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**ADEC STORAGE  
TANK PROGRAM  
FAIRBANKS**

**RELEASE INVESTIGATION RESULTS  
H&H CONTRACTORS PROPERTY  
3050 PHILLIPS FIELD ROAD, FAIRBANKS, ALASKA**

Submitted to:  
H&H Contractors, Inc.  
3050 Phillips Field Road  
Fairbanks, Alaska 99701

*Specs on well  
Additional sampling points  
Secondary containment from  
large stockpile - no cover  
Gummon program*

Submitted by:  
AGRA Earth & Environmental, Inc.  
3504 Industrial Avenue, Suite 5  
Fairbanks, Alaska 99701

December 1999

8-024-01243-1



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JAN 18 2000

ADEC STORAGE  
TANK PROGRAM

**LETTER OF TRANSMITTAL**

TO: ADEC  
610 University Avenue  
Fairbanks, Alaska

DATE <b>FAIRBANKS</b> January 13, 2000	PROJECT No. 8-024-01243-1-
ATTENTION John B. Carnahan	
RE: Release Investigation Results	

WE ARE SENDING YOU: ☐ Attached ☐ Under separate cover via \_\_\_\_\_ the following items:

☒ Report ☐ Prints ☐ Plans ☐ 3 1/2" Disk ☐ 5 1/4" Disk  
☐ Letter ☐ Shop Drawings ☐ Specifications ☐ \_\_\_\_\_

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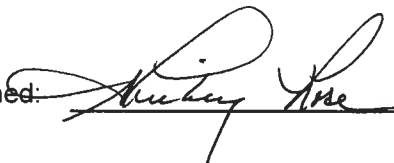
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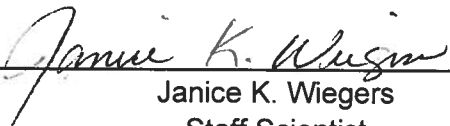


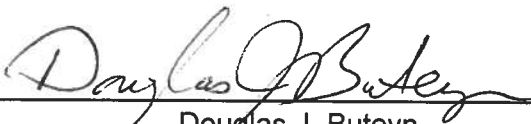
**RELEASE INVESTIGATION RESULTS**

**H&H Contractors Property  
3050 Phillips Field Road, Fairbanks, Alaska**

Submitted to:  
H&H Contractors, Inc.  
3050 Phillips Field Road  
Fairbanks, Alaska 99701

Submitted by:  
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December 1999  
8-024-01243-1



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## 1.0 INTRODUCTION

In September 1998, AGRA Earth & Environmental, Inc. (AGRA) completed a release investigation in the former location of a 30,000-gallon underground storage tank (UST) at the H&H Contractors (H&H) property located at 3050 Phillips Field Road in Fairbanks (Figure 1). Hydrocarbon-impacted soil was identified in the vicinity of the former UST during a closure site assessment completed by AGRA personnel in 1997. The objective of this release investigation was to delineate the extent of the impacted soil at the former UST location and to assess the presence of impacted groundwater beneath the former tank site. This was accomplished via excavation of the impacted soil remaining in the ground and installation of a **single groundwater monitoring well**.

Field activities completed during the release investigation included soil excavation; monitoring well installation and development; and soil and groundwater sample collection. AGRA served as the environmental consultant to H&H during the release investigation and was responsible for soil screening, soil sampling, well development, and groundwater sample collection. H&H was responsible for the excavation, hauling, and handling of the impacted soil; and installation of the monitoring well.

The release investigation generated a total of 650 cubic yards of hydrocarbon-impacted soil which was stockpiled in a temporary holding cell constructed at the site. During the summer of 1999, that soil was used to produce cold-mix asphalt in accordance with the approved treatment plan for the stockpiled soil. The resulting asphalt was used to pave the ground surface near the H&H Asphalt Plant.

## 1.1 SITE DESCRIPTION

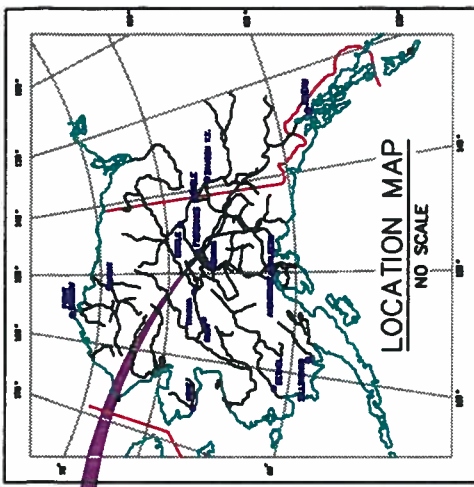
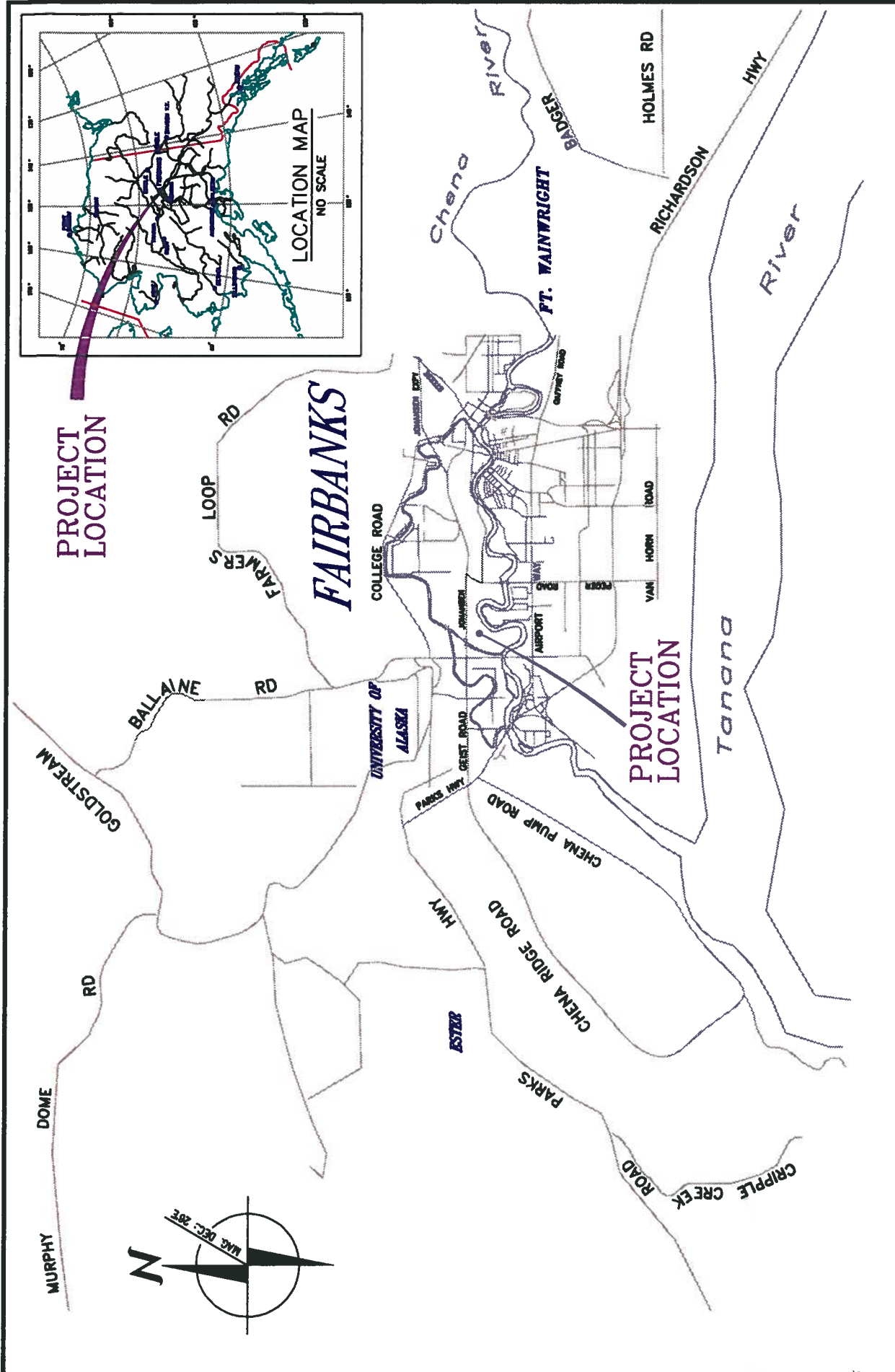
The project site is located in the H&H equipment yard and operations area near the south end of Marian Drive (Figure 2). The 30,000-gallon regulated diesel UST, reportedly installed in 1976, served as a fuel source for bulk refueling of heavy equipment and support vehicles. The diesel tank was located roughly 1,100 feet south of the intersection of Marian Drive and Phillips Field Road. The tank was situated beneath approximately eighteen inches of fill material with the long axis of the tank oriented roughly due north. A bulk refueling stand was located directly over the former tank and a concrete dispenser island associated with an aboveground tank system is located west of the former tank location along Marian Drive.

## 1.2 BACKGROUND

In October 1997, H&H, Swaim Enterprises, and AGRA personnel completed the decommissioning of a single 30,000-gallon diesel UST at the H&H equipment yard. AGRA personnel collected soil samples from the tank excavation and the stockpiled soil for laboratory testing in accordance with Alaska Department of Environmental Conservation (ADEC) UST regulations. Based on our observations and the results of testing, we noted the following:

- The samples collected from the excavation within two feet of the former tank bottom contained hydrocarbon concentrations that exceeded applicable ADEC cleanup levels.





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H & H CONTRACTORS  
 3050 PHILLIPS FIELD ROAD  
 FAIRBANKS, ALASKA  
 LOCATION MAP  
 FIGURE 1

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- Approximately 300 cubic yards of hydrocarbon-impacted soil were stockpiled at a location on the H&H property.

Due to the presence of diesel-impacted soil beneath the tank, the tank excavation was not backfilled pending the release investigation that is reported in this document.

### 1.3 SCOPE OF WORK

This document describes the activities conducted in 1998 and 1999 to address the contamination identified during removal of the 30,000-gallon diesel UST. The scope of work included two components: a release investigation focused on the former UST location and treatment of the impacted stockpile generated during excavation activities at the site.

#### 1.3.1 Release Investigation

The objectives of the release investigation were to assess the extent of petroleum-impacted soil associated with the former UST and to evaluate groundwater quality beneath the tank location. During this process, approximately 650 cubic yards of soil was excavated as a remedial effort to remove the source of contamination. Specifically, the scope of work for the release investigation included the following:

- Constructing a temporary soil holding cell in accordance with ADEC guidelines;
- Excavating and segregating clean and impacted soil from the former UST location as directed by the AGRA representative. Contaminated soil was stockpiled in the temporary holding cell pending treatment and subsequent disposal;
- Completing confirmation sampling to evaluate the effectiveness of the excavation program;
- Backfilling the excavation and restoring the site to the original surface;
- Installing and developing a 2-inch ID 0.010-inch slotted PVC monitoring well within the vicinity of the former tank;
- Completing groundwater sampling from the monitoring well and from three existing water wells on the H&H property to evaluate the condition of the groundwater beneath the site; and
- Completing a groundwater elevational survey at the four sampled wells to assess the groundwater flow direction at the time of sampling.



### 1.3.2 Stockpile Treatment

The objective of this component of the work was to dispose of the 950 cubic yards of contaminated soil generated during tank removal and release investigation activities at the H&H site. In order to complete this phase of the work in accordance with ADEC regulations, the impacted soil was incorporated into a cold-mix asphalt (CMA).

## 2.0 RELEASE INVESTIGATION

The methods followed during the release investigation, including the field observations and analytical results obtained during the site work, are described in the following subsections.

### 2.1 METHODS

Site work completed during the release investigation included excavation and soil sampling, well installation and development, and groundwater sampling. The release investigation was conducted by AGRA and H&H personnel and was completed in accordance with the ADEC *Underground Storage Tank Regulations* (18AAC78).

#### 2.1.1 Excavation of Impacted Soil

Excavation activities were conducted between September 3 and 11, 1998. H&H personnel initiated site work by relocating the former bulk refueling stand to facilitate excavation along the eastern sidewall of the tank area. H&H personnel also constructed a temporary soil holding cell on a designated portion of H&H property north of the site. Site preparation for the holding cell involved grading the ground surface to minimize the potential for deleterious materials to puncture or tear the stockpile liner. The stockpile holding cell was constructed using a 20-mil polyethylene bottom liner. The sides of the pile were left flush-to-grade to enable entry to the cell by the loader and dump trucks.

Throughout the soil excavation process, experienced AGRA personnel were on site to observe and document the project activities. Specific field documentation included:

- Field screening of the excavated soil using a MiniRae Plus Professional photoionization detector (PID) for preliminary screening and the Hanby Soil Test method for more refined screening measurements;
- Qualitative observations of the excavated soil (visual discoloration, staining); and
- Field drawings showing excavation limits, sample locations, and screening measurements.

Preliminary field screening included direct screening of the soil as it was excavated and measurement of headspace gas concentrations in soil samples. Direct screening was accomplished as the soil was removed from the excavation and involved screening soil in the backhoe bucket with the PID. Headspace gas concentration screening involved collecting a soil



sample in a resealable plastic bag and warming the sample for 10 to 20 minutes in the field vehicle prior to screening with the PID. Volatilized hydrocarbons are thus trapped in the headspace within the sample bag. The sample is analyzed by inserting the PID probe into a small opening at the top of the sample bag and allowing the headspace gas inside the bag to be pumped through the instrument. The PID provides a digital display, in parts per million (ppm), of the concentration of volatile organic compounds in the soil gas. For each sample screened by either method, the maximum reading observed on the display was recorded as the headspace gas concentration for that sample.

AGRA personnel used the Hanby Soil Test to confirm the results of the headspace gas concentration screening. The Hanby method consists of decanting a select solvent on a 5-gram soil sample to extract the target hydrocarbon compounds. The mixture is then agitated for approximately three minutes. The liquid is decanted into a prepared test vial and is mixed with a coloring agent. The resulting color is compared with standardized charts to determine the range of concentrations for specific contaminants.

After the impacted soil was removed, H&H personnel backfilled the excavated area with imported clean fill and clean soil removed during the excavation. The final dimensions of the excavation and other pertinent site features are shown in Figure 3.

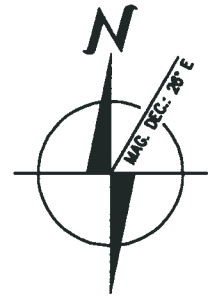
### **2.1.2 Confirmation Soil Sampling**

Upon completing soil excavation, AGRA personnel documented soil conditions by collecting soil samples for laboratory analysis. All laboratory samples were placed into laboratory-prepared sample jars and stored in chilled coolers while on site. Soil sample collection was performed in accordance with the following program:

- After reaching the apparent lateral extent of impacted soil, a soil sample was collected along the perimeter of that location. In total, 11 soil samples were obtained along the excavation boundary as shown in Figure 4.
- Three confirmation soil samples were also collected from the bottom of the west end of the excavation at approximately six feet below grade to document in-place soil conditions, as indicated in Figure 4. Since excavation continued below the groundwater table in the main excavation area, confirmation soil samples were not collected from the bottom in this area.
- AGRA personnel collected five soil samples from the contaminated soil stockpile resulting from impacted soil removal during the release investigation activities, which totaled approximately 650 cubic yards. Samples were obtained from approximately 18 inches into the soil pile to allow sampling of a fresh surface.
- Duplicate soil samples were obtained at a rate of one sample per ten primary samples.



APPROX. SCALE  
0 20  
FEET



DRIVE

MARIAN

FUEL PUMP ISLAND

CONCRETE  
(REMOVED)

FORMER 30,000  
GALLON DIESEL TANK

FUEL LINE

BULK  
REFUELING  
STAND

EXCAVATED TO 6 FEET BGS | EXCAVATED TO 12 FEET BGS

ABOVEGROUND FUEL TANK  
(RELOCATED DURING EXCAVATION)



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H & H CONTRACTORS, INC.  
3050 PHILLIPS FIELD ROAD  
FAIRBANKS, ALASKA  
FINAL EXCAVATION LIMITS  
FIGURE 3

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DATE: 12/06/1999

SCALE: AS SHOWN

- All samples submitted for analysis were shipped to the AGRA Environmental Chemistry Laboratory in Portland, Oregon. The samples were tested for benzene, toluene, ethylbenzene, and xylenes (BTEX) by Alaska Test Method AK101 and diesel range petroleum hydrocarbons (DRO) by Alaska Test Method AK102.

### 2.1.3 Monitoring Well Construction

An AGRA technician was on site to record well construction details. The monitoring well was constructed using 2-inch ID Schedule 40 PVC well casing. H&H personnel excavated a test pit to place the well approximately six feet below the apparent groundwater table. Well MW-1 was constructed with 10 feet of 0.010-inch slotted piping set at a depth of approximately 20 feet with 10-20 grade silica sand filling the test pit to a depth of about 9 feet. A 1-foot-thick bentonite seal was placed above the sand pack. Clean native soils generated during the excavation process completed the well to grade. The well was finished with a 4-foot diameter flush-mounted protective steel monument. AGRA personnel developed the well using the "surge and purge" technique described in the ADEC *Recommended Practices for Monitoring Well Design, Installation, and Decommissioning* (April 1992) to remove silt and to increase hydraulic communication with the surrounding formation material. An as-built diagram of the monitoring well is provided in Appendix A.

### 2.1.4 Groundwater Sampling

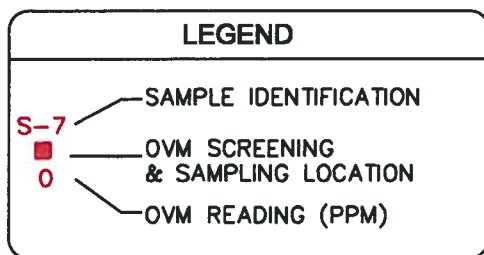
Groundwater quality beneath the former UST site was evaluated by collecting water samples from monitoring well MW-1. In addition, three other water wells present on the H&H property were sampled to evaluate the groundwater quality outside the immediate tank vicinity. These wells are located inside the bathroom of the construction parts building, inside the garage of trailer #1, and in a wellhouse outside of trailer #2. Figure 5 shows the well locations in relation to pertinent site features.

