1085401

ADEC File Number:

ADEC RecKey Number:

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   ☑ Yes ☐ No Comments:

   SGS Environmental

   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 Comments:

   NA

2. Chain of Custody (COC)

   a. COC information completed, signed, and dated (including released/received by)?

   ☑ Yes ☐ No Comments:

b. Correct analyses requested?

☑ Yes ☐ No Comments:

Total Solids were analyzed; however they were not recorded on the COC. The Sample Receipt Form states that all sample bottles are labeled for BTEX and DRO, however, this is not correct. The COC says to hold BTEX for three samples, Land-S-2, Land-S-6, and Land-S-9, however, SLR later communicated to SGS that the BTEX samples should be analyzed after all.

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?

☑ Yes ☐ No Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

☑ Yes ☐ No Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

☑ Yes ☐ No Comments:

NA

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

☑ Yes ☐ No Comments:

e. Data quality or usability affected? Explain.

Comments:

NA

4. Case Narrative

a. Present and understandable?

☑ Yes ☐ No Comments:

b. Discrepancies, errors or QC failures identified by the lab?

☒ Yes ☐ No Comments:

All discrepancies and errors were found in the Case Narrative as well as the laboratory report results.

c. Were all corrective actions documented?

☒ Yes ☐ No Comments:

No corrective actions were necessary or taken.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

If there was QC failure, it was explained that the sample results may be biased high or low, sample results may have been not detected above the PQL, or that other QC methods performed by the laboratory were found to be within acceptable range.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

☒ Yes ☐ No Comments:

Total Solids were analyzed; however they were not recorded on the COC. The Sample Receipt Form states that all sample bottles are labeled for BTEX and DRO, however, this is not correct. The COC says to hold BTEX for three samples, Land-S-2, Land-S-6, and Land-S-9, however, SLR later communicated to SGS that the BTEX samples should be analyzed after all.

b. All applicable holding times met?

☒ Yes ☐ No Comments:

c. All soils reported on a dry weight basis?

☒ Yes ☐ No Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

☒ Yes ☐ No Comments:

Method reporting limits (MRLs) were compared to applicable cleanup levels for the site. The analytes with result of ND had MRLs below applicable cleanup levels.

e. Data quality or usability affected? Explain.

Comments:

No. The analytes with result of ND had MRLs below applicable cleanup levels.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

☑ Yes ☐ No Comments:

ii. All method blank results less than PQL?

☑ Yes ☐ No Comments:

iii. If above PQL, what samples are affected?

Comments:

NA

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☑ Yes ☐ No Comments:

NA

v. Data quality or usability affected? Explain.

Comments:

No

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 Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☑ Yes ☐ No Comments:

NA

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 Comments:

The MS recovery is outside of QC criteria for Phenanthrene and Pyrene (biased high) using EPA Method 8270D SIMS. This affects samples MNVC-Ex-1, MNVC-Ex-2, MNVC-Ex-3, and MNVC-EX-4. The LCS is within QC criteria.
The MSD recovery is outside of QC criteria (biased high) for Phenanthrene, Fluoranthene, Pyrene, Chrysene, and Benzo[b]Fluorantene using EPA Method 8270D SIMS. This affects samples MNVC-Ex-1, MNVC-Ex-2, MNVC-Ex-3, and MNVC-EX-4. The LCS is within QC criteria.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☐ Yes ☒ No Comments:

The MS/MSD RPD is outside of QC criteria for phenanthrene, using EPA Method 8270D SIMS.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

MNVC-Ex-1, MNVC-Ex-2, MNVC-Ex-3, and MNVC-EX-4

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☒ Yes ☐ No Comments:

Laboratory noted affected samples in the Sample Remarks sections of the laboratory report.

vii. Data quality or usability affected? Explain.
Comments:

No. LCS was within acceptable range for MS/MSD samples outside of QC criteria. Phenanthrene was not detected above the PQL in associated samples.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

☒ Yes ☐ No 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 Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☒ Yes ☐ No Comments:

NA

iv. Data quality or usability affected? Explain.

Comments:

NA

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and cooler?

☒ Yes ☐ No Comments:

ii. All results less than PQL?

☒ Yes ☐ No Comments:

iii. If above PQL, what samples are affected?

Comments:

NA

iv. Data quality or usability affected? Explain.

Comments:

No

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☒ Yes ☐ No Comments:

ii. Submitted blind to lab?

☑ Yes ☐ No Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☑ Yes ☐ No Comments:

iv. Data quality or usability affected? Explain.

Comments:

No

f. Decontamination or Equipment Blank (if applicable)

☐ Yes ☐ No ☑ Not Applicable

i. All results less than PQL?

☐ Yes ☐ No Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? Explain.

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

☒ Yes ☐ No Comments:

NA

SGS Environmental Services
Alaska Division
Level II Laboratory Data Report

Project:	ADEC McGrath
Client:	SLR Alaska-Anchorage
SGS Work Order:	1085401

Released by:

Barbara A. Hager

Barbara Hager
Alaska Division Project Manager

Barbara A. Hager
2008.10.22 10:02:09 -08'00'

Contents:

Note:
Unless otherwise noted, all quality assurance/quality control criteria is in compliance with the standards set forth by the proper regulatory authority, the SGS Quality Assurance Program Plan, and the National Environmental Accreditation Conference.

CASE NARRATIVE

Print Date: 10/22/2008

Client Name: SLR Alaska-Anchorage
Project Name: ADEC McGrath
Workorder No.: 1085401

Sample Comments

Refer to the sample receipt form for information on sample condition.

Lab Sample ID	Sample Type	Client Sample ID
1085401006	PS	Land-S-6
	AK102 - The pattern is consistent with a weathered middle distillate.	
1085401007	PS	Land-S-9
	AK102 - The pattern is consistent with a weathered middle distillate.	
864466	MS	Square 87 (#260)(1085449001MS)
	8270D SIMS - Elevated PQL due to dark sample extract. 8270D SIMS - MS recovery is outside of QC criteria for phenanthrene and pyrene (biased high). Batch LCS is within QC criteria.	
864467	MSD	Square 87 (#...(1085449001MSD)
	8270D SIMS - Elevated PQL due to dark sample extract. 8270D SIMS - MSD recovery is outside of QC criteria for multiple analytes (biased high). The batch LCS is within QC criteria. 8270D SIMS - MS/MSD RPD is outside of QC criteria for phenanthrene.	

Report of Manual Integrations

Print Date: 10/22/2008

Laboratory ID	Client Sample ID	Analytical Batch	Method	Analyte	Reason
864467	Square 87 (#...(1085449001MSD)	XMS4740	8270D SIMS	Benzo[k]fluoranthene	PNF

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.

Laboratory Analytical Report

Client: **SLR Alaska-Anchorage**
4601 Business Park Blvd #K42
Anchorage, AK 99503

Attn: **Darsen Gaughan**
T: (907)222-1112 F:(907)222-1113

Project: **ADEC McGrath**

Workorder No.: **1085401**

Certification:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, other than the conditions noted on the sample data sheet(s) and/or the case narrative. This certification applies only to the tested parameters and the specific sample(s) received at the laboratory.

Barbara A. Hager

Barbara Hager
Alaska Division Project Manager

Barbara A. Hager
2008.10.22 10:02:20
-08'00'

If you have any questions regarding this report, or if we can be of further assistance, please contact your SGS Project Manager.

Barbara Hager
Barbara.Hager@sgs.com
Project Manager

Print Date: 10/22/2008

Enclosed are the analytical results associated with this workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by SGS. A copy of our Quality Assurance Plan (QAP), which outlines this program is available at your request.

The Laboratory certification numbers are AK971-05 (DW), UTS-005 (CS) and AK00971 (Micro) for ADEC and AK100001 for NELAP (RCRA methods: 1020A, 1311, 6010B, 7470A, 7471A, 9040B, 9045C, 9056, 9060, 8015B, 8021B, 8081A/8082, 8260B, 8270C).

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP, the National Environmental Laboratory Accreditation Program and, when applicable, other regulatory authorities.

If you have any questions regarding this report or if we can be of any assistance, please contact your SGS Project Manager at 907-562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

MDL	Method Detection Limit
PQL	Practical Quantitation Limit (reporting limit).
CL	Control Limit
U	Indicates the analyte was analyzed for but not detected.
F	Indicates value that is greater than or equal to the MDL.
J	The quantitation is an estimation.
ND	Indicates the analyte is not detected
B	Indicates the analyte is found in a blank associated with the sample.
*	The analyte has exceeded allowable regulatory or control limits.
D	The analyte concentration is the result of dilution.
GT	Greater Than
LT	Less Than
Q	QC parameter out of acceptance range.
M	A matrix effect was present.
E	The analyte result is above the calibrated range.
R	Rejected
DF	Analytical Dilution Factor
JL	The analyte was positively identified, but the quantitation is a low estimation.
<Surr>	Surrogate QC spiked standard
<Surr/IS>	Surrogate / Internal Standard QC spiked standard
QC	Quality Control
QA	Quality Assurance
MB	Method Blank
LCS (D)	Laboratory Control Sample (Duplicate)
MS(D)	Matrix Spike (Duplicate)
BMS(D)	Site Specific Matrix Spike
RPD	Relative Percent Difference
ICV	Initial Calibration Verification
CCV	Continuous Calibration Verification
MSA	Method of Standard Addition

Notes: Soil samples are reported on a dry weight basis unless otherwise specified
All DRO/RRO analysese are integrated per SOP.

