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SITE RECONNAISSANCE REPORT

LIME VILLAGE, ALASKA

DRAFT

Contract No. 18-5001-10
Project No. 22044

Prepared for:
Alaska Department of Environmental Conservation
Aboveground Storage Tank Program
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TABLE OF CONTENTS

Section **Page**

Tables

Figures

Appendices

ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
AST	aboveground storage tank
BEESC	Bristol Environmental & Engineering Services Corporation
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
DRO	diesel-range organic
F	Fahrenheit
GPS	global positioning system
GRO	gasoline-range organic
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
PAH	polynuclear aromatic hydrocarbon
PID	photoionization detector
ppm	parts per million
°	degree
′	minute
″	second

1.0 EXECUTIVE SUMMARY

1.1 Summary

The Alaska Department of Environmental Conservation (ADEC) tasked Bristol Environmental & Engineering Services Corporation (BEESC) with conducting a site reconnaissance at the following fuel tank farms in Lime Village, Alaska:

- Lime Village Traditional Council Tank Farm; and
- Iditarod Area School District Tank Farm.

The site reconnaissance was conducted October 12, 2001.

A sample in the area of the Lime Village Traditional Council Tank Farm contained diesel-range organic (DRO) concentrations that exceed cleanup levels. It is recommended to further investigate the soil at greater depths near and at the location of the fuel tanks. Additionally, collecting a groundwater sample should be attempted.

In the area of the Iditarod Area School District Tank Farm, samples collected from 5 feet below ground surface (bgs) in areas near the school and downhill from the tank farm contained DRO concentrations exceeding ADEC Method Two cleanup levels. Other areas near the tank farm that had reportedly contained high concentrations of DRO could not be accessed. Recommendations are made to examine the feasibility of collecting groundwater samples form the area; further evaluate the open area around the school at depths up to 5 feet and determine whether the contamination is localized; sample within the bermed area of the tank farm when the tanks are removed; and sample downhill from the tank farm when the area is cleared of building materials.

Preliminary testing of soils near the tank at the teacher housing indicates the potential presence of DRO in the soils, and that soil may not have been removed from the area. Additional sampling is recommended to confirm the status of any DRO contamination (soil and groundwater) in the area.

Analysis of water samples collected from the potable water sources indicates no DRO concentration is present at the method detection limit of 0.500 milligrams per liter (mg/L). The cleanup level for groundwater is 1.5 mg/L. No further sampling is recommended for the drinking water sources.

1.2 Introduction to Project

1.2.1 Project Manager

The BEESC project manager is Michael F. Torpy, P.E.

1.2.2 Field Personnel

Mr. Torpy and Larry Pederson conducted the site reconnaissance at Lime Village.

1.2.3 Logistics of Project

Several different air charter companies can be used to fly from Anchorage to Lime Village. The compressed calibration gas for the photoionization detector (PID) and the methanol for the

laboratory sample jars can be shipped with passengers on these flights. In Lime Village, short-term lodging is sometimes be available at the school. The school has some amenities, including a stove, refrigerator and freezer, and telephone. Food required for a stay in Lime Village should be included as part of the trip requirements. The Village Council has a four-wheeler and cart that was made available for rent during the site reconnaissance. Accommodations should be made in advance for any rental equipment and room requirements.

Loaded barges are not able to travel on the river to the city. Limited air transport is the limited means of shipping materials and equipment. The air runway is relatively short, and loads must be limited. Breakup at Lime Village generally occurs in April and May.

1.3 Objective of Investigation

1.3.1 Purpose

The purpose of the site reconnaissance at the City of Lime Village was to determine the potential for environmental contamination from fuel tank farms of the city. The objective was accomplished by gathering information through interviews and environmental sampling. The information from the site reconnaissance is used to develop an understanding of the potential extent of contamination and to assess the potential threat of the contamination to human health and the surrounding environment.

1.3.2 Work Plan

The work followed the work plan prepared in August 2001 for the site reconnaissance at City of Lime Village. The work plan included a Site Safety and Health Plan.

1.3.3 ADEC Cleanup Levels Used (and Justification)

Cleanup levels for the following sites are based on Method Two, in Title 18, Chapter 75, of the *Alaska Administrative Code*, as amended through October 28, 2000. The cleanup levels selected for Lime Village are based on Method Two, Under 40-Inch Zone migration to groundwater pathway. This selected method and its scenario are the most restrictive of the three scenarios included in Method Two. The selected method is appropriate for the physical conditions of the site, and may be used as an initial basis of comparison for evaluating the environmental conditions of the site. The Method Two cleanup levels are shown in Table 1-1.

Table 1-1 Method Two Cleanup Levels (mg/kg)

Cleanup Level in Milligrams per Kilogram (mg/kg)					
GRO	DRO	Benzene	Toluene	Ethylbenzene	Xylenes
300	250	0.02	5.4	5.5	78

DRO = diesel-range organic

GRO = gasoline-range organic

2.0 CITY SUMMARY

2.1 General Information

The information provided in this section was obtained from the Alaska Department of Community and Economic Development Web site (http://www.dced.state.ak.us/mra/CF_BLOCK.cfm). This information was last updated in 2001.

Lime Village is on the south bank of the Stony River, 50 miles southeast of its junction with the Kuskokwim River. The city is 111 air miles south of McGrath, 137 miles east of Aniak, and 185 miles west of Anchorage. It lies at approximately 61 degrees (°) 21 minutes (′) North Latitude, 155° 28′ West Longitude (Section 30, Township 015N, Range 034W, Seward Meridian). Lime Village is located in the Kuskokwim Recording District. The area encompasses 80.3 square miles of land and 2.2 square miles of water.

Lime Village was named for the nearby limestone hills. The earliest recorded settlement was in 1907, when Paul, Evan, and Zacar Constantinoff were year-round residents. People from nearby Lake Clark used the area for a summer fish camp. The 1939 U.S. Census called the settlement "Hungry Village." A Russian Orthodox chapel, Saints Constantine and Helen, was built in 1960. A state school was constructed in 1974.

Lime Village is a Denaina Athabascan Indian settlement practicing a subsistence lifestyle. There is no store in Lime Village. Salmon, moose, bear, caribou, waterfowl, and berries are used as food sources. Some seasonal work is available through U.S. Bureau of Land Management firefighting or trapping.

Water is drawn from Stony River, which flows northward past the community. The water is treated at the community well (Figure 2-1) and is available to users from a dispensing port on the outside of the community well building. Residents haul water from the generator shack. Sewage is disposed of in pit privies. The school and teacher's housing are connected to individual wells and septic systems, and are fully plumbed. A central electrical system was completed in March 1998. Since July 2001, an experimental hybrid solar-diesel electric generator has been in operation. Fuel oil is brought in for the school and clinic, although most residents use wood for heating.

Lime Village is dependent on small riverboats and airplanes for transportation. Because of the shallow water, barges cannot supply the community most of the year. When the river freezes, residents use dog teams and snow machines for ground travel. A 1,475-foot gravel runway just north of the city is owned and maintained by the state. Sky Vans are the largest aircraft able to land on the runway.

Lime Village is influenced by a continental climate. Temperatures range between -47° Fahrenheit (F) and 82° F. Precipitation averages 22 inches, with snowfall of 85 inches per year. The Kuskokwim and Stony rivers are ice-free from mid-June through October.

2.2 City Contacts

The following city contacts were made:

Anna Bobby, Lime Village Traditional Council City Administrator, (907) 526-5236

Joe Bobby, Power Plant Operator, (907) 526-5004

Beverly Campbell, School Principal, (907) 526-5112

Dave Shelborn, Iditarod Area School District Maintenance Manager, (907) 524-3035

Steve Stassel, Alaska Energy and Engineering, Inc., Project Manager, (907) 349-0100

2.3 Equipment in City

The equipment owned by the city includes a Bobcat, a 450C John Deere bulldozer, and a small grader.

2.4 Residents with 40-hour Training

One person has completed the 40-hour Hazardous Waste Operations and Emergency Response training. No individuals of Lime Village are known to be current in this training.

2.5 Buried Utilities

Utilities, including electricity and telephone connections, are above ground. The fuel distribution pipe from the schools tanks to the school building is buried; no other utilities are known to be buried.

2.6 Tank Farm Locations

The tank farm locations of Lime Village are shown in Figure 2-1

2.7 Water Supply Locations

The community potable water well is approximately 75 feet from the Stony River on the northeast edge of the city. Drinking water is hauled from the well to be used in the homes. The school receives its drinking water from a nearby well. The school well is located south of the school, and its use is limited because of high iron content. The water is treated with a physical chemical system. Groundwater near the school is believed to be approximately 30 feet bgs.

2.8 Landfill Location

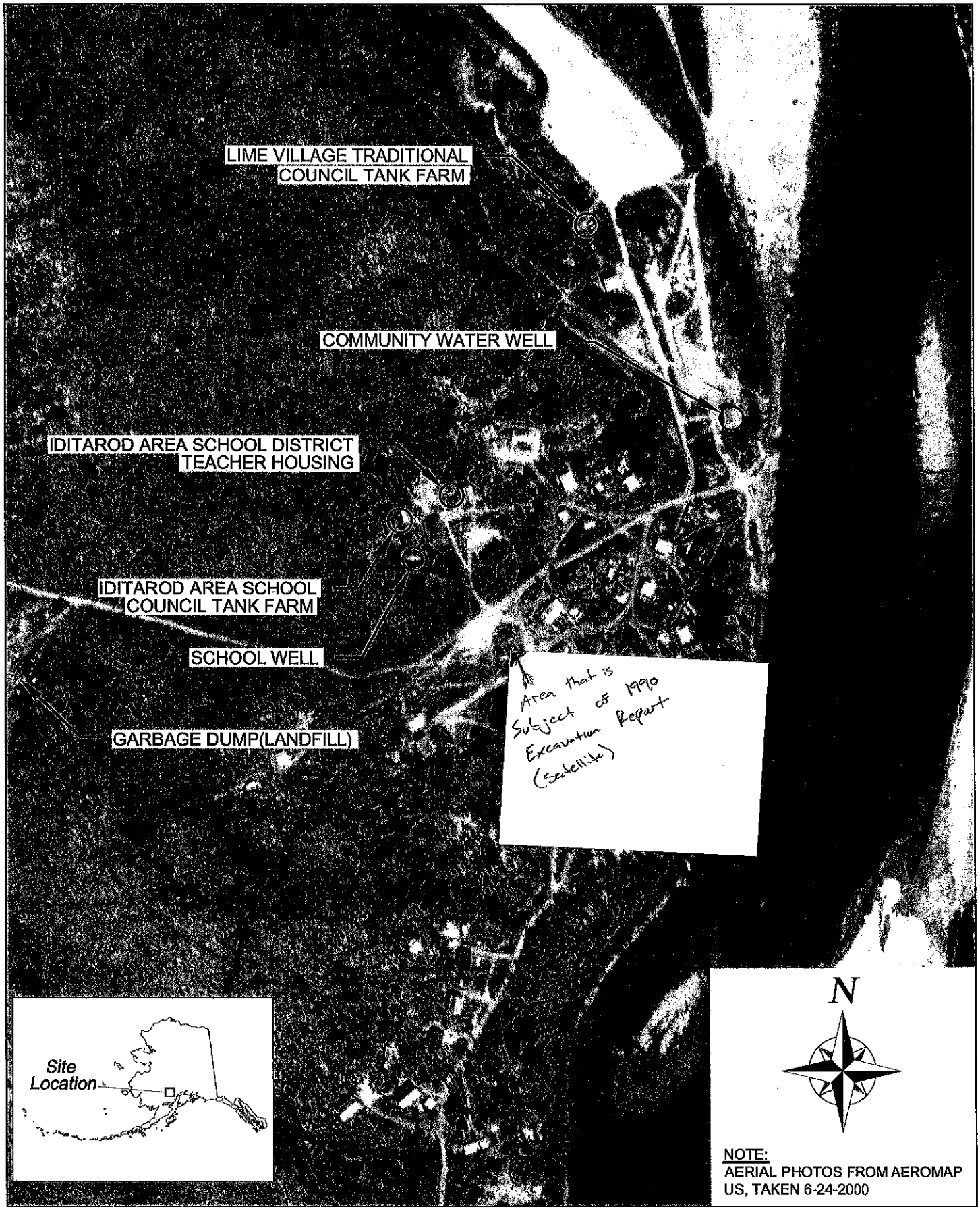
The landfill is located along an undeveloped road west of the city (Figure 2-1). The landfill is on private property, and the road leading to the area ends a short way beyond the landfill.

2.9 Source Material Site Locations

Gravel used to construct the airfield runway was taken from areas near the river, on the east side of the airport. The areas are not evident in the aerial photograph (Figure 2-1), but are reportedly visible after a rainstorm or snowmelt when they fill and become small ponds.

2.10 Subsistence and Recreational Areas

The Lime Village area is considered a subsistence and recreation area. The residents of the city hunt and fish essentially from their doorsteps, and many of the food-gathering activities may be considered recreational, subsistence, or both.



Bristol Environmental & Engineering Services Corporation Contract No: 18-5001-10	AERIAL PHOTO SITE INVESTIGATION LIME VILLAGE, ALASKA	Date: DEC 2001	FIGURE 2-1
		Drawn By: BP	Project No: 22044
		Checked By: MT	

3.0 SITE INFORMATION AND FINDINGS

The locations of the soil samples were selected by evaluating the condition of the tank farm and the slope of the terrain surrounding the tank farm. Locations where soil samples were collected for laboratory analysis were selected with the following approach:

- Judging where contamination may most likely travel from a fuel release, based on the site terrain;
- Identifying where obvious contamination is present (soil staining, odor, etc.) or would be most likely to have traveled downgradient from the tank farm;
- Locating a specific site or area, based on information from an interview; and
- Locating general areas from a previous site investigation reported by Environmental Health Sciences-Alaska, Inc., in 1994, *Lime Village Assessment.*

The physical site investigation consisted of walking around the tank farm and its surrounding area. Staining, slope of the surface, stressed vegetation, and the condition of the tank farm and its tanks were observed. In areas where the presence of contamination was believed to be possible, a metal detector was used to determine the absence of buried metal (and utility lines). After digging into the ground, the appearance of the soil was observed, and the PID meter was used in some areas to determine whether volatile hydrocarbons could be detected.

In locations having the highest likelihood for potential contamination, a soil sample was collected and its odor was evaluated. Under other conditions, use of a PID meter was planned; however, during the site reconnaissance, the meter was rendered dysfunctional. The PID failure was attributed to freezing or other conditions that could not be adjusted. PetroFlag assays were used to evaluate the petroleum content of the soils. The soils to be submitted for laboratory analysis samples were placed into the appropriate glass jars, labeled, and kept within eyesight during the site investigation. The soils were prepared for shipment under chain of custody, and were transported to CT&E Analytical Laboratory in Anchorage, Alaska, for analysis. No attempt was made to maintain the samples on ice.

As a matter of record, the location of some sample sites was recorded from a hand-held global positioning system (GPS) unit. The averaging function was used, and at least 100 counts were made before the position was recorded. The accuracy of the data was read from the GPS unit and recorded in the field notes (Appendix B).

Typical sampling included exposing a soil sample area by removing any snow and vegetation cover with a shovel, then using a hand auger to reach a particular soil depth. In some cases, a deeper sample could not be collected; for example, when large rocks or bedrock were encountered and when loose gravel collapsed into the sample hole.