The sample collection process at MW-1 included measuring the depth to water and total depth in the well, calculating the volume of water in the well, and purging at least three well volumes of water using a disposable bailer. After purging the well, a sample of the groundwater in the well was collected in a bailer. The purge water was placed into a 55-gallon drum stored on site. The drum was labeled with AGRA's company name and phone number, the date of collection, and the nature of the contents. Before leaving the site, the drum cover was replaced and secured.

Purging of the other three water wells was accomplished by running water from a tap served by each well for at least 10 minutes. Samples were collected either from the tap or from a bailer lowered into the well casing. The samples were collected in laboratory-prepared jars and stored in a chilled cooler while on site and through shipment to the laboratory. All of the samples were submitted to the AGRA laboratory in Portland, Oregon for analysis of BTEX and gasoline range organics (GRO) by Alaska Test Method AK101 and DRO by Alaska Test Method AK102.

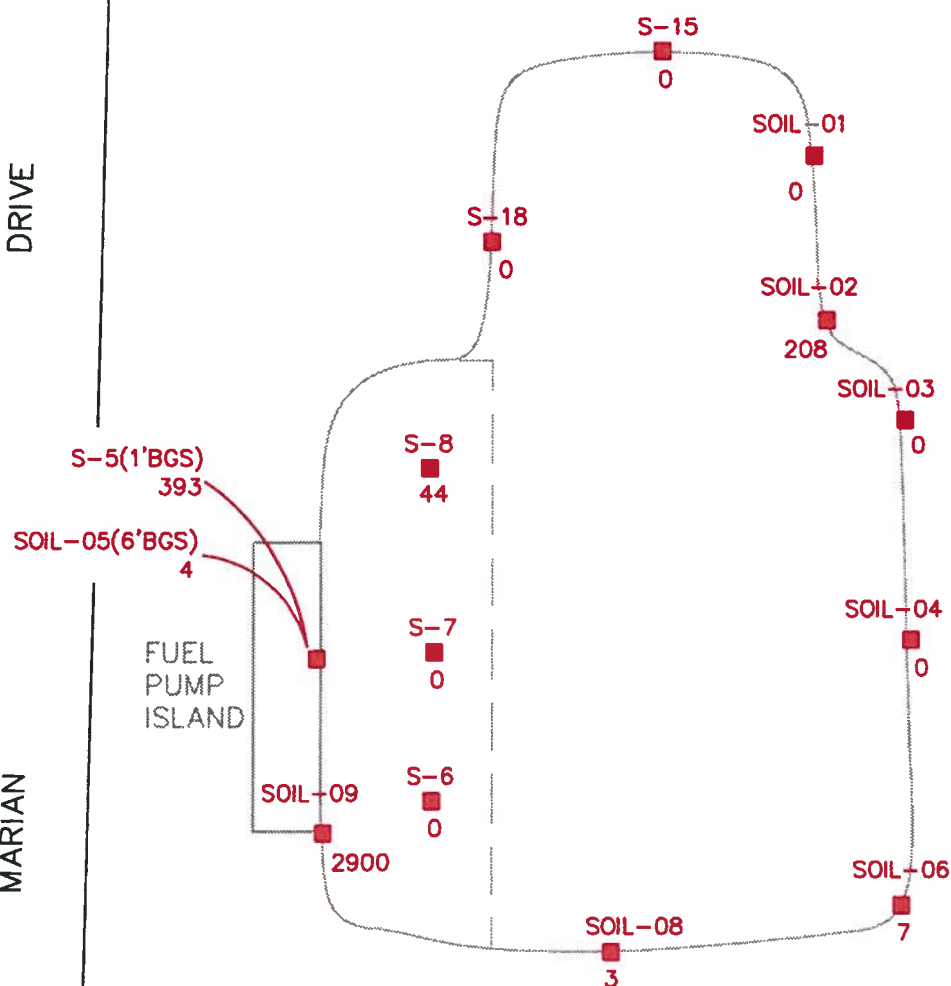
In conjunction with the sampling effort, AGRA personnel completed a level survey to determine the relative elevation of the well casings with an accuracy of  $\pm 0.01$  feet. For the survey, a temporary





DRIVE

MARIAN



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 SOIL SAMPLING LOCATIONS  
 FIGURE 4

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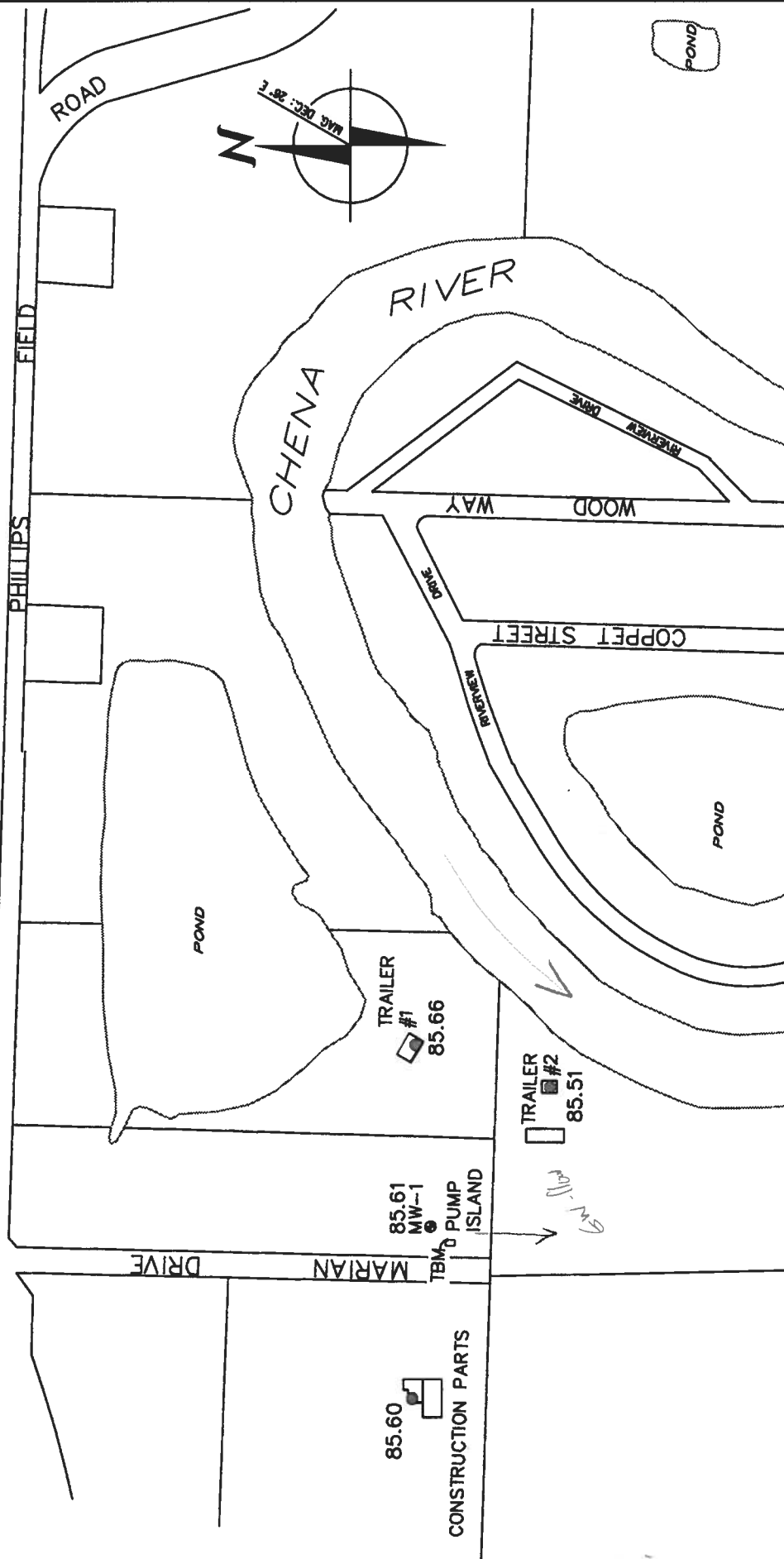
FILE: 12431004

DATE: 12/07/1999

SCALE: AS SHOWN

# JOHANSEN EXPRESSWAY

LEGEND	
●	MONITORING WELL
●	PRIVATE WATER WELL
85.60 GROUNDWATER ELEV. ON MARCH 11, 1999	



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 GROUNDWATER SAMPLING LOCATIONS  
 FIGURE 5



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benchmark (TBM) was established at the site and assigned an arbitrary elevation of 100 feet. The water pumps were disconnected from the water wells, and each well casing was marked and surveyed relative to the TBM to establish a reference elevation from which to measure the depth to water and calculate relative water table elevations. Stabilized groundwater elevation data were obtained using an Associated Remedial Technologies IS101-E hydrocarbon interface probe, capable of distinguishing between water and free-phase hydrocarbons.

## **2.2 FIELD OBSERVATIONS**

Site activities are described in this section according to two general categories: excavation and soil screening, and groundwater sampling.

### **2.2.1 Excavation and Soil Screening**

Site work for this release investigation began within the excavation that remained open following the 1997 tank removal. Initially, headspace gas concentrations ranged from 300 to 900 ppm at depths of 9 to 10 feet below grade. Direct screening measurements of the excavation sidewalls ranged from approximately 50 to 150 ppm. The soil vapor concentrations dissipated along the north and west excavation sidewalls. The predominant soil types consisted of gravelly sand and sandy silts. Photographs depicting site conditions during field work are included in Appendix B.

AGRA personnel collected direct and headspace gas screening measurements throughout the excavation process. Sidewall excavation was continued until screening levels below 10 ppm were reached or structural obstacles prevented further excavation. Sidewall excavation was discontinued near the bulk fueling stand and at the edge of the pump island to prevent damage to these structures. An aboveground fuel tank located at the southeast corner of the excavation was relocated during the site work to allow excavation of the soil in this area. The fuel piping connecting the aboveground tank and the pump island was also removed to allow excavation beneath the piping. AGRA personnel observed staining at the base of the aboveground tank associated with the connection to the fuel piping and H&H personnel reported that the union joint was not tight when the fuel piping was disconnected.

Impacted soil was removed from the bottom of the main excavation to a depth approximately three feet below the apparent water table. The water table was observed to occur at 12 feet below grade at the time of the site work. Soil was also excavated between the main excavation and the pump island after removal of the concrete groundcover in this area. Based on screening levels, soil in this area was excavated to a depth of 6 to 7 feet below grade, as shown in Figure 3.

Following excavation of the impacted soil to the extent possible, confirmation sampling was completed along the perimeter of the excavation and from the stockpiled materials. Additional soil samples were collected at the excavation limits beneath the fuel pump island and the bulk refueling stand to document soil conditions in those areas.





## 2.2.2 Groundwater Sampling

Following the installation and development of MW-1, a preliminary groundwater sample was collected from this well on September 27, 1999. A second sampling event occurred on March 11, 1999 and included well MW-1 and water wells located in the construction parts building, trailer #1, and outside of trailer #2. However, these samples were extracted by the laboratory past the recommended holding time for DRO analysis. Therefore, on April 7, a second set of samples was collected from wells MW-1 and Trailer #1.

AGRA personnel performed the level survey and measured the depth to water in each well on March 11, 1999. Based on the calculated groundwater elevations, groundwater was flowing roughly due south at the time the wells were sampled. Groundwater elevation data are presented in Table 1.

**TABLE 1**  
**Level Survey Data on March 11, 1999**

Well ID	Measuring Point Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)
MW-1	101.34	15.73	85.61
Construction Parts	102.39	16.79	85.60
Trailer #1	100.47	14.81	85.66
Trailer #2	101.48	15.96	85.52

## 2.3 ANALYTICAL RESULTS

Tables 2 and 3 summarize the data obtained for the soil and groundwater samples collected during this portion of the project. Table 2 lists the BTEX and DRO concentrations for the documentary soil samples obtained from the soils along the excavation sidewalls. Table 3 lists the BTEX, GRO, and DRO results for the groundwater samples collected from the monitoring and water wells at the site. Duplicate samples are listed in the tables directly after the primary sample. A copy of each laboratory report appears in Appendix C.



*benzene  
(0.05) RQL above  
cleanup level*

**TABLE 2**

**Laboratory Results - Confirmation Soil Samples from Excavation**

Sample ID	Sample Location	Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	DRO (mg/kg)
<b>ADEC Cleanup Levels<sup>1</sup></b>			<b>0.02</b>	<b>5.4</b>	<b>5.5</b>	<b>78</b>	<b>250</b>
S-5	Beneath Pump Island/ Fuel Lines	1	NT	NT	NT	NT	<b>19,000</b>
SOIL-05		6	ND(0.05)	ND(0.05)	ND(0.05)	ND(1.5)	90
SOIL-09		5	ND(0.05)	0.30	0.14	3.8	<b>310</b>
S-6	West Excavation Area Adjacent to Pump Island	5	NT	NT	NT	NT	ND(25)
S-7		6	ND(0.05)	ND(0.05)	ND(0.05)	ND(1.5)	ND(25)
S-8		6	NT	NT	NT	NT	ND(25)
S-15	Sidewalls at North End of Excavation	10	ND(0.05)	ND(0.05)	ND(0.05)	ND(1.5)	ND(25)
S-18		10	ND(0.05)	ND(0.05)	ND(0.05)	ND(1.5)	ND(25)
SOIL-01		8	ND(0.05)	ND(0.05)	ND(0.05)	ND(1.5)	ND(25)
SOIL-02	Beneath Bulk Refueling Stand	8	ND(0.05)	ND(0.05)	0.06	0.24	<b>850</b>
SOIL-03	Sidewalls at South End of Excavation	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(1.5)	ND(25)
SOIL-04		8	ND(0.05)	ND(0.05)	ND(0.05)	ND(1.5)	ND(25)
SOIL-08		8	ND(0.05)	0.07	ND(0.05)	ND(1.5)	ND(25)
SOIL-06		8	ND(0.05)	ND(0.05)	ND(0.05)	ND(1.5)	ND(25)
SOIL-07	Duplicate of Soil-06	---	ND(0.05)	ND(0.05)	ND(0.05)	ND(1.5)	ND(25)

Notes: Results in bold indicate that the concentration was greater than the ADEC cleanup level.  
ND(xx) indicates the analyte was not detected above the limit shown.  
NT indicates the sample was not tested for this analyte.  
<sup>1</sup> Most stringent (Migration to Groundwater) Soil Cleanup Levels for an area with less than 40 inches mean annual precipitation listed in 18 AAC 75.341, as amended through January 22, 1999.

**TABLE 3**

**Laboratory Results - Groundwater Samples**

Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	GRO (mg/L)	DRO (mg/L)
<b>ADEC Cleanup Levels<sup>1</sup></b>		<b>5</b>	<b>1,000</b>	<b>700</b>	<b>10,000</b>	<b>1.3</b>	<b>1.5</b>
MW1	9/17/98	0.96	10.8	20.0	375	NT	21
	3/11/99 <sup>3</sup>	0.82	0.59	12.8	38.2	0.515	<b>50</b>
	4/7/99	0.73	ND(0.50)	9.72	35.7	0.485	<b>22</b>
Duplicate of MW-1 <sup>2</sup>	4/7/99	0.72	ND(0.50)	8.88	33.2	0.477	<b>23</b>
Construction Parts	3/11/99 <sup>3</sup>	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.5)	ND(0.050)	ND(0.25)
Trailer #1	3/11/99 <sup>3</sup>	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.5)	ND(0.050)	0.29
	4/7/99	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.5)	ND(0.050)	ND(0.25)
Trailer #2	3/11/99 <sup>3</sup>	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.5)	ND(0.050)	ND(0.25)

Notes: Results in bold indicate that the concentration was greater than the ADEC cleanup level.  
ND(xx) indicates the analyte was not detected above the limit shown.  
NT indicates that the sample was not tested for this analyte  
<sup>1</sup> Groundwater Cleanup Levels listed in 18AAC 75.345, as amended through January 22, 1999.  
<sup>2</sup> Sample identified as Dup-1.  
<sup>3</sup> DRO was analyzed one day past the holding time.



### 3.0 STOCKPILE TREATMENT

The methods followed to treat the impacted stockpile, including the field observations collected during site work and the analytical results from the stockpiled soil, are described in the following subsections. A letter from H&H summarizing the soil treatment activities is provided in Appendix D.

#### 3.1 METHODS

The diesel-contaminated soil generated at and stockpiled on the H&H property was incorporated into CMA pavement and placed in the vehicular traffic area of the Asphalt Batch Plant located west of Marion Drive and adjacent to the former tank area. This work was completed in accordance with the Treatment Plan prepared by AGRA on June 18, 1999 and approved by the ADEC. All site preparation, paving, and material handling was performed in accordance with the requirements outlined in the ADEC *Underground Storage Tank Procedures Manual*. This remedial method provided a two-fold benefit: 1) The CMA pavement placed over the former tank location will serve as a barrier to infiltrating surface water, minimizing further impact from any residual soil contamination; and 2) Paving the area resulted in a significant value-added site improvement by enhancing fugitive dust containment near the H&H Asphalt Batch Plant. Prior to preparation of the CMA pavement, a mix design study was completed by H&H in accordance with current industry standards.

On May 20, 1999, AGRA personnel collected three 5-part composite soil samples to evaluate the current contaminant levels in the stockpiled materials. The three samples produced an average diesel range concentration of 5,000 mg/kg. Based on these results, the soils were judged to be suitable for use in making CMA. The stockpiled soils were then mixed with clean, crushed aggregate. The amount of aggregate used in the asphalt comprised approximately 30 percent of the soil weight for mix stabilization and to increase pavement strength. Noticeable debris was removed from the stockpile before starting the blending process. The aggregate mixture was then combined with CSS-1, a locally available Cationic Emulsified Asphalt that mixes well in the presence of moisture and at low temperatures.