SAMPLE SUMMARY

Print Date: 10/22/2008

Client Name: SLR Alaska-Anchorage
Project Name: ADEC McGrath
Workorder No.: 1085401

Analytical Methods

Method Description	Analytical Method
8270 PAH SIM Semi-Volatiles GC/MS	8270D SIMS
BTEX 8021 prepped by AK101 Field Prep	SW8021B
Diesel Range Organics (S)	AK102
Percent Solids SM2540G	SM20 2540G

Sample ID Cross Reference

Lab Sample ID	Client Sample ID
1085401001	MNVC-EX-1
1085401002	MNVC-EX-2
1085401003	MNVC-EX-3
1085401004	MNVC-EX-4
1085401005	Land-S-2
1085401006	Land-S-6
1085401007	Land-S-9
1085401008	TRIP BLANK

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-1**
SGS Ref. #: 1085401001
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 96.1

Collection Date/Time: 09/30/08 09:35
Receipt Date/Time: 10/01/08 14:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	ND	10.1	3.22	ug/Kg	1	VFC9195	VXX18835	
Toluene	ND	40.3	12.1	ug/Kg	1	VFC9195	VXX18835	
Ethylbenzene	ND	40.3	12.1	ug/Kg	1	VFC9195	VXX18835	
o-Xylene	ND	40.3	12.1	ug/Kg	1	VFC9195	VXX18835	
P & M -Xylene	ND	40.3	12.1	ug/Kg	1	VFC9195	VXX18835	
1,4-Difluorobenzene <surr>	92.8	80-120		%	1	VFC9195	VXX18835	

Batch Information

Analytical Batch: VFC9195
Analytical Method: SW8021B
Analysis Date/Time: 10/04/08 14:22
Dilution Factor: 1

Prep Batch: VXX18835
Prep Method: SW5035A
Prep Date/Time: 09/30/08 09:35

Initial Prep Wt./Vol.: 71.837 g
Prep Extract Vol.: 27.82 mL
Container ID:1085401001-A
Analyst: HM

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-1**
SGS Ref. #: 1085401001
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 96.1

Collection Date/Time: 09/30/08 09:35
Receipt Date/Time: 10/01/08 14:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	ND	20.6	2.06	mg/Kg	1	XFC8272	XXX20195	
5a Androstane <surr>	67.1	50-150		%	1	XFC8272	XXX20195	

Batch Information

Analytical Batch: XFC8272
Analytical Method: AK102
Analysis Date/Time: 10/15/08 00:47
Dilution Factor: 1

Prep Batch: XXX20195
Prep Method: SW3550C
Prep Date/Time: 10/14/08 10:00

Initial Prep Wt./Vol.: 30.384 g
Prep Extract Vol.: 1 mL
Container ID:1085401001-B
Analyst: GL

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-1**
SGS Ref. #: 1085401001
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 96.1

Collection Date/Time: 09/30/08 09:35
Receipt Date/Time: 10/01/08 14:20

Polynuclear Aromatics GC/MS

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Acenaphthylene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Acenaphthene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Fluorene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Phenanthrene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Anthracene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Fluoranthene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Pyrene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Benzo(a)Anthracene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Chrysene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Benzo[b]Fluoranthene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Benzo[k]fluoranthene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Benzo[a]pyrene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Indeno[1,2,3-c,d] pyrene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Dibenzo[a,h]anthracene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Benzo[g,h,i]perylene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Naphthalene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
1-Methylnaphthalene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
2-Methylnaphthalene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Terphenyl-d14 <surr>	81.3	30-125		%	1	XMS4740	XXX20198	

Batch Information

Analytical Batch: XMS4740
Analytical Method: 8270D SIMS
Analysis Date/Time: 10/15/08 13:18
Dilution Factor: 1

Prep Batch: XXX20198
Prep Method: SW3550C
Prep Date/Time: 10/14/08 14:00

Initial Prep Wt./Vol.: 22.88 g
Prep Extract Vol.: 1 mL
Container ID:1085401001-B
Analyst: JDH

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-1**
SGS Ref. #: 1085401001
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 96.1

Collection Date/Time: 09/30/08 09:35
Receipt Date/Time: 10/01/08 14:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	96.1			%	1	SPT7834		

Batch Information

Analytical Batch: SPT7834
Analytical Method: SM20 2540G
Analysis Date/Time: 10/09/08 17:30
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1085401001-B
Analyst: STB

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-2**
SGS Ref. #: 1085401002
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 72.4

Collection Date/Time: 09/30/08 09:40
Receipt Date/Time: 10/01/08 14:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	ND	18.5	5.93	ug/Kg	1	VFC9195	VXX18835	
Toluene	ND	74.2	22.2	ug/Kg	1	VFC9195	VXX18835	
Ethylbenzene	ND	74.2	22.2	ug/Kg	1	VFC9195	VXX18835	
o-Xylene	ND	74.2	22.2	ug/Kg	1	VFC9195	VXX18835	
P & M -Xylene	ND	74.2	22.2	ug/Kg	1	VFC9195	VXX18835	
1,4-Difluorobenzene <surr>	93	80-120		%	1	VFC9195	VXX18835	

Batch Information

Analytical Batch: VFC9195
Analytical Method: SW8021B
Analysis Date/Time: 10/04/08 14:40
Dilution Factor: 1

Prep Batch: VXX18835
Prep Method: SW5035A
Prep Date/Time: 09/30/08 09:40

Initial Prep Wt./Vol.: 95.708 g
Prep Extract Vol.: 51.4 mL
Container ID:1085401002-A
Analyst: HM

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-2**
SGS Ref. #: 1085401002
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 72.4

Collection Date/Time: 09/30/08 09:40
Receipt Date/Time: 10/01/08 14:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	3.76 J	27.5	2.75	mg/Kg	1	XFC8272	XXX20195	
5a Androstane <surr>	62.4	50-150		%	1	XFC8272	XXX20195	

Batch Information

Analytical Batch: XFC8272
Analytical Method: AK102
Analysis Date/Time: 10/15/08 00:57
Dilution Factor: 1

Prep Batch: XXX20195
Prep Method: SW3550C
Prep Date/Time: 10/14/08 10:00

Initial Prep Wt./Vol.: 30.14 g
Prep Extract Vol.: 1 mL
Container ID:1085401002-B
Analyst: GL

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-2**
SGS Ref. #: 1085401002
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 72.4

Collection Date/Time: 09/30/08 09:40
Receipt Date/Time: 10/01/08 14:20

Polynuclear Aromatics GC/MS

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Acenaphthylene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Acenaphthene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Fluorene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Phenanthrene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Anthracene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Fluoranthene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Pyrene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Benzo(a)Anthracene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Chrysene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Benzo[b]Fluoranthene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Benzo[k]fluoranthene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Benzo[a]pyrene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Indeno[1,2,3-c,d] pyrene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Dibenzo[a,h]anthracene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Benzo[g,h,i]perylene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Naphthalene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
1-Methylnaphthalene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
2-Methylnaphthalene	ND	6.89	2.07	ug/Kg	1	XMS4740	XXX20198	
Terphenyl-d14 <surr>	80.6	30-125		%	1	XMS4740	XXX20198	

Batch Information

Analytical Batch: XMS4740
Analytical Method: 8270D SIMS
Analysis Date/Time: 10/15/08 13:51
Dilution Factor: 1

Prep Batch: XXX20198
Prep Method: SW3550C
Prep Date/Time: 10/14/08 14:00

Initial Prep Wt./Vol.: 22.559 g
Prep Extract Vol.: 1 mL
Container ID:1085401002-B
Analyst: JDH

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-2**
SGS Ref. #: 1085401002
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 72.4

Collection Date/Time: 09/30/08 09:40
Receipt Date/Time: 10/01/08 14:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	72.4			%	1	SPT7834		

Batch Information

Analytical Batch: SPT7834
Analytical Method: SM20 2540G
Analysis Date/Time: 10/09/08 17:30
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1085401002-B
Analyst: STB

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-3**
SGS Ref. #: 1085401003
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 96.4

Collection Date/Time: 09/30/08 10:00
Receipt Date/Time: 10/01/08 14:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	ND	6.98	2.23	ug/Kg	1	VFC9195	VXX18835	
Toluene	ND	27.9	8.38	ug/Kg	1	VFC9195	VXX18835	
Ethylbenzene	ND	27.9	8.38	ug/Kg	1	VFC9195	VXX18835	
o-Xylene	ND	27.9	8.38	ug/Kg	1	VFC9195	VXX18835	
P & M -Xylene	ND	27.9	8.38	ug/Kg	1	VFC9195	VXX18835	
1,4-Difluorobenzene <surr>	91.9	80-120		%	1	VFC9195	VXX18835	

