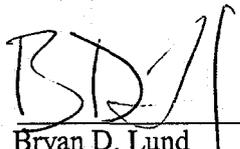


**Aboveground Storage Tanks/
Ore Hopper Demolition and
Petroleum Release Investigation
Red Devil Mine
Red Devil, Alaska**

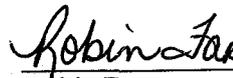
Prepared for

U.S. Department of the Interior
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National Business Center
Denver Federal Center, Building 50
Denver, Colorado 80225-0047

MACTEC Project 4034030008



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ADEC REVIEW COMMENTS

Aboveground Storage Tanks/Ore Hopper Demolition and Petroleum Release Investigation
 Red Devil Mine, Alaska
 Project 4034030008

Reviewer	Comment Number	Reference Location	Review Comments/Questions	Comment Disposition
Anne Marie Palmieri	1	Page 4	The AST metal was buried in an onsite disposal area. As the United States Bureau of Land Management (BLM) is not planning to retain ownership of this property, the department requests that the location of this area, as well as the other onsite disposal areas, be surveyed and noted on the land status maps.	Comment noted for the purpose of this report. Larry Beck will provide follow-on information for the BLM's planned survey activities this summer.
	2	Page 9 Section 3.3, Analytical Results	The cleanup levels proposed in this report cannot be approved. The proposed cleanup levels are the 18 AAC 75.340, method one, category B levels for gasoline range organics (GRO) and residual range organics (RRO), method two cleanup levels other contaminants of concern, and method three cleanup levels for diesel range organics (DRO) and benzene. The use of the various methods cannot be mixed as has been proposed. The department recommends using method three to determine cleanup levels at this site. By using a site-specific hydraulic gradient of 0.074, the migration to groundwater risk-based pathway values would change for several contaminants of concern. Still, the contaminant cleanup level is determined by the governing pathway which has the most-stringent value. Below is a table which shows the cleanup levels with their respective governing pathways that the department believes are applicable for this site. If BLM wishes to propose these levels in the final workplan, they can be approved at that time.	The values (from the Method 3 calculator) and proposed in the ADEC table (copied at the end of this document) were incorporated into the text and figures.

Reviewer	Comment Number	Reference Location	Review Comments/Questions	Comment Disposition
	2 (cont'd)		The department requested additional supporting documentation concerning the calculation used for hydraulic gradient from your consultant, Bryan Lund of MACTEC, Inc, on May 18, 2004. This information was provided to the department on May 19th. The department has received the calculation and concurs with the manner in which it was developed.	Comment noted.
	3	Page 13, Section 5.0	The department concurs with the proposal to excavate the contaminated soil this year, stockpile it through the winter, and treat it next field season.	Comment noted.
	4	Figure 3	The benzene value listed for sample 03RDV37SL is non-detect with a method detection limit of 0.053 mg/kg. Table 1 and the laboratory data sheets show a concentration of 0.053 mg/kg for this sample.	ND and the parentheses were removed from Figure 3.
	5	Table 2	Table 2 is missing from this report.	Table 2 was mislabeled Table 3 in the draft report. This typographic error was corrected for the final document.
	6	General	It is not stated if the groundwater monitoring wells are planned to be sampled in 2004. The department requests that groundwater samples be collected from the monitoring wells and analyzed for arsenic, antimony, and mercury.	Comment noted for the purpose of this report.

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DISTRIBUTION

ABBREVIATIONS AND ACRONYMS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AST	aboveground storage tank
bgs	below ground surface
BLM	Bureau of Land Management
BTEX	benzene, toluene, ethylbenzene, xylenes
°C	degrees Celsius
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency
°F	degrees Fahrenheit
GRO	gasoline-range organics
µg/L	micrograms per liter
MACTEC	MACTEC Engineering and Consulting
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
MW	monitoring well
ND	not detected
PAHs	polynuclear aromatic hydrocarbons
PID	photoionization detector
QC	quality control
RRO	residual-range organics
SOW	Statement of Work
USGS	U.S. Geological Survey

1.0 INTRODUCTION

The Bureau of Land Management (BLM), Alaska State Office, retained MACTEC Engineering and Consulting (MACTEC), formerly Harding ESE, to continue environmental restoration activities at the Red Devil Mine site. The following activities are included in this task order:

- Demolishing and disposing of five aboveground storage tanks (ASTs) and one ore hopper
- Characterizing and assessing petroleum contamination at the former AST sites and along the associated fuel distribution system where evidence of petroleum contamination had been previously documented
- Conducting one round of groundwater sampling from existing monitoring wells
- Developing corrective action options for the petroleum contamination identified at the mine site.

The BLM assigned the Statement of Work (SOW) to MACTEC under Task Order NAD03HL17, Red Devil Mine, Contract Number NAC010004.

The field program for the restoration activities followed the SOW and current regulations (including guidance documents) listed in Section 6.0, Bibliography.

1.1 Site Description and Background

The Red Devil mercury mine site is in a remote part of western Alaska, approximately 250 miles west of Anchorage, about 2 miles southeast of the village of Red Devil (Figure 1). The legal description for the mine is Township 19 North, Range 44 West, southeast 1/4, Section 6, Seward Meridian (BLM, Request for Quotation, July 1, 2003).

The Red Devil Mine operated intermittently from 1933 until 1971. Mining operations produced more than 34,000 flasks of mercury (each flask holds approximately 2 quarts).

The site covers approximately 10 acres and is bisected by Red Devil Creek. Milling operations were situated on the east side of the creek, and the General Mine Area was on the west side of Red Devil Creek. The ore hopper, conveyor, retort, powerhouse, chemical storage sheds, ASTs, and settling ponds were located in the Milling Operations Area. Structures in the General Mine Area included the warehouse, shop building, laboratory, hoist building, and the mine portals. Residents' housing was also on the west side of the creek on a small bluff northwest of the General Mine Area.

In 2003, the only remaining structures at the site were five ASTs and the ore hopper. The World War II-era ASTs were installed in the mid-1950s to supply diesel fuel for mine operations. They were constructed of bolted steel plates. Under each tank there was a wood plank base. The ore hopper was a steel structure about 40 feet high supported by a concrete footer/foundation structure. The hopper was constructed of bolted steel plates forming a funnel approximately 20 feet in diameter. Four steel beams and cross members set in a concrete foundation supported the hopper. The concrete foundation also housed the shaker assembly and one end of the conveyor system.

1.2 Statement of Work

The project SOW included the following tasks:

- Prepare a detailed work plan and a site-specific safety and health plan that supplements the program-level plans
- Demolish and dispose of five ASTs and one ore hopper
- Conduct a petroleum release investigation
- Collect groundwater samples from five existing groundwater monitoring wells
- Prepare a report that presents the following:
 - A summary of field activities
 - Tables summarizing results from the soil and groundwater sampling

- Figures showing sample locations, results, and groundwater flow directions
- Photographs documenting the investigation
- Laboratory data
- Disposition and certificates of treatment/disposal for any waste streams shipped offsite (purge water from the monitoring wells)
- Options for corrective actions

1.3 Deviations from the Statement of Work

Deviations from the SOW are as follows:

- Traditional site access using the road near the Red Devil Post Office was restricted and posted with multiple "No Trespassing" and "No Admittance" signs. Because of the potential right-of-way issues, the field crew accessed the mine via a trail from the Red Devil Lodge. The trail was brushed out with the excavator and improved enough that four wheelers and a pickup truck could use this route to the job site.
- An exposure assessment, including air quality sampling and monitoring, was performed during the hotwork on the ASTs. The crew used supplied air during this portion of the demolition.
- Wood planking beneath the ASTs was contaminated with petroleum products and was stacked and covered and remains onsite adjacent to each former AST location.
- The base structure of the ore hopper was larger than identified in the Request for Quotation. The concrete base structure surrounded several large piers supporting the ore hopper, crusher, and conveyor assembly. Each pier was about 2 feet by 2 feet by 9 feet tall. Neither the concrete structure nor the support piers could be demolished or moved. Therefore, the concrete structure and the support piers were left in place

and buried with tailings from the bench above the ore hopper.

- A 6-inch line from the Kuskokwim River to the AST at the top of the hill was identified during site activities but could not be removed with the equipment mobilized for AST demolition. Approximately 750 feet of 2- and 3-inch-diameter pipe found elsewhere onsite was placed in the disposal area.
- While the area near AST 3 was being cleared for the drill rig, several scattered derelict drums were discovered. The drums were not further characterized during the demolition work.

2.0 FIELD ACTIVITIES

Field activities were conducted at Red Devil Mine from September 10, 2003, through September 29, 2003. Tasks included demolishing and disposing of five ASTs and one ore hopper, sampling five groundwater monitoring wells, and conducting a petroleum release investigation. MACTEC staff and personnel from Winsor Construction, Inc., White Environmental Consultants Inc., and GeoTek Alaska, Inc., were onsite.

Photographs of the site and field activities are in Appendix A.

2.1 Mobilization and Demobilization

Equipment and personnel were mobilized to Red Devil by scheduled and chartered aircraft. Initially, an excavator, four-wheelers, support equipment, and an operator were ferried to Red Devil by Lynden Air Cargo Hercules aircraft. A second Hercules charter delivered the Geoprobe® drill rig and its accessories, with the backhaul being used to demobilize the excavator and other support equipment.

The remaining equipment was demobilized from Red Devil using a CASA 212 from Village Air Cargo.

Personnel traveled to and from the site by PenAir, Hageland Aircraft Services, Inc., and private charter.

2.2 Field Procedures

2.2.1 Sampling and Field Screening

Sampling procedures were conducted in accordance with the work plan, the program-level quality assurance plan, and Alaska Department of Environmental Conservation (ADEC) regulatory and guidance documents.

Soil Sampling

Soil samples associated with AST 1 were collected directly from three excavations. Soil samples associated with ASTs 2, 3, 4, and 5 were recovered from disposable Geoprobe Macro Core® Teflon liners drilled in 4-foot intervals. Field personnel donned a new pair of nitrile gloves before collecting each sample. Soil was transferred into sample containers with decontaminated stainless steel spoons.

Field screening samples were collected as grab samples. Soil was transferred into a quart-sized, plastic, resealable bag until the bag was one-third to one-half full. The soil was warmed to between 55 and 70 degrees Fahrenheit (°F) to allow headspace vapors to develop. After the soil reached the desired temperature, established by touch, the bag was agitated and the probe of the photoionization detector (PID) was inserted. Readings were taken for approximately 30 seconds, and the maximum value was recorded in the log book. This soil was discarded at the mine site near the AST where it was collected.

Soil samples for laboratory analysis were collected from the excavations or Geoprobe liners and placed directly into laboratory-provided containers. The samples were then placed in a cooler and kept at approximately 4 degrees Celsius (°C) until delivered to the analytical laboratory.

Groundwater Sampling

Five existing groundwater monitoring wells were sampled using low flow/micropurge techniques. Foot valves and dedicated disposable tubing were used to purge each groundwater monitoring well, measure water quality parameters, and collect the analytical laboratory samples.

Water quality parameters were measured with a Horiba U-10 meter. At approximately 1-gallon intervals, pH, dissolved oxygen, turbidity, temperature, conductivity, and salinity values were recorded.

Groundwater samples were placed directly into laboratory-supplied sample containers. The groundwater samples were turbid and were not filtered before filling laboratory-provided containers.

2.2.2 Decontamination Procedures

Decontamination procedures for soil sampling equipment consisted of an Alconox wash followed by deionized water rinses. The equipment then air-dried before use.

Groundwater sampling equipment was dedicated at each monitoring well and was properly disposed of after use. No decontamination was performed on dedicated equipment.

2.2.3 Tank Demolition Procedures

The tanks were inspected and emptied of residual fluid during site activities in 2000.

After monitoring the tanks for flammable vapors and oxygen content, workers used a plasma torch to cut and dismantle each AST. First, an access hole was cut in the tank sidewall, allowing workers to inspect the tank. After the inspection (looking for sludge or liquid and testing the air quality), a second cut was made horizontally around the tank, approximately one-third of the way down from the top. The excavator then pulled this "ring" (including the tank roof) to the ground as a single unit. The dismantled ASTs were cut into manageable-sized pieces and buried in the onsite disposal area.

An exposure assessment was performed during the first 3 days of demolition activities. White Environmental Consultants, Inc., sampled and monitored air quality during all hotwork. The demolition crew used supplied air during the assessment. Results from the exposure assessment proved that lead was not a hazard; however, the

crew continued to use supplied air because of fumes created during hotwork activities.

Each AST was built over a wood plank base. This base consisted of layered, interlocked 1-inch by 8-inch wood planking. Most of this material was stained and smelled like diesel fuel. The BLM did not want the contaminated wood debris buried onsite with the AST metal; therefore, the wood was stacked and covered with plastic near each former AST pad. No samples of the wood were collected.

2.3 AST Demolition and Disposal

Five ASTs were used at the Red Devil Mine. The tanks were installed in the mid-1950s. Information for each AST is presented below.

Tank Number	Height (feet)	Diameter (feet)	Approximate Storage Capacity (gallons)	Surface area (sq. ft.)
AST 1	16.0	29.8	84,000	2,893
AST 2	16.0	23.5	52,000	2,049
AST 3	24.0	29.8	125,000	3,642
AST 4	16.0	23.5	52,000	2,049
AST 5	16.0	23.5	52,000	2,049

Note: The tank steel was approximately 3/16 inch thick

2.3.1 Demolition

Five field-constructed steel ASTs were cut and dismantled with a plasma torch. Tank cutting procedures are described in Section 2.2, Field Procedures.

Demolition of the ASTs began on September 11, 2003, with the following schedule:

AST 5	September 11-12
AST 4	September 12-14
AST 3	September 12-15
AST 2	September 15-18
AST 1	September 18-20

2.3.2 Disposal

AST metal (approximately 12,680 square feet) was buried in a disposal area onsite. Approximately 750 linear feet of pipeline was also placed in the disposal area. The wood planking from under each tank was stacked and covered next to each former AST pad.

The metal-disposal area was excavated near Monitoring Well (MW) 1 (Figure 2). This site was chosen because it was large enough to bury all of the demolition debris, was easily accessible by the heavy equipment, and did not limit or block the access road to the AST sites.

The disposal area was excavated in soil consisting of gravelly sand with a trace of finer-grained material. The completed disposal area measured approximately 55 feet long, 15 feet wide, and 12 feet deep. After demolition materials were placed in the excavated disposal area, the disposal area was capped with approximately 3 feet of soil and graded to promote positive drainage and limit the potential for erosion.

2.4 Ore Hopper Demolition and Disposal

The ore hopper and support structure was approximately 40 feet high. The entire assembly included a funnel-shaped bin (the ore hopper) mounted on four steel-beam supports set in a concrete support structure, or foundation structure. The hopper was approximately 20 feet in diameter, constructed of bolted steel plates tapering into the shaker assembly. Four steel I-beam legs with cross members supported the hopper. The steel legs were set in concrete piers at least 2 feet by 2 feet by 9 feet tall. The piers were enclosed in a concrete foundation structure along with an ore crusher/shaker system and conveyor assembly.

2.4.1 Demolition

Demolition of the ore hopper took place in several stages starting on September 14, 2003. The metal support beams were cut and the funnel-shaped hopper assembly was pulled to the ground. The

metal was then cut into sections and placed in the disposal site.

The excavator was used to pull over, knock down, or pulverize the concrete structure supporting the ore hopper and the four large concrete piers supporting the ore hopper, the crusher and the conveyor assemblies. Concrete debris was left in place and covered by tailings from the bench above the ore hopper. Final grading occurred on September 23, 2003.

2.4.2 Disposal

Approximately 1,400 square feet of metal from the ore hopper, ore crusher, supports, and conveyor assembly was placed in the disposal area. Debris from inside the support structure and broken concrete (less than 10 cubic yards) was also placed in the disposal area.

Most of the concrete structure remained in place. It was buried with tailings from the bench above the ore hopper. Photographs in Appendix A show the final cover at this site.

2.5 Petroleum Release Investigation

MACTEC performed a petroleum release investigation to identify if petroleum products had affected soils near and under the fuel storage and distribution systems. Twelve soil borings and three excavations were completed as part of this task. After samples were collected, the excavations were backfilled with the excavated materials, and the soil borings were grouted to the surface with bentonite slurry. Sample locations are shown in Figure 3.

The AST at the top of the hill (AST 1) was sampled by using the excavator and trenching techniques. Soil was excavated near the center of the former AST, downslope toward the Kuskokwim River and downslope toward Red Devil Creek. Groundwater was not encountered in the excavations.

The four ASTs on the lower bench (ASTs 2, 3, 4, and 5) were sampled with a Geoprobe 6610DT drill rig. The rig is a self-propelled, track-mounted drill that combines direct-push coring methods with

hollow stem augers. It uses a static weight of 5,020 pounds combined with percussion (36,000 pounds) as energy for the advancement of a push rod. Continuous soil samples are recovered from a Macro-Core® Teflon liner (approximately 2 inches diameter by 4 feet long) advanced with the push rod. The liners were split, and samples were taken from the entire length of the core. A photograph of the sample core is in Appendix A. Groundwater was not encountered in any of the soil borings.

Field screening and analytical laboratory samples were collected from excavations and soil borings. Borings were placed directly in the footprint of each of the former ASTs, downslope toward the Kuskokwim River, and toward Red Devil Creek. Twenty-two project soil samples and three quality control (QC) soil samples were submitted for laboratory analyses.

Because the field-screening samples could not be warmed at the site, they were transported to the lodge, brought to temperature, and then the highest PID readings were recorded in the logbook.

Analytical samples were collected from the sides of the excavation and from split Teflon liners in the borings. Samples were placed into laboratory-provided containers, stored in a cooler with ice substitute, and maintained at about 4°C until transport to the laboratory.

Descriptions of the sampling activities for each area are presented below. Excavation and boring logs are presented in Appendix B.

2.5.1 AST 1

AST 1 is at the top of the hill on the east side of Red Devil Creek. Because this tank sits at the highest point on a bedrock outcrop, three excavations were completed instead of soil borings. The first excavation was near the center of the former AST (AST 1C); the second excavation was placed downslope from the former AST toward the river (AST 1RS); the final excavation was also downslope of the former AST toward Red Devil Creek and above AST 2 (AST 1W).

At AST 1C, 6 inches of fill, probably tailings, covered fractured bedrock. The excavation was terminated at 2 feet below ground surface (bgs) in fairly competent fractured bedrock. The orientation of the bedrock and its joint/fracture system in the excavation and along the bedrock wall rising behind the AST pad dips away from the Kuskokwim River and Red Devil Creek. No hydrocarbon staining or odors were noted in the excavation. One soil sample (03RDV30SL) and three field-screening samples were collected from this excavation.

At AST 1RS, approximately 2 feet of black soil overlaid 6 inches of organic material, above fractured bedrock, which was encountered at the bottom of the excavation. The surface soil is probably material removed from the foundation area of the AST and pushed over the side. The 6 inches of organic material had easily identifiable moss, tundra, and leaves; this is probably the original ground surface before AST construction. The excavation was terminated at 3 feet bgs.

No hydrocarbon staining or odors were noted during excavation activities or while sampling; however, when backfilling the hole a slight hydrocarbon odor was noted. The source could not be discerned. One soil sample (03RDV31SL) and four field-screening samples were collected from this excavation.

At AST 1W, fractured bedrock was encountered at less than 1 foot bgs on the south side of the excavation toward AST 1. The rest of the excavation was black soil with organic material down to 2 feet bgs. The excavation was terminated in fractured bedrock. No hydrocarbon staining or odors were noted. One soil sample (03RDV32SL) and two field-screening samples were collected.

2.5.2 AST 2

At AST 2, soil borings were completed with the use of direct-push coring. The first soil boring (AST 2C) was placed near the center of the former AST; the second boring (AST 2RS) was placed across the access road and downslope toward the Kuskokwim River; the final boring (AST 2W) was downslope from the former AST 2 toward Red Devil Creek and upslope from AST 3.

Boring AST 2C was advanced to a depth of 20 feet bgs. The top 6 inches of the 0-to-4-foot interval consisted of organic material with angular rock fragments in a brown gray sandy matrix. The rest of the interval consisted of a brown gray sand with angular rock pieces. The same material was recovered from the 4-to-8-foot and 8-to-12-foot intervals, with the amount of fractured rock increasing with depth. Near 13 feet bgs, a significant increase in the hammer pressure was needed to advance the core. An increase in the amount of fractured bedrock was noted at the bottom of this core and in the 16-to-20-foot interval.

A slight hydrocarbon odor was noted in the 16-to-20-foot-bgs interval. Two soil samples, 03RDV33SL (0 to 4 feet bgs) and 03RDV34SL (8 to 12 feet bgs), and seven field-screening samples were collected from this boring.

Boring AST 2RS was terminated at 20 feet bgs. Approximately 1 foot of organic material with the brown gray sandy gravel was noted in the 0-to-4-foot-bgs interval. The rest of the boring consisted of the brown gray sand with angular rock fragments. No hydrocarbon staining or odors were noted in this boring. One soil sample, 03RDV35SL (8-to-12-foot-bgs interval), and five field-screening samples were collected from this boring.

Boring AST 2W was terminated at 15 feet bgs because of refusal. The boring consisted of brown gray sand with angular rock fragments. No hydrocarbon staining or odors were noted in this boring. One soil sample, 03RDV44SL (4-to-8-foot-bgs interval), and three field-screening samples were collected from this boring.

2.5.3 AST 3

The first soil boring (AST 3C) at AST 3 was placed near the center of the tank footprint; the second boring (AST 3RS) was placed across the access road upgradient of the Kuskokwim River; the final boring (AST 3W) was also downslope from the former AST and in the access road upslope of AST 4.

Boring AST 3C was advanced until refusal at approximately 19 feet bgs. This boring consisted of a brown gray sand with angular rock pieces. The amount of silt and rock fragments increased in the cores with depth. At approximately 15 feet bgs a significant increase in the hammer pressure was needed to advance the core. A slight hydrocarbon odor was noted the entire depth of this boring. Two soil samples, 03RDV36SL (0 to 4 feet bgs) and 03RDV37SL (15 to 19 feet bgs), and five field-screening samples were collected from this boring.

Boring AST 3RS was terminated at 14 feet bgs in fractured bedrock. Brown gray gravelly sand was encountered the entire length of the boring, with the amount of rock increasing with depth until refusal at 14 feet bgs. No hydrocarbon staining was noted; however, a strong hydrocarbon odor was noted to a depth of approximately 9 feet bgs. No odor was noted below this depth. Two soil samples, 03RDV42SL (0 to 4 feet bgs) and 03RDV43SL (8 to 12 feet bgs), and three field-screening samples were collected from this boring.

Boring AST 3W was terminated at 13 feet bgs because of refusal. The boring consisted of brown gray sand with angular rock fragments. No hydrocarbon staining or odors were noted in this boring. One soil sample, 03RDV45SL (8 to 12 feet bgs), and four field-screening samples were collected from this boring.

2.5.4 AST 4

At AST 4, the first soil boring (AST 4C) was placed near the center of the former AST footprint; the second boring (AST 4RS) was placed across the access road, down the slope toward Red Devil Creek; the final boring (AST 4W) was also down the slope from the former AST and upslope from AST 5.

Boring AST 4C was advanced to 20 feet bgs. The boring consisted of brown gray sand with angular rock pieces for the entire length of the boring. More angular rock was noted in the 0-to-4-foot interval, indicated by poor recovery in the core. A slight hydrocarbon odor was noted to approximately 11 feet bgs. No hydrocarbon odor was detected between 12 and 16 feet bgs, and a slight

hydrocarbon odor was again noted at the top of the 16-to-20-foot-bgs interval. Two soil samples, 03RDV38SL (4 to 8 feet bgs) and 03RDV39SL (8 to 12 feet bgs), and five field-screening samples were collected from this boring.

Boring AST 4RS was advanced an additional 4 feet to 24 feet bgs because of the hydrocarbon odor detected in the 16-to-20-foot-bgs interval in AST 4C. Brown gray gravelly sand was encountered in the 0-to-4-foot interval. Increased organics in brown gray sand with a few rock fragments were encountered between 4 and 8 feet bgs. Core samples returned to the brown gray sand with angular rock fragments in the rest of the boring, with the amount of rock fragments increasing with depth. Two analytical samples, 03RDV46SL (8 to 12 feet bgs) and 03RDV47SL (20 to 24 feet bgs), were collected. Although no hydrocarbon odor was noted in this boring, the second analytical sample was collected from the 20-to-24-foot-bgs interval to intercept any plume that might exist under AST 4. Six field-screening samples were collected from this boring.

Boring AST 4W was terminated at 20 feet bgs. The boring consisted of brown gray sand with angular rock fragments. The amount of sand decreased with depth, and the amount of angular rock fragments increased. No hydrocarbon staining or odors were noted in this boring. One soil sample and a QC sample (03RDV48SL and 03RDV49SL, respectively) were collected from the 8-to-12-foot-bgs interval. Five field-screening samples were collected from this boring.

2.5.5 AST 5

At AST 5, the first soil boring (AST 5C) was placed near the center of the former AST; the second boring (AST 5RS) was placed across the access road, down the slope toward Red Devil Creek; the final boring (AST 5W) was downslope from the former AST and on the same side of the access road as the former AST, near where the distribution pipeline may have been formerly located. This site represents the farthest downslope sample location and is downslope toward the retort area.

Boring AST 5C was advanced to 20 feet bgs. This boring had brown gray sand with angular rock pieces along the entire depth. The amount of rock fragments in the core increased with depth. A strong hydrocarbon odor was noted for the entire depth of this boring. Two soil samples, 03RDV40SL (4 to 8 feet bgs) and 03RDV41SL (16 to 20 feet bgs), and five field-screening samples were collected from this boring.

Boring AST 5RS was terminated at 24 feet bgs in fractured bedrock. Brown gray sandy gravel was encountered from 0 to 4 feet bgs. Between 4 and 12 feet bgs, the material had more organics and less rock. Very little resistance was needed to push the rod in this material. The rest of the boring was the typical brown gray sand with rock fragments, the amount of rock increasing with depth. No hydrocarbon odor was noted; however, because of the strong hydrocarbon odor noted under AST 5, two soil samples, 03RDV53SL (16 to 20 feet bgs) and 03RDV54SL (20 to 24 feet bgs), were collected from this boring. One QC sample, 03RDV55SL, was also recovered from the 20-to-24-foot-bgs interval.

Boring AST 5W was extended to 24 feet bgs because of the strong hydrocarbon odor from under AST 5 and because this is the lowest elevation being drilled to delineate any plume. The boring consisted of brown gray sand with angular rock fragments. No hydrocarbon odors were noted until approximately 20 feet bgs. Two soil samples, 03RDV50SL (16 to 20 feet bgs) and 03RDV52SL (20 to 24 feet bgs), one QC sample, 03RDV51SL (20 to 24 feet bgs), and six field-screening samples were collected from this boring.

2.6 Groundwater Sampling

Dedicated disposal equipment was used for groundwater sampling. Purge water was transported to Emerald Alaska for treatment and disposal. A Certificate of Disposal is presented in Appendix C.

As water was purged from the wells, water quality parameters were measured and recorded in the logbook at approximately 1-gallon intervals. All wells produced turbid water even after several well volumes were removed. All groundwater samples

were collected and placed unfiltered directly into laboratory-provided containers.

Sample 03RDVMW4 was collected from MW04 on September 20, 2003. More than 15 well volumes were removed before sampling. All parameters except the turbidity had stabilized at the time of sampling.

Three well volumes were purged from MW01 before collecting sample 03RDVMW1 on September 22, 2003. Quality control sample 03RDVMW10 was collected at the same time and submitted for analysis.

Sample 03RDVMW3 was collected from MW03 on September 20, 2003. Approximately 10 well volumes were removed before sampling.

Sample 03RDVMW6 was collected from MW06 on September 22, 2003. Approximately six well volumes were purged before sampling.

On September 23, 2003, MW07 was purged and did not recharge. Approximately 0.5 gallon of water was removed initially. After 6 hours the well had recharged enough for the collection of sample 03RDVMW7; however, because of the slow recharge only 0.5 liter was submitted for diesel-range organics and residual-range organics (DRO/RRO) analysis.

3.0 LABORATORY RESULTS

3.1 Analytical Program

Sample numbers, locations, depths, and requested chemical analyses are summarized in Tables 1 and 2 and the sample record log in Appendix D. Soil sample locations (and analytical results) are presented in Figure 3. Figure 4 presents groundwater information.

The project laboratory was Analytica Alaska in Anchorage, Alaska; Analytica-SE in Juneau, Alaska; and Analytica Environmental Laboratories in Thornton, Colorado. Sample preparation and chemical analyses were performed by using methods described in *Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods* (U.S.

Environmental Protection Agency [EPA], 1996) and State of Alaska Methods 101, 102, and 103.

Soil Analysis

- Gasoline-range organics (GRO) by State of Alaska Method AK101
- DRO by State of Alaska Method AK102
- RRO by State of Alaska Method AK103
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B
- Polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270C

Groundwater Water Analysis

- GRO by State of Alaska Method AK101
- DRO by State of Alaska Method AK102
- RRO by State of Alaska Method AK103
- BTEX by EPA Method 8021B
- Inorganic compounds (metals – antimony and arsenic) by EPA Method 6020
- Inorganic compounds (metals – mercury) by EPA Method 7470A

3.2 Data Quality Assessment

MACTEC assessed data quality for all project and QC samples collected during the investigation. The results of the data quality assessment and checklists are in Appendix D. On the basis of MACTEC's data quality assessment, the data are considered acceptable.

3.3 Analytical Results

The analytical data and the regulatory cleanup levels for soil and groundwater samples are summarized in Tables 1 and 2 and Figures 3 and 4.

Soil samples collected from each excavation or boring had DRO, RRO, and BTEX analysis performed. Samples from the borings placed within the footprint of each AST also underwent PAH analysis. One sample at each AST site was also tested for GRO. A total of 23 project samples and 2 QC samples were analyzed.

Soil sample results were compared to cleanup levels established by the ADEC in Title 18, Alaska Administrative Code, Chapter 75 (18 AAC 75). Site specific parameters that influence the migration to groundwater and ingestion exposure pathway were used to develop alternative cleanup levels (Appendix E).

Groundwater samples were collected from the five existing monitoring wells; one QC sample was also collected from MW01. All samples were analyzed for GRO, DRO, RRO, BTEX, and antimony, arsenic, and mercury.

Groundwater results were compared to criteria established in ADEC 18 AAC 75, Table C.

3.3.1 Soil Results

A total of 23 project samples and 2 QC samples were analyzed. Sample results are summarized in Table 1 and presented in Figure 3. Analytical laboratory results are in Appendix D.

AST 1

Sample 03RDV30SL, collected from below the center of the AST, was analyzed for DRO (200 milligrams per kilogram [mg/kg]), RRO (not detected above the practical quantitation limit [ND]), and BTEX (ND, 0.16 mg/kg, 0.15 mg/kg, and 0.81 mg/kg, respectively). Reported concentrations were below cleanup levels.

Sample 03RDV31SL, collected from excavation AST 1RS, was analyzed for DRO (200 mg/kg), RRO (12 mg/kg), GRO (83 mg/kg), BTEX (ND, 0.089 mg/kg, ND, and 0.40 mg/kg, respectively), and PAHs (ND except for naphthalene at 0.4 mg/kg). Reported concentrations were below ADEC cleanup levels.

Sample 03RDV32SL, collected from excavation AST 1W, was analyzed for DRO (ND), RRO (ND), and BTEX (ND except for xylene at 0.021 mg/kg). Reported concentrations were below ADEC cleanup levels.

AST 2

Two samples were collected from boring AST 2C at 2.0 feet bgs and 10.0 feet bgs. Sample 03RDV33SL, collected at 2.0 feet bgs, was analyzed for DRO (82 mg/kg), RRO (9.8 mg/kg), GRO (ND), and BTEX (ND, 0.0099 mg/kg, ND, and 0.024 mg/kg, respectively). Sample 03RDV34SL, collected at 10.0 feet bgs, was analyzed for DRO (9.7 mg/kg), RRO (ND), and BTEX (0.016 mg/kg, 0.14 mg/kg, 0.060 mg/kg, and 0.33 mg/kg, respectively). Reported concentrations were below ADEC cleanup levels.

Sample 03RDV35SL, collected from Boring AST 2RS, was analyzed for DRO (ND), RRO (ND), and BTEX. BTEX concentrations were reported ND, except for toluene, which was detected at 0.014 mg/kg. Reported concentrations were below cleanup levels.

Sample 03RDV44SL, collected from Boring AST 3W, was analyzed for DRO, RRO, and BTEX. Reported concentrations were ND, with the exception of xylene, which was detected at 0.037 mg/kg. Reported concentrations were below cleanup levels.

AST 3

Two samples were collected from Boring AST 3C at 2.0 feet bgs and 17.0 feet bgs. Sample 03RDV36SL, collected at 2.0 feet bgs, was analyzed for DRO (210 mg/kg), RRO (ND), GRO (59 mg/kg), BTEX (ND, 0.16 mg/kg, 0.081 mg/kg, and 0.63 mg/kg, respectively), and PAHs (ND except for naphthalene at 0.150 mg/kg and phenanthrene at 0.100 mg/kg). Sample 03RDV37SL, collected at 17.0 feet bgs, was analyzed for DRO (9.2 mg/kg), RRO (ND), and BTEX (0.053 mg/kg, 0.020 mg/kg, 0.16 mg/kg, and 0.29 mg/kg, respectively). Reported concentrations were below ADEC cleanup levels.

Two samples were collected from Boring AST 3RS at 5.0 feet bgs and 10.0 feet bgs. Sample 03RDV42SL was analyzed for DRO (18 mg/kg), RRO (ND), GRO (ND), BTEX (ND except for xylene at 0.026 mg/kg), and PAHs (ND except for naphthalene at 0.14 mg/kg). Sample 03RDV43SL was analyzed for DRO (ND), RRO (ND), and BTEX (ND except for toluene at 0.011 mg/kg). Reported concentrations were below cleanup levels.

Sample 03RDV45SL, collected from Boring AST 3W, was analyzed for DRO (ND), RRO (ND), and BTEX (ND for all analytes). Reported concentrations were below cleanup levels.

AST 4

Two samples were collected from Boring AST 4C at 6.0 feet bgs and 10.0 feet bgs. Sample 03RDV38SL, 6.0 feet bgs, was analyzed for DRO (3,000 mg/kg), RRO (ND), GRO (53 mg/kg), BTEX (ND, 0.096 mg/kg, 0.18 mg/kg, and 1.2 mg/kg, respectively), and PAHs (ND except for naphthalene at 0.054 mg/kg and phenanthrene at 0.077 mg/kg). The concentration of DRO exceeded the ADEC cleanup level (1,190 mg/kg). Sample 03RDV39SL, collected at 10.0 feet bgs, was analyzed for DRO (83 mg/kg), RRO (ND), and BTEX (ND, 0.030 mg/kg, 0.025 mg/kg, and 0.18 mg/kg, respectively). Reported concentrations were below ADEC cleanup levels.

Two samples were collected from Boring AST 4RS at 10.0 feet bgs and 22.0 feet bgs. Both samples, 03RDV46SL and 03RDV47SL, were analyzed for DRO, RRO, and BTEX. Concentrations for all analytes were reported as ND except for xylene (0.048 mg/kg) in sample 03RDV47SL. Reported concentrations were below cleanup criteria.

Sample 03RDV48SL, collected from Boring AST 4W at 10.0 feet bgs, was analyzed for DRO, RRO, and BTEX. Reported concentrations were ND except for toluene (0.029 mg/kg) and xylene (0.069 mg/kg). Reported concentrations were below ADEC cleanup criteria.

AST 5

Two samples were collected from Boring AST 5C at 6.0 feet bgs and 18.0 feet bgs. Sample

03RDV40SL, collected at 6.0 feet bgs, was analyzed for DRO (3,400 mg/kg), RRO (ND), GRO (120 mg/kg), BTEX (ND, 0.14 mg/kg, 0.17 mg/kg and 2.3 mg/kg, respectively), and PAHs (ND except for naphthalene at 0.260 mg/kg and phenanthrene at 0.150 mg/kg). DRO and GRO concentrations exceeded the ADEC cleanup levels of 1,190 mg/kg and 100 mg/kg, respectively. Sample 03RDV41SL, collected at 18.0 feet bgs, was analyzed for DRO (47 mg/kg), RRO (ND), and BTEX (ND [0.013], 0.061 mg/kg, 0.063 mg/kg, and 0.42 mg/kg, respectively). Reported concentrations were below the cleanup levels.

Two project samples were collected from Boring AST 5RS at 18.0 feet bgs and 22.0 feet bgs; one QC sample was collected at 22.0 feet bgs. Sample 03RDV53SL, collected at 18.0 feet bgs, was analyzed for DRO (10 mg/kg), RRO (ND), and BTEX (ND, 0.015 mg/kg, ND, and 0.037 mg/kg, respectively). Sample 03RDV54SL, collected at 22.0 feet bgs, was analyzed for DRO (ND), RRO (ND), GRO (ND), BTEX (ND, 0.013 mg/kg, ND, and 0.03 mg/kg, respectively). QC sample 03RDV55SL was analyzed for DRO (ND), RRO (ND), GRO (ND), and BTEX (ND except xylene at 0.035 mg/kg). Reported concentrations were below ADEC cleanup criteria.

Two samples were collected from Boring AST 5W. Sample 03RDV50SL, collected at 18.0 feet bgs, was analyzed for DRO (ND), RRO (13 mg/kg), and BTEX (ND except for xylene at 0.047 mg/kg). Sample 03RDV52SL, collected at 22.0 feet bgs, was analyzed for DRO (ND), RRO (ND), and BTEX (ND except for xylene at 0.045 mg/kg). Quality control sample 03RDV51SL was collected at 18.0 feet bgs and analyzed for DRO (20 mg/kg), RRO (15 mg/kg), and BTEX (ND, 0.018 mg/kg, ND, and 0.053 mg/kg, respectively). Reported concentrations were below ADEC cleanup levels.

3.3.2 Groundwater Results

Five existing monitoring wells were sampled; one QC sample was collected from MW01. Results are presented in Table 2. The analytical laboratory reports are included in Appendix D.

Sample 03RDVMW1, collected from MW01, was analyzed for GRO (ND), DRO (ND), RRO

(0.30 milligrams per liter [mg/L]), BTEX (ND for all analytes), antimony (0.0080 mg/L), arsenic (0.0330 mg/L), and mercury (ND). The concentration of antimony exceeded the ADEC cleanup level of 0.006 mg/L. Quality control sample 03RDVMW10 was analyzed for GRO (ND), DRO (ND), RRO (0.25 mg/L), BTEX (ND for all analytes), antimony (0.0070 mg/L), arsenic (0.0340 mg/L), and mercury (0.0037 mg/L). The concentration of antimony and mercury exceeded the ADEC cleanup levels of 0.006 mg/L and 0.002 mg/L, respectively.

Sample 03RDVMW3, collected from MW03, was analyzed for GRO (ND), DRO (ND), RRO (0.24 mg/L), BTEX (ND for all analytes), antimony (0.7510 mg/L), arsenic (0.1480 mg/L), and mercury (0.001 mg/L). The concentrations of antimony and arsenic exceeded the ADEC cleanup levels of 0.006 mg/L and 0.05 mg/L, respectively.

Sample 03RDVMW4, collected from MW04, was analyzed for GRO (ND), DRO (0.25 mg/L), RRO (0.48 mg/L), BTEX (ND for all analytes), antimony (0.0435 mg/L), arsenic (0.0209 mg/L), and mercury (ND). The concentration of antimony exceeded the ADEC cleanup level of 0.006 mg/L.

Sample 03RDVMW6, collected from MW06, was analyzed for GRO (ND), DRO (ND), RRO (0.25mg/L), BTEX (ND for all analytes), antimony (0.0150 mg/L), arsenic (0.0360 mg/L), and mercury (ND). The concentration of antimony exceeded the ADEC cleanup level of 0.006 mg/L.

Sample 03RDVMW7, collected from MW07, was analyzed for GRO (ND), DRO (ND), RRO (ND); BTEX (ND for all analytes), antimony (ND), arsenic (ND), and mercury (0.011 mg/L). The concentration of mercury exceeded the ADEC cleanup level of 0.002 mg/L.

4.0 CONCLUSIONS

All project tasks were completed according to the SOW and project plan documents with the exceptions noted in Section 1.3. A summary of each task is presented below.

4.1 AST Demolition and Disposal

Demolition of the five ASTs began on September 11, 2003, and was completed on September 20, 2003.

- Tank cutting activities were conducted by crews using plasma torches. Crews used supplied air during all hotwork.
- An exposure assessment was performed during cutting operations; findings indicated that lead was not a hazard.
- The wood plank base beneath each tank was removed, stacked, and covered with Visqueen alongside each former AST location.
- The disposal area for tank steel and piping is near MW01 and measures approximately 55 feet long, 15 feet wide, and 12 feet deep.
- Approximately 12,700 square feet of tank metal was placed in the onsite disposal area.
- The disposal area was capped with more than 3 feet of soil and graded to promote positive drainage and minimize the likelihood of erosion.

4.2 Ore Hopper Demolition

The ore hopper stood approximately 40 feet tall above a concrete foundation structure with pier blocks.