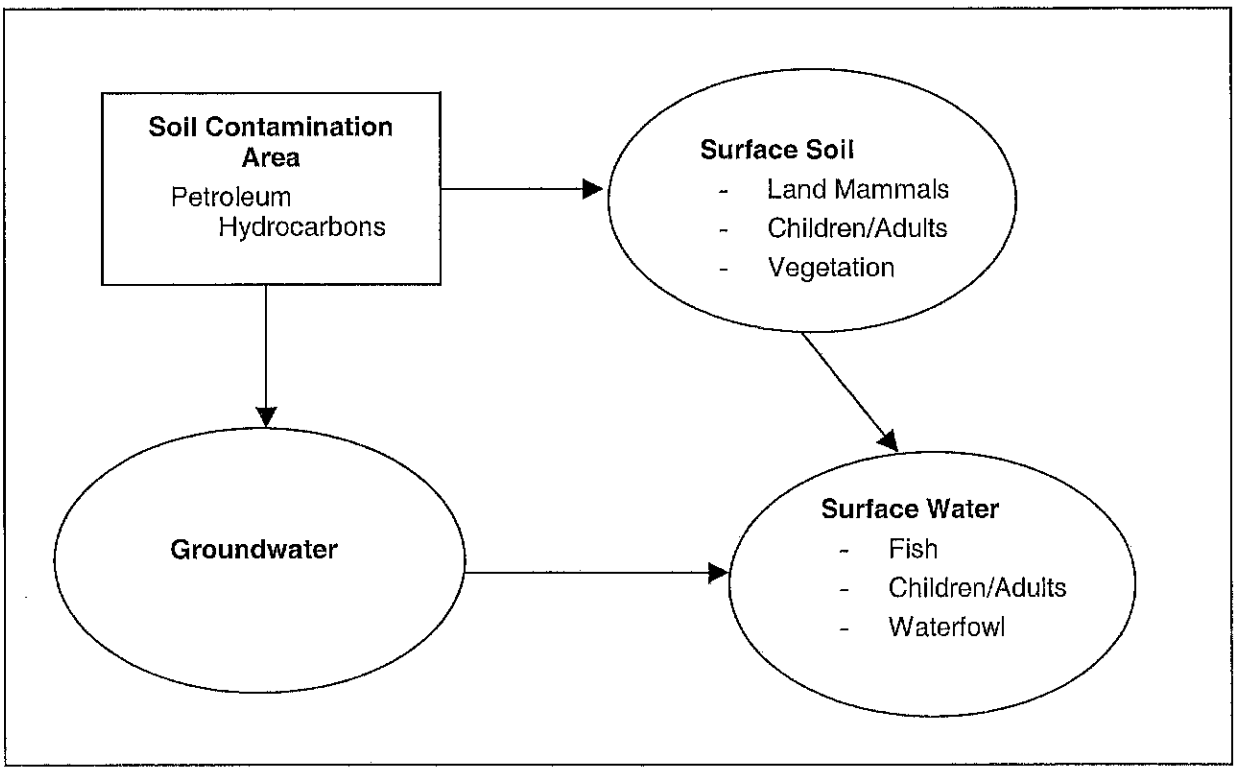
The records of activities associated with this site reconnaissance are provided in the photographs in Appendix A. Copies of the field notes are provided in Appendix B. Appendix C contains the chain-of-custody form for the samples and the analytical report. Appendices D and E (transcripts of meetings with city authorities and summary of injuries, accidents, and incidents) are not used.

The site reconnaissance at Lime Village was conducted on October 12, 2001. A few inches of snow was on the ground during the visit, but the ground had not started to freeze, allowing relatively routine retrieval of soil samples.

The houses of Lime Village are built on a hill overlooking the Stony River toward the east. The area is surrounded with evergreen and deciduous trees, and is underlain by glacial till and discontinuous permafrost. Several established paths in the area are used for pedestrian and four-wheeler traffic. None of the paths appear to be constructed with imported fill material. The airfield runway, which lies at the base of a hill between the Stony River on its east side and a slough to the west, is made of constructed material. The slough drains to the river at its north end near the north end of the runway, and reportedly floods during the spring, completely covering the vegetation of the slough.

A general conceptual site model shown in Figure 3-1 identifies the potential fate of any contaminants in the area. In general, surface and groundwater contaminants of Lime Village tank farms would eventually reach Stony River, located at the base of the hills on which Lime Village is built and adjacent to the air runway. The tanks near the airport are at approximately the same elevation as the river, and are separated from the river by the airport road on its east side. Migration of contaminants would eventually reach the river where exposure of fish and wildlife to the contaminant could cause secondary exposure to human health and the environment. Under specific conditions, other potential routes of exposure to contaminants in Lime Village could include inhalation of volatile contaminants and ingestion of surface soil contaminants such as berries and other foods.

Figure 3-1 General Site Conceptual Model for the Lime Village Tank Farm Sites



3.1 Lime Village Traditional Council Tank Farm

3.1.1 Site Description

Located at GPS coordinates North 61° 21′ 25.4 seconds (″) West 155° 26′ 10.1″, the Lime Village Traditional Council Tank Farm (Figure 2-1 and Photograph 2) is at an open area near the southwest end of the runway and adjacent to the road from the runway leading to the village. Five fuel tanks are staged in a flat, unlined area at an elevation lower than the runway, and slightly higher than the nearby slough northwest of the fuel farm area. Figure 3-2 shows the tank farm area and describes the colors of each tank. For purposes of this report, the tanks are labeled by color or by both color and number, shown in Figure 3-2, to provide a method of discussion. With the possible exception of the yellow tank, the tanks are likely single walled, rest on or near the ground, and are braced on their sides with dimension lumber. The yellow tank and the two red tanks are mounted on skids. Tank red-3 is reportedly a gasoline tank; the others are diesel tanks. The diesel tanks do not appear to be connected, and likely are operated as separate tanks.

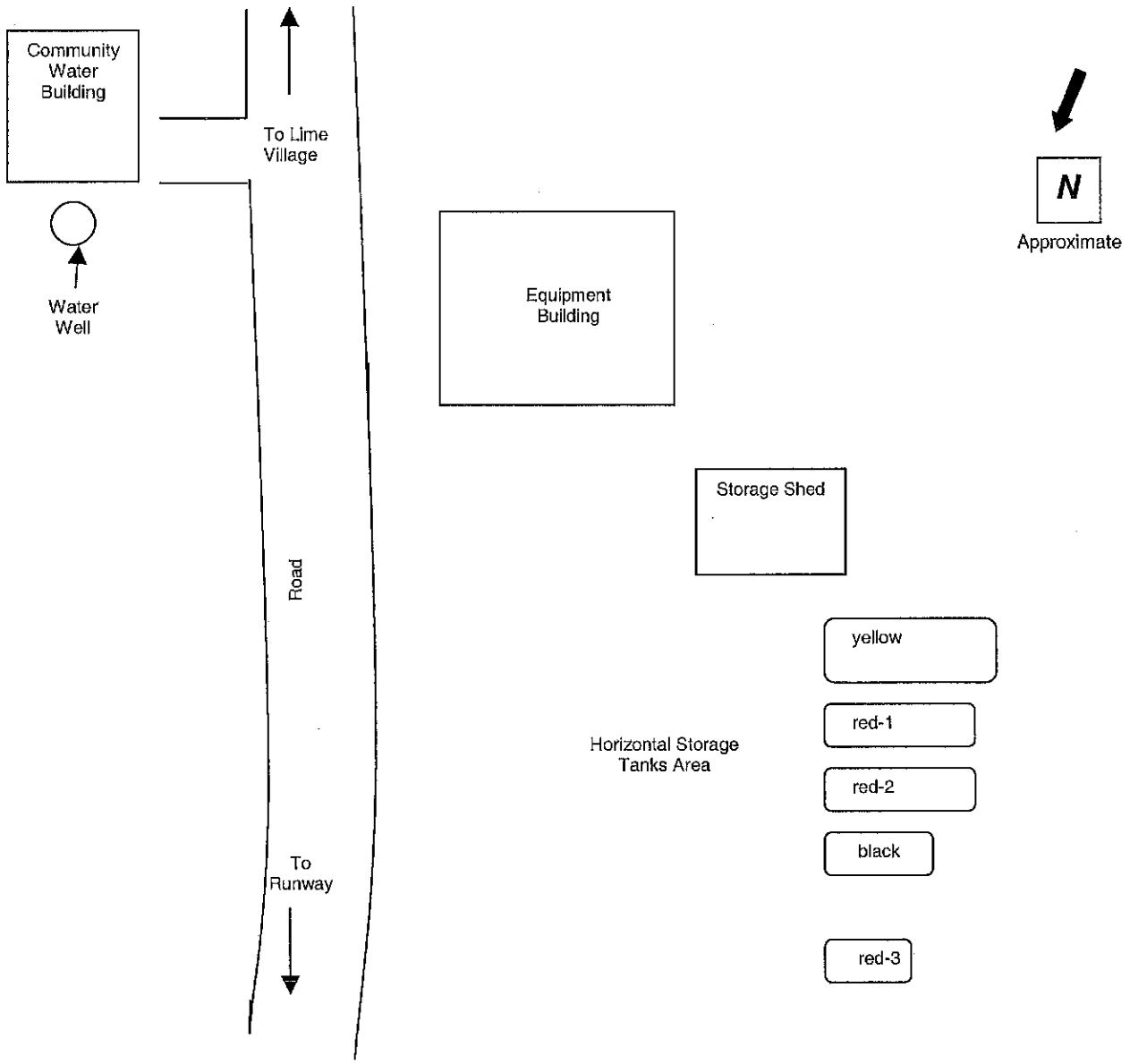
3.1.2 Site Reconnaissance

The site was covered with less than one-quarter foot of snow at the time of the site reconnaissance, and standing water could be seen in the slough northwest of the tank farm area. The area had no significant vegetative growth, and is probably barren because of motor traffic. The soil is primarily a sandy type of material containing rounded beach rock. Surface water of the nearby slough was approximately 5 feet lower than the elevation of the tank area, and is assumed to be the same level as the groundwater of the area. Three 55-gallon drums of unknown content were resting upright on the ground near the area. The drums were covered with secured tops.

Soil Sample Collection. Several samples were collected from the area to evaluate their potential for contamination. Some samples were evaluated with a PID meter, and some were analyzed with a PetroFlag kit to measure total petroleum hydrocarbon material of the soil. The nature and location of the samples collected for laboratory analysis are described below.

> **Sample LMV-S-01** was collected from a depth of approximately 2 feet bgs at a location approximately 10 feet northeast of tank red-1. The soil was sandy with beach rock and had a PID reading of 16.5 parts per million (ppm). Additional samples were collected in the area at approximately the same depth. Two samples–one taken approximately 20 feet from tank red-1 and the other from within 3 feet of the gasoline red-3 tank–had PID readings of zero ppm.

Figure 3-2 Layout of the Lime Village Traditional Council Tank Farm



Note: Figure is not to scale.

Sample LMV-S-02 was collected from a depth of approximately 3 feet bgs at a location approximately 15 feet west of tank red-3. This area is along a footpath that leads to the equipment shed, and is the natural drainage path for any surface runoff from the tank farm area. West of the area is a natural drainage area that leads to the south end of the slough.

Sample LMV-S-03 was collected along the same footpath as sample LMV-S-002, but west of the yellow tank. The depth of the sample was approximately 3 feet bgs.

Sample LMV-S-04 was collected along the same footpath as sample LMV-S-002, but approximately 50 feet south and 30 feet west of the yellow tank. The depth of the sample was approximately 3 feet bgs.

Sample LMV-S-05 was collected southeast of the yellow tank. The depth of sample was approximately 2 ft. bgs.

3.1.3 Laboratory Analytical Results

The results of analysis are summarized in Table 3-1.

Table 3-1 Sampling Results for the Lime Village Traditional Council Tank Farm Area

Sample Number	GPS Coordinates	Sample Core Depth (feet)	PID Reading (ppm)	PetroFlag Reading (ppm)	GRO (mg/kg)	DRO (mg/kg)	BTEX (mg/kg)
LMV-S-01	North 61° 21' 25.4" West 155° 26' 10.1"	2	16.5	192	NA	683	NA
LMV-S-01-d	-- (~ 4 feet north of red-3 tank)	2	--	130	--	--	--
LMV-S-02	--	2	0	0	U (3.46)	10.7	Benzene: U (0.0173) Toluene: U (0.0693) Ethylbenzene: U (0.0693) p,m-Xylenes: U (0.0693) o-Xylenes: U (0.0693)
LMV-S-03	--	2-3	--	--	U (2.89)	U (10.7)	Benzene: U (0.0144) Toluene: U (0.0693) Ethylbenzene: U (0.0577) p,m-Xylenes: U (0.0577) o-Xylenes: U (0.0577)
LMV-S-04	North 61° 21' 24.7" West 155° 26' 10.1"	2-3	--	--	U (3.03)	U (11.0)	Benzene: U (0.0151) Toluene: U (0.0605) Ethylbenzene: U (0.0605) p,m-Xylenes: U (0.0605) o-Xylenes: U (0.0605)
LMV-S-05	--	2-3	--	--	NA	U (10.5)	NA

-- = not applicable
BTEX = benzene, toluene, ethylbenzene, and xylenes
DRO = diesel-range organic
GRO = gasoline-range organic
mg/kg = milligrams per kilogram
NA = not analyzed
ppm = parts per million
U (###) = undetected at the limit value amount

3.1.4 Discussion and Conclusions

The Lime Village Traditional Council Tank Farm site generally consists of a porous material that could provide a vertical route to groundwater for small or intermittent fuel spills. Sampling indicated that the horizontal migration of any fuel spills is limited or non-detected. The limited presence of DRO in some samples may be the result of small local spills. One sample, LMV-S-01, was found to have a DRO concentration exceeding the ADEC Method Two cleanup level. No groundwater samples were collected during the site reconnaissance to determine potential presence of groundwater contamination.

From the findings of observations about conditions of the site and the results of analyses, it is recommended that two groundwater monitoring wells be installed in the vicinity of the tank farm to determine whether groundwater contamination has occurred. One well should be placed east of the tank farm in an area within 20 or 30 feet of tank red-1; the other should be placed near the slough, downgradient from the tank farm. Soil in the area near tank red-1 should be removed, and the remaining soil in the excavated area should be tested to confirm

that the soil exceeding soil cleanup levels has been removed. The excavation should be backfilled with clean soil. Because the soils are sandy and full of cobble material, well installations will probably require use of a backhoe to remove an excess of soil before the groundwater is reached. If no groundwater contamination is identified, the wells should be decommissioned.

In the event that monitoring wells cannot be properly installed, an excavation should be made at a location downgradient from the tank farm, then a soil sample collected near the groundwater level. If DRO is identified, it may be assumed groundwater is impacted.

It is also recommended that any construction activities in the area include a contingency for removing other minor amounts of soil directly beneath the tanks, in case localized contamination is encountered. If the monitoring wells are installed before the tanks are removed, it is recommended that soils immediately adjacent to the tanks be sampled to determine whether contamination is present.

Table 3-2 summarizes the recommendations and rationale for any additional sampling.

Table 3-2 Future Sampling Rationale for the Lime Village Traditional Council Tank Farm

Sample Media	Location	Rationale or Action
Groundwater	Downgradient from suspected source area	Install two monitoring wells, sample, and test for DRO. Decommission if tests indicate no contamination.
Surface Soil	Various locations within the tank farm	No sampling is recommended.
	Area surrounding tanks area	No additional sampling is recommended.
Subsurface Soil	Soils surrounding area	Confirmation sampling after soil in front of tank red-1 has been removed.
	Soils of tanks area	Assay of area beneath tanks. Determine presence at depth.
Surface Water	Downgradient from suspected source area (Stony River slough)	No sampling recommended.

3.2 Iditarod Area School District Tank Farm

3.2.1 Site Description

Located at GPS coordinates North 61° 21′ 18.7″ West 155° 26′ 13.1″, the Iditarod Area School District Tank Farm site (Figure 2-1 and Photographs 3 and 4) consists of three horizontal tanks in a bermed area adjacent to (approximately 50 feet from) the Lime Village School. The general tank farm area includes the school building, located downhill to the west of the tank farm, and a generator shack, located near the base of the tank farm, downhill and west of the tank farm (see Figure 3-3). The foundation of the generator shack is nearly the same as that of the school's.

The soil is a silt/sandy-like material with few rocks and cobble material. The tank farm berm surrounding the horizontal tanks appeared to consist of native soil. The tanks appeared to be stabilized with by placed lumber. The tank farm had no apparent liner. During the site reconnaissance, temperatures were estimated to be near 25° F to 30° F, and less than a quarter foot of snow covered the ground. Generally, the area around the school was clear of vegetation. The area between the tank farm and the generator shack was filled with building materials.