Batch Information

Analytical Batch: VFC9195
Analytical Method: SW8021B
Analysis Date/Time: 10/04/08 14:59
Dilution Factor: 1

Prep Batch: VXX18835
Prep Method: SW5035A
Prep Date/Time: 09/30/08 10:00

Initial Prep Wt./Vol.: 107.305 g
Prep Extract Vol.: 28.89 mL
Container ID:1085401003-A
Analyst: HM

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-3**
SGS Ref. #: 1085401003
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 96.4

Collection Date/Time: 09/30/08 10:00
Receipt Date/Time: 10/01/08 14:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	ND	20.5	2.05	mg/Kg	1	XFC8272	XXX20195	
5a Androstane <surr>	55.4	50-150		%	1	XFC8272	XXX20195	

Batch Information

Analytical Batch: XFC8272
Analytical Method: AK102
Analysis Date/Time: 10/15/08 01:06
Dilution Factor: 1

Prep Batch: XXX20195
Prep Method: SW3550C
Prep Date/Time: 10/14/08 10:00

Initial Prep Wt./Vol.: 30.366 g
Prep Extract Vol.: 1 mL
Container ID:1085401003-B
Analyst: GL

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-3**
SGS Ref. #: 1085401003
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 96.4

Collection Date/Time: 09/30/08 10:00
Receipt Date/Time: 10/01/08 14:20

Polynuclear Aromatics GC/MS

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Acenaphthylene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Acenaphthene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Fluorene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Phenanthrene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Anthracene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Fluoranthene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Pyrene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Benzo(a)Anthracene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Chrysene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Benzo[b]Fluoranthene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Benzo[k]fluoranthene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Benzo[a]pyrene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Indeno[1,2,3-c,d] pyrene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Dibenzo[a,h]anthracene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Benzo[g,h,i]perylene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Naphthalene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
1-Methylnaphthalene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
2-Methylnaphthalene	ND	5.12	1.53	ug/Kg	1	XMS4740	XXX20198	
Terphenyl-d14 <surr>	86.7	30-125		%	1	XMS4740	XXX20198	

Batch Information

Analytical Batch: XMS4740
Analytical Method: 8270D SIMS
Analysis Date/Time: 10/15/08 14:25
Dilution Factor: 1

Prep Batch: XXX20198
Prep Method: SW3550C
Prep Date/Time: 10/14/08 14:00

Initial Prep Wt./Vol.: 22.818 g
Prep Extract Vol.: 1 mL
Container ID:1085401003-B
Analyst: JDH

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-3**
SGS Ref. #: 1085401003
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 96.4

Collection Date/Time: 09/30/08 10:00
Receipt Date/Time: 10/01/08 14:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	96.4			%	1	SPT7834		

Batch Information

Analytical Batch: SPT7834
Analytical Method: SM20 2540G
Analysis Date/Time: 10/09/08 17:30
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1085401003-B
Analyst: STB

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-4**
SGS Ref. #: 1085401004
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 96.3

Collection Date/Time: 09/30/08 09:30
Receipt Date/Time: 10/01/08 14:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	ND	6.72	2.15	ug/Kg	1	VFC9195	VXX18835	
Toluene	ND	26.9	8.06	ug/Kg	1	VFC9195	VXX18835	
Ethylbenzene	ND	26.9	8.06	ug/Kg	1	VFC9195	VXX18835	
o-Xylene	ND	26.9	8.06	ug/Kg	1	VFC9195	VXX18835	
P & M -Xylene	ND	26.9	8.06	ug/Kg	1	VFC9195	VXX18835	
1,4-Difluorobenzene <surr>	93.1	80-120		%	1	VFC9195	VXX18835	

Batch Information

Analytical Batch: VFC9195
Analytical Method: SW8021B
Analysis Date/Time: 10/04/08 15:17
Dilution Factor: 1

Prep Batch: VXX18835
Prep Method: SW5035A
Prep Date/Time: 09/30/08 09:30

Initial Prep Wt./Vol.: 112.564 g
Prep Extract Vol.: 29.14 mL
Container ID:1085401004-A
Analyst: HM

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-4**
SGS Ref. #: 1085401004
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 96.3

Collection Date/Time: 09/30/08 09:30
Receipt Date/Time: 10/01/08 14:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	ND	20.6	2.06	mg/Kg	1	XFC8272	XXX20195	
5a Androstane <surr>	64.3	50-150		%	1	XFC8272	XXX20195	

Batch Information

Analytical Batch: XFC8272
Analytical Method: AK102
Analysis Date/Time: 10/15/08 01:16
Dilution Factor: 1

Prep Batch: XXX20195
Prep Method: SW3550C
Prep Date/Time: 10/14/08 10:00

Initial Prep Wt./Vol.: 30.225 g
Prep Extract Vol.: 1 mL
Container ID:1085401004-B
Analyst: GL

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-4**
SGS Ref. #: 1085401004
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 96.3

Collection Date/Time: 09/30/08 09:30
Receipt Date/Time: 10/01/08 14:20

Polynuclear Aromatics GC/MS

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Acenaphthylene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Acenaphthene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Fluorene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Phenanthrene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Anthracene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Fluoranthene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Pyrene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Benzo(a)Anthracene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Chrysene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Benzo[b]Fluoranthene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Benzo[k]fluoranthene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Benzo[a]pyrene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Indeno[1,2,3-c,d] pyrene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Dibenzo[a,h]anthracene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Benzo[g,h,i]perylene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Naphthalene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
1-Methylnaphthalene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
2-Methylnaphthalene	ND	5.12	1.54	ug/Kg	1	XMS4740	XXX20198	
Terphenyl-d14 <surr>	92.6	30-125		%	1	XMS4740	XXX20198	

Batch Information

Analytical Batch: XMS4740
Analytical Method: 8270D SIMS
Analysis Date/Time: 10/15/08 14:58
Dilution Factor: 1

Prep Batch: XXX20198
Prep Method: SW3550C
Prep Date/Time: 10/14/08 14:00

Initial Prep Wt./Vol.: 22.794 g
Prep Extract Vol.: 1 mL
Container ID:1085401004-B
Analyst: JDH

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **MNVC-EX-4**
SGS Ref. #: 1085401004
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 96.3

Collection Date/Time: 09/30/08 09:30
Receipt Date/Time: 10/01/08 14:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	96.3			%	1	SPT7834		

Batch Information

Analytical Batch: SPT7834
Analytical Method: SM20 2540G
Analysis Date/Time: 10/09/08 17:30
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1085401004-B
Analyst: STB

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **Land-S-2**
SGS Ref. #: 1085401005
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 80.9

Collection Date/Time: 09/30/08 14:45
Receipt Date/Time: 10/01/08 14:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	ND	16.9	5.40	ug/Kg	1	VFC9210	VXX18876	
Toluene	ND	67.5	20.3	ug/Kg	1	VFC9210	VXX18876	
Ethylbenzene	ND	67.5	20.3	ug/Kg	1	VFC9210	VXX18876	
o-Xylene	ND	67.5	20.3	ug/Kg	1	VFC9210	VXX18876	
P & M -Xylene	ND	67.5	20.3	ug/Kg	1	VFC9210	VXX18876	
1,4-Difluorobenzene <surr>	90.3	80-120		%	1	VFC9210	VXX18876	

Batch Information

Analytical Batch: VFC9210
Analytical Method: SW8021B
Analysis Date/Time: 10/09/08 12:12
Dilution Factor: 1

Prep Batch: VXX18876
Prep Method: SW5035A
Prep Date/Time: 09/30/08 14:45

Initial Prep Wt./Vol.: 70.29 g
Prep Extract Vol.: 38.41 mL
Container ID:1085401005-A
Analyst: HM

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **Land-S-2**
SGS Ref. #: 1085401005
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 80.9

Collection Date/Time: 09/30/08 14:45
Receipt Date/Time: 10/01/08 14:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	5.80 J	24.5	2.45	mg/Kg	1	XFC8272	XXX20195	
5a Androstane <surr>	57.5	50-150		%	1	XFC8272	XXX20195	

Batch Information

Analytical Batch: XFC8272
Analytical Method: AK102
Analysis Date/Time: 10/15/08 01:35
Dilution Factor: 1

Prep Batch: XXX20195
Prep Method: SW3550C
Prep Date/Time: 10/14/08 10:00

Initial Prep Wt./Vol.: 30.224 g
Prep Extract Vol.: 1 mL
Container ID:1085401005-B
Analyst: GL

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **Land-S-2**
SGS Ref. #: 1085401005
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 80.9

Collection Date/Time: 09/30/08 14:45
Receipt Date/Time: 10/01/08 14:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	80.9			%	1	SPT7834		