- Demolition of the ore hopper started on September 14, 2003, and continued in several stages.
- Approximately 1,400 square feet of ore hopper metal was placed in the disposal area.
- Less than 10 cubic yards of concrete was placed in the disposal area.
- Tailings from the bench above the ore hopper were used to bury the building foundation.

- Final grading over the foundation building occurred on September 23, 2003.

4.3 Petroleum Release Investigation

The information presented in this section includes a discussion of results for samples collected in 2000 and the results from our 2003 release investigation.

Previous work (completed in 2000) included inspecting the ASTs and fuel distribution lines for residual fuels or fluids and taking shallow surface samples near a valve on each AST, at visible joints in the fuel distribution lines, and in areas of visible surface staining. Findings included the following:

- Up to 2 inches of rainwater (no sheen or odor) was inside the ASTs.
- The pipeline from the Kuskokwim River to AST 1 had approximately 55 gallons of fuel recovered. This was transported offsite for energy recovery.
- Fuel distribution lines from the ASTs to the modern retort building were broken or disconnected at several points and in poor condition. No residual fuels were noted in the pipe sections.
- Twenty-two soil samples (maximum depth of approximately 3 feet bgs) were collected at the ASTs and fuel distribution lines and analyzed for DRO, RRO, GRO, and BTEX. Three samples were analyzed for PAHs. GRO, RRO, toluene, ethylbenzene, total xylenes, and PAHs were not detected at concentrations exceeding ADEC soil Method 3 cleanup levels. One sample, 00RDV11SL, had a benzene concentration of 0.095 mg/kg, which exceeds the ADEC alternate cleanup level of 0.087 mg/kg. DRO concentrations were above the ADEC alternate cleanup level of 1,190 mg/kg in 16 of the 22 samples. DRO concentrations above the cleanup level ranged from 1,910 mg/kg to 22,900 mg/kg.

In 2000, field crews inspected former fuel piping runs from the power plant north to the shop

building, mess hall, warehouse, and other mine buildings on the north side of Red Devil Creek. Fuel lines that were discovered were empty. No signs of impacts attributable to fuels were observed during inspection of piping runs in this area.

In 2003, soil samples were collected from excavations or borings under the ASTs and downgradient toward the Kuskokwim River and Red Devil Creek to identify possible petroleum contamination.

Findings include the following:

- The concentration of DRO exceeded the ADEC alternate cleanup level in two samples: one collected below AST 5 and one collected below AST 4. Both samples were collected from approximately 6 feet bgs.

Areas of concern are identified at the Kuskokwim River end of the pipeline, at the tank farm, and along the pipeline route toward the former retort area. Figure 5 presents the estimated areas and volumes where contaminants exceed the ADEC cleanup levels.

4.4 Groundwater Sampling

Groundwater sampling was performed in five existing monitoring wells in September 2003. Samples were analyzed for GRO, DRO, RRO, BTEX, arsenic, antimony, and mercury. Table 2 presents the analytical results and regulatory cleanup criteria. Figure 4 shows results and groundwater elevation information.

- DRO was detected in monitoring well MW04; however, the concentration was below ADEC cleanup levels.
- RRO was detected in four of five wells; however, there were no exceedances of ADEC cleanup levels.
- Antimony, arsenic, and mercury were detected at concentrations above ADEC cleanup levels.

A comparison between the 2003 data and data obtained in 2000 was performed. Concentrations of

antimony decreased in all wells. Arsenic concentrations decreased in four of the monitoring wells but increased in MW06 (from 25.4 to 36.0 micrograms per liter [$\mu\text{g/L}$]). Mercury concentrations decreased in MW01, MW03, and MW04, stayed the same in MW06 (ND), and increased in MW07 (from 5.48 $\mu\text{g/L}$ to 11.0 $\mu\text{g/L}$). No petroleum hydrocarbon analysis was performed in 2000; therefore, no comparison could be made.

5.0 CORRECTIVE ACTION

Remediation of the former tank farm will likely include excavating and treating approximately 2,300 cubic yards of petroleum-impacted soil by thermal desorption or land spreading.

Treatment of the contaminated soil will be in accordance with EPA and ADEC regulatory guidance.

Before site cleanup activities begin, a schedule of fieldwork and project planning documents will be submitted for regulatory approval. Submittals include a sampling and analysis plan, a waste management plan, and a cleanup plan. Included in the cleanup plan are site control plans, an air quality compliance discussion, and a detailed description of the cleanup technique (thermal desorption or land spreading).

Contaminated soil will be stockpiled before treatment. The stockpile will meet the requirements in 18 AAC 75.370, Soil Storage and Disposal. The stockpile will be placed more than 100 feet from all surface water and public, Class C, or private water systems. The liner will be of 20-mil-thick, oil-resistant material (18 AAC 75.360, Table D, Long-term Storage of Petroleum Contaminated Soil, 180 Days to 2 Years). The cover will be 6-mil, reinforced polyethylene liner material lapped over the bottom liner to prevent water running through soil. The stockpile will be inspected and maintained regularly.

Soil treatment will be by thermal desorption or onsite bioremediation (landspread). The alternative selected will depend on the final volume of soil and the BLM's goals for management of the site. Before the start of site activities, compliance criteria and

approvals as determined in 18 AAC 75.365 will be in place.

Post-treatment soil samples will be collected and analyzed in accordance with 18 AAC 78.605 post-treatment sample requirements. The treated material will then be spread onsite and graded to promote positive drainage and minimize the likelihood of erosion.

All stockpile construction materials will be removed for offsite disposal or recycling.

The contractor responsible for this work will be responsible for meeting all regulatory and guidance criteria.

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Table 1. Soil Results for 2003 Petroleum Release Investigation, Red Devil Mine, Alaska

Sample Number	03RDV30SL	03RDV31SL	03RDV32SL	03RDV33SL	03RDV34SL	03RDV35SL	03RDV36SL	03RDV37SL	03RDV38SL
Sample Date	9/25/2003	9/25/2003	9/25/2003	9/26/2003	9/26/2003	9/26/2003	9/26/2003	9/26/2003	9/26/2003
Location	AST 1 CENTER	AST 1 RIVER SIDE	AST 1 WEST	AST 2 CENTER	AST 2 CENTER	AST 2 RIVERSIDE	AST 3 CENTER	AST 3 CENTER	AST 4 CENTER
Depth (feet bgs)	1.5	2.6	1.9	2.0	10.0	10.0	2.0	17.0	6.0
Sample Type	PR	PR	PR	PR	PR	PR	PR	PR	PR
Associated QC									
Final PID Screening Level (ppm)	4167	9999	309	209	617	31	225	281	290

Analyte	Method	Units	Cleanup Criteria ^a	03RDV30SL	03RDV31SL	03RDV32SL	03RDV33SL	03RDV34SL	03RDV35SL	03RDV36SL	03RDV37SL	03RDV38SL
Organic Compounds												
GRO	AK101	mg/kg	1,380	--	83	--	ND (2.1)	--	--	59	--	53
DRO	AK102	mg/kg	1,190	200	200	ND(4.1)	82	9.7	ND(4.8)	210	9.2	3,000
RRO	AK103	mg/kg	10,000	ND (8.6)	12	ND(8.2)	9.8	ND(8.2)	ND(9.6)	ND(7.7)	ND(8.5)	ND(82)
Benzene	EPA 8021B	mg/kg	0.087	ND (0.017)	ND (0.071)	ND (0.0098)	ND (0.0096)	0.016	ND (0.013)	ND (0.052)	0.053	ND (0.048)
Toluene	EPA 8021B	mg/kg	25.2	0.16	0.089	ND (0.0098)	0.0099	0.14	0.014	0.16	0.020	0.096
Ethylbenzene	EPA 8021B	mg/kg	25.7	0.15	ND (0.071)	ND (0.0098)	ND (0.0096)	0.060	ND (0.013)	0.081	0.16	0.18
Total Xylenes	EPA 8021B	mg/kg	362	0.81	0.40	0.021	0.024	0.33	ND (0.027)	0.63	0.29	1.2
Polynuclear Aromatic Hydrocarbons												
Naphthalene	EPA 8270C	mg/kg	21	--	0.400 J	--	--	--	--	0.150 J	--	0.054 J
Phenanthrene	EPA 8270C	mg/kg	4,300	--	--	--	--	--	--	0.100 J	--	0.077 J

-- Not analyzed
 bgs Below ground surface
 DRO Diesel-range organics
 EPA U.S. Environmental Protection Agency
 GRO Gasoline-range organics
 J Analyte was detected above Method Detection Limit but below Practical Quantitation Limit.

mg/kg Milligrams per kilogram
 ND Not detected at or above the reporting limit in parentheses
 PID Photoionization detector
 ppm Parts per million
 PR Project sample
 QC Quality control sample
 RRO Residual-range organics

a. Cleanup levels are from Alaska Department of Environmental Conservation, Title 18, Alaska Administrative Code, Chapter 75 (18 AAC 75). A summary of these cleanup levels and how they were developed is included in Appendix E.

Note: Results that exceed the cleanup level are shown in bold.

Table 1. Soil Results for 2003 Petroleum Release Investigation, Red Devil Mine, Alaska

Sample Number	03RDV39SL	03RDV40SL	03RDV41SL	03RDV42SL	03RDV43SL	03RDV44SL	03RDV45SL	03RDV46SL	03RDV47SL
Sample Date	9/26/2003	9/26/2003	9/26/2003	9/26/2003	9/26/2003	9/27/2003	9/27/2003	9/27/2003	9/27/2003
Location	AST 4 CENTER	AST 5 CENTER	AST 5 CENTER	AST 3 RIVERSIDE	AST 3 RIVERSIDE	AST 2 WEST	AST 3 WEST	AST 4 RIVERSIDE	AST 4 RIVERSIDE
Depth (feet bgs)	10.0	6.0	18.0	5.0	10.0	6.0	10.0	10.0	22.0
Sample Type	PR	PR	PR	PR	PR	PR	PR	PR	PR
Associated QC									
Final PID Screening Level (ppm)	99	230	163	30	4	57	26	29	20

Analyte	Method	Units	Cleanup Criteria ^a	03RDV39SL	03RDV40SL	03RDV41SL	03RDV42SL	03RDV43SL	03RDV44SL	03RDV45SL	03RDV46SL	03RDV47SL
Organic Compounds												
GRO	AK101	mg/kg	1,380	--	120	--	ND(2.3)	--	--	--	--	--
DRO	AK102	mg/kg	1,190	83	3,400	47	18	ND(4.4)	ND(4.2)	ND(4.1)	ND(4.2)	ND(4.2)
RRO	AK103	mg/kg	10,000	ND(8.2)	ND(85)	ND(8.5)	ND(9.3)	ND(8.9)	ND(8.5)	ND(8.1)	ND(8.4)	ND(8.5)
Benzene	EPA 8021B	mg/kg	0.087	ND (0.017)	ND (0.044)	ND (0.013)	ND (0.011)	ND (0.0094)	ND (0.015)	ND (0.013)	ND (0.015)	ND (0.017)
Toluene	EPA 8021B	mg/kg	25.2	0.030	0.14	0.061	ND (0.011)	0.011	ND (0.015)	ND (0.013)	ND (0.015)	ND (0.017)
Ethylbenzene	EPA 8021B	mg/kg	25.7	0.025	0.17	0.063	ND (0.011)	ND (0.0094)	ND (0.015)	ND (0.013)	ND (0.015)	ND (0.017)
Total Xylenes	EPA 8021B	mg/kg	362	0.18	2.30	0.42	0.026	ND (0.019)	0.037	ND (0.026)	ND (0.030)	0.048
Polynuclear Aromatic Hydrocarbons												
Naphthalene	EPA 8270C	mg/kg	21	--	0.260 J	--	0.140 J	--	--	--	--	--
Phenanthrene	EPA 8270C	mg/kg	4,300	--	0.150 J	--	--	--	--	--	--	--

-- Not analyzed
 bgs Below ground surface
 DRO Diesel-range organics
 EPA U.S. Environmental Protection Agency
 GRO Gasoline-range organics
 J Analyte was detected above Method Detection Limit but below Practical Quantitation Limit.

mg/kg Milligrams per kilogram
 ND Not detected at or above the reporting limit in parentheses
 PID Photoionization detector
 ppm Parts per million
 PR Project sample
 QC Quality control sample
 RRO Residual-range organics

a. Cleanup levels are from Alaska Department of Environmental Conservation, Title 18, Alaska Administrative Code, Chapter 75 (18 AAC 75). A summary of these cleanup levels and how they were developed is included in Appendix E.

Note: Results that exceed the cleanup level are shown in bold.

Table 1. Soil Results for 2003 Petroleum Release Investigation, Red Devil Mine, Alaska

Sample Number	03RDV48SL	03RDV49SL	03RDV50SL	03RDV51SL	03RDV52SL	03RDV53SL	03RDV54SL	03RDV55SL
Sample Date	9/27/2003	9/27/2003	9/27/2003	9/27/2003	9/27/2003	9/27/2003	9/27/2003	9/27/2003
Location	AST 4 WEST	AST 4 WEST	AST 5 WEST	AST 5 WEST	AST 5 WEST	AST 5 RIVERSIDE	AST 5 RIVERSIDE	AST 5 RIVERSIDE
Depth (feet bgs)	10.0	10.0	18.0	18.0	22.0	18.0	22.0	22.0
Sample Type	PR	QC	PR	QC	PR	PR	PR	QC
Associated QC	03RDV49SL		03RDV51SL				03RDV55SL	
Final PID Screening Level (ppm)	25	25	40	40	23	30	32	32

Analyte	Method	Units	Cleanup Criteria ^a	03RDV48SL	03RDV49SL	03RDV50SL	03RDV51SL	03RDV52SL	03RDV53SL	03RDV54SL	03RDV55SL
Organic Compounds											
GRO	AK101	mg/kg	1,380	—	—	—	—	—	—	ND(2.8)	ND(3.5)
DRO	AK102	mg/kg	1,190	ND(4.3)		ND(4.4)	20	ND(4.2)	10	ND(4.5)	ND(4.3)
RRO	AK103	mg/kg	10,000	ND (8.7)		13	15	ND(8.5)	ND(8.7)	ND(9.0)	ND(8.5)
Benzene	EPA 8021B	mg/kg	0.087	ND (0.019)		ND (0.016)	ND (0.016)	ND (0.018)	ND (0.014)	ND (0.013)	ND (0.016)
Toluene	EPA 8021B	mg/kg	25.2	0.029		ND (0.016)	0.018	ND (0.018)	0.015	0.013	ND (0.016)
Ethylbenzene	EPA 8021B	mg/kg	25.7	ND (0.019)		ND (0.016)	ND (0.016)	ND (0.018)	ND (0.014)	ND (0.013)	ND (0.016)
Total Xylenes	EPA 8021B	mg/kg	362	0.069		0.047	0.053	0.045	0.037	0.030	0.035
Polynuclear Aromatic Hydrocarbons											
Naphthalene	EPA 8270C	mg/kg	21	—		—	—	—	—	—	—
Phenanthrene	EPA 8270C	mg/kg	4,300			—	—	—	—	—	—

— Not analyzed
 bgs Below ground surface
 DRO Diesel-range organics
 EPA U.S. Environmental Protection Agency
 GRO Gasoline-range organics
 J Analyte was detected above Method Detection Limit but below Practical Quantitation Limit.

mg/kg Milligrams per kilogram
 ND Not detected at or above the reporting limit in parentheses
 PID Photoionization detector
 ppm Parts per million
 PR Project sample
 QC Quality control sample
 RRO Residual-range organics

a. Cleanup levels are from Alaska Department of Environmental Conservation, Title 18, Alaska Administrative Code, Chapter 75 (18 AAC 75). A summary of these cleanup levels and how they were developed is included in Appendix E.

Prepared/Date: 8/6/11/04
 Checked/Date: 8/11/04

Note: Results that exceed the cleanup level are shown in bold.

Table 2. Groundwater Analytical Results, Red Devil Mine, Alaska

				Sample Number	03RDVMW1	03RDVMW3	03RDVMW4	03RDVMW6	03RDVMW7	03RDVMW10
				Sample Date	9/22/2003	9/20/2003	9/20/2003	9/22/2003	9/23/2003	9/22/2003
				Location	West side of Red Devil Creek, near retort	West side of Red Devil Creek, near settling pond	East side of Red Devil Creek	East side of Red Devil Creek	West side of Red Devil Creek, west of retort/ore hopper	West side of Red Devil Creek, near retort
				Sample Type	PR	PR	PR	PR	PR	QC
				Associated QC	03RDVMW10					
Analyte	Method	Units	Cleanup Criteria							
GRO	AK101	mg/L	1.3	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
DRO	AK102	mg/L	1.5	ND (0.11)	ND (0.11)	0.25	ND (0.11)	ND (0.17)	ND (0.17)	ND (0.11)
RRO	AK103	mg/L	1.1	0.30	0.24	0.48	0.25	ND (0.33)	0.25	0.25
Benzene	EPA 8021B	µg/L	5	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Toluene	EPA 8021B	µg/L	1,000	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Ethylbenzene	EPA 8021B	µg/L	700	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Total Xylenes	EPA 8021B	µg/L	10,000	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Antimony	EPA 6020	mg/L	0.006	0.0080	0.7510	0.0435	0.0150	ND (0.0010)	0.0070	0.0070
Arsenic	EPA 6020	mg/L	0.05	0.0330	0.1480	0.0209	0.0360	ND (0.0010)	0.0340	0.0340
Mercury	EPA 7470A	mg/L	0.002	ND(0.00020)	0.001	ND(0.00020)	ND(0.00020)	0.011	0.0037	0.0037

AK Alaska Method
DRO Diesel-range organics
EPA U.S. Environmental Protection Agency
GRO Gasoline-range organics
µg/L Micrograms per liter
mg/L Milligrams per liter
ND Not detected at or above the reporting limit in parentheses
PR Project sample
QC Quality control sample
RRO Residual-range organics

a. Cleanup levels are from Alaska Department of Environmental Conservation, Title 18, Alaska Administrative Code, Chapter 75 (18 AAC 75) Table C.
Note: Results that exceed the cleanup level are shown in bold.

Prepared/Date: Agg 6/10/04
Checked/Date: BWD 6/10/04

FIGURES



RED DEVIL MINE



File: 40340300001.dwg
 Path: P:\040\4034030008 red devil.rvt
 Date: 08/21/03 14:29:15

FIGURE

Site Location and Vicinity Maps

AST/Ore Hopper Demolition
 and Petroleum Release Investigation
 Red Devil Mine
 Red Devil, Alaska

1



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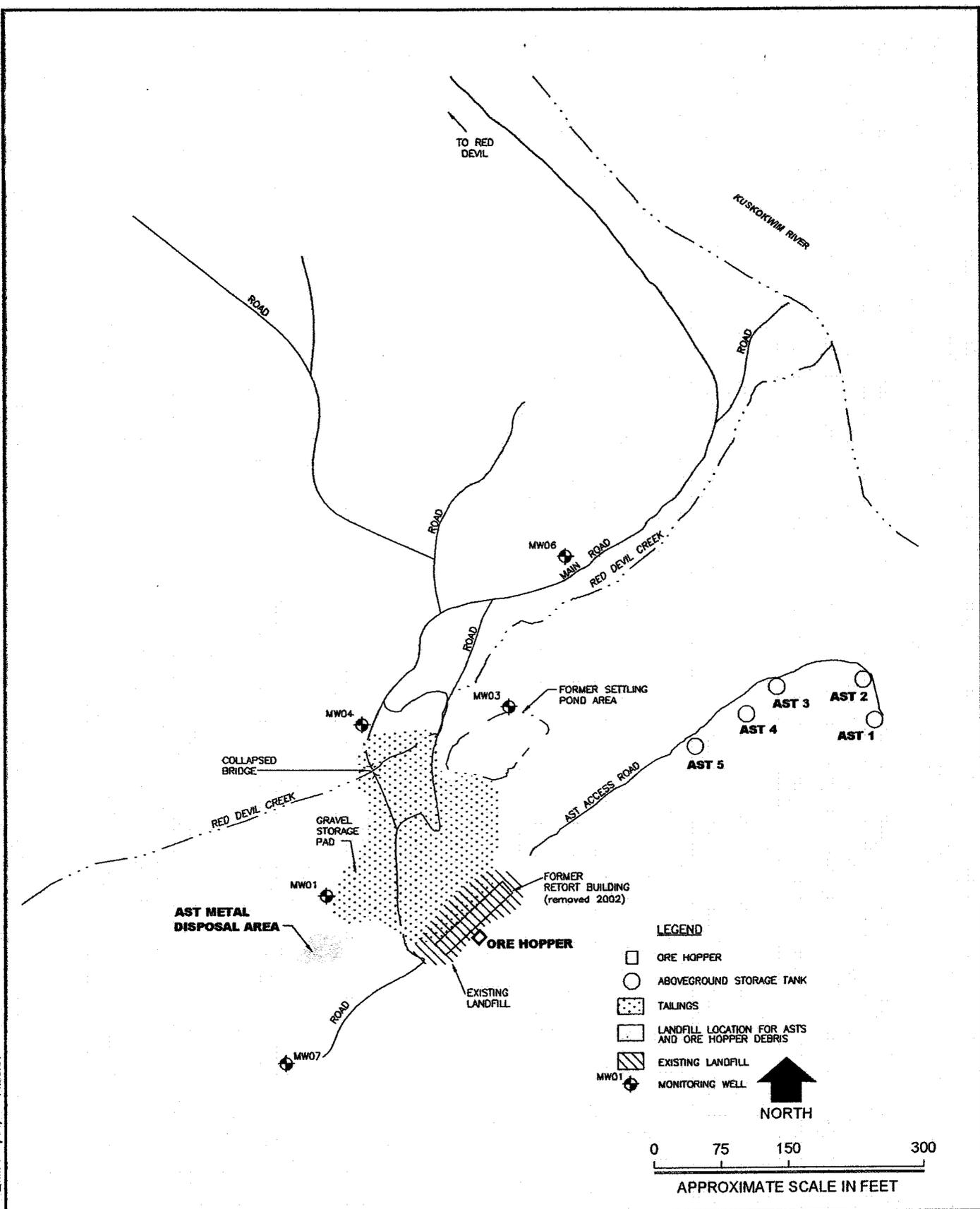
DRAWN
 JP

PROJECT NUMBER
 4034030008

APPROVED
 [Signature]

DATE
 8/2003

File: 4034030008.dwg
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 Date: 08/21/03 14:55:21



Site Plan
 AST/Ore Hopper Demolition
 and Petroleum Release Investigation
 Red Devil Mine
 Red Devil, Alaska

FIGURE

2



MACTEC
 Engineering and Consulting, Inc.

DRAWN JP	PROJECT NUMBER 4034030008	APPROVED [Signature]	DATE 8/2003
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03RDV46SL (10.0) Benzene ND(0.015) DRO ND(4.2) GRO --- RRO ND(8.4)	00RDV09SL (0-0.5) Benzene ND(0.0166) DRO 4.680 GRO 41.7 RRO ND(257)	00RDV11SL (0-0.5) Benzene 0.095 DRO 1.910 GRO 79.9 RRO 91.1	03RDV36SL (2.0) Benzene ND(0.052) DRO 210 GRO 59 RRO ND(7.7)	03RDV42SL (5.0) Benzene ND(0.011) DRO 18 GRO ND(2.3) RRO ND(9.3)	00RDV13SL (0-0.5) Benzene ND(0.0156) DRO 3.060 GRO 7.07 RRO 194	00RDV20SL (1.0-1.5) Benzene ND(0.0327) DRO 22.900 GRO 79.7 RRO ND(348)
03RDV47SL (22.0) Benzene ND(0.017) DRO ND(4.2) GRO --- RRO ND(8.5)	00RDV10SL (0-0.5) Benzene ND(0.0141) DRO 2.880 GRO 79.9 RRO ND(164)	03RDV45SL (10.0) Benzene ND(0.013) DRO ND(4.1) GRO --- RRO ND(8.1)	00RDV12SL (1.0-1.5) Benzene 0.0456 DRO 1.250 GRO 41.1 RRO 81.8	03RDV37SL (17.0) Benzene 0.053 DRO 9.2 GRO --- RRO ND(8.5)	03RDV43SL (10.0) Benzene ND(0.0094) DRO ND(4.4) GRO --- RRO ND(8.9)	00RDV21SL (2.5-3.0) Benzene ND(0.0154) DRO 13.600 GRO 69.8 RRO ND(356)
03RDV38SL (6.0) Benzene ND(0.048) DRO 3.000 GRO 53 RRO ND(82)	03RDV39SL (10.0) Benzene ND(0.017) DRO 83 GRO --- RRO ND(8.2)	03RDV48SL (10.0) Benzene ND(0.019) DRO ND(4.3) GRO --- RRO ND(8.7)	03RDV49SL (10.0) Benzene --- DRO --- GRO --- RRO ---	03RDV63SL (18.0) Benzene ND(0.014) DRO 10 GRO --- RRO ND(8.7)	03RDV54SL (22.0) Benzene ND(0.013) DRO ND(4.5) GRO ND(2.8) RRO ND(9.0)	03RDV55SL (22.0) Benzene ND(0.016) DRO ND(4.3) GRO ND(3.5) RRO ND(8.5)

03RDV38SL (6.0) Benzene ND(0.048) DRO 3.000 GRO 53 RRO ND(82)
03RDV39SL (10.0) Benzene ND(0.017) DRO 83 GRO --- RRO ND(8.2)

03RDV48SL (10.0) Benzene ND(0.019) DRO ND(4.3) GRO --- RRO ND(8.7)
03RDV49SL (10.0) Benzene --- DRO --- GRO --- RRO ---

03RDV63SL (18.0) Benzene ND(0.014) DRO 10 GRO --- RRO ND(8.7)
03RDV54SL (22.0) Benzene ND(0.013) DRO ND(4.5) GRO ND(2.8) RRO ND(9.0)
03RDV55SL (22.0) Benzene ND(0.016) DRO ND(4.3) GRO ND(3.5) RRO ND(8.5)

00RDV07SL (0-0.5) Benzene ND(0.0482) DRO 8.840 GRO 195 RRO ND(178)
00RDV08SL (0-0.5) Benzene ND(0.0213) DRO 3.270 GRO 128 RRO ND(180)

00RDV03SL (0-0.5) Benzene ND(0.0348) DRO 8.670 GRO 214 RRO ND(340)

03RDV50SL (18.0) Benzene ND(0.016) DRO ND(4.4) GRO --- RRO 13
03RDV51SL (18.0) Benzene ND(0.016) DRO 20 GRO --- RRO 15
03RDV52SL (22.0) Benzene ND(0.018) DRO ND(4.2) GRO --- RRO ND(8.5)

00RDV04SL (0-0.5) Benzene ND(0.015) DRO 4.010 GRO 38.7 RRO ND(375)
00RDV05SL (0-0.5) Benzene ND(0.0142) DRO 6.520 GRO 23.2 RRO ND(475)
00RDV06SL (0-0.5) Benzene ND(0.0132) DRO 8.900 GRO 21.8 RRO ND(392)

00RDV30SL (0-0.5) TOC 8,197

03RDV40SL (6.0) Benzene ND(0.044) DRO 3.400 GRO 120 RRO ND(55)
03RDV41SL (18.0) Benzene ND(0.013) DRO 47 GRO --- RRO ND(8.5)

00RDV19SL (2.5-3.0) Benzene ND(0.0154) DRO 13.600 GRO 69.8 RRO ND(356)

03RDV35SL (10.0) Benzene ND(0.013) DRO ND(4.8) GRO --- RRO ND(9.6)

00RDV14SL (1.0-1.5) Benzene 0.0658 DRO 530 GRO 110 RRO 18.2
00RDV15SL (2.0-2.5) Benzene 0.0319 DRO 559 GRO 53.8 RRO 27.7

00RDV16SL (1.5-2.0) Benzene ND(0.018) DRO 515 GRO 52.9 RRO ND(17.8)

03RDV31SL (2.6) Benzene ND(0.071) DRO 200 GRO 83 RRO 12

00RDV18SL (2.0-2.5) Benzene ND(0.0164) DRO 2,330 GRO 22.6 RRO 72.5

03RDV33SL (2.0) Benzene ND(0.0096) DRO 82 GRO ND(2.1) RRO 9.8

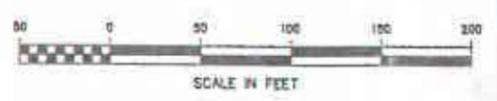
03RDV34SL (10.0) Benzene ND(0.018) DRO 9.7 GRO --- RRO ND(8.2)

00RDV17SL (0.75-1.0) Benzene ND(0.0178) DRO ND(9.99) GRO ND(3.55) RRO ND(16.5)

LEGEND:

- MW01 GROUNDWATER MONITORING WELL
- 00RDV23SL GENERAL MINE AREA AND FUEL STORAGE AREA SOIL SAMPLE LOCATIONS (2000)
- 03RDV31SL PETROLEUM RELEASE INVESTIGATION SOIL SAMPLE LOCATIONS (2003)
- NOT ANALYZED
- AST ABOVEGROUND STORAGE TANK
- DRO DIESEL-RANGE ORGANICS
- ND NOT DETECTED AT OR ABOVE THE PRACTICAL QUANTIFICATION LIMIT IN PARENTHESES
- RRO RESIDUAL-RANGE ORGANICS
- 03RDV36SL (10.0-15.0) SAMPLE LOCATION ID
- 10.5-15.0 SAMPLE DEPTH INTERVAL (FEET BELOW GROUND SURFACE)
- CONCENTRATION ANALYTE

ALL RESULTS PRESENTED IN MILLIGRAMS PER KILOGRAM
BOLD BLUE TEXT DENOTES EXCEEDANCE OF ADEC METHOD 3 CLEANUP LEVELS



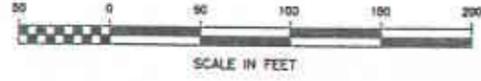
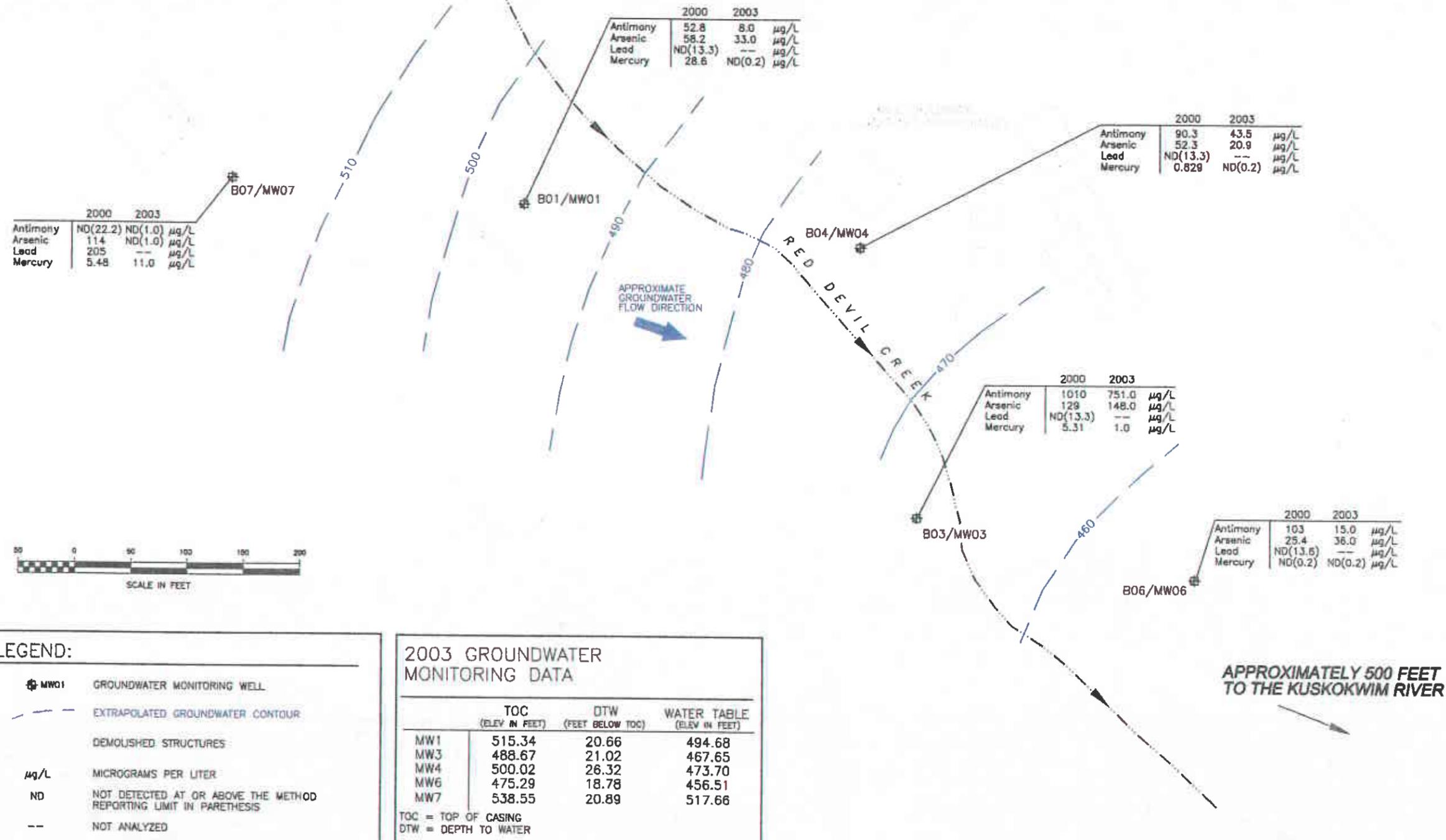
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Engineering and Consulting, Inc.

2000 and 2003 Soil Sample Locations and Results
AST/Ore Hopper Demolition and Petroleum Release Investigation
Red Devil Mine
Red Devil, Alaska

FIGURE 3

DRAWN: JP PROJECT NUMBER: 4034030008 APPROVED: [Signature] DATE: 11/2003

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Date: Time: 03/12/04 09:23:01



LEGEND:

- MW01 GROUNDWATER MONITORING WELL
- EXTRAPOLATED GROUNDWATER CONTOUR
- DEMOLISHED STRUCTURES
- µg/L MICROGRAMS PER LITER
- ND NOT DETECTED AT OR ABOVE THE METHOD REPORTING LIMIT IN PARETHESIS
- NOT ANALYZED

2003 GROUNDWATER MONITORING DATA

	TOC (ELEV IN FEET)	DTW (FEET BELOW TOC)	WATER TABLE (ELEV IN FEET)
MW1	515.34	20.66	494.68
MW3	488.67	21.02	467.65
MW4	500.02	26.32	473.70
MW6	475.29	18.78	456.51
MW7	538.55	20.89	517.66

TOC = TOP OF CASING
DTW = DEPTH TO WATER

Notes:
Groundwater contours are based on water elevations from monitoring wells (measured during well sampling in September 2003), Red Devil Creek, and local topography. Groundwater levels will fluctuate seasonally and groundwater generally flows towards the Kuskokwim River.

Monitoring well elevations and contours are based on an assumed elevation of 500.00 feet assigned to control monument "RDM-03 2000" during 2000 survey.

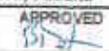


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Engineering and Consulting, Inc.

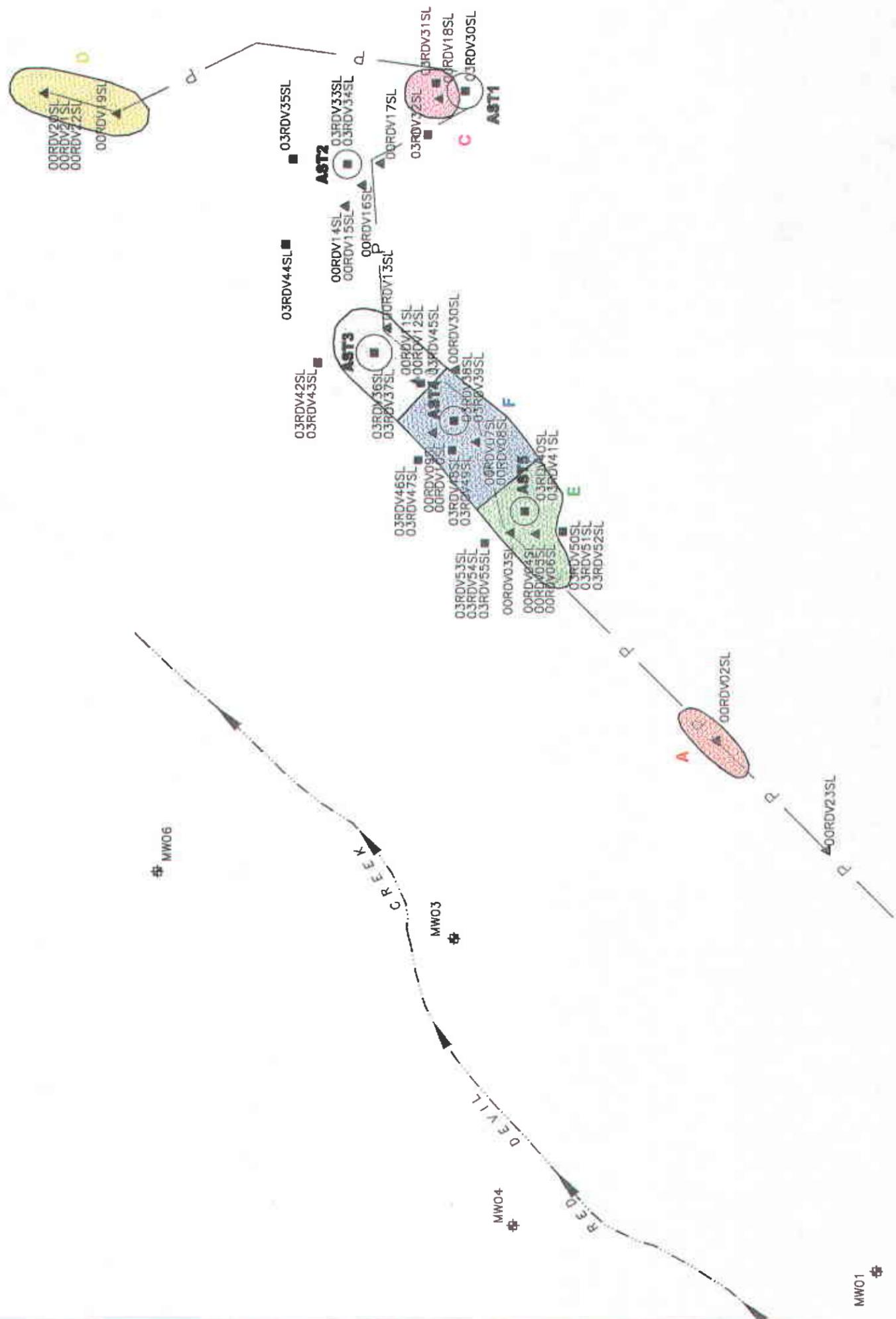
Groundwater Elevation Map and Sample Analytical Results 2000 and 2003

AST/Ore Hopper Demolition and Petroleum Release Investigation
Red Devil Mine
Red Devil, Alaska

FIGURE 4

DRAWN JP	PROJECT NUMBER 403403008	APPROVED 	DATE 11/2003
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 Date: 11/01/03 09:58:20



LOCATION	SURFACE AREA (SQ. FEET)	AVERAGE DEPTH (FEET)	VOLUME (CUBIC YARDS)
A	1598	2	120
C	5040	2	373
D	2281	3	253
E	1497	4	222
F	4516	3	502
F	6787	3	754

LEGEND:

- ☒ MW01 GROUNDWATER MONITORING WELL
- ▲ 00RDV23SL GENERAL MINE AREA AND FUEL STORAGE AREA
- 00RDV21SL SOIL SAMPLE LOCATIONS (2000)
- 00RDV19SL PETROLEUM RELEASE INVESTIGATION
- 03RDV31SL SOIL SAMPLE LOCATIONS (2003)

FIGURE **5**

Approximate Area of Soil Cleanup Level Exceedance

AST/Ore Hopper Demolition and Petroleum Release Investigation
Red Devil Mine
Red Devil, Alaska

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Engineering and Consulting, Inc.