The soil processing used a residual asphalt content of approximately 5.2% by weight. This amount is consistent with the Illinois Mix Design Method estimating the optimum mix for soils of the type in the stockpile (slightly silty sand and gravel). The mix was adjusted as necessary to improve the coating or workability of the mix. After mixing, the asphalt was spread and allowed to partially cure before the area was compacted.

#### 3.2 ANALYTICAL RESULTS

The analytical results for all samples collected from the impacted soil stockpile appear in Table 4. These results document a decrease in contaminant concentrations subsequent to removal of the soil from the UST excavation.



**TABLE 4**  
**Laboratory Results - Stockpile Soil Samples**

Sample ID	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	DRO (mg/kg)
<b>ADEC Cleanup Levels<sup>1</sup></b>		<b>0.02</b>	<b>5.4</b>	<b>5.5</b>	<b>78</b>	<b>250</b>
SPSOIL-01	9/11/98	<b>7.2</b>	<b>42</b>	<b>12</b>	<b>136</b>	<b>19,000</b>
Duplicate of SPSOIL-01 <sup>2</sup>		<b>5.8</b>	<b>52</b>	<b>11</b>	<b>91</b>	<b>16,000</b>
SPSOIL-03		ND(0.50)	ND(0.50)	2.1	35.8	10,000
SPSOIL-04		ND(0.50)	0.68	1.5	27.2	6,200
SPSOIL-05		ND(0.50)	ND(0.50)	1.1	24.7	9,700
SPSOIL-06		ND(0.50)	1.3	1.7	19.4	8,700
SP-1	5/20/99	NT	NT	NT	NT	6,000
SP-2		NT	NT	NT	NT	5,100
SP-3		NT	NT	NT	NT	3,900

Notes: Results in bold indicate that the concentration was greater than the ADEC cleanup level.

<sup>1</sup> Most stringent (Migration to Groundwater) Soil Cleanup Levels for an area with less than 40 inches mean annual precipitation listed in 18 AAC 75.341, as amended through January 22, 1999.

<sup>2</sup> Sample identified as SPSOIL-02.

NT indicates the analyte was not tested.

ND(xx) indicates the analyte was not detected above the limit shown in parentheses.

## 4.0 CONCLUSIONS

AGRA conducted a release investigation at the H&H property on Marian Drive to evaluate the extent of impacted soil and groundwater associated with the former 30,000-gallon diesel UST that was removed in 1997. During the tank removal and release investigation, approximately 950 cubic yards of impacted soil were generated and temporarily stored in a holding cell on the H&H property, for later treatment and disposal.

## 4.1 RELEASE INVESTIGATION

The work completed during the release investigation included excavation of the impacted soil at the site, soil sampling at the excavation limits to confirm that the majority of the impacted material was removed, installation of a monitoring well in the former tank location, and sampling water wells on the subject property to document groundwater conditions beneath the site. On the basis of the observations made during the field work and the analytical results received for confirmation soil and water samples, the following conclusions are offered:

- 1) The analytical results for soil samples collected along the perimeter of the excavation suggest that the excavation reached the lateral extent of impacted soil. Although analytical samples were not collected at the base of the excavation, impacted soil was removed to a depth approximately three feet below the apparent water table in an attempt to remove as much of the potential smear zone soils as possible. Based on the effort made and the results obtained, it appears that the majority of the impacted soil associated with the former UST was removed during site work.



- 2) Soil sample test results indicate that DRO-impacted soil remains in the area beneath the bulk fueling stand and beneath the concrete pump island. The potential for vertical migration of the contaminants is minimized by asphalt and concrete ground covers in some of these areas.
- 3) DRO concentrations above the ADEC cleanup levels were detected in the groundwater sampled at MW-1, located in the tank excavation area. Water wells sampled at three locations in the site vicinity contained BTEX, GRO, and DRO concentrations below cleanup levels.

#### **4.2 STOCKPILE TREATMENT**

In September 1998, soil samples collected from the impacted soil stockpile contained DRO concentrations between 6,200 and 19,000 mg/kg. A second sampling event in June 1999 identified a maximum DRO concentration of 6,000 mg/kg in the stockpiled soil. H&H personnel subsequently incorporated this soil into a cold-mix asphalt and used the mixture to pave the surface near the asphalt batch plant.

#### **5.0 RECOMMENDATIONS**

Based on the presence of impacted groundwater beneath the former UST, a groundwater monitoring program should be established for the H&H property to comply with the requirements of the UST regulations. AGRA recommends that, at a minimum, this program include the following elements:

- Semi-annual collection and analysis of groundwater samples from monitoring well MW-1 to monitor the groundwater condition in the source area; and
- Annual collection and analysis of samples from the three water wells identified on the site to monitor water quality at these wells.

Although this program is anticipated to meet the requirements of the UST regulations, the actual composition of the monitoring program will need to be established through consultation with the ADEC.

#### **6.0 LIMITATIONS**

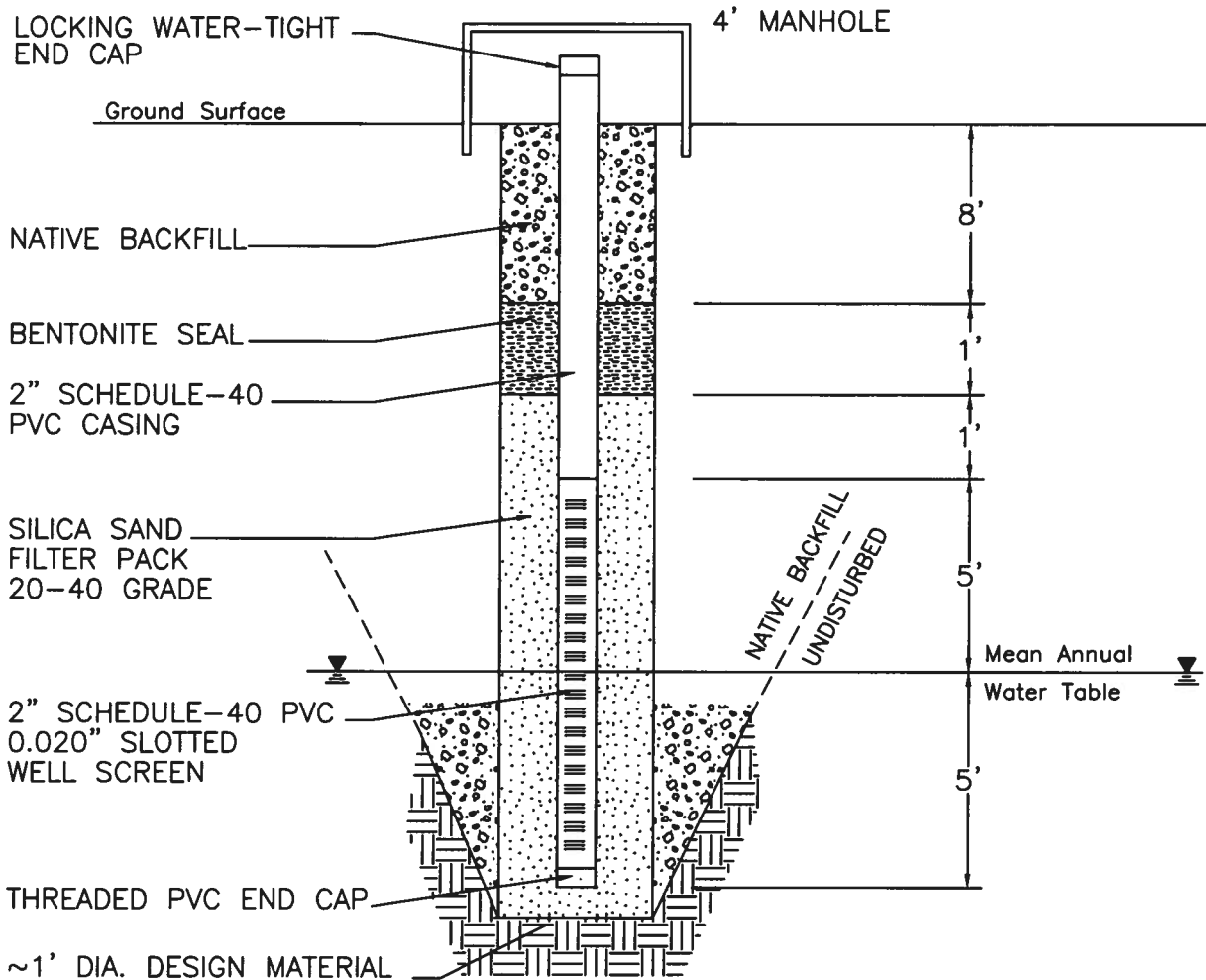
The observations and findings presented in this report are professional opinions based on the information gained from a limited number of soil and water samples collected from a limited number of locations on the site. The measured concentrations of the tested analytes may not be representative of concentrations in unsampled portions of the property. The analytical methods used were selected based on the known past usage of the former tank on the property. Additional analytes not tested for during this investigation may or may not be present. No warranty or guarantee is expressed or implied.



# **APPENDIX A**

## **WELL CONSTRUCTION DETAILS**





**AGRA** Earth & Environmental  
ENGINEERING GLOBAL SOLUTIONS  
3504 Industrial Ave. Suite 5  
Fairbanks, AK 99701

H & H CONTRACTORS  
3050 PHILLIPS FIELD ROAD  
FAIRBANKS, ALASKA  
AS BUILT MONITORING WELL  
APPENDIX A

DESIGN: JKW

DRAWN: PC2

W/O: 9-024-01243-1

FILE: 12431007

DATE: 01/13/2000

SCALE: AS SHOWN

# APPENDIX B PHOTOGRAPHIC LOG





Photo 1: View of the dispenser island and work area at the start of the investigation.



Photo 2: Soil conditions near dispenser island.



Photo 3: Eastern sidewall during site work. Note excavation test trench at photo center right.



Photo 4: Piping associated with an aboveground storage tank system was exposed and protected during site work.





Photo 5: Excavating contaminated soils.



Photo 6: View of site conditions during excavation.



Photo 7: Backfilling the excavation.



Photo 8: Contaminated soil stockpile.

# **APPENDIX C**

## **LABORATORY DATA**



September 21, 1998

AGRA Earth & Environmental  
3504 Industrial Avenue, Suite 5  
Fairbanks, AK 99701

AKC FAIRBANKS

SEP 24 1998

RECEIVED

Attention: Mr. James Spontak

Dear Mr. Spontak:

RE: Analytical Results For Project 8-024-01243-0

Attached are the results for the samples submitted on September 10, 1998 from the above referenced project. For your reference, our project number associated with these samples is AK980542.

The samples were analyzed for diesel range organics, and BTEX at the AGRA Earth & Environmental Portland Chemistry Laboratory.

All analyses were conducted in accordance with applicable QA/QC guidelines. The results apply only to the samples submitted.

Please feel free to contact me if you have any questions regarding this report, or if I can be of any assistance in any other matter.

Respectfully submitted,

AGRA Earth & Environmental



Sean Gormley  
Laboratory Manager  
Laboratory ID # UST-008



Project: H & H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil

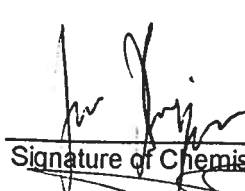
Service Request No.: AK980542  
Report Date: 9/20/98  
Report No.: 98054205  
C.O.C. No.: 03180/03179

**Diesel Range Organics**  
**ADEC Method AK 102**  
**mg/kg(ppm)**  
**Dry Weight Basis**

Sample Name	Lab Code	Sample Date	Extraction Date	Analysis Date	Diesel Result	Surrogate Recovery O-Terphenyl
S-15	0542-1	9/4/98	9/15/98	9/18/98	<25	103
S-18	0542-2	9/4/98	9/15/98	9/18/98	<25	106
SP-1	0542-3	9/4/98	9/15/98	9/19/98	8800(a)	(b) ←
S-7	0542-4	9/3/98	9/15/98	9/18/98	<25	109
S-6	0542-5	9/3/98	9/15/98	9/18/98	<25	114
S-8	0542-6	9/3/98	9/15/98	9/18/98	<25	112
S-5	0542-7	9/3/98	9/15/98	9/19/98	19,000(a)	(b) ←
Lab Blank	0542-MB	9/15/98	9/15/98	9/18/98	<25	100

(a) Result is from a 1:20 dilution.

(b) Not applicable because the analysis of the sample required a dilution that reduced the surrogate concentration below the analytical detection limit.

  
Signature of Chemist

  
QA/QC Review



**AGRA** Earth & Environmental  
ENGINEERING GLOBAL SOLUTIONS

Project: H & H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil

Service Request No.: AK980542  
Report Date: 9/20/98  
Report No.: 98054206  
C.O.C. No.: 03180/0317

**QC Data Report - Blank Spike Recoveries**  
**Diesel Range Organics**  
**ADEC Method AK 102**  
**mg/kg(ppm)**  
**As Received Basis**

Sample Name:	Lab Blank	Spike Level	Blank	Percent	Blank	Percent	Relative
Lab Code:	0542-MB	(mg/kg)	Spike	Recovery	Spike	Recovery	Percent
Diesel:	<25	250	220	(BS) 88	Duplicate 200	(BSD) 80	Difference 10
Acceptance Limits:	~	~	~	60%-120%	~	60%-120%	<20
Extraction Date:	9/15/98	~	9/15/98	~	9/15/98	~	~
Analysis Date:	9/18/98	~	9/18/98	~	9/18/98	~	~
Surrogate Recovery:							Control Limits
O-Terphenyl:	100%	~	104%	~	99%	~	60%-120%

ND Not Detected

Spike Source: ADEC Method AK 102 Diesel Blend (AEE Lot# 98-2-58-9)

Signature of Chemist

QA/QC Review



**AGRA** Earth & Environmental  
ENGINEERING GLOBAL SOLUTIONS



Project: H & H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil

Service Request No.: AK980542  
Report Date: 9/20/98  
Report No.: 98054207  
C.O.C. No.: 03180/03179

**QC Data Report - Duplicate Summary**  
**Diesel Range Organics**  
**ADEC Method AK 102**  
**mg/kg(ppm)**  
**Dry Weight Basis**

Sample Name:	S-8	Sample	Relative
Lab Code:	0542-6	Duplicate	Percent
Diesel:	<25	<25	Difference
			(a)

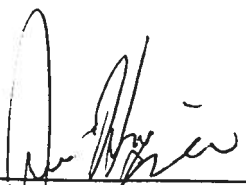
Acceptance Limits: ~ ~ <25

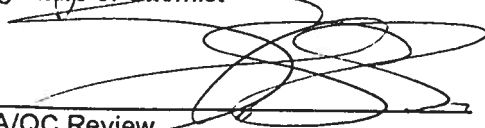
Sample Date:	9/3/98	9/3/98	~
Extraction Date:	9/15/98	9/15/98	~
Analysis Date:	9/18/98	9/18/98	~

Surrogate Recovery:			Control Limits
O-Terphenyl:	105%	112%	50%-150%

NA Not Applicable

(a) Not applicable when sample concentration is less than the method reporting limit.

  
\_\_\_\_\_  
Signature of Chemist

  
\_\_\_\_\_  
QA/QC Review



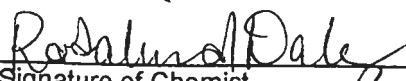
Project: H & H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil

Service Request No.: AK980542  
Report Date: 9/14/98  
Report No.: 98054201  
C.O.C. No.: 03180/03179

**BTEX Compounds**  
**ADEC Method AK101**  
**mg/kg(ppm)**  
**Dry Weight Basis**

Sample Name:	S-15	S-18	S-7	Lab Blank	Reporting
Lab Code:	0542-1	0542-2	0542-4	0542-MB	Limit
Benzene	ND	ND	ND	ND	0.05
Toluene	ND	ND	ND	ND	0.05
Ethylbenzene	ND	ND	ND	ND	0.05
m/p-Xylene	ND	ND	ND	ND	0.10
o-Xylene	ND	ND	ND	ND	0.05
Sample Date:	9/4/98	9/4/98	9/3/98	9/10/98	
Extraction Date:	9/4/98	9/4/98	9/3/98	9/10/98	
Analysis Date:	9/11/98	9/11/98	9/11/98	9/11/98	
Surrogate Recovery:					<b>AEE</b>
					<b>Acceptance</b>
					<b>Limits</b>
a,a,a - Trifluorotoluene:	80%	82%	74%	106%	65%-134%
4-Bromofluorobenzene:	85%	89%	81%	96%	61%-126%

ND Not Detected

  
Signature of Chemist

  
QA/QC Review



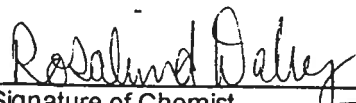
Project: H & H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil

Service Request No.: AK980542  
Report Date: 9/14/98  
Report No.: 98054202  
C.O.C. No.: 03180/03179

**BTEX Compounds**  
**ADEC Method AK101**  
**mg/kg(ppm)**  
**Dry Weight Basis**

Sample Name:	Trip Blank	Lab Blank	Method Reporting Limit
Lab Code:	0542-8	0542-MB	
Benzene:	ND	ND	0.05
Toluene:	ND	ND	0.05
Ethylbenzene:	ND	ND	0.05
Total Xylenes:	ND	ND	0.15
Sample Date:	6/12/98	9/10/98	
Extraction Date:	6/12/98	9/10/98	
Analysis Date:	9/11/98	9/11/98	
Surrogate Recovery:			AEE Acceptance Limits
a,a,a-Trifluorotoluene:	100%	106%	69%-145%
4-Bromofluorobenzene:	86%	96%	65%-134%

ND Not Detected

  
Signature of Chemist

  
QA/QC Review



**AGRA** Earth & Environmental  
ENGINEERING GLOBAL SOLUTIONS

Project: H & H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil

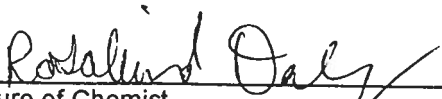
Service Request No.: AK980542  
Report Date: 9/14/98  
Report No.: 98054203  
C.O.C.: 03180/03179

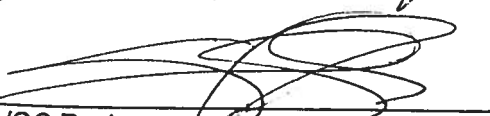
**QC Data Report**  
**Blank Spike Recoveries**  
**BTEX Compounds**  
**ADEC Method AK101**  
**mg/kg(ppm)**  
**As Received Basis**

Sample Name:	Lab Blank	Spike Level	Blank Spike	Percent Recovery	Blank Spike Duplicate	Percent Recovery	AEE Acceptance Limits	Relative Percent Difference
Lab Code:	0542-MB	(mg/kg)	(BS)	(BS)	(DBS)	(DBS)		(RPD)
Benzene	<0.05	1.0	1.1	110	1.1	110	70%-130%	<1
Toluene	<0.05	1.0	0.98	98	0.98	98	73%-127%	<1
Ethylbenzene	<0.05	1.0	0.91	91	0.91	91	73%-129%	<1
Total Xylenes	<0.15	3.0	2.9	97	2.9	97	70%-131%	<1
Sample Date:	9/10/98	~	9/10/98	~	9/10/98	~	~	
Extraction Date:	9/10/98	~	9/10/98	~	9/10/98	~	~	
Analysis Date:	9/11/98	~	9/11/98	~	9/11/98	~	~	
<b>AEE Acceptance Limits</b>								
Surrogate Recovery:								
a,a,a-Trifluorotoluene:	96%	~	99%	~	98%	~	65% - 134%	
4-Bromofluorobenzene:	97%	~	99%	~	100%	~	61% - 126%	

ND Not Detected

Spike Source: Accustandard WA-VPH Lot # A7060438.