3.2.2 Site Reconnaissance

The contacts for the site reconnaissance were Fred Bobby, former school custodian; Beverly Campbell, Teacher and Principal of the School; and Mr. Campbell, current school custodian.

Fuel leaks are known to have occurred at the site, and are reportedly related primarily to broken piping that could be observed in the crawlspace beneath the school building (Photograph 5). Upon examination of the leak repair, staining and odor in the crawlspace were evident. The area north of the school is a gathering place and play area for the community's children, and is

the main area of pedestrian traffic for the students attending school and congregating about the school.

Soil Sample Collection. Several soil samples were collected in the area downhill from the tank farm and around the school area. A PID to be used for evaluating the soil was dysfunctional, possibly because of freezing conditions, and could not be used to evaluate the soil. The odor of the soil samples collected at various depths was recorded in the field notebook, and several samples were collected along the length of the soil column to gain an understanding of potential contamination with depth of soil. The location of each soil sample is described below, and is depicted in Figure 3-3.

Sample LMV-S-06 was collected at approximately 5 feet bgs in the area between the generator shack and the tank farm, near the southeast corner of the tank farm. A sample was also collected at 2 feet bgs for use in a PetroFlag assay.

Sample LMV-S-07 was collected at approximately 5 feet bgs near the northwest corner of the school, on the west side of the building.

Sample LMV-S-08 was collected at approximately 5 feet bgs near the northwest corner of the school, on the north side of the building in front of the crawlspace door. A sample was also collected at 2 feet bgs for use in a PetroFlag assay.

Sample LMV-S-09 was collected at approximately 4 feet bgs near the northeast corner of the school, on the north side of the building. A sample was also collected at 2 feet bgs for use in a PetroFlag assay.

Sample LMV-S-10 was collected at approximately 5 feet bgs directly in front (east) of the generator shack. A sample was also collected at 2 feet bgs for use in a PetroFlag assay.

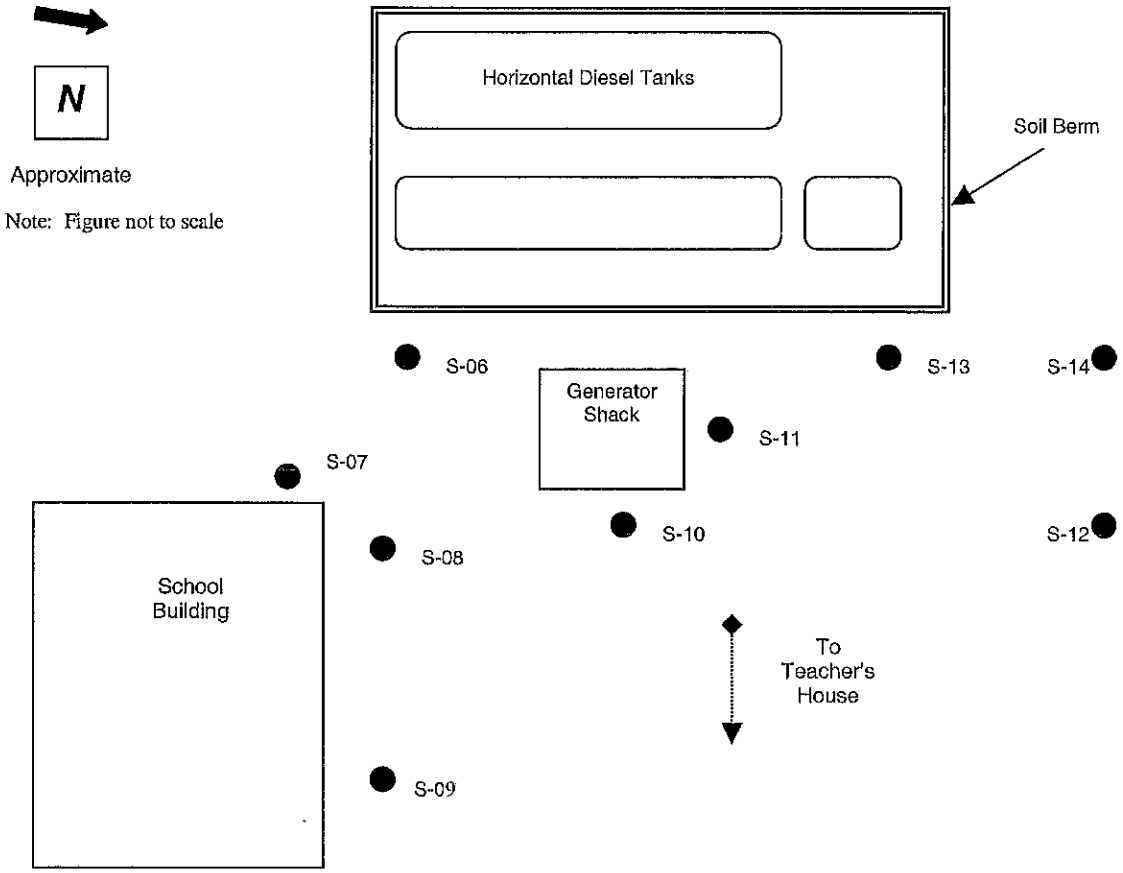
Sample LMV-S-11 was collected at approximately 5 feet bgs near the middle of the north side of the generator shack.

Sample LMV-S-12 was collected at approximately 5 feet bgs, approximately 10 feet north of the northeast corner of the generator shack and downhill from the east side of the tank farm.

Sample LMV-S-13 was collected at approximately 4 feet bgs, near the northeast corner of the tank farm, on its east side. A sample was also collected at 2 feet bgs for use in a PetroFlag assay.

Sample LMV-S-14 was collected at approximately 2 feet bgs, approximately 10 feet north of the northeast corner of the tank farm. It was used for a PetroFlag assay.

Figure 3-3 Layout of the Iditarod Area School District Tank Farm Area



3.2.3 Laboratory Analytical Results

Tables 3-3 and 3-4 summarize the results of laboratory analysis. Table 3-3 also provides field analysis results.

Table 3-3 DRO and PetroFlag Sampling Results for the Iditarod Area School District Tank Farm

Sample Number	GPS Coordinates	Sample Core Depth (feet)	Odor Detected?	PetroFlag Reading (ppm)	DRO (mg/kg)
LMV-06	North 61° 21' 18.7" West 155° 26' 13.1"	5	Slight	--	14.2
LMV-S-07	--	5	No	--	U (11.8)
LMV-S-08	--	5	Strong at 2 ft., relatively strong at 5 ft. bgs	2,112 (at 2 feet bgs)	2,380
LMV-S-09	--	4	Slight odor at 2 ft.; no odor at 4 ft. bgs	8	U (12.0)
LMV-S-10	--	5	Strong odor at 2 ft. and 4 ft. bgs.	NA	2,840
LMV-S-10a	--	2	Strong odor at 2 ft. and 4 ft. bgs.	Error (2 feet bgs)	NA
LMV-S-11	--	5	Very strong odor at 5 ft. bgs.	Error (2 feet bgs)	NA
LMV-S-012	--	5	Slight odor at 5 ft. bgs	565 (5 feet bgs.)	143
LMV-S-013	--	4	Slight odor at 2 ft. bgs, slight to no odor at 4 ft. bgs.	--	U (11.6)
LMV-S-014	--	2	Slight to no odor	Error	NA

-- = no reading recorded

DRO = diesel-range organic

Error = interference in the method, or the detection limit is beyond 10,000 ppm of the constituents it measures

NA = data is not available

mg/kg = milligrams per kilogram

ppm = parts per million

U (###) = undetected at the limit value amount

Table 3-4 Polynuclear Aromatic Hydrocarbon (SIM) Sampling Results for the Iditarod Area School District Tank Farm

Sample Number	Analytical Results in Micrograms per Kilogram (µg/kg)															
	Naphthalene	Acenaphtylene	Acenaphthene	Fluorine	Pyrene	Benzo[b]Fluoranthene	Phenanthrene	Anthrecene	Fluoranthene	Benzo(a)Anthracene	Chrysene	Benzo[k] Fluoranthene	Benzo[a]Pyrene	Indeno[1,2,3-c,d]Pyrene	Dibenzo[a,h]Anthracene	Benzo[g,h,i]Perylene
LMV-S-06	U (65.6)	U (65.6)	U (65.6)	U (65.6)	U (65.6)	U (65.6)	U (65.6)	U (65.6)	U (65.6)	U (65.6)	U (65.6)	U (65.6)	U (65.6)	U (65.6)	U (65.6)	U (65.6)
LMV-S-07	U (71.4)	U (71.4)	U (71.4)	U (71.4)	U (71.4)	U (71.4)	U (71.4)	U (71.4)	U (71.4)	U (71.4)	U (71.4)	U (71.4)	U (71.4)	U (71.4)	U (71.4)	U (71.4)
LMV-S-08	U (71.9)	U (71.9)	U (71.9)	U (71.9)	U (71.9)	U (71.9)	U (71.9)	U (71.9)	U (71.9)	U (71.9)	U (71.9)	U (71.9)	U (71.9)	U (71.9)	U (71.9)	U (71.9)

U (###) = Undetected at the limit value amount

3.2.4 Discussion and Conclusions

Nearly all of the samples collected from the Iditarod Area School District Tank Farm area had a distinct petroleum odor as soil was removed along the length of the soil column. Soil in the school crawlspace had distinct staining and petroleum odor, which reportedly has diminished over time. An evaluation of the analytical results indicates that the area of the tank farm east of the generator shack and immediately north of the school (samples LMV-S-008 and LMV-S-009) contains DRO concentrations exceeding ADEC Method Two cleanup levels of 250 milligrams per kilogram (mg/kg). Most of the samples were collected at approximately 5 feet bgs and were submitted for laboratory analysis of DRO. Three of the samples were also analyzed for polynuclear aromatic hydrocarbon (PAH) content. As indicated in Table 3-4, the soil contains no detectable concentrations of PAH compounds. Samples collected at an intermediate depth of 2 feet bgs and analyzed with a PetroFlag kit indicated the presence of petroleum material in the samples.

The analytical results indicate that contamination exceeding ADEC Method Two soil cleanup levels for DRO contamination is found at depths of at least 5 feet bgs in the area north of the southwest corner of the building and immediately east of the generator shack. Further, the presence of odor in the soils and the results of PetroFlag assays indicate there is petroleum contamination near the ground surface and extending to at least 5 feet bgs.

It is recommended that additional sampling be performed in the area north of the school and east of the generator shack, to identify the extent of contamination and the depth at which the contamination exceeds cleanup levels. The samples should be analyzed for DRO. It is also recommended that additional soil sampling and laboratory analysis be performed after the tank

farm is decommissioned to evaluate the DRO concentrations in soil beneath the tank farm area. Site reconnaissance sampling of areas downgradient and near the tank farm indicated relatively minor DRO concentrations near the southeast corner of the tank farm. No detectable DRO was found at the northeast corner of the tank farm. Because a previous study indicated that DRO contamination was present in the area between the generator shed and the existing tank farm, this area should also be sampled when it is cleared.

Soils in the crawlspace that are more stained or odorous soil should be removed, and the remaining soil should be covered with an impermeable liner to prevent vapors from entering the school. The liner should be covered and the excavated area should be backfilled with clean soil and filled to original grade. The removed soil should be placed in 55-gallon drums and kept covered and secured until it can be tested and properly disposed of. Any removal of soil from the crawl space must consider its effects to the integrity of the structure's foundation.

An attempt should be made to install groundwater monitoring wells and determine whether groundwater contamination has occurred. Use of a motor-driven hand auger may be feasible, depending on the geology of the site beyond 5 feet bgs, and depending on the actual depth to groundwater. The logs from installing the school drinking water well should be examined before plans are made for installing the monitoring wells.

On the basis of information in the site conceptual model shown in Figure 3-1, field observations, results of analyses, and previous reports of the site, Table 3-5 summarizes sampling recommendations.

Table 3-5 Future Sampling Rationale for the Iditarod Area School District Tank Farm

Sample Media	Location	Rationale or Action
Groundwater	Downgradient from suspected source area	An effort should be made to identify depth of groundwater from drilling logs of the school water well. No groundwater was encountered at 5 feet bgs. Groundwater may be 30 feet bgs.
Surface and Subsurface Soil	North of the school and east of the generator shack	Contaminants are possibly leaching from surface soil into groundwater. Define lateral and vertical extent of contamination for purpose of potential remedial activities.
Surface Water	Surface water is Stony River and slough.	No sampling is warranted or recommended.

3.3 Iditarod Area School District–Teacher Housing

3.3.1 Site Description

Located downhill from the school area, the Teacher Housing area of the Iditarod Area School District consists of an open area west of the school teacher's house (Figures 2-1 and 3-3 and Photograph 6). Although this area was not intended to be part of the site reconnaissance, samples from this area were collected and analyzed with the PetroFlag kit to provide a preliminary indication of the condition of the soils. It was reported that a tank in the area had

been removed and that the soil beneath the tank also had been removed. Other information indicated the soil has not been removed. A previous investigation (Environmental Health Sciences-Alaska, Inc., 1994, *Lime Village Assessment*) indicated that two soil samples of the area had DRO concentrations that exceeded the 250-mg/kg cleanup level. According to the report, several samples had been collected at approximately 4 feet bgs and were evaluated with a PID. Two samples with the highest PID readings were analyzed for DRO, and the results indicated DRO concentrations of 554 mg/kg and 2,880 mg/kg.

3.3.2 Site Reconnaissance

A single fuel tank is located approximately 20 feet west of the teacher's house. The tank is placed on a liner and is surrounded by a relatively shallow berm. The area west of the house where the tank is located has a slope toward the house. During the site reconnaissance, the area was covered with less than a quarter foot of snow. It was evident from clearing some of the snow in the area that the ground is lacking vegetation. Sampling was conducted in the area, and the samples were analyzed with the PetroFlag kit. The fuel line connecting the tank to the house is above ground, and is supported by what appeared to be logs placed upright beneath the pipe. The open area west of the house is continuous with the open area north of the school and east of the generator shack that is part of the school tank farm. There are no physical barriers between the teacher house and the school. The areas east, west, and south of the house are downhill from the house.

The contacts for the site was Mr. Campbell, the school custodian, who had only recently arrived in the community, and Fred Bobby, Vice-President of the Lime Village Traditional Council and a previous custodian for the school.

Soil Sample Collection. The soil samples collected from the area are described below.

> **Sample LMV-S-15** was collected from a depth of approximately 2 feet bgs on the south side of the fuel line, midway between the tank and house. The soil was a silt-like material with a minor amount of cobble or rocks. The sample had no petroleum odor and was analyzed with a PetroFlag kit.
>
> **Sample LMV-S-16** was collected from a depth of approximately 2 feet bgs on the north side of the fuel line, midway between the tank and house. The soil was a silt-like material with a minor amount of cobble or rocks. The sample had no petroleum odor and was analyzed with a PetroFlag kit.

3.3.3 PetroFlag Assay Results

The results of the soil assays for the site are summarized in Table 3-6.

Table 3-6 Sampling Results for the Iditarod Area School District Teacher Housing Tank Area

Sample Number	Sample Core Depth (feet)	Petroleum Odor Detected?	PetroFlag Reading (ppm)	DRO (mg/kg)
LMV-S-015	2	No	25	NA
LMV-S-016	2	No	7	NA

DRO = diesel-range organic
mg/kg = milligrams per kilogram
NA= not analyzed
ppm =parts per million

3.3.4 Discussion and Conclusions

The results of the PetroFlag assay indicate a residual petroleum concentration may be present at a depth of 2 feet bgs. On the basis of these preliminary results and uncertainty about the fate of the soil at the site, it is recommended that additional sampling be performed around the area at a depth of 4 to 5 feet bgs to more completely evaluate the condition of the soils and determine whether soils of the area exceed DRO cleanup levels. Table 3-7 provides rationale for additional sampling.