PROJECT NUMBER
4034030008

DRAWN
JP

APPROVED
RCL

DATE
1/2004

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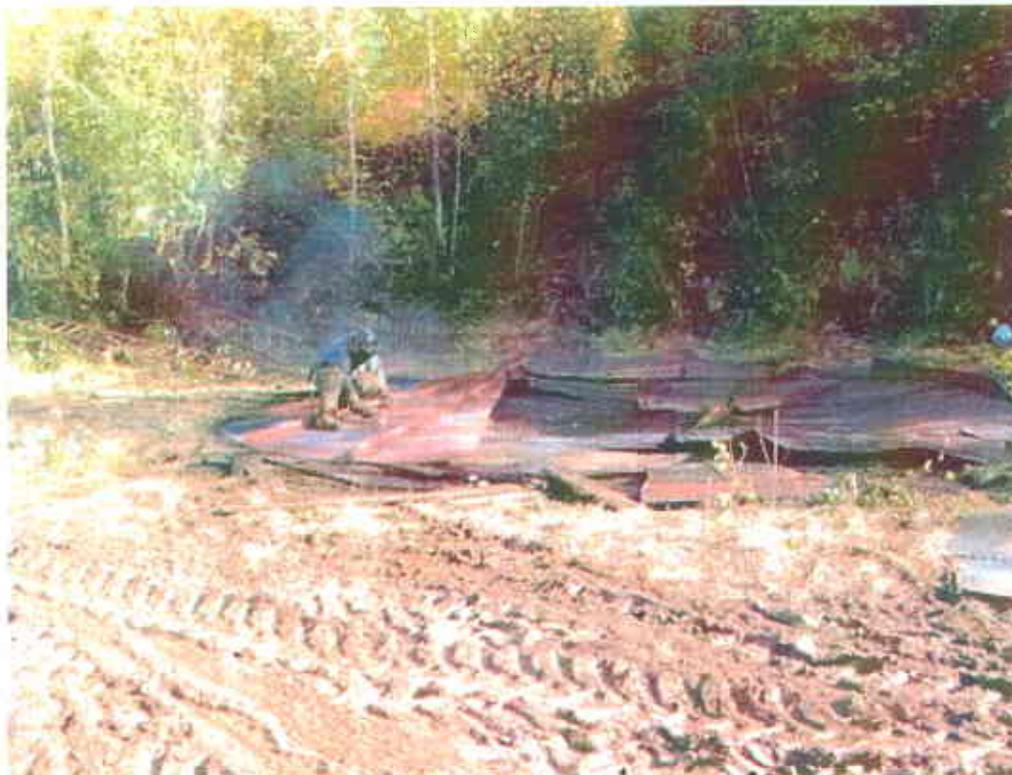


APPENDIX A
PHOTOGRAPH LOG

**AST/Ore Hopper Demolition and Petroleum Release Investigation,
Red Devil Mine**



AST 1, access panel cut out for inspection



AST 1, removing tank bottom

**AST/Ore Hopper Demolition and Petroleum Release Investigation,
Red Devil Mine**



AST 2 before demolition



AST 2 during demolition



Former AST 3, metal removed during demolition



AST 3 after tank removal, cutting tank bottom

**AST/Ore Hopper Demolition and Petroleum Release Investigation,
Red Devil Mine**



AST 4 Demolition



AST 4 demolition continued

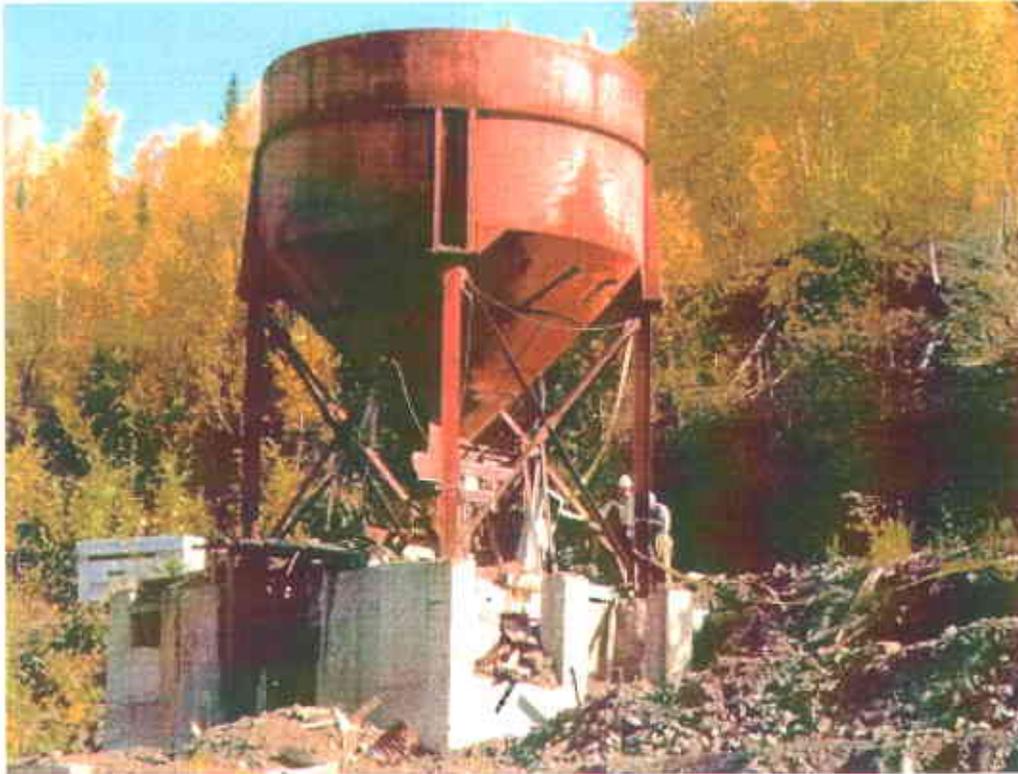
**AST/Ore Hopper Demolition and Petroleum Release Investigation,
Red Devil Mine**



AST 5 Demolition



AST 5, wood planking beneath tank



Ore hopper



Ore hopper foundation structure

**AST/Ore Hopper Demolition and Petroleum Release Investigation,
Red Devil Mine**



Ore hopper site after demolition



AST metal disposal area under construction



AST metal in disposal area



Disposal area during fieldwork

**AST/Ore Hopper Demolition and Petroleum Release Investigation,
Red Devil Mine**



Petroleum release investigation trench at AST 1



Petroleum release investigation drilling with Geoprobe 6610DT

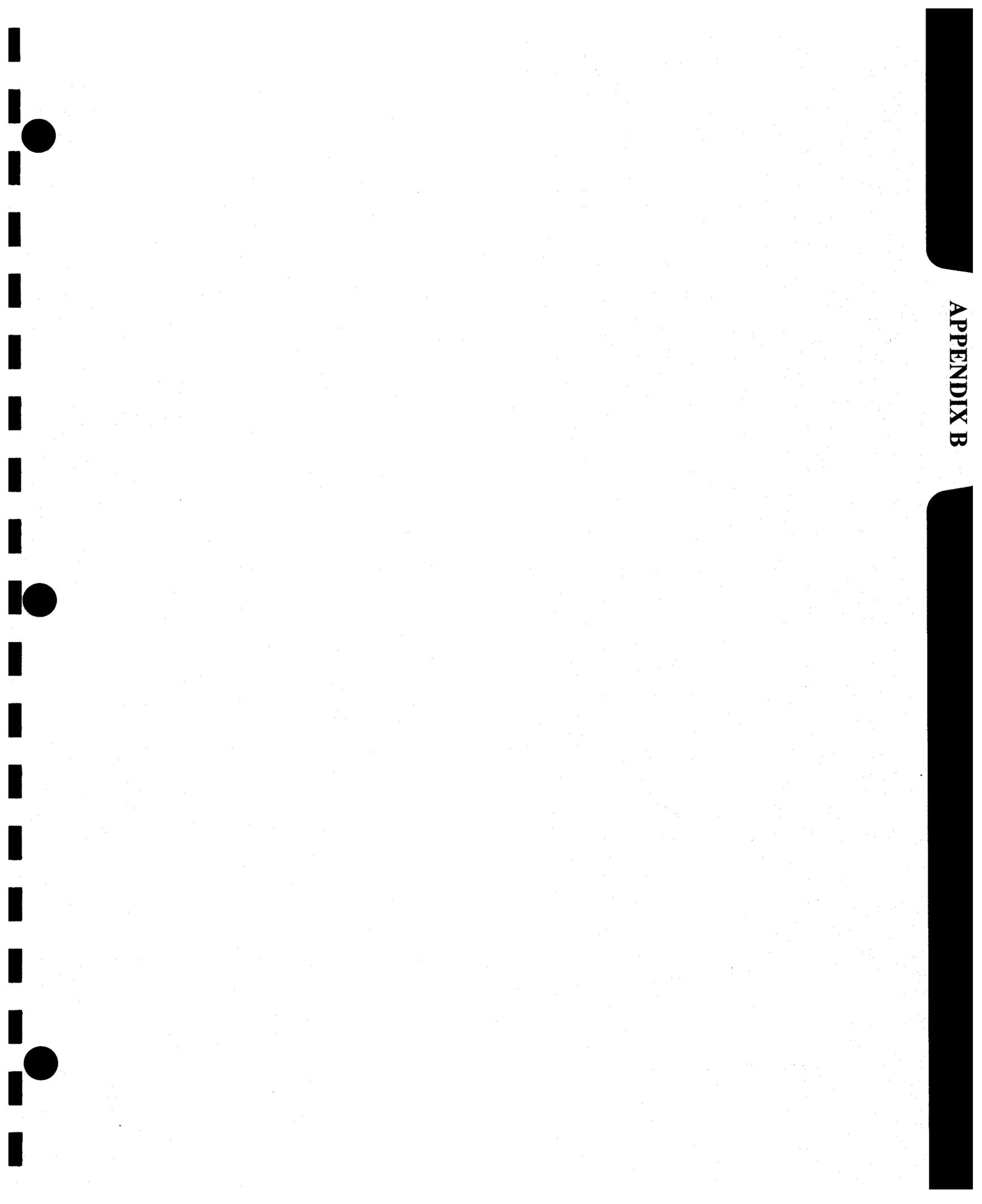
**AST/Ore Hopper Demolition and Petroleum Release Investigation,
Red Devil Mine**



Core sample from Geoprobe



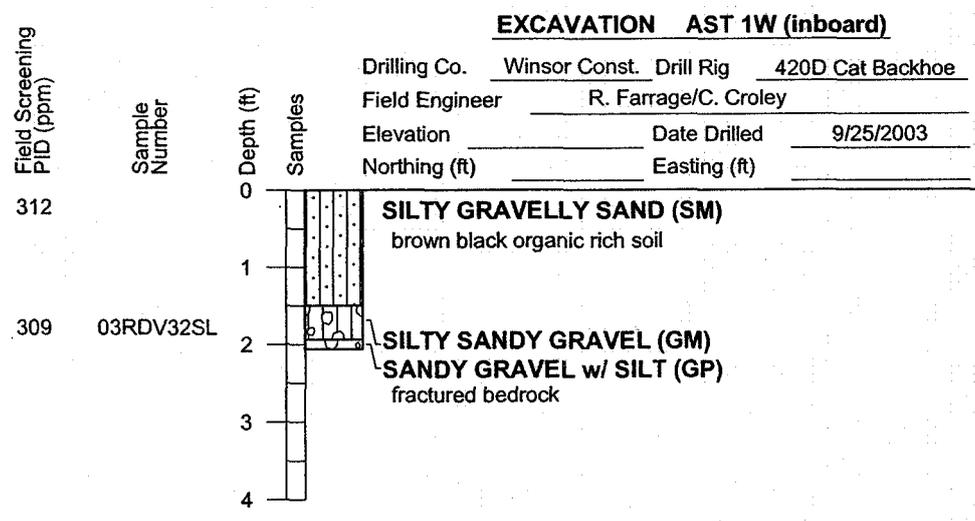
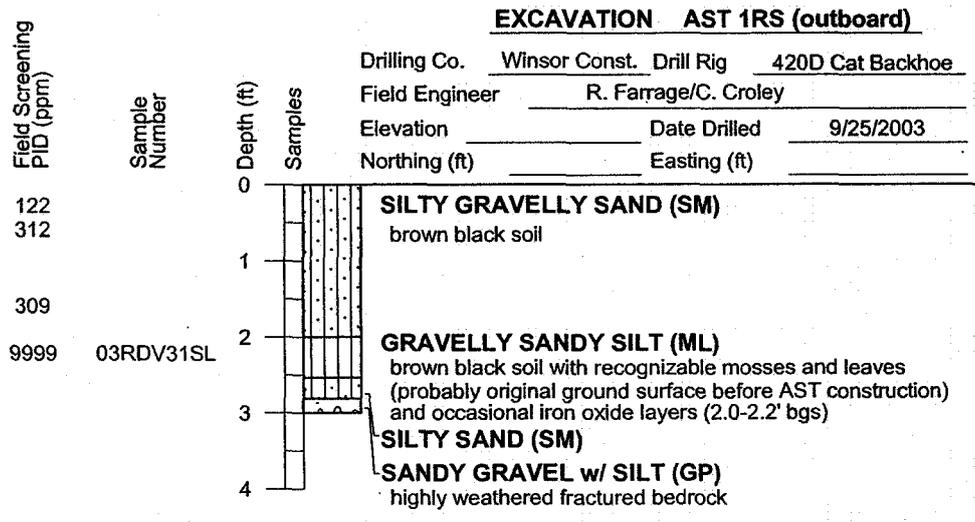
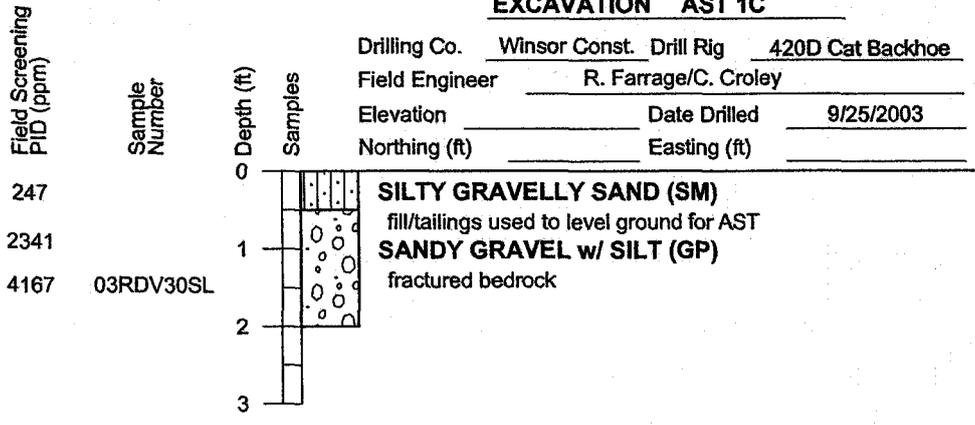
Site overview after demolition and investigation



APPENDIX B

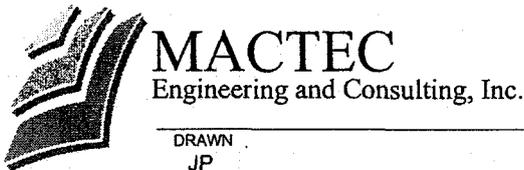
EXCAVATION AND BORING LOGS

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Excavation Logs 1C, 1RS, and 1W

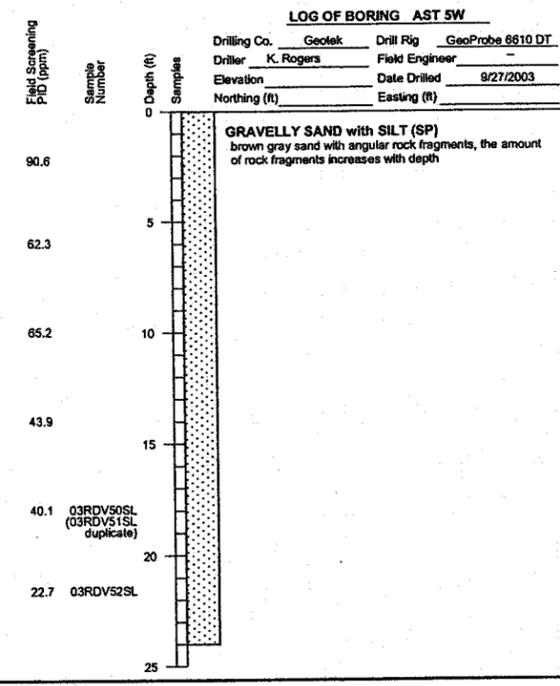
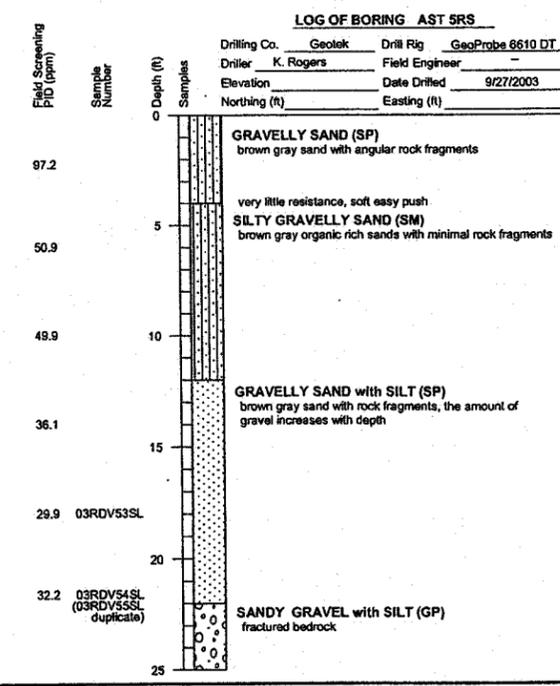
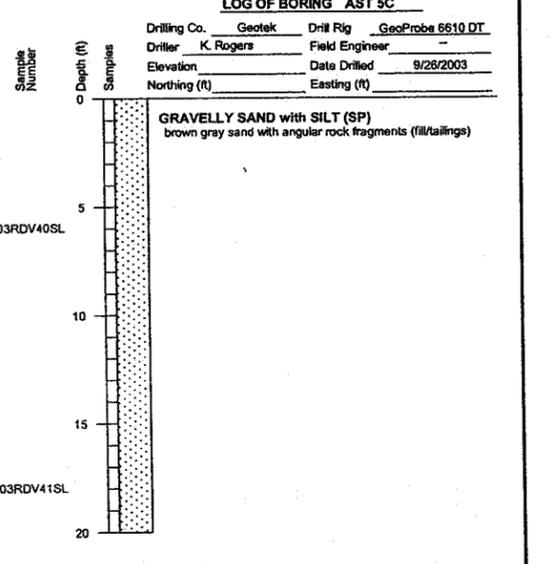
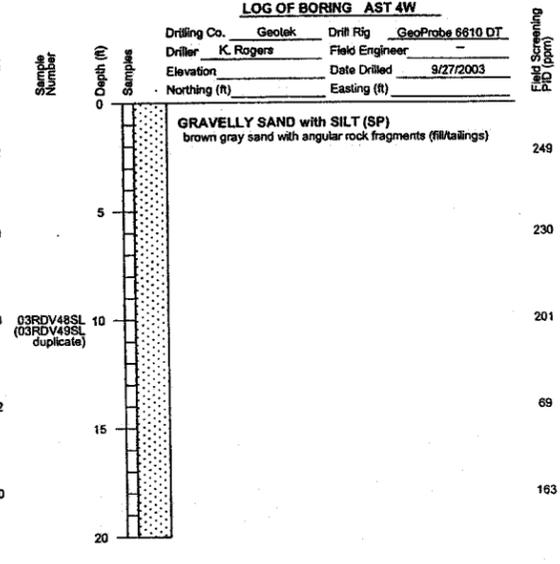
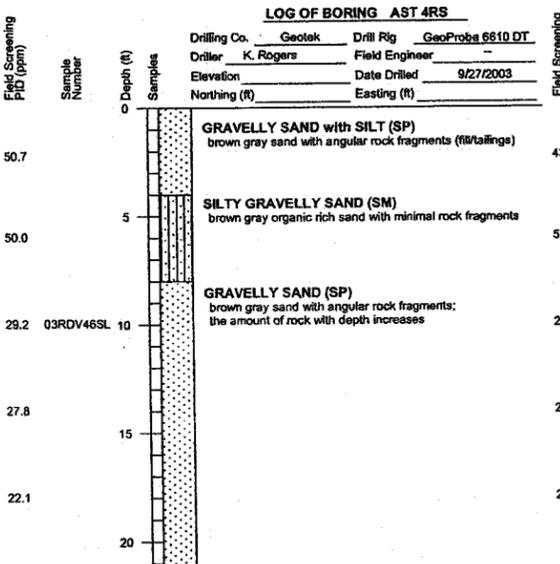
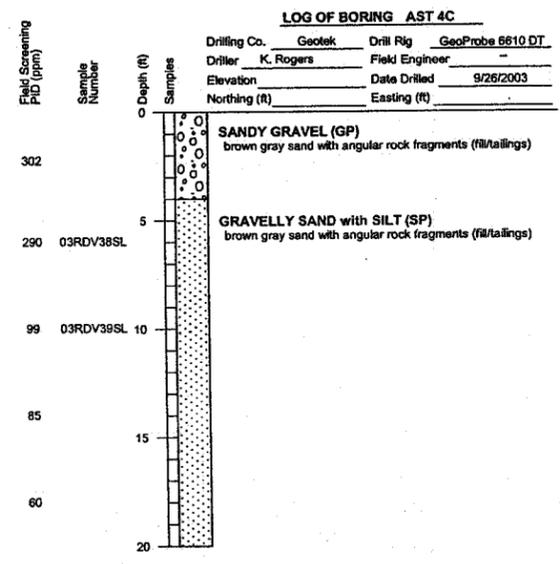
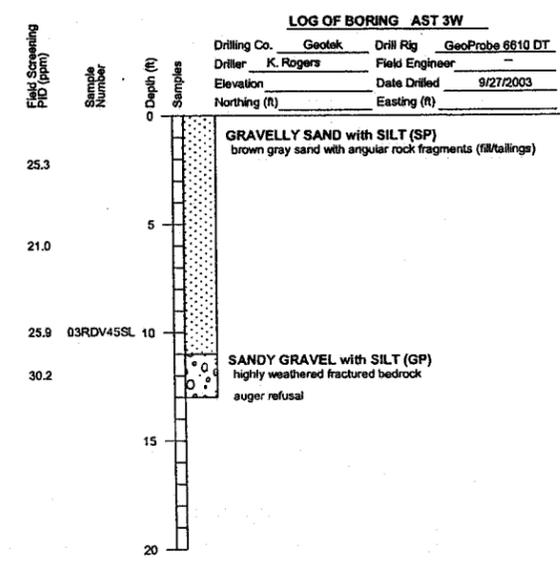
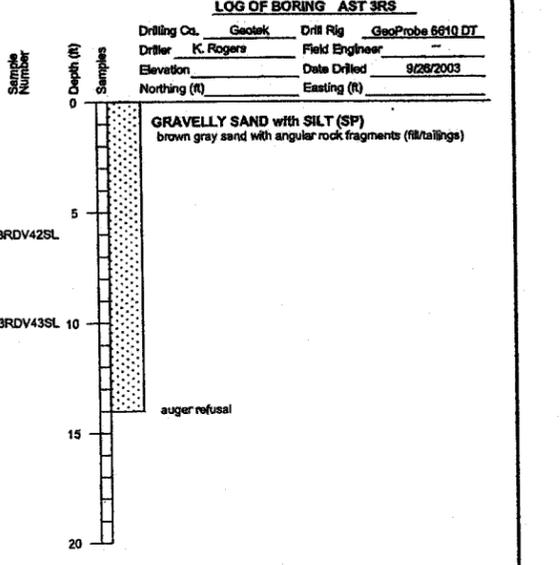
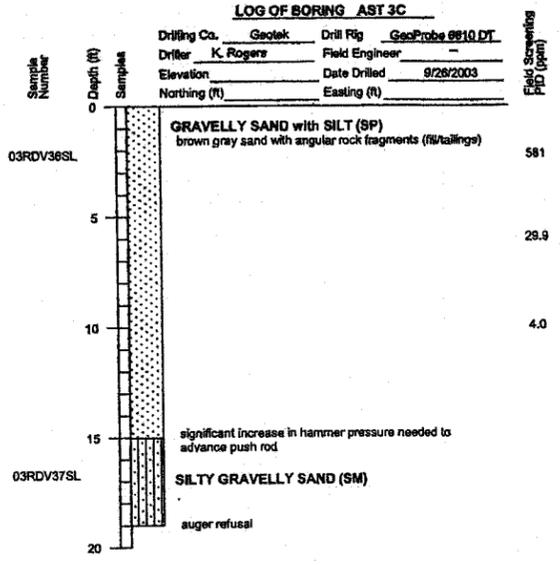
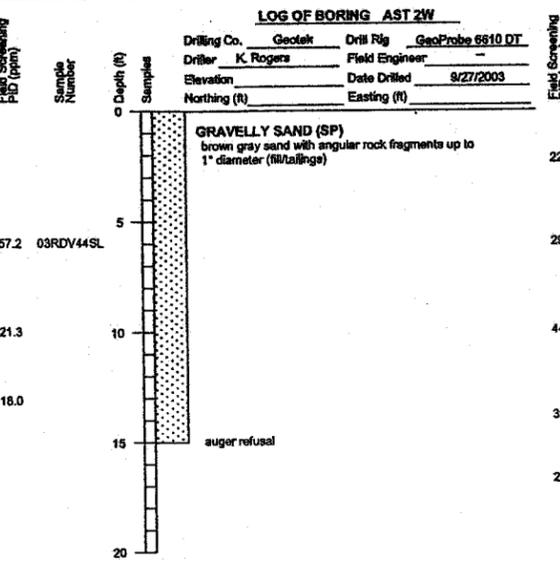
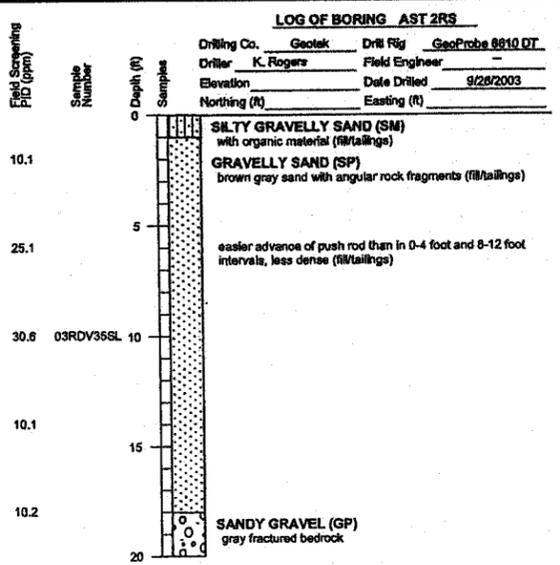
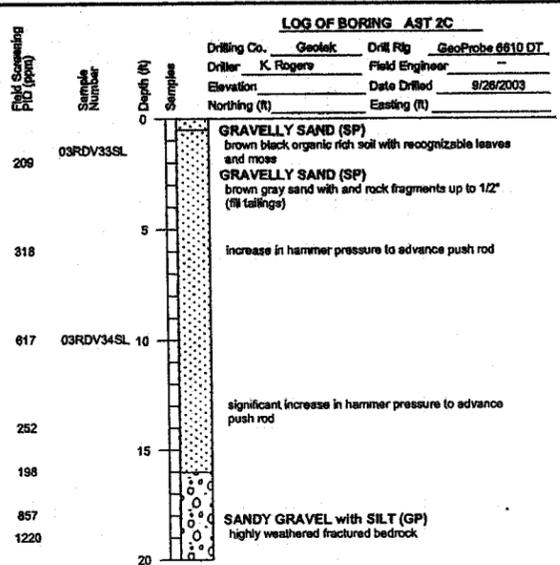
FIGURE



AST/Ore Hopper Demolition
 and Petroleum Release Investigation
 Red Devil Mine
 Red Devil, Alaska

B-1

File: 40340300087.dwg
 Path: P:\CAD\4034030008 red devil r1\
 Date, Time: 02/25/04 08:58:15



Note:
 Geoprobe 6610DT soil probing (direct push) machine that uses a static weight (5020 lbs) combined with percussion (36,000 lbs) as energy for the advancement of push rod. Geoprobe Macro-Core is a solid barrel direct push device for collecting continuous core samples. The Macro-Core soil samples are collected in a Teflon, PVC or PETG liner.

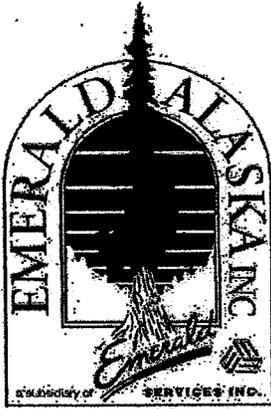
MACTEC
 Engineering and Consulting, Inc.

DRAWN: JP
 PROJECT NUMBER: 4034030008
 APPROVED: [Signature]
 DATE: 01/01

Boring Logs
 AST/Ore Hopper Demolition
 and Petroleum Release Investigation
 Red Devil Mine
 Red Devil, Alaska

APPENDIX C

CERTIFICATE OF DISPOSAL



Emerald Alaska Inc
800 East Ship Creek
Anchorage, AK 99501
(907) 258-1558 fax (907) 258-3049

www.emeraldak.com

Certificate of Disposal / Recycle

Generator: Bureau of Land Management
Red Devil Mine
6881 Abbott Loop Road
Anchorage, AK 99507

MACTEC
601 East 57th Place
Anchorage, AK 99518

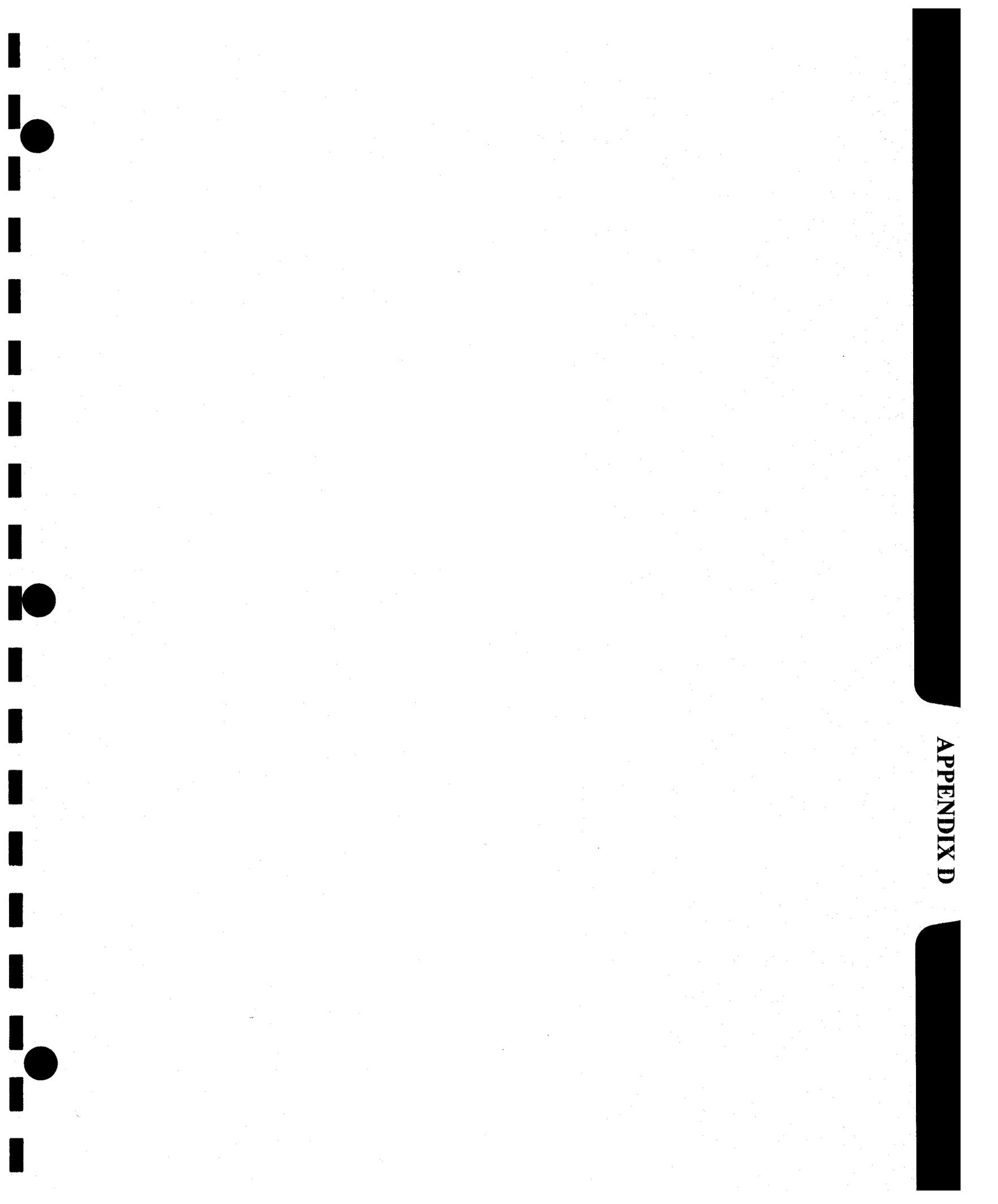
Document: Manifest #02011

Date of Disposal / Recycle: March 29, 2004

Line Item	Description	Profile Number	Quantity
1a	Material Not Regulated by DOT (Purge Water)	AK02906	60 Gallons

Roxanne Pedersen
Roxanne Pedersen, Facility Operator

April 2, 2004



APPENDIX D

DATA QUALITY ASSESSMENT AND ANALYTICAL RESULTS

Red Devil AST
Bureau of Land Management
MACTEC Project 4034030008

Sample Number	Date	Time	Depth (feet, BGS)	Location	Sample Type	Associated Sample Number	AK102/103 (DRO/RRO)	AK101 (GRO)	EPA 8021 (BTEX)	EPA 8270C (PAHs)	AK101/EPA 8021B (GRO/BTEX)	SW6020 (Metals)	SW7470A (Mercury)	Lab	Tared Containers AK101(GRO)	Tared Containers EPA8021 (BTEX)
03RDV30SL	9/25/2003	10:20	1.5	AST 1 Center	PR		X		X					Analytica		16409
03RDV31SL	9/25/2003	10:35	2.6	AST 1 OUTBOARD RIVER SIDE	PR		X	X	X	X				Analytica	16179	16179
03RDV32SL	9/25/2003	11:10	1.9	AST 1 INBOARD ABOVE TANK 2	PR		X		X					Analytica		16175
03RDV33SL	9/26/2003	10:00	2.0	AST 2 CENTER	PR		X	X	X					Analytica	16119	16119
03RDV34SL	9/26/2003	10:45	10.0	AST 2 CENTER	PR		X		X					Analytica		16543
03RDV35SL	9/26/2003	13:50	10.0	AST 2 RIVERSIDE	PR		X		X					Analytica		16120
03RDV36SL	9/26/2003	14:45	2.0	AST 3 CENTER	PR		X	X	X	X				Analytica	16170	16170
03RDV37SL	9/26/2003	16:15	17.0	AST 3 CENTER	PR		X		X					Analytica		16548
03RDV38SL	9/26/2003	16:30	6.0	AST 4 CENTER	PR		X	X	X	X				Analytica	16501	16501
03RDV39SL	9/26/2003	16:50	10.0	AST 4 CENTER	PR		X		X					Analytica		16158
03RDV40SL	9/26/2003	17:30	6.0	AST 5 CENTER	PR		X	X	X	X				Analytica	16535	16535
03RDV41SL	9/26/2003	18:12	18.0	AST 5 CENTER	PR		X		X					Analytica		16529
03RDV42SL	9/26/2003	18:30	5.0	AST 3 RIVERSIDE	PR		X	X	X	X				Analytica	16093	16093
03RDV43SL	9/26/2003	18:45	10.0	AST 3 RIVERSIDE	PR		X		X					Analytica		16542
03RDV44SL	9/27/2003	9:55	6.0	AST 2 WEST	PR		X		X					Analytica		16177
03RDV45SL	9/27/2003	10:30	10.0	AST 3 WEST	PR		X		X					Analytica		16178
03RDV46SL	9/27/2003	10:55	10.0	AST 4 RIVERSIDE	PR		X		X					Analytica		16165
03RDV47SL	9/27/2003	11:20	22.0	AST 4 RIVERSIDE	PR		X		X					Analytica		16186
03RDV48SL	9/27/2003	13:40	10.0	AST 4 WEST	PR	03RDV49SL	X		X					Analytica		16079
03RDV49SL	9/27/2003	10:00	10.0	AST 4 WEST	QC											
03RDV50SL	9/27/2003	15:15	18.0	AST 5 WEST	PR	03RDV51SL	X		X					Analytica		16168
03RDV51SL	9/27/2003	15:17	18.0	AST 5 WEST	QC		X		X					Analytica		16180
03RDV52SL	9/27/2003	15:40	22.0	AST 5 WEST	PR		X		X					Analytica		16500
03RDV53SL	9/27/2003	16:20	18.0	AST 5 RIVERSIDE	PR		X		X					Analytica		16185
03RDV54SL	9/27/2003	16:30	22.0	AST 5 RIVERSIDE	PR	03RDV55SL	X	X	X					Analytica	16181	16181
03RDV55SL	9/27/2003	16:32	22.0	AST 5 RIVERSIDE	QC		X	X	X					Analytica	16536	16536
Trip Blank	9/28/2003				TB			X	X					Analytica		
03RDVMW1	9/22/2003	17:25		W. side of RDV Creek, near retort	PR	03RDVMW10	X				X	X	X	Analytica		
03RDVMW3	9/20/2003	16:14		W. side of RDV Creek, near settling pond	PR		X				X	X	X	Analytica		
03RDVMW4	9/20/2003	13:55		E. side of RDV Creek	PR		X				X	X	X	Analytica		
03RDVMW6	9/22/2003	15:42		E. side of RDV Creek	PR		X				X	X	X	Analytica		
03RDVMW7	9/23/2003	16:35		W. side of RDV Creek, W of retort/ore hopper	PR		X				X	X	X	Analytica		
03RDVMW10	9/22/2003	17:28		W. side of RDV Creek, near retort	QC		X				X	X	X	Analytica		
Trip Blank	9/22/2003				TB						X			Analytica		



LABORATORY DATA REVIEW CHECKLIST

	<u>YES</u>	<u>NO</u>	<u>NOT APPLICABLE</u>
1. Laboratory analytical data report appears complete (all data results present for all samples submitted for analysis) and there are no apparent transcription errors:	<u>X</u>	___	___
2. Samples analyzed within applicable holding times (based on date of sample collection):*	<u>X</u>	___	___
3. Trip blanks, field blanks or laboratory method blanks are free of blank contamination:	<u>X</u>	___	___
4. If field duplicate samples collected, calculated results meet Relative Percent Difference guidelines: **	___	<u>X</u>	___
5. Surrogate recoveries (organic analyses only) within laboratory reported recovery acceptance ranges:	___	<u>X</u>	___
6. If Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples required to meet project objectives, Percent Recoveries (%R) and Relative Percent Difference (RPD) within laboratory reported acceptance ranges:	___	___	<u>X</u>
7. Reported detection limits meet project objectives (e.g., are capable of achieving applicable site standards):	<u>X</u>	___	___
8. Completed Chain-Of-Custody received noting sample/custody seal condition (with airbill, if appropriate):	<u>X</u>	___	___
9. Analytical costs within authorized budget for these services:	<u>X</u>	___	___

COMMENTS:

1. Analytical data was reviewed according to the MACTEC Quality Assurance, August, 2003.
2. Field duplicates 03RDV50SL (PR) and 03RDV51SL (QC) have relative percent differences (RPD) greater than 50 percent for Diesel Range Organics (DRO) (127.87 percent), (DRO was not detected at or below 4.4 mg/kg in project sample 03RDV50SL, and was detected at 20mg/kg in QC sample 03RDV51SL) See attached RPD calculations.
3. For test Method AK101 samples 03RDV31SL, 03RDV36SL, 03RDV38SL, and 03RDV40SL contained high levels of hydrocarbons that required the sample extracts to be diluted. At the diluted level it was not feasible to recover and detect GRO surrogates Bromofluorobenzene (0%), and Bromofluorobenzene (PID) (0%) above the high background contamination. These surrogate results are flagged with DIL to indicate loss by dilution. These diluted surrogates samples are considered in control with the methodology and no further action was taken.
4. No samples of this delivery were requested or selected as batch MD/MSD.

- Notes: 1. This checklist is intended for use with the laboratory reporting formats typical of most projects. If "no" is answered to one or more of the above checklist questions 1 through 7, a more detailed Data Validation may be required, and a person knowledgeable in Data Validation protocols should be consulted. This checklist should not be used if the project scope requires Data Validation from the onset.
2. * = Based upon EPA Guidance and the applicable analytical method references. See reverse side of checklist for details.
3. ** = Based upon EPA Guidance. Use these criteria on duplicate and sample results which exceed five times the reported detection limit. See reverse side of checklist for details.

Checked by: Scott Finnegan

Date: 2/18/2004

GENERAL DATA REVIEW CRITERIA

Typical Holding Times for Water Samples:*

Volatile Organic Compounds (EPA Method 8260/624)

14 days to analysis when preserved with HCl
(7 days if not preserved)

Semi-volatile Organic Compounds (EPA Method 8270)

7 days to extraction, 40 days to analysis

Pesticides/PCBs (EPA Method 8081/8082)

7 days to extraction, 40 days to analysis

Metals (except Mercury)

180 days to analysis when preserved with HNO₃

Mercury

28 days to analysis

Cyanide

14 days to analysis

Typical Relative Percent Difference (RPD) Guidelines:**

Volatile Organic Compounds (EPA Method 8260/624)

<u>Aqueous</u>	<u>Soil</u>
----------------	-------------

<30

<50

Semi-volatile Organic Compounds (EPA Method 8270)

<30

<50

Pesticides/PCBs (EPA Method 8081/8082)

<30

<50

Metals and Cyanide

<30

<50

Notes:

RPD calculated as:

$$RPD = \frac{|A-B|}{[(A+B)/2]} \times 100$$

where:

RPD = Relative Percent Difference

A = Sample Result

B = Duplicate Sample Result

* = Based upon EPA Guidance and the applicable analytical method references.