  
Signature of Chemist

  
QA/QC Review



Project: H & H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil

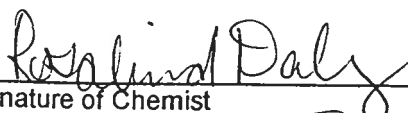
Service Request No.: AK980542  
Report Date: 9/14/98  
Report No.: 98054204  
C.O.C.: 03180/03179

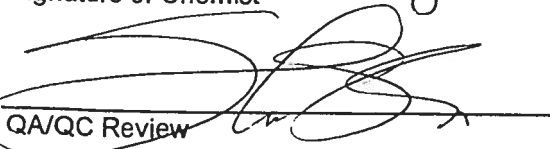
QC Data Report  
Matrix Spike Recoveries  
ADEC Method AK101  
EPA Methods 5030/8021B  
mg/kg(ppm)  
As Received Basis

Sample Name:	Batch QC	Spike Level	Matrix Spike	Percent Recovery	Matrix Spike Duplicate	Percent Recovery	AEE % Recovery Acceptance Limits/	Relative Percent Difference
Lab Code:	0540-1	(mg/kg)	(MS)	(MS)	(DMS)	(DMS)		(RPD)
Benzene	<0.05	1.0	0.86	86	0.93	93	53%-132%	8
Toluene	<0.05	1.0	0.81	81	0.89	89	57%-130%	9
Ethylbenzene	<0.05	1.0	0.77	77	0.87	87	56%-132%	12
Total Xylenes	<0.15	3.0	2.5	83	2.8	93	46%-148%	11
Sample Date:	9/9/98	~	9/9/98	~	9/9/98	~	~	
Extraction Date:	9/10/98	~	9/10/98	~	9/10/98	~	~	
Analysis Date:	9/11/98	~	9/11/98	~	9/11/98	~	~	
							AEE Acceptance Limits	
Surrogate Recovery:								
a,a,a-Trifluorotoluene:	101%	~	108%	~	115%	~	65% - 134%	
4-Bromofluorobenzene:	108%	~	111%	~	117%	~	61% - 126%	

ND Not Detected

Spike Source: Accustandard WA-VPH Lot # A7060438.

  
Signature of Chemist

  
QA/QC Review



**AGRA Earth & Environmental Portland Chemistry Laboratory  
Sample Receipt Documentation Form**

Project: <u>H &amp; H Contractors</u>	<div style="display: flex; justify-content: space-between;"> <div> Cooler Temperatures  4.2  3.9  3.2 </div> <div> 3.6  3.7 </div> </div>
SR No.: <u>AK980542</u>	
Date: <u>9/10/98</u>	
Time: <u>9:50am</u>	
Temperature of Cooler Upon Receipt (Record to the Right):	
Received By: <u>Can</u>	

**Section One: Shipping/Delivery Issues**

1. Method of Sample Delivery: <u>Fed Ex</u>			
2. Airbill or Courier Receipt Number: <u>806084406860</u>			
3. Is a copy of the airbill or courier receipt available to be placed in the job file?	<u>(Yes)</u>	No	NA

**Section Two: Sample Custody Issues**

4. Are custody seals on the shipping container intact?	Yes	No	<u>(NA)</u>
5. Is a COC or other sample transmittal document present?	<u>(Yes)</u>	No	NA
6. Is the COC complete?	<u>(Yes)</u>	<u>Can't find</u>	NA
7. Are the sample seals intact?	Yes	No	<u>(NA)</u>
8. Does the COC match the samples received?	Yes	<u>(No)</u>	NA

**Section Three: Sample Integrity Issues**

9. Are all sample containers intact and not leaking?	<u>(Yes)</u>	No	NA
10. Are all samples preserved properly?	<u>(Yes)</u>	No	NA
11. Are all samples within holding time for the required tests?	<u>(Yes)</u>	No	NA
12. *Were all samples received at the proper temperature?	<u>(Yes)</u>	No	NA
13. Are samples for volatiles and other headspace sensitive parameters free of headspace or bubbles?	Yes	No	<u>(NA)</u>

**Section Four: Sample Containers Received:**

14. 4 oz. glass jars: <u>7</u>	19. 2oz. amber (MeOH): <u>4</u>
15. 8 oz. glass jars:	20. Encore samplers:
16. 40ml VOA vials:	21. 500ml plastic:
17. 1 liter glass:	22. 1liter plastic:
18. Other (describe):	

\*Temperatures for: water and soil samples = 4°C-6°C, MeOH jars = 25°C, air = not required

#8 Trip blank not included on COC.

Reviewed By:



Laboratory Manager or Designee



**AGRA Earth & Environmental**  
ENGINEERING GLOBAL SOLUTIONS



**Earth & Environmental**

3504 Industrial Avenue, Suite 5  
Fairbanks, Alaska, U.S.A. 99701

Fairbanks, Alaska, U.S.A. 99701

Tel (907) 479-7586 Fax (907) 479-0193

03180

## CHAIN OF CUSTODY

PROJECT		CLIENT		PROJECT NO.		PHONE NO.		ANALYSIS REQUESTED (circle, check box or write preferred method in box)	
H & H Contractors				8-024-0243-0					
PROJECT MANAGER		PHONE NO.		PHONE NO.		PHONE NO.			
Jim Spontak		907-474-7586							
SAMPLER'S NAME (please print)		PHONE NO.							
Janice Weeps									
SAMPLER'S SIGNATURE									
Janice Weeps									
SAMPLE I.D.	DATE	TIME	MATRIX	PRESERVATIVE	CONTAINERS No.	VOL.			
1. S-15	9/9/98	8:45	soil	1cc Methanol	1/1	4oz	BTEX by 5030/8015	GRPH by 5030/8015	DAPH by 3550/18100 AK102
2. S-18	9:15		"	"	"	"			
3. SP-1	12:20		"	1cc	1	4oz			
4.									
5.									
6.									
7.									
8.									
9.									
10.									

LABORATORY		TURNAROUND TIME		SPECIAL INSTRUCTIONS / ADDITIONAL COMMENTS	
ECL PORTLAND					
SHIPPING I.D. / AIRBILL #					
CARRIER					
DOT DESIGNATION					
FED EX					

RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION		DATE		TIME	
Janice Weeps / H&H		9/9/98		10:00							

AGRA Earth & Environmental, Inc. (7/94)

Cynthia Duxelle / AEE

9/10/98

5am

1

2

PAGE 1 OF 2

**DISTRIBUTION:** White, Yellow - Laboratory, Pink - Originator

AGRA Earth &amp; Environmental, Inc. (7/94)



# CHAIN OF CUSTODY

PROJECT		PROJECT No.		PHONE No.		ANALYSIS REQUESTED (circle, check box or write preferred method in box)	
CLIENT		PROJECT MANAGER		PHONE No.		PHONE No.	
H & H Contractors		Jim Spontak		(408) 479-7586			
SAMPLER'S NAME (please print)		Janice Niegers					
SAMPLER'S SIGNATURE		Janice Niegers					
SAMPLE I.D.	DATE	TIME	MATRIX	PRESERVATIVE	CONTAINERS No.	VOL.	
1. S-7	9/13/98	15:00	soil	ice/methanol	1/1	403	
2. S-6	↓	14:20	↓	ice	1	403	
3. S-8	↓	16:00	↓	↓	↓	↓	
4. S-5	↓	14:10	↓	↓	↓	↓	
5. Trip Blank	9/12/98						
6.							
7.							
8.							
9.							
10.							

PROJECT		PROJECT No.		PHONE No.		ANALYSIS REQUESTED (circle, check box or write preferred method in box)	
CLIENT		PROJECT MANAGER		PHONE No.		PHONE No.	
H & H Contractors		Jim Spontak		(408) 479-7586			
SAMPLER'S NAME (please print)		Janice Niegers					
SAMPLER'S SIGNATURE		Janice Niegers					
SAMPLE I.D.	DATE	TIME	MATRIX	PRESERVATIVE	CONTAINERS No.	VOL.	
1. S-7	9/13/98	15:00	soil	ice/methanol	1/1	403	
2. S-6	↓	14:20	↓	ice	1	403	
3. S-8	↓	16:00	↓	↓	↓	↓	
4. S-5	↓	14:10	↓	↓	↓	↓	
5. Trip Blank	9/12/98						
6.							
7.							
8.							
9.							
10.							

PROJECT		PROJECT No.		PHONE No.		ANALYSIS REQUESTED (circle, check box or write preferred method in box)	
CLIENT		PROJECT MANAGER		PHONE No.		PHONE No.	
H & H Contractors		Jim Spontak		(408) 479-7586			
SAMPLER'S NAME (please print)		Janice Niegers					
SAMPLER'S SIGNATURE		Janice Niegers					
SAMPLE I.D.	DATE	TIME	MATRIX	PRESERVATIVE	CONTAINERS No.	VOL.	
1. S-7	9/13/98	15:00	soil	ice/methanol	1/1	403	
2. S-6	↓	14:20	↓	ice	1	403	
3. S-8	↓	16:00	↓	↓	↓	↓	
4. S-5	↓	14:10	↓	↓	↓	↓	
5. Trip Blank	9/12/98						
6.							
7.							
8.							
9.							
10.							

PROJECT		PROJECT No.		PHONE No.		ANALYSIS REQUESTED (circle, check box or write preferred method in box)	
CLIENT		PROJECT MANAGER		PHONE No.		PHONE No.	
H & H Contractors		Jim Spontak		(408) 479-7586			
SAMPLER'S NAME (please print)		Janice Niegers					
SAMPLER'S SIGNATURE		Janice Niegers					
SAMPLE I.D.	DATE	TIME	MATRIX	PRESERVATIVE	CONTAINERS No.	VOL.	
1. S-7	9/13/98	15:00	soil	ice/methanol	1/1	403	
2. S-6	↓	14:20	↓	ice	1	403	
3. S-8	↓	16:00	↓	↓	↓	↓	
4. S-5	↓	14:10	↓	↓	↓	↓	
5. Trip Blank	9/12/98						
6.							
7.							
8.							
9.							
10.							

PROJECT		PROJECT No.		PHONE No.		ANALYSIS REQUESTED (circle, check box or write preferred method in box)	
CLIENT		PROJECT MANAGER		PHONE No.		PHONE No.	
H & H Contractors		Jim Spontak		(408) 479-7586			
SAMPLER'S NAME (please print)		Janice Niegers					
SAMPLER'S SIGNATURE		Janice Niegers					
SAMPLE I.D.	DATE	TIME	MATRIX	PRESERVATIVE	CONTAINERS No.	VOL.	
1. S-7	9/13/98	15:00	soil	ice/methanol	1/1	403	
2. S-6	↓	14:20	↓	ice	1	403	
3. S-8	↓	16:00	↓	↓	↓	↓	
4. S-5	↓	14:10	↓	↓	↓	↓	
5. Trip Blank	9/12/98						
6.							
7.							
8.							
9.							
10.							

PROJECT		PROJECT No.		PHONE No.		ANALYSIS REQUESTED (circle,	
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**DISTRIBUTION:** White, Yellow - Laboratory, Pink - Originator

AK980542





**AGRA** Earth & Environmental

ENGINEERING GLOBAL SOLUTIONS

**AGRA Earth &  
Environmental, Inc.**  
7477 SW Tech Center Drive  
Portland, Oregon  
USA 97223-8025  
Tel (503) 639-3400  
Fax (503) 620-7892

September 29, 1998

AGRA Earth & Environmental  
3504 Industrial Avenue, Suite 5  
Fairbanks, AK 99701

**Attention: Mr. James Spontak**

Dear Mr. Spontak:

RE: Analytical Results For Project 8-024-01243-1

Attached are the results for the samples submitted on September 22, 1998 from the above referenced project. For your reference, our project number associated with these samples is AK980584.

The samples were analyzed for diesel range organics, and BTEX at the AGRA Earth & Environmental Portland Chemistry Laboratory.

All analyses were conducted in accordance with applicable QA/QC guidelines. The results apply only to the samples submitted.

Please feel free to contact me if you have any questions regarding this report, or if I can be of any assistance in any other matter.

Respectfully submitted,

**AGRA Earth & Environmental**

Sean Gormley  
Laboratory Manager  
Laboratory ID # UST-008

**AFB FAIRBANKS**

**OCT 1 - 1998**

**RECEIVED**



Project: H & H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK980584  
Report Date: 9/25/98  
Report No.: 98058403  
C.O.C.: 03187

QC Data Report  
Matrix Spike Recoveries  
BTEX Compounds  
ADEC Method AK101  
ug/L (ppb)  
As Received Basis

Sample Name:	Batch QC	Spike Level	Matrix Spike	Percent Recovery	Matrix Spike Duplicate	Percent Recovery	AEE Acceptance Limits	Relative Percent Difference
Lab Code:	0577-9	(ug/L)	(MS)	(MS)	(DMS)	(DMS)		(RPD)
Benzene	<0.50	20.0	20.5	102	23.7	118	60%-147%	14
Toluene	<0.50	20.0	17.8	89	20.3	102	74%-128%	13
Ethylbenzene	<0.50	20.0	15.9	79	18.8	94	57%-147%	17
Total Xylenes	<1.50	60.0	52.8	88	57.6	96	40%-159%	9

Sample Date: 9/18/98 ~ 9/18/98 ~ 9/18/98 ~ ~  
Analysis Date: 9/24/98 ~ 9/24/98 ~ 9/24/98 ~ ~

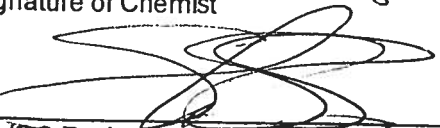
Surrogate Recovery:

a,a,a-Trifluorotoluene:	95%	~	98%	~	97%	~	AEE Acceptance Limits
4-Bromofluorobenzene:	99%	~	99%	~	99%	~	66% - 122%
							71% - 120%

ND Not Detected

Spike Source: Accustandard WA-VPH Lot # A7060438.

  
Signature of Chemist

  
QA/QC Review



Project: H & H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK980584  
Report Date: 9/28/98  
Report No.: 98058404  
C.O.C. No.: 03187

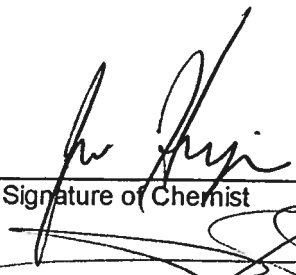
**Diesel Range Organics**  
**ADEC Method AK 102**  
mg/L (ppm)

Sample Name	Lab Code	Sample Date	Extraction Date	Analysis Date	Diesel Result	Surrogate Recovery O-Terphenyl
98-0917-GW-MW1	0584-1	9/17/98	9/24/98	9/27/98	21(a)	(b)
Lab Blank	0584-MB	9/24/98	9/24/98	9/27/98	<0.25	113

Acceptance Criteria: 50%-150%

(a) Result is from a 1:10 dilution.

(b) Not applicable because the analysis of the sample required a dilution that reduced the surrogate concentration below the analytical detection limit.