Table 3-7 Future Sampling Rationale for the Iditarod Area School District Teacher Tank Area

Sample Media	Location	Rationale or Action
Groundwater	In area of previously identified contamination.	Evaluate possibility of installing a monitoring well. Determine if groundwater has been impacted.
Surface and Subsurface Soil	Areas in tank area, downhill from tank, and near teacher's house.	Sample and analyze for DRO at various depths throughout area.
Surface Water	Downgradient from suspected source area	No sampling warranted or recommended.

3.4 Potable Water Well Sampling

Individuals of the community requested that the drinking water wells be tested to confirm that DRO is not present in the drinking water. Both drinking water wells were sampled and analyzed for DRO.

3.4.1 School Water Well

A water sample from the sink tap within the school was collected and submitted for analysis. The results of analysis indicate that DRO was not detected at the method detection limit of 0.500 mg/L.

3.4.2 Community Water Well

A sample from the dispenser of the community water well on the northwest side of the building was collected and analyzed. The results of analysis indicate that DRO was not detected at the method detection limit of 0.500 mg/L. The ADEC Groundwater Cleanup Level for DRO are 1.5 mg/L.

4.0 SUMMARY OF SITE FINDINGS

Table 4-1 summarizes pertinent information for the three sites in Lime Village where site reconnaissance activities were performed.

Table 4-1 Site Summaries

Site Name	Status	Owner/Operator	Spill Summary	Identified Spills and Observations	Point of Contact and Phone Number
Lime Village Traditional Council Tank Farm	Active	Lime Village Traditional Council	Incidental spills possibly detected. Deeper (greater than 2 to 3 feet) contamination was not evaluated.	Spills of DRO and GRO identified in previous study.	Anna Bobby, President, Traditional Council, (907) 526-5236
Iditarod Area School District Tank Farm	Active	Iditarod Area School District	Spill in school crawlspace. Other spills from tank farm noted in previous investigation.	Spill of DRO and identified in previous study.	Dave Shelborn, Iditarod Area School District Maintenance Manager, (907) 524-3035
Iditarod Area School District Teacher Tank	Active	Iditarod Area School District	Previous study indicated likely spill. Preliminary data indicate contaminated soil may not have been removed.	Spill of DRO and identified in previous study.	Dave Shelborn, Iditarod Area School District Maintenance Manager, (907) 524-3035

5.0 SUMMARY OF ASSESSMENT AND REMEDIATION RECOMMENDATIONS

Samples in the area of the Lime Village Traditional Council Tank Farm contained DRO concentrations that exceed cleanup levels. Recommendations are made to further investigate the soil at greater depths near and at the location of the fuel tanks. Additionally, collecting a groundwater sample should be attempted.

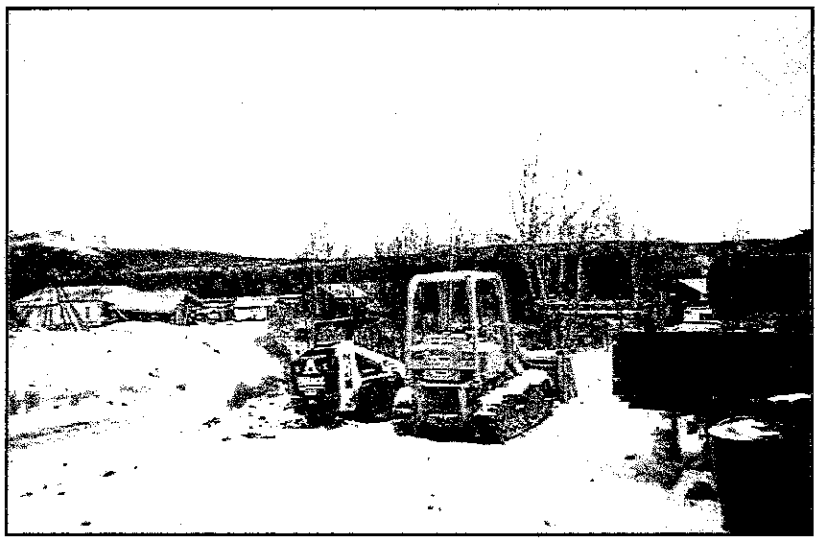
In the area of the Iditarod Area School District Tank Farm, samples collected from 5 feet bgs in areas near the school and downhill from the tank farm contained DRO concentrations exceeding ADEC Method Two cleanup levels. Other areas near the tank farm that had reportedly contained high concentrations of DRO could not be accessed. Recommendations are made to examine the feasibility of collecting groundwater samples form the area; further evaluate the open area around the school at depths up to 5 feet and determine whether the contamination is localized; sample within the bermed area of the tank farm when the tanks are removed; and sample downhill from the tank farm when the area is cleared of building materials.

Preliminary testing of soils near the tank at the teacher housing indicates the potential presence of DRO in the soils, and that soil may not have been removed from the area. Additional sampling is recommended to confirm the status of any DRO contamination (soil and groundwater) in the area.

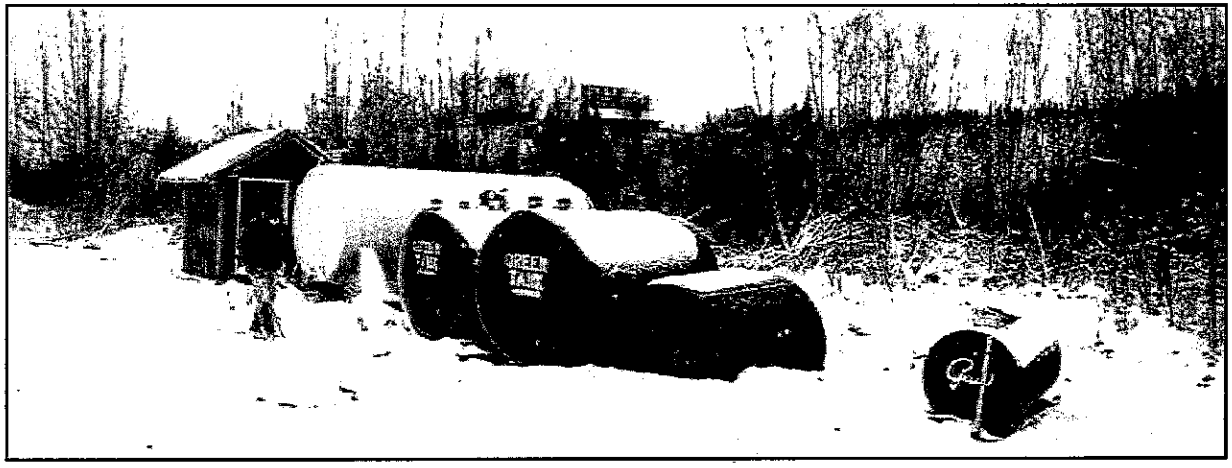
Analysis of water samples collected from the potable water sources indicates no DRO concentration is present at the method detection limit of 0.500 mg/L. The cleanup level for groundwater is 1.5 mg/L. No further sampling is recommended for the drinking water sources.

Appendix A

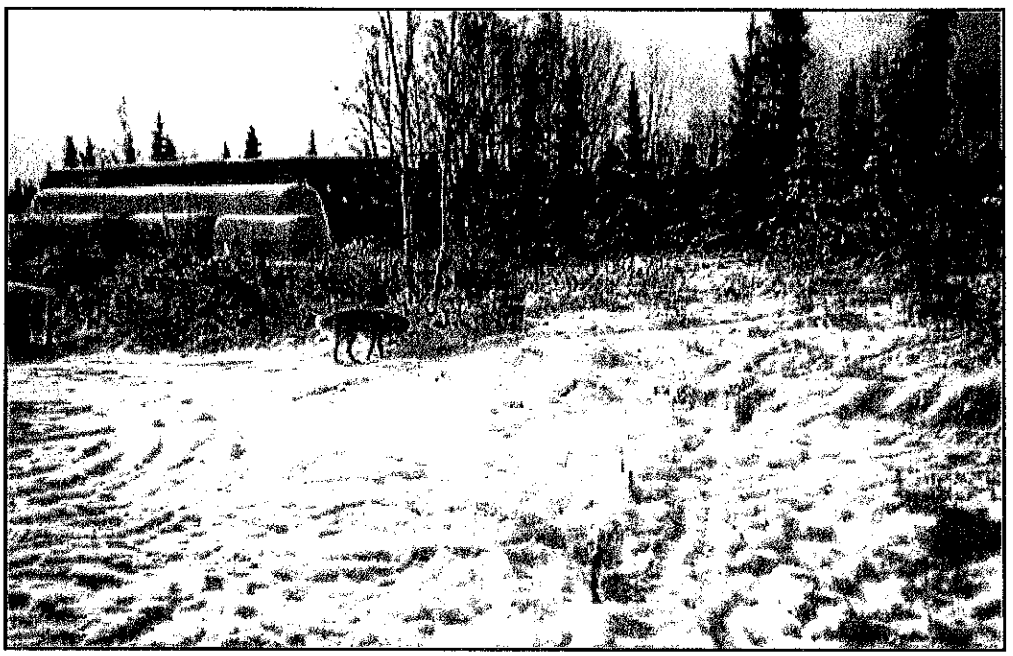
Photographs



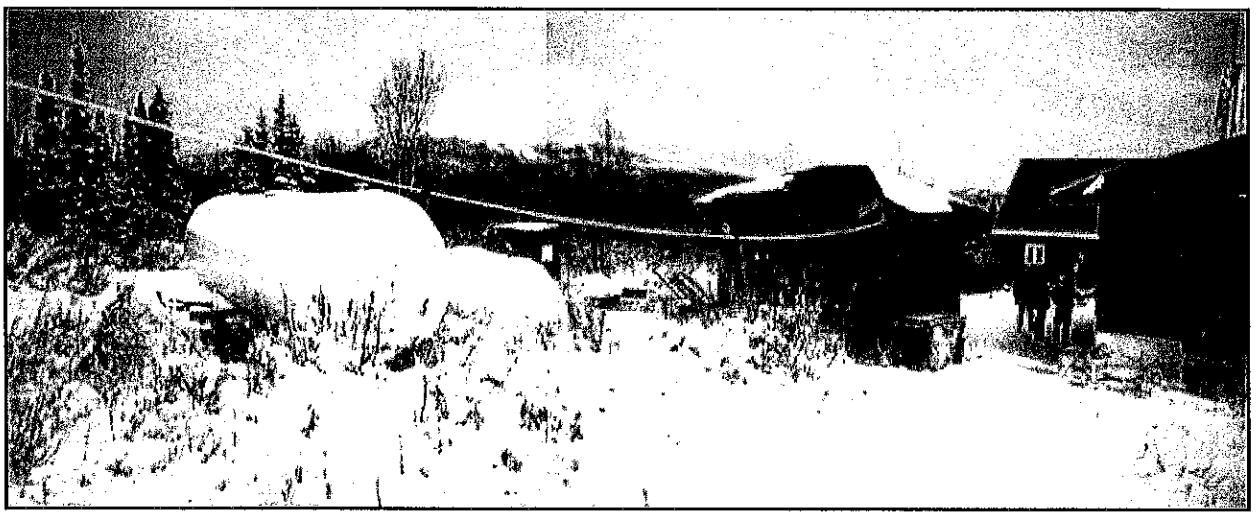
Photograph 1. Construction Equipment in the Lime Village



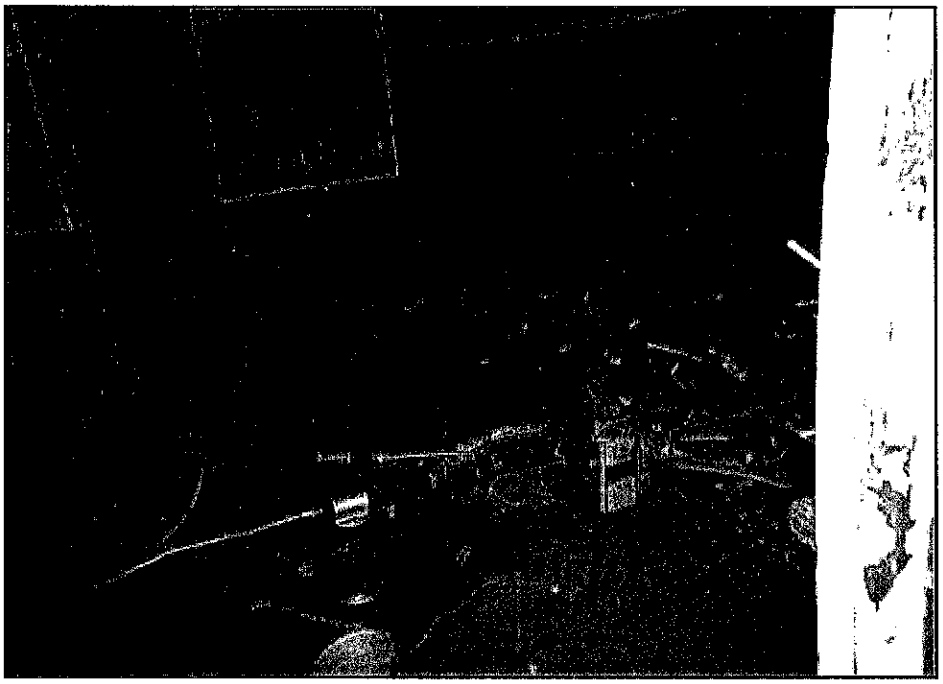
Photograph 2. Lime Village Traditional Council Tank Farm (Area)
Facing south. Taken from the northeast corner of the tank farm area.
Note the area of the tank farm is unlined. The river is east from the left side of picture; a slough is west (beyond brush and trees in background (on right of photograph); and air landing strip is behind the location from where the photograph was taken.



Photograph 3. Iditarod Area School District Tank Farm
Facing south-southwest. Taken from north of the tank farm.
The tanks are in the upper left of the photograph.
Note the slope of the ground, which rises to the southwest (toward the back of the photograph).



Photograph 4. Iditarod Area School District Tank Farm
Facing north. Taken from the south side of the tank farm.
Note that the horizontal tanks are in good condition.
The school generator is in the small brown building east (right) of the tanks.



Photograph 5. Iditarod Area School District Tank Farm
Taken underneath the Lime Village School.
Note that the makeshift heating fuel line has leaked large amounts of fuel under the school. Strong petroleum odors were noted in the area during the site visit.

Photograph 6. Iditarod Area School District Teacher Housing Tank
Facing east-southeast. Taken from west of the tank.
The black tank in the center of the photograph holds 1,000 gallons of heating fuel (diesel No. 1). Note the septic system southwest of the tank (bottom right of the photograph).

Photograph 7. Lime Village Traditional Council Community Watering Point
Facing east. Taken from the west side of the building.
The Stony River is located east of (beyond) the building. The well is on the north side of the building.

Appendix B

Field Notes

8:00 a.m.

Lakehead
first turn-off sign
at cross street
"Hillcrest"

Aircraft tarmac
on lakeside
yellow Hangar

[illegible]
Joe Bobby
[illegible]
Brenda
[illegible]
[illegible]
[illegible]
243-3995
Fred Bobby 526-5220
Anna Bobby/Jal
[illegible]
526-5233 (f)
526-5433 (h)
Leonard Campbell
[illegible]
526-5242
Steve Stassel - 349-0100 AE&E
Oct. 01
- too windy thru passes
- no go
- called Anna Bobby & S. Stassel

Larry Pederson
830-8809 (cell)
745-8740 (home)
Anna Bobby 526-5433

CURLVS
Stony River Lodge
526-5211

notes from LIME VILLAGE ASSESS.
1994
permafrost encountered @
8-12 ft. bgs.

At generator shack area
near Tanks and Village School

area around "Former Tank Area"
not assessed
area around "Earth Containment
Dike / Tanks" not assessed.

Around GENERATOR SHACK -
high DRO conc. to 6'-8' bgs.
Area is ~35×40 adjacent to
TANKS.

AST - TEACHER's HOUSE
relatively low conc.
no issue?

Diesel Fuel Pipeline
high DRO conc. along pipeline
@ surface to 4' bgs.
no further depth analyzed

Slough water
not a problem

School Water - top.
before water treatment
and softening after
15 gal. purge

WD.