** = Based upon EPA Guidance. Use these criteria on duplicate and sample results that exceed five times the reported detection limit.

RED DEVIL ASTs SOIL
FIELD DUPLICATE RELATIVE PERCENT DIFFERENCES

Analyte	03RDV50SL	03RDV51SL	RPD
DRO	ND(4.4)	20	127.87
RRO	13	15	-14.29
VOC's (BTEX)			
Benzene	ND(0.016)	ND(0.016)	OK
Ethylbenzene	ND(0.016)	ND(0.016)	OK
Toluene	ND(0.016)	0.018	OK
Xylenes, Total	0.047	0.053	-12.00

Analyte	03RDV54SL	03RDV55SL	RPD
DRO	ND(4.5)	ND(4.3)	OK
RRO	ND(9.0)	ND(8.5)	OK
VOC's (BTEX)			
Benzene	ND(0.0013)	ND(0.0016)	OK
Ethylbenzene	ND(0.0013)	ND(0.0016)	OK
Toluene	0.013	ND(0.0016)	OK
Xylenes, Total	0.03	0.035	-15.38



Analytica Alaska Incorporated
website:
www.analyticagroup.com

10/30/2003

Mactec Engineering & Consulting Inc.
601 E. 57th Place
Anchorage, AK 99518
Attn: Bryan Lund

Work Order #: A0310016
Date: 10/30/2003
Work ID: Red Devil AST Removal
Date Received: 10/3/2003

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A0310016-01	03RDV 30 SL	A0310016-02	03RDV 31 SL
A0310016-03	03RDV 32 SL	A0310016-04	03RDV 33 SL
A0310016-05	03RDV 34 SL	A0310016-06	03RDV 35 SL
A0310016-07	03RDV 36 SL	A0310016-08	03RDV 37 SL
A0310016-09	03RDV 38 SL	A0310016-10	03RDV 39 SL
A0310016-11	03RDV 40 SL	A0310016-12	03RDV 41 SL
A0310016-13	03RDV 42 SL	A0310016-14	03RDV 43 SL
A0310016-15	03RDV 44 SL	A0310016-16	03RDV 45 SL
A0310016-17	03RDV 46 SL	A0310016-18	03RDV 47 SL
A0310016-19	03RDV 48 SL	A0310016-20	03RDV 50 SL
A0310016-21	03RDV 51 SL	A0310016-22	03RDV 52 SL
A0310016-23	03RDV 53 SL	A0310016-24	03RDV 54 SL
A0310016-25	03RDV 55 SL	A0310016-26	Trip Blank

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

Gina Durkin
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

Analytica Alaska Inc.
Work Order: A0310016
(continued)

INTERNAL STANDARD AREAS:

There were no Internal Standard outliers.

SURROGATE RECOVERIES:

There were no surrogate outliers.

METHOD BLANK OUTLIERS:

There are no method blank outliers.

LCS OUTLIERS:

There are no LCS outliers.

MS/MSD and DUP OUTLIERS:

There are no MS/MSD or DUP outliers.

Case Narrative

Analytica Alaska Inc.

Work Order: A0310016

Samples were prepared and analyzed according to EPA or equivalent methods outlined in the following references:

ADEC Method AK101 For the Determination of Gasoline Range Organics.

ADEC Method AK102 For the Determination of Diesel Range Organics.

ADEC Method AK103 For the Determination of Residual Range Organics.

Test Methods for Evaluating Solid Waste, USEPA SW-846, Third Edition, Rev. 4, Dec. 1996.

Standard Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures, ASTM D 2216-80, July 1980.

SAMPLE RECEIPT:

There were 25 samples and GRO/BTEX trip blank received at Analytica-Anchorage (ADEC Laboratory Approval Number: UST-014) on 10/3/2003 in one cooler at a temperature of 5.4°C. Samples were received in good condition and in order per chain of custody.

8270 sample fractions were transferred for analysis at Analytica Environmental Laboratories (AEL); 12189 Pennsylvania St. Thornton, CO 80241 where they were received at a temperature of 3.3°C in good condition and in order per chain of custody.

REVIEW FOR COMPLIANCE WITH ANALYTICA QA PLAN

A summary of our review is shown below, organized by test:

Test Method: ADEC AK102/103 - (DRO & RRO) - Solid

HOLDING TIMES:

Holding times were met for this Test.

INSTRUMENT CALIBRATIONS:

Initial calibration and CCV samples met method criteria.

SURROGATE RECOVERIES:

There were no surrogate outliers.

METHOD BLANK OUTLIERS:

There were no MB outliers; no target analytes detected in the MB above the PQL.

LCS/LCSD OUTLIERS:

There are no LCS/LCSD outliers.

MS/MSD OUTLIERS:

No samples of this delivery were requested or selected as batch MS/MSD.

Test Method: GRO by ADEC AK101 & BTEX by 8021B - Solid

HOLDING TIMES:

Holding times were met for this Test.

INSTRUMENT CALIBRATIONS:

Initial calibration and CCV samples met method criteria.

SURROGATE RECOVERIES:

Case Narrative

Analytica Alaska Inc.

Work Order: A0310016

(continued)

The following samples had high levels of hydrocarbon contamination that required the sample extracts be diluted to bring the extract concentration within the instrument calibration range and to prevent damage to the instrument from overloading the detector with hydrocarbon. At the diluted level, it was not feasible to recover and detect the spiked concentration of surrogate Bromofluorobenzene above the high background contamination present in the sample. These unrecovered surrogate results are flagged with DIL to indicate loss by dilution. These diluted surrogate samples are considered in control with the methodology and no further action was taken. Reporting limits for BTEX compounds are similarly elevated by this necessary dilution of the sample extract.

Sample	LabID	Surrogate	Recovery	LCL	UCL
03RDV 31 SL	A0310016-02A	Bromofluorobenzene (PID)	0	50	150 Complete
03RDV 31 SL	A0310016-02A	Bromofluorobenzene	0	50	150 Complete
03RDV 36 SL	A0310016-07A	Bromofluorobenzene	0	50	150 Complete
03RDV 36 SL	A0310016-07A	Bromofluorobenzene (PID)	0	50	150 Complete
03RDV 38 SL	A0310016-09A	Bromofluorobenzene	0	50	150 Complete
03RDV 38 SL	A0310016-09A	Bromofluorobenzene (PID)	0	50	150 Complete
03RDV 40 SL	A0310016-11A	Bromofluorobenzene	0	50	150 Complete
03RDV 40 SL	A0310016-11A	Bromofluorobenzene (PID)	0	50	150 Complete

METHOD BLANK OUTLIERS:

There were no MB outliers; no target analytes were detected in the MB above the PQL.

LCS/LCSD OUTLIERS:

There are no LCS/LCSD outliers.

MS/MSD OUTLIERS:

No samples of this delivery were requested or selected as batch MS/MSD.

Test Method: SW8270C - Semivolatile Organics by GC/MS - PAH - Solid

HOLDING TIMES:

Holding times were met for this Test.

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:

All sample extracts was processed through a Gel Permentation Cleanup procedure to remove organic interferences.

INSTRUMENT PERFORMANCE CHECKS:

Instrument checks were within method criteria.

INITIAL CALIBRATIONS:

Initial calibrations were within method criteria.

CONTINUING CALIBRATIONS:

One of the targets show %D values greater than 20% in the opening CCV shown below. The CCC's and the SPCC's are in control. The average %D in the CCV is less than 15%. Thus this CCV meets criteria. The results out of the 20% window are shown below.

RunDate	Analyte	Recovery	LCL	UCL
10/28/2003 12:39:00 AM	Pyrene	121.	80	120

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec
 Report Section: Client Sample Report
 Client Sample Name: 03RDV 30 SL

Matrix: Soil Collection Date: 9/25/2003 10:20:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-01B	Analysis Date:	10/9/2003 9:40:00PM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100962.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture:	8.12
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.36 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Diesel Range Organics	n/a	200		mg/Kg	4.3	0.66				1	
Residual Range Organics	n/a	ND		mg/Kg	8.6	1.3					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.4		mg/Kg	0.20	0.040	2.1	64.4	50	150	1
Squalane	111-01-3	1.3		mg/Kg	0.28	0.055	2.1	62.0	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-01B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.33 g	Prep Extract Vol:	9.57 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:
Moisture	na	8.1		%	0.046	0.0093				1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-01A	Analysis Date:	10/8/2003 10:17:00AM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100807.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture	8.12
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	25.08 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Benzene	71-43-2	ND		mg/Kg	0.017	0.0019				1	
Ethylbenzene	100-41-4	0.15		mg/Kg	0.017	0.0018					
Toluene	108-88-3	0.16		mg/Kg	0.017	0.0023					
Xylenes, Total	1330-20-7	0.81		mg/Kg	0.035	0.0050					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.5		mg/Kg	0.43	0.054	2.7	91.2	50	150	1
Difluorobenzene(PID)	540-36-3	1.4		mg/Kg	0.017	0.0022	1.4	103	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Client Sample Report

Client Sample Name: 03RDV 31 SL

Matrix: Soil **Collection Date:** 9/25/2003 10:35:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-02B	Analysis Date:	10/9/2003 10:08:00PM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100963.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture:	15
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.77 g	Prep Extract Vol:	1.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>					<u>Rerun #:</u>
Diesel Range Organics	n/a	200		mg/Kg	4.6	0.70					1
Residual Range Organics	n/a	12		mg/Kg	9.1	1.4					
<u>Surrogate</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>	<u>Spike</u>	<u>% Recov</u>	<u>LCL</u>	<u>UCL</u>	<u>Rerun #:</u>
o-Terphenyl	84-15-1	1.5		mg/Kg	0.21	0.043	2.3	65.4	50	150	1
Squalane	111-01-3	1.5		mg/Kg	0.29	0.059	2.3	64.7	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-02B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture:	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.30 g	Prep Extract Vol:	8.90 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>					<u>Rerun #:</u>
Moisture	na	15		%	0.043	0.0087					1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-02A	Analysis Date:	10/8/2003 10:47:00AM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100808.D
Prep Method ID:	5035	Dilution Factor:	4
Prep Batch Number:	A031008003	Percent Moisture:	15
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	26.36 g	Prep Extract Vol:	25.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>					<u>Rerun #:</u>
Benzene	71-43-2	ND		mg/Kg	0.071	0.0079					1
Ethylbenzene	100-41-4	ND		mg/Kg	0.071	0.0073					
Gasoline Range Organics	n/a	83		mg/Kg	16	2.2					
Toluene	108-88-3	0.089		mg/Kg	0.071	0.0095					
Xylenes, Total	1330-20-7	0.40		mg/Kg	0.14	0.020					
<u>Surrogate</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>	<u>Spike</u>	<u>% Recov</u>	<u>LCL</u>	<u>UCL</u>	<u>Rerun #:</u>
Bromofluorobenzene	1072-85-1	ND		mg/Kg	1.8	0.22	2.8	0.00	50	150	1 DIL
Bromofluorobenzene(PID)	1072-85-1	ND		mg/Kg	1.8	0.22	2.8	0.00	50	150	DIL

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Client Sample Report
Client Sample Name: 03RDV 36 SL

Matrix: Soil Collection Date: 9/26/2003 2:45:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-07B	Analysis Date: 10/10/2003 2:14:00AM
Prep Date: 10/8/2003	Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)	File Name: R3100972.D
Prep Method ID: 3550	Dilution Factor: 1
Prep Batch Number: A031008004	Percent Moisture: 4.13
Report Basis: Dry Weight Basis	Analyst Initials: HW
Sample prep wt./vol: 26.96 g	Prep Extract Vol: 1.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>					<u>Rerun #:</u>
Diesel Range Organics	n/a	210		mg/Kg	3.9	0.60					1
Residual Range Organics	n/a	ND		mg/Kg	7.7	1.2					
<u>Surrogate</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>	<u>Spike</u>	<u>% Recov</u>	<u>LCL</u>	<u>UCL</u>	<u>Rerun #:</u>
o-Terphenyl	84-15-1	1.7		mg/Kg	0.18	0.036	1.9	88.6	50	150	1
Squalane	111-01-3	1.7		mg/Kg	0.25	0.050	1.9	86.4	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-07B	Analysis Date: 10/9/2003 9:15:00AM
Prep Date: 10/8/2003	Instrument: SCALE
Analytical Method ID: ASTM D2216 - % moisture	File Name:
Prep Method ID: D2216	Dilution Factor: 1
Prep Batch Number: A031010007	Percent Moisture:
Report Basis: As Received	Analyst Initials: JS
Sample prep wt./vol: 10.14 g	Prep Extract Vol: 9.76 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>					<u>Rerun #:</u>
Moisture	na	4.1		%	0.048	0.0096					1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-07A	Analysis Date: 10/8/2003 1:14:00PM
Prep Date: 10/8/2003	Instrument: Natasha
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B	File Name: N3100813.D
Prep Method ID: 5035	Dilution Factor: 4
Prep Batch Number: A031008003	Percent Moisture: 4.13
Report Basis: Dry Weight Basis	Analyst Initials: SG
Sample prep wt./vol: 32.23 g	Prep Extract Vol: 25.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>					<u>Rerun #:</u>
Benzene	71-43-2	ND		mg/Kg	0.052	0.0057					1
Ethylbenzene	100-41-4	0.081		mg/Kg	0.052	0.0053					
Gasoline Range Organics	n/a	59		mg/Kg	11	1.6					
Toluene	108-88-3	0.16		mg/Kg	0.052	0.0069					
Xylenes, Total	1330-20-7	0.63		mg/Kg	0.10	0.015					
<u>Surrogate</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>	<u>Spike</u>	<u>% Recov</u>	<u>LCL</u>	<u>UCL</u>	<u>Rerun #:</u>
Bromofluorobenzene	1072-85-1	ND		mg/Kg	1.3	0.16	2.0	0.00	50	150	1 DIL
Bromofluorobenzene(PID)	1072-85-1	ND		mg/Kg	1.3	0.16	2.0	0.00	50	150	DIL

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 36 SL

Matrix: Soil **Collection Date:** 9/26/2003 2:45:00PM

Lab Sample Number: A0310016-07A	Analysis Date: 10/8/2003 1:14:00PM
Prep Date: 10/8/2003	Instrument: Natasha
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B	File Name: N3100813.D
Prep Method ID: 5035	Dilution Factor: 4
Prep Batch Number: A031008003	Percent Moisture: 4.13
Report Basis: Dry Weight Basis	Analyst Initials: SG
Sample prep wt./vol: 32.23 g	Prep Extract Vol: 25.00 ml
Difluorobenzene 540-36-3 3.5 mg/Kg 0.052 0.0065 4.0 87.6 50 150 1	
Difluorobenzene(PID) 540-36-3 4.2 mg/Kg 0.052 0.0065 4.0 104 50 150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0310016-07C	Analysis Date: 10/28/2003 4:04:00AM
Prep Date: 10/8/2003	Instrument: MS1BNA
Analytical Method ID: SW8270C - Semivolatile Organics by GC/MS - PAH	File Name: 03102729.D
Prep Method ID: 3550B	Dilution Factor: 1
Prep Batch Number: T031009004	Percent Moisture: 4.13
Report Basis: Dry Weight Basis	Analyst Initials: bs
Sample prep wt./vol: 30.13 g	Prep Extract Vol: 2.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>					<u>Rerun #:</u>
Acenaphthene	83-32-9	ND		ug/Kg	170	27					1
Acenaphthylene	208-96-8	ND		ug/Kg	170	29					
Anthracene	120-12-7	ND		ug/Kg	170	27					
Benzo(a)anthracene	56-55-3	ND		ug/Kg	170	18					
Benzo(a)pyrene	50-32-8	ND		ug/Kg	170	20					
Benzo(b)fluoranthene	205-99-2	ND		ug/Kg	170	24					
Benzo(g,h,i)perylene	191-24-2	ND		ug/Kg	170	53					
Benzo(k)fluoranthene	207-08-9	ND		ug/Kg	170	40					
Chrysene	218-01-9	ND		ug/Kg	170	19					
Dibenzo(a,h)anthracene	53-70-3	ND		ug/Kg	170	54					
Fluoranthene	206-44-0	ND		ug/Kg	170	22					
Fluorene	86-73-7	ND		ug/Kg	170	26					
Indeno(1,2,3-cd)pyrene	193-39-5	ND		ug/Kg	170	49					
Naphthalene	91-20-3	150	J	ug/Kg	170	21					
Phenanthrene	85-01-8	100	J	ug/Kg	170	21					
Pyrene	129-00-0	ND		ug/Kg	170	29					
<u>Surrogate</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Spike</u>	<u>% Recov</u>	<u>LCL</u>	<u>UCL</u>	<u>Rerun #:</u>
2-Fluorobiphenyl	321-60-8	1,800		ug/Kg	170	21	3,500	53.4	36	121	1
D14-Terphenyl	92-94-4D	2,500		ug/Kg	170	21	3,500	71.0	30	134	
D5-Nitrobenzene	98-95-3D	1,600		ug/Kg	170	26	3,500	44.8	30	122	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Client Sample Report
Client Sample Name: 03RDV 37 SL

Matrix: Soil Collection Date: 9/26/2003 4:15:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-08B	Analysis Date:	10/10/2003 2:41:00AM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100973.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture:	6.01
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.03 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Diesel Range Organics	n/a	9.2		mg/Kg	4.3	0.66				1	
Residual Range Organics	n/a	ND		mg/Kg	8.5	1.3					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.6		mg/Kg	0.20	0.040	2.1	73.4	50	150	1
Squalane	111-01-3	1.5		mg/Kg	0.27	0.055	2.1	71.0	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-08B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture:	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	11.13 g	Prep Extract Vol:	10.52 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:
Moisture	na	6.0		%	0.047	0.0095				1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-08A	Analysis Date:	10/8/2003 1:44:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100814.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture:	6.01
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	30.26 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Benzene	71-43-2	0.053		mg/Kg	0.014	0.0016				1	
Ethylbenzene	100-41-4	0.16		mg/Kg	0.014	0.0014					
Toluene	108-88-3	0.020		mg/Kg	0.014	0.0019					
Xylenes, Total	1330-20-7	0.29		mg/Kg	0.028	0.0040					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.0		mg/Kg	0.35	0.044	2.2	90.5	50	150	1
Difluorobenzene(PID)	540-36-3	1.1		mg/Kg	0.014	0.0018	1.1	105	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: **03RDV 38 SL**

Matrix: Soil Collection Date: 9/26/2003 4:30:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-09B	Analysis Date: 10/10/2003 12:16:00PM
Prep Date: 10/8/2003	Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)	File Name: R3100994.D
Prep Method ID: 3550	Dilution Factor: 10
Prep Batch Number: A031008004	Percent Moisture: 6.35
Report Basis: Dry Weight Basis	Analyst Initials: HW
Sample prep wt./vol: 26.09 g	Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:				
Diesel Range Organics	n/a	3,000		mg/Kg	41	6.3	1				
Residual Range Organics	n/a	ND		mg/Kg	82	13					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	ND		mg/Kg	1.9	0.38	2.0	73.0	50	150	1 DIL
Squalane	111-01-3	ND		mg/Kg	2.6	0.53	2.0	60.2	50	150	DIL

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-09B	Analysis Date: 10/9/2003 9:15:00AM
Prep Date: 10/8/2003	Instrument: SCALE
Analytical Method ID: ASTM D2216 - % moisture	File Name:
Prep Method ID: D2216	Dilution Factor: 1
Prep Batch Number: A031010007	Percent Moisture
Report Basis: As Received	Analyst Initials: JS
Sample prep wt./vol: 11.04 g	Prep Extract Vol: 10.40 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:			
Moisture	na	6.3		%	0.047	0.0094	1			

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-09A	Analysis Date: 10/8/2003 2:15:00PM
Prep Date: 10/8/2003	Instrument: Natasha
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B	File Name: N3100815.D
Prep Method ID: 5035	Dilution Factor: 4
Prep Batch Number: A031008003	Percent Moisture: 6.35
Report Basis: Dry Weight Basis	Analyst Initials: SG
Sample prep wt./vol: 35.77 g	Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:				
Benzene	71-43-2	ND		mg/Kg	0.048	0.0053	1				
Ethylbenzene	100-41-4	0.18		mg/Kg	0.048	0.0049					
Gasoline Range Organics	n/a	53		mg/Kg	10	1.5					
Toluene	108-88-3	0.096		mg/Kg	0.048	0.0064					
Xylenes, Total	1330-20-7	1.2		mg/Kg	0.096	0.014					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	ND		mg/Kg	1.2	0.15	1.9	0.00	50	150	1 DIL
Bromofluorobenzene(PID)	1072-85-1	ND		mg/Kg	1.2	0.15	1.9	0.00	50	150	DIL

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec
Report Section: Client Sample Report
 Client Sample Name: **03RDV 38 SL**

Matrix: Soil Collection Date: 9/26/2003 4:30:00PM

Lab Sample Number: A0310016-09A Analysis Date: 10/8/2003 2:15:00PM
 Prep Date: 10/8/2003 Instrument: Natasha
 Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B File Name: N3100815.D
 Prep Method ID: 5035 Dilution Factor: 4
 Prep Batch Number: A031008003 Percent Moisture: 6.35
 Report Basis: Dry Weight Basis Analyst Initials: SG
 Sample prep wt./vol: 35.77 g Prep Extract Vol: 25.00 ml
 Difluorobenzene 540-36-3 3.3 mg/Kg 0.048 0.0060 3.7 **89.8** 50 150 1
 Difluorobenzene(PID) 540-36-3 3.8 mg/Kg 0.048 0.0060 3.7 **101** 50 150

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0310016-09C Analysis Date: 10/28/2003 4:38:00AM
 Prep Date: 10/8/2003 Instrument: MS1BNA
 Analytical Method ID: SW8270C - Semivolatile Organics by GC/MS - PAH File Name: 03102730.D
 Prep Method ID: 3550B Dilution Factor: 1
 Prep Batch Number: T031009004 Percent Moisture: 6.35
 Report Basis: Dry Weight Basis Analyst Initials: bs
 Sample prep wt./vol: 30.02 g Prep Extract Vol: 2.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL					Rerun #:
Acenaphthene	83-32-9	ND		ug/Kg	180	27					1
Acenaphthylene	208-96-8	ND		ug/Kg	180	30					
Anthracene	120-12-7	ND		ug/Kg	180	28					
Benzo(a)anthracene	56-55-3	ND		ug/Kg	180	18					
Benzo(a)pyrene	50-32-8	ND		ug/Kg	180	20					
Benzo(b)fluoranthene	205-99-2	ND		ug/Kg	180	24					
Benzo(g,h,i)perylene	191-24-2	ND		ug/Kg	180	54					
Benzo(k)fluoranthene	207-08-9	ND		ug/Kg	180	41					
Chrysene	218-01-9	ND		ug/Kg	180	20					
Dibenzo(a,h)anthracene	53-70-3	ND		ug/Kg	180	55					
Fluoranthene	206-44-0	ND		ug/Kg	180	22					
Fluorene	86-73-7	ND		ug/Kg	180	26					
Indeno(1,2,3-cd)pyrene	193-39-5	ND		ug/Kg	180	50					
Naphthalene	91-20-3	54	J	ug/Kg	180	21					
Phenanthrene	85-01-8	77	J	ug/Kg	180	21					
Pyrene	129-00-0	ND		ug/Kg	180	29					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
2-Fluorobiphenyl	321-60-8	2,000		ug/Kg	180	22	3,600	55.4	36	121	1
D14-Terphenyl	92-94-4D	2,600		ug/Kg	180	22	3,600	72.9	30	134	
D5-Nitrobenzene	98-95-3D	1,700		ug/Kg	180	27	3,600	46.7	30	122	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec
 Report Section: **Client Sample Report**
 Client Sample Name: **03RDV 39 SL**

Matrix: Soil Collection Date: 9/26/2003 4:50:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-10B	Analysis Date:	10/10/2003 3:09:00AM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100974.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture:	8.34
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	26.46 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL					Rerun #:
Diesel Range Organics	n/a	83		mg/Kg	4.1	0.64					1
Residual Range Organics	n/a	ND		mg/Kg	8.2	1.3					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.5		mg/Kg	0.19	0.039	2.1	73.7	50	150	1
Squalane	111-01-3	1.4		mg/Kg	0.26	0.053	2.1	69.6	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-10B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture:	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.73 g	Prep Extract Vol:	9.91 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL					Rerun #:
Moisture	na	8.3		%	0.046	0.0092					1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-10A	Analysis Date:	10/8/2003 2:45:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100816.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture:	8.34
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	25.70 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL					Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.017	0.0019					1
Ethylbenzene	100-41-4	0.025		mg/Kg	0.017	0.0017					
Toluene	108-88-3	0.030		mg/Kg	0.017	0.0023					
Xylenes, Total	1330-20-7	0.18		mg/Kg	0.034	0.0049					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.5		mg/Kg	0.42	0.053	2.7	92.9	50	150	1
Difluorobenzene(PID)	540-36-3	1.4		mg/Kg	0.017	0.0021	1.3	102	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Client Sample Report

Client Sample Name: 03RDV 40 SL

Matrix: Soil Collection Date: 9/26/2003 5:30:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-11B Analysis Date: 10/10/2003 11:48:00AM
Prep Date: 10/8/2003 Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3100993.D
Prep Method ID: 3550 Dilution Factor: 10
Prep Batch Number: A031008004 Percent Moisture: 8.09
Report Basis: Dry Weight Basis Analyst Initials: HW
Sample prep wt./vol: 25.69 g Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Diesel Range Organics	n/a	3,400		mg/Kg	42	6.5				1	
Residual Range Organics	n/a	ND		mg/Kg	85	13					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	2.1		mg/Kg	2.0	0.40	2.1	97.6	50	150	1
Squalane	111-01-3	ND		mg/Kg	2.7	0.54	2.1	81.0	50	150	DIL

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-11B Analysis Date: 10/9/2003 9:15:00AM
Prep Date: 10/8/2003 Instrument: SCALE
Analytical Method ID: ASTM D2216 - % moisture File Name:
Prep Method ID: D2216 Dilution Factor: 1
Prep Batch Number: A031010007 Percent Moisture:
Report Basis: As Received Analyst Initials: JS
Sample prep wt./vol: 10.82 g Prep Extract Vol: 10.02 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:
Moisture	na	8.1		%	0.046	0.0093				1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-11A Analysis Date: 10/8/2003 3:15:00PM
Prep Date: 10/8/2003 Instrument: Natasha
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B File Name: N3100817.D
Prep Method ID: 5035 Dilution Factor: 4
Prep Batch Number: A031008003 Percent Moisture: 8.09
Report Basis: Dry Weight Basis Analyst Initials: SG
Sample prep wt./vol: 39.29 g Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Benzene	71-43-2	ND		mg/Kg	0.044	0.0049				1	
Ethylbenzene	100-41-4	0.17		mg/Kg	0.044	0.0045					
Gasoline Range Organics	n/a	120		mg/Kg	9.7	1.4					
Toluene	108-88-3	0.14		mg/Kg	0.044	0.0059					
Xylenes, Total	1330-20-7	2.3		mg/Kg	0.089	0.013					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	ND		mg/Kg	1.1	0.14	1.7	0.00	50	150	1 DIL
Bromofluorobenzene(PID)	1072-85-1	ND		mg/Kg	1.1	0.14	1.7	0.00	50	150	DIL

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: **03RDV 40 SL**

Matrix: Soil Collection Date: 9/26/2003 5:30:00PM

Lab Sample Number:	A0310016-11A	Analysis Date:	10/8/2003 3:15:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100817.D
Prep Method ID:	5035	Dilution Factor:	4
Prep Batch Number:	A031008003	Percent Moisture:	8.09
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	39.29 g	Prep Extract Vol:	25.00 ml
Difluorobenzene	540-36-3 3.1 mg/Kg	0.044 0.0055 3.5	89.7 50 150 1
Difluorobenzene(PID)	540-36-3 3.5 mg/Kg	0.044 0.0055 3.5	102 50 150

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0310016-11C	Analysis Date:	10/28/2003 5:12:00AM
Prep Date:	10/8/2003	Instrument:	MS1BNA
Analytical Method ID:	SW8270C - Semivolatile Organics by GC/MS - PAH	File Name:	03102731.D
Prep Method ID:	3550B	Dilution Factor:	2
Prep Batch Number:	T031009004	Percent Moisture:	8.09
Report Basis:	Dry Weight Basis	Analyst Initials:	bs
Sample prep wt./vol:	30.05 g	Prep Extract Vol:	2.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL					Rerun #:
Acenaphthene	83-32-9	ND		ug/Kg	370	56					1
Acenaphthylene	208-96-8	ND		ug/Kg	370	61					
Anthracene	120-12-7	ND		ug/Kg	370	57					
Benzo(a)anthracene	56-55-3	ND		ug/Kg	370	37					
Benzo(a)pyrene	50-32-8	ND		ug/Kg	370	41					
Benzo(b)fluoranthene	205-99-2	ND		ug/Kg	370	50					
Benzo(g,h,i)perylene	191-24-2	ND		ug/Kg	370	110					
Benzo(k)fluoranthene	207-08-9	ND		ug/Kg	370	84					
Chrysene	218-01-9	ND		ug/Kg	370	40					
Dibenzo(a,h)anthracene	53-70-3	ND		ug/Kg	370	110					
Fluoranthene	206-44-0	ND		ug/Kg	370	46					
Fluorene	86-73-7	ND		ug/Kg	370	54					
Indeno(1,2,3-cd)pyrene	193-39-5	ND		ug/Kg	370	100					
Naphthalene	91-20-3	260	J	ug/Kg	370	43					
Phenanthrene	85-01-8	150	J	ug/Kg	370	43					
Pyrene	129-00-0	ND		ug/Kg	370	60					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
2-Fluorobiphenyl	321-60-8	2,000		ug/Kg	370	44	3,600	56.0	36	121	1
D14-Terphenyl	92-94-4D	2,800		ug/Kg	370	44	3,600	76.6	30	134	
D5-Nitrobenzene	98-95-3D	2,500		ug/Kg	370	55	3,600	69.6	30	122	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec
Report Section: Client Sample Report
 Client Sample Name: 03RDV 41 SL

Matrix: Soil Collection Date: 9/26/2003 6:12:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-12B	Analysis Date: 10/10/2003 3:36:00AM
Prep Date: 10/8/2003	Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)	File Name: R3100975.D
Prep Method ID: 3550	Dilution Factor: 1
Prep Batch Number: A031008004	Percent Moisture: 8.24
Report Basis: Dry Weight Basis	Analyst Initials: HW
Sample prep wt./vol: 25.55 g	Prep Extract Vol: 1.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>		<u>Rerun #:</u>
Diesel Range Organics	n/a	47		mg/Kg	4.3	0.66		1
Residual Range Organics	n/a	ND		mg/Kg	8.5	1.3		

<u>Surrogate</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>	<u>Spike</u>	<u>% Recov</u>	<u>LCL</u>	<u>UCL</u>	<u>Rerun #:</u>
o-Terphenyl	84-15-1	1.9		mg/Kg	0.20	0.040	2.1	89.7	50	150	1
Squalane	111-01-3	1.9		mg/Kg	0.27	0.055	2.1	88.1	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-12B	Analysis Date: 10/9/2003 9:15:00AM
Prep Date: 10/8/2003	Instrument: SCALE
Analytical Method ID: ASTM D2216 - % moisture	File Name:
Prep Method ID: D2216	Dilution Factor: 1
Prep Batch Number: A031010007	Percent Moisture:
Report Basis: As Received	Analyst Initials: JS
Sample prep wt./vol: 10.69 g	Prep Extract Vol: 9.88 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>	<u>Rerun #:</u>
Moisture	na	8.2		%	0.046	0.0093	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-12A	Analysis Date: 10/8/2003 4:45:00PM
Prep Date: 10/8/2003	Instrument: Natasha
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name: N3100820.D
Prep Method ID: 5035	Dilution Factor: 1
Prep Batch Number: A031008003	Percent Moisture: 8.24
Report Basis: Dry Weight Basis	Analyst Initials: SG
Sample prep wt./vol: 32.67 g	Prep Extract Vol: 25.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>	<u>Rerun #:</u>
Benzene	71-43-2	ND		mg/Kg	0.013	0.0015	1
Ethylbenzene	100-41-4	0.063		mg/Kg	0.013	0.0014	
Toluene	108-88-3	0.061		mg/Kg	0.013	0.0018	
Xylenes, Total	1330-20-7	0.42		mg/Kg	0.027	0.0038	

<u>Surrogate</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>POL</u>	<u>MDL</u>	<u>Spike</u>	<u>% Recov</u>	<u>LCL</u>	<u>UCL</u>	<u>Rerun #:</u>
Bromofluorobenzene(PID)	1072-85-1	1.8		mg/Kg	0.33	0.042	2.1	85.3	50	150	1
Difluorobenzene(PID)	540-36-3	1.1		mg/Kg	0.013	0.0017	1.0	104	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: **03RDV 42 SL**

Matrix: Soil Collection Date: 9/26/2003 6:30:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-13B	Analysis Date: 10/10/2003 4:04:00AM
Prep Date: 10/8/2003	Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)	File Name: R3100976.D
Prep Method ID: 3550	Dilution Factor: 1
Prep Batch Number: A031008004	Percent Moisture: 15
Report Basis: Dry Weight Basis	Analyst Initials: HW
Sample prep wt./vol: 25.42 g	Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Diesel Range Organics	n/a	18		mg/Kg	4.6	0.72				1	
Residual Range Organics	n/a	ND		mg/Kg	9.3	1.4					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.5		mg/Kg	0.22	0.044	2.3	64.3	50	150	1
Squalane	111-01-3	1.5		mg/Kg	0.30	0.060	2.3	64.1	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-13B	Analysis Date: 10/9/2003 9:15:00AM
Prep Date: 10/8/2003	Instrument: SCALE
Analytical Method ID: ASTM D2216 - % moisture	File Name:
Prep Method ID: D2216	Dilution Factor: 1
Prep Batch Number: A031010007	Percent Moisture
Report Basis: As Received	Analyst Initials: JS
Sample prep wt./vol: 10.91 g	Prep Extract Vol: 9.38 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:
Moisture	na	15		%	0.043	0.0086				1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-13A	Analysis Date: 10/9/2003 12:26:00PM
Prep Date: 10/8/2003	Instrument: Natasha
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B	File Name: N3100910.D
Prep Method ID: 5035	Dilution Factor: 1
Prep Batch Number: A031008003	Percent Moisture: 15
Report Basis: Dry Weight Basis	Analyst Initials: SG
Sample prep wt./vol: 44.46 g	Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Benzene	71-43-2	ND		mg/Kg	0.011	0.0012				1	
Ethylbenzene	100-41-4	ND		mg/Kg	0.011	0.0011					
Gasoline Range Organics	n/a	ND		mg/Kg	2.3	0.33					
Toluene	108-88-3	ND		mg/Kg	0.011	0.0014					
Xylenes, Total	1330-20-7	0.026		mg/Kg	0.021	0.0030					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	1.3		mg/Kg	0.27	0.033	1.7	76.9	50	150	1
Bromofluorobenzene(PfD)	1072-85-1	1.4		mg/Kg	0.27	0.033	1.7	82.9	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec
Report Section: Client Sample Report
 Client Sample Name: **03RDV 42 SL**

Matrix: Soil Collection Date: 9/26/2003 6:30:00PM

Lab Sample Number: A0310016-13A Analysis Date: 10/9/2003 12:26:00PM
 Prep Date: 10/8/2003 Instrument: Natasha
 Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B File Name: N3100910.D
 Prep Method ID: 5035 Dilution Factor: 1
 Prep Batch Number: A031008003 Percent Moisture: 15
 Report Basis: Dry Weight Basis Analyst Initials: SG
 Sample prep wt./vol: 44.46 g Prep Extract Vol: 25.00 ml

Difluorobenzene	540-36-3	0.74	mg/Kg	0.011	0.0013	0.83	89.3	50	150	1
Difluorobenzene(PID)	540-36-3	0.85	mg/Kg	0.011	0.0013	0.83	102	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0310016-13C Analysis Date: 10/28/2003 5:47:00AM
 Prep Date: 10/8/2003 Instrument: MS1BNA
 Analytical Method ID: SW8270C - Semivolatile Organics by GC/MS - PAH File Name: 03102732.D
 Prep Method ID: 3550B Dilution Factor: 2
 Prep Batch Number: T031009004 Percent Moisture: 15
 Report Basis: Dry Weight Basis Analyst Initials: bs
 Sample prep wt./vol: 30.06 g Prep Extract Vol: 2.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:				
Acenaphthene	83-32-9	ND		ug/Kg	400	61	1				
Acenaphthylene	208-96-8	ND		ug/Kg	400	66					
Anthracene	120-12-7	ND		ug/Kg	400	62					
Benzo(a)anthracene	56-55-3	ND		ug/Kg	400	40					
Benzo(a)pyrene	50-32-8	ND		ug/Kg	400	45					
Benzo(b)fluoranthene	205-99-2	ND		ug/Kg	400	54					
Benzo(g,h,i)perylene	191-24-2	ND		ug/Kg	400	120					
Benzo(k)fluoranthene	207-08-9	ND		ug/Kg	400	91					
Chrysene	218-01-9	ND		ug/Kg	400	43					
Dibenzo(a,h)anthracene	53-70-3	ND		ug/Kg	400	120					
Fluoranthene	206-44-0	ND		ug/Kg	400	50					
Fluorene	86-73-7	ND		ug/Kg	400	58					
Indeno(1,2,3-cd)pyrene	193-39-5	ND		ug/Kg	400	110					
Naphthalene	91-20-3	140	J	ug/Kg	400	47					
Phenanthrene	85-01-8	ND		ug/Kg	400	47					
Pyrene	129-00-0	ND		ug/Kg	400	65					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
2-Fluorobiphenyl	321-60-8	1,900		ug/Kg	400	48	3,900	49.2	36	121	1
D14-Terphenyl	92-94-4D	2,800		ug/Kg	400	48	3,900	71.7	30	134	
D5-Nitrobenzene	98-95-3D	2,600		ug/Kg	400	60	3,900	66.0	30	122	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Client Sample Report
Client Sample Name: 03RDV 43 SL

Matrix: Soil Collection Date: 9/26/2003 6:45:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-14B Analysis Date: 10/14/2003 12:05:00AM
Prep Date: 10/10/2003 Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3101370.D
Prep Method ID: 3550 Dilution Factor: 1
Prep Batch Number: A031010004 Percent Moisture: 8.62
Report Basis: Dry Weight Basis Analyst Initials: HW
Sample prep wt./vol: 24.69 g Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/Kg	4.4	0.68				1	
Residual Range Organics	n/a	ND		mg/Kg	8.9	1.4					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.6		mg/Kg	0.21	0.042	2.2	70.2	50	150	1
Squalane	111-01-3	1.6		mg/Kg	0.28	0.057	2.2	73.2	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-14B Analysis Date: 10/9/2003 9:15:00AM
Prep Date: 10/8/2003 Instrument: SCALE
Analytical Method ID: ASTM D2216 - % moisture File Name:
Prep Method ID: D2216 Dilution Factor: 1
Prep Batch Number: A031010007 Percent Moisture
Report Basis: As Received Analyst Initials: JS
Sample prep wt./vol: 11.88 g Prep Extract Vol: 10.94 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:
Moisture	na	8.6		%	0.046	0.0092				1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-14A Analysis Date: 10/8/2003 5:45:00PM
Prep Date: 10/8/2003 Instrument: Natasha
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX File Name: N3100822.D
Prep Method ID: 5035 Dilution Factor: 1
Prep Batch Number: A031008003 Percent Moisture: 8.62
Report Basis: Dry Weight Basis Analyst Initials: SG
Sample prep wt./vol: 46.71 g Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Benzene	71-43-2	ND		mg/Kg	0.0094	0.0010				1	
Ethylbenzene	100-41-4	ND		mg/Kg	0.0094	0.00096					
Toluene	108-88-3	0.011		mg/Kg	0.0094	0.0013					
Xylenes, Total	1330-20-7	ND		mg/Kg	0.019	0.0027					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	1.4		mg/Kg	0.23	0.029	1.5	93.7	50	150	1
Difluorobenzene(PID)	540-36-3	0.75		mg/Kg	0.0094	0.0012	0.73	103	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Client Sample Report

Client Sample Name: 03RDV 44 SL
Matrix: Soil
Collection Date: 9/27/2003 9:55:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-15B
Prep Date: 10/8/2003
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)
Prep Method ID: 3550
Prep Batch Number: A031008004
Report Basis: Dry Weight Basis
Sample prep wt./vol: 25.57 g
Analysis Date: 10/10/2003 7:42:00AM
Instrument: Roo
File Name: R3100983.D
Dilution Factor: 1
Percent Moisture: 7.53
Analyst Initials: HW
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/Kg	4.2	0.65				1	
Residual Range Organics	n/a	ND		mg/Kg	8.5	1.3					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.7		mg/Kg	0.20	0.040	2.1	79.1	50	150	1
Squalane	111-01-3	1.7		mg/Kg	0.27	0.054	2.1	81.0	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-15B
Prep Date: 10/8/2003
Analytical Method ID: ASTM D2216 - % moisture
Prep Method ID: D2216
Prep Batch Number: A031010007
Report Basis: As Received
Sample prep wt./vol: 10.81 g
Analysis Date: 10/9/2003 9:15:00AM
Instrument: SCALE
File Name:
Dilution Factor: 1
Percent Moisture:
Analyst Initials: JS
Prep Extract Vol: 10.07 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:
Moisture	na	7.5		%	0.047	0.0093				1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-15A
Prep Date: 10/8/2003
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX
Prep Method ID: 5035
Prep Batch Number: A031008003
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.73 g
Analysis Date: 10/8/2003 6:14:00PM
Instrument: Natasha
File Name: N3100823.D
Dilution Factor: 1
Percent Moisture: 7.53
Analyst Initials: SG
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Benzene	71-43-2	ND		mg/Kg	0.015	0.0016				1	
Ethylbenzene	100-41-4	ND		mg/Kg	0.015	0.0015					
Toluene	108-88-3	ND		mg/Kg	0.015	0.0020					
Xylenes, Total	1330-20-7	0.037		mg/Kg	0.029	0.0042					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.2		mg/Kg	0.36	0.045	2.3	97.0	50	150	1
Difluorobenzene(PID)	540-36-3	1.2		mg/Kg	0.015	0.0018	1.1	105	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: **03RDV 45 SL**