  
Signature of Chemist

  
QA/QC Review



**AGRA** Earth & Environmental  
ENGINEERING GLOBAL SOLUTIONS

Service Request No.: AK980584  
Report Date: 9/28/98  
Report No.: 98058405  
C.O.C. No.: 03187

Sample Name:	Lab Blank	Spike Level	Blank Spike	Percent Recovery	Blank Spike Duplicate	Percent Recovery	Relative Percent Difference
Lab Code:	0584-MB	(mg/L)		(BS)		(BSD)	
Diesel:	<0.25	1.0	0.84	84	0.82	82	2

Acceptance Limits:	~	~	~	60%-120%	~	60%-120%	<20
--------------------	---	---	---	----------	---	----------	-----

<b>Extraction Date:</b>	9/24/98	~	9/24/98	~	9/24/98	~	~
<b>Analysis Date:</b>	9/27/98	~	9/27/98	~	9/27/98	~	~

Surrogate Recovery:						Control Limits
O-Terphenyl:	113%	~	116%	~	117%	60%-120%

**Spike Source:** ADEC Method AK 102 Diesel Blend (AEE Lot# 98-2-70-2).

Signature of Chemist

QA/QC Review



Project: H & H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

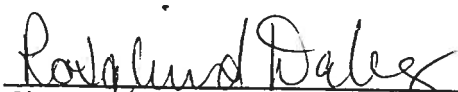
Service Request No.: AK980584  
Report Date: 9/25/98  
Report No.: 98058401  
C.O.C. No.: 03187

**BTEX Compounds**  
**ADEC Method AK101**  
**µg/L(ppb)**

Sample Name:	98-0917- GW-MW1	98-0917- Trip Blank	Lab Blank 1	Lab Blank 2	Reporting Limit
Lab Code:	0584-1	0584-2	0584-MB1	0584-MB2	
Benzene	0.96	ND	ND	ND	0.50
Toluene	10.8	ND	ND	ND	0.50
Ethylbenzene	20.0	ND	ND	ND	0.50
m/p-Xylene	285	ND	ND	ND	1.00
o-Xylene	190(a)	ND	ND	ND	0.50
Sample Date:	9/17/98	9/17/98	9/24/98	9/25/98	
Analysis Date:	9/25/98	9/24/98	9/24/98	9/25/98	
Surrogate Recovery:					AEE Acceptance Limits
a,a,a - Trifluorotoluene:	99%	107%	97%	109%	66%-122%
4-Bromofluorobenzene:	95%	112%	101%	111%	71%-120%
	(1:5 dilution)				
a,a,a - Trifluorotoluene:	74%				66%-122%
4-Bromofluorobenzene:	77%				71%-120%

ND Not Detected

(a) Result is from a 1:5 dilution analyzed on 9/25/98.

  
Signature of Chemist

  
QA/QC Review



Project: H & H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK980584  
Report Date: 9/25/98  
Report No.: 98058402  
C.O.C.: 03187

QC Data Report  
Blank Spike Recoveries  
BTEX Compounds  
ADEC Method AK101  
ug/L (ppb)

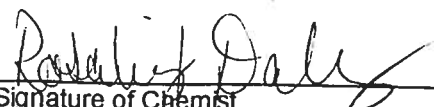
Sample Name:	Lab Blank	Spike Level	Blank Spike	Percent Recovery	Blank Spike Duplicate	Percent Recovery	AEE % Recovery Acceptance Criteria	Relative Percent Difference
Lab Code:	0584-MB	(ug/L)	(BS)	(BS)	(BSD)	(BSD)		(RPD)
Benzene	<0.50	20.0	23.8	119	22.7	113	70%-130%	5
Toluene	<0.50	20.0	21.6	108	20.5	102	76%-123%	5
Ethylbenzene	<0.50	20.0	20.3	101	19.2	96	75%-127%	6
Total Xylenes	<1.50	60.0	68.5	114	65.2	109	74%-128%	5

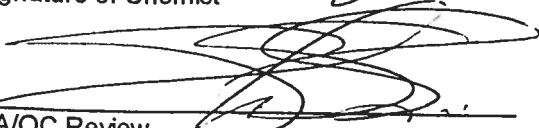
Sample Date: 9/24/98 ~ 9/24/98 ~ 9/24/98 ~ ~  
Analysis Date: 9/24/98 ~ 9/24/98 ~ 9/24/98 ~ ~

AEE Acceptance Limits						
Surrogate Recovery:						
a,a,a-Trifluorotoluene:	97%	~	120%	~	120%	~ 66% - 122%
4-Bromofluorobenzene:	101%	~	113%	~	113%	~ 71% - 120%

ND Not Detected

Spike Source: Accustandard WA-VPH Lot # A7060438.

  
Signature of Chemist

  
QA/QC Review



# CHAIN OF CUSTODY

PROJECT		PROJECT No.		ANALYSIS REQUESTED (circle, check box or write preferred method in box)																	
CLIENT		PHONE No.																			
PROJECT MANAGER		PHONE No.																			
SAMPLER'S NAME (please print)		PHONE No.																			
SAMPLER'S SIGNATURE																					
SAMPLE ID.	DATE	TIME	MATRIX	PRESERVATIVE	CONTAINERS No.	VOL.	BTEX by 8030/8015 AK 101	GRPH by 5030/8015	DRPH by 8550/8460 AK 102	BTEX/GRPH Combo by 5030/8020-8015	TPH by 3550/418.1	Halogenated Volatiles by 5030/8010	WTPH 418.1 MODIFIED	Aromatics by 602	Polynuclear Aromatics by 610 or 8310	Total Halogens (TOX) by 9076	Total Metals by ICP AA	Purgeable Organics GC/MS by 8240 or 624	Base/Neut/acid Organics GC/MS by 825 or 8270	PCB by 8080	
1. 980917-GW-MWI	9/17/98	1330	WATER	HCL	3	40mL			X												
2. 980917-TRIP BLANK	↓	1300	"	"	1	40mL		X													
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

SAMPLE RECEIPT		LABORATORY		TURNAROUND TIME		SPECIAL INSTRUCTIONS / ADDITIONAL COMMENTS	
TOTAL # CONTAINERS	SHIPPING I.D. / AIRBILL #	AEE FAIRBANKS, OR.					
6							
CONDITION OF CONTAINERS	CARRIER						
Good, 70C							
CONDITION OF SEALS	DOT DESIGNATION						
NA							
RELINQUISHED BY / AFFILIATION		ACCEPTED BY / AFFILIATION		DATE		TIME	
1. J. DePina / AEE FBKS		1. J. DePina / AEE FBKS		9/18/98		0900	
2.		2.					
3.		3.		9/22/98		17:45	



**AGRA Earth & Environmental**  
ENGINEERING GLOBAL SOLUTIONS

**AGRA Earth &  
Environmental, Inc.**  
7477 SW Tech Center Drive  
Portland, Oregon  
USA 97223-8025  
Tel (503) 639-3400  
Fax (503) 620-7892

October 1, 1998

AGRA Earth & Environmental  
3504 Industrial Avenue, Suite 5  
Fairbanks, AK 99701

**AFF FAIRBANKS**

**OCT 5 - 1998**

**Attention: Mr. James Spontak**

**RECEIVED**

Dear Mr. Spontak:

RE: Analytical Results For Project 8-024-01243-0

Attached are the results for the samples submitted on September 16, 1998 from the above referenced project. For your reference, our project number associated with these samples is AK980556.

The samples were analyzed for diesel range organics, and BTEX at the AGRA Earth & Environmental Portland Chemistry Laboratory.

All analyses were conducted in accordance with applicable QA/QC guidelines. The results apply only to the samples submitted.

Please feel free to contact me if you have any questions regarding this report, or if I can be of any assistance in any other matter.

Respectfully submitted,

**AGRA Earth & Environmental**

Sean Gormley  
Laboratory Manager  
Laboratory ID # UST-008





Project: H&H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil

Service Request No.: AK980556  
Report Date: 9/30/98  
Report No.: 98055604  
C.O.C. No.: 03182/03177

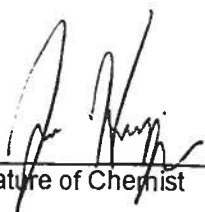
**Diesel Range Organics**  
**ADEC Method AK 102**  
**mg/kg(ppm)**  
**Dry Weight Basis**

Sample Name	Lab Code	Sample Date	Extraction Date	Analysis Date	Diesel Result	Surrogate Recovery O-Terphenyl
980810-Soil-01	0556-1	9/10/98	9/21/98	9/28/98	<25	92
980810-Soil-02	0556-2	9/10/98	9/21/98	9/28/98	850(a)	(b)
980810-Soil-03	0556-3	9/10/98	9/21/98	9/28/98	<25	112
980810-Soil-04	0556-4	9/10/98	9/21/98	9/29/98	<25	106
980810-Soil-05	0556-5	9/10/98	9/21/98	9/29/98	90	125
980810-Soil-06	0556-6	9/10/98	9/21/98	9/28/98	<25	103
980810-Soil-07	0556-7	9/10/98	9/21/98	9/28/98	<25	118
980810-Soil-08	0556-8	9/10/98	9/21/98	9/28/98	<25	111
980810-Soil-09	0556-9	9/10/98	9/21/98	9/28/98	310(a)	(b)
980811-SPSoil-01	0556-10	9/11/98	9/21/98	9/29/98	19,000(c)	(b)
980811-SPSoil-02	0556-11	9/11/98	9/21/98	9/29/98	16,000(c)	(b)
980811-SPSoil-03	0556-12	9/11/98	9/21/98	9/29/98	10,000(a)	(b)
980811-SPSoil-04	0556-13	9/11/98	9/21/98	9/29/98	6200(a)	(b)
980811-SPSoil-05	0556-14	9/11/98	9/21/98	9/29/98	9700(a)	(b)
980811-SPSoil-06	0556-15	9/11/98	9/21/98	9/29/98	8700(a)	(b)
Lab Blank	0556-MB	9/21/98	9/21/98	9/26/98	<25	104

(a) Result is from a 1:10 dilution.

(b) Not applicable because the analysis of the sample required a dilution that reduced the surrogate concentration below the analytical detection limit.

(c) Result is from a 1:25 dilution.

  
Signature of Chemist

  
QA/QC Review



Project: H&H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil

Service Request No.: AK980556  
Report Date: 9/30/98  
Report No.: 98055605  
C.O.C. No.: 03182/0317

**QC Data Report - Blank Spike Recoveries**  
**Diesel Range Organics**  
**ADEC Method AK 102**  
**mg/kg(ppm)**  
**As Received Basis**

Sample Name:	Lab Blank	Spike Level	Blank	Percent	Blank	Percent	Relative
Lab Code:	0556-MB	(mg/kg)	Spike	Recovery	Spike	Recovery	Percent
				(BS)	Duplicate	(BSD)	Difference
Diesel:	<25	250	150	60	180	72	18

Acceptance Limits: ~ ~ ~ 60%-120% ~ 60%-120% <20

Extraction Date: 9/21/98 ~ 9/21/98 ~ 9/21/98 ~ ~

Analysis Date: 9/26/98 ~ 9/26/98 ~ 9/26/98 ~ ~

Surrogate Recovery: ~ ~ ~ ~ ~ ~ ~ ~

O-Terphenyl: 104% ~ 120% ~ 130% ~ ~ ~ ~

Control Limits  
60%-120%

ND Not Detected

Spike Source: ADEC Method AK 102 Diesel Blend (AEE Lot# 98-2-62-3).

Signature of Chemist

QA/QC Review



Project: H&H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil

Service Request No.: AK980556  
Report Date: 9/30/98  
Report No.: 98055606  
C.O.C. No.: 03182/03177

**QC Data Report - Duplicate Summary**  
**Diesel Range Organics**  
**ADEC Method AK 102**  
**mg/kg(ppm)**  
**Dry Weight Basis**

<b>Sample Name:</b>	980810- Soil-06	<b>Sample</b>	<b>Relative</b>
<b>Lab Code:</b>	0556-6	<b>Duplicate</b>	<b>Percent</b>
<b>Diesel:</b>	<25	<25	<b>Difference</b>
			(a)

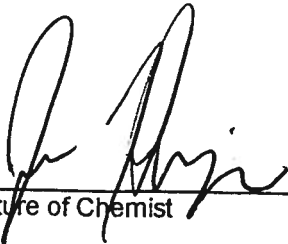
**Acceptance Limits:**       ~               ~               <25

<b>Sample Date:</b>	9/10/98	9/10/98	~
<b>Extraction Date:</b>	9/21/98	9/21/98	~
<b>Analysis Date:</b>	9/28/98	9/29/98	~

<b>Surrogate Recovery:</b>			<b>Control</b>
O-Terphenyl:	103%	130%	<b>Limits</b>
			50%-150%

NA Not Applicable

(a) Not applicable when sample concentration is less than the method reporting limit.

  
\_\_\_\_\_  
Signature of Chemist

  
\_\_\_\_\_  
QA/QC Review



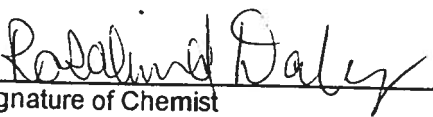
Project: H&H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil


Service Request No.: AK980556  
Report Date: 9/23/98  
Report No.: 98055601a  
C.O.C. No.: 03182/03177

**BTEX Compounds**  
**ADEC Method AK101**  
**mg/kg(ppm)**  
**Dry Weight Basis**

Sample Name:	980910- Soil-01	980910- Soil-02	980910- Soil-03	980910- Soil-04	980910- Soil-05	980910- Soil-06	Reporting Limit
Lab Code:	0556-1	0556-2	0556-3	0556-4	0556-5	0556-6	
Benzene	ND	ND	ND	ND	ND	ND	0.05
Toluene	ND	ND	ND	ND	ND	ND	0.05
Ethylbenzene	ND	0.06	ND	ND	ND	ND	0.05
m/p-Xylene	ND	0.14	ND	ND	ND	ND	0.10
o-Xylene	ND	0.10	ND	ND	ND	ND	0.05
Sample Date:	9/10/98	9/10/98	9/10/98	9/10/98	9/10/98	9/10/98	
Extraction Date:	9/17/98	9/17/98	9/17/98	9/17/98	9/17/98	9/17/98	
Analysis Date:	9/22/98	9/17/98	9/17/98	9/17/98	9/17/98	9/17/98	
Surrogate Recovery:							<b>AEE Acceptance Limits</b>
a,a,a - Trifluorotoluene:	73%	76%	77%	78%	80%	80%	65%-134%
4-Bromofluorobenzene:	77%	91%	83%	85%	86%	85%	61%-126%

ND Not Detected

  
Signature of Chemist

  
QA/QC Review  


Project: H&H Contractors  
 Project No.: 8-024-01243-0  
 Project Manager: James Spontak  
 Sample Matrix: Soil

Service Request No.: AK980556  
 Report Date: 9/23/98  
 Report No.: 98055601b  
 C.O.C. No.: 03182/03177

**BTEX Compounds**  
**ADEC Method AK101**  
**mg/kg(ppm)**  
**Dry Weight Basis**

	980910- Soil-07	980910- Soil-08	980910- Soil-09	(a) 980911- Soil-01	(a) 980911- Soil-02	(a) 980911- SPSoil-03	Reporting Limit
<b>Lab Code:</b>	0556-7	0566-8	0566-9	0566-10	0566-11	0566-12	
Benzene	ND	ND	ND	7.2	5.8	<0.50	0.05
Toluene	ND	0.07	0.30	42	52	<0.50	0.05
Ethylbenzene	ND	ND	0.14	12	11	2.1	0.05
m/p-Xylene	ND	ND	2.7	100	91	27	0.10
o-Xylene	ND	ND	1.1	36	32	8.8	0.05
<b>Sample Date:</b>	9/10/98	9/10/98	9/10/98	9/11/98	9/11/98	9/11/98	
<b>Extraction Date:</b>	9/17/98	9/10/98	9/10/98	9/11/98	9/11/98	9/11/98	
<b>Analysis Date:</b>	9/17/98	9/17/98	9/17/98	9/17/98	9/18/98	9/18/98	
<b>Surrogate Recovery:</b>				↑	↑		<b>AEE Acceptance Limits</b>
a,a,a - Trifluorotoluene:	80%	70%	87%			(b)	65%-134%
4-Bromofluorobenzene:	84%	76%	91%			(b)	61%-126%

*Sample labels should be  
 980911-SPSOIL-01  
 980911-SPSOIL-02*


ND Not Detected

(a) Results are from a 1:10 dilution.

(b) Not applicable because the analysis of the sample required a dilution below the analytical detection limit.

entrainment

*Lodolinda Daley*  
 Signature of Chemist

*Mike [Signature]*  
 QA/QC Review  


Project: H&H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil

Service Request No.: AK980556  
Report Date: 9/23/98  
Report No.: 98055601c  
C.O.C. No.: 03182/03177

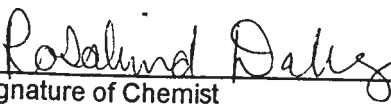
**BTEX Compounds**  
**ADEC Method AK101**  
**mg/kg(ppm)**  
**Dry Weight Basis**

	(a) 980911- SPSoil-04	(a) 980911- SPSoil-05	(a) 980911- SPSoil-06	Lab Blank 0566-MB	Reporting Limit
Sample Name:	0566-13	0566-14	0566-15		
Lab Code:					
Benzene	<0.50	<0.50	<0.50	ND	0.05
Toluene	0.68	<0.50	1.3	ND	0.05
Ethylbenzene	1.5	1.1	1.7	ND	0.05
m/p-Xylene	20	18	16	ND	0.10
o-Xylene	7.2	6.7	3.4	ND	0.05
Sample Date:	9/11/98	9/11/98	9/11/98	9/17/98	
Extraction Date:	9/11/98	9/11/98	9/11/98	9/17/98	
Analysis Date:	9/18/98	9/18/98	9/18/98	9/17/98	
Surrogate Recovery:					<b>AEE Acceptance Limits</b>
a,a,a - Trifluorotoluene:	(b)	(b)	(b)	86%	65%-134%
4-Bromofluorobenzene:	(b)	(b)	(b)	89%	61%-126%

ND Not Detected

(a) Results are from a 1:10 dilution.

(b) Not applicable because the analysis of the sample required a dilution that reduced the surrogate concentration below the analytical detection limit.