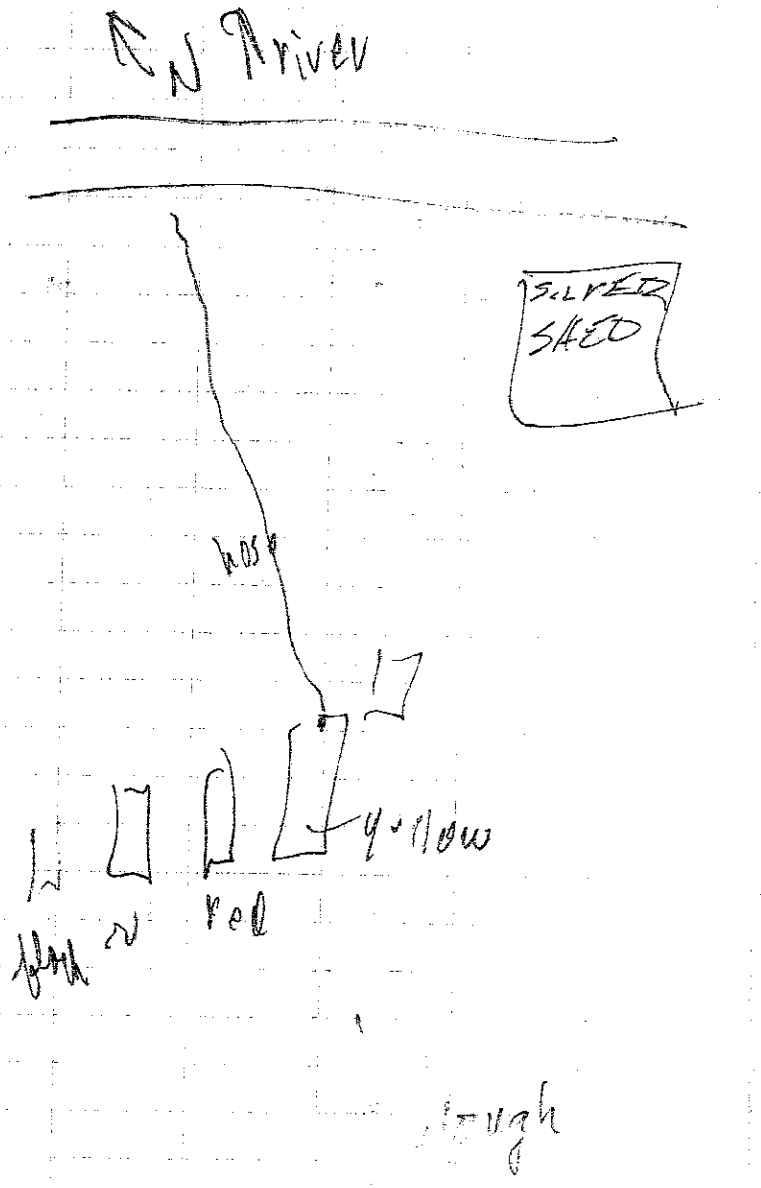
0.5 ppm as "Groundwater
Parameter" - no
explanation.

For Seve pictures
the
1. Day tank inside
Power Plant
" Simplex or
Ryko "
w/ pipe connection
At power plant
2. Piping from
generation - How piping
routes to day tank.
3. teacher leaving
elementary school,
take picture

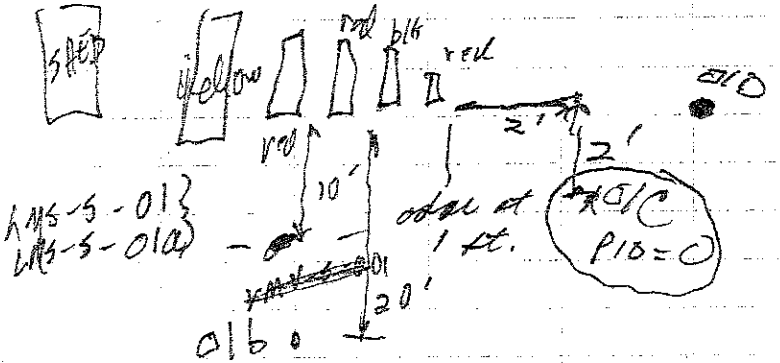
on end of buildings
(end away from
community) and
where fuel pipe
comes up hill.

4. Piping to boiler
in high school
electric room/~~lot~~
Washer building
inside how
piping connects.

12 Oct 01
arrive @ 10:00 a.m.
cloudy, slight snow
~ 20-25 °F



LMV-5-01



a~ N 61 21 25.4
W 155 20 40.1
12 ft.

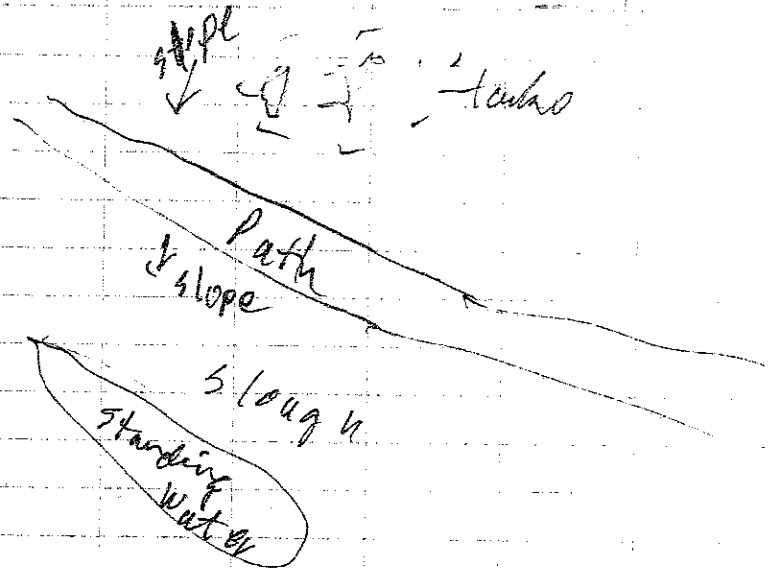
PID 16.5.

a sandy w/ beach rocks
refusal ~ 2 ft.
odor
Not frozen

b sandy w/ beach rocks
refusal ~ 2 ft
slight odor

PID – 0

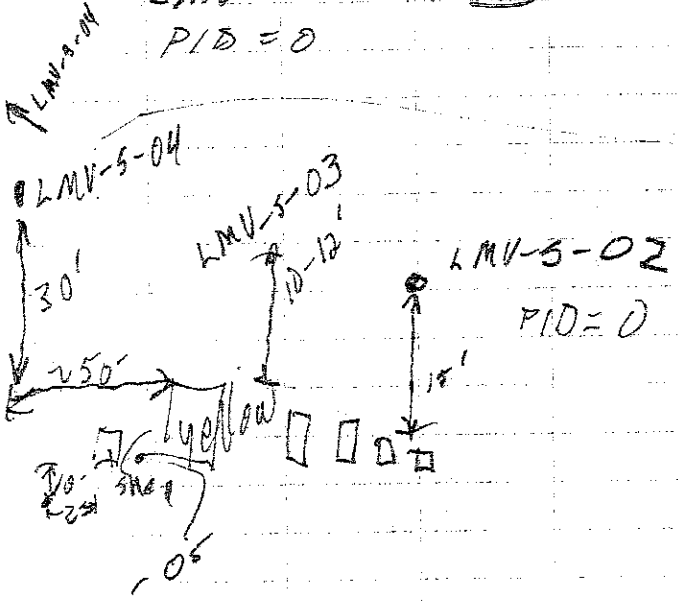
T. road to river
runway



standing water is ~ 5 ft lower than tank area

LMW-01-C
~2 ft deep
Sandy w/ bedrock
PID = 0

LMW-5-01-D
PID = 0



at ~12:00 PID could not be read. Display too cold?

sandy w/ rock
refusal ~ 2 ft

LMW-5-03
NO odor
sandy / rock
refusal ~ 2-3 ft

LMW-5-04
sandy / rock
refusal ~ 2-3 ft
No odor

GPS
N 61 21 24.7
W 155 24 10.1
14.7 ft

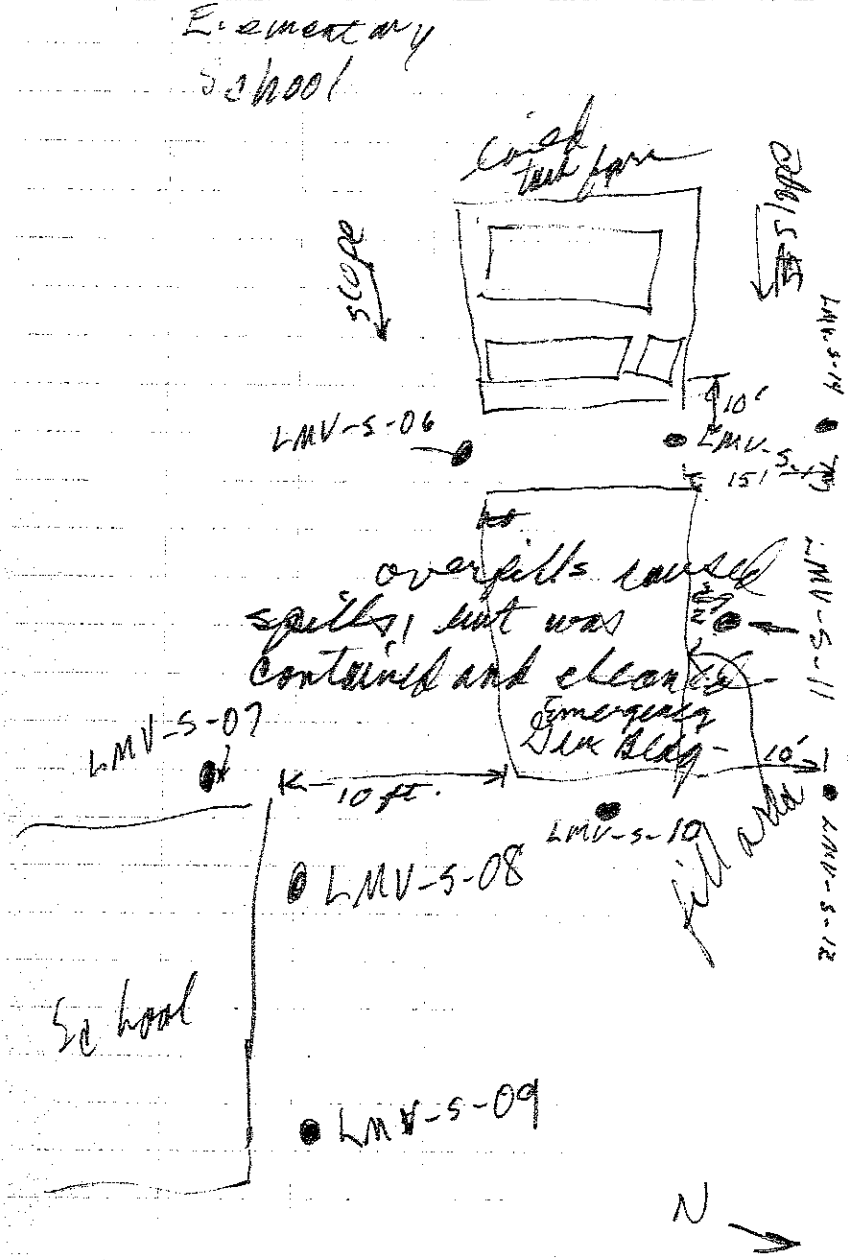
LMV-S-05

Sandy

~2' thick

No odor

Elementary School



At airport slough
at mid summer
the slough floods
up @ high water
and covers the
slough

Fred Bottig
Maintenance for
at schools

no one in crawl space
of school.

less underneath school
from poor plumbing
contamination

there was a leak in
the ventilator
bldg

Sample SCHOOL WATER
from water tap
in school

LMV-S-06
slight odor
~5 ft
highly salty; no locks
slight odor

GPS
N 61 21 ~~07~~ 18.7
W 155 26 ~~23~~ 13.1

LMV-S-07
no odor near school
4 ft
silt

LMV-S-08a LMV-08 no odor
silt ~4 ft
strong odor -2ft

LMV-S-08 — Continued
silt
5 ft is sample
defenate odor
Westerly strong

LMV-S-09 → 4 ft
silt
slight odor ~2 ft.
LMV-S-09a ~2 ft.

LMV-S-10 d
-2' silt
strong odor
also strong at 4 ft
LMV-S-10
~5 ft
silt

LMV-S-11
Sult 2 ft
very strong odor
petroflex only
5 ft

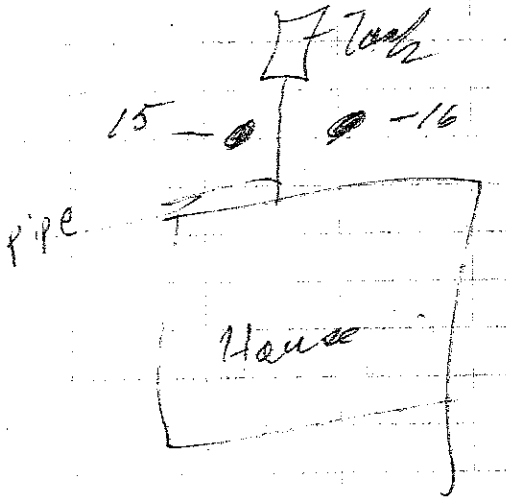
LMV-S-12
Petro flag and
2 ft
slight odor 5 ft.

LMV-S-13
silt
slight odor @ 2 ft
slight to no odor @ 4 ft
sample at 4'

LMV-S-14
silt
2 ft.
petroflex only.
slight to no odor

Coaches House

LMV-5-15
2ft no odor – Reddish clay
LMV-5-16
2ft. no odor Reddish clay



School water from kitchen top
no softner

filter removes solids odor of iron in water

most residents use/ drink river water

there is the community water well where some bring jugs and take it home from well and is Chlorinated - & kids drink that water - Hauled in 5 gal containers.

Community Water Sample
1 l

Pitot Field Tests

Sample #	Reading (ppm)
LAV-S- 1a	192
1c	9
1d	159
02	0
08a	3112
09a	8
10	Over 10,000
10a	Over 10,000
11	Over 10,000
12	565
14	Over 10,000
15	25
16	7

Appendix C

Chain-of-Custody Form and Laboratory Analytical Report

CTE Environmental Services
Alaska Division
Laboratory Data Report

Project: ADEC Lime Village

Client: Bristol Environmental

CTE Work Order: 1017111

Contents:

Chain of Custody
Quality Control Summary Forms

Note:

Unless otherwise noted, all quality assurance/quality control criteria is in compliance with the proper regulatory authority and/or CTE's Quality Assurance Program Plan.

Case Narrative

Customer: BRISENV Bristol Environmental

Project: 1017111 ADEC Lime Village

1017111003 PS

DRO - Pattern consistent with weathered middle distillate.

1017111004 PS

DRO - Pattern consistent with highly weathered middle distillate.

1017111008 PS

DRO - Pattern consistent with weathered middle distillate.

1017111010 PS

DRO - Pattern consistent with weathered middle distillate.

1017111012 PS

DRO - Pattern consistent with weathered middle distillate.

1017111013 PS

DRO - Pattern consistent with weathered middle distillate.

DRO - Surrogate recovery is outside of acceptable range due to matrix interference.

398855 MS

PAHSIM - Several analytes do not meet QC recovery or RPD goals. See LCS/LCSD for recoveries.

398856 MSD

PAHSIM - Several analytes do not meet QC recovery or RPD goals. See LCS/LCSD for recoveries.

398853 LCS

PAHSIM - Indeno[1,2,3-c,d]pyrene, Dibenzo[a,h]anthracene and Benzo[g,h,i]perylene are biased high and do not meet QC recovery goals. Results are not affected as these analytes were not found above the PQL in the samples.

399178 LCS

DRO LCS/LCSD - Surrogate is biased high due to interference by method required petroleum spike.

399661 LCS

DRO LCS/LCSD - Surrogate is biased high due to interference by method required petroleum spike.