Matrix: Soil Collection Date: 9/27/2003 10:30:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-16B	Analysis Date: 10/10/2003 8:10:00AM
Prep Date: 10/8/2003	Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)	File Name: R3100984.D
Prep Method ID: 3550	Dilution Factor: 1
Prep Batch Number: A031008004	Percent Moisture: 7.62
Report Basis: Dry Weight Basis	Analyst Initials: HW
Sample prep wt./vol: 26.67 g	Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/Kg	4.1	0.63				1	
Residual Range Organics	n/a	ND		mg/Kg	8.1	1.2					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.6		mg/Kg	0.19	0.038	2.0	77.2	50	150	1
Squalane	111-01-3	1.6		mg/Kg	0.26	0.052	2.0	78.6	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-16B	Analysis Date: 10/9/2003 9:15:00AM
Prep Date: 10/8/2003	Instrument: SCALE
Analytical Method ID: ASTM D2216 - % moisture	File Name:
Prep Method ID: D2216	Dilution Factor: 1
Prep Batch Number: A031010007	Percent Moisture
Report Basis: As Received	Analyst Initials: JS
Sample prep wt./vol: 11.30 g	Prep Extract Vol: 10.51 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:
Moisture	na	7.6		%	0.047	0.0093				1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-16A	Analysis Date: 10/9/2003 12:56:00PM
Prep Date: 10/8/2003	Instrument: Natasha
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name: N3100911.D
Prep Method ID: 5035	Dilution Factor: 1
Prep Batch Number: A031008003	Percent Moisture: 7.62
Report Basis: Dry Weight Basis	Analyst Initials: SG
Sample prep wt./vol: 32.70 g	Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Benzene	71-43-2	ND		mg/Kg	0.013	0.0015				1	
Ethylbenzene	100-41-4	ND		mg/Kg	0.013	0.0014					
Toluene	108-88-3	ND		mg/Kg	0.013	0.0018					
Xylenes, Total	1330-20-7	ND		mg/Kg	0.026	0.0038					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.0		mg/Kg	0.33	0.041	2.1	97.0	50	150	1
Difluorobenzene(PID)	540-36-3	1.1		mg/Kg	0.013	0.0017	1.0	103	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Client Sample Report

Client Sample Name:

03RDV 46 SL

Matrix: Soil

Collection Date: 9/27/2003 10:55:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-17B Analysis Date: 10/10/2003 8:37:00AM
Prep Date: 10/8/2003 Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3100985.D
Prep Method ID: 3550 Dilution Factor: 1
Prep Batch Number: A031008004 Percent Moisture: 8.69
Report Basis: Dry Weight Basis Analyst Initials: HW
Sample prep wt./vol: 25.98 g Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/Kg	4.2	0.65				1	
Residual Range Organics	n/a	ND		mg/Kg	8.4	1.3					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.2		mg/Kg	0.20	0.040	2.1	57.9	50	150	1
Squalane	111-01-3	1.3		mg/Kg	0.27	0.054	2.1	59.8	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-17B Analysis Date: 10/9/2003 9:15:00AM
Prep Date: 10/8/2003 Instrument: SCALE
Analytical Method ID: ASTM D2216 - % moisture File Name:
Prep Method ID: D2216 Dilution Factor: 1
Prep Batch Number: A031010007 Percent Moisture:
Report Basis: As Received Analyst Initials: JS
Sample prep wt./vol: 10.88 g Prep Extract Vol: 10.02 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:
Moisture	na	8.7		%	0.046	0.0092				1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-17A Analysis Date: 10/8/2003 7:14:00PM
Prep Date: 10/8/2003 Instrument: Natasha
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX File Name: N3100825.D
Prep Method ID: 5035 Dilution Factor: 1
Prep Batch Number: A031008003 Percent Moisture: 8.69
Report Basis: Dry Weight Basis Analyst Initials: SG
Sample prep wt./vol: 29.43 g Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Benzene	71-43-2	ND		mg/Kg	0.015	0.0016				1	
Ethylbenzene	100-41-4	ND		mg/Kg	0.015	0.0015					
Toluene	108-88-3	ND		mg/Kg	0.015	0.0020					
Xylenes, Total	1330-20-7	ND		mg/Kg	0.030	0.0043					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.3		mg/Kg	0.37	0.047	2.3	100	50	150	1
Difluorobenzene(PID)	540-36-3	1.2		mg/Kg	0.015	0.0019	1.2	103	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Client Sample Report
Client Sample Name: 03RDV 47 SL

Matrix: Soil Collection Date: 9/27/2003 11:20:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-18B Analysis Date: 10/10/2003 9:04:00AM
Prep Date: 10/8/2003 Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3100986.D
Prep Method ID: 3550 Dilution Factor: 1
Prep Batch Number: A031008004 Percent Moisture: 11
Report Basis: Dry Weight Basis Analyst Initials: HW
Sample prep wt./vol: 26.30 g Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/Kg	4.2	0.66				1	
Residual Range Organics	n/a	ND		mg/Kg	8.5	1.3					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.7		mg/Kg	0.20	0.040	2.1	80.1	50	150	1
Squalane	111-01-3	1.8		mg/Kg	0.27	0.055	2.1	83.8	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-18B Analysis Date: 10/9/2003 9:15:00AM
Prep Date: 10/8/2003 Instrument: SCALE
Analytical Method ID: ASTM D2216 - % moisture File Name:
Prep Method ID: D2216 Dilution Factor: 1
Prep Batch Number: A031010007 Percent Moisture:
Report Basis: As Received Analyst Initials: JS
Sample prep wt./vol: 10.95 g Prep Extract Vol: 9.91 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:
Moisture	na	10		%	0.045	0.0090				1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-18A Analysis Date: 10/9/2003 1:26:00PM
Prep Date: 10/8/2003 Instrument: Natasha
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX File Name: N3100912.D
Prep Method ID: 5035 Dilution Factor: 1
Prep Batch Number: A031008003 Percent Moisture: 11
Report Basis: Dry Weight Basis Analyst Initials: SG
Sample prep wt./vol: 26.74 g Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Benzene	71-43-2	ND		mg/Kg	0.017	0.0018				1	
Ethylbenzene	100-41-4	ND		mg/Kg	0.017	0.0017					
Toluene	108-88-3	ND		mg/Kg	0.017	0.0022					
Xylenes, Total	1330-20-7	0.048		mg/Kg	0.033	0.0048					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.5		mg/Kg	0.42	0.052	2.6	95.9	50	150	1
Difluorobenzene(PID)	540-36-3	1.3		mg/Kg	0.017	0.0021	1.3	102	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Client Sample Report

Client Sample Name:

03RDV 48 SL

Matrix: Soil

Collection Date: 9/27/2003 1:40:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-19B Analysis Date: 10/10/2003 9:31:00AM
 Prep Date: 10/8/2003 Instrument: Roo
 Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3100987.D
 Prep Method ID: 3550 Dilution Factor: 1
 Prep Batch Number: A031008004 Percent Moisture: 9.48
 Report Basis: Dry Weight Basis Analyst Initials: HW
 Sample prep wt./vol: 25.49 g Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/Kg	4.3	0.67				1	
Residual Range Organics	n/a	ND		mg/Kg	8.7	1.3					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.7		mg/Kg	0.20	0.041	2.2	76.2	50	150	1
Squalane	111-01-3	1.7		mg/Kg	0.28	0.056	2.2	80.2	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-19B Analysis Date: 10/9/2003 9:15:00AM
 Prep Date: 10/8/2003 Instrument: SCALE
 Analytical Method ID: ASTM D2216 - % moisture File Name:
 Prep Method ID: D2216 Dilution Factor: 1
 Prep Batch Number: A031010007 Percent Moisture:
 Report Basis: As Received Analyst Initials: JS
 Sample prep wt./vol: 10.95 g Prep Extract Vol: 10.01 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:
Moisture	na	9.5		%	0.046	0.0091				1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-19A Analysis Date: 10/9/2003 1:56:00PM
 Prep Date: 10/8/2003 Instrument: Natasha
 Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX File Name: N3100913.D
 Prep Method ID: 5035 Dilution Factor: 1
 Prep Batch Number: A031008003 Percent Moisture: 9.48
 Report Basis: Dry Weight Basis Analyst Initials: SG
 Sample prep wt./vol: 22.77 g Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Benzene	71-43-2	ND		mg/Kg	0.019	0.0021				1	
Ethylbenzene	100-41-4	ND		mg/Kg	0.019	0.0020					
Toluene	108-88-3	0.029		mg/Kg	0.019	0.0026					
Xylenes, Total	1330-20-7	0.069		mg/Kg	0.039	0.0056					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	3.0		mg/Kg	0.49	0.061	3.0	98.4	50	150	1
Difluorobenzene(PID)	540-36-3	1.6		mg/Kg	0.019	0.0024	1.5	103	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec
Report Section: Client Sample Report
 Client Sample Name: **03RDV 50 SL**

Matrix: Soil Collection Date: 9/27/2003 3:15:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-20B	Analysis Date: 10/13/2003 8:54:00PM
Prep Date: 10/10/2003	Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)	File Name: R3101363.D
Prep Method ID: 3550	Dilution Factor: 1
Prep Batch Number: A031010004	Percent Moisture: 9.93
Report Basis: Dry Weight Basis	Analyst Initials: HW
Sample prep wt./vol: 25.43 g	Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/Kg	4.4	0.67				1	
Residual Range Organics	n/a	13		mg/Kg	8.7	1.3					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.8		mg/Kg	0.20	0.041	2.2	82.4	50	150	1
Squalane	111-01-3	2.0		mg/Kg	0.28	0.056	2.2	91.9	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-20B	Analysis Date: 10/10/2003 9:50:00AM
Prep Date: 10/9/2003	Instrument: SCALE
Analytical Method ID: ASTM D2216 - % moisture	File Name:
Prep Method ID: D2216	Dilution Factor: 1
Prep Batch Number: A031010006	Percent Moisture:
Report Basis: As Received	Analyst Initials: JS
Sample prep wt./vol: 11.38 g	Prep Extract Vol: 10.34 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:
Moisture	na	9.9		%	0.045	0.0091				1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-20A	Analysis Date: 10/9/2003 2:26:00PM
Prep Date: 10/8/2003	Instrument: Natasha
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name: N3100914.D
Prep Method ID: 5035	Dilution Factor: 1
Prep Batch Number: A031008003	Percent Moisture: 9.93
Report Basis: Dry Weight Basis	Analyst Initials: SG
Sample prep wt./vol: 28.17 g	Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Benzene	71-43-2	ND		mg/Kg	0.016	0.0017				1	
Ethylbenzene	100-41-4	ND		mg/Kg	0.016	0.0016					
Toluene	108-88-3	ND		mg/Kg	0.016	0.0021					
Xylenes, Total	1330-20-7	0.047		mg/Kg	0.032	0.0045					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.3		mg/Kg	0.39	0.049	2.5	91.5	50	150	1
Difluorobenzene(PID)	540-36-3	1.3		mg/Kg	0.016	0.0020	1.2	102	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Client Sample Report
Client Sample Name: 03RDV 51 SL

Matrix: Soil Collection Date: 9/27/2003 3:17:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-21B Analysis Date: 10/13/2003 9:21:00PM
Prep Date: 10/10/2003 Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3101364.D
Prep Method ID: 3550 Dilution Factor: 1
Prep Batch Number: A031010004 Percent Moisture: 9.80
Report Basis: Dry Weight Basis Analyst Initials: HW
Sample prep wt./vol: 25.37 g Prep Extract Vol: 1.00 ml

Table with columns: Analyte, CASNo, Result, Flags, Units, POL, MDL, Spike, % Recov, LCL, UCL, Rerun #. Rows include Diesel Range Organics, Residual Range Organics, o-Terphenyl, and Squalane.

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-21B Analysis Date: 10/10/2003 9:50:00AM
Prep Date: 10/9/2003 Instrument: SCALE
Analytical Method ID: ASTM D2216 - % moisture File Name:
Prep Method ID: D2216 Dilution Factor: 1
Prep Batch Number: A031010006 Percent Moisture:
Report Basis: As Received Analyst Initials: JS
Sample prep wt./vol: 12.14 g Prep Extract Vol: 11.04 ml

Table with columns: Analyte, CASNo, Result, Flags, Units, POL, MDL, Rerun #. Row includes Moisture.

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-21A Analysis Date: 10/9/2003 2:56:00PM
Prep Date: 10/9/2003 Instrument: Natasha
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX File Name: N3100915.D
Prep Method ID: 5035 Dilution Factor: 1
Prep Batch Number: A031009001 Percent Moisture: 9.80
Report Basis: Dry Weight Basis Analyst Initials: SG
Sample prep wt./vol: 28.31 g Prep Extract Vol: 25.00 ml

Table with columns: Analyte, CASNo, Result, Flags, Units, POL, MDL, Spike, % Recov, LCL, UCL, Rerun #. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total, Bromofluorobenzene(PID), and Difluorobenzene(PID).

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Client Sample Report
Client Sample Name: 03RDV 52 SL

Matrix: Soil Collection Date: 9/27/2003 3:40:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-22B	Analysis Date:	10/13/2003 9:48:00PM
Prep Date:	10/10/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3101365.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031010004	Percent Moisture:	8.94
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.96 g	Prep Extract Vol:	1.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>					<u>Rerun #:</u>
Diesel Range Organics	n/a	ND		mg/Kg	4.2	0.65					1
Residual Range Organics	n/a	ND		mg/Kg	8.5	1.3					
<u>Surrogate</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Spike</u>	<u>% Recov</u>	<u>LCL</u>	<u>UCL</u>	<u>Rerun #:</u>
o-Terphenyl	84-15-1	1.6		mg/Kg	0.20	0.040	2.1	73.3	50	150	1
Squalane	111-01-3	1.7		mg/Kg	0.27	0.054	2.1	78.5	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-22B	Analysis Date:	10/10/2003 9:50:00AM
Prep Date:	10/9/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010006	Percent Moisture:	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	11.26 g	Prep Extract Vol:	10.34 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>					<u>Rerun #:</u>
Moisture	na	8.9		%	0.046	0.0092					1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-22A	Analysis Date:	10/9/2003 3:32:00PM
Prep Date:	10/9/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100916.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031009001	Percent Moisture:	8.94
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	24.86 g	Prep Extract Vol:	25.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>					<u>Rerun #:</u>
Benzene	71-43-2	ND		mg/Kg	0.018	0.0019					1
Ethylbenzene	100-41-4	ND		mg/Kg	0.018	0.0018					
Toluene	108-88-3	ND		mg/Kg	0.018	0.0024					
Xylenes, Total	1330-20-7	0.045		mg/Kg	0.035	0.0051					
<u>Surrogate</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Spike</u>	<u>% Recov</u>	<u>LCL</u>	<u>UCL</u>	<u>Rerun #:</u>
Bromofluorobenzene(PID)	1072-85-1	2.6		mg/Kg	0.44	0.055	2.8	92.8	50	150	1
Difluorobenzene(PID)	540-36-3	1.4		mg/Kg	0.018	0.0022	1.4	102	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Client Sample Report
Client Sample Name: 03RDV 53 SL

Matrix: Soil Collection Date: 9/27/2003 4:20:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-23B Analysis Date: 10/13/2003 10:16:00PM
Prep Date: 10/10/2003 Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3101366.D
Prep Method ID: 3550 Dilution Factor: 1
Prep Batch Number: A031010004 Percent Moisture: 10
Report Basis: Dry Weight Basis Analyst Initials: HW
Sample prep wt./vol: 25.50 g Prep Extract Vol: 1.00 ml

Table with columns: Analyte, CASNo, Result, Flags, Units, POL, MDL, Rerun #. Rows include Diesel Range Organics, Residual Range Organics, o-Terphenyl, and Squalane.

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-23B Analysis Date: 10/10/2003 9:50:00AM
Prep Date: 10/9/2003 Instrument: SCALE
Analytical Method ID: ASTM D2216 - % moisture File Name:
Prep Method ID: D2216 Dilution Factor: 1
Prep Batch Number: A031010006 Percent Moisture:
Report Basis: As Received Analyst Initials: JS
Sample prep wt./vol: 11.31 g Prep Extract Vol: 10.25 ml

Table with columns: Analyte, CASNo, Result, Flags, Units, POL, MDL, Rerun #. Row includes Moisture.

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-23A Analysis Date: 10/9/2003 4:02:00PM
Prep Date: 10/9/2003 Instrument: Natasha
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX File Name: N3100917.D
Prep Method ID: 5035 Dilution Factor: 1
Prep Batch Number: A031009001 Percent Moisture: 10
Report Basis: Dry Weight Basis Analyst Initials: SG
Sample prep wt./vol: 32.06 g Prep Extract Vol: 25.00 ml

Table with columns: Analyte, CASNo, Result, Flags, Units, POL, MDL, Rerun #. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total, Bromofluorobenzene(PID), and Difluorobenzene(PID).

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec
 Report Section: Client Sample Report
 Client Sample Name: 03RDV 54 SL

Matrix: Soil Collection Date: 9/27/2003 4:30:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-24B	Analysis Date:	10/13/2003 10:43:00PM
Prep Date:	10/10/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3101367.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031010004	Percent Moisture:	12
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.22 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/Kg	4.5	0.69				1	
Residual Range Organics	n/a	ND		mg/Kg	9.0	1.4					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.9		mg/Kg	0.21	0.042	2.2	85.2	50	150	1
Squalane	111-01-3	2.0		mg/Kg	0.29	0.058	2.2	90.6	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-24B	Analysis Date:	10/10/2003 9:50:00AM
Prep Date:	10/9/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010006	Percent Moisture:	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	11.49 g	Prep Extract Vol:	10.28 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:
Moisture	na	12		%	0.045	0.0089				1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-24A	Analysis Date:	10/9/2003 5:32:00PM
Prep Date:	10/9/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100920.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031009001	Percent Moisture:	12
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	35.68 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Benzene	71-43-2	ND		mg/Kg	0.013	0.0014				1	
Ethylbenzene	100-41-4	ND		mg/Kg	0.013	0.0013					
Gasoline Range Organics	n/a	ND		mg/Kg	2.8	0.39					
Toluene	108-88-3	0.013		mg/Kg	0.013	0.0017					
Xylenes, Total	1330-20-7	0.030		mg/Kg	0.025	0.0036					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	1.8		mg/Kg	0.32	0.040	2.0	89.0	50	150	1
Bromofluorobenzene(PID)	1072-85-1	2.0		mg/Kg	0.32	0.040	2.0	103	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 54 SL

Matrix: Soil

Collection Date: 9/27/2003 4:30:00PM

Lab Sample Number: A0310016-24A

Prep Date: 10/9/2003

Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B

Prep Method ID: 5035

Prep Batch Number: A031009001

Report Basis: Dry Weight Basis

Sample prep wt./vol: 35.68 g

Analysis Date: 10/9/2003 5:32:00PM

Instrument: Natasha

File Name: N3100920.D

Dilution Factor: 1

Percent Moisture: 12

Analyst Initials: SG

Prep Extract Vol: 25.00 ml

Difluorobenzene	540-36-3	0.84	mg/Kg	0.013	0.0016	0.99	85.2	50	150	1
Difluorobenzene(PID)	540-36-3	1.1	mg/Kg	0.013	0.0016	0.99	106	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Client Sample Report
Client Sample Name: 03RDV 55 SL

Matrix: Soil Collection Date: 9/27/2003 4:32:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-25B	Analysis Date:	10/13/2003 11:10:00PM
Prep Date:	10/10/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3101368.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031010004	Percent Moisture:	11
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	26.39 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/Kg	4.3	0.66				1	
Residual Range Organics	n/a	ND		mg/Kg	8.5	1.3					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.5		mg/Kg	0.20	0.040	2.1	72.0	50	150	1
Squalane	111-01-3	1.6		mg/Kg	0.27	0.055	2.1	74.3	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-25B	Analysis Date:	10/10/2003 9:50:00AM
Prep Date:	10/9/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010006	Percent Moisture:	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.92 g	Prep Extract Vol:	9.79 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:
Moisture	na	11		%	0.045	0.0090				1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-25A	Analysis Date:	10/9/2003 6:02:00PM
Prep Date:	10/9/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100921.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031009001	Percent Moisture:	11
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	28.16 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Benzene	71-43-2	ND		mg/Kg	0.016	0.0018				1	
Ethylbenzene	100-41-4	ND		mg/Kg	0.016	0.0016					
Gasoline Range Organics	n/a	ND		mg/Kg	3.5	0.49					
Toluene	108-88-3	ND		mg/Kg	0.016	0.0021					
Xylenes, Total	1330-20-7	0.035		mg/Kg	0.032	0.0046					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	2.4		mg/Kg	0.40	0.050	2.5	95.1	50	150	1
Bromofluorobenzene(PID)	1072-85-1	2.5		mg/Kg	0.40	0.050	2.5	100	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: **03RDV 55 SL**

Matrix: Soil

Collection Date: 9/27/2003 4:32:00PM

Lab Sample Number: A0310016-25A

Prep Date: 10/9/2003

Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B

Prep Method ID: 5035

Prep Batch Number: A031009001

Report Basis: Dry Weight Basis

Sample prep wt./vol: 28.16 g

Analysis Date: 10/9/2003 6:02:00PM

Instrument: Natasha

File Name: N3100921.D

Dilution Factor: 1

Percent Moisture: 11

Analyst Initials: SG

Prep Extract Vol: 25.00 ml

Difluorobenzene	540-36-3	1.1	mg/Kg	0.016	0.0020	1.3	89.6	50	150	1
Difluorobenzene(PID)	540-36-3	1.3	mg/Kg	0.016	0.0020	1.3	103	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: Trip Blank

Matrix: Soil Collection Date: 9/27/2003 4:32:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-26A	Analysis Date:	10/9/2003 6:31:00PM
Prep Date:	10/9/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100922.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031009001	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	SG
Sample prep wt./vol:	23.74 g	Prep Extract Vol:	25.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>				<u>Rerun #:</u>	
Benzene	71-43-2	ND		mg/Kg	0.017	0.0019				1	
Ethylbenzene	100-41-4	ND		mg/Kg	0.017	0.0017					
Gasoline Range Organics	n/a	ND		mg/Kg	3.7	0.52					
Toluene	108-88-3	ND		mg/Kg	0.017	0.0023					
Xylenes, Total	1330-20-7	ND		mg/Kg	0.034	0.0048					
<u>Surrogate</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Spike</u>	<u>% Recov</u>	<u>LCL</u>	<u>UCL</u>	<u>Rerun #:</u>
Bromofluorobenzene	1072-85-1	2.6		mg/Kg	0.42	0.053	2.6	100	50	150	1
Bromofluorobenzene(PID)	1072-85-1	3.0		mg/Kg	0.42	0.053	2.6	113	50	150	
Difluorobenzene	540-36-3	1.1		mg/Kg	0.017	0.0021	1.3	85.6	50	150	
Difluorobenzene(PID)	540-36-3	1.4		mg/Kg	0.017	0.0021	1.3	107	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Solid Collection Date: 10/8/2003 12:00:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A031008004-MB Analysis Date: 10/9/2003 7:51:00PM
Prep Date: 10/8/2003 Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3100958.D
Prep Method ID: 3550 Dilution Factor: 1
Prep Batch Number: A031008004 Percent Moisture: NA
Report Basis: Dry Weight Basis Analyst Initials: HW
Sample prep wt./vol: 25.00 g Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/Kg	4.0	0.62				1	
Residual Range Organics	n/a	ND		mg/Kg	8.0	1.2					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.3		mg/Kg	0.19	0.038	2.0	65.2	50	150	1
Squalane	111-01-3	1.4		mg/Kg	0.26	0.051	2.0	67.6	50	150	

Lab Sample Number: A031010004-MB Analysis Date: 10/13/2003 7:32:00PM
Prep Date: 10/10/2003 Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3101360.D
Prep Method ID: 3550 Dilution Factor: 1
Prep Batch Number: A031010004 Percent Moisture: NA
Report Basis: Dry Weight Basis Analyst Initials: HW
Sample prep wt./vol: 25.84 g Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL					Rerun #:
Diesel Range Organics	n/a	ND		mg/Kg	3.9	0.60					1
Residual Range Organics	n/a	ND		mg/Kg	7.7	1.2					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.6		mg/Kg	0.18	0.036	1.9	82.3	50	150	1
Squalane	111-01-3	1.7		mg/Kg	0.25	0.050	1.9	89.9	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A031010006-MB Analysis Date: 10/10/2003 9:50:00AM
Prep Date: 10/9/2003 Instrument: SCALE
Analytical Method ID: ASTM D2216 - % moisture File Name:
Prep Method ID: D2216 Dilution Factor: 1
Prep Batch Number: A031010006 Percent Moisture: NA
Report Basis: Dry Weight Basis Analyst Initials: JS
Sample prep wt./vol: 11.11 g Prep Extract Vol: 11.11 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL					Rerun #:
Moisture	na	ND		%	0.050	0.010					1
Lab Sample Number: A031010007-MB Analysis Date: 10/9/2003 9:15:00AM Prep Date: 10/8/2003 Instrument: SCALE Analytical Method ID: ASTM D2216 - % moisture File Name: Prep Method ID: D2216 Dilution Factor: 1											

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec
Report Section: Method Blank Report

Client Sample Name: **MB**

Matrix: Solid Collection Date: 10/10/2003 5:21:31PM

Prep Batch Number: A031010007 Percent Moisture: NA
 Report Basis: Dry Weight Basis Analyst Initials: JS
 Sample prep wt./vol: 11.02 g Prep Extract Vol: 11.01 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Moisture	na	ND		%	0.050	0.010	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A031008003-MB Analysis Date: 10/8/2003 8:47:00AM
 Prep Date: 10/8/2003 Instrument: Natasha
 Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B File Name: N3100804.D
 Prep Method ID: 5035 Dilution Factor: 1
 Prep Batch Number: A031008003 Percent Moisture: NA
 Report Basis: Dry Weight Basis Analyst Initials: SG
 Sample prep wt./vol: 25.00 g Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.016	0.0018	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.016	0.0016	
Gasoline Range Organics	n/a	ND		mg/Kg	3.5	0.49	
Toluene	108-88-3	ND		mg/Kg	0.016	0.0021	
Xylenes, Total	1330-20-7	ND		mg/Kg	0.032	0.0046	

Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	2.6		mg/Kg	0.40	0.050	2.5	103	50	150	1
Bromofluorobenzene(PID)	1072-85-1	2.6		mg/Kg	0.40	0.050	2.5	105	50	150	
Difluorobenzene	540-36-3	1.2		mg/Kg	0.016	0.0020	1.3	92.3	50	150	
Difluorobenzene(PID)	540-36-3	1.3		mg/Kg	0.016	0.0020	1.3	102	50	150	

Lab Sample Number: A031009001-MB Analysis Date: 10/9/2003 8:42:00AM
 Prep Date: 10/9/2003 Instrument: Natasha
 Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B File Name: N3100904.D
 Prep Method ID: 5035 Dilution Factor: 1
 Prep Batch Number: A031009001 Percent Moisture: NA
 Report Basis: Dry Weight Basis Analyst Initials: SG
 Sample prep wt./vol: 25.00 g Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.016	0.0018	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.016	0.0016	
Gasoline Range Organics	n/a	ND		mg/Kg	3.5	0.49	
Toluene	108-88-3	ND		mg/Kg	0.016	0.0021	
Xylenes, Total	1330-20-7	ND		mg/Kg	0.032	0.0046	

Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	2.5		mg/Kg	0.40	0.050	2.5	102	50	150	1
Bromofluorobenzene(PID)	1072-85-1	2.6		mg/Kg	0.40	0.050	2.5	103	50	150	
Difluorobenzene	540-36-3	1.1		mg/Kg	0.016	0.0020	1.3	89.5	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Solid Collection Date: 10/9/2003 12:00:00AM

Lab Sample Number: A031009001-MB Analysis Date: 10/9/2003 8:42:00AM
Prep Date: 10/9/2003 Instrument: Natasha
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B File Name: N3100904.D
Prep Method ID: 5035 Dilution Factor: 1
Prep Batch Number: A031009001 Percent Moisture: NA
Report Basis: Dry Weight Basis Analyst Initials: SG
Sample prep wt./vol: 25.00 g Prep Extract Vol: 25.00 ml
Difluorobenzene(PID) 540-36-3 1.3 mg/Kg 0.016 0.0020 1.3 103 50 150 1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A031008003-MB Analysis Date: 10/8/2003 8:47:00AM
Prep Date: 10/8/2003 Instrument: Natasha
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX File Name: N3100804.D
Prep Method ID: 5035 Dilution Factor: 1
Prep Batch Number: A031008003 Percent Moisture: NA
Report Basis: Dry Weight Basis Analyst Initials: SG
Sample prep wt./vol: 25.00 g Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Benzene	71-43-2	ND		mg/Kg	0.016	0.0018				1	
Ethylbenzene	100-41-4	ND		mg/Kg	0.016	0.0016					
Toluene	108-88-3	ND		mg/Kg	0.016	0.0021					
Xylenes, Total	1330-20-7	ND		mg/Kg	0.032	0.0046					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.6		mg/Kg	0.40	0.050	2.5	105	50	150	1
Difluorobenzene(PID)	540-36-3	1.3		mg/Kg	0.016	0.0020	1.3	102	50	150	

Lab Sample Number: A031009001-MB Analysis Date: 10/9/2003 8:42:00AM
Prep Date: 10/9/2003 Instrument: Natasha
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX File Name: N3100904.D
Prep Method ID: 5035 Dilution Factor: 1
Prep Batch Number: A031009001 Percent Moisture: NA
Report Basis: Dry Weight Basis Analyst Initials: SG
Sample prep wt./vol: 25.00 g Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL					Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.016	0.0018					1
Ethylbenzene	100-41-4	ND		mg/Kg	0.016	0.0016					
Toluene	108-88-3	ND		mg/Kg	0.016	0.0021					
Xylenes, Total	1330-20-7	ND		mg/Kg	0.032	0.0046					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.6		mg/Kg	0.40	0.050	2.5	103	50	150	1
Difluorobenzene(PID)	540-36-3	1.3		mg/Kg	0.016	0.0020	1.3	103	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: T031009004-MB Analysis Date: 10/26/2003 6:40:00AM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Solid **Collection Date:** 10/8/2003 3:30:00PM

Prep Date: 10/8/2003 **Instrument:** MS1BNA
Analytical Method ID: SW8270C - Semivolatile Organics by GC/MS - PAH **File Name:** 03102539.D
Prep Method ID: 3550B **Dilution Factor:** 1
Prep Batch Number: T031009004 **Percent Moisture:** NA
Report Basis: Dry Weight Basis **Analyst Initials:** bs
Sample prep wt./vol: 30.07 g **Prep Extract Vol:** 2.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>				
Acenaphthene	83-32-9	ND		ug/Kg	170	26	1				
Acenaphthylene	208-96-8	ND		ug/Kg	170	28					
Anthracene	120-12-7	ND		ug/Kg	170	26					
Benzo(a)anthracene	56-55-3	ND		ug/Kg	170	17					
Benzo(a)pyrene	50-32-8	ND		ug/Kg	170	19					
Benzo(b)fluoranthene	205-99-2	ND		ug/Kg	170	23					
Benzo(g,h,i)perylene	191-24-2	ND		ug/Kg	170	51					
Benzo(k)fluoranthene	207-08-9	ND		ug/Kg	170	39					
Chrysene	218-01-9	ND		ug/Kg	170	18					
Dibenzo(a,h)anthracene	53-70-3	ND		ug/Kg	170	51					
Fluoranthene	206-44-0	ND		ug/Kg	170	21					
Fluorene	86-73-7	ND		ug/Kg	170	25					
Indeno(1,2,3-cd)pyrene	193-39-5	ND		ug/Kg	170	47					
Naphthalene	91-20-3	ND		ug/Kg	170	20					
Phenanthrene	85-01-8	ND		ug/Kg	170	20					
Pyrene	129-00-0	ND		ug/Kg	170	28					
<u>Surrogate</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Spike</u>	<u>% Recov</u>	<u>LCL</u>	<u>UCL</u>	<u>Rerun #:</u>
2-Fluorobiphenyl	321-60-8	1,700		ug/Kg	170	20	3,300	51.0	36	121	1
D14-Terphenyl	92-94-4D	2,500		ug/Kg	170	20	3,300	74.3	30	134	
D5-Nitrobenzene	98-95-3D	1,400		ug/Kg	170	25	3,300	41.5	30	122	

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska
 Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Project Number: **QUALITY CONTROL REPORT**
 Prep Batch: A031010007

SAMPLE DUPLICATE REPORT

Analysis: ASTM D2216 - % moisture
 Base Sample: A0310016-19B
 Prep Date: 10/8/2003
 Samp. Anal. Date: 10/9/2003 9:15:00AM
 Units: %
 DUP Anal. Date: 10/9/2003 9:15:00AM
 Matrix: Soil

Analyte Name	SampResult	DUPRes.	RPD	RPDLim	Flag
Moisture	9.48	9.97	5.0	20	

Prep Batch: A031008004

LCS/LCSD REPORT

Analysis: ADEC AK102/103 - (DRO & RRO)
 MB: A031008004-MB
 Prep Date: 10/8/2003
 MB Anal. Date: 10/9/2003 7:51:00PM
 Units: mg/Kg
 LCS Anal. Date: 10/9/2003 8:18:00PM
 LCSD Anal. Date: 10/9/2003 8:46:00PM
 Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Diesel Range Organics	ND	66.8	67.6	78.3	79.6	85.4	84.9	1.2	60 - 120	20	
Residual Range Organics	ND	66.9	74.9	78.3	79.6	85.5	94.1	11.3	60 - 120	20	

Prep Batch: A031010004

LCS/LCSD REPORT

Analysis: ADEC AK102/103 - (DRO & RRO)
 MB: A031010004-MB
 Prep Date: 10/10/2003
 MB Anal. Date: 10/13/2003 7:32:00PM
 Units: mg/Kg
 LCS Anal. Date: 10/13/2003 7:59:00PM
 LCSD Anal. Date: 10/13/2003 8:27:00PM
 Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Diesel Range Organics	ND	63.9	69.1	76.4	78.6	83.6	87.9	7.8	60 - 120	20	
Residual Range Organics	ND	69.9	80.4	76.4	78.6	91.5	102.3	14.0	60 - 120	20	

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little significance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska
Workorder (SDG): A0310016
Project: Red Devil AST Removal
Project Number:
Prep Batch: A031008003

QUALITY CONTROL REPORT

LCS/LCSD REPORT

Analysis: Aromatic VOCs by GC/FID via method 8021B - BTEX MB: A031008003-MB
Prep Date: 10/8/2003
MB Anal. Date: 10/8/2003 8:47:00AM Units: mg/Kg
LCS Anal. Date: 10/8/2003 9:17:00AM LCSD Anal. Date: 10/8/2003 9:47:00AM Matrix: Soil

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	0.374	0.371	0.345	0.345	108.5	107.6	0.8	60 - 120	20	
Toluene	ND	1.90	1.86	2.11	2.11	89.9	88.0	2.1	60 - 120	20	
Ethylbenzene	ND	0.572	0.571	0.507	0.507	112.8	112.6	0.2	60 - 120	20	
Xylenes, Total	ND	2.77	2.74	2.48	2.48	111.7	110.5	1.1	60 - 120	20	

Prep Batch: A031009001

LCS/LCSD REPORT

Analysis: Aromatic VOCs by GC/FID via method 8021B - BTEX MB: A031009001-MB
Prep Date: 10/9/2003
MB Anal. Date: 10/9/2003 8:42:00AM Units: mg/Kg
LCS Anal. Date: 10/9/2003 9:12:00AM LCSD Anal. Date: 10/9/2003 9:41:00AM Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	0.389	0.362	0.345	0.345	112.8	105.0	7.2	60 - 120	20	
Toluene	ND	1.95	1.84	2.11	2.11	92.3	87.1	5.8	60 - 120	20	
Ethylbenzene	ND	0.549	0.560	0.507	0.507	108.3	110.4	2.0	60 - 120	20	
Xylenes, Total	ND	2.72	2.77	2.48	2.48	109.7	111.7	1.8	60 - 120	20	

Prep Batch: A031008003

LCS/LCSD REPORT

Analysis: GRO by ADEC AK 101 & BTEX by 8021B MB: A031008003-MB
Prep Date: 10/8/2003
MB Anal. Date: 10/8/2003 8:47:00AM Units: mg/Kg
LCS Anal. Date: 10/8/2003 9:17:00AM LCSD Anal. Date: 10/8/2003 9:47:00AM Matrix: Soil

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	0.374	0.371	0.345	0.345	108.5	107.6	0.8	60 - 120	20	
Toluene	ND	1.90	1.86	2.11	2.11	89.9	88.0	2.1	60 - 120	20	
Ethylbenzene	ND	0.572	0.571	0.507	0.507	112.8	112.6	0.2	60 - 120	20	

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska
 Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Project Number:
 Prep Batch: A031008003

QUALITY CONTROL REPORT

LCS/LCSD REPORT

Analysis: GRO by ADEC AK101 & BTEX by 8021B MB: A031008003-MB
 Prep Date: 10/8/2003
 MB Anal. Date: 10/8/2003 8:47:00AM Units: mg/Kg
 LCS Anal. Date: 10/8/2003 9:17:00AM LCSD Anal. Date: 10/8/2003 9:47:00AM Matrix: Soil

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Xylenes, Total	ND	2.77	2.74	2.48	2.48	111.7	110.5	1.1	60 - 120	20	
Gasoline Range Organics	ND	21.3	22.9	27.5	27.5	77.5	83.3	7.2	60 - 120	20	

Prep Batch: A031009001

LCS/LCSD REPORT

Analysis: GRO by ADEC AK101 & BTEX by 8021B MB: A031009001-MB
 Prep Date: 10/9/2003
 MB Anal. Date: 10/9/2003 8:42:00AM Units: mg/Kg
 LCS Anal. Date: 10/9/2003 9:12:00AM LCSD Anal. Date: 10/9/2003 9:41:00AM Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	0.389	0.362	0.345	0.345	112.8	105.0	7.2	60 - 120	20	
Toluene	ND	1.95	1.84	2.11	2.11	92.3	87.1	5.8	60 - 120	20	
Ethylbenzene	ND	0.549	0.560	0.507	0.507	108.3	110.4	2.0	60 - 120	20	
Xylenes, Total	ND	2.72	2.77	2.48	2.48	109.7	111.7	1.8	60 - 120	20	
Gasoline Range Organics	ND	21.6	22.8	27.5	27.5	78.5	82.9	5.4	60 - 120	20	

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little significance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Project Number:

QUALITY CONTROL REPORT

Prep Batch: T031009004

LCS REPORT

Analysis: SW8270C - Semivolatile Organics by GC/MS - PAH

MB: T031009004-MB

Prep Date: 10/8/2003

MB Anal. Date: 10/26/2003 6:40:00AM

Units: ug/Kg

LCS Anal. Date: 10/26/2003 7:14:00AM

Matrix: Solid

<u>Analyte Name</u>	<u>SampResult</u>	<u>LCSRes.</u>	<u>SPLev</u>	<u>Recov.</u>	<u>Recov Lim</u>	<u>RPDLim</u>	<u>Flag</u>
Naphthalene	ND	1,220	1,670	73.3	45 - 136		
Acenaphthylene	ND	1,430	1,670	85.9	48 - 133		
Acenaphthene	ND	1,530	1,670	91.9	43 - 122		
Fluorene	ND	1,570	1,670	94.3	58 - 130		
Phenanthrene	ND	1,360	1,670	81.7	54 - 140		
Anthracene	ND	1,450	1,670	87.1	59 - 131		
Fluoranthene	ND	1,330	1,670	79.9	51 - 140		
Pyrene	ND	1,600	1,670	96.1	40 - 127		
Benzo(a)anthracene	ND	1,390	1,670	83.5	58 - 118		
Chrysene	ND	2,190	1,670	131.5	55 - 139		
Benzo(b)fluoranthene	ND	1,480	1,670	88.9	41 - 133		
Benzo(k)fluoranthene	ND	1,640	1,670	98.5	49 - 138		
Benzo(a)pyrene	ND	1,450	1,670	87.1	40 - 138		
Indeno(1,2,3-cd)pyrene	ND	1,710	1,670	102.7	48 - 125		
Dibenzo(a,h)anthracene	ND	1,460	1,670	87.7	50 - 129		
Benzo(g,h,i)perylene	ND	1,300	1,670	78.1	50 - 125		