  
Signature of Chemist

  
QA/QC Review



**AGRA** Earth & Environmental  
ENGINEERING GLOBAL SOLUTIONS

Project: H&H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil

Service Request No.: AK980556  
Report Date: 9/23/98  
Report No.: 98055602  
C.O.C.: 03182/03177

**QC Data Report**  
**Blank Spike Recoveries**  
**BTEX Compounds**  
**ADEC Method AK101**  
**mg/kg(ppm)**  
**As Received Basis**

Sample Name:	Lab Blank	Spike Level	Blank Spike	Percent Recovery	Blank Spike Duplicate	Percent Recovery	AEE Acceptance Limits	Relative Percent Difference
Lab Code:	0556-MB	(mg/kg)	(BS)	(BS)	(DBS)	(DBS)		(RPD)
Benzene	<0.05	1.0	0.90	90	0.91	91	70%-130%	1
Toluene	<0.05	1.0	0.88	88	0.90	90	73%-127%	2
Ethylbenzene	<0.05	1.0	0.86	86	0.88	88	73%-129%	2
Total Xylenes	<1.50	3.0	2.8	93	2.9	97	70%-131%	4

Sample Date: 9/17/98 ~ 9/17/98 ~ 9/17/98 ~ ~  
Extraction Date: 9/17/98 ~ 9/17/98 ~ 9/17/98 ~ ~  
Analysis Date: 9/17/98 ~ 9/17/98 ~ 9/17/98 ~ ~

**Surrogate Recovery:**

a,a,a-Trifluorotoluene:	86%	~	88%	~	91%	~	<b>AEE Acceptance Limits</b> 65% - 134%
4-Bromofluorobenzene:	89%	~	91%	~	93%	~	61% - 126%

ND Not Detected

Spike Source: Accustandard WA-VPH Lot # A7060438.

  
Signature of Chemist

  
QA/QC Review



Project: H&H Contractors  
Project No.: 8-024-01243-0  
Project Manager: James Spontak  
Sample Matrix: Soil

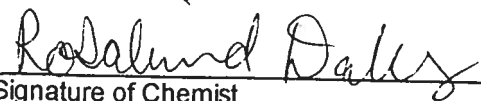
Service Request No.: AK980556  
Report Date: 9/23/98  
Report No.: 98055603  
C.O.C.: 03182/03177

QC Data Report  
Matrix Spike Recoveries  
BTEX Compounds  
ADEC Method AK101  
mg/kg(ppm)  
As Received Basis

Sample Name:	980910- Soil-01	Spike Level (mg/kg)	Matrix Spike (MS)	Percent Recovery (MS)	Matrix Spike Duplicate (DMS)	Percent Recovery (DMS)	AEE % Recovery Acceptance Limits	Relative Percent Difference (RPD)
Lab Code:	0556-1							
Benzene	<0.05	1.0	0.92	92	0.95	95	53%-132%	3
Toluene	<0.05	1.0	0.86	86	0.88	88	57%-130%	2
Ethylbenzene	<0.05	1.0	0.79	79	0.80	80	56%-132%	1
Total Xylenes	<0.15	3.0	2.6	87	2.6	87	46%-148%	<1
Sample Date:	9/10/98	~	9/10/98	~	9/10/98	~	~	
Extraction Date:	9/17/98	~	9/17/98	~	9/17/98	~	~	
Analysis Date:	9/22/98	~	9/17/98	~	9/17/98	~	~	
							AEE Acceptance Limits	
Surrogate Recovery:								
a,a,a-Trifluorotoluene:	73%	~	75%	~	77%	~	65% - 134%	
4-Bromofluorobenzene:	77%	~	84%	~	87%	~	61% - 126%	

ND Not Detected

Spike Source: Accustandard WA-VPH Lot # A7060438.

  
Signature of Chemist

  
QA/QC Review





**AGRA Earth & Environmental Portland Chemistry Laboratory  
Sample Receipt Documentation Form**

Project: <u>H &amp; H Contractors</u>	Cooler Temperatures  6.7  5.3  5.8  5.2  5.0
SR No.: <u>AK980556</u>	
Date: <u>9/16/98</u>	
Time: <u>930am</u>	
Temperature of Cooler Upon Receipt (Record to the Right):	
Received By: <u>Q&amp;N</u>	

**Section One: Shipping/Delivery Issues**

1. Method of Sample Delivery: <u>FedEx</u>			
2. Airbill or Courier Receipt Number: <u>8060844 06870</u>			
3. Is a copy of the airbill or courier receipt available to be placed in the job file?	<u>Yes</u>	No	NA

**Section Two: Sample Custody Issues**

4. Are custody seals on the shipping container intact?	Yes	No	<u>NA</u>
5. Is a COC or other sample transmittal document present?	<u>Yes</u>	No	NA
6. Is the COC complete?	<u>Yes</u>	No	NA
7. Are the sample seals intact?	Yes	No	<u>NA</u>
8. Does the COC match the samples received?	<u>Yes</u>	No	NA

**Section Three: Sample Integrity Issues**

9. Are all sample containers intact and not leaking? <u>See comment</u>	<u>Yes</u>	No	NA
10. Are all samples preserved properly?	<u>Yes</u>	No	NA
11. Are all samples within holding time for the required tests?	<u>Yes</u>	No	NA
12. *Were all samples received at the proper temperature?	<u>Yes</u>	No	NA
13. Are samples for volatiles and other headspace sensitive parameters free of headspace or bubbles?	Yes	No	<u>NA</u>

**Section Four: Sample Containers Received:**

14. 4 oz. glass jars: <u>15</u>	19. 2oz. amber (MeOH): <u>15</u>
15. 8 oz. glass jars:	20. Encore samplers:
16. 40ml VOA vials:	21. 500ml plastic:
17. 1 liter glass:	22. 1liter plastic:
18. Other (describe):	

\*Temperatures for: water and soil samples = 4°C-6°C, MeOH jars = 25°C, air = not required

#9- possible leakage if 980910-Soil-06 (methane jar).

Reviewed By:



Laboratory Manager or Designee



**AGRA** Earth & Environmental  
ENGINEERING GLOBAL SOLUTIONS

# CHAIN OF CUSTODY

PROJECT		PROJECT No.		ANALYSIS REQUESTED (circle, check box or write preferred method in box)															
CLIENT		PHONE No.																	
PROJECT MANAGER		PHONE No.																	
SAMPLER'S NAME (please print)		PHONE No.																	
SAMPLER'S SIGNATURE																			
SAMPLE I.D.	DATE	TIME	MATRIX	PRESERVATIVE	CONTAINERS	BTEX by 6030/8020	GRPH by 5030/8015	DRPH by 8050/8040 AK102	BTEX/GRPH Combo by 5030/8020-8015	TPH by 3550/418.1	Halogenated Volatiles by 5030/8010	WTPH-418.1 MODIFIED	Aromatics by 602	Polynuclear Aromatics by 610 or 8310	Total Halogens (TOX) by 9076	Total Metals by ICP AA	Purgeable Organics GC/MS by 8240 or 824	Base/Neurotoxic Organics GC/MS by 825 or 8270	PCB by 8080
1. 980910-SOIL-01	9/10/98	1045	SOIL	MeOH	1	X		X											
2. 980910-SOIL-02	1120			CHILL	1	X		X											
3. 980910-SOIL-03	1205					X		X											
4. 980910-SOIL-04	1210					X		X											
5. 980910-SOIL-05	1230					X		X											
6. 980910-SOIL-06	1415					X		X											
7. 980910-SOIL-07	1420					X		X											
8. 980910-SOIL-08	1520					X		X											
9. 980910-SOIL-09	1540					X		X											
10.																			

SAMPLE RECEIPT		LABORATORY		TURNAROUND TIME		SPECIAL INSTRUCTIONS / ADDITIONAL COMMENTS	
TOTAL # CONTAINERS	SHIPPING I.D. / AIRBILL #	AEE PORTLAND, OR.					
CONDITION OF CONTAINERS	CARRIER						
CONDITION OF SEALS	DOT DESIGNATION						
RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION	
1. <i>[Signature]</i> / AEE FBK		09/14/98		8:00a		1. <i>[Signature]</i> / AEE	
2. <i>[Signature]</i> / AEE		9/14/98		9:30a		2. <i>[Signature]</i> / AEE	
3. <i>[Signature]</i> / AEE						3. <i>[Signature]</i> / AEE	
						DATE 9/14/98 TIME 9:30am	
						PAGE 1 OF 2	



03177

## Tel (907) 479-7586 Fax (907) 479-0193

**DISTRIBUTION:** White, Yellow - Laboratory, Pink - Originator

AK950554

April 02, 1999

AGRA Earth & Environmental  
3504 Industrial Avenue, Suite 5  
Fairbanks, AK 99701

**Attention: Jim Spontak**

Dear Mr. Spontak:

RE: Analytical Results For Project 8-024-01243-1

Attached are the results for the samples submitted on March 17, 1999 from the above referenced project. For your reference, our project number associated with these samples is AK990218.

The samples were analyzed the AGRA Earth & Environmental, Inc (AEEI) Chemistry Laboratory.

All analyses were conducted in accordance with applicable QA/QC guidelines. The results apply only to the samples submitted.

Please feel free to contact me if you have any questions regarding this report, or if I can be of any assistance in any other matter.

Respectfully submitted,

AGRA Earth & Environmental



Sean Gormley  
Laboratory Manager  
Laboratory ID # UST-008



Project: H&H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK990218  
Report Date: 4/1/99  
Report No.: 99021808  
C.O.C. No.: 02695

**Diesel Range Organics**  
**ADEC Method AK 102**  
mg/L (ppm)

Sample Name	Lab Code	Sample Date	Extraction Date	Analysis Date	Diesel Result	Surrogate Recovery O-Terphenyl
MW-1	218-1	3/11/99	3/23/99(a)	3/29/99	50(b)	(c)
Construction Parts	218-2	3/11/99	3/23/99(a)	3/25/99	<0.25	92
Trailer #1	218-3	3/11/99	3/23/99(a)	3/25/99	0.29(a)	84
Trailer #2	218-4	3/11/99	3/23/99(a)	3/25/99	<0.25	80
Dup-1	218-6	3/11/99	3/23/99(a)	3/26/99	19.0	(c)
Lab Blank	218-MB	3/23/99	3/23/99(a)	3/24/99	<0.25	85

Acceptance Criteria: 50%-150%

- (a) Sample was extracted 5 days past the end of the recommended maximum holding time. Please see case narrative.  
(b) Result is from a 1:20 dilution.  
(c) Not applicable due to the presence of interfering chromatographic peaks from elevated concentrations of target compounds which prevented determination of the surrogate.  
(d) Results are quantified as diesel, but the chromatographic pattern does not match that of the standard.

Signature of Chemist

QA/QC Review



Project: H&H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK990218  
Report Date: 4/1/99  
Report No.: 99021807  
C.O.C. No.: 02695

QC Data Report - Duplicate Summary  
Diesel Range Organics  
ADEC Method AK 102  
mg/L(ppm)

Sample Name:	Batch QC	Sample	Relative
Lab Code:	237-2	Duplicate	Percent
			Difference
Diesel:	<0.25	<0.25	(a)

Acceptance Limits: ~ ~ <25

Sample Date:	3/17/99	3/17/99	~
Extraction Date:	3/23/99	3/23/99	~
Analysis Date:	3/24/99	3/24/99	~

Surrogate Recovery:			Control
O-Terphenyl:	97%	90%	Limits
			50%-150%

(a) Not applicable when sample concentration is less than the method reporting limit.

Signature of Chemist

QA/QC Review



Project: H&H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK990218  
Report Date: 4/1/99  
Report No.: 99021808  
C.O.C. No.: 02695

QC Data Report - Blank Spike Recoveries  
Diesel Range Organics  
ADEC Method AK 102  
mg/L(ppm)

Sample Name:	Lab Blank	Spike Level (mg/L)	Blank Spike	Percent Recovery (BS)	Blank Spike Duplicate	Percent Recovery (BSD)	Relative Percent Difference
Lab Code:	237-MB						
Diesel:	<0.25	1.0	0.99	99	0.97	97	2

Acceptance Limits: ~ ~ ~ 60%-120% ~ 60%-120% <20

Extraction Date: 3/23/99 ~ 3/23/99 ~ 3/23/99 ~ ~  
Analysis Date: 3/24/99 ~ 3/24/99 ~ 3/24/99 ~ ~

Surrogate Recovery:  
O-Terphenyl: 85% ~ 103% ~ 100% ~ Control Limits 60%-120%

ND Not Detected

Spike Source: ADEC Method AK 102 Diesel Blend (AEE Lot# 88-21-2-2).

Signature of Chemist

QA/QC Review



Project: H&H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK890218  
Report Date: 3/31/99  
Report No.: 99021801  
C.O.C. No.: 02695

Gasoline Range Organics & BTEX  
ADEC Method AK101  
µg/L(ppb)

	(a)		Construction				Method
Sample Name:	MW-1	MW-1	Parts	Trailer #1	Trailer #2	Trip Blank	Reporting
Lab Code:	218-1	218-1rr	218-2	218-3	218-4	218-5	Limit
Gasoline:	515(b)	607(b)	ND	ND	ND	ND	50.0
Benzene:	0.82	0.66	ND	ND	ND	ND	0.50
Toluene:	0.59	ND	ND	ND	ND	0.71	0.50
Ethylbenzene:	12.8	12.0	ND	ND	ND	ND	0.50
Total Xylenes:	38.2	35.8	ND	ND	ND	ND	1.50
Sample Date:	3/11/99	3/11/99	3/11/99	3/11/99	3/11/99	3/11/99	
Analysis Date:	3/25/99	3/26/99	3/25/99	3/25/99	3/25/99	3/24/99	


Surrogate Recovery: (a,a,a-Trifluorotoluene):

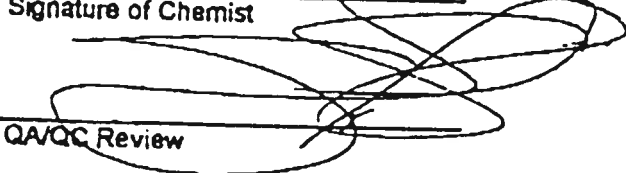
							AEE Acceptance Limits
Gasoline Analysis(FID):	102%	107%	99%	103%	102%	100%	88%-144%
BTEX Analysis(PID):	98%	92%	97%	100%	100%	101%	61%-130%

ND Not Detected

(a) BTEX results are for confirmation only. The original sample analysis did not meet QC criteria. The sample was re-analyzed 1 day past the recommended maximum holding time. The second analysis confirmed the original analysis. The results from both analyses are reported.

(b) Results are quantified as gasoline, but the chromatographic pattern does not match that of the standard.

  
Signature of Chemist

  
QA/QC Review





Project: H&H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK990218  
Report Date: 3/31/99  
Report No.: 99021802  
C.O.C. No.: 02695

Gasoline Range Organics & BTEX  
ADEC Method AK101  
µg/L(ppb)

	(a)				
Sample Name:	Dup-1	Dup-1	Lab Blank	Lab Blank	Method
Lab Code:	218-6	218-6rr	218-MB1	218-MB2	Reporting
					Limit
Gasoline:	488(b)	557(b)	ND	ND	50.0
Benzene:	0.82	0.68	ND	ND	0.50
Toluene:	0.52	ND	ND	ND	0.50
Ethylbenzene:	12.3	11.2	ND	ND	0.50
Total Xylenes:	38.9	32.8	ND	ND	1.50

Sample Date: 3/11/99 3/11/99 3/24/99 3/26/99  
Analysis Date: 3/25/99 3/28/99 3/24/99 3/26/99

					AEE Acceptance Limits
Surrogate Recovery: (a,a,a-Trifluorotoluene):					
Gasoline Analysis(FID):	101%	105%	100%	103%	66%-144%
BTEX Analysis(PID):	102%	88%	99%	89%	61%-130%

ND Not Detected

(a) BTEX results are for confirmation only. The original sample analysis did not meet QC criteria. The sample was re-analyzed 1 day past the recommended maximum holding time. The second analysis confirmed the original analysis. The results from both analyses are reported.

(b) Results are quantified as gasoline, but the chromatographic pattern does not match that of the standard.

  
Signature of Chemist

QA/QC Review



Project: H&H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK880218  
Report Date: 3/31/99  
Report No.: 99021803  
C.O.C. No.: 02695

QC Data Report  
Blank Spike Recoveries  
Gasoline Range Organics & BTEX  
ADEC Method AK101  
ug/L(ppb)

Sample Name:	Lab Blank	Spike Level	Blank Spike	Percent Recovery	Blank Spike Duplicate	Percent Recovery	Relative Percent Difference	AEE Acceptance Limits
Lab Code:	218-MB1	(ug/L)	(BS)	(BS)	(BSD)	(BSD)		
Gasoline:	<50.0	1000	1020	102	997	100	2	77%-118%
Benzene:	<0.50	20.0	21.4	107	21.9	110	2	72%-128%
Toluene:	<0.50	20.0	21.1	106	21.1	106	<1	74%-124%
Ethylbenzene:	<0.50	20.0	20.5	102	20.3	102	<1	71%-126%
Total Xylenes:	<1.50	60.0	64.7	108	64.0	107	1	77%-125%
Sample Date:	3/24/99	~	3/24/99	~	3/24/99	~	~	
Analysis Date:	3/24/99	~	3/24/99	~	3/24/99	~	~	
Surrogate Recovery (a,a,a-Trifluorotoluene):								AEE Acceptance Limits
Gasoline Analysis(FID):	100%	~	111%	~	111%	~	~	66% - 144%
BTEX Analysis(PID):	99%	~	100%	~	103%	~	~	61% - 130%

ND Not Detected

Spike Source: Accustandard WA-VPH Lot # A7060438.

Spike Source: Ultra Scientific RGO-601, Lot # M-0910.

Signature of Chemist

QA/QC Review



Project: H&H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK990218  
Report Date: 3/31/99  
Report No.: 99021805  
C.O.C. No.: 02695


QC Data Report  
Blank Spike Recoveries  
Gasoline Range Organics & BTEX  
ADEC Method AK101  
ug/L(ppb)

Sample Name:	Lab Blank	Spike Level	Blank Spike	Percent Recovery	Blank Spike Duplicate	Percent Recovery	Relative Percent Difference	AEE cceptance Limits
Lab Code:	218-MB2	(ug/L)	(BS)	(BS)	(BSD)	(BSD)		
Gasoline:	<50.0	1000	1050	105	1110	111	8	77%-118%
Benzene:	<0.50	20.0	18.8	84	17.3	86	3	72%-129%
Toluene:	<0.50	20.0	18.9	84	17.4	87	3	74%-124%
Ethylbenzene:	<0.50	20.0	16.5	82	17.0	85	3	71%-126%
Total Xylenes:	<1.50	60.0	50.2	84	51.5	86	3	77%-125%
Sample Date:	3/26/99	~	3/26/99	~	3/26/99	~	~	
Analysis Date:	3/26/99	~	3/26/99	~	3/26/99	~	~	
Surrogate Recovery (a,a,a-Trifluorotoluene):								AEE cceptance Limits
Gasoline Analysis(FID):	103%	~	114%	~	116%	~	~	88% - 144%
BTEX Analysis(PID):	89%	~	92%	~	91%	~	~	81% - 130%

ND Not Detected

Spike Source: Accustandard WA-VPH Lot # A7060438.