399664 LCS

DRO LCS/LCSD - Surrogate is biased high due to interference by method required petroleum spike.

398854 LCSD

PAHSIM - Indeno[1,2,3-c,d]pyrene and Dibenzo[a,h]anthracene are biased high and do not meet QC recovery goals. Results are not affected as these analytes were not found above the PQL in the samples.

399179 LCSD

DRO LCS/LCSD - Surrogate is biased high due to interference by method required petroleum spike.

399662 LCSD

DRO LCS/LCSD - Surrogate is biased high due to interference by method required petroleum spike.

399665 LCSD

DRO LCS/LCSD - Surrogate is biased high due to interference by method required petroleum spike.

CHAIN OF CUSTODY RECORD

1217111

CT&E Environmental Services Inc.
Laboratory Division

(1)

CLIENT: Bristol Env. & Eng

CONTACT: M. Torpy PHONE NO: (907) 563-0013

PROJECT: ADEC LINE VILLAGE PWSID#:

REPORTS TO: M. Torpy FAX NO: (907) 563-6713

INVOICE TO: M. Torpy QUOTE#

P.O. NUMBER:

CT&E Reference:

PAGE 1 OF 2

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used	Analysis Required (3) DRO	GRO/BTEX	PAH (SIM)	REMARKS
(1)	Community Water	10 Oct	3:00p	Water	1			X			
(2)	SCHOOL WATER	12 Oct	1:45	Water	1			X			
(3)	LMV-S-01		11:50a	Soil	1			X			
(4)	LMV-S-02		12:10p	Soil	2			X	X		
(5)	LMV-S-03		12:20p	Soil	2			X	X		
(6)	LMV-S-04		12:25p	Soil	2			X	X		
(7)	LMV-S-05		12:40p	Soil	1			X			
(8)	LMV-S-06		12:55p	Soil	1			X		X	
(9)	LMV-S-07		1:10p	Soil	1			X		X	
(10)	LMV-S-08		1:15p	Soil	1			X			

(5)

	Date	Time	
Collected/Relinquished By: (1) M. Torpy	12 Oct	6:00p	Received By:
Relinquished By: (2) M. Torpy	12 Oct	6:15p	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 19/12/01	Time 1815	Received For Laboratory By:

(4)

Shipping Carrier:

Shipping Ticket No:

Temperature C: 8.4°C

Data Deliverables:

Level I Level II Level III EDD Type:

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

Requested Turnaround Time and Special Instructions:

200 W. Potter Drive **Anchorage, AK 99518** Tel: (907) 562-2343 Fax: (907) 561-5301
3180 Peger Road **Fairbanks, AK 99701** Tel: (907) 474-8656 Fax: (907) 474-9685

White - Retained by Lab (Project File) Yellow - Returned with Report Pink - Retained by Sampler

0-720

CHAIN OF CUSTODY RECORD

1017111

CT&E Environmental Services Inc.
Laboratory Division

(1)

CLIENT: Shannon & Wilson
CONTACT: M. Torpy PHONE NO: (907) 563-0013
PROJECT: ADEC Lime Village PWSID#:
REPORTS TO: M. Torpy FAX NO: (907) 563-6713
INVOICE TO: M. Torpy QUOTE# P.O. NUMBER:

CT&E Reference:

PAGE 2 OF 2

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used	(3) Analysis Required: DRO	GRO (BTEX)	PAH (SIM)	REMARKS
11	LMV-6-09	12Oct	2:15p	Soil	1			X			
12	LMV-5-10		2:30p	Soil	1			X			
~~13~~	~~LMV-5-11~~										
13	LMV-5-12		—	Soil	1			X			
14	LMV-5-13		—	Soil	1			X			

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
M. Torpy	12Oct01	6:00p	
Relinquished By: (2)	Date	Time	Received By:
M. Torpy	12Oct01	6:15p	
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received For Laboratory By:
	10/12/01	1815	

(4)

Shipping Carrier:
Shipping Ticket No:
Temperature C: 8.4°C
Data Deliverables:
Level I Level II Level III EDD Type:
Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT
Requested Turnaround Time and Special Instructions:

200 W. Potter Drive **Anchorage, AK 99518** Tel: (907) 562-2343 Fax: (907) 561-5301
3180 Peger Road **Fairbanks, AK 99701** Tel: (907) 474-8656 Fax: (907) 474-9685

White - Retained by Lab (Project File) Yellow - Returned with Report Pink - Retained by Sampler

CT&E Environmental Services Inc.

SAMPLE RECEIPT FORM

CT&E WO# 1017111

Yes	No		
	✓	Are samples **RUSH**, priority, or *within 72 hrs.* of **hold time**?	
		If yes have you done *e-mail notification*?	
	✓	Are samples *within 24 hrs.* of **hold time** or **due date**?	
		If yes, have you *spoken with* Supervisor?	
✓ *,**		Are there any **problems** (e.g., ids, analyses)?	
		Were samples preserved correctly and pH verified?	
		Has Project Manager been notified of problems?	
	✓	Is this an ACOE / AFCEE / ADEC project?	
	✓	Will a **data package** be required?	
	✓	If this is for PWS, provide **PWSID.**	
		Is there a **quote** for this project?	
	✓	Will **courier** charges apply?	

* USED TIME OF SAMPLE TO ID #3 GRO/BTEX JAR, BUT COC DOES NOT LIST A GRO/BTEX FOR #3

** CLIENT PUT LABEL ON TLO JAR FOR #4

Completed by (sign): Forest Taylor **(print):** FOREST TAYLOR

Due Date: 10/23/01

Received Date/Time: 10/12/01 1815

Received Temperature: 8.4°C

Matrix of each Sample:

1	" "	#1-2
2	" "	#3-14
	" "	
2	Trip Blank	#15
	BMS/BMSD	

Additional Sample Remarks:

- Extra Sample Volume?
- ✓ Limited Sample Volume? #1, 2
- ✓ Field pres'd for volatiles? #3-6
- Field-filtered for dissolved ____?
- Lab-filtered for dissolved ____?
- Ref Lab required? ____

Notes: ____

*********The following *must* be completed for *all* ACOE & AFCEE: *********

Yes	No		
		Is received temperature 4 ± 2°C? Temp:	
		Thermometer used:	
		Was there an airbill, etc.? Note #:	
		Was cooler sealed with custody seals? Fax'd to COE?	
		# / where:	
		Were seals intact upon arrival?	
		Was there a COC with cooler?	
		Was the COC filled out properly?	
		Did the COC indicate ACOE / AFCEE project? (if applicable)	
		Did the COC and samples correspond?	
		Were all samples packed to prevent breakage?	
		packing material:	
		Were all samples unbroken and clearly labeled?	
		Were all samples sealed in separate plastic bags?	
		Were all bottles for volatiles free of headspace?	
		Were correct container / sample sizes submitted?	
		Is sample condition good?	
		Was client notified of problems? (specify below)	

# of each Container Received:

	950 ml amber unpres'd
2	950 ml amber w / HCl
	500 ml amber w / H_2SO_4
	1L cubies unpres'd
	1L cubies w / HNO_3
	1L cubies w / H_2SO_4
	1L cubies w / NaOH + ZnAc
	120 ml coli bottles
	60 ml Nalgene
12	8 oz amber unpres'd
	4 oz amber unpres'd
5	4 oz w / septa w / MeOH
	40 ml vials w / HCl
	Other (specify) ____
	Other (specify) ____

Individual contacted: ____

Date / Time: ____ Phone / Fax: ____

Log-in proofed by: ____

TO BE COMPLETED IN ANCHORAGE UPON ARRIVAL FROM FAIRBANKS:

DATE / TIME: ____ **COOLER TEMP:** ____

CUSTODY SEALS INTACT: YES / NO # / WHERE: ____

COMPLETED BY (INITIAL): ____

CT&E Environmental Services Inc.
Laboratory Division

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: http://www.cteesi.com

Laboratory Analysis Report

Mike Torpy
Bristol Environmental
2000 W Intl Airport Rd, Ste C1
Anchorage, AK 995021117

Work Order:	1017111
	ADEC Lime Village
Client:	Bristol Environmental
Report Date:	November 15, 2001

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by CT&E. A copy of our Quality Control Manual that outlines this program is available at your request.

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth in our Quality Assurance Program Plan.

If you have any questions regarding this report or if we can be of any other assistance, please call your CT&E Project Manager at (907) 562-2343.

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

U	Indicates the analyte was analyzed for but not detected.
F	Indicates an estimated value that falls below PQL, but is greater than the MDL.
B	Indicates the analyte is found in the blank associated with the sample.
*	The analyte has exceeded allowable limits.
GT	Greater Than
D	Secondary Dilution
LT	Less Than
!	Surrogate out of range

CT&E Environmental Services Inc.

CT&E Ref.#	1017111001	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
roject Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 15:00
lient Sample ID	Community WAter	**Received Date/Time**	10/12/2001 18:15
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	Stephen C. Ede
rdered By		**Released By**	Rhonda Stucker

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic Fuels Department								
iesel Range Organics	0.500 U	0.500	mg/L	AK102 DRO		10/16/01	10/17/01	MCM
Surrogates								
i Androstane <surr>	117		%	AK102 DRO	50-150	10/16/01	10/17/01	MCM

CT&E Environmental Services Inc.

CT&E Ref.#	1017111002	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 13:45
Client Sample ID	School Water	**Received Date/Time**	10/12/2001 18:15
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	Rhonda Stucker

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic Fuels Department								
Diesel Range Organics	0.500 U	0.500	mg/L	AK102 DRO		10/16/01	10/17/01	MCM
Surrogates								
a Androstane <surr>	89.4		%	AK102 DRO	50-150	10/16/01	10/17/01	MCM

701

CT&E Environmental Services Inc.

CT&E Ref.#	1017111003	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 11:50
Client Sample ID	LMV-S-001	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Rhonda Strickler

Sample Remarks:
DRO - Pattern consistent with weathered middle distillate.

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	94.1		%	SM20 2540G			10/15/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	683	10.7	mg/Kg	AK102 DRO		10/18/01	10/19/01	MCM
Surrogates								
5a Androstane <surr>	142		%	AK102 DRO	50-150	10/18/01	10/19/01	MCM

CT&E Environmental Services Inc.

CT&E Ref.#	1017111004	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 12:10
Client Sample ID	LMV-S-002	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	Rhonda Strickler

Sample Remarks:

DRO - Pattern consistent with highly weathered middle distillate.

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	95.4		%	SM20 2540G			10/15/01	DMR
Volatile Fuels Department								
Gasoline Range Organics	3.46 U	3.46	mg/Kg	AK101/8021B		10/12/01	11/06/01	RMV
Benzene	0.0173 U	0.0173	mg/Kg	AK101/8021B		10/12/01	11/06/01	RMV
Toluene	0.0693 U	0.0693	mg/Kg	AK101/8021B		10/12/01	11/06/01	RMV
Ethylbenzene	0.0693 U	0.0693	mg/Kg	AK101/8021B		10/12/01	11/06/01	RMV
P & M -Xylene	0.0693 U	0.0693	mg/Kg	AK101/8021B		10/12/01	11/06/01	RMV
O-Xylene	0.0693 U	0.0693	mg/Kg	AK101/8021B		10/12/01	11/06/01	RMV
Surrogates								
1,4-Difluorobenzene <Surr>	104		%	AK101/8021B	60-120	10/12/01	11/06/01	RMV
4-Bromofluorobenzene <Surr>	51.9		%	AK101/8021B	50-150	10/12/01	11/06/01	RMV
Semivolatile Organic Fuels Department								
Diesel Range Organics	10.7	10.7	mg/Kg	AK102 DRO		10/18/01	10/19/01	MCM
Surrogates								
a Androstane <surr>	109		%	AK102 DRO	50-150	10/18/01	10/19/01	MCM

701

CT&E Environmental Services Inc.

CT&E Ref.#	1017111005	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 12:20
Client Sample ID	LMV-S-03	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Rhonda Stucker

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	91.0		%	SM20 2540G			10/15/01	DMR
Volatile Fuels Department								
Gasoline Range Organics	2.89 U	2.89	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
Benzene	0.0144 U	0.0144	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
Toluene	0.0577 U	0.0577	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
Ethylbenzene	0.0577 U	0.0577	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
P & M -Xylene	0.0577 U	0.0577	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
O-Xylene	0.0577 U	0.0577	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
Surrogates								
1,4-Difluorobenzene <Surr>	84.4		%	AK101/8021B	60-120	10/12/01	11/09/01	RMV
4-Bromofluorobenzene <Surr>	62.3		%	AK101/8021B	50-150	10/12/01	11/09/01	RMV
Semivolatile Organic Fuels Department								
Diesel Range Organics	10.7 U	10.7	mg/Kg	AK102 DRO		10/18/01	10/19/01	MCM
Surrogates								
a Androstane <surr>	94.6		%	AK102 DRO	50-150	10/18/01	10/19/01	MCM

701

CT&E Environmental Services Inc.

CT&E Ref.#	1017111006	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 12:25
Client Sample ID	LMV-S-04	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Rhonda Stucka

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	93.4		%	SM20 2540G			10/15/01	DMR
Volatile Fuels Department								
Gasoline Range Organics	3.03 U	3.03	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
Benzene	0.0151 U	0.0151	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
Toluene	0.0605 U	0.0605	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
Ethylbenzene	0.0605 U	0.0605	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
P & M -Xylene	0.0605 U	0.0605	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
O-Xylene	0.0605 U	0.0605	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
Surrogates								
a,a,4-Difluorobenzene <Surr>	85.7		%	AK101/8021B	60-120	10/12/01	11/09/01	RMV
4-Bromofluorobenzene <Surr>	54.1		%	AK101/8021B	50-150	10/12/01	11/09/01	RMV
Semivolatile Organic Fuels Department								
Diesel Range Organics	11.0 U	11.0	mg/Kg	AK102 DRO		10/18/01	10/19/01	MCM
Surrogates								
5a Androstane <surr>	111		%	AK102 DRO	50-150	10/18/01	10/19/01	MCM

701

CT&E Environmental Services Inc.

CT&E Ref.#	1017111007	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 12:40
Client Sample ID	LMV-S-05	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Rhonda Strucha

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	94.9		%	SM20 2540G			10/15/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	10.5 U	10.5	mg/Kg	AK102 DRO		10/18/01	10/19/01	MCM
Surrogates								
5a Androstane <surr>	118		%	AK102 DRO	50-150	10/18/01	10/19/01	MCM

CT&E Environmental Services Inc.

CT&E Ref.#	1017111008	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 12:55
Client Sample ID	LMV-S-06	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Rhonda Strickler

Sample Remarks:

DRO - Pattern consistent with weathered middle distillate.

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	91.7		%	SM20 2540G			10/15/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	14.2	11.3	mg/Kg	AK102 DRO		10/18/01	10/19/01	MCM
Surrogates								
5a Androstane <surr>	116		%	AK102 DRO	50-150	10/18/01	10/19/01	MCM
Polynuclear Aromatics GC/MS								
Benzo(a)Anthracene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Naphthalene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Acenaphthylene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Acenaphthene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Phenanthrene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Fluoranthene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Benzo[k]fluoranthene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Fluorene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Anthracene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Pyrene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Chrysene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Benzo[b]Fluoranthene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Benzo[a]pyrene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Indeno[1,2,3-c,d] pyrene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Dibenzo[a,h]anthracene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Benzo[g,h,i]perylene	65.6 U	65.6	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Surrogates								
Naphthalene-d8 <surr/IS>	89.9		%	PAH SIM	10-138	10/15/01	10/16/01	SPM
Acenaphthene-d10 <surr/IS>	93.8		%	PAH SIM	10-147	10/15/01	10/16/01	SPM

CT&E Environmental Services Inc.

CT&E Ref.#	1017111008	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 12:55
Client Sample ID	LMV-S-06	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By			

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS								
Chrysene-d12 <surr/IS>	92.6		%	PAH SIM	16-147	10/15/01	10/16/01	SPM

CT&E Environmental Services Inc.