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little significance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report:

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

SURROGATE RECOVERY SUMMARY REPORT

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Test Method: ADEC AK102/103 - (DRO & RRO)

Lab Sample #:	A0310016-01B	Dilution:	1		
Analysis Date:	10/9/2003 9:40:00PM	Client Sample:	03RDV 30 SL		
Batch Number:	A031008004	Data File:	R3100962.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	64	50	150		Complete
Squalane	62	50	150		Complete

Lab Sample #:	A0310016-02B	Dilution:	1		
Analysis Date:	10/9/2003 10:08:00PM	Client Sample:	03RDV 31 SL		
Batch Number:	A031008004	Data File:	R3100963.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	65	50	150		Complete
Squalane	65	50	150		Complete

Lab Sample #:	A0310016-03B	Dilution:	1		
Analysis Date:	10/9/2003 10:35:00PM	Client Sample:	03RDV 32 SL		
Batch Number:	A031008004	Data File:	R3100964.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	83	50	150		Complete
Squalane	88	50	150		Complete

Lab Sample #:	A0310016-04B	Dilution:	1		
Analysis Date:	10/10/2003 12:52:00AM	Client Sample:	03RDV 33 SL		
Batch Number:	A031008004	Data File:	R3100969.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	66	50	150		Complete
Squalane	63	50	150		Complete

Lab Sample #:	A0310016-05B	Dilution:	1		
Analysis Date:	10/10/2003 1:19:00AM	Client Sample:	03RDV 34 SL		
Batch Number:	A031008004	Data File:	R3100970.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	79	50	150		Complete
Squalane	78	50	150		Complete

Lab Sample #:	A0310016-07B	Dilution:	1		
Analysis Date:	10/10/2003 2:14:00AM	Client Sample:	03RDV 36 SL		
Batch Number:	A031008004	Data File:	R3100972.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	89	50	150		Complete
Squalane	86	50	150		Complete

Lab Sample #:	A0310016-08B	Dilution:	1		
Analysis Date:	10/10/2003 2:41:00AM	Client Sample:	03RDV 37 SL		
Batch Number:	A031008004	Data File:	R3100973.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	73	50	150		Complete
Squalane	71	50	150		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Test Method: ADEC AK102/103 - (DRO & RRO)

Lab Sample #:	A0310016-10B	Dilution:	1		
Analysis Date:	10/10/2003 3:09:00AM	Client Sample:	03RDV 39 SL		
Batch Number:	A031008004	Data File:	R3100974.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	74	50	150		Complete
Squalane	70	50	150		Complete

Lab Sample #:	A0310016-12B	Dilution:	1		
Analysis Date:	10/10/2003 3:36:00AM	Client Sample:	03RDV 41 SL		
Batch Number:	A031008004	Data File:	R3100975.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	90	50	150		Complete
Squalane	88	50	150		Complete

Lab Sample #:	A0310016-13B	Dilution:	1		
Analysis Date:	10/10/2003 4:04:00AM	Client Sample:	03RDV 42 SL		
Batch Number:	A031008004	Data File:	R3100976.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	64	50	150		Complete
Squalane	64	50	150		Complete

Lab Sample #:	A0310016-15B	Dilution:	1		
Analysis Date:	10/10/2003 7:42:00AM	Client Sample:	03RDV 44 SL		
Batch Number:	A031008004	Data File:	R3100983.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	79	50	150		Complete
Squalane	81	50	150		Complete

Lab Sample #:	A0310016-16B	Dilution:	1		
Analysis Date:	10/10/2003 8:10:00AM	Client Sample:	03RDV 45 SL		
Batch Number:	A031008004	Data File:	R3100984.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	77	50	150		Complete
Squalane	79	50	150		Complete

Lab Sample #:	A0310016-17B	Dilution:	1		
Analysis Date:	10/10/2003 8:37:00AM	Client Sample:	03RDV 46 SL		
Batch Number:	A031008004	Data File:	R3100985.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	58	50	150		Complete
Squalane	60	50	150		Complete

Lab Sample #:	A0310016-18B	Dilution:	1		
Analysis Date:	10/10/2003 9:04:00AM	Client Sample:	03RDV 47 SL		
Batch Number:	A031008004	Data File:	R3100986.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	80	50	150		Complete
Squalane	84	50	150		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec

Test Method: ADEC AK102/103 - (DRO & RRO)

Lab Sample #: A0310016-19B Dilution: 1
 Analysis Date: 10/10/2003 9:31:00AM Client Sample: 03RDV 48 SL
 Batch Number: A031008004 Data File: R3100987.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	76	50	150		Complete
Squalane	80	50	150		Complete

Lab Sample #: A0310016-11B Dilution: 10
 Analysis Date: 10/10/2003 11:48:00AM Client Sample: 03RDV 40 SL
 Batch Number: A031008004 Data File: R3100993.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	98	50	150		Complete
Squalane	81	50	150	UNDER QUANT LIMIT	Complete

Lab Sample #: A0310016-09B Dilution: 10
 Analysis Date: 10/10/2003 12:16:00PM Client Sample: 03RDV 38 SL
 Batch Number: A031008004 Data File: R3100994.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	73	50	150	UNDER QUANT LIMIT	Complete
Squalane	60	50	150	UNDER QUANT LIMIT	Complete

Lab Sample #: A0310016-20B Dilution: 1
 Analysis Date: 10/13/2003 8:54:00PM Client Sample: 03RDV 50 SL
 Batch Number: A031010004 Data File: R3101363.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	82	50	150		Complete
Squalane	92	50	150		Complete

Lab Sample #: A0310016-21B Dilution: 1
 Analysis Date: 10/13/2003 9:21:00PM Client Sample: 03RDV 51 SL
 Batch Number: A031010004 Data File: R3101364.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	84	50	150		Complete
Squalane	90	50	150		Complete

Lab Sample #: A0310016-22B Dilution: 1
 Analysis Date: 10/13/2003 9:48:00PM Client Sample: 03RDV 52 SL
 Batch Number: A031010004 Data File: R3101365.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	73	50	150		Complete
Squalane	79	50	150		Complete

Lab Sample #: A0310016-23B Dilution: 1
 Analysis Date: 10/13/2003 10:16:00PM Client Sample: 03RDV 53 SL
 Batch Number: A031010004 Data File: R3101366.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	75	50	150		Complete
Squalane	75	50	150		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec

Test Method: ADEC AK102/103 - (DRO & RRO)

Lab Sample #: A0310016-24B Dilution: 1
 Analysis Date: 10/13/2003 10:43:00PM Client Sample: 03RDV 54 SL
 Batch Number: A031010004 Data File: R3101367.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	85	50	150		Complete
Squalane	91	50	150		Complete

Lab Sample #: A0310016-25B Dilution: 1
 Analysis Date: 10/13/2003 11:10:00PM Client Sample: 03RDV 55 SL
 Batch Number: A031010004 Data File: R3101368.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	72	50	150		Complete
Squalane	74	50	150		Complete

Lab Sample #: A0310016-06B Dilution: 1
 Analysis Date: 10/13/2003 11:38:00PM Client Sample: 03RDV 35 SL
 Batch Number: A031010004 Data File: R3101369.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	62	50	150		Complete
Squalane	66	50	150		Complete

Lab Sample #: A0310016-14B Dilution: 1
 Analysis Date: 10/14/2003 12:05:00AM Client Sample: 03RDV 43 SL
 Batch Number: A031010004 Data File: R3101370.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	70	50	150		Complete
Squalane	73	50	150		Complete

Lab Sample #: A031008004-MB Dilution: 1
 Analysis Date: 10/9/2003 7:51:00PM Client Sample: MB
 Batch Number: A031008004 Data File: R3100958.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	65	60	120		Complete
Squalane	68	60	120		Complete

Lab Sample #: A031010004-MB Dilution: 1
 Analysis Date: 10/13/2003 7:32:00PM Client Sample: MB
 Batch Number: A031010004 Data File: R3101360.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	82	60	120		Complete
Squalane	90	60	120		Complete

Lab Sample #: A031008004-LCS Dilution: 1
 Analysis Date: 10/9/2003 8:18:00PM Client Sample: LCS
 Batch Number: A031008004 Data File: R3100959.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	81	60	120		Complete
Squalane	87	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Test Method: ADEC AK102/103 - (DRO & RRO)

Lab Sample #:	A031010004-LCS	Dilution:	1		
Analysis Date:	10/13/2003 7:59:00PM	Client Sample:	<u>LCS</u>		
Batch Number:	A031010004	Data File:	R3101361.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	89	60	120		Complete
Squalane	91	60	120		Complete

Lab Sample #:	A031008004-LCSD	Dilution:	1		
Analysis Date:	10/9/2003 8:46:00PM	Client Sample:	<u>LCSD</u>		
Batch Number:	A031008004	Data File:	R3100960.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	79	60	120		Complete
Squalane	84	60	120		Complete

Lab Sample #:	A031010004-LCSD	Dilution:	1		
Analysis Date:	10/13/2003 8:27:00PM	Client Sample:	<u>LCSD</u>		
Batch Number:	A031010004	Data File:	R3101362.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	93	60	120		Complete
Squalane	96	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec
Test Method: Aromatic VOCs by GC/FID via method 8021B - BTEX

Lab Sample #: A0310016-01A Dilution: 25
Analysis Date: 10/8/2003 10:17:00AM Client Sample: 03RDV 30 SL
Batch Number: A031008003 Data File: N3100807.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	91	50	150		Complete
Difluorobenzene(PID)	103	50	150		Complete

Lab Sample #: A0310016-03A Dilution: 25
Analysis Date: 10/8/2003 11:16:00AM Client Sample: 03RDV 32 SL
Batch Number: A031008003 Data File: N3100809.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	82	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #: A0310016-05A Dilution: 25
Analysis Date: 10/8/2003 12:15:00PM Client Sample: 03RDV 34 SL
Batch Number: A031008003 Data File: N3100811.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	91	50	150		Complete
Difluorobenzene(PID)	104	50	150		Complete

Lab Sample #: A0310016-06A Dilution: 25
Analysis Date: 10/8/2003 12:45:00PM Client Sample: 03RDV 35 SL
Batch Number: A031008003 Data File: N3100812.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	94	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #: A0310016-08A Dilution: 25
Analysis Date: 10/8/2003 1:44:00PM Client Sample: 03RDV 37 SL
Batch Number: A031008003 Data File: N3100814.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	91	50	150		Complete
Difluorobenzene(PID)	105	50	150		Complete

Lab Sample #: A0310016-10A Dilution: 25
Analysis Date: 10/8/2003 2:45:00PM Client Sample: 03RDV 39 SL
Batch Number: A031008003 Data File: N3100816.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	93	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #: A0310016-12A Dilution: 25
Analysis Date: 10/8/2003 4:45:00PM Client Sample: 03RDV 41 SL
Batch Number: A031008003 Data File: N3100820.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	85	50	150		Complete
Difluorobenzene(PID)	104	50	150		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Test Method: Aromatic VOCs by GC/FID via method 8021B - BTEX

Lab Sample #: A0310016-14A Dilution: 25
 Analysis Date: 10/8/2003 5:45:00PM Client Sample: **03RDV 43 SL**
 Batch Number: A031008003 Data File: N3100822.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	94	50	150		Complete
Difluorobenzene(PID)	103	50	150		Complete

Lab Sample #: A0310016-15A Dilution: 25
 Analysis Date: 10/8/2003 6:14:00PM Client Sample: **03RDV 44 SL**
 Batch Number: A031008003 Data File: N3100823.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	97	50	150		Complete
Difluorobenzene(PID)	105	50	150		Complete

Lab Sample #: A0310016-17A Dilution: 25
 Analysis Date: 10/8/2003 7:14:00PM Client Sample: **03RDV 46 SL**
 Batch Number: A031008003 Data File: N3100825.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	100	50	150		Complete
Difluorobenzene(PID)	103	50	150		Complete

Lab Sample #: A0310016-16A Dilution: 25
 Analysis Date: 10/9/2003 12:56:00PM Client Sample: **03RDV 45 SL**
 Batch Number: A031008003 Data File: N3100911.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	97	50	150		Complete
Difluorobenzene(PID)	103	50	150		Complete

Lab Sample #: A0310016-18A Dilution: 25
 Analysis Date: 10/9/2003 1:26:00PM Client Sample: **03RDV 47 SL**
 Batch Number: A031008003 Data File: N3100912.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	96	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #: A0310016-19A Dilution: 25
 Analysis Date: 10/9/2003 1:56:00PM Client Sample: **03RDV 48 SL**
 Batch Number: A031008003 Data File: N3100913.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	98	50	150		Complete
Difluorobenzene(PID)	103	50	150		Complete

Lab Sample #: A0310016-20A Dilution: 25
 Analysis Date: 10/9/2003 2:26:00PM Client Sample: **03RDV 50 SL**
 Batch Number: A031008003 Data File: N3100914.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene(PID)	92	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec

Test Method: Aromatic VOCs by GC/FID via method 8021B - BTEX

Lab Sample #:	A0310016-21A	Dilution:	25		
Analysis Date:	10/9/2003 2:56:00PM	Client Sample:	<u>03RDV 51 SL</u>		
Batch Number:	A031009001	Data File:	N3100915.D		
AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	92	50	150		Complete
Difluorobenzene(PID)	101	50	150		Complete

Lab Sample #:	A0310016-22A	Dilution:	25		
Analysis Date:	10/9/2003 3:32:00PM	Client Sample:	<u>03RDV 52 SL</u>		
Batch Number:	A031009001	Data File:	N3100916.D		
AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	93	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #:	A0310016-23A	Dilution:	25		
Analysis Date:	10/9/2003 4:02:00PM	Client Sample:	<u>03RDV 53 SL</u>		
Batch Number:	A031009001	Data File:	N3100917.D		
AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	95	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #:	A031008003-MB	Dilution:	25		
Analysis Date:	10/8/2003 8:47:00AM	Client Sample:	<u>MB</u>		
Batch Number:	A031008003	Data File:	N3100804.D		
AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	105	60	120		Complete
Difluorobenzene(PID)	102	60	120		Complete

Lab Sample #:	A031009001-MB	Dilution:	25		
Analysis Date:	10/9/2003 8:42:00AM	Client Sample:	<u>MB</u>		
Batch Number:	A031009001	Data File:	N3100904.D		
AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	103	60	120		Complete
Difluorobenzene(PID)	103	60	120		Complete

Lab Sample #:	A031008003-LCS	Dilution:	25		
Analysis Date:	10/8/2003 9:17:00AM	Client Sample:	<u>LCS</u>		
Batch Number:	A031008003	Data File:	N3100805.D		
AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	93	60	120		Complete
Difluorobenzene(PID)	97	60	120		Complete

Lab Sample #:	A031009001-LCS	Dilution:	25		
Analysis Date:	10/9/2003 9:12:00AM	Client Sample:	<u>LCS</u>		
Batch Number:	A031009001	Data File:	N3100905.D		
AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	93	60	120		Complete
Difluorobenzene(PID)	98	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec
 Test Method: GRO by ADEC AK101 & BTEX by 8021B

Lab Sample #: A0310016-13A Dilution: 25
 Analysis Date: 10/9/2003 12:26:00PM Client Sample: 03RDV 42 SL
 Batch Number: A031008003 Data File: N3100910.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	77	50	150		Complete
Bromofluorobenzene(PID)	83	50	150		Complete
Difluorobenzene	89	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #: A0310016-24A Dilution: 25
 Analysis Date: 10/9/2003 5:32:00PM Client Sample: 03RDV 54 SL
 Batch Number: A031009001 Data File: N3100920.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	89	50	150		Complete
Bromofluorobenzene(PID)	103	50	150		Complete
Difluorobenzene	85	50	150		Complete
Difluorobenzene(PID)	106	50	150		Complete

Lab Sample #: A0310016-25A Dilution: 25
 Analysis Date: 10/9/2003 6:02:00PM Client Sample: 03RDV 55 SL
 Batch Number: A031009001 Data File: N3100921.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	95	50	150		Complete
Bromofluorobenzene(PID)	100	50	150		Complete
Difluorobenzene	90	50	150		Complete
Difluorobenzene(PID)	103	50	150		Complete

Lab Sample #: A0310016-26A Dilution: 25
 Analysis Date: 10/9/2003 6:31:00PM Client Sample: Trip Blank
 Batch Number: A031009001 Data File: N3100922.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	100	50	150		Complete
Bromofluorobenzene(PID)	113	50	150		Complete
Difluorobenzene	86	50	150		Complete
Difluorobenzene(PID)	107	50	150		Complete

Lab Sample #: A031008003-MB Dilution: 25
 Analysis Date: 10/8/2003 8:47:00AM Client Sample: MB
 Batch Number: A031008003 Data File: N3100804.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	103	60	120		Complete
Bromofluorobenzene(PID)	105	60	120		Complete
Difluorobenzene	92	60	120		Complete
Difluorobenzene(PID)	102	60	120		Complete

Lab Sample #: A031009001-MB Dilution: 25
 Analysis Date: 10/9/2003 8:42:00AM Client Sample: MB
 Batch Number: A031009001 Data File: N3100904.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec
 Test Method: GRO by ADEC AK101 & BTEX by 8021B

Lab Sample #: A031009001-MB Dilution: 25
 Analysis Date: 10/9/2003 8:42:00AM Client Sample: MB
 Batch Number: A031009001 Data File: N3100904.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	102	60	120		Complete
Bromofluorobenzene(PID)	103	60	120		Complete
Difluorobenzene	90	60	120		Complete
Difluorobenzene(PID)	103	60	120		Complete

Lab Sample #: A031008003-LCS Dilution: 25
 Analysis Date: 10/8/2003 9:17:00AM Client Sample: LCS
 Batch Number: A031008003 Data File: N3100805.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	111	60	120		Complete
Bromofluorobenzene(PID)	93	60	120		Complete
Difluorobenzene	87	60	120		Complete
Difluorobenzene(PID)	97	60	120		Complete

Lab Sample #: A031009001-LCS Dilution: 25
 Analysis Date: 10/9/2003 9:12:00AM Client Sample: LCS
 Batch Number: A031009001 Data File: N3100905.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	111	60	120		Complete
Bromofluorobenzene(PID)	93	60	120		Complete
Difluorobenzene	87	60	120		Complete
Difluorobenzene(PID)	98	60	120		Complete

Lab Sample #: A031008003-LCSD Dilution: 25
 Analysis Date: 10/8/2003 9:47:00AM Client Sample: LCSD
 Batch Number: A031008003 Data File: N3100806.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	113	60	120		Complete
Bromofluorobenzene(PID)	92	60	120		Complete
Difluorobenzene	89	60	120		Complete
Difluorobenzene(PID)	97	60	120		Complete

Lab Sample #: A031009001-LCSD Dilution: 25
 Analysis Date: 10/9/2003 9:41:00AM Client Sample: LCSD
 Batch Number: A031009001 Data File: N3100906.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	109	60	120		Complete
Bromofluorobenzene(PID)	88	60	120		Complete
Difluorobenzene	88	60	120		Complete
Difluorobenzene(PID)	95	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Test Method: SW8270C - Semivolatile Organics by GC/MS - PAH

Lab Sample #: A0310016-02C Dilution: 10
 Analysis Date: 10/28/2003 3:30:00AM Client Sample: 03RDV 31 SL
 Batch Number: T031009004 Data File: 03102728.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	62	36	121		Complete
D14-Terphenyl	72	30	134		Complete
D5-Nitrobenzene	74	30	122		Complete

Lab Sample #: A0310016-07C Dilution: 1
 Analysis Date: 10/28/2003 4:04:00AM Client Sample: 03RDV 36 SL
 Batch Number: T031009004 Data File: 03102729.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	53	36	121		Complete
D14-Terphenyl	71	30	134		Complete
D5-Nitrobenzene	45	30	122		Complete

Lab Sample #: A0310016-09C Dilution: 1
 Analysis Date: 10/28/2003 4:38:00AM Client Sample: 03RDV 38 SL
 Batch Number: T031009004 Data File: 03102730.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	55	36	121		Complete
D14-Terphenyl	73	30	134		Complete
D5-Nitrobenzene	47	30	122		Complete

Lab Sample #: A0310016-11C Dilution: 2
 Analysis Date: 10/28/2003 5:12:00AM Client Sample: 03RDV 40 SL
 Batch Number: T031009004 Data File: 03102731.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	56	36	121		Complete
D14-Terphenyl	77	30	134		Complete
D5-Nitrobenzene	70	30	122		Complete

Lab Sample #: A0310016-13C Dilution: 2
 Analysis Date: 10/28/2003 5:47:00AM Client Sample: 03RDV 42 SL
 Batch Number: T031009004 Data File: 03102732.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	49	36	121		Complete
D14-Terphenyl	72	30	134		Complete
D5-Nitrobenzene	66	30	122		Complete

Lab Sample #: T031009004-MB Dilution: 1
 Analysis Date: 10/26/2003 6:40:00AM Client Sample: MB
 Batch Number: T031009004 Data File: 03102539.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	51	36	121		Complete
D14-Terphenyl	74	30	134		Complete
D5-Nitrobenzene	42	30	122		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec

Test Method: SW8270C - Semivolatile Organics by GC/MS - PAH

Lab Sample #: T031009004-LCS Dilution: 1
Analysis Date: 10/26/2003 7:14:00AM Client Sample: LCS
Batch Number: T031009004 Data File: 03102540.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
2-Fluorobiphenyl	63	36	121		Complete
D14-Terphenyl	75	30	134		Complete
D5-Nitrobenzene	44	30	122		Complete

Lab Sample #: A0310015-06A-MS Dilution: 1
Analysis Date: 10/28/2003 6:21:00AM Client Sample: MS
Batch Number: T031009004 Data File: 03102733.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
2-Fluorobiphenyl	50	36	121		Complete
D14-Terphenyl	62	30	134		Complete
D5-Nitrobenzene	43	30	122		Complete

Lab Sample #: A0310015-06A-MSD Dilution: 1
Analysis Date: 10/28/2003 6:56:00AM Client Sample: MSD
Batch Number: T031009004 Data File: 03102734.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
2-Fluorobiphenyl	48	36	121		Complete
D14-Terphenyl	57	30	134		Complete
D5-Nitrobenzene	39	30	122		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
 Project: Red Devil AST Removal
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: Mactec

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 20,069 Lab Project Number: A0310016

Prep Date: 10/8/2003

Lab Method Blank Id: A031008003-MB
 Prep Batch ID: A031008003
 Method: Aromatic VOCs by GC/FID via method 8021B - BTEX

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A031008003-LCS	LCS	N3100805.D	10/8/2003 9:17:00AM
A031008003-LCS	LCS	N3100805.D	10/8/2003 9:17:00AM
A031008003-LCSD	LCSD	N3100806.D	10/8/2003 9:47:00AM
A031008003-LCSD	LCSD	N3100806.D	10/8/2003 9:47:00AM
A0310016-01A	03RDV 30 SL	N3100807.D	10/8/2003 10:17:00AM
A0310016-02A	03RDV 31 SL	N3100808.D	10/8/2003 10:47:00AM
A0310016-03A	03RDV 32 SL	N3100809.D	10/8/2003 11:16:00AM
A0310016-04A	03RDV 33 SL	N3100810.D	10/8/2003 11:45:00AM
A0310016-05A	03RDV 34 SL	N3100811.D	10/8/2003 12:15:00PM
A0310016-06A	03RDV 35 SL	N3100812.D	10/8/2003 12:45:00PM
A0310016-07A	03RDV 36 SL	N3100813.D	10/8/2003 1:14:00PM
A0310016-08A	03RDV 37 SL	N3100814.D	10/8/2003 1:44:00PM
A0310016-09A	03RDV 38 SL	N3100815.D	10/8/2003 2:15:00PM
A0310016-10A	03RDV 39 SL	N3100816.D	10/8/2003 2:45:00PM
A0310016-11A	03RDV 40 SL	N3100817.D	10/8/2003 3:15:00PM
A0310016-12A	03RDV 41 SL	N3100820.D	10/8/2003 4:45:00PM
A0310016-14A	03RDV 43 SL	N3100822.D	10/8/2003 5:45:00PM
A0310016-15A	03RDV 44 SL	N3100823.D	10/8/2003 6:14:00PM
A0310016-17A	03RDV 46 SL	N3100825.D	10/8/2003 7:14:00PM
A0310016-13A	03RDV 42 SL	N3100910.D	10/9/2003 12:26:00PM
A0310016-16A	03RDV 45 SL	N3100911.D	10/9/2003 12:56:00PM
A0310016-18A	03RDV 47 SL	N3100912.D	10/9/2003 1:26:00PM
A0310016-19A	03RDV 48 SL	N3100913.D	10/9/2003 1:56:00PM
A0310016-20A	03RDV 50 SL	N3100914.D	10/9/2003 2:26:00PM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 20,069 Lab Project Number: A0310016

Prep Date: 10/8/2003

Lab Method Blank Id: A031008004-MB
Prep Batch ID: A031008004
Method: ADEC AK102/103 - (DRO & RRO)

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A031008004-LCS	LCS	R3100959.D	10/9/2003 8:18:00PM
A031008004-LCSD	LCSD	R3100960.D	10/9/2003 8:46:00PM
A0310016-01B	03RDV 30 SL	R3100962.D	10/9/2003 9:40:00PM
A0310016-02B	03RDV 31 SL	R3100963.D	10/9/2003 10:08:00PM
A0310016-03B	03RDV 32 SL	R3100964.D	10/9/2003 10:35:00PM
A0310016-04B	03RDV 33 SL	R3100969.D	10/10/2003 12:52:00AM
A0310016-05B	03RDV 34 SL	R3100970.D	10/10/2003 1:19:00AM
A0310016-07B	03RDV 36 SL	R3100972.D	10/10/2003 2:14:00AM
A0310016-08B	03RDV 37 SL	R3100973.D	10/10/2003 2:41:00AM
A0310016-10B	03RDV 39 SL	R3100974.D	10/10/2003 3:09:00AM
A0310016-12B	03RDV 41 SL	R3100975.D	10/10/2003 3:36:00AM
A0310016-13B	03RDV 42 SL	R3100976.D	10/10/2003 4:04:00AM
A0310016-15B	03RDV 44 SL	R3100983.D	10/10/2003 7:42:00AM
A0310016-16B	03RDV 45 SL	R3100984.D	10/10/2003 8:10:00AM
A0310016-17B	03RDV 46 SL	R3100985.D	10/10/2003 8:37:00AM
A0310016-18B	03RDV 47 SL	R3100986.D	10/10/2003 9:04:00AM
A0310016-19B	03RDV 48 SL	R3100987.D	10/10/2003 9:31:00AM
A0310016-11B	03RDV 40 SL	R3100993.D	10/10/2003 11:48:00AM
A0310016-09B	03RDV 38 SL	R3100994.D	10/10/2003 12:16:00PM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 20,069 Lab Project Number: A0310016

Prep Date: 10/9/2003

Lab Method Blank Id: A031009001-MB
Prep Batch ID: A031009001
Method: Aromatic VOCs by GC/FID via method 8021B - BTEX

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A0310016-21A	03RDV 51 SL	N3100915.D	10/9/2003 2:56:00PM
A0310016-22A	03RDV 52 SL	N3100916.D	10/9/2003 3:32:00PM
A0310016-23A	03RDV 53 SL	N3100917.D	10/9/2003 4:02:00PM
A0310016-24A	03RDV 54 SL	N3100920.D	10/9/2003 5:32:00PM
A0310016-25A	03RDV 55 SL	N3100921.D	10/9/2003 6:02:00PM
A0310016-26A	Trip Blank	N3100922.D	10/9/2003 6:31:00PM
A031009001-LCS	LCS	N3100905.D	10/9/2003 9:12:00AM
A031009001-LCS	LCS	N3100905.D	10/9/2003 9:12:00AM
A031009001-LCSD	LCSD	N3100906.D	10/9/2003 9:41:00AM
A031009001-LCSD	LCSD	N3100906.D	10/9/2003 9:41:00AM

Prep Date: 10/8/2003

Lab Method Blank Id: T031009004-MB
Prep Batch ID: T031009004
Method: SW8270C - Semivolatile Organics by GC/MS - PAH

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
T031009004-LCS	LCS	03102540.D	10/26/2003 7:14:00AM
A0310015-06A	Batch QC	03102721.D	10/27/2003 11:49:00PM
A0310016-02C	03RDV 31 SL	03102728.D	10/28/2003 3:30:00AM
A0310016-07C	03RDV 36 SL	03102729.D	10/28/2003 4:04:00AM
A0310016-09C	03RDV 38 SL	03102730.D	10/28/2003 4:38:00AM
A0310016-11C	03RDV 40 SL	03102731.D	10/28/2003 5:12:00AM
A0310016-13C	03RDV 42 SL	03102732.D	10/28/2003 5:47:00AM
A0310015-06A-MS	MS	03102733.D	10/28/2003 6:21:00AM
A0310015-06A-MSD	MSD	03102734.D	10/28/2003 6:56:00AM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 20,069 Lab Project Number: A0310016

Prep Date: 10/10/2003

Lab Method Blank Id: A031010004-MB
Prep Batch ID: A031010004
Method: ADEC AK102/103 - (DRO & RRO)

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A031010004-LCS	LCS	R3101361.D	10/13/2003 7:59:00PM
A031010004-LCSD	LCSD	R3101362.D	10/13/2003 8:27:00PM
A0310016-20B	03RDV 50 SL	R3101363.D	10/13/2003 8:54:00PM
A0310016-21B	03RDV 51 SL	R3101364.D	10/13/2003 9:21:00PM
A0310016-22B	03RDV 52 SL	R3101365.D	10/13/2003 9:48:00PM
A0310016-23B	03RDV 53 SL	R3101366.D	10/13/2003 10:16:00PM
A0310016-24B	03RDV 54 SL	R3101367.D	10/13/2003 10:43:00PM
A0310016-25B	03RDV 55 SL	R3101368.D	10/13/2003 11:10:00PM
A0310016-06B	03RDV 35 SL	R3101369.D	10/13/2003 11:38:00PM
A0310016-14B	03RDV 43 SL	R3101370.D	10/14/2003 12:05:00AM

Prep Date: 10/9/2003

Lab Method Blank Id: A031010006-MB
Prep Batch ID: A031010006
Method: ASTM D2216 - % moisture

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A0310016-20B	03RDV 50 SL		10/10/2003 9:50:00AM
A0310016-21B	03RDV 51 SL		10/10/2003 9:50:00AM
A0310016-22B	03RDV 52 SL		10/10/2003 9:50:00AM
A0310016-23B	03RDV 53 SL		10/10/2003 9:50:00AM
A0310016-24B	03RDV 54 SL		10/10/2003 9:50:00AM
A0310016-25B	03RDV 55 SL		10/10/2003 9:50:00AM
B0310054-03A	Batch QC		10/10/2003 9:50:00AM
B0310054-03A-DUP	DUP		10/10/2003 9:50:00AM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 20,069 Lab Project Number: A0310016

Prep Date: 10/8/2003

Lab Method Blank Id: A031010007-MB
Prep Batch ID: A031010007
Method: ASTM D2216 - % moisture

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A0310016-01B	03RDV 30 SL		10/9/2003 9:15:00AM
A0310016-02B	03RDV 31 SL		10/9/2003 9:15:00AM
A0310016-03B	03RDV 32 SL		10/9/2003 9:15:00AM
A0310016-04B	03RDV 33 SL		10/9/2003 9:15:00AM
A0310016-05B	03RDV 34 SL		10/9/2003 9:15:00AM
A0310016-06B	03RDV 35 SL		10/9/2003 9:15:00AM
A0310016-07B	03RDV 36 SL		10/9/2003 9:15:00AM
A0310016-08B	03RDV 37 SL		10/9/2003 9:15:00AM
A0310016-09B	03RDV 38 SL		10/9/2003 9:15:00AM
A0310016-10B	03RDV 39 SL		10/9/2003 9:15:00AM
A0310016-11B	03RDV 40 SL		10/9/2003 9:15:00AM
A0310016-12B	03RDV 41 SL		10/9/2003 9:15:00AM
A0310016-13B	03RDV 42 SL		10/9/2003 9:15:00AM
A0310016-14B	03RDV 43 SL		10/9/2003 9:15:00AM
A0310016-15B	03RDV 44 SL		10/9/2003 9:15:00AM
A0310016-16B	03RDV 45 SL		10/9/2003 9:15:00AM
A0310016-17B	03RDV 46 SL		10/9/2003 9:15:00AM
A0310016-18B	03RDV 47 SL		10/9/2003 9:15:00AM
A0310016-19B	03RDV 48 SL		10/9/2003 9:15:00AM
A0310016-19B-DUP	DUP		10/9/2003 9:15:00AM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec

DATA FLAGS AND DEFINITIONS

The PQL is the Method Quantitation Limit as defined by USACE.

Reporting Limit: Limit below which results are shown as "ND". This may be the PQL, MDL, or a value between. See the report conventions below.

Result Field:

ND = Not Detected at or above the Reporting Limit

NA = Analyte not applicable (see Case Narrative for discussion)

Qualifier Fields:

LOW = Recovery is below Lower Control Limit

HIGH = Recovery, RPD, or other parameter is above Upper Control Limit

E = Reported concentration is above the instrument calibration upper range

Organic Analysis Flags:

B = Analyte was detected in the laboratory method blank

J = Analyte was detected above MDL or Reporting Limit but below the Quant Limit (PQL)

Inorganic Analysis Flags:

J = Analyte was detected above the Reporting Limit but below the Quant Limit (PQL)

W = Post digestion spike did not meet criteria

S = Reported value determined by the Method of Standard Additions (MSA)

Other Flags may be applied. See Case Narrative for Description

Detailed Analytical Report

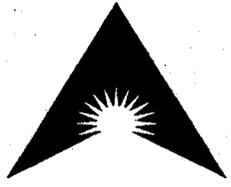
Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016
Project: Red Devil AST Removal
Client: Mactec Engineering & Consulting Inc.
Client Project Number: Mactec

REPORTING CONVENTIONS FOR THIS REPORT

A0310016

<u>TestPkgName</u>	<u>Basis</u>	<u># Sig Figs</u>	<u>Reporting Limit</u>
8021/5035 (Solid) - BTEX	Dry Weight Basis	2	Report to PQL
8270C/3550B (Solid) - PAH	Dry Weight Basis	2	Report to MDL, J qual below PQL
AK101GRO/8021BTEX/5035 (Solid)	Dry Weight Basis	2	Report to PQL
AK102/103/3550 (Solid) - (DRO & RRO)	Dry Weight Basis	2	Report to PQL
ASTMD2216/ASTMD2216 (Solid) - % moisture	As Received	2	Report to PQL



**ANALYTICA
ALASKA Inc.**

Support Documentation

The Science of Analysis and The Art of Service

Project Name: Red Devil AST Removal

Project Location: Red Devil Mine, AK

Project Manager: Bryan Lund

Samplers: Robin Farrage

Recorder: _____

Standard

MATRIX	# Containers & Preservative					IDENTIFIER	DATE AND TIME				TARED CONTAINER #'s			ANALYSIS REQUESTED			
	4-oz glass (methanol preservative)	40 ml glass (sodium bisulfate)	4-oz glass	8-oz Amber glass	8-oz glass		Sample Number	YR	MO	DY	TIME	AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	AK 102/103 (DRO/RRO)	EPA 8270C (PAHs)	
S L	1		2			03RDV40SL SL	0	3	0	9	2	6	17:30	16535 →			11
S L	1		1			03RDV41SL SL	0	3	0	8	2	6	1812		16529		12
S L	1		2			03RDV42SL SL	0	3	0	8	2	6	1830	←	16093		13
S L	1		1			03RDV43SL SL	0	3	0	8	2	6	1845		16542		14
S L	1		1			03RDV44SL SL	0	3	0	8	2	7	955		16177		15
S L	1		1			03RDV45SL SL	0	3	0	8	2	7	1030		16178		16
S L	1		1			03RDV46SL SL	0	3	0	8	2	7	1055		16165		17
S L	1		1			03RDV47SL SL	0	3	0	8	2	7	1120		16186		18
S L	1		1			03RDV48SL SL	0	3	0	8	2	7	11340		16079		17
S L	0	0				03RDV49SL SL	0	3	0	8	2	7		BEFORE JARS			

NOTES:

Temperature Blank Included

S.Y.

RELENGISHED BY:(Signature) <i>Robin Farrage</i>	DATE 10/3/03	TIME 15:10	RECEIVED BY:(Signature) <i>Dolores Wheeler</i>	DATE 10-3-03
RELENGISHED BY:(Signature) <i>Amber Hammond</i>	DATE 10/6/03	TIME 1:00 PM	RECEIVED BY:(Signature)	DATE
DISPATCHED BY:(Signature)	DATE	TIME	RECEIVED FOR LAB BY:(Signature)	DATE
METHOD OF SHIPMENT				

☑ = AEL

Project Name: Red Devil AST Removal

Project Location: Red Devil Mine, AK

Project Manager: Bryan Lund

Samplers: Robin Farrage

Recorder: _____

Standard

MATRIX	# Containers & Preservative					IDENTIFIER	DATE AND TIME				TARED CONTAINER #'s			ANALYSIS REQUESTED							
	4-oz glass (methanol preservative)	40 ml glass (sodium bisulfate)	4-oz glass	8-oz Amber glass	8-oz glass		Sample Number	YR	MO	DY	TIME	AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	AK 102/103 (DRO/RRO)	EPA 8270C (PAHs)					
S	L	1	1			03RDV50SL SL	0	3	0	9	2	7	1515		16168						20
S	L	1	1			03RDV51SL SL	0	3	0	8	2	7	1517		16180						21
S	L	1	1			03RDV52SL SL	0	3	0	8	2	7	1540		16500						22
S	L	1	1			03RDV53SL SL	0	3	0	8	2	7	1620		16185						23
S	L	1	1			03RDV54SL SL	0	3	0	8	2	7	1630	X ←	16181						24
S	L	1	1			03RDV55SL SL	0	3	0	8	2	7	1632	X ←	16536						25
S	L	1	1			TRIP BLANK SL	0	3	0	8	2	7		X	X						26
S	L					SL	0	3	0	8	2	7									
S	L					SL	0	3	0	8	2	7									
S	L					SL	0	3	0	8	2	7									

NOTES:

Temperature Blank Included

 5.4

RELENGISHED BY: (Signature) <i>Robin Farrage</i>	DATE 10/3/03	TIME 15:10	RECEIVED BY: (Signature) <i>Doreen Wheeler</i>	DATE 4:00 pm 10-3-03
RELENGISHED BY: (Signature) <i>Amber Hammond</i>	DATE 10/16/03	TIME 1:00 PM	RECEIVED BY: (Signature)	DATE
DISPATCHED BY: (Signature)	DATE	TIME	RECEIVED FOR LAB BY: (Signature)	DATE
METHOD OF SHIPMENT				

☑ = AEL



MACTEC

Engineering and Consulting, Inc.

501 East 57th Place
Anchorage, Alaska 99518

Tel: 907/563-3102
Fax: 907/561-4574
Web: www.mactec.com

Fax

TO:	<u>DOLLIE</u>	FROM:	<u>R. FARRAGE</u>
FIRM:	<u>ANALYTICA</u>	PROJECT #:	<u>4034030008</u>
FAX:	<u>907-258-2155 6634</u>	DATE:	<u>10/7/03</u>
TEL:	<u>907-258-2155</u>	# PAGES:	<u>3</u> + this cover sheet

MESSAGE:

Attached please find corrected Chain of Custody forms for the Red Devil ASR Removal project. The correct dates should be for September 2003 NOT August.

Each incorrect month entry was corrected to 09 & initialed to maintain proper chain of custody procedures.

Should you need additional information, please contact Bryan Lund or myself @ 563-8102.