Spike Source: Ultra Scientific RGO-801, Lot # M-0910.

  
Signature of Chemist

  
QA/QC Review



Project: H&H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK990218  
Report Date: 3/31/99  
Report No.: 99021804  
C.O.C.: 02695

QC Data Report  
Matrix Spike Recoveries  
BTEX Compounds  
ADEC Method AK101  
ug/L (ppb)

Sample Name:	Batch QC	Spike Level	Matrix Spike	Percent Recovery	Matrix Spike Duplicate	Percent Recovery	Relative Percent Difference	AEE Acceptance Limits
Lab Code:	230-2	(ug/L)	(MS)	(MS)	(DMS)	(DMS)		
Benzene	<0.50	20.0	21.2	108	21.7	108	2	44%-162%
Toluene	<0.50	20.0	20.4	102	19.4	97	5	62%-139%
Ethylbenzene	<0.50	20.0	19.5	98	18.8	93	5	49%-148%
Total Xylenes	<1.50	60.0	58.2	97	47.3	79	21	45%-143%
Sample Date:	3/16/99	~	3/16/99	~	3/16/99	~	~	~
Analysis Date:	3/24/99	~	3/24/99	~	3/24/99	~	~	~
								AEE Acceptance Limits
Surrogate Recovery:								
a,a,a-Trifluorotoluene:	100%	~	101%	~	101%	~	~	61% - 130%
4-Bromofluorobenzene:	99%	~	101%	~	102%	~	~	72% - 120%

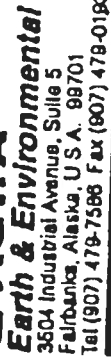
ND Not Detected

Spike Source: Accustandard WA-VPH Lot # A7060438.

  
Signature of Chemist

  
QA/QC Review





AK 990218  
812066  
3/17/99

## CHAIN OF CUSTODY

[illegible]

SAMPLE RECEIPT	Laboratory	Turnaround Time	Special Instructions / Additional Comments
TOTAL # CONTAINERS	ACRA Earth & Env. Portland SHIPPING I.D. / AIRBILL #	<input type="checkbox"/> 8 HOUR <input type="checkbox"/> 24 HOUR <input type="checkbox"/> 1 WEEK <input checked="" type="checkbox"/> 2 WEEK (standard) <input type="checkbox"/> OTHER _____	
CONDITION OF CONTAINERS	CARRIER		
CONDITION OF SEALS	DOT DESIGNATION		
RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION
1. J. A. Salazar / ACRA FBKS	3/15/99	1000	1. [Signature] / ACRA FBKS
2.			2. [Signature]
3.			3. [Signature]

PAGE 1 OF 1

ACRA Earth & Environmental, Inc. (764)

**DISTRIBUTION:** White, Yellow - Laboratory, Pink - Original

April 16, 1999

AGRA Earth & Environmental  
3504 Industrial Avenue, Suite 5  
Fairbanks, AK 99701

**Attention: Mr. James Spontak**

Dear Mr. Spontak:

RE: Analytical Results For Project 8-014-01243-1

Attached are the results for the samples submitted on April 9, 1999 from the above referenced project. For your reference, our project number associated with these samples is AK990311.

The samples were analyzed the AGRA Earth & Environmental, Inc. (AEEI) Chemistry Laboratory.

All analyses were conducted in accordance with applicable QA/QC guidelines. The results apply only to the samples submitted.

Please feel free to contact me if you have any questions regarding this report, or if I can be of any assistance in any other matter.

Respectfully submitted,

**AGRA Earth & Environmental**



Sean Gormley  
Laboratory Manager  
**Laboratory ID # UST-008**

**AEE FAIRBANKS**

**APR 20 1999**

**RECEIVED**

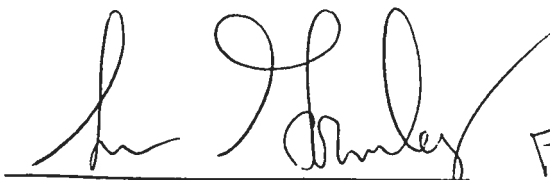
Project: H&H Contractors  
Project No.: 8-014-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK990311  
Report Date: 04/16/999  
Report No.: 99031104  
C.O.C. No.: 03809

**Gasoline Range Organics & BTEX**  
**ADEC Method AK101**  
**µg/L(ppb)**

Sample Name:	MW-1	TR-1	Trip Blank	Dup-1	Lab Blank	Lab Blank	Method Reporting Limit
Lab Code:	0311-1	0311-2	0311-3	0311-4	0311-MB1	0311-MB2	
Gasoline:	485	ND	ND	447	ND	ND	50.0
Benzene:	0.73	ND	ND	0.72	ND	ND	0.50
Toluene:	ND	ND	ND	ND	ND	ND	0.50
Ethylbenzene:	9.72	ND	ND	8.88	ND	ND	0.50
Total Xylenes:	35.7	ND	ND	33.2	ND	ND	1.50
Sample Date:	4/7/99	4/7/99	11/25/98	4/7/99	4/13/99	4/14/99	
Analysis Date:	4/14/99	4/14/99	4/13/99	4/14/99	4/13/99	4/14/99	
							<b>AEE Acceptance Limits</b>
<b>Surrogate Recovery: (a,a,a-Trifluorotoluene):</b>							
Gasoline Analysis(FID):	95%	92%	98%	90%	99%	98%	66%-144%
BTEX Analysis(PID):	95%	89%	99%	89%	100%	99%	61%-130%

ND Not Detected



Signature of Chemist

  
QA/QC Review



Project: H&H Contractors  
Project No.: 8-014-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK990311  
Report Date: 04/16/999  
Report No.: 99031105  
C.O.C. No.: 03809

QC Data Report  
Blank Spike Recoveries  
Gasoline Range Organics & BTEX  
ADEC Method AK101  
ug/L(ppb)

Sample Name:	Lab Blank	Spike Level (ug/L)	Blank Spike (BS)	Percent Recovery (BS)	Blank Spike Duplicate (BSD)	Percent Recovery (BSD)	Relative Percent Difference	AEE Acceptance Limits
Lab Code:	0311-MB1							
Gasoline:	<50.0	1000	1010	101	1050	105	4	77%-118%
Benzene:	<0.50	20.0	21.4	107	21.9	110	2	72%-129%
Toluene:	<0.50	20.0	20.7	104	20.8	104	<1	74%-124%
Ethylbenzene:	<0.50	20.0	19.7	98	20.2	101	3	71%-126%
Total Xylenes:	<1.50	60.0	62.0	103	64.3	107	4	77%-125%

Sample Date: 4/13/99 ~ 4/13/99 ~ 4/13/99 ~ ~  
Analysis Date: 4/13/99 ~ 4/13/99 ~ 4/13/99 ~ ~

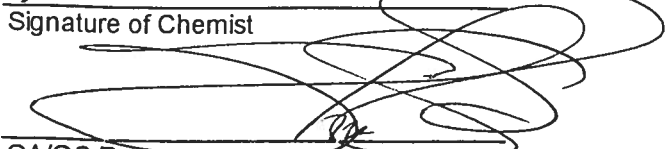
								AEE Acceptance Limits
Surrogate Recovery (a,a,a-Trifluorotoluene):								
Gasoline Analysis(FID):	99%	~	107%	~	108%	~	~	6% - 144%
BTEX Analysis(PID):	100%	~	101%	~	98%	~	~	1% - 130%

ND Not Detected

Spike Source: Accustandard WA-VPH Lot # A7060438.

Spike Source: Ultra Scientific RGO-601, Lot # M-0910.

  
Signature of Chemist

  
QA/QC Review





Project: H&H Contractors  
Project No.: 8-014-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK990311  
Report Date: 04/16/999  
Report No.: 99031106  
C.O.C. No.: 03809

**QC Data Report**  
**Blank Spike Recoveries**  
**Gasoline Range Organics & BTEX**  
**ADEC Method AK101**  
**ug/L(ppb)**

Sample Name:	Lab Blank	Spike Level	Blank Spike	Percent Recovery	Blank Spike Duplicate	Percent Recovery	Relative Percent Difference	AEE Acceptance Limits
Lab Code:	0311-MB1	(ug/L)	(BS)	(BS)	(BSD)	(BSD)		
Gasoline:	<50.0	1000	932	93	848	85	9	77%-118%
Benzene:	<0.50	20.0	18.9	94	19.0	95	<1	72%-129%
Toluene:	<0.50	20.0	18.5	92	18.3	92	1	74%-124%
Ethylbenzene:	<0.50	20.0	18.3	91	18.0	90	2	71%-126%
Total Xylenes:	<1.50	60.0	58.6	98	57.8	96	1	77%-125%

Sample Date: 4/14/99 ~ 4/14/99 ~ 4/14/99 ~ ~  
Analysis Date: 4/14/99 ~ 4/14/99 ~ 4/14/99 ~ ~

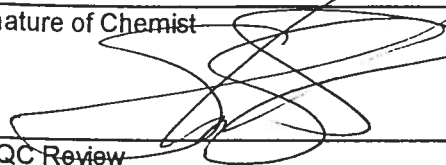
								AEE Acceptance Limits
<b>Surrogate Recovery (a,a,a-Trifluorotoluene):</b>								
Gasoline Analysis(FID):	98%	~	107%	~	110%	~	~	6% - 144%
BTEX Analysis(PID):	99%	~	101%	~	100%	~	~	1% - 130%

ND Not Detected

Spike Source: Accustandard WA-VPH Lot # A7060438.

Spike Source: Ultra Scientific RGO-601, Lot # M-0910.

  
Signature of Chemist

  
QA/QC Review



Project: H&H Contractors  
Project No.: 8-014-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK990311  
Report Date: 04/16/999  
Report No.: 99031108  
C.O.C.: 03809

**QC Data Report**  
**Matrix Spike Recoveries**  
**BTEX Compounds**  
**ADEC Method AK101**  
**ug/L (ppb)**

Sample Name:	Batch QC	Spike Level (ug/L)	Matrix Spike (MS)	Percent Recovery (MS)	Matrix Spike Duplicate (DMS)	Percent Recovery (DMS)	Relative Percent Difference	AEE Acceptance Limits
Lab Code:	300-2							
Benzene	56.8	40.0	98.3	104	95.5	97	3	44%-162%
Toluene	14.8	40.0	55.0	100	53.4	96	3	62%-139%
Ethylbenzene	2.93	40.0	42.4	99	41.3	96	3	49%-146%
Total Xylenes	46.1	120	165	99	161	96	2	46%-143%

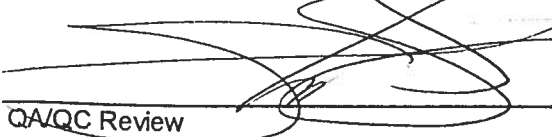
Sample Date:	4/6/99	~	4/6/99	~	4/6/99	~	~	~
Analysis Date:	4/14/99	~	4/14/99	~	4/14/99	~	~	~

								<b>AEE Acceptance Limits</b>
<b>Surrogate Recovery:</b>								
a,a,a-Trifluorotoluene:	93%	~	93%	~	92%	~	~	61% - 130%
4-Bromofluorobenzene:	93%	~	93%	~	93%	~	~	72% - 120%

ND Not Detected

Spike Source: Accustandard WA-VPH Lot # A7060438.

  
Signature of Chemist

  
QA/QC Review



Project: H&H Contractors  
Project No.: 8-014-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: AK990311  
Report Date: 04/16/999  
Report No.: 99031107  
C.O.C.: 03809

QC Data Report  
Matrix Spike Recoveries  
BTEX Compounds  
ADEC Method AK101  
ug/L (ppb)

Sample Name:	Batch QC	Spike Level (ug/L)	Matrix Spike (MS)	Percent Recovery (MS)	Matrix Spike Duplicate (DMS)	Percent Recovery (DMS)	Relative Percent Difference	AEE Acceptance Limits
Lab Code:	301-2							
Benzene	<0.50	20.0	20.9	104	21.8	109	4	44%-162%
Toluene	<0.50	20.0	20.3	102	20.9	104	3	62%-139%
Ethylbenzene	<0.50	20.0	19.7	98	20.3	102	3	49%-146%
Total Xylenes	<1.50	60.0	62.5	104	62.7	104	<1	46%-143%

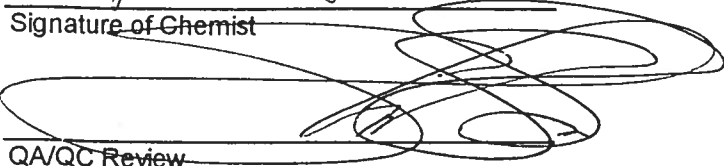
Sample Date:	4/6/99	~	4/6/99	~	4/6/99	~	~	~
Analysis Date:	4/13/99	~	4/13/99	~	4/13/99	~	~	~

								AEE Acceptance Limits
Surrogate Recovery:								
a,a,a-Trifluorotoluene:	99%	~	100%	~	101%	~	~	61% - 130%
4-Bromofluorobenzene:	101%	~	99%	~	101%	~	~	72% - 120%

ND Not Detected

Spike Source: Accustandard WA-VPH Lot # A7060438.

  
Signature of Chemist

  
QA/QC Review



Project: H&H Contractors  
Project No.: 8-014-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: Ak990311  
Report Date: 04/16/999  
Report No.: 99031101  
C.O.C. No.: 03809

**Diesel Range Organics**  
**ADEC Method AK 102**  
mg/L (ppm)

Sample Name	Lab Code	Sample Date	Extraction Date	Analysis Date	Diesel Result	Surrogate Recovery O-Terphenyl
MW-1	311-1	4/7/99	4/13/99	4/15/99	22(a)	(b)
TR-1	311-2	4/7/99	4/13/99	4/15/99	<0.25	144
Dup-1	311-4	4/7/99	4/13/99	4/15/99	23(a)	(b)
Lab Blank	311-MB	4/13/99	4/13/99	4/15/99	<0.25	91

Acceptance Criteria: 50%-150%

(a) Result is from a 1:10 dilution.

(b) Not applicable due to the presence of interfering chromatographic peaks from elevated concentrations of target compounds which prevented determination of the surrogate.

  
Signature of Chemist

  
QA/QC Review



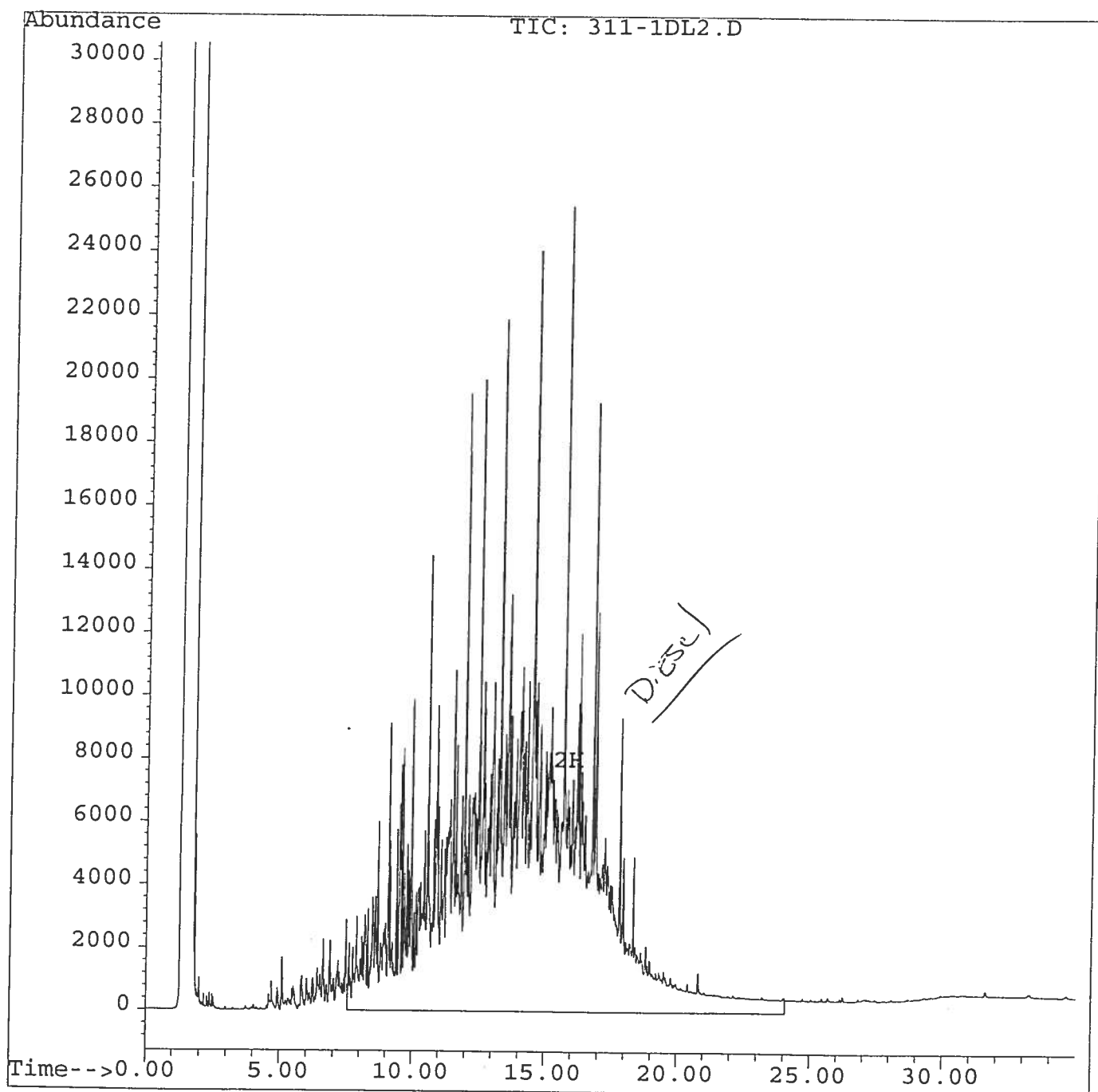
# Quantitation Report

Data File : C:\HPCHEM\5\DATA\041499\311-1DL2.D  
Acq On : 15 Apr 99 06:56 AM  
Sample : ak102 h2o 1:10  
Misc :  
Quant Time: Apr 15 9:45 1999

Vial: 14  
Operator: JH  
Inst : HP GC/FID  
Multiplr: 1.00

Method : C:\HPCHEM\5\METHODS\AK0219.M  
Title :  
Last Update : Mon Mar 01 16:20:52 1999  
Response via : Multiple Level Calibration

Volume Inj. :  
Signal Phase :  
Signal Info :



Project: H&H Contractors  
Project No.: 8-014-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: Ak990311  
Report Date: 04/16/999  
Report No.: 99031103  
C.O.C. No.: 03809

**QC Data Report - Blank Spike Recoveries**  
**Diesel Range Organics**  
**ADEC Method AK 102**  
**mg/L(ppm)**

Sample Name:	Lab Blank	Spike Level	Blank	Percent	Blank	Percent	Relative
Lab Code:	311-MB	(mg/L)	Spike	Recovery	Spike	Recovery	Percent
Diesel:	<0.25	1.0	1.0	(BS)	Duplicate	(BSD)	Difference
				100	1.1	110	10
Acceptance Limits:	~	~	~	60%-120%	~	60%-120%	<20
Extraction Date:	4/13/99	~	4/13/99	~	4/13/99	~	~
Analysis Date:	4/15/99	~	4/15/99	~	4/15/99	~	~
Surrogate Recovery:							Control
O-Terphenyl:	91%	~	96%	~	109%	~	Limits
							60%-120%

ND Not Detected

Spike Source: ADEC Method AK 102 Diesel Blend (AEE Lot# 98-21-37-2).