Batch Information

Analytical Batch: SPT7834
Analytical Method: SM20 2540G
Analysis Date/Time: 10/09/08 17:30
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1085401005-B
Analyst: STB

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **Land-S-6**
SGS Ref. #: 1085401006
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 88.3

Collection Date/Time: 09/30/08 14:50
Receipt Date/Time: 10/01/08 14:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	ND	11.8	3.76	ug/Kg	1	VFC9210	VXX18876	
Toluene	ND	47.0	14.1	ug/Kg	1	VFC9210	VXX18876	
Ethylbenzene	ND	47.0	14.1	ug/Kg	1	VFC9210	VXX18876	
o-Xylene	ND	47.0	14.1	ug/Kg	1	VFC9210	VXX18876	
P & M -Xylene	ND	47.0	14.1	ug/Kg	1	VFC9210	VXX18876	
1,4-Difluorobenzene <surr>	91.4	80-120		%	1	VFC9210	VXX18876	

Batch Information

Analytical Batch: VFC9210
Analytical Method: SW8021B
Analysis Date/Time: 10/09/08 12:31
Dilution Factor: 1

Prep Batch: VXX18876
Prep Method: SW5035A
Prep Date/Time: 09/30/08 14:50

Initial Prep Wt./Vol.: 83.676 g
Prep Extract Vol.: 34.77 mL
Container ID:1085401006-A
Analyst: HM

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **Land-S-6**
SGS Ref. #: 1085401006
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 88.3

Collection Date/Time: 09/30/08 14:50
Receipt Date/Time: 10/01/08 14:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	34.7	22.5	2.25	mg/Kg	1	XFC8272	XXX20195	
5a Androstane <surr>	57.1	50-150		%	1	XFC8272	XXX20195	

Batch Information

Analytical Batch: XFC8272
Analytical Method: AK102
Analysis Date/Time: 10/15/08 01:45
Dilution Factor: 1

Prep Batch: XXX20195
Prep Method: SW3550C
Prep Date/Time: 10/14/08 10:00

Initial Prep Wt./Vol.: 30.237 g
Prep Extract Vol.: 1 mL
Container ID:1085401006-B
Analyst: GL

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **Land-S-6**
SGS Ref. #: 1085401006
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 88.3

Collection Date/Time: 09/30/08 14:50
Receipt Date/Time: 10/01/08 14:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	88.3			%	1	SPT7834		

Batch Information

Analytical Batch: SPT7834
Analytical Method: SM20 2540G
Analysis Date/Time: 10/09/08 17:30
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1085401006-B
Analyst: STB

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **Land-S-9**
SGS Ref. #: 1085401007
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 80.9

Collection Date/Time: 09/30/08 14:55
Receipt Date/Time: 10/01/08 14:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	ND	13.9	4.44	ug/Kg	1	VFC9210	VXX18876	
Toluene	ND	55.5	16.7	ug/Kg	1	VFC9210	VXX18876	
Ethylbenzene	ND	55.5	16.7	ug/Kg	1	VFC9210	VXX18876	
o-Xylene	25.6 J	55.5	16.7	ug/Kg	1	VFC9210	VXX18876	
P & M -Xylene	ND	55.5	16.7	ug/Kg	1	VFC9210	VXX18876	
1,4-Difluorobenzene <surr>	89.8	80-120		%	1	VFC9210	VXX18876	

Batch Information

Analytical Batch: VFC9210
Analytical Method: SW8021B
Analysis Date/Time: 10/09/08 12:49
Dilution Factor: 1

Prep Batch: VXX18876
Prep Method: SW5035A
Prep Date/Time: 09/30/08 14:55

Initial Prep Wt./Vol.: 97.076 g
Prep Extract Vol.: 43.58 mL
Container ID:1085401007-A
Analyst: HM

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **Land-S-9**
SGS Ref. #: 1085401007
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 80.9

Collection Date/Time: 09/30/08 14:55
Receipt Date/Time: 10/01/08 14:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	37.5	24.2	2.42	mg/Kg	1	XFC8282	XXX20195	
5a Androstane <surr>	57.2	50-150		%	1	XFC8282	XXX20195	

Batch Information

Analytical Batch: XFC8282
Analytical Method: AK102
Analysis Date/Time: 10/19/08 02:13
Dilution Factor: 1

Prep Batch: XXX20195
Prep Method: SW3550C
Prep Date/Time: 10/14/08 10:00

Initial Prep Wt./Vol.: 30.726 g
Prep Extract Vol.: 1 mL
Container ID:1085401007-B
Analyst: GL

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **Land-S-9**
SGS Ref. #: 1085401007
Project ID: ADEC McGrath
Matrix: Soil/Solid (dry weight)
Percent Solids: 80.9

Collection Date/Time: 09/30/08 14:55
Receipt Date/Time: 10/01/08 14:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	80.9			%	1	SPT7834		

Batch Information

Analytical Batch: SPT7834
Analytical Method: SM20 2540G
Analysis Date/Time: 10/09/08 17:30
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1085401007-B
Analyst: STB

SLR Alaska-Anchorage Print Date: 10/22/2008

Client Sample ID: **TRIP BLANK**
SGS Ref. #: 1085401008
Project ID: ADEC McGrath
Matrix: Solid/Soil (Wet Weight)

Collection Date/Time: 09/30/08 09:30
Receipt Date/Time: 10/01/08 14:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	ND	12.6	4.05	ug/Kg	1	VFC9195	VXX18835	
Toluene	ND	50.6	15.2	ug/Kg	1	VFC9195	VXX18835	
Ethylbenzene	ND	50.6	15.2	ug/Kg	1	VFC9195	VXX18835	
o-Xylene	ND	50.6	15.2	ug/Kg	1	VFC9195	VXX18835	
P & M -Xylene	ND	50.6	15.2	ug/Kg	1	VFC9195	VXX18835	
1,4-Difluorobenzene <surr>	92.4	80-120		%	1	VFC9195	VXX18835	

Batch Information

Analytical Batch: VFC9195
Analytical Method: SW8021B
Analysis Date/Time: 10/04/08 15:35
Dilution Factor: 1

Prep Batch: VXX18835
Prep Method: SW5035A
Prep Date/Time: 09/30/08 09:30

Initial Prep Wt./Vol.: 49.431 g
Prep Extract Vol.: 25 mL
Container ID:1085401008-A
Analyst: HM

SGS Ref.#	862585	Method Blank	**Printed Date/Time**		10/22/2008 9:48
Client Name	SLR Alaska-Anchorage		**Prep**	**Batch**	VXX18835
Project Name/#	ADEC McGrath			**Method**	SW5035A
Matrix	Soil/Solid (dry weight)			**Date**	10/01/2008

QC results affect the following production samples:

1085401001, 1085401002, 1085401003, 1085401004, 1085401008

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Volatile Fuels Department					
Benzene	ND	12.5	4.00	ug/Kg	10/04/08
Toluene	ND	50.0	15.0	ug/Kg	10/04/08
Ethylbenzene	ND	50.0	15.0	ug/Kg	10/04/08
o-Xylene	ND	50.0	15.0	ug/Kg	10/04/08
P & M -Xylene	ND	50.0	15.0	ug/Kg	10/04/08
Surrogates					
1,4-Difluorobenzene <surr>	92.2	80-120		%	10/04/08

Batch VFC9195
Method SW8021B
Instrument HP 5890 Series II PID+HECD VBA

SGS Ref.#	863612	Method Blank	**Printed Date/Time**	10/22/2008	9:48
Client Name	SLR Alaska-Anchorage		**Prep Batch**		
Project Name/#	ADEC McGrath		**Method**		
Matrix	Soil/Solid (dry weight)		**Date**		

QC results affect the following production samples:

1085401001, 1085401002, 1085401003, 1085401004, 1085401005, 1085401006, 1085401007

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Solids					
Total Solids	100			%	10/09/08
Batch SPT7834					
Method SM20 2540G					
Instrument					

SGS Ref.#	864311	Method Blank	**Printed Date/Time**	10/22/2008	9:48
Client Name	SLR Alaska-Anchorage		**Prep Batch**	XXX20195	
Project Name/#	ADEC McGrath		**Method**	SW3550C	
Matrix	Soil/Solid (dry weight)		**Date**	10/14/2008	

QC results affect the following production samples:

1085401001, 1085401002, 1085401003, 1085401004, 1085401005, 1085401006, 1085401007

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Semivolatile Organic Fuels Department					
Diesel Range Organics	ND	20.0	2.00	mg/Kg	10/15/08
Surrogates					
5a Androstane <surr>	73.4	60-120		%	10/15/08

Batch XFC8272
Method AK102
Instrument HP 5890 Series II FID SV D R

SGS Ref.#	864437	Method Blank	**Printed Date/Time**		10/22/2008 9:48
Client Name	SLR Alaska-Anchorage		**Prep**	**Batch**	VXX18876
Project Name/#	ADEC McGrath			**Method**	SW5035A
Matrix	Soil/Solid (dry weight)			**Date**	10/09/2008

QC results affect the following production samples:

1085401005, 1085401006, 1085401007

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Volatile Fuels Department					
Benzene	ND	12.5	4.00	ug/Kg	10/09/08
Toluene	ND	50.0	15.0	ug/Kg	10/09/08
Ethylbenzene	ND	50.0	15.0	ug/Kg	10/09/08
o-Xylene	ND	50.0	15.0	ug/Kg	10/09/08
P & M -Xylene	ND	50.0	15.0	ug/Kg	10/09/08
Surrogates					
1,4-Difluorobenzene <surr>	89.7	80-120		%	10/09/08
Batch	VFC9210				
Method	SW8021B				
Instrument	HP 5890 Series II PID+FID VCA				

SGS Ref.#	864464	Method Blank	**Printed Date/Time**	10/22/2008	9:48
Client Name	SLR Alaska-Anchorage		**Prep Batch**	XXX20198	
Project Name/#	ADEC McGrath		**Method**	SW3550C	
Matrix	Soil/Solid (dry weight)		**Date**	10/14/2008	

QC results affect the following production samples:

1085401001, 1085401002, 1085401003, 1085401004

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Polynuclear Aromatics GC/MS					
Acenaphthylene	ND	5.00	1.50	ug/Kg	10/15/08
Acenaphthene	ND	5.00	1.50	ug/Kg	10/15/08
Fluorene	ND	5.00	1.50	ug/Kg	10/15/08
Phenanthrene	ND	5.00	1.50	ug/Kg	10/15/08
Anthracene	ND	5.00	1.50	ug/Kg	10/15/08
Fluoranthene	ND	5.00	1.50	ug/Kg	10/15/08
Pyrene	ND	5.00	1.50	ug/Kg	10/15/08
Benzo(a)Anthracene	ND	5.00	1.50	ug/Kg	10/15/08
Chrysene	ND	5.00	1.50	ug/Kg	10/15/08
Benzo[b]Fluoranthene	ND	5.00	1.50	ug/Kg	10/15/08
Benzo[k]fluoranthene	ND	5.00	1.50	ug/Kg	10/15/08
Benzo[a]pyrene	ND	5.00	1.50	ug/Kg	10/15/08
Indeno[1,2,3-c,d] pyrene	ND	5.00	1.50	ug/Kg	10/15/08
Dibenzo[a,h]anthracene	ND	5.00	1.50	ug/Kg	10/15/08
Benzo[g,h,i]perylene	ND	5.00	1.50	ug/Kg	10/15/08
Naphthalene	ND	5.00	1.50	ug/Kg	10/15/08
1-Methylnaphthalene	ND	5.00	1.50	ug/Kg	10/15/08
2-Methylnaphthalene	ND	5.00	1.50	ug/Kg	10/15/08
Surrogates					
Terphenyl-d14 <surr>	89.4	30-125		%	10/15/08

Batch	XMS4740
Method	8270D SIMS
Instrument	HP 5890 Series II MS2 SVOA

SGS Ref.#	863638	Duplicate	**Printed Date/Time**	10/22/2008	9:48
Client Name	SLR Alaska-Anchorage		**Prep Batch**		
Project Name/#	ADEC McGrath		**Method**		
Original	1085437011		**Date**		
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1085401001, 1085401002, 1085401003, 1085401004, 1085401005, 1085401006, 1085401007

Parameter	Original Result	QC Result	Units	RPD	RPD Limits	Analysis Date
Solids						
Total Solids	48.5	48.6	%	0	(< 15)	10/09/2008

Batch SPT7834
Method SM20 2540G
Instrument

SGS Ref.#	862586	Lab Control Sample	**Printed Date/Time**	10/22/2008	9:48
	862587	Lab Control Sample Duplicate	**Prep Batch**	VXX18835	
Client Name	SLR Alaska-Anchorage		**Method**	SW5035A	
Project Name/#	ADEC McGrath		**Date**	10/01/2008	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1085401001, 1085401002, 1085401003, 1085401004, 1085401008

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Benzene	LCS	1330	107	(80-125)			1250 ug/Kg	10/04/2008
	LCSD	1330	106		1	(< 20)	1250 ug/Kg	10/04/2008
Toluene	LCS	1350	108	(85-120)			1250 ug/Kg	10/04/2008
	LCSD	1340	107		1	(< 20)	1250 ug/Kg	10/04/2008
Ethylbenzene	LCS	1380	111	(85-125)			1250 ug/Kg	10/04/2008
	LCSD	1360	109		2	(< 20)	1250 ug/Kg	10/04/2008
o-Xylene	LCS	1330	106	(85-125)			1250 ug/Kg	10/04/2008
	LCSD	1310	105		2	(< 20)	1250 ug/Kg	10/04/2008
P & M -Xylene	LCS	2820	113	(85-125)			2500 ug/Kg	10/04/2008
	LCSD	2790	111		1	(< 20)	2500 ug/Kg	10/04/2008
Surrogates								
1,4-Difluorobenzene <surr>	LCS		97	(80-120)				10/04/2008
	LCSD		98		1			10/04/2008

Batch	VFC9195
Method	SW8021B
Instrument	HP 5890 Series II PID+HECD VBA

SGS Ref.#	864312	Lab Control Sample	**Printed Date/Time**	10/22/2008	9:48
	864313	Lab Control Sample Duplicate	**Prep Batch**	XXX20195	
Client Name	SLR Alaska-Anchorage		**Method**	SW3550C	
Project Name/#	ADEC McGrath		**Date**	10/14/2008	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1085401001, 1085401002, 1085401003, 1085401004, 1085401005, 1085401006, 1085401007

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Semivolatile Organic Fuels Department								
Diesel Range Organics	LCS	136	82	(75-125)			167 mg/Kg	10/15/2008
	LCSD	130	78		5	(< 20)	167 mg/Kg	10/15/2008
Surrogates								
5a Androstane <surr>	LCS		84	(60-120)				10/15/2008
	LCSD		79		6			10/15/2008

Batch XFC8272
Method AK102
Instrument HP 5890 Series II FID SV D R

SGS Ref.#	864438	Lab Control Sample	**Printed Date/Time**	10/22/2008	9:48
	864439	Lab Control Sample Duplicate	**Prep Batch**	VXX18876	
Client Name	SLR Alaska-Anchorage		**Method**	SW5035A	
Project Name/#	ADEC McGrath		**Date**	10/09/2008	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1085401005, 1085401006, 1085401007

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Benzene	LCS	1320	105	(80-125)			1250 ug/Kg	10/09/2008
	LCSD	1300	104		1	(< 20)	1250 ug/Kg	10/09/2008
Toluene	LCS	1350	108	(85-120)			1250 ug/Kg	10/09/2008
	LCSD	1320	105		2	(< 20)	1250 ug/Kg	10/09/2008
Ethylbenzene	LCS	1370	110	(85-125)			1250 ug/Kg	10/09/2008
	LCSD	1350	108		2	(< 20)	1250 ug/Kg	10/09/2008
o-Xylene	LCS	1330	106	(85-125)			1250 ug/Kg	10/09/2008
	LCSD	1300	104		2	(< 20)	1250 ug/Kg	10/09/2008
P & M -Xylene	LCS	2840	114	(85-125)			2500 ug/Kg	10/09/2008
	LCSD	2800	112		1	(< 20)	2500 ug/Kg	10/09/2008
Surrogates								
1,4-Difluorobenzene <surr>	LCS		96	(80-120)				10/09/2008
	LCSD		96		0			10/09/2008

Batch	VFC9210
Method	SW8021B
Instrument	HP 5890 Series II PID+FID VCA

SGS Ref.#	864465	Lab Control Sample	**Printed Date/Time**	10/22/2008	9:48
			Prep Batch	XXX20198	
Client Name	SLR Alaska-Anchorage		**Method**	SW3550C	
Project Name/#	ADEC McGrath		**Date**	10/14/2008	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1085401001, 1085401002, 1085401003, 1085401004

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date

Polynuclear Aromatics GC/MS

SGS Ref.#	864465 Lab Control Sample		**Printed Date/Time**	10/22/2008	9:48
			Prep Batch	XXX20198	
Client Name	SLR Alaska-Anchorage		**Method**	SW3550C	
Project Name/#	ADEC McGrath		**Date**	10/14/2008	
Matrix	Soil/Solid (dry weight)				