Robin Farrage

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AAI-ANCHORAGE

CHAIN OF CUSTODY

Red Devil AST Retrieval

MACTEC Engineering and Consulting, Inc.
 801 East 57th Place, Anchorage, Alaska, 99518
 (907) 563-9102 / FAX (907) 561-4574

pg 1 of 3

Project Name: Red Devil AST Removal

Project Location: Red Devil Mine, AK

Project Manager: Bryan Lund

Samplers: Robin Fairage

Recorder:

Standard

MATRIX	# Containers & Preservative				IDENTIFIER	DATE AND TIME			TANKED CONTAINER #s			ANALYSIS REQUESTED				
	4 oz glass (methanol preservative)	4 oz glass (sodium lauryl)	1 oz glass	2 oz Amber glass		Sample Number	YR	MO	DY	TIME	AK101 (GRO)	EPA 821 (RTK)	EPA 8260B (VOCs)	AK 102/103 (DRO/RO)	EPA 8270C (PAHs)	
S	1	1	1		03RDV305L	03	01	09	2	5	10:20					
S	1	1	2		03RDV315L	03	01	08	1	2	11:35	16174	16409	✓	✓	
S	1	1	1		03RDV325L	03	01	09	2	5	11:10	16119	16175	✓	✓	
S	1	1	1		03RDV335L	03	01	08	2	2	10:00	16159	16543	✓	✓	
S	1	1	1		03RDV345L	03	01	08	2	2	12:45	16170	16120	✓	✓	
S	1	1	2		03RDV355L	03	01	08	2	6	12:50	16170	16120	✓	✓	
S	1	1	1		03RDV365L	03	01	08	2	8	14:45	16170	16120	✓	✓	
S	1	1	1		03RDV375L	03	01	08	2	6	16:15	16501	16548	✓	✓	
S	1	1	2		03RDV385L	03	01	08	2	6	16:30	16501	16548	✓	✓	
S	1	1	1		03RDV395L	03	01	08	2	8	16:50	16158	16158	✓	✓	

NOTES:

Temperature Blank Included

5/4

RECEIVED BY (Signature)	DATE	TIME	RECEIVED BY (Signature)	DATE	TIME
<i>Robin Fairage</i>	10/3/03	15:10	<i>Douglas...</i>	10-3-03	
RECEIVED BY (Signature)	DATE	TIME	RECEIVED BY (Signature)	DATE	TIME
DISPATCHED BY (Signature)	DATE	TIME	RECEIVED FOR LAB BY (Signature)	DATE	TIME
METHOD OF SHIPMENT					

MACTEC Engineering and Consulting, Inc.
 601 East 57th Place, Anchorage, Alaska, 99518
 (907) 563-8102 / FAX (907) 561-4574

CHAIN OF CUSTODY
 # Red Devil AST Removal

AAI-ANCHORAGE

page 2 of 3

Project Name: Red Devil AST Removal
 Project Location: Red Devil Mine, AK
 Project Manager: Bryan Lund

Samplers: Robin Farrage
 Recorder: _____

Standard

MATRIX	# Containers & Preservative		IDENTIFIER	DATE AND TIME			TARED CONTAINER #s	ANALYSIS REQUESTED
	4-oz glass (methanol preservative)	40 ml glass (sodium borate)		1-oz glass	2-oz Amber glass	2-oz glass		
S	1	1	03RDV40SL	03	09	28	16535	EPA 8270C (PAHs)
S	1	1	03RDV41SL	03	09	28	16529	AK 102/103 (DRO/RRO)
S	1	1	03RDV42SL	03	09	28	16542	EPA 8280B (VOCs)
S	1	1	03RDV43SL	03	09	28	16177	
S	1	1	03RDV44SL	03	09	28	16178	
S	1	1	03RDV45SL	03	09	28	16165	
S	1	1	03RDV46SL	03	09	28	16186	
S	1	1	03RDV47SL	03	09	28	16079	
S	1	1	03RDV48SL	03	09	28	16079	
S	1	1	03RDV49SL	03	09	28	16079	

NOTES:

Temperature Blank Included

SJ

RECEIVED BY (Signature) <u>Robin Farrage</u>	DATE <u>10/3/03</u>	TIME <u>15:10</u>	RECEIVED BY (Signature) <u>Doreen Hood</u>	DATE <u>10.3.03</u>	TIME <u>4:00</u>
RECEIVED BY (Signature)	DATE	TIME	RECEIVED BY (Signature)	DATE	TIME
DISPATCHED BY (Signature)	DATE	TIME	RECEIVED FOR LAB BY (Signature)	DATE	TIME
METHOD OF SHIPMENT					

page 3 of 3

CHAIN OF CUSTODY
Red Devil AST Removal

MACTEC Engineering and Consulting, Inc.
 501 East 57th Place, Anchorage, Alaska, 99518
 (907) 563-8102 / FAX (907) 561-4574

Project Name: Red Devil AST Removal
Project Location: Red Devil Mine, AK
Project Manager: Bryan Lund

Samplers: Robin Farrage
Recorder:

Standard

MATRIX	# Containers & Preservative	IDENTIFIER	DATE AND TIME			TARED CONTAINER #'S			ANALYSIS REQUESTED
			YR	MO	DY	TIME	AK101 (SFO)	EPA 8260B (VOCs)	
S	4 oz glass (methanol preservative)	Sample Number	03	08	27	1515			
S	4 oz glass	03RDV50SL	03	08	27	1515	161108		
S	4 oz Amber glass	03RDV51SL	03	08	27	1517	161120		
S	4 oz glass (sodium citrate)	03RDV52SL	03	08	27	1540	16500		
S	4 oz glass	03RDV53SL	03	08	27	1620	16185		
S	4 oz glass	03RDV54SL	03	08	27	1630	X ← 16181		
S	4 oz glass	03RDV55SL	03	08	27	1632	X ← 16550		
S	4 oz glass	TRAP BLANK	03	08	27	1632	X		
S	4 oz glass		03	08	27				
S	4 oz glass		03	08	27				
S	4 oz glass		03	08	27				

NOTES:

Temperature Blank Included S4

RELINQUISHED BY (Signature) <i>Robin Farrage</i>	DATE 10/3/03	TIME 15:10	RECEIVED BY (Signature) <i>[Signature]</i>	DATE 10/3/03	TIME 4:00 pm
RELINQUISHED BY (Signature)	DATE	TIME	RECEIVED BY (Signature)	DATE	TIME
DISPATCHED BY (Signature)	DATE	TIME	RECEIVED FOR LAB BY (Signature)	DATE	TIME
METHOD OF SHIPMENT					



Cooler Receipt Form

AAI-ANCHORAGE

Client: Mactec Engineering & Consul Client Code: 010400
Project: Red Devil AST Removal

Order #: A0310016

Cooler ID: 1

A. Preliminary Examination Phase:

Date cooler opened: 10/3/2003
Cooler opened by: dw

Signature: D. Wheeler

1. Was airbill Attached? No

Airbill #:

Carrier Name: Client

2. Custody Seals? No

How many? 0

Location:

Seal Name:

3. Seals intact? N/A

4. Screened for radiation? N/A

5. COC Attached? Yes

Properly Completed? Yes

Signed by AEL employee? Yes

6. Project Identification from custody paper: Red Devil AST Removal

7. Preservative: BlueGel

Temperature: 5.4

Designated person initial here to acknowledge receipt: DW

Date: 10-6-03

COMMENTS:

B. Log-In Phase: Samples Log-in Date: 10/6/2003 Log-in By: dw

Signature: D. Wheeler

1. Packing Type: Bubblewrap

2. Were samples in separate bags? Yes

3. Were containers intact? Yes

Labels agree with COC? Yes

4. Number of bottles received: 51

Number of samples received: 25

5. Correct containers used? Yes

Correct preservatives added? Yes

6. Sufficient sample volume? Yes

7. Bubbles in VOA samples? No

8. Was Project manager called and status discussed? No

9. Was anyone called? No Who was called? _____ By whom? _____ Date: _____

COMMENTS:

A0310016

Project Name: Red Devil AST Removal AEL-THORNTON

Project Location: Red Devil Mine, AK

Project Manager: Bryan Lund

Samplers: Robin Farrage

Recorder: _____

Standard _____

MATRIX	# Containers & Preservative					IDENTIFIER	DATE AND TIME				TARED CONTAINER #'s			ANALYSIS REQUESTED							
	4-oz glass (methanol preservative)	40 ml glass (sodium bisulfate)	4-oz glass	8-oz Amber glass	8-oz glass		Sample Number	YR	MO	DY	TIME	AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	AK 102/103 (DRO/PRO)	EPA 8270C (PAHs)					
S	L	1		1		03RDV30SL SL	0	3	0	9	2	5	10 20		16409			✓	✓		1
S	L	1		2		03RDV31SL SL	0	3	0	8	2	5	1135	16179 →				✓	✓		2
S	L	1		1		03RDV32SL SL	0	3	0	8	2	5	1110		16175			✓	✓		3
S	L	1		1		03RDV33SL SL	0	3	0	8	2	6	1000	16119 →				✓	✓		4
S	L	1		1		03RDV34SL SL	0	3	0	8	2	6	1045		16543			✓	✓		5
S	L	1		1		03RDV35SL SL	0	3	0	8	2	6	1350		16120			✓	✓		6
S	L	1		2		03RDV36SL SL	0	3	0	8	2	6	1445	16170 →				✓	✓		7
S	L	1		1		03RDV37SL SL	0	3	0	8	2	6	1615		16548			✓	✓		8
S	L	1		2		03RDV38SL SL	0	3	0	8	2	6	1630	16501 →				✓	✓		9
S	L	1		1		03RDV39SL SL	0	3	0	8	2	6	1650		16158			✓	✓		10

NOTES:

Temperature Blank Included
5.4

RELEASED BY: (Signature) <i>Robin Farrage</i>	DATE 10/3/03	TIME 15:10	RECEIVED BY: (Signature) <i>Daniel White</i>	DATE 10-3-03	TIME 4:00
RELEASED BY: (Signature) <i>Amber Hammett</i>	DATE 10/16/03	TIME 1:00 PM	RECEIVED BY: (Signature) <i>David</i>	DATE 10/7/03	TIME 9:00
DISPATCHED BY: (Signature)	DATE	TIME	RECEIVED FOR LAB BY: (Signature)	DATE	
METHOD OF SHIPMENT					

☐ = AEL

MACTEC Engineering and Consulting, Inc.

601 East 57th Place, Anchorage, Alaska. 99518

(907) 563-8102 / FAX (907) 561-4574

CHAIN OF CUSTODY

Red Devil AST Removal

AEL-THORNTON

Project Name: Red Devil AST Removal
 Project Location: Red Devil Mine, AK Samplers: Robin Farrage
 Project Manager: Bryan Lund Recorder: _____ Standard

MATRIX	# Containers & Preservative					IDENTIFIER	DATE AND TIME				TARED CONTAINER #'s			ANALYSIS REQUESTED				
	4-oz glass (methanol preservative)	40 ml glass (sodium bisulfate)	4-oz glass	8-oz Amber glass	8-oz glass		Sample Number	YR	MO	DY	TIME	AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	AK 102/103 (DRO/RO)	EPA 8270C (PAHs)		
S L	2					03RDV40SL SL	0	3	0	9	2	6	1730	16535 →		✓	✓	11
S L	1					03RDV41SL SL	0	3	0	8	2	6	1812		16529	✓	✓	12
S L	2					03RDV42SL SL	0	3	0	8	2	6	1830	← 16093		✓	✓	13
S L	1					03RDV43SL SL	0	3	0	8	2	6	1845		16542	✓	✓	14
S L	1					03RDV44SL SL	0	3	0	8	2	7	955		16177	✓	✓	15
S L	1					03RDV45SL SL	0	3	0	8	2	7	1030		16178	✓	✓	16
S L	1					03RDV46SL SL	0	3	0	8	2	7	1055		16165	✓	✓	17
S L	1					03RDV47SL SL	0	3	0	8	2	7	1120		16186	✓	✓	18
S L	1					03RDV48SL SL	0	3	0	8	2	7	11340		16079	✓	✓	19
S L	0	0				03RDV49SL SL	0	3	0	8	2	7	11340	Broken JARS				

NOTES:
 Temperature Blank Included
 S.4

RELENGISHED BY: (Signature) <i>Robin Farrage</i>	DATE 10/3/03	TIME 15:10	RECEIVED BY: (Signature) <i>Dolores Wheeler</i>	DATE 10.3.03
RELENGISHED BY: (Signature) <i>Donna Hammond</i>	DATE 10/6/03	TIME 1:00 PM	RECEIVED BY: (Signature) <i>Donna Hammond</i>	DATE 10/7/03
DISPATCHED BY: (Signature)	DATE	TIME	RECEIVED FOR LAB BY: (Signature)	DATE
METHOD OF SHIPMENT				

☑ = AEL

AEL-THORNTON

Project Name: Red Devil AST Removal
 Project Location: Red Devil Mine, AK
 Project Manager: Bryan Lund
 Samplers: Robin Farrage
 Recorder: Standard

MATRIX	# Containers & Preservative	IDENTIFIER	DATE AND TIME			TARED CONTAINER #'s			ANALYSIS REQUESTED			
			YR	MO	DY	TIME	AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	AK 102/103 (DRO/RRO)	EPA 8270C (PAHs)	
S	4-oz glass (methanol preservative)	Sample Number										
S	4-oz glass	03RDV50SL	0	3	0	9	2	7	16108			20
S	8-oz Amber glass	03RDV51SL	0	3	0	8	2	7	16120			21
S	8-oz glass	03RDV52SL	0	3	0	8	2	7	16500			22
S	40 ml glass (sodium bisulfate)	03RDV53SL	0	3	0	8	2	7	16185			23
S	4-oz glass (methanol preservative)	03RDV54SL	0	3	0	8	2	7	16181	X		24
S	4-oz glass	03RDV55SL	0	3	0	8	2	7	16530	X		25
S	4-oz glass	TEMP BLANK	0	3	0	8	2	7	X			26
S	4-oz glass		0	3	0	8	2	7				
S	4-oz glass		0	3	0	8	2	7				
S	4-oz glass		0	3	0	8	2	7				

NOTES:

Temperature Blank Included 5.4

RELEASHER BY: (Signature) Robin Farrage DATE 10/3/03 TIME 15:10 RECEIVED BY: (Signature) [Signature] DATE 4.00.03

RELEASHER BY: (Signature) [Signature] DATE 10/15/03 TIME 1:00 PM RECEIVED BY: (Signature) [Signature] DATE 10/7/03 TIME 9:00

DISPATCHED BY: (Signature) [Signature] DATE 10/15/03 TIME 1:00 PM RECEIVED FOR LAB BY: (Signature) [Signature] DATE 10/7/03 TIME 9:00

METHOD OF SHIPMENT AEL



Cooler Receipt Form

AEL-THORNTON

Client: Mactec Engineering & Consul Client Code: 010400
Project: Red Devil AST Removal

Order #: A0310016

Cooler ID: 2

A. Preliminary Examination Phase:

Date cooler opened: 10/7/2003
Cooler opened by: DM

Signature: Dave Smoz

- 1. Was airbill Attached? Yes Airbill #: 790922757564 Carrier Name: FedEx
- 2. Custody Seals? Yes How many? 1 Location: top Seal Name: DW
- 3. Seals intact? Yes
- 4. Screened for radiation? N/A
- 5. COC Attached? Yes Properly Completed? Yes Signed by AEL employee? Yes
- 6. Project Identification from custody paper: Red Devil AST Removal
- 7. Preservative: BlueGel Temperature: 3.3

OSM

Date: 10/9/03

Designated person initial here to acknowledge receipt:

COMMENTS: Second Cooler: FedEx # 790922757689, same seal signature, temp blank = 2.4 deg C

B. Log-In Phase:

Samples Log-in Date: 10/8/2003 Log-in By: RA

Signature: ERZ

- 1. Packing Type: Bubblewrap
- 2. Were samples in separate bags? Yes
- 3. Were containers intact? Yes Labels agree with COC? Yes
- 4. Number of bottles received: 5 Number of samples received: 5
- 5. Correct containers used? Yes Correct preservatives added? N/A
- 6. Sufficient sample volume? Yes
- 7. Bubbles in VOA samples? N/A
- 8. Was Project manager called and status discussed? No
- 9. Was anyone called? No Who was called? _____ By whom? _____ Date: _____

COMMENTS:



LABORATORY DATA REVIEW CHECKLIST

	<u>YES</u>	<u>NO</u>	<u>NOT APPLICABLE</u>
1. Laboratory analytical data report appears complete (all data results present for all samples submitted for analysis) and there are no apparent transcription errors:	<u>X</u>	___	___
2. Samples analyzed within applicable holding times (based on date of sample collection):*	<u>X</u>	___	___
3. Trip blanks, field blanks or laboratory method blanks are free of blank contamination:	<u>X</u>	___	___
4. If field duplicate samples collected, calculated results meet Relative Percent Difference guidelines: **	___	<u>X</u>	___
5. Surrogate recoveries (organic analyses only) within laboratory reported recovery acceptance ranges:	___	<u>X</u>	___
6. If Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples required to meet project objectives, Percent Recoveries (%R) and Relative Percent Difference (RPD) within laboratory reported acceptance ranges:	___	___	<u>X</u>
7. Reported detection limits meet project objectives (e.g., are capable of achieving applicable site standards):	<u>X</u>	___	___
8. Completed Chain-Of-Custody received noting sample/custody seal condition (with airbill, if appropriate):	<u>X</u>	___	___
9. Analytical costs within authorized budget for these services:	<u>X</u>	___	___

COMMENTS:

1. Analytical data was reviewed according to the MACTEC Quality Assurance, August, 2003.
2. For batch A0309186 field duplicates 03RDVMW1 (PR) and 03RDVMW10 (QC) have relative percent differences (RPD) greater than 50 percent for Mercury (179.49 percent), (Mercury was not detected at or below 0.0002 mg/L in project sample 03RDVMW1, and was detected at 0.0037 mg/L in QC sample 03RDVMW10) See attached RPD calculations.
3. No samples of this delivery were requested or selected as batch MD/MSD.

- Notes: 1. This checklist is intended for use with the laboratory reporting formats typical of most projects. If "no" is answered to one or more of the above checklist questions 1 through 7, a more detailed Data Validation may be required, and a person knowledgeable in Data Validation protocols should be consulted. This checklist should not be used if the project scope requires Data Validation from the onset.
2. * = Based upon EPA Guidance and the applicable analytical method references. See reverse side of checklist for details.

GENERAL DATA REVIEW CRITERIA

Typical Holding Times for Water Samples:*

Volatile Organic Compounds (EPA Method 8260/624)

14 days to analysis when preserved with HCl
(7 days if not preserved)

Semi-volatile Organic Compounds (EPA Method 8270)

7 days to extraction, 40 days to analysis

Pesticides/PCBs (EPA Method 8081/8082)

7 days to extraction, 40 days to analysis

Metals (except Mercury)

180 days to analysis when preserved with HNO₃

Mercury

28 days to analysis

Cyanide

14 days to analysis

Typical Relative Percent Difference (RPD) Guidelines:**

Volatile Organic Compounds (EPA Method 8260/624)

<u>Aqueous</u>	<u>Soil</u>
<30	<50

Semi-volatile Organic Compounds (EPA Method 8270)

<30

Pesticides/PCBs (EPA Method 8081/8082)

<30

Metals and Cyanide

<30

<50

Notes:

RPD calculated as:

$$RPD = \frac{|A-B|}{(A+B)/2} \times 100$$

where:

RPD = Relative Percent Difference

A = Sample Result

B = Duplicate Sample Result

* = Based upon EPA Guidance and the applicable analytical method references.

** = Based upon EPA Guidance. Use these criteria on duplicate and sample results that exceed five times the reported detection limit.

RED DEVIL ASTs WATER
FIELD DUPLICATE RELATIVE PERCENT DIFFERENCES

Analyte	03RDVMW1	03RDV10	RPD
DRO	ND(0.11)	ND(0.11)	OK
RRO	0.3	0.25	18.18
VOC's (BTEX)			
Benzene	ND(1.0)	ND(1.0)	OK
Ethylbenzene	ND(1.0)	ND(1.0)	OK
GRO	ND(50)	ND(50)	OK
Toluene	ND(1.0)	ND(1.0)	OK
Xylenes, Total	ND(3.0)	ND(3.0)	OK

SW7470A

Mercury	ND(0.0002)	0.0037	179.49
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Metals

Antimony	8	7	13.33
Arsenic	33	34	-2.99



Analytica Alaska Incorporated
website:
www.analyticagroup.com

10/8/2003

Mactec Engineering & Consulting Inc.
601 E. 57th Place
Anchorage, AK 99518
Attn: Bryan Lund

Work Order #: A0309159
Date: 10/8/2003
Work ID: Red Devil AST
Date Received: 9/24/2003

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A0309159-01	03RDV MW4	A0309159-02	03RDV MW3

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

A handwritten signature in cursive script that reads "Gina Durkin".

Gina Durkin
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

Analytica Alaska Inc.

Work Order: A0309159

Samples were prepared and analyzed according to EPA or equivalent methods outlined in the following references:

ADEC Method AK101 For the Determination of Gasoline Range Organics.
ADEC Method AK102 For the Determination of Diesel Range Organics.
ADEC Method AK103 For the Determination of Residual Range Organics.
Test Methods for Evaluating Solid Waste, USEPA SW-846, Third Edition, Revision 4, December 1996.

SAMPLE RECEIPT:

Two (2) samples for Red Devil AST project were received at Analytica-Anchorage (ADEC Laboratory Approval Number: UST-014) on 9/24/2003 in one cooler at a temperature of 2.0°C. Samples were received in good condition and in order per chain of custody.

Sample fractions for Metals test were transferred for analysis to Analytica-SE (5438 Shaune Dr. Juneau AK, 99801) where they were received on 9/25/2003 in one cooler at temperature of 1.0°C in good condition and in order per chain of custody.

Samples fractions for Mercury by SW7470 were transferred for analysis to Analytica Environmental Laboratories (AEL); 12189 Pennsylvania St. Thornton, CO 80241 where they were received at a temperature of 1.4°C in good condition and in order per chain of custody.

REVIEW FOR COMPLIANCE WITH ANALYTICA QA PLAN

A summary of our review is shown below, organized by test:

Test Method: ADEC AK102/103 - (DRO & RRO) - Aqueous

HOLDING TIMES:

Holding times were met for this test.

INSTRUMENT CALIBRATIONS:

Initial calibration and CCV samples met method criteria.

SURROGATE RECOVERIES:

There were no surrogate recovery outliers.

METHOD BLANK OUTLIERS:

There were no method blank outliers; no target analytes detected in the method blank above the PQL.

LCS/LCSD OUTLIERS:

There are no LCS/LCSD outliers.

MS/MSD OUTLIERS:

No samples of this delivery were selected or designated as batch MS/MSD.

Test Method: GRO by ADEC AK101 & BTEX by 8021B - Aqueous

HOLDING TIMES:

Holding times were met for this test.

INSTRUMENT CALIBRATIONS:

Initial calibration and CCV samples met method criteria.

Case Narrative

Analytica Alaska Inc.
Work Order: A0309159
(continued)

SURROGATE RECOVERIES:

There were no surrogate recovery outliers.

METHOD BLANK OUTLIERS:

There were no method blank outliers; no target analytes detected in the method blank above the PQL.

LCS/LCSD OUTLIERS:

There are no LCS/LCSD outliers.

MS/MSD OUTLIERS:

No samples of this delivery were selected or designated as batch MS/MSD.

Test Method: SW6020 - ICPMS - ICPMS Total - Aqueous

HOLDING TIMES:

Holding times were met for this test.

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:

There were no unusual observations.

INSTRUMENT PERFORMANCE CHECKS:

Instrument checks were within method criteria.

INITIAL CALIBRATIONS:

Initial calibrations were within method criteria.

CONTINUING CALIBRATIONS:

Continuing calibrations were within method criteria.

METHOD BLANK OUTLIERS:

There are no method blank outliers.

LCS OUTLIERS:

There are no LCS outliers.

MS/MSD and DUP OUTLIERS:

There are no MS/MSD or DUP outliers.

Test Method: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg - Aqueous

HOLDING TIMES:

Holding times were met for this test.

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:

There were no unusual observations.

INSTRUMENT PERFORMANCE CHECKS:

Instrument checks were within method criteria.

INITIAL CALIBRATIONS:

Initial calibrations were within method criteria.

Case Narrative

Analytica Alaska Inc.
Work Order: A0309159
(continued)

CONTINUING CALIBRATIONS:
Continuing calibrations were within method criteria.

METHOD BLANK OUTLIERS:
There are no method blank outliers.

LCS OUTLIERS:
There are no LCS outliers.

MS/MSD and DUP OUTLIERS:
There are no MS/MSD or DUP outliers.

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309159
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC
Report Section: Client Sample Report
Client Sample Name: 03RDV MW4

Matrix: Water Collection Date: 9/20/2003 1:55:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309159-01B Analysis Date: 9/30/2003 2:43:00PM
Prep Date: 9/30/2003 Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3093010.D
Prep Method ID: 3510 Dilution Factor: 1
Prep Batch Number: A030929001 Analyst Initials: HW
Report Basis: As Received Prep Extract Vol: 1.00 ml
Sample prep wt./vol: 950.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Diesel Range Organics	n/a	0.25		mg/L	0.11	0.021				1	
Residual Range Organics	n/a	0.48		mg/L	0.21	0.033					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	0.039		mg/L	0.0053	0.00067	0.053	73.5	50	150	1
Squalane	111-01-3	0.047		mg/L	0.0053	0.0010	0.053	89.7	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309159-01A Analysis Date: 9/30/2003 12:02:00PM
Prep Date: 9/30/2003 Instrument: Boris
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B File Name: B3093009.D
Prep Method ID: 5030 Dilution Factor: 1
Prep Batch Number: A030930001 Analyst Initials: SG
Report Basis: As Received Prep Extract Vol: 5.00 ml
Sample prep wt./vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Benzene	71-43-2	ND		ug/L	1.0	0.15				1	
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18					
Gasoline Range Organics	n/a	ND		ug/L	50	3.0					
Toluene	108-88-3	ND		ug/L	1.0	0.24					
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	88		ug/L	1.0	0.10	100	87.9	50	150	1
Bromofluorobenzene(PID)	1072-85-1	92		ug/L	1.0	0.10	100	91.9	50	150	
Difluorobenzene	540-36-3	47		ug/L	1.0	0.10	50	94.8	50	150	
Difluorobenzene(PID)	540-36-3	48		ug/L	1.0	0.10	50	96.9	50	150	

The following test was conducted by: Analytica - Juneau

Lab Sample Number: A0309159-01C Analysis Date: 10/1/2003 6:51:59PM
Prep Date: 9/26/2003 Instrument: Elan
Analytical Method ID: SW6020 - ICPMS - ICPMS Total File Name: export100103.c
Prep Method ID: 3010A Dilution Factor: 1
Prep Batch Number: J030926008 Analyst Initials: DF
Report Basis: As Received Prep Extract Vol: 50.00 ml
Sample prep wt./vol: 50.00 ml

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309159
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

Report Section: Client Sample Report

Client Sample Name: **03RDV MW4**

Matrix: Water Collection Date: 9/20/2003 1:55:00PM

Lab Sample Number: A0309159-01C Analysis Date: 10/1/2003 6:51:59PM
Prep Date: 9/26/2003 Instrument: Elan
Analytical Method ID: SW6020 - ICPMS - ICPMS Total File Name: export100103.c
Prep Method ID: 3010A Dilution Factor: 1
Prep Batch Number: J030926008 Analyst Initials: DF
Report Basis: As Received Prep Extract Vol: 50.00 ml
Sample prep wt./vol: 50.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Antimony	7440-36-0	43.5		ug/L	0.50	0.096	1
Arsenic	7440-38-2	20.9		ug/L	1.0	0.086	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0309159-01D Analysis Date: 10/3/2003 4:20:49PM
Prep Date: 10/2/2003 Instrument: CVAA_1
Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg File Name: B31003W.WK
Prep Method ID: 7470A Dilution Factor: 1
Prep Batch Number: T031002019 Analyst Initials: CS
Report Basis: As Received Prep Extract Vol: 20.00 ml
Sample prep wt./vol: 20.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Mercury	7439-97-6	ND		mg/L	0.00020	0.000060	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309159
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC
Report Section: Client Sample Report
Client Sample Name: 03RDV MW3

Matrix: Water Collection Date: 9/20/2003 4:14:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309159-02B Analysis Date: 9/30/2003 3:10:00PM
 Prep Date: 9/30/2003 Instrument: Roo
 Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3093011.D
 Prep Method ID: 3510 Dilution Factor: 1
 Prep Batch Number: A030929001
 Report Basis: As Received Analyst Initials: HW
 Sample prep wt./vol: 950.00 ml Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:				
Diesel Range Organics	n/a	ND		mg/L	0.11	0.021	1				
Residual Range Organics	n/a	0.24		mg/L	0.21	0.033					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	0.035		mg/L	0.0053	0.00067	0.053	67.0	50	150	1
Squalane	111-01-3	0.042		mg/L	0.0053	0.0010	0.053	79.5	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309159-02A Analysis Date: 9/30/2003 12:35:00PM
 Prep Date: 9/30/2003 Instrument: Boris
 Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B File Name: B3093010.D
 Prep Method ID: 5030 Dilution Factor: 1
 Prep Batch Number: A030930001
 Report Basis: As Received Analyst Initials: SG
 Sample prep wt./vol: 5.00 ml Prep Extract Vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:				
Benzene	71-43-2	ND		ug/L	1.0	0.15	1				
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18					
Gasoline Range Organics	n/a	ND		ug/L	50	3.0					
Toluene	108-88-3	ND		ug/L	1.0	0.24					
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	90		ug/L	1.0	0.10	100	89.9	50	150	1
Bromofluorobenzene(PID)	1072-85-1	92		ug/L	1.0	0.10	100	92.2	50	150	
Difluorobenzene	540-36-3	48		ug/L	1.0	0.10	50	96.0	50	150	
Difluorobenzene(PID)	540-36-3	48		ug/L	1.0	0.10	50	96.8	50	150	

The following test was conducted by: Analytica - Juneau

Lab Sample Number: A0309159-02C Analysis Date: 10/1/2003 6:55:26PM
 Prep Date: 9/26/2003 Instrument: Elan
 Analytical Method ID: SW6020 - ICPMS - ICPMS Total File Name: export100103.c
 Prep Method ID: 3010A Dilution Factor: 1
 Prep Batch Number: J030926008
 Report Basis: As Received Analyst Initials: DF
 Sample prep wt./vol: 50.00 ml Prep Extract Vol: 50.00 ml

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309159
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

Report Section: Client Sample Report

Client Sample Name: **03RDV MW3**

Matrix: Water Collection Date: 9/20/2003 4:14:00PM

Lab Sample Number: A0309159-02C Analysis Date: 10/1/2003 6:55:26PM
Prep Date: 9/26/2003 Instrument: Elan
Analytical Method ID: SW6020 - ICPMS - ICPMS Total File Name: export100103.c
Prep Method ID: 3010A Dilution Factor: 1
Prep Batch Number: J030926008
Report Basis: As Received Analyst Initials: DF
Sample prep wt./vol: 50.00 ml Prep Extract Vol: 50.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Antimony	7440-36-0	751		ug/L	0.50	0.096	1
Arsenic	7440-38-2	148		ug/L	1.0	0.086	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0309159-02D Analysis Date: 10/3/2003 4:23:07PM
Prep Date: 10/2/2003 Instrument: CVAA_1
Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg File Name: B31003W.WK
Prep Method ID: 7470A Dilution Factor: 1
Prep Batch Number: T031002019
Report Basis: As Received Analyst Initials: CS
Sample prep wt./vol: 20.00 ml Prep Extract Vol: 20.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Mercury	7439-97-6	0.0010		mg/L	0.00020	0.000060	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309159
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Aqueous **Collection Date:** 9/30/2003 12:00:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A030929001-MB	Analysis Date:	9/30/2003 1:21:00PM
Prep Date:	9/30/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3093007.D
Prep Method ID:	3510	Dilution Factor:	1
Prep Batch Number:	A030929001	Analyst Initials:	HW
Report Basis:	Dry Weight Basis	Prep Extract Vol:	1.00 ml
Sample prep wt./vol:	1,000.00 ml		

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/L	0.10	0.020				1	
Residual Range Organics	n/a	ND		mg/L	0.20	0.031					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	0.045		mg/L	0.0050	0.00064	0.050	89.7	50	150	1
Squalane	111-01-3	0.040		mg/L	0.0050	0.00096	0.050	80.5	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A030930001-MB	Analysis Date:	9/30/2003 9:14:00AM
Prep Date:	9/30/2003	Instrument:	Boris
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	B3093004.D
Prep Method ID:	5030	Dilution Factor:	1
Prep Batch Number:	A030930001	Analyst Initials:	SG
Report Basis:	Dry Weight Basis	Prep Extract Vol:	5.00 ml
Sample prep wt./vol:	5.00 ml		

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Benzene	71-43-2	ND		ug/L	1.0	0.15				1	
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18					
Gasoline Range Organics	n/a	ND		ug/L	50	3.0					
Toluene	108-88-3	ND		ug/L	1.0	0.24					
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	90		ug/L	1.0	0.10	100	90.2	50	150	1
Bromofluorobenzene(PID)	1072-85-1	94		ug/L	1.0	0.10	100	93.9	50	150	
Difluorobenzene	540-36-3	46		ug/L	1.0	0.10	50	93.0	50	150	
Difluorobenzene(PID)	540-36-3	48		ug/L	1.0	0.10	50	96.6	50	150	

The following test was conducted by: Analytica - Juneau

Lab Sample Number:	J030926008-MB	Analysis Date:	10/1/2003 5:00:11PM
Prep Date:	9/26/2003	Instrument:	Elan
Analytical Method ID:	SW6020 - ICPMS - ICPMS Total	File Name:	export100103.c
Prep Method ID:	3010A	Dilution Factor:	1
Prep Batch Number:	J030926008	Analyst Initials:	DF
Report Basis:	Dry Weight Basis	Prep Extract Vol:	50.00 ml
Sample prep wt./vol:	50.00 ml		

Detailed Analytical Report

Analytica Alaska Southeast

Workorder (SDG): A0309159
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Aqueous Collection Date: 9/26/2003 12:00:00AM

Lab Sample Number: J030926008-MB Analysis Date: 10/1/2003 5:00:11PM
Prep Date: 9/26/2003 Instrument: Elan
Analytical Method ID: SW6020 - ICPMS - ICPMS Total File Name: export100103.c
Prep Method ID: 3010A Dilution Factor: 1
Prep Batch Number: J030926008
Report Basis: Dry Weight Basis Analyst Initials: DF
Sample prep wt./vol: 50.00 ml Prep Extract Vol: 50.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Antimony	7440-36-0	ND		ug/L	0.50	0.096	1
Arsenic	7440-38-2	ND		ug/L	1.0	0.086	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: T031002019-MB Analysis Date: 10/3/2003 4:05:19PM
Prep Date: 10/2/2003 Instrument: CVAA_1
Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg File Name: B31003W.WK
Prep Method ID: 7470A Dilution Factor: 1
Prep Batch Number: T031002019
Report Basis: Dry Weight Basis Analyst Initials: CS
Sample prep wt./vol: 20.00 ml Prep Extract Vol: 20.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Mercury	7439-97-6	ND		mg/L	0.00020	0.000060	1

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska
Workorder (SDG): A0309159
Project: Red Devil AST
Project Number:
Prep Batch: A030929001

QUALITY CONTROL REPORT

LCS/LCSD REPORT

Analysis: ADEC AK102/103 - (DRO & RRO) MB: A030929001-MB
Prep Date: 9/30/2003
MB Anal. Date: 9/30/2003 1:21:00PM Units: mg/L
LCS Anal. Date: 9/30/2003 1:48:00PM LCSD Anal. Date: 9/30/2003 2:15:00PM Matrix: Aqueous

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Diesel Range Organics	ND	1.83	1.76	2.00	2.00	91.5	88.0	3.9	60 - 120	20	
Residual Range Organics	ND	1.92	2.11	2.00	2.00	96.0	105.5	9.4	60 - 120	20	

FOOTNOTES TO QC REPORT

- Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.
- Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.
- Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.
- Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little significance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159
 Project: Red Devil AST
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: MACTEC

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska
 Workorder (SDG): A0309159
 Project: Red Devil AST
 Project Number:
 Prep Batch: A030930001

QUALITY CONTROL REPORT

LCS/LCSD REPORT

Analysis: GRO by ADEC AK101 & BTEX by 8021B MB: A030930001-MB
 Prep Date: 9/30/2003
 MB Anal. Date: 9/30/2003 9:14:00AM Units: ug/L
 LCS Anal. Date: 9/30/2003 9:48:00AM LCSD Anal. Date: 9/30/2003 10:21:00AM Matrix: Aqueous

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	14.6	14.3	13.8	13.8	105.8	103.7	2.1	60 - 120	20	
Toluene	ND	78.3	74.3	84.5	84.5	92.6	87.9	5.2	60 - 120	20	
Ethylbenzene	ND	20.2	19.6	20.3	20.3	99.6	96.6	3.0	60 - 120	20	
Xylenes, Total	ND	93.7	89.8	99.2	99.2	94.5	90.5	4.3	60 - 120	20	
Gasoline Range Organics	ND	1,030	1,040	1,100	1,100	93.6	94.5	1.0	60 - 120	20	

FOOTNOTES TO QC REPORT

- Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.
- Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.
- Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.
- Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little significance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

Tests Run at: Analytica Environmental Laboratories - Juneau, Alaska
Workorder (SDG): A0309159
Project: Red Devil AST
Project Number:
Prep Batch: J030926008

QUALITY CONTROL REPORT

LCS REPORT

Analysis: SW6020 - ICPMS - ICPMS Total

MB: J030926008-MB

Prep Date: 9/26/2003

MB Anal. Date: 10/1/2003 5:00:11PM

Units: ug/L

LCS Anal. Date: 10/1/2003 5:03:38PM

Matrix: Aqueous

Analyte Name	SampResult	LCSRes.	SPLev	Recov.	Recov Lim	RPDLim	Flag
Antimony	ND	47.8	50.0	95.6	80 - 120		
Arsenic	ND	50.6	50.0	101.2	80 - 120		

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little significance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159

Project: Red Devil AST

Client: Mactec Engineering & Consulting Inc.

Client Project Number: MACTEC

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado

Workorder (SDG): A0309159

Project: Red Devil AST

Project Number:

QUALITY CONTROL REPORT

Prep Batch: T031002019

LCS REPORT

Analysis: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg MB: T031002019-MB
Prep Date: 10/2/2003
MB Anal. Date: 10/3/2003 4:05:19PM Units: mg/L
LCS Anal. Date: 10/3/2003 4:07:38PM Matrix: Aqueous

<u>Analyte Name</u>	<u>SampResult</u>	<u>LCSRes.</u>	<u>SPLev</u>	<u>Recov.</u>	<u>Recov Lim</u>	<u>RPDLim</u>	<u>Flag</u>
Mercury	ND	0.00454	0.00496	91.5	80 - 120		

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little significance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

SURROGATE RECOVERY SUMMARY REPORT

Test Method: ADEC AK102/103 - (DRO & RRO)

Lab Sample #: A0309159-01B Dilution: 1
Analysis Date: 9/30/2003 2:43:00PM Client Sample: 03RDV MW4
Batch Number: A030929001 Data File: R3093010.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	74	50	150		Complete
Squalane	90	50	150		Complete

Lab Sample #: A0309159-02B Dilution: 1
Analysis Date: 9/30/2003 3:10:00PM Client Sample: 03RDV MW3
Batch Number: A030929001 Data File: R3093011.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	67	50	150		Complete
Squalane	80	50	150		Complete

Lab Sample #: A030929001-MB Dilution: 1
Analysis Date: 9/30/2003 1:21:00PM Client Sample: MB
Batch Number: A030929001 Data File: R3093007.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	90	60	120		Complete
Squalane	81	60	120		Complete

Lab Sample #: A030929001-LCS Dilution: 1
Analysis Date: 9/30/2003 1:48:00PM Client Sample: LCS
Batch Number: A030929001 Data File: R3093008.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	74	60	120		Complete
Squalane	85	60	120		Complete

Lab Sample #: A030929001-LCSD Dilution: 1
Analysis Date: 9/30/2003 2:15:00PM Client Sample: LCSD
Batch Number: A030929001 Data File: R3093009.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	75	60	120		Complete
Squalane	86	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159
 Project: Red Devil AST
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: MACTEC
 Test Method: GRO by ADEC AK101 & BTEX by 8021B

Lab Sample #: A0309159-01A Dilution: 1
 Analysis Date: 9/30/2003 12:02:00PM Client Sample: **03RDV MW4**
 Batch Number: A030930001 Data File: B3093009.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	88	50	150		Complete
Bromofluorobenzene(PID)	92	50	150		Complete
Difluorobenzene	95	50	150		Complete
Difluorobenzene(PID)	97	50	150		Complete

Lab Sample #: A0309159-02A Dilution: 1
 Analysis Date: 9/30/2003 12:35:00PM Client Sample: **03RDV MW3**
 Batch Number: A030930001 Data File: B3093010.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	90	50	150		Complete
Bromofluorobenzene(PID)	92	50	150		Complete
Difluorobenzene	96	50	150		Complete
Difluorobenzene(PID)	97	50	150		Complete

Lab Sample #: A030930001-MB Dilution: 1
 Analysis Date: 9/30/2003 9:14:00AM Client Sample: **MB**
 Batch Number: A030930001 Data File: B3093004.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	90	60	120		Complete
Bromofluorobenzene(PID)	94	60	120		Complete
Difluorobenzene	93	60	120		Complete
Difluorobenzene(PID)	97	60	120		Complete

Lab Sample #: A030930001-LCS Dilution: 1
 Analysis Date: 9/30/2003 9:48:00AM Client Sample: **LCS**
 Batch Number: A030930001 Data File: B3093005.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	101	60	120		Complete
Bromofluorobenzene(PID)	91	60	120		Complete
Difluorobenzene	105	60	120		Complete
Difluorobenzene(PID)	95	60	120		Complete

Lab Sample #: A030930001-LCSD Dilution: 1
 Analysis Date: 9/30/2003 10:21:00AM Client Sample: **LCSD**
 Batch Number: A030930001 Data File: B3093006.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	100	60	120		Complete
Bromofluorobenzene(PID)	89	60	120		Complete
Difluorobenzene	108	60	120		Complete
Difluorobenzene(PID)	98	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 19,819 Lab Project Number: A0309159

Prep Date: 9/26/2003

Lab Method Blank Id: J030926008-MB
Prep Batch ID: J030926008
Method: SW6020 - ICPMS - ICPMS Total

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A0309117-06A	Batch QC	export100103.csv	10/1/2003 5:40:37PM
A0309133-04A	Batch QC	export100103.csv	10/1/2003 6:45:07PM
A0309159-01C	03RDV MW4	export100103.csv	10/1/2003 6:51:59PM
A0309159-02C	03RDV MW3	export100103.csv	10/1/2003 6:55:26PM
J030926008-LCS	LCS	export100103.csv	10/1/2003 5:03:38PM
A0309133-04A-DUP	DUP	export100103.csv	10/1/2003 6:48:33PM
A0309117-06A-MS	MS	export100103.csv	10/1/2003 5:44:03PM

Prep Date: 9/30/2003

Lab Method Blank Id: A030929001-MB
Prep Batch ID: A030929001
Method: ADEC AK102/103 - (DRO & RRO)

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A030929001-LCS	LCS	R3093008.D	9/30/2003 1:48:00PM
A030929001-LCSD	LCSD	R3093009.D	9/30/2003 2:15:00PM
A0309159-01B	03RDV MW4	R3093010.D	9/30/2003 2:43:00PM
A0309159-02B	03RDV MW3	R3093011.D	9/30/2003 3:10:00PM

Prep Date: 9/30/2003

Lab Method Blank Id: A030930001-MB
Prep Batch ID: A030930001
Method: GRO by ADEC AK101 & BTEX by 8021B

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A030930001-LCS	LCS	B3093005.D	9/30/2003 9:48:00AM
A030930001-LCSD	LCSD	B3093006.D	9/30/2003 10:21:00AM
A0309159-01A	03RDV MW4	B3093009.D	9/30/2003 12:02:00PM
A0309159-02A	03RDV MW3	B3093010.D	9/30/2003 12:35:00PM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 19,819 Lab Project Number: A0309159

Prep Date: 10/2/2003

Lab Method Blank Id: T031002019-MB
Prep Batch ID: T031002019
Method: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A0309159-01D	03RDV MW4	B31003W.WKS	10/3/2003 4:20:49PM
A0309159-02D	03RDV MW3	B31003W.WKS	10/3/2003 4:23:07PM
B0309253-01A	Batch QC	B31003W.WKS	10/3/2003 4:40:52PM
T031002019-LCS	LCS	B31003W.WKS	10/3/2003 4:07:38PM
B0309253-01A-DUP	DUP	B31003W.WKS	10/3/2003 4:43:29PM
B0309253-01A-MS	MS	B31003W.WKS	10/3/2003 4:45:47PM

DATA FLAGS AND DEFINITIONS

The PQL is the Method Quantitation Limit as defined by USACE.