Signature of Chemist

QA/QC Review



Project: H&H Contractors  
Project No.: 8-014-01243-1  
Project Manager: James Spontak  
Sample Matrix: Water

Service Request No.: Ak990311  
Report Date: 04/16/999  
Report No.: 99031102  
C.O.C. No.: 03809

**QC Data Report - Duplicate Summary**  
**Diesel Range Organics**  
**ADEC Method AK 102**  
**mg/L(ppm)**

Sample Name:	TR-1	Sample	Relative
Lab Code:	311-2	Duplicate	Percent
			Difference
Diesel:	<0.25	<0.25	(a)

Acceptance Limits: ~ ~ <25

Sample Date:	4/7/99	4/7/99	~
Extraction Date:	4/13/99	4/13/99	~
Analysis Date:	4/15/99	4/15/99	~

Surrogate Recovery:			Control Limits
O-Terphenyl:	144%	99%	50%-150%

NA Not Applicable

(a) Not applicable when sample concentration is less than the method reporting limit.

Signature of Chemist

QA/QC Review



**AGRA Earth & Environmental Portland Chemistry Laboratory  
Sample Receipt Documentation Form**

Project: <u>H &amp; H Contractors</u>	Cooler Temperatures  3.6      4.8  3.2      5.2      5.6
SR No.: <u>AK990311</u>	
Date: <u>4/9/99</u>	
Time: <u>2:45</u>	
Temperature of Cooler Upon Receipt (Record to the Right):	
Received By: <u>JH</u>	

**Section One: Shipping/Delivery Issues**

1. Method of Sample Delivery:	<u>Fedex</u>		
2. Airbill or Courier Receipt Number:	<u>0210</u>		
3. Is a copy of the airbill or courier receipt available to be placed in the job file?	<u>Yes</u>	No	NA

**Section Two: Sample Custody Issues**

4. Are custody seals on the shipping container intact?	<u>Yes</u>	No	<u>NA</u>
5. Is a COC or other sample transmittal document present?	<u>Yes</u>	No	NA
6. Is the COC complete?	<u>Yes</u>	No	NA
7. Are the sample seals intact?	<u>Yes</u>	No	<u>NA</u>
8. Does the COC match the samples received?	<u>Yes</u>	No	NA

**Section Three: Sample Integrity Issues**

9. Are all sample containers intact and not leaking?	<u>Yes</u>	No	NA
10. Are all samples preserved properly?	<u>Yes</u>	No	NA
11. Are all samples within holding time for the required tests?	<u>Yes</u>	No	NA
12. *Were all samples received at the proper temperature?	<u>Yes</u>	No	NA
13. Are samples for volatiles and other headspace sensitive parameters free of headspace or bubbles?	<u>Yes</u>	No	NA

**Section Four: Sample Containers Received:**

14. 4 oz. glass jars:	19. 2oz. amber (MeOH):
15. 8 oz. glass jars:	20. Encore samplers:
16. 40ml VOA vials: <u>10</u>	21. 500ml plastic:
17. 1 liter glass: <u>6</u>	22. 1liter plastic:
18. Other (describe):	

\*Temperatures for: water and soil samples = 4°C-6°C, MeOH jars = 25°C, air = not required

Reviewed By:

[Signature]  
Laboratory Manager or Designee





AK900311

## CHAIN OF CUSTODY

PROJECT		PROJECT No.		ANALYSIS REQUESTED (circle, check box or write preferred method in box)																	
CLIENT		8-014-01243-1																			
		PHONE No.																			
PROJECT MANAGER		PHONE No.																			
SAMPLER'S NAME (please print)		479-7580																			
SAMPLER'S SIGNATURE		Janice Wiegers																			
		Janice Wiegers																			
		Janice Wiegers																			
SAMPLE I.D.		DATE		TIME		MATRIX		PRESERVATIVE		CONTAINERS											
1. MW-1		4-7-99		11:30		H <sub>2</sub> O		10/1cc		3/3 12/40ml											
2. TR-1		4-7-99		11:45		↓		↓		↓											
3. TRIP Blank		11-25-98		11:00		↓		1cc		1 40ml											
4. dup-1		4-7-99		—		H <sub>2</sub> O		10/1cc		3/3 12/40ml											
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

SAMPLE RECEIPT		LABORATORY		TURNAROUND TIME		SPECIAL INSTRUCTIONS / ADDITIONAL COMMENTS	
TOTAL # CONTAINERS		SHIPPING I.D. / AIRBILL #					
CONDITION OF CONTAINERS		CARRIER					
CONDITION OF SEALS		DOT DESIGNATION					
RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION	
Janice Wiegers / AGR		4-8-99		10:30		1. [Signature] / AGR-PDX	
						2.	
						3.	

PAGE 1 OF 1	
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**DISTRIBUTION:** White, Yellow - Laboratory, Pink - Originator

June 9, 1999

AGRA Earth & Environmental  
3504 Industrial Avenue, Suite 5  
Fairbanks, AK 99701

**AEE FAIRBANKS**

**JUN 14 1999**

**RECEIVED**

**Attention: James Spontak**

Dear Mr. Spontak:

RE: Analytical Results For Project 8-024-01243-1

Attached are the results for the samples submitted on May 21, 1999 from the above referenced project. For your reference, our project number associated with these samples is AK990462.

The samples were analyzed at the AGRA Earth & Environmental Portland Chemistry Laboratory.

All analyses were conducted in accordance with applicable QA/QC guidelines. The results apply only to the samples submitted.

Please feel free to contact me if you have any questions regarding this report, or if I can be of any assistance in any other matter.

Respectfully submitted,

**AGRA Earth & Environmental**



Sean Gormley  
Laboratory Manager  
Laboratory ID # UST-008

Project: H & H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Soil

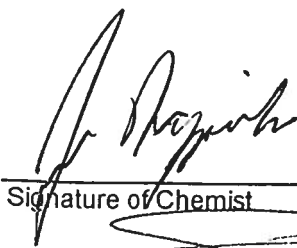
Service Request No.: AK990462  
Report Date: 6/7/99  
Report No.: 99046202  
C.O.C. No.: 03823

**Diesel Range Organics**  
**ADEC Method AK 102**  
**mg/kg(ppm)**  
**Dry Weight Basis**

Sample Name	Lab Code	Sample Date	Extraction Date	Analysis Date	Diesel Result	Surrogate Recovery O-Terphenyl
SP-1	462-1	5/20/99	5/25/99	6/3/99	6000 (a)	(b)
SP-2	462-2	5/20/99	5/25/99	6/3/99	5100 (a)	(b)
SP-3	462-3	5/20/99	5/25/99	6/3/99	3900 (a)	(b)
Lab Blank	462-MB	5/25/99	5/25/99	5/29/99	<25	93

(a) Result is from a 1:10 dilution.

(b) Not applicable due to the presence of interfering chromatographic peaks from elevated concentrations of target compounds which prevented determination of the surrogate.

  
Signature of Chemist

  
QA/QC Review



Project: H & H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Soil

Service Request No.: AK990462  
Report Date: 6/7/99  
Report No.: 99046203  
C.O.C. No.: 3823

**QC Data Report - Blank Spike Recoveries**  
**Diesel Range Organics**  
**ADEC Method AK 102**  
**mg/kg(ppm)**  
**As Received Basis**

<b>Sample Name:</b>	Lab Blank	<b>Spike Level</b>		<b>Percent Recovery</b>	<b>Blank Spike Duplicate</b>	<b>Percent Recovery (BSD)</b>	<b>Relative Percent Difference</b>
<b>Lab Code:</b>	462-MB	(mg/kg)	<b>Blank Spike</b>	(BS)			
Diesel:	<25	500	570	114	600	120	5
<b>Acceptance Limits:</b>	~	~	~	60%-120%	~	60%-120%	<20
<b>Extraction Date:</b>	5/25/99	~	5/25/99	~	5/25/99	~	~
<b>Analysis Date:</b>	5/29/99	~	5/30/99	~	5/30/99	~	~
<b>Surrogate Recovery:</b>							<b>Control Limits</b>
O-Terphenyl:	93%	~	136%	~	143%	~	60%-120%

ND Not Detected

Spike Source: ADEC Method AK 102 Diesel Blend (AEE Lot# 98-21-37-2)

Signature of Chemist

QA/QC Review



Project: H&H Contractors  
Project No.: 8-024-01243-1  
Project Manager: James Spontak  
Sample Matrix: Soil

Service Request No.: AK990462  
Report Date: 6/5/99  
Report No.: 99046201  
C.O.C. No.: 03823

QC Data Report - Duplicate Summary  
Diesel Range Organics  
ADEC Method AK 102  
mg/kg(ppm)  
Dry Weight Basis

Sample Name:	Batch QC	Sample	Relative
Lab Code:	459-1	Duplicate	Percent
Diesel:	230	220	4
	100	110	10

Acceptance Limits: ~ ~ <25

Sample Date: 5/20/99 5/20/99 ~  
Extraction Date: 5/25/99 5/25/99 ~  
Analysis Date: 5/28/99 5/29/99 ~

Surrogate Recovery: Control  
O-Terphenyl: (a) 148% Limits  
50%-150%

NA Not Applicable

(a) Not applicable due to the presence of chromatographic peaks from target and non-target compounds which prevented determination of the surrogate.

Signature of Chemist  
VQC Review



**AGRA Earth & Environmental Portland Chemistry Laboratory  
Sample Receipt Documentation Form**

Project: H. H. Contractors  
 SR No.: AK9900462  
 Date: 5/21/99  
 Time: 11:15  
 Temperature of Cooler Upon Receipt (Record to the Right):  
 Received By: SS

Cooler Temperatures		
4.4	3.9	3.5
2.3		1.5

**Section One: Shipping/Delivery Issues**

1. Method of Sample Delivery: <u>Fed Ex</u>			
2. Airbill or Courier Receipt Number: <u>808711971279</u>			
3. Is a copy of the airbill or courier receipt available to be placed in the job file?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA

**Section Two: Sample Custody Issues**

4. Are custody seals on the shipping container intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA
5. Is a COC or other sample transmittal document present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> NA
6. Is the COC complete?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA
7. Are the sample seals intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA
8. Does the COC match the samples received?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> NA

**Section Three: Sample Integrity Issues**

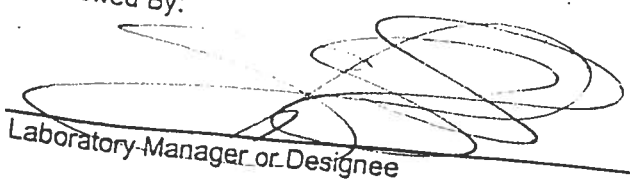
9. Are all sample containers intact and not leaking?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA
10. Are all samples preserved properly?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> NA
11. Are all samples within holding time for the required tests?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA
12. Were all samples received at the proper temperature?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA
13. Are samples for volatiles and other headspace sensitive parameters free of headspace or bubbles?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> NA

**Section Four: Sample Containers Received:**

14. 4 oz. glass jars: <u>10</u>	19. 2oz. amber (MeOH):
15. 8 oz. glass jars:	20. Encore samplers:
16. 40ml VOA vials:	21. 500ml plastic:
17. 1 liter glass:	22. 1 liter plastic:
18. Other (describe):	

\*Temperatures for: water and soil samples = 4°C-6°C, MeOH jars = 25°C, air = not required

Reviewed By:

  
 Laboratory Manager or Designee

# CHAIN OF CUSTODY

PROJECT <b>H 7 H CONTRACTORS</b>		PROJECT NO. <b>8-024-01243-1</b>		ANALYSIS REQUESTED (circle, check box or write preferred method in box)																		
CLIENT <b>H 7 H CONTRACTORS</b>		PHONE NO. _____																				
PROJECT MANAGER <b>J. SPONTAK</b>		PHONE NO. <b>(907) 479-7586</b>																				
SAMPLER'S NAME (please print) <b>KERL DEPALMA</b>		PHONE NO. _____																				
SAMPLER'S SIGNATURE <i>Kerl Depalma</i>		_____																				
SAMPLE I.D.	DATE	TIME	MATRIX	PRESERVATIVE	CONTAINERS No.	VOL.	BTEX by 5030 / 8015	GRPH by 5030 / 8015	DIPH by 3550 / 8100	AX 102	BTEX/GRPH Combo by 5030 / 8020-8015	TPH by 3550 / 418.1	Halogenated Volatiles by 5030 / 8010	WTPH-418.1 MODIFIED	Aromatics by 602	Polynuclear Aromatics by 610 or 8310	Total Halogens (TOX) by 9076	Total Metals by ICP AA	Purgeable Organics GC/MS by 8240 or 624	Base/Neu/Acid/Organics GC/MS by 625 or 8270	PCB by 8080	
1. SP-1	5/20/97	1050	S	chld	2	4mg			X													
2. SP-2	5/20/97	1105	L	↓	↓	↓																
3. SP-3	5/20/97	1115	L	↓	↓	↓																
4.																						
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						

SAMPLE RECEIPT <b>SEE SRD-1</b>		LABORATORY <b>PORT LAND</b>		TURNAROUND TIME		SPECIAL INSTRUCTIONS / ADDITIONAL COMMENTS	
TOTAL # CONTAINERS		SHIPPING I.D. / AIRBILL # <b>808 711971279</b>		<input type="checkbox"/> 8 HOUR <input type="checkbox"/> 24 HOUR <input checked="" type="checkbox"/> 2 WEEK <input type="checkbox"/> 2 WEEK (standard) <input type="checkbox"/> OTHER _____			
CONDITION OF CONTAINERS		CARRIER <b>FED EX</b>					
CONDITION OF SEALS		DOT DESIGNATION					
RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION	
1. <i>Kerl Depalma</i> AGRA		5/20/97		1200		1. <i>[Signature]</i> / AGA-EDX	
2.						2.	
3.						3.	
						DATE	
						TIME	





**APPENDIX D**

**SOIL TREATMENT LETTER**



# H. & H. Contractors Inc.

PHILLIPS FIELD ROAD P.O. BOX 60610 FAIRBANKS, ALASKA 99706  
PHONE: (907) 479-2235 FAX: (907) 479-2253

## UST Excavated Soil Remediation

During the excavation and removal of a 30,000 gallon fuel storage tank H&H Contractors was left with approximately 1500 tons of contaminated soil. After review it was decided to blend the soil with clean aggregate and a "Cutback" Asphalt(MC-30). The material would then be placed in the vehicular traffic area of the Asphalt Batch Plant in order to help contain the fugitive dust generated there.

After further study with asphalt cements it was determined that a Cationic Emulsified Asphalt would serve better than MC-30 for two reasons: MC-30 is reluctant to stick to the aggregate particles in the presence of moisture which would require heating the aggregate and soil blend in order to drive off the surface moisture. Heating through a drum dryer was not an option that H&H Contractors was willing to explore due to emission problems. Secondly, emulsions will work at much lower temperatures and therefore the mix could be placed during August when H&H Contractors had the equipment and manpower available. The decision was made to use a locally available product- CSS-1.

H&H Contractors developed a mix design using a blend of the excavated soil and a screened and crushed aggregate sized between  $\frac{3}{4}$ " and  $\frac{1}{2}$ ". By utilizing the aggregate blending system portion of the Asphalt Batch Plant a mixture of soil and rock(70/30) was fed to a pugmill. The CSS-1 was blended by volumetric metering and adjusted to obtain a mixture which adequately covered all the particles. Subsequent testing by H&H Technicians found this mixture to be approximately 5.2% emulsion by weight of total product.

The mixture was place at the traffic area by endump trucks. A grader then spread the mixture by working the material back and forth several times to "blend" the mixture before a finish depth of four inches was obtained. Compaction was accomplished by vibratory compactors.