CT&E Ref.#	1017111009	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 13:10
Client Sample ID	LMV-S-07	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Rhonda Stucker

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	84.0		%	SM20 2540G			10/16/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	11.8 U	11.8	mg/Kg	AK102 DRO		10/18/01	10/19/01	MCM
Surrogates								
5a Androstane <surr>	102		%	AK102 DRO	50-150	10/18/01	10/19/01	MCM
Polynuclear Aromatics GC/MS								
Benzo(a)Anthracene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Naphthalene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Acenaphthylene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Acenaphthene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Phenanthrene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Fluoranthene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Benzo[k]fluoranthene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Fluorene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Anthracene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Pyrene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Chrysene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Benzo[b]Fluoranthene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Benzo[a]pyrene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Indeno[1,2,3-c,d] pyrene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Dibenzo[a,h]anthracene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Benzo[g,h,i]perylene	71.4 U	71.4	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Surrogates								
Naphthalene-d8 <surr/IS>	101		%	PAH SIM	10-138	10/15/01	10/16/01	SPM
Acenaphthene-d10 <surr/IS>	112		%	PAH SIM	10-147	10/15/01	10/16/01	SPM

CT&E Ref.#	1017111009	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 13:10
Client Sample ID	LMV-S-07	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By			

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS								
Chrysene-d12 <surr/IS>	91.6		%	PAH SIM	16-147	10/15/01	10/16/01	SPM

CT&E Environmental Services Inc.

CT&E Ref.#	1017111010	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 13:10
Client Sample ID	LMV-S-08	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Rhonda Stucker

Sample Remarks:
DRO - Pattern consistent with weathered middle distillate.

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	83.2		%	SM20 2540G			10/16/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	2380	124	mg/Kg	AK102 DRO		10/18/01	10/22/01	MCM
Surrogates								
5a Androstane <surr>	149		%	AK102 DRO	50-150	10/18/01	10/22/01	MCM
Polynuclear Aromatics GC/MS								
Benzo(a)Anthracene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Naphthalene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Acenaphthylene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Acenaphthene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Phenanthrene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Fluoranthene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Benzo[k]fluoranthene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Fluorene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Anthracene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Pyrene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Chrysene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Benzo[b]Fluoranthene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Benzo[a]pyrene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Indeno[1,2,3-c,d] pyrene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Dibenzo[a,h]anthracene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Benzo[g,h,i]perylene	71.9 U	71.9	ug/Kg	PAH SIM		10/15/01	10/16/01	SPM
Surrogates								
Naphthalene-d8 <surr/IS>	70.6		%	PAH SIM	10-138	10/15/01	10/16/01	SPM
Acenaphthene-d10 <surr/IS>	75.1		%	PAH SIM	10-147	10/15/01	10/16/01	SPM

CT&E Environmental Services Inc.

CT&E Ref.#	1017111010	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 13:10
Client Sample ID	LMV-S-08	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By			

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS								
Chrysene-d12 <surr/IS>	103		%	PAH SIM	16-147	10/15/01	10/16/01	SPM

CT&E Environmental Services Inc.

CT&E Ref.#	1017111011	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 14:15
Client Sample ID	LMV-S-09	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Rhonda Stucker

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	83.7		%	SM20 2540G			10/16/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	12.0 U	12.0	mg/Kg	AK102 DRO		10/18/01	10/19/01	MCM
Surrogates								
5a Androstane <surr>	102		%	AK102 DRO	50-150	10/18/01	10/19/01	MCM

CT&E Environmental Services Inc.

CT&E Ref.#	1017111012	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 14:30
Client Sample ID	LMV-S-10	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	

Sample Remarks:

DRO - Pattern consistent with weathered middle distillate.

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	85.6		%	SM20 2540G			10/16/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	2840	119	mg/Kg	AK102 DRO		10/18/01	10/22/01	MCM
Surrogates								
5a Androstane <surr>	140		%	AK102 DRO	50-150	10/18/01	10/22/01	MCM

CT&E Environmental Services Inc.

CT&E Ref.#	1017111013	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 0:00
Client Sample ID	LMV-S-12	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Rhonda Stucker

Sample Remarks:

DRO - Pattern consistent with weathered middle distillate.
DRO - Surrogate recovery is outside of acceptable range due to matrix interference.

Parameter	Results		PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids									
Total Solids	75.6			%	SM20 2540G			10/16/01	DMR
Semivolatile Organic Fuels Department									
Diesel Range Organics	143		13.5	mg/Kg	AK102 DRO		10/18/01	10/19/01	MCM
Surrogates									
Androstane <surr>	176	!		%	AK102 DRO	50-150	10/18/01	10/19/01	MCM

CT&E Environmental Services Inc.

CT&E Ref.#	1017111014	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
roject Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 0:00
Client Sample ID	LMV-S-13	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
rdered By		**Released By**	Rhonda Stucker

ample Remarks:

rameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
otal Solids	84.7		%	SM20 2540G			10/16/01	DMR
emivolatile Organic Fuels Department								
Diesel Range Organics	11.6 U	11.6	mg/Kg	AK102 DRO		10/18/01	10/20/01	MCM
urrogates								
5a Androstane <surr>	112		%	AK102 DRO	50-150	10/18/01	10/20/01	MCM

701

CT&E Environmental Services Inc.

CT&E Ref.#	1017111015	**Client PO#**	
Client Name	Bristol Environmental	**Printed Date/Time**	11/15/2001 11:06
Project Name/#	ADEC Lime Village	**Collected Date/Time**	10/12/2001 0:00
Client Sample ID	Trip Blank	**Received Date/Time**	10/12/2001 18:15
Matrix	Soil/Solid	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Rhonda Stucker

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	100		%	SM20 2540G			10/16/01	DMR
Volatile Fuels Department								
Gasoline Range Organics	2.57 U	2.57	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
Benzene	0.0128 U	0.0128	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
Toluene	0.0514 U	0.0514	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
Ethylbenzene	0.0514 U	0.0514	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
P & M -Xylene	0.0514 U	0.0514	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
O Xylene	0.0514 U	0.0514	mg/Kg	AK101/8021B		10/12/01	11/09/01	RMV
Surrogates								
1,4-Difluorobenzene <Surr>	86.4		%	AK101/8021B	60-120	10/12/01	11/09/01	RMV
4-Bromofluorobenzene <Surr>	81.7		%	AK101/8021B	50-150	10/12/01	11/09/01	RMV

CT&E Environmental Services Inc.

CT&E Ref.#	403527	Matrix Spike	**Printed Date/Time**	11/15/2001 11:07
	403528	Matrix Spike Duplicate	**Prep Batch**	VXX 8595
			Method	AK101 Extraction (S)
			Date	10/12/2001
Original	1017388003			
Matrix	Soil/Solid			

QC results affect the following production samples:
1017111004

Parameter		Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Volatile Fuels Department										
o-Xylene	MS	0.0917 U	1.19	89	(80-120)			1.32 mg/Kg	11/06/01	RMV
	MSD		1.15	86		3	(< 20)	1.32 mg/Kg	11/06/01	RMV
Toluene	MS	0.0917 U	4.95	88	(80-120)			5.59 mg/Kg	11/06/01	RMV
	MSD		4.76	85		4	(< 20)	5.59 mg/Kg	11/06/01	RMV
P & M -Xylene	MS	0.0917 U	2.99	84	(80-120)			3.52 mg/Kg	11/06/01	RMV
	MSD		2.87	81		4	(< 20)	3.52 mg/Kg	11/06/01	RMV
Gasoline Range Organics	MS	4.59 U	41.7	116	(60-120)			35.7 mg/Kg	11/06/01	RMV
	MSD		39.0	108		7	(< 20)	35.7 mg/Kg	11/06/01	RMV
Benzene	MS	0.0229 U	1.35	87	(80-120)			1.55 mg/Kg	11/06/01	RMV
	MSD		1.30	84		4	(< 20)	1.55 mg/Kg	11/06/01	RMV
Ethylbenzene	MS	0.0917 U	0.893	91	(80-120)			0.976 mg/Kg	11/06/01	RMV
	MSD		0.859	87		4	(< 20)	0.976 mg/Kg	11/06/01	RMV

Batch VFC 4910
Method AK101/8021B
Instrument HP 5890 Series II PID+FID VDA

CT&E Environmental Services Inc.

T&E Ref.#	398855	Matrix Spike	Printed Date/Time		11/15/2001 11:07
	398856	Matrix Spike Duplicate	Prep	Batch	XXX 9340
				Method	Sonication Extraction Soil PA
				Date	10/15/2001
Original	1016966007				
Matrix	Soil/Solid				

QC results affect the following production samples:
1017111008, 1017111009, 1017111010

Parameter		Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Polynuclear Aromatics GC/MS										
uorene	MS	66.1 U	19.5F	88	(77-137)			22.2 ug/Kg	10/16/01	SPM
	MSD		59.8 U	71 *		21	(< 30)	22.1 ug/Kg	10/16/01	SPM
Acenaphthene	MS	66.1 U	18.9F	85	(79-134)			22.2 ug/Kg	10/16/01	SPM
	MSD		18.8F	85		1	(< 30)	22.1 ug/Kg	10/16/01	SPM
yrene	MS	66.1 U	24.3F	109	(60-153)			22.2 ug/Kg	10/16/01	SPM
	MSD		20.6F	93		16	(< 30)	22.1 ug/Kg	10/16/01	SPM
enanthrene	MS	66.1 U	20.2F	91	(38-167)			22.2 ug/Kg	10/16/01	SPM
	MSD		59.8 U	75		20	(< 30)	22.1 ug/Kg	10/16/01	SPM
Indeno[1,2,3-c,d] pyrene	MS	66.1 U	18.6F	84	(60-145)			22.2 ug/Kg	10/16/01	SPM
	MSD		59.8 U	67		22	(< 30)	22.1 ug/Kg	10/16/01	SPM
uoranthene	MS	66.1 U	22.9F	103	(62-145)			22.2 ug/Kg	10/16/01	SPM
	MSD		19.8F	90		15	(< 30)	22.1 ug/Kg	10/16/01	SPM
ibenzo[a,h]anthracene	MS	66.1 U	59.9 U	74	(53-141)			22.2 ug/Kg	10/16/01	SPM
	MSD		59.8 U	55		30	(< 30)	22.1 ug/Kg	10/16/01	SPM
Chrysene	MS	66.1 U	23.2F	105	(66-152)			22.2 ug/Kg	10/16/01	SPM
	MSD		21.8F	99		6	(< 30)	22.1 ug/Kg	10/16/01	SPM
nthracene	MS	66.1 U	21.1F	95	(19-133)			22.2 ug/Kg	10/16/01	SPM
	MSD		18.7F	85		12	(< 30)	22.1 ug/Kg	10/16/01	SPM
aphthalene	MS	66.1 U	59.9 U	79 *	(81-143)			22.2 ug/Kg	10/16/01	SPM
	MSD		59.8 U	78 *		2	(< 30)	22.1 ug/Kg	10/16/01	SPM
Acenaphthylene	MS	66.1 U	59.9 U	78	(66-139)			22.2 ug/Kg	10/16/01	SPM
	MSD		59.8 U	67		15	(< 30)	22.1 ug/Kg	10/16/01	SPM
enzo[k]fluoranthene	MS	66.1 U	26.3F	118	(65-154)			22.2 ug/Kg	10/16/01	SPM
	MSD		18.2F	82		36 *	(< 30)	22.1 ug/Kg	10/16/01	SPM
enzo(a)Anthracene	MS	66.1 U	21.9F	99	(64-148)			22.2 ug/Kg	10/16/01	SPM
	MSD		59.8 U	61 *		47 *	(< 30)	22.1 ug/Kg	10/16/01	SPM
Benzo[a]pyrene	MS	66.1 U	24.8F	112	(12-139)			22.2 ug/Kg	10/16/01	SPM
	MSD		18.5F	84		29	(< 30)	22.1 ug/Kg	10/16/01	SPM
enzo[b]Fluoranthene	MS	66.1 U	19.0F	85	(74-148)			22.2 ug/Kg	10/16/01	SPM
	MSD		59.8 U	69 *		22	(< 30)	22.1 ug/Kg	10/16/01	SPM
enzo[g,h,i]perylene	MS	66.1 U	18.6F	84	(64-142)			22.2 ug/Kg	10/16/01	SPM
	MSD		59.8 U	69		19	(< 30)	22.1 ug/Kg	10/16/01	SPM

Batch XMS 2206
Method PAH SIM
Instrument HP 5890 Series II MS2 SVOA

CT&E Environmental Services Inc.

CT&E Ref.#	399054	Method Blank	**Printed Date/Time**	11/15/2001 11:07
Client Name	Bristol Environmental		**Prep Batch**	
Project Name/#	ADEC Lime Village		**Method**	
Matrix	Soil/Solid		**Date**	

QC results affect the following production samples:

1017111003, 1017111004, 1017111005, 1017111006, 1017111007, 1017111008

Parameter	Results	PQL	Units	Analysis Date	Init
Solids					
Total Solids		100	%	10/15/01	DMR
Batch SPT 4138					
Method SM20 2540G					
Instrument					

CT&E Environmental Services Inc.

CT&E Ref.#	399055	Duplicate	**Printed Date/Time**	11/15/2001 11:07	
Client Name	Bristol Environmental		**Prep Batch**		
Project Name/#	ADEC Lime Village		**Method**		
Original	1016965001		**Date**		
Matrix	Soil/Solid				

QC results affect the following production samples:

1017111003, 1017111004, 1017111005, 1017111006, 1017111007, 1017111008

Parameter	Original Result	QC Result	RPD	RPD Limits	Analysis Date	Init
Solids						
Total Solids	95.0	95.1	0	(< 20)	10/15/01	DMR
Batch SPT 4138						
Method SM20 2540G						
Instrument						

CT&E Environmental Services Inc.

CT&E Ref.#	399249	Method Blank	**Printed Date/Time**	11/15/2001 11:07
Client Name	Bristol Environmental		**Prep Batch**	
roject Name/#	ADEC Lime Village		**Method**	
Matrix	Soil/Solid		**Date**	

QC results affect the following production samples:

1017111009, 1017111010, 1017111011, 1017111012, 1017111013, 1017111014, 1017111015

Parameter	Results	PQL	Units	Analysis Date	Init
olids					
Total Solids		100	%	10/16/01	DMR
Batch SPT 4139					
Method SM20 2540G					
Instrument					

CT&E Environmental Services Inc.

CT&E Ref.#	399250 Duplicate	**Printed Date/Time**	11/15/2001 11:07
Client Name	Bristol Environmental	**Prep Batch**	
roject Name/#	ADEC Lime Village	**Method**	
Original	1017111009	**Date**	
Matrix	Soil/Solid		

)C results affect the following production samples:

1017111009, 1017111010, 1017111011, 1017111012, 1017111013, 1017111014, 1017111015

rameter	Original Result	QC Result	RPD	RPD Limits	Analysis Date	Init
Solids						
otal Solids	84.0	83.9	0	(< 20)	10/16/01	DMR

Batch SPT 4139
Method SM20 2540G
Instrument

F-701

CT&E Environmental Services Inc.

CT&E Ref.#	403524	Method Blank	**Printed Date/Time**		11/15/2001 11:07
Client Name	Bristol Environmental		**Prep**	**Batch**	VXX 8595
Project Name/#	ADEC Lime Village			**Method**	
Matrix	Soil/Solid			**Date**	11/06/2001

QC results affect the following production samples:

1017111004

Parameter	Results	PQL	Units	Analysis Date	Init
Volatile Fuels Department					
Gasoline Range Organics	2.50 U	2.50	mg/Kg	11/06/01	RMV
Benzene	0.00575F	0.0125	mg/Kg	11/06/01	RMV
Toluene	0.0161F	0.0500	mg/Kg	11/06/01	RMV
Ethylbenzene	0.0500 U	0.0500	mg/Kg	11/06/01	RMV
P & M -Xylene	0.0500 U	0.0500	mg/Kg	11/06/01	RMV
o-Xylene	0.0500 U	0.0500	mg/Kg	11/06/01	RMV

Batch VFC 4910
Method AK101/8021B
Instrument HP 5890 Series II PID+FID VDA

CT&E Environmental Services Inc.