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Polynuclear Aromatics GC/MS								
Acenaphthylene	LCS	12.3	55	(45-102)			22.2 ug/Kg	10/15/2008
Acenaphthene	LCS	12.2	55	(45-99)			22.2 ug/Kg	10/15/2008
Fluorene	LCS	13.2	59	(50-107)			22.2 ug/Kg	10/15/2008
Phenanthrene	LCS	14.7	66	(50-110)			22.2 ug/Kg	10/15/2008
Anthracene	LCS	10.7	48	(28-103)			22.2 ug/Kg	10/15/2008
Fluoranthene	LCS	15.5	70	(55-115)			22.2 ug/Kg	10/15/2008
Pyrene	LCS	14.8	67	(45-120)			22.2 ug/Kg	10/15/2008
Benzo(a)Anthracene	LCS	15.5	70	(40-110)			22.2 ug/Kg	10/15/2008
Chrysene	LCS	15.4	69	(55-110)			22.2 ug/Kg	10/15/2008
Benzo[b]Fluoranthene	LCS	15.7	71	(45-115)			22.2 ug/Kg	10/15/2008
Benzo[k]fluoranthene	LCS	15.2	68	(45-120)			22.2 ug/Kg	10/15/2008
Benzo[a]pyrene	LCS	9.29	42	(10-102)			22.2 ug/Kg	10/15/2008
Indeno[1,2,3-c,d] pyrene	LCS	12.8	58	(40-120)			22.2 ug/Kg	10/15/2008
Dibenzo[a,h]anthracene	LCS	12.3	56	(40-125)			22.2 ug/Kg	10/15/2008
Benzo[g,h,i]perylene	LCS	13.3	60	(40-118)			22.2 ug/Kg	10/15/2008
Naphthalene	LCS	11.1	50	(40-92)			22.2 ug/Kg	10/15/2008
1-Methylnaphthalene	LCS	11.2	51	(30-97)			22.2 ug/Kg	10/15/2008
2-Methylnaphthalene	LCS	11.9	54	(45-96)			22.2 ug/Kg	10/15/2008
Surrogates								
Terphenyl-d14 <surr>	LCS		89	(30-125)				10/15/2008

SGS Ref.#	864465	Lab Control Sample	**Printed Date/Time**	10/22/2008	9:48
			Prep Batch	XXX20198	
Client Name	SLR Alaska-Anchorage		**Method**	SW3550C	
Project Name/#	ADEC McGrath		**Date**	10/14/2008	
Matrix	Soil/Solid (dry weight)				

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date

Polynuclear Aromatics GC/MS

Batch XMS4740
Method 8270D SIMS
Instrument HP 5890 Series II MS2 SVOA

SGS Ref.#	864466	Matrix Spike	**Printed Date/Time**	10/22/2008 9:48
	864467	Matrix Spike Duplicate	**Prep Batch**	XXX20198
			Method	Sonication Extraction Soil 8270
			Date	10/14/2008
Original	1085449001			
Matrix	Soil/Solid (dry weight)			

QC results affect the following production samples:

1085401001, 1085401002, 1085401003, 1085401004

Parameter	Qualifiers		Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount		Analysis Date
Polynuclear Aromatics GC/MS											
Acenaphthylene	MS	ND		18.2	73	(45-102)			25.2	ug/Kg	10/15/2008
	MSD			18.7	74		2	(< 30)	25.2	ug/Kg	10/15/2008
Acenaphthene	MS	ND		17.2	68	(45-99)			25.2	ug/Kg	10/15/2008
	MSD			17.8	71		4	(< 30)	25.2	ug/Kg	10/15/2008
Fluorene	MS	ND		21.5	86	(50-107)			25.2	ug/Kg	10/15/2008
	MSD			24.4	97		12	(< 30)	25.2	ug/Kg	10/15/2008
Phenanthrene	MS	ND		37.5	149*	(50-110)			25.2	ug/Kg	10/15/2008
	MSD			52.7	209*		34 *	(< 30)	25.2	ug/Kg	10/15/2008
Anthracene	MS	ND		18.0	72	(28-103)			25.2	ug/Kg	10/15/2008
	MSD			21.0	83		15	(< 30)	25.2	ug/Kg	10/15/2008
Fluoranthene	MS	ND		28.1	112	(55-115)			25.2	ug/Kg	10/15/2008
	MSD			32.1	128*		13	(< 30)	25.2	ug/Kg	10/15/2008
Pyrene	MS	ND		30.9	123*	(45-120)			25.2	ug/Kg	10/15/2008
	MSD			37.0	147*		18	(< 30)	25.2	ug/Kg	10/15/2008
Benzo(a)Anthracene	MS	ND		24.4	97	(40-110)			25.2	ug/Kg	10/15/2008
	MSD			27.6	109		12	(< 30)	25.2	ug/Kg	10/15/2008
Chrysene	MS	ND		25.5	102	(55-110)			25.2	ug/Kg	10/15/2008
	MSD			29.2	116*		13	(< 30)	25.2	ug/Kg	10/15/2008
Benzo[b]Fluoranthene	MS	ND		28.5	113	(45-115)			25.2	ug/Kg	10/15/2008
	MSD			32.3	129*		13	(< 30)	25.2	ug/Kg	10/15/2008
Benzo[k]fluoranthene	MS	ND		21.3	85	(45-120)			25.2	ug/Kg	10/15/2008
	MSD			23.9	95		11	(< 30)	25.2	ug/Kg	10/15/2008
Benzo[a]pyrene	MS	ND		22.9	91	(10-102)			25.2	ug/Kg	10/15/2008
	MSD			25.2	100		9	(< 30)	25.2	ug/Kg	10/15/2008
Indeno[1,2,3-c,d] pyrene	MS	ND		22.0	88	(40-120)			25.2	ug/Kg	10/15/2008
	MSD			23.1	92		5	(< 30)	25.2	ug/Kg	10/15/2008
Dibenzo[a,h]anthracene	MS	ND		20.2	80	(40-125)			25.2	ug/Kg	10/15/2008
	MSD			21.6	86		7	(< 30)	25.2	ug/Kg	10/15/2008
Benzo[g,h,i]perylene	MS	ND		23.9	95	(40-118)			25.2	ug/Kg	10/15/2008
	MSD			25.6	102		7	(< 30)	25.2	ug/Kg	10/15/2008
Naphthalene	MS	ND		17.7	70	(40-92)			25.2	ug/Kg	10/15/2008
	MSD			20.3	81		14	(< 30)	25.2	ug/Kg	10/15/2008
1-Methylnaphthalene	MS	ND		17.9	71	(30-97)			25.2	ug/Kg	10/15/2008
	MSD			20.2	80		12	(< 30)	25.2	ug/Kg	10/15/2008
2-Methylnaphthalene	MS	ND		21.2	85	(45-96)			25.2	ug/Kg	10/15/2008
	MSD			23.6	94		11	(< 30)	25.2	ug/Kg	10/15/2008

Surrogates

SGS Ref.#	864466	Matrix Spike	**Printed Date/Time**	10/22/2008	9:48
	864467	Matrix Spike Duplicate	**Prep Batch**	XXX20198	
			Method	Sonication Extraction Soil 8270	
			Date	10/14/2008	
Original	1085449001				
Matrix	Soil/Solid (dry weight)				

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Polynuclear Aromatics GC/MS									
Terphenyl-d14 <surr>	MS		25.2	100	(30-125)				10/15/2008
	MSD		26.8	106		6			10/15/2008

Batch XMS4740
Method 8270D SIMS
Instrument HP 5890 Series II MS2 SVOA

SGS

CHAIN OF CUSTODY RECORD
SGS Environmental Services Inc.

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1085401

71

(1)

CLIENT: SLR International

CONTACT: Darren Gallagher PHONE NO:( ) 722-1112

PROJECT: ADEC McGrath SITE/PWSID# :

REPORTS TO: E-MAIL:

SLR FAX NO.:( )

INVOICE TO: QUOTE #

SLR P.O. NUMBER

SGS Reference:

PAGE 1 OF 1

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP G=GRAB)	Preservatives Used											REMARKS
							Analysis Required (3)	BTEX 8021B	DRO AK102	PAH 8270C								
(1) A,B	MNVC-EX-1	9-30-08	0935	Soil	2	G		X	X	X								
(2)	" -EX-2	"	0940	"	2	G		X	X	X								
(3)	" -EX-3	"	1000	"	2	G		X	X	X								
(4)	" -EX-4	"	0930	"	2	G		X	X	X								
(5)	Land-S-2	"	1445	"	2	G		X	X									HOLD BTEX
(6)	Land-S-6	"	1450	"	2	G		X	X									HOLD BTEX
(7)	Land-S-9	"	1455	"	2	G		X	X									HOLD BTEX
(8) A	Trip Blank	"	1500	"	1	—		X										

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:	Date	Time
Darren Gallagher	10-1-08	0800			
Relinquished By: (2)	Date	Time	Received By:	Date	Time
Relinquished By: (3)	Date	Time	Received By:	Date	Time
Relinquished By: (4)	Date	Time	Received By:	Date	Time
				10/1/08	1420

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature IC: 6.2 TB=2.1 C=0.5 T:

Special Deliverable Requirements:

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

Special Instructions:

Requested Turnaround Time:

☐ RUSH _____ Date Needed ☒ STD

☐ 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
☐ 1270 Greenbrier Street Charleston, WV 25311 Tel: (304) 346-0725 Fax: (304) 346-0761

White - Retained by Lab
Yellow - Returned with Report
Pink - Retained by Sampler

1085401

SGS

SAMPLE RECEIPT FORM

SGS WO#:

Yes	No	NA	
___	✓	___	Are samples **RUSH**, priority or *w/in 72 hrs* of hold time?
___	___	✓	If yes, have you done *e-mail ALERT notification*?
___	✓	___	Are samples *within 24 hrs.* of **hold time** or **due date**?
___	___	✓	If yes, have you also *spoken with* supervisor?
___	___	✓	Archiving bottles (if req'd): Are they properly marked?
___	✓	___	Are there any **problems**? PM Notified? ___
✓	___	___	Were samples preserved correctly and ~~pH verified~~?
___	___	✓	If this is for PWS, provide **PWSID.** ___
___	✓	___	Will courier charges apply?
			Method of payment? ___
___	✓	___	Data package required? (Level: 1 / 2 / 3 / 4)
			Notes: ___
___	✓	___	Is this a DoD project? (USACE, Navy, AFCEE)

TAT (circle one): (Standard) -or- Rush

Received Date: 10-1-08

Received Time: 1420

Is **date/time conversion** necessary? no

# of hours to AK Local Time: ___

Thermometer ID: ___

Cooler ID	Temp Blank	Cooler Temp
1	2.1 °C	0.5 °C
	°C	°C
	°C	°C
	°C	°C
	°C	°C
	°C	°C

Note: Temperature readings include thermometer correction factors

Delivery method (circle all that apply): (Client)

Alert Courier / UPS / FedEx / USPS / DHL / AA Goldstreak / NAC / ERA / PenAir / Carlile/ Lynden / SGS / Other: ___

Airbill # ___

Additional Sample Remarks: *(✓if applicable)*

___ Extra Sample Volume?

___ Limited Sample Volume?

✓ MeOH field preserved for volatiles?

___ Field-filtered for dissolved ___

___ Lab-filtered for dissolved ___

___ Ref Lab required? ___

___ Foreign Soil?

This section must be filled out for DoD projects (USACE, Navy, AFCEE)

Yes	No	
___	___	Is received temperature 4 ± 2°C?
		Exceptions: Samples/Analyses Affected:
___	___	If temperature(s) <0 °C, were containers ice-free? N/A
		Notify PM immediately of any ice in samples.
___	___	Was there an airbill? *(Note # above in the right hand column)*
___	___	Was cooler sealed with custody seals?
		#'s / where: ___
___	___	Were seal(s) intact upon arrival?
___	___	Was there a COC with cooler?
___	___	Was COC sealed in plastic bag & taped inside lid of cooler?
___	___	Was the COC filled out properly?
___	___	Did the COC indicate USACE / Navy / AFCEE project?
___	___	Did the COC and samples correspond?
___	___	Were all sample packed to prevent breakage?
		Packing material: ___
___	___	Were all samples unbroken and clearly labeled?
___	___	Were all samples sealed in separate plastic bags?
___	___	Were all VOCs free of headspace and/or MeOH preserved?
___	___	Were correct container / sample sizes submitted?
___	___	Is sample condition good?
___	___	Was copy of CoC, SRF, and custody seals given to PM to fax?

This section must be filled if problems are found.

Yes	No	
___	___	Was client notified of problems?

Individual contacted: ___

Via: Phone / Fax / Email (*circle one*)

Date/Time: ___

Reason for contact: ___

Change Order Required? ___

SGS Contact: ___

Notes: Sample JARS 1-7 B ARE LABELED BTEX & DRO, GRO Bottle slot correct

Completed by (sign): ___ (print): JAMES DOUGHTY

Login proof (check one): waived ___ required ___ performed by: ___

1085401

SGS

SAMPLE RECEIPT FORM (page 2)

SGS WO#:

#	Container ID	Matrix	Test	QC	TB	Container Volume: 1 L	500 mL	250 mL	125 mL	60 mL	40 mL	8oz (250 mL)	4oz (125 mL)	Other	Container Type: AG	CG	HDPE	Nalgene	Cubie	Coli	Septa	Other	Preservative: None	HCl	HNO_3	H_2SO_4	MeOH	$Na_2S_2O_3$	NaOH	Other
1-4	A	2	BTEX										4		L						L						L			
	B		DRO PHH										4		L								L							
5-7	A	2	BTEX										3		L						L						L			
	B		DRO										3		L								L							
8	A	2	BTEX										1		L						L						L			
Bottle Totals													15																	

Completed by: _____ Date: 10-1-08

Form # F004r16 revised 03/10/08

APPENDIX D

CONCEPTUAL SITE MODEL SCOPING FORM AND DIAGRAM

Human Health Conceptual Site Model
Scoping Form

Site Name: Former McGrath Tribal Council Hall

File Number: N/A

Completed by: SLR International Corp

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, a CSM graphic and text must be submitted with the site characterization work plan.

General Instructions: Follow the italicized instructions in each section below.

1. *General Information:*

Sources *(check potential sources at the site)*

- ☑ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☑ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☐ Other: _____

Release Mechanisms *(check potential release mechanisms at the site)*

- ☑ Spills
- ☑ Leaks
- ☑ Direct discharge
- ☑ Burning
- ☐ Other: _____

Impacted Media *(check potentially-impacted media at the site)*

- ☑ Surface soil (0-2 feet bgs*)
- ☑ Subsurface Soil (>2 feet bgs)
- ☐ Air
- ☐ Groundwater
- ☐ Surface water
- ☐ Other: _____

Receptors (*check receptors that could be affected by contamination at the site)*

- ☐ Residents (adult or child)
- ☑ Commercial or industrial worker
- ☑ Construction worker
- ☐ Subsistence harvester (i.e., gathers wild foods)
- ☐ Subsistence consumer (i.e., eats wild foods)
- ☑ Site visitor
- ☑ Trespasser
- ☐ Recreational user
- ☐ Farmer
- ☐ Other: _____

* bgs – below ground surface

2. *Exposure Pathways:* *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact –

1 Incidental Soil Ingestion

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

If both boxes are checked, label this pathway complete: Complete

2 Dermal Absorption of Contaminants from Soil

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Can the soil contaminants permeate the skin? (Contaminants listed below, or within the groups listed below, should be evaluated for dermal absorption). ☐

Arsenic	Lindane
Cadmium	PAHs
Chlordane	Pentachlorophenol
2,4-dichlorophenoxyacetic acid	PCBs
Dioxins	SVOCs
DDT	

If all of the boxes are checked, label this pathway complete: _____

b) Ingestion –

1 Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, OR are contaminants expected to migrate to groundwater in the future? ☑

Could the potentially affected groundwater be used as a current or future drinking water source? *Please note, only leave the box unchecked if ADEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.* ☑

If both the boxes are checked, label this pathway complete: Complete

2 Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water OR are contaminants expected to migrate to surface water in the future? ☐

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? *Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).* ☑

If both boxes are checked, label this pathway complete: _____

3 Ingestion of Wild Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild food? ☐

Do the site contaminants have the potential to bioaccumulate (*see* Appendix A)? ☐

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. the top 6 feet of soil, in groundwater that **could be** connected to surface water, etc.) ☑

If all of the boxes are checked, label this pathway complete: _____

c) Inhalation

1 Inhalation of Outdoor Air

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Are the contaminants in soil volatile (*See Appendix B*)? ☑

If all of the boxes are checked, label this pathway complete: Complete

2 Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be placed on the site in an area that could be affected by contaminant vapors? (i.e., within 100 feet, horizontally or vertically, of the contaminated soil or groundwater, or subject to "preferential pathways" that promote easy airflow, like utility conduits or rock fractures) ☑

Are volatile compounds present in soil or groundwater (*See Appendix C*)? ☐

If both boxes are checked, label this pathway complete: _____

3. Additional Exposure Pathways: *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- Climate permits recreational use of waters for swimming,
- Climate permits exposure to groundwater during activities, such as construction, without protective clothing, or
- Groundwater or surface water is used for household purposes.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Volatile Compounds in Household Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- The contaminated water is used for household purposes such as showering, laundering, and dish washing, and
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix B)

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Fugitive Dust

Generally DEC soil ingestion cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway, although this is not true in the case of chromium. Examples of conditions that may warrant further investigation include:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers. This size can be inhaled and would be of concern for determining if this pathway is complete.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during recreational or some types of subsistence activities. People then incidentally **ingest** sediment from normal hand-to-mouth activities. In addition, **dermal absorption of contaminants** may be of concern if people come in contact with sediment and the contaminants are able to permeate the skin (see dermal exposure to soil section). This type of exposure is rare but it should be investigated if:

- Climate permits recreational activities around sediment, and/or
- Community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

ADEC soil ingestion cleanup levels are protective of direct contact with sediment. If they are determined to be over-protective for sediment exposure at a particular site, other screening levels could be adopted or developed.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

4. Other Comments (*Provide other comments as necessary to support the information provided in this form.)*

APPENDIX A

BIOACCUMULATIVE COMPOUNDS

Table A-1: List of Compounds of Potential Concern for Bioaccumulation

Organic compounds are identified as bioaccumulative if they have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5. Inorganic compounds are identified as bioaccumulative if they are listed as such by EPA (2000). Those compounds in Table X of 18 AAC 75.345 that are bioaccumulative, based on the definition above, are listed below.

Aldrin	DDT	Lead
Arsenic	Dibenzo(a,h)anthracene	Mercury
Benzo(a)anthracene	Dieldrin	Methoxychlor
Benzo(a)pyrene	Dioxin	Nickel
Benzo(b)fluoranthene	Endrin	PCBs
Benzo(k)fluoranthene	Fluoranthene	
Cadmium	Heptachlor	Pyrene
Chlordane	Heptachlor epoxide	Selenium
Chrysene	Hexachlorobenzene	Silver
Copper	Hexachlorocyclopentadiene	Toxaphene
DDD	Indeno(1,2,3-c,d)pyrene	Zinc
DDE		

Because BCF values can relatively easily be measured or estimated, the BCF is frequently used to determine the potential for a chemical to bioaccumulate. A compound with a BCF greater than 1,000 is considered to bioaccumulate in tissue (EPA 2004b).

For inorganic compounds, the BCF approach has not been shown to be effective in estimating the compound's ability to bioaccumulate. Information available, either through scientific literature or site-specific data, regarding the bioaccumulative potential of an inorganic site contaminant should be used to determine if the pathway is complete.

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000). The BCF can also be estimated from a chemical's physical and chemical properties. A chemical's octanol-water partitioning coefficient (K_{ow}) along with defined regression equations can be used to estimate the BCF. EPA's Persistent, Bioaccumulative, and Toxic (PBT) Profiler (EPA 2004) can be used to estimate the BCF using the K_{ow} and linear regressions presented by Meylan et al. (1996). The PBT Profiler is located at http://www.pbtprofiler.net/. For compounds not found in the PBT Profiler, DEC recommends using a log K_{ow} greater than 3.5 to determine if a compound is bioaccumulative.

APPENDIX B

VOLATILE COMPOUNDS

Table B-1: List of Volatile Compounds of Potential Concern
Common volatile contaminants of concern at contaminated sites. A chemical is defined as volatile if the Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater and the molecular weight less than 200 g/mole (g/mole; EPA 2004a). Those compounds in Table X of 18 AAC 75.345 that are volatile, based on the definition above, are listed below.

Acenaphthene	1,4-dichlorobenzene	Pyrene
Acetone	1,1-dichloroethane	Styrene
Anthracene	1,2-dichloroethane	1,1,2,2-tetrachloroethane
Benzene	1,1-dichloroethylene	Tetrachloroethylene
Bis(2-chlorethyl)ether	Cis-1,2-dichloroethylene	Toluene
Bromodichloromethane	Trans-1,2-dichloroethylene	1,2,4-trichlorobenzene
Carbon disulfide	1,2-dichloropropane	1,1,1-trichloroethane
Carbon tetrachloride	1,3-dichloropropane	1,1,2-trichloroethane
Chlorobenzene	Ethylbenzene	Trichloroethylene
Chlorodibromomethane	Fluorene	Vinyl acetate
Chloroform	Methyl bromide	Vinyl chloride
2-chlorophenol	Methylene chloride	Xylenes
Cyanide	Naphthalene	GRO
1,2-dichlorobenzene	Nitrobenzene	DRO

APPENDIX C

COMPOUNDS OF CONCERN FOR VAPOR MIGRATION

Table C-1: List of Compounds of Potential Concern for the Vapor Migration

A chemical is considered sufficiently toxic if the vapor concentration of the pure component poses an incremental lifetime cancer risk greater than 10-6 or a non-cancer hazard index greater than 1. A chemical is considered sufficiently volatile if it's Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater.

Acenaphthene	Dibenzofuran	Hexachlorobenzene
Acetaldehyde	1,2-Dibromo-3-chloropropane	Hexachlorocyclopentadiene
Acetone	1,2-Dibromoethane (EDB)	Hexachloroethane
Acetonitrile	1,3-Dichlorobenzene	Hexane
Acetophenone	1,2-Dichlorobenzene	Hydrogen cyanide
Acrolein	1,4-Dichlorobenzene	Isobutanol
Acrylonitrile	2-Nitropropane	Mercury (elemental)
Aldrin	N-Nitroso-di-n-butylamine	Methacrylonitrile
alpha-HCH (alpha-BHC)	n-Propylbenzene	Methoxychlor
Benzaldehyde	o-Nitrotoluene	Methyl acetate
Benzene	o-Xylene	Methyl acrylate
Benzo(b)fluoranthene	p-Xylene	Methyl bromide
Benzylchloride	Pyrene	Methyl chloride chloromethane)
beta-Chloronaphthalene	sec-Butylbenzene	Methylcyclohexane
Biphenyl	Styrene	Methylene bromide
Bis(2-chloroethyl)ether	tert-Butylbenzene	Methylene chloride
Bis(2-chloroisopropyl)ether	1,1,1,2-Tetrachloroethane	Methylethylketone (2-butanone)
Bis(chloromethyl)ether	1,1,2,2-Tetrachloroethane	Methylisobutylketone
Bromodichloromethane	Tetrachloroethylene	Methylmethacrylate
Bromoform	Dichlorodifluoromethane	2-Methylnaphthalene
1,3-Butadiene	1,1-Dichloroethane	MTBE
Carbon disulfide	1,2-Dichloroethane	m-Xylene
Carbon tetrachloride	1,1-Dichloroethylene	Naphthalene
Chlordane	1,2-Dichloropropane	n-Butylbenzene
2-Chloro-1,3-butadiene (chloroprene)	1,3-Dichloropropene	Nitrobenzene
Chlorobenzene	Dieldrin	Toluene
1-Chlorobutane	Endosulfan	trans-1,2-Dichloroethylene
Chlorodibromomethane	Epichlorohydrin	1,1,2-Trichloro-1,2,2-trifluoroethane
Chlorodifluoromethane	Ethyl ether	1,2,4-Trichlorobenzene
Chloroethane (ethyl chloride)	Ethylacetate	1,1,2-Trichloroethane
Chloroform	Ethylbenzene	1,1,1-Trichloroethane
2-Chlorophenol	Ethylene oxide	Trichloroethylene
2-Chloropropane	Ethylmethacrylate	Trichlorofluoromethane
Chrysene	Fluorene	1,2,3-Trichloropropane
cis-1,2-Dichloroethylene	Furan	1,2,4-Trimethylbenzene
Crotonaldehyde (2-butenal)	Gamma-HCH (Lindane)	1,3,5-Trimethylbenzene
Cumene	Heptachlor	Vinyl acetate
DDE	Hexachloro-1,3-butadiene	Vinyl chloride (chloroethene)

Source: EPA 2002.

HUMAN HEALTH CONCEPTUAL SITE MODEL

Site: Former McGrath Tribal Council Hall
McGrath, Alaska

Follow the directions below. Do not consider engineering or land use controls when describing pathways.

Completed By: SLR International Cor

Date Completed: February 9, 2009

(1)
Check the media that could be directly affected by the release.

(2)
For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3)
Check exposure media identified in (2).

(4)
Check exposure pathways that are complete or need further evaluation. The pathways identified must agree with Sections 2 and 3 of the CSM Scoping Form.

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — *check soil*	☑ soil	☑ Incidental Soil Ingestion		F	C/F	F			
	☑ Migration or leaching to subsurface — *check soil*		☐ Dermal Absorption of Contaminants from Soil							
	☑ Migration or leaching to groundwater — *check groundwater*									
	☑ Volatilization — *check air*									
	☐ Runoff or erosion — *check surface water*									
	☑ Uptake by plants or animals — *check biota*									
	☐ Other (*list*):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — *check soil*	☑ groundwater	☑ Ingestion of Groundwater		F	F	F			
	☑ *Migration to groundwater* — *check groundwater*		☐ Dermal Absorption of Contaminants in Groundwater							
	☑ *Volatilization* — *check air*		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ *Other (list):*									
☐ Ground-water	☐ Direct release to groundwater — *check groundwater*	☑ air	☑ Inhalation of Outdoor Air		F	C/F	F			
	☐ *Volatilization* — *check air*		☐ Inhalation of Indoor Air							
	☐ *Flow to surface water body* — *check surface water*		☐ Inhalation of Fugitive Dust							
	☐ *Flow to sediment* — *check sediment*									
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*									
☐ Surface Water	☐ Direct release to surface water — *check surface water*	☐ surface water	☐ Ingestion of Surface Water							
	☐ *Volatilization* — *check air*		☐ Dermal Absorption of Contaminants in Surface Water							
	☐ *Sedimentation* — *check sediment*		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*									
☐ Sediment	☐ Direct release to sediment — *check sediment*	☐ sediment	☐ Direct Contact with Sediment							
	☐ *Resuspension, runoff, or erosion* — *check surface water*									
	☐ *Uptake by plants or animals* — *check biota*	☑ biota	☐ Ingestion of Wild Foods							
	☐ *Other (list):*									

Revised 3/21/06