CT&E Ref.#	403525 Lab Control Sample	**Printed Date/Time**	11/15/2001 11:07
	403526 Lab Control Sample Duplicate	**Prep Batch**	VXX 8595
Client Name	Bristol Environmental	**Method**	
Project Name/#	ADEC Lime Village	**Date**	11/06/2001
Matrix	Soil/Solid		

QC results affect the following production samples:

1017111004

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Ethylbenzene	LCS	0.573	93	(80-120)			0.616 mg/Kg	11/06/01	RMV
	LCSD	0.631	102		10	(< 20)	0.616 mg/Kg	11/09/200	RMV
Gasoline Range Organics	LCS	26.1	116	(60-120)			22.5 mg/Kg	11/06/01	RMV
	LCSD	25.8	115		1	(< 20)	22.5 mg/Kg	11/09/200	RMV
P & M -Xylene	LCS	1.91	86	(80-120)			2.22 mg/Kg	11/06/01	RMV
	LCSD	2.16	97		12	(< 20)	2.22 mg/Kg	11/09/200	RMV
Toluene	LCS	3.16	90	(80-120)			3.53 mg/Kg	11/06/01	RMV
	LCSD	3.55	101		12	(< 20)	3.53 mg/Kg	11/09/200	RMV
o-Xylene	LCS	0.762	92	(80-120)			0.832 mg/Kg	11/06/01	RMV
	LCSD	0.865	104		13	(< 20)	0.832 mg/Kg	11/09/200	RMV
Benzene	LCS	0.860	88	(80-120)			0.978 mg/Kg	11/06/01	RMV
	LCSD	0.975	100		13	(< 20)	0.978 mg/Kg	11/09/200	RMV

Batch VFC 4910
Method AK101/8021B
Instrument HP 5890 Series II PID+FID VDA

CT&E Environmental Services Inc.

CT&E Ref.#	404380	Method Blank	**Printed Date/Time**	11/15/2001 11:07	
Client Name	Bristol Environmental		**Prep Batch**	VXX	8623
Project Name/#	ADEC Lime Village		**Method**		
Matrix	Soil/Solid		**Date**	11/08/2001	

QC results affect the following production samples:

1017111005, 1017111006, 1017111015

Parameter	Results	PQL	Units	Analysis Date	Init
Volatile Fuels Department					
Gasoline Range Organics	2.50 U	2.50	mg/Kg	11/08/01	RMV
Benzene	0.00558F	0.0125	mg/Kg	11/08/01	RMV
Toluene	0.0500 U	0.0500	mg/Kg	11/08/01	RMV
Ethylbenzene	0.0500 U	0.0500	mg/Kg	11/08/01	RMV
P & M -Xylene	0.0500 U	0.0500	mg/Kg	11/08/01	RMV
o-Xylene	0.0500 U	0.0500	mg/Kg	11/08/01	RMV

Batch VFC 4912
Method AK101/8021B
Instrument HP 5890 Series II PID+FID VCA

CT&E Environmental Services Inc.

CT&E Ref.#	404381 Lab Control Sample	**Printed Date/Time**	11/15/2001 11:07
	404382 Lab Control Sample Duplicate	**Prep Batch**	VXX 8623
Client Name	Bristol Environmental	**Method**	
Project Name/#	ADEC Lime Village	**Date**	11/08/2001
Matrix	Soil/Solid		

QC results affect the following production samples:

1017111005, 1017111006, 1017111015

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Benzene	LCS	0.848	87	(80-120)			0.978 mg/Kg	11/08/01	RMV
	LCSD	0.924	95		9	(< 20)	0.978 mg/Kg	11/08/200	RMV
thylbenzene	LCS	0.578	94	(80-120)			0.616 mg/Kg	11/08/01	RMV
	LCSD	0.610	99		5	(< 20)	0.616 mg/Kg	11/08/200	RMV
Gasoline Range Organics	LCS	19.0	85	(60-120)			22.5 mg/Kg	11/08/01	RMV
	LCSD	20.6	91		8	(< 20)	22.5 mg/Kg	11/08/200	RMV
r & M -Xylene	LCS	1.92	86	(80-120)			2.22 mg/Kg	11/08/01	RMV
	LCSD	2.01	91		5	(< 20)	2.22 mg/Kg	11/08/200	RMV
oluene	LCS	3.22	91	(80-120)			3.53 mg/Kg	11/08/01	RMV
	LCSD	3.37	96		5	(< 20)	3.53 mg/Kg	11/08/200	RMV
o-Xylene	LCS	0.754	91	(80-120)			0.832 mg/Kg	11/08/01	RMV
	LCSD	0.787	95		4	(< 20)	0.832 mg/Kg	11/08/200	RMV

Batch VFC 4912
Method AK101/8021B
Instrument HP 5890 Series II PID+FID VCA

701

CT&E Ref.#	398852 Method Blank	**Printed Date/Time**	11/15/2001 11:07
Client Name	Bristol Environmental	**Prep Batch**	XXX 9340
Project Name/#	ADEC Lime Village	**Method**	
Matrix	Soil/Solid	**Date**	10/15/2001

QC results affect the following production samples:
1017111008, 1017111009, 1017111010

Parameter	Results	PQL	Units	Analysis Date	Init
Polynuclear Aromatics GC/MS					
Benzo(a)Anthracene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Naphthalene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Acenaphthylene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Acenaphthene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Phenanthrene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Fluoranthene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Benzo[k]fluoranthene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Fluorene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Anthracene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Pyrene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Chrysene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Benzo[b]Fluoranthene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Benzo[a]pyrene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Indeno[1,2,3-c,d] pyrene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Dibenzo[a,h]anthracene	6.00 U	6.00	ug/Kg	10/15/01	SPM
Benzo[g,h,i]perylene	6.00 U	6.00	ug/Kg	10/15/01	SPM

Batch XMS 2206
Method PAH SIM
Instrument HP 5890 Series II MS2 SVOA

CT&E Environmental Services Inc.

CT&E Ref.#	398853 Lab Control Sample	**Printed Date/Time**	11/15/2001 11:07
	398854 Lab Control Sample Duplicate	**Prep Batch**	XXX 9340
Client Name	Bristol Environmental	**Method**	
Project Name/#	ADEC Lime Village	**Date**	10/15/2001
Matrix	Soil/Solid		

QC results affect the following production samples:
1017111008, 1017111009, 1017111010

arameter		QC Results	Pct Recov		LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Fluorene	LCS	28.7	129		(77-137)			22.2 ug/Kg	10/15/01	SPM
	LCSD	26.7	120			7	(< 30)	22.2 ug/Kg	10/15/200	SPM
.cenaphthene	LCS	26.7	120		(79-134)			22.2 ug/Kg	10/15/01	SPM
	LCSD	26.8	121			0	(< 30)	22.2 ug/Kg	10/15/200	SPM
Pyrene	LCS	26.7	120		(60-153)			22.2 ug/Kg	10/15/01	SPM
	LCSD	24.5	110			8	(< 30)	22.2 ug/Kg	10/15/200	SPM
r henanthrene	LCS	27.3	123		(38-167)			22.2 ug/Kg	10/15/01	SPM
	LCSD	26.7	120			3	(< 30)	22.2 ug/Kg	10/15/200	SPM
ideno[1,2,3-c,d] pyrene	LCS	34.1	154	*	(60-145)			22.2 ug/Kg	10/15/01	SPM
	LCSD	33.1	149	*		3	(< 30)	22.2 ug/Kg	10/15/200	SPM
Fluoranthene	LCS	24.5	110		(62-145)			22.2 ug/Kg	10/15/01	SPM
	LCSD	24.5	110			0	(< 30)	22.2 ug/Kg	10/15/200	SPM
Dibenzo[a,h]anthracene	LCS	31.8	143	*	(53-141)			22.2 ug/Kg	10/15/01	SPM
	LCSD	31.7	143	*		0	(< 30)	22.2 ug/Kg	10/15/200	SPM
hrysene	LCS	26.3	118		(66-152)			22.2 ug/Kg	10/15/01	SPM
	LCSD	26.0	117			1	(< 30)	22.2 ug/Kg	10/15/200	SPM
Anthracene	LCS	22.9	103		(19-133)			22.2 ug/Kg	10/15/01	SPM
	LCSD	21.2	95			8	(< 30)	22.2 ug/Kg	10/15/200	SPM
aphthalene	LCS	27.9	126		(81-143)			22.2 ug/Kg	10/15/01	SPM
	LCSD	27.8	125			0	(< 30)	22.2 ug/Kg	10/15/200	SPM
.cenaphthylene	LCS	25.6	115		(66-139)			22.2 ug/Kg	10/15/01	SPM
	LCSD	26.4	119			3	(< 30)	22.2 ug/Kg	10/15/200	SPM
Benzo[k]fluoranthene	LCS	26.5	119		(65-154)			22.2 ug/Kg	10/15/01	SPM
	LCSD	26.5	119			0	(< 30)	22.2 ug/Kg	10/15/200	SPM
enzo(a)Anthracene	LCS	28.4	128		(64-148)			22.2 ug/Kg	10/15/01	SPM
	LCSD	29.8	134			5	(< 30)	22.2 ug/Kg	10/15/200	SPM
enzo[a]pyrene	LCS	26.8	121		(12-139)			22.2 ug/Kg	10/15/01	SPM
	LCSD	30.1	136			12	(< 30)	22.2 ug/Kg	10/15/200	SPM
Benzo[b]Fluoranthene	LCS	28.2	127		(74-148)			22.2 ug/Kg	10/15/01	SPM
	LCSD	29.1	131			3	(< 30)	22.2 ug/Kg	10/15/200	SPM
enzo[g,h,i]perylene	LCS	32.0	144	*	(64-142)			22.2 ug/Kg	10/15/01	SPM
	LCSD	30.1	135			6	(< 30)	22.2 ug/Kg	10/15/200	SPM

Batch	XMS 2206
Method	PAH SIM
Instrument	HP 5890 Series II MS2 SVOA

701

CT&E Environmental Services Inc.

CT&E Ref.#	399177	Method Blank	**Printed Date/Time**	11/15/2001 11:07	
Client Name	Bristol Environmental		**Prep Batch**	XXX	9350
Project Name/#	ADEC Lime Village		**Method**		
Matrix	Water (Surface, Eff., Ground)		**Date**	10/16/2001	

QC results affect the following production samples:

1017111001, 1017111002

Parameter	Results	PQL	Units	Analysis Date	Init
Semivolatile Organic Fuels Department					
Diesel Range Organics	0.500 U	0.500	mg/L	10/17/01	MCM
Residual Range Organics GC	1.00 U	1.00	mg/L	10/17/01	MCM

Batch XFC 5252
Method AK102/103
Instrument HP 5890 Series II FID SV C F

CT&E Environmental Services Inc.

CT&E Ref.#	399178 Lab Control Sample	**Printed Date/Time**	11/15/2001 11:07
	399179 Lab Control Sample Duplicate	**Prep Batch**	XXX 9350
Client Name	Bristol Environmental	**Method**	
Project Name/#	ADEC Lime Village	**Date**	10/16/2001
Matrix	Water (Surface, Eff., Ground)		

QC results affect the following production samples:

1017111001, 1017111002

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Diesel Range Organics	LCS	5.73	115	(75-125)			5 mg/L	10/17/01	MCM
	LCSD	5.39	108		6	(< 20)	5 mg/L	10/17/200	MCM
Residual Range Organics GC	LCS	4.29	86	(60-120)			5 mg/L	10/17/01	MCM
	LCSD	4.74	95		10	(< 20)	5 mg/L	10/17/200	MCM

Batch XFC 5252
Method AK102/103
Instrument HP 5890 Series II FID SV C F

CT&E Ref.#	399180	Leaching Blank	**Printed Date/Time**		11/15/2001 11:07
Client Name	Bristol Environmental		**Prep**	**Batch**	XXX 9350
Project Name/#	ADEC Lime Village			**Method**	
Matrix	Water (Surface, Eff., Ground)			**Date**	10/16/2001

QC results affect the following production samples:

1017111001, 1017111002

Parameter	Results	PQL	Units	Analysis Date	Init
Semivolatile Organic Fuels Department					
Diesel Range Organics	0.521 U	0.521	mg/L	10/17/01	MCM
Residual Range Organics GC	1.04 U	1.04	mg/L	10/17/01	MCM

Batch XFC 5252
Method AK102/103
Instrument HP 5890 Series II FID SV C F

CT&E Environmental Services Inc.

CT&E Ref.#	399660 Method Blank	**Printed Date/Time**	11/15/2001 11:07
Client Name	Bristol Environmental	**Prep Batch**	XXX 9369
Project Name/#	ADEC Lime Village	**Method**	
Matrix	Soil/Solid	**Date**	10/18/2001

QC results affect the following production samples:

1017111003, 1017111004, 1017111005

Parameter	Results	PQL	Units	Analysis Date	Init
Semivolatile Organic Fuels Department					
Diesel Range Organics	10.0 U	10.0	mg/Kg	10/22/01	MCM
Residual Range Organics GC	20.0 U	20.0	mg/Kg	10/22/01	MCM

Batch XFC 5255
Method AK102/103
Instrument HP 5890 Series II FID SV C F

CT&E Environmental Services Inc.

CT&E Ref.#	399661 Lab Control Sample	**Printed Date/Time**	11/15/2001 11:07
	399662 Lab Control Sample Duplicate	**Prep Batch**	XXX 9369
lient Name	Bristol Environmental	**Method**	
Project Name/#	ADEC Lime Village	**Date**	10/18/2001
Matrix	Soil/Solid		

)C results affect the following production samples:

1017111003, 1017111004, 1017111005

rameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Diesel Range Organics	LCS	149	89	(75-125)			167 mg/Kg	10/22/01	MCM
	LCSD	177	106		17	(< 20)	167 mg/Kg	10/22/200	MCM
esidual Range Organics GC	LCS	106	64	(60-120)			167 mg/Kg	10/22/01	MCM
	LCSD	115	69		8	(< 20)	167 mg/Kg	10/22/200	MCM

Batch XFC 5255
Method AK102/103
Instrument HP 5890 Series II FID SV C F

CT&E Environmental Services Inc.

CT&E Ref.#	399663 Method Blank	**Printed Date/Time**	11/15/2001 11:07
Client Name	Bristol Environmental	**Prep Batch**	XXX 9370
Project Name/#	ADEC Lime Village	**Method**	
Matrix	Soil/Solid	**Date**	10/18/2001

QC results affect the following production samples:

1017111006, 1017111007, 1017111008, 1017111009, 1017111010, 1017111011, 1017111012, 1017111013, 1017111014

Parameter	Results	PQL	Units	Analysis Date	Init
Semivolatile Organic Fuels Department					
Diesel Range Organics	10.0 U	10.0	mg/Kg	10/19/01	MCM
Residual Range Organics GC	20.0 U	20.0	mg/Kg	10/19/01	MCM

Batch XFC 5254
Method AK102/103
Instrument HP 5890 Series II FID SV C F

CT&E Environmental Services Inc.

CT&E Ref.#	399664 Lab Control Sample	**Printed Date/Time**	11/15/2001 11:07
	399665 Lab Control Sample Duplicate	**Prep Batch**	XXX 9370
lient Name	Bristol Environmental	**Method**	
Project Name/#	ADEC Lime Village	**Date**	10/18/2001
Matrix	Soil/Solid		

QC results affect the following production samples:

1017111006, 1017111007, 1017111008, 1017111009, 1017111010, 1017111011, 1017111012, 1017111013, 1017111014

arameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Diesel Range Organics	LCS	181	109	(75-125)			167 mg/Kg	10/19/01	MCM
	LCSD	198	119		9	(< 20)	167 mg/Kg	10/19/200	MCM
esidual Range Organics GC	LCS	122	74	(60-120)			167 mg/Kg	10/19/01	MCM
	LCSD	129	78		5	(< 20)	167 mg/Kg	10/19/200	MCM

Batch XFC 5254
Method AK102/103
Instrument HP 5890 Series II FID SV C F