Reporting Limit: Limit below which results are shown as "ND". This may be the PQL, MDL, or a value between. See the report conventions below.

Result Field:

ND = Not Detected at or above the Reporting Limit
NA = Analyte not applicable (see Case Narrative for discussion)

Qualifier Fields:

LOW = Recovery is below Lower Control Limit
HIGH = Recovery, RPD, or other parameter is above Upper Control Limit
E = Reported concentration is above the instrument calibration upper range

Organic Analysis Flags:

B = Analyte was detected in the laboratory method blank
J = Analyte was detected above MDL or Reporting Limit but below the Quant Limit (PQL)

Inorganic Analysis Flags:

J = Analyte was detected above the Reporting Limit but below the Quant Limit (PQL)
W = Post digestion spike did not meet criteria
S = Reported value determined by the Method of Standard Additions (MSA)

Other Flags may be applied. See Case Narrative for Description

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159

Project: Red Devil AST

Client: Mactec Engineering & Consulting Inc.

Client Project Number: MACTEC

REPORTING CONVENTIONS FOR THIS REPORT

A0309159

<u>TestPkgName</u>	<u>Basis</u>	<u># Sig Figs</u>	<u>Reporting Limit</u>
6020/3010A (Aqueous) - ICPMS Total	As Received	3	Report to PQL
7470A/7470A (Aqueous) - Total Hg	As Received	2	Report to PQL
AK101GRO/8021BTEX/5030 (Aqueous)	As Received	2	Report to PQL
AK102/103/3510 (Aqueous) - (DRO & RRO)	As Received	2	Report to PQL



**ANALYTICA
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Support Documentation

The Science of Analysis and The Art of Service

ANALYTICA GROUP

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(303) 469-8868
FAX: (303) 469-5254

No 30381

LGN: AD30A159
Quote:
Project ID #:

Chain of Custody Record / Analysis Request

www.analyticagroup.com

Company Name: MACTEC Company Address: 601 EAST 57th PLACE ANCHORAGE AK 99508 Telephone: 907-563-8102 Fax: 907-561-4574 Email:		Project Name: Red Devil AS1 Report To: BRYAN LUND Invoice To: BRYAN LUND P.O. Number: AB4030008		Date Collected: 9/20/03 13:55 Time collected: WATER # Containers: 2 1 1 VOA 1LT 1LT 1LT (Handwritten: 250mL only)		MS / MSD Preserved? Highly Concentrated?		LAB ID
Sample ID 0320Y MW4 0320Y MW3 WATER-TEMP BLANK		X X X		X X X		X X X		X X X
COMMENTS O SE S-AEL								
RELINQUISHED BY SAMPLER: Signature: [Signature] Printed Name: R. FARRAGE Firm: MACTEC Date/Time: 9/22/03 11:40		RECEIVED BY: Signature: [Signature] Printed Name: S. FINNEGAN Firm: MACTEC Date/Time: 9/24/03 8:45		RELINQUISHED BY: Signature: [Signature] Printed Name: Dolores Wheeler Firm: AA1 Date/Time: 9-24-03 9:05AM		RECEIVED BY: Signature: [Signature] Printed Name: Dolores Wheeler Firm: AA1 Date/Time: 9-24-03 9:05AM		COOLER RECEIPT INFORMATION <input type="checkbox"/> 10 Business Days Standard <input type="checkbox"/> 15 Business Days FAT <input type="checkbox"/> Other: _____ # Business Days (Prior Authorization Required.) Cooler Received: 2.0 °C Temp Received: _____ °C Coolers: _____ Seals: 2-SF
MEANS OF DELIVERY / WAY BILL # Hand Delivered								



Cooler Receipt Form
AAI-ANCHORAGE

Client: Mactec Engineering & Consul Client Code: 010400
Project: Red Devel AST/

Order #: A0309159

Cooler ID: 1

A. Preliminary Examination Phase:

Date cooler opened: 9/24/2003
Cooler opened by: dw

Signature: D. Wheeler

- 1. Was airbill Attached? No
2. Custody Seals? Yes
3. Seals intact? Yes
4. Screened for radiation? N/A
5. COC Attached? Yes
6. Project Identification from custody paper: Red Devel AST/
7. Preservative: BlueGel Temperature: 2.0

Designated person initial here to acknowledge receipt:

DW Date: 9-24-03

COMMENTS:

B. Log-In Phase:

Samples Log-in Date: 9/24/2003 Log-in By: dw

Signature: D. Wheeler

- 1. Packing Type: Bubblewrap
2. Were samples in separate bags? Yes
3. Were containers intact? Yes
4. Number of bottles received: 10
5. Correct containers used? Yes
6. Sufficient sample volume? Yes
7. Bubbles in VOA samples? No
8. Was Project manager called and status discussed? No
9. Was anyone called? No

COMMENTS:

Amber Hammontree

From: "Lund, Bryan" <BDLUND@mactec.com>
To: <ahammontree@analyticagroup.com>
Sent: Thursday, September 25, 2003 12:21 PM
Subject: Red Devil Tanks

Amber – I did get your message, just behind on all fronts.

The Red Devil water samples for metals should be analyzed for mercury, antimony, and arsenic.

If you need me to sign/approve something let me know. I will also talk with field so this does not happen again.

Thanks, Bryan

Bryan D. Lund
MACTEC Engineering and Consulting
Anchorage, Alaska
email: bdlund@mactec.com
tele: 907-563-8102
fax: 907-561-4574



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FAX: (303) 469-5254

No 30381

LGN: AD309159
Quote:
Project ID #:

Chain of Custody Record / Analysis Request

Company Name: **MACTEC**
 Company Address: **601 EAST 57th Place
Anchorage AK 99518**
 Telephone: **907-563-8102**
 Fax: **907-561-4574**
 Email:

Project Name: **Red Devil Ast /**
 Report To: **BRYAN LUND**
 Invoice To: **BRYAN LUND**
 P.O. Number: **4034030008**

Sample ID	Date Collected	Time collected	Matrix	# Containers			PF	AT	GRO	BTEX	HCL	Preserved HCL	AK102	103	Preserved HCL	6020/7470	Preserved HCL	H103	7470	MS / MSD	Preserved?	Highly Concentrated?	LAB ID
				VOA	ILT	250mL Poly																	
03RDV MW4	9/20/03	13:55	Water	2	1	1	X	X	X	X	X	X	X	X	X	X	X	X	X		X		
03RDV MW3	9/20/03	16:14		2	1	1	X	X	X	X	X	X	X	X	X	X	X	X	X		X		
WATER / TEMP BLANK																							

COMMENTS: **O SE
D-AEL**

- 10 Business Days
 - 15 Business Days
 - other: Standard # Business Days
- (Prior Authorization Required.)

RELINQUISHED BY SAMPLER:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:	Cooler Receipt Information
Signature: <i>[Signature]</i>	Signature: <i>[Signature]</i>	Signature: <i>[Signature]</i>	Signature: <i>[Signature]</i>	Temp Received: <u>2.0</u> °C 1.0 °C
Printed Name: R. FARRAGE	Printed Name: S. FINNEGAN	Printed Name: Dollie Wheeler	Printed Name: Kerica Schroeder	Temp Received: _____ °C
Firm: MACTEC	Firm: MACTEC	Firm: AAI	Firm: AAI SE	Coolers: _____
Date/Time: 9/22/03 11:40	Date/Time: 9/24/03 8:45	Date/Time: 9-24-03 9:05 AM	Date/Time: _____	Seals: 2-SF y-DW
				Means of Delivery / Way Bill #

Cooler Receipt Form



AAISE-JUNEAU

Client: Mactec Engineering & Consul Client Code: 010400
Project: Red Devel AST/

Order #: A0309159

Cooler ID: 2

A. Preliminary Examination Phase:

Date cooler opened: 9/25/2003
Cooler opened by: KS

Signature: *Kerwin Schmal*

- 1. Was airbill Attached? Yes Airbill #: DHL #878 4721 525 Carrier Name: DHL
- 2. Custody Seals? Yes How many? 1 Location: on cooler Seal Name: DW
- 3. Seals intact? Yes
- 4. Screened for radiation? No
- 5. COC Attached? Yes Properly Completed? Yes Signed by AEL employee? Yes
- 6. Project Identification from custody paper: Red Devil AST
- 7. Preservative: BlueGel Temperature: 1.0

Designated person initial here to acknowledge receipt:

[Handwritten Signature] Date: 9/25/03

COMMENTS:

B. Log-In Phase: Samples Log-in Date: 9/25/2003 Log-in By: KU

Signature: *[Handwritten Signature]*

- 1. Packing Type: Green Foam
- 2. Were samples in separate bags? No
- 3. Were containers intact? Yes Labels agree with COC? Yes
- 4. Number of bottles received: 2 Number of samples received: 2
- 5. Correct containers used? Yes Correct preservatives added? Yes
- 6. Sufficient sample volume? Yes
- 7. Bubbles in VOA samples? N/A
- 8. Was Project manager called and status discussed? No
- 9. Was anyone called? No Who was called? _____ By whom? _____ Date: _____

COMMENTS:



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FAX: (907) 780-6670

AEL-THORNTON

No 30381

LGN: AD309159
Quote:
Project ID #:

Chain of Custody Record / Analysis Request

Company Name: **MACTEC**
Company Address: **601 EAST 57th Place Anchorage AK 99508**
Telephone: **907-563-8102**
Fax: **907-561-4574**
Email:

Project Name: **Red Devil AS1**
Report To: **BRYAN LUND**
Invoice To: **BRYAN LUND**
P.O. Number: **4234030008**

Sample ID	Date Collected	Time collected	Maxlix	# Containers		MS / MSD	Preserved?	Highly Concentrated?	LAB ID
				VQA	Lt				
032DY MW4	9/22/03 13:55	Water		2	1	X	X		
032DY MW3	9/22/03 16:14			2	1	X	X		
WATER / TEMP BLANK									

COMMENTS

O SE
D-AEL

RELIQUISHED BY SAMPLER:	RECEIVED BY:	RELIQUISHED BY:	RECEIVED BY:
Signature: <i>[Signature]</i> Printed Name: S. FINNEGAN Firm: MACTEC	Signature: <i>[Signature]</i> Printed Name: DOLIE WHEELER Firm: AAI	Signature: <i>[Signature]</i> Printed Name: DOLIE WHEELER Firm: AAI	Signature: <i>[Signature]</i> Printed Name: DOLIE WHEELER Firm: AAI
Date/Time: 9/22/03 11:40	Date/Time: 9/24/03 8:45	Date/Time: 9/24/03 9:15 AM	Date/Time: 9/25/03 11:30

10 Business Days
 15 Business Days
 other: _____ # Business Days (Prior Authorization Required.)

Cooler Receipt Information
 Temp Received: **2.0** °C / **1.4** °C
 Temp Received: _____ °C
 Coolers: _____
 Seals: **2-5F**

Means of Delivery / Way Bill # _____

Cooler Receipt Form

AEL-THORNTON



Client: Mactec Engineering & Consul Client Code: 010400
Project: Red Devel AST/

Order #: A0309159

Cooler ID: 3

A. Preliminary Examination Phase:

Date cooler opened: 9/25/2003
Cooler opened by: RA

Signature: RRR

- 1. Was airbill Attached? Yes Airbill #: 7909 1106 5923 Carrier Name: FedEx
- 2. Custody Seals? Yes How many? 1 Location: front Seal Name: DW
- 3. Seals intact? Yes
- 4. Screened for radiation? N/A
- 5. COC Attached? N/A Properly Completed? Yes Signed by AEL employee? Yes
- 6. Project Identification from custody paper: Red Devel AST/
- 7. Preservative: BlueGel Temperature: 1.4

Designated person initial here to acknowledge receipt:

RRR Date: 9/25/03

COMMENTS:

B. Log-In Phase:

Samples Log-in Date: 9/25/2003 Log-in By: dm

Signature: [Signature]

- 1. Packing Type: Bubblewrap
- 2. Were samples in separate bags? Yes
- 3. Were containers intact? Yes Labels agree with COC? Yes
- 4. Number of bottles received: 2 Number of samples received: 2
- 5. Correct containers used? Yes Correct preservatives added? Yes
- 6. Sufficient sample volume? Yes
- 7. Bubbles in VOA samples? N/A
- 8. Was Project manager called and status discussed? No
- 9. Was anyone called? No Who was called? _____ By whom? _____ Date: _____

COMMENTS:



Analytica Alaska Incorporated
website:
www.analyticagroup.com

10/24/2003

Mactec Engineering & Consulting Inc.
601 E. 57th Place
Anchorage, AK 99518
Attn: Bryan Lund

Work Order #: A0309186
Date: 10/24/2003
Work ID: Red Devil AST
Date Received: 9/26/2003

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A0309186-01	03RDVMW6	A0309186-02	03RDVMW1
A0309186-03	03RDVMW10	A0309186-04	03RDVMW7
A0309186-05	TRIP BLANK		

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

Jason Gray
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

Analytica Alaska Inc.

Work Order: A0309186

Samples were prepared and analyzed by methods in the following references:

ADEC Method AK101 For the Determination of Gasoline Range Organics.
ADEC Method AK102/103 For the Determination of Diesel/Residual Range Organics.
Test Methods for Evaluating Solid Waste, USEPA SW-846, Third Edition, Rev. 4, Dec. 1996.

SAMPLE RECEIPT:

Four samples and BTEX trip blank were received at Analytica-Anchorage (ADEC Laboratory Approval Number: UST-014) on 9/26/2003 in two coolers at a temperature of 2.4°C, 4.2°C.

Comments: Samples very turbid at time of sampling 03RDVMW7 very turbid; not enough recharge to sample for all parameters. Only .5 liter for aK102/103. R.Farrage; Mactec.

Samples were otherwise received in good condition and in order per chain of custody

Samples for Hg analysis were transferred for analysis at Analytica Environmental Laboratories (AEL); 12189 Pennsylvania St. Thornton, CO 80241 where they were received at a temperature of 2.3°C in good condition and in order per chain of custody.

Samples fractions for Metals testing were transferred to Analytica-SE (5438 Shuane Dr. Juneau AK, 99801) where they were received in one cooler at temperature of 3.6°C on 10/3/2003. Samples were received in good condition and in order per chain of custody. Due to subsequent laboratory instrument problems AAI-Juneau was unable to perform the analysis and the method 6020 Metals samples were sent for subcontract analysis to BC Research Inc. 3650 Wesbrook Mall, Vancouver, BC, V6S 2L2.

REVIEW FOR COMPLIANCE WITH ANALYTICA QA PLAN

A summary of our review is shown below, organized by test:

Test Method: ADEC AK102 (DRO)

HOLDING TIMES:

Holding times were met for this Test.

INSTRUMENT CALIBRATIONS:

Initial calibration and CCV samples met method criteria.

SURROGATE RECOVERIES:

There were no surrogate recovery outliers.

METHOD BLANK OUTLIERS:

There were no MB outliers.

LCS/LCSD OUTLIERS:

There are no LCS/LCSD outliers.

Test Method: GRO by ADEC AK101 & BTEX by 8021B

HOLDING TIMES:

Holding times were met for this Test.

INSTRUMENT CALIBRATIONS:

Initial calibration and CCV samples met method criteria.

Case Narrative

Analytica Alaska Inc.
Work Order: A0309186
(continued)

SURROGATE RECOVERIES:
There were no Surrogate recovery outliers.

METHOD BLANK OUTLIERS:
There were no MB outliers.

LCS/LCSD OUTLIERS:
There are no LCS/LCSD outliers.

Test Method: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg - Aqueous

HOLDING TIMES:
Holding times were met for this Test

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:
There were no unusual observations.

INSTRUMENT PERFORMANCE CHECKS:
Instrument checks were within method criteria.

INITIAL CALIBRATIONS:
Initial calibrations were within method criteria.

CONTINUING CALIBRATIONS:
Continuing calibrations were within method criteria.

METHOD BLANK OUTLIERS:
There are no method blank outliers.

LCS OUTLIERS:
There are no LCS outliers.

MS/MSD and DUP OUTLIERS:
There are no MS/MSD or DUP outliers.

Test Method: SW6020 - ICPMS - Total BC Research - Aqueous

This test was subcontracted to BC Research Inc. 3650 Wesbrook Mall, Vancouver, BC, V6S 2L2 and has been represented to us as having met all method criteria.

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC
Report Section: Client Sample Report

Client Sample Name: 03RDVMW6

Matrix: Water Collection Date: 9/22/2003 3:42:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-01B Analysis Date: 10/7/2003 3:28:00PM
Prep Date: 10/3/2003 Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3100703.D
Prep Method ID: 3510 Dilution Factor: 1
Prep Batch Number: A031003006
Report Basis: As Received Analyst Initials: HW
Sample prep wt./vol: 940.00 ml Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/L	0.11	0.021				1	
Residual Range Organics	n/a	0.25		mg/L	0.21	0.033					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	0.047		mg/L	0.0053	0.00068	0.053	88.9	50	150	1
Squalane	111-01-3	0.052		mg/L	0.0053	0.0010	0.053	97.1	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-01A Analysis Date: 10/2/2003 6:11:00PM
Prep Date: 10/2/2003 Instrument: Natasha
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B File Name: N3100222.D
Prep Method ID: 5030 Dilution Factor: 1
Prep Batch Number: A031002002
Report Basis: As Received Analyst Initials: SG
Sample prep wt./vol: 5.00 ml Prep Extract Vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL					Rerun #:
Benzene	71-43-2	ND		ug/L	1.0	0.15					1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18					
Gasoline Range Organics	n/a	ND		ug/L	50	3.0					
Toluene	108-88-3	ND		ug/L	1.0	0.24					
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63					
Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	75		ug/L	1.0	0.10	100	74.7	50	150	1
Bromofluorobenzene(PID)	1072-85-1	100		ug/L	1.0	0.10	100	101	50	150	
Difluorobenzene	540-36-3	46		ug/L	1.0	0.10	50	92.9	50	150	
Difluorobenzene(PID)	540-36-3	50		ug/L	1.0	0.10	50	99.9	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0309186-01D Analysis Date: 10/11/2003 2:56:40PM
Prep Date: 10/8/2003 Instrument: CVAA_1
Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg File Name: B031011W.W
Prep Method ID: 7470A Dilution Factor: 1
Prep Batch Number: T031008002
Report Basis: As Received Analyst Initials: CS
Sample prep wt./vol: 20.00 ml Prep Extract Vol: 20.00 ml

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186

Project: Red Devil AST

Client: Mactec Engineering & Consulting Inc.

Client Project Number: MACTEC

Report Section: Client Sample Report

Client Sample Name: **03RDVMW6**

Matrix: Water Collection Date: 9/22/2003 3:42:00PM

Lab Sample Number:	A0309186-01D	Analysis Date:	10/11/2003 2:56:40PM
Prep Date:	10/8/2003	Instrument:	CVAA_1
Analytical Method ID:	SW7470A - Mercury in Liquid Waste by CVAA - Total Hg	File Name:	B031011W.W
Prep Method ID:	7470A	Dilution Factor:	1
Prep Batch Number:	T031008002	Analyst Initials:	CS
Report Basis:	As Received	Prep Extract Vol:	20.00 ml
Sample prep wt./vol:	20.00 ml		

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Mercury	7439-97-6	ND		mg/L	0.00020	0.000060	1

The following test was conducted by: BC Research Inc.

Lab Sample Number:	A0309186-01C	Analysis Date:	10/17/2003 12:49:47PM
Prep Date:	10/17/2003	Instrument:	Sub Contract
Analytical Method ID:	SW6020 - ICPMS - Total BC Research	File Name:	
Prep Method ID:	6020-BC	Dilution Factor:	1
Prep Batch Number:	J031023006	Analyst Initials:	BC Research
Report Basis:	As Received	Prep Extract Vol:	100.00 ml
Sample prep wt./vol:	100.00 ml		

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Antimony	7440-36-0	15.0		ug/L	1.0	0.33	1
Arsenic	7440-38-2	36.0		ug/L	1.0	0.33	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186
 Project: Red Devil AST
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: MACTEC
 Report Section: Client Sample Report

Client Sample Name: **03RDVMW1**

Matrix: Water Collection Date: 9/22/2003 5:25:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-02B Analysis Date: 10/7/2003 3:55:00PM
 Prep Date: 10/3/2003 Instrument: Roo
 Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3100704.D
 Prep Method ID: 3510 Dilution Factor: 1
 Prep Batch Number: A031003006
 Report Basis: As Received Analyst Initials: HW
 Sample prep wt./vol: 950.00 ml Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/L	0.11	0.021				1	
Residual Range Organics	n/a	0.30		mg/L	0.21	0.033					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	0.043		mg/L	0.0053	0.00067	0.053	82.6	50	150	1
Squalane	111-01-3	0.045		mg/L	0.0053	0.0010	0.053	86.0	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-02A Analysis Date: 10/2/2003 6:41:00PM
 Prep Date: 10/2/2003 Instrument: Natasha
 Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B File Name: N3100223.D
 Prep Method ID: 5030 Dilution Factor: 1
 Prep Batch Number: A031002002
 Report Basis: As Received Analyst Initials: SG
 Sample prep wt./vol: 5.00 ml Prep Extract Vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Benzene	71-43-2	ND		ug/L	1.0	0.15				1	
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18					
Gasoline Range Organics	n/a	ND		ug/L	50	3.0					
Toluene	108-88-3	ND		ug/L	1.0	0.24					
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	72		ug/L	1.0	0.10	100	72.0	50	150	1
Bromofluorobenzene(PID)	1072-85-1	110		ug/L	1.0	0.10	100	107	50	150	
Difluorobenzene	540-36-3	44		ug/L	1.0	0.10	50	87.8	50	150	
Difluorobenzene(PID)	540-36-3	52		ug/L	1.0	0.10	50	104	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0309186-02D Analysis Date: 10/11/2003 2:59:08PM
 Prep Date: 10/8/2003 Instrument: CVAA_1
 Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg File Name: B031011W.W
 Prep Method ID: 7470A Dilution Factor: 1
 Prep Batch Number: T031008002
 Report Basis: As Received Analyst Initials: CS
 Sample prep wt./vol: 20.00 ml Prep Extract Vol: 20.00 ml

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

Report Section: Client Sample Report

Client Sample Name: **03RDVMW1**

Matrix: Water Collection Date: 9/22/2003 5:25:00PM

Lab Sample Number: A0309186-02D Analysis Date: 10/11/2003 2:59:08PM
Prep Date: 10/8/2003 Instrument: CVAA_1
Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg File Name: B031011W.W
Prep Method ID: 7470A Dilution Factor: 1
Prep Batch Number: T031008002 Analyst Initials: CS
Report Basis: As Received Prep Extract Vol: 20.00 ml
Sample prep wt./vol: 20.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Mercury	7439-97-6	ND		mg/L	0.00020	0.000060	1

The following test was conducted by: BC Research Inc.

Lab Sample Number: A0309186-02C Analysis Date: 10/17/2003 12:49:47PM
Prep Date: 10/17/2003 Instrument: Sub Contract
Analytical Method ID: SW6020 + ICPMS - Total BC Research File Name:
Prep Method ID: 6020-BC Dilution Factor: 1
Prep Batch Number: J031023006 Analyst Initials: BC Research
Report Basis: As Received Prep Extract Vol: 100.00 ml
Sample prep wt./vol: 100.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Antimony	7440-36-0	8.00		ug/L	1.0	0.33	1
Arsenic	7440-38-2	33.0		ug/L	1.0	0.33	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186
 Project: Red Devil AST
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: MACTEC
 Report Section: Client Sample Report
 Client Sample Name: **03RDVMW10**

Matrix: Water Collection Date: 9/22/2003 5:28:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-03B Analysis Date: 10/7/2003 7:07:00PM
 Prep Date: 10/3/2003 Instrument: Roo
 Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3100711.D
 Prep Method ID: 3510 Dilution Factor: 1
 Prep Batch Number: A031003006
 Report Basis: As Received Analyst Initials: HW
 Sample prep wt./vol: 950.00 ml Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:
Diesel Range Organics	n/a	ND		mg/L	0.11	0.021				1
Residual Range Organics	n/a	0.25		mg/L	0.21	0.033				

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	0.051		mg/L	0.0053	0.00067	0.053	97.8	50	150	1
Squalane	111-01-3	0.049		mg/L	0.0053	0.0010	0.053	92.9	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-03A Analysis Date: 10/2/2003 7:10:00PM
 Prep Date: 10/2/2003 Instrument: Natasha
 Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B File Name: N3100224.D
 Prep Method ID: 5030 Dilution Factor: 1
 Prep Batch Number: A031002002
 Report Basis: As Received Analyst Initials: SG
 Sample prep wt./vol: 5.00 ml Prep Extract Vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL					Rerun #:
Benzene	71-43-2	ND		ug/L	1.0	0.15					1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18					
Gasoline Range Organics	n/a	ND		ug/L	50	3.0					
Toluene	108-88-3	ND		ug/L	1.0	0.24					
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63					

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	72		ug/L	1.0	0.10	100	72.4	50	150	1
Bromofluorobenzene(PID)	1072-85-1	100		ug/L	1.0	0.10	100	104	50	150	
Difluorobenzene	540-36-3	45		ug/L	1.0	0.10	50	89.6	50	150	
Difluorobenzene(PID)	540-36-3	52		ug/L	1.0	0.10	50	104	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0309186-03D Analysis Date: 10/11/2003 3:01:26PM
 Prep Date: 10/8/2003 Instrument: CVAA_1
 Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg File Name: B031011W.W
 Prep Method ID: 7470A Dilution Factor: 1
 Prep Batch Number: T031008002
 Report Basis: As Received Analyst Initials: CS
 Sample prep wt./vol: 20.00 ml Prep Extract Vol: 20.00 ml

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC
Report Section: **Client Sample Report**
Client Sample Name: **03RDVMW10**

Matrix: Water Collection Date: 9/22/2003 5:28:00PM

Lab Sample Number: A0309186-03D Analysis Date: 10/11/2003 3:01:26PM
Prep Date: 10/8/2003 Instrument: CVAA_1
Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg File Name: B031011W.W
Prep Method ID: 7470A Dilution Factor: 1
Prep Batch Number: T031008002
Report Basis: As Received Analyst Initials: CS
Sample prep wt./vol: 20.00 ml Prep Extract Vol: 20.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Mercury	7439-97-6	0.0037		mg/L	0.00020	0.000060	1

The following test was conducted by: BC Research Inc.

Lab Sample Number: A0309186-03C Analysis Date: 10/17/2003 12:49:47PM
Prep Date: 10/17/2003 Instrument: Sub Contract
Analytical Method ID: SW6020 - ICPMS - Total BC Research File Name:
Prep Method ID: 6020-BC Dilution Factor: 1
Prep Batch Number: J031023006
Report Basis: As Received Analyst Initials: BC Research
Sample prep wt./vol: 100.00 ml Prep Extract Vol: 100.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Antimony	7440-36-0	7.00		ug/L	1.0	0.33	1
Arsenic	7440-38-2	34.0		ug/L	1.0	0.33	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC
Report Section: Client Sample Report

Client Sample Name: 03RDVMW7

Matrix: Water **Collection Date:** 9/23/2003 4:35:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0309186-04B	Analysis Date:	10/7/2003 7:35:00PM
Prep Date:	10/3/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100712.D
Prep Method ID:	3510	Dilution Factor:	1
Prep Batch Number:	A031003006	Analyst Initials:	HW
Report Basis:	As Received	Prep Extract Vol:	1.00 ml
Sample prep wt./vol:	600.00 ml		

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:	
Diesel Range Organics	n/a	ND		mg/L	0.17	0.033				1	
Residual Range Organics	n/a	ND		mg/L	0.33	0.052					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	0.093		mg/L	0.0083	0.0011	0.083	112	50	150	1
Squalane	111-01-3	0.089		mg/L	0.0083	0.0016	0.083	107	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0309186-04A	Analysis Date:	10/2/2003 7:40:00PM
Prep Date:	10/2/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100225.D
Prep Method ID:	5030	Dilution Factor:	1
Prep Batch Number:	A031002002	Analyst Initials:	SG
Report Basis:	As Received	Prep Extract Vol:	5.00 ml
Sample prep wt./vol:	5.00 ml		

Analyte	CASNo	Result	Flags	Units	PQL	MDL					Rerun #:
Benzene	71-43-2	ND		ug/L	1.0	0.15					1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18					
Gasoline Range Organics	n/a	ND		ug/L	50	3.0					
Toluene	108-88-3	ND		ug/L	1.0	0.24					
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63					
Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	71		ug/L	1.0	0.10	100	71.4	50	150	1
Bromofluorobenzene(PID)	1072-85-1	100		ug/L	1.0	0.10	100	99.8	50	150	
Difluorobenzene	540-36-3	45		ug/L	1.0	0.10	50	90.4	50	150	
Difluorobenzene(PID)	540-36-3	50		ug/L	1.0	0.10	50	101	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0309186-04D	Analysis Date:	10/11/2003 3:03:59PM
Prep Date:	10/8/2003	Instrument:	CVAA_1
Analytical Method ID:	SW7470A - Mercury in Liquid Waste by CVAA - Total Hg	File Name:	B031011W.W
Prep Method ID:	7470A	Dilution Factor:	1
Prep Batch Number:	T031008002	Analyst Initials:	CS
Report Basis:	As Received	Prep Extract Vol:	20.00 ml
Sample prep wt./vol:	20.00 ml		

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC
Report Section: Client Sample Report

Client Sample Name:

03RDVMW7

Matrix: Water Collection Date: 9/23/2003 4:35:00PM

Lab Sample Number: A0309186-04D Analysis Date: 10/11/2003 3:03:59PM
Prep Date: 10/8/2003 Instrument: CVAA_1
Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg File Name: B031011W.W
Prep Method ID: 7470A Dilution Factor: 1
Prep Batch Number: T031008002 Analyst Initials: CS
Report Basis: As Received Prep Extract Vol: 20.00 ml
Sample prep wt./vol: 20.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Mercury	7439-97-6	0.011		mg/L	0.00020	0.000060	1

The following test was conducted by: BC Research Inc.

Lab Sample Number: A0309186-04C Analysis Date: 10/17/2003 12:49:47PM
Prep Date: 10/17/2003 Instrument: Sub Contract
Analytical Method ID: SW6020 - ICPMS - Total BC Research File Name:
Prep Method ID: 6020-BC Dilution Factor: 1
Prep Batch Number: J031023006 Analyst Initials: BC Research
Report Basis: As Received Prep Extract Vol: 100.00 ml
Sample prep wt./vol: 100.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Antimony	7440-36-0	ND		ug/L	1.0	0.33	1
Arsenic	7440-38-2	ND		ug/L	1.0	0.33	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186
 Project: Red Devil AST
 Client: Mactec Engineering & Consulting Inc.
 Client Project Number: MACTEC
Report Section: Client Sample Report
 Client Sample Name: **TRIP BLANK**

Matrix: Water Collection Date: 9/23/2003 4:35:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-05A Analysis Date: 10/2/2003 8:10:00PM
 Prep Date: 10/2/2003 Instrument: Natasha
 Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B File Name: N3100226.D
 Prep Method ID: 5030 Dilution Factor: 1
 Prep Batch Number: A031002002 Analyst Initials: SG
 Report Basis: As Received Prep Extract Vol: 5.00 ml
 Sample prep wt./vol: 5.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>					<u>Rerun #:</u>
Benzene	71-43-2	ND		ug/L	1.0	0.15					1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18					
Gasoline Range Organics	n/a	ND		ug/L	50	3.0					
Toluene	108-88-3	ND		ug/L	1.0	0.24					
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63					
<u>Surrogate</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Spike</u>	<u>% Recov</u>	<u>LCL</u>	<u>UCL</u>	<u>Rerun #:</u>
Bromofluorobenzene	1072-85-1	72		ug/L	1.0	0.10	100	71.8	50	150	1
Bromofluorobenzene(PID)	1072-85-1	110		ug/L	1.0	0.10	100	107	50	150	
Difluorobenzene	540-36-3	44		ug/L	1.0	0.10	50	88.2	50	150	
Difluorobenzene(PID)	540-36-3	52		ug/L	1.0	0.10	50	104	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC
Report Section: Method Blank Report
Client Sample Name: MB

Matrix: Aqueous Collection Date: 10/3/2003 12:00:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A031003006-MB Analysis Date: 10/8/2003 12:40:00PM
Prep Date: 10/3/2003 Instrument: Roo
Analytical Method ID: ADEC AK102/103 - (DRO & RRO) File Name: R3100729.D
Prep Method ID: 3510 Dilution Factor: 1
Prep Batch Number: A031003006 Analyst Initials: HW
Report Basis: Dry Weight Basis Prep Extract Vol: 1.00 ml
Sample prep wt./vol: 1,000.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL				Rerun #:
Diesel Range Organics	n/a	ND		mg/L	0.10	0.020				1
Residual Range Organics	n/a	ND		mg/L	0.20	0.031				

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	0.050		mg/L	0.0050	0.00064	0.050	99.7	50	150	1
Squalane	111-01-3	0.049		mg/L	0.0050	0.00096	0.050	98.0	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A031002002-MB Analysis Date: 10/2/2003 9:07:00AM
Prep Date: 10/2/2003 Instrument: Natasha
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B File Name: N3100204.D
Prep Method ID: 5030 Dilution Factor: 1
Prep Batch Number: A031002002 Analyst Initials: SG
Report Basis: Dry Weight Basis Prep Extract Vol: 5.00 ml
Sample prep wt./vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL					Rerun #:
Benzene	71-43-2	ND		ug/L	1.0	0.15					1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18					
Gasoline Range Organics	n/a	ND		ug/L	50	3.0					
Toluene	108-88-3	ND		ug/L	1.0	0.24					
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63					

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	79		ug/L	1.0	0.10	100	79.4	50	150	1
Bromofluorobenzenc(PID)	1072-85-1	110		ug/L	1.0	0.10	100	107	50	150	
Difluorobenzene	540-36-3	46		ug/L	1.0	0.10	50	92.8	50	150	
Difluorobenzene(PID)	540-36-3	50		ug/L	1.0	0.10	50	100	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: T031008002-MB Analysis Date: 10/11/2003 2:23:28PM
Prep Date: 10/8/2003 Instrument: CVAA_1
Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg File Name: B031011W.W
Prep Method ID: 7470A Dilution Factor: 1
Prep Batch Number: T031008002 Analyst Initials: CS
Report Basis: Dry Weight Basis Prep Extract Vol: 20.00 ml
Sample prep wt./vol: 20.00 ml

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186

Project: Red Devil AST

Client: Mactec Engineering & Consulting Inc.

Client Project Number: MACTEC

Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Aqueous

Collection Date: 10/8/2003 12:00:00AM

Lab Sample Number: T031008002-MB

Analysis Date: 10/11/2003 2:23:28PM

Prep Date: 10/8/2003

Instrument: CVAA_1

Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

File Name: B031011W.W

Prep Method ID: 7470A

Dilution Factor: 1

Prep Batch Number: T031008002

Report Basis: Dry Weight Basis

Analyst Initials: CS

Sample prep wt./vol: 20.00 ml

Prep Extract Vol: 20.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Mercury	7439-97-6	ND		mg/L	0.00020	0.000060	2

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska
Workorder (SDG): A0309186
Project: Red Devil AST
Project Number:
Prep Batch: A031003006

QUALITY CONTROL REPORT

LCS/LCSD REPORT

Analysis: ADEC AK102/103 - (DRO & RRO) MB: A031003006-MB
Prep Date: 10/3/2003
MB Anal. Date: 10/8/2003 12:40:00PM Units: mg/L
LCS Anal. Date: 10/6/2003 9:11:00PM LCSD Anal. Date: 10/8/2003 1:08:00PM Matrix: Aqueous

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Diesel Range Organics	ND	2.08	1.90	2.00	2.00	104.0	95.0	9.0	60 - 120	20	
Residual Range Organics	ND	2.32	1.95	2.00	2.00	116.0	97.5	17.3	60 - 120	20	

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little significance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska
Workorder (SDG): A0309186
Project: Red Devil AST
Project Number:
Prep Batch: A031002002

QUALITY CONTROL REPORT

LCS/LCSD REPORT

Analysis: GRO by ADEC AK101 & BTEX by 8021B MB: A031002002-MB
Prep Date: 10/2/2003
MB Anal. Date: 10/2/2003 9:07:00AM Units: ug/L
LCS Anal. Date: 10/2/2003 9:37:00AM LCSD Anal. Date: 10/2/2003 10:07:00AM Matrix: Aqueous

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLv	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	14.1	14.2	13.8	13.8	102.2	102.9	0.7	60 - 120	20	
Toluene	ND	74.2	74.0	84.5	84.5	87.8	87.5	0.3	60 - 120	20	
Ethylbenzene	ND	22.4	22.7	20.3	20.3	110.4	111.9	1.3	60 - 120	20	
Xylenes, Total	ND	112	110	99.2	99.2	112.9	110.9	1.8	60 - 120	20	
Gasoline Range Organics	ND	911	970	1,100	1,100	82.8	88.2	6.3	60 - 120	20	

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little significance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado
Workorder (SDG): A0309186
Project: Red Devil AST
Project Number:
Prep Batch: T031008002

QUALITY CONTROL REPORT

LCS REPORT

Analysis: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg
MB: T031008002-MB
Prep Date: 10/8/2003
MB Anal. Date: 10/11/2003 2:23:28PM
Units: mg/L
LCS Anal. Date: 10/10/2003 5:06:21PM
Matrix: Aqueous

<u>Analyte Name</u>	<u>SampResult</u>	<u>LCSRes.</u>	<u>SPLev</u>	<u>Recov.</u>	<u>Recov Lim</u>	<u>RPDLim</u>	<u>Flag</u>
Mercury	ND	0.00486	0.00496	98.0	80 - 120		

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little significance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

SURROGATE RECOVERY SUMMARY REPORT

Test Method: ADEC AK102/103 - (DRO & RRO)

Lab Sample #: A0309186-01B Dilution: 1
Analysis Date: 10/7/2003 3:28:00PM Client Sample: 03RDVMW6
Batch Number: A031003006 Data File: R3100703.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	89	50	150		Complete
Squalane	97	50	150		Complete

Lab Sample #: A0309186-02B Dilution: 1
Analysis Date: 10/7/2003 3:55:00PM Client Sample: 03RDVMW1
Batch Number: A031003006 Data File: R3100704.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	83	50	150		Complete
Squalane	86	50	150		Complete

Lab Sample #: A0309186-03B Dilution: 1
Analysis Date: 10/7/2003 7:07:00PM Client Sample: 03RDVMW10
Batch Number: A031003006 Data File: R3100711.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	98	50	150		Complete
Squalane	93	50	150		Complete

Lab Sample #: A0309186-04B Dilution: 1
Analysis Date: 10/7/2003 7:35:00PM Client Sample: 03RDVMW7
Batch Number: A031003006 Data File: R3100712.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	112	50	150		Complete
Squalane	107	50	150		Complete

Lab Sample #: A031003006-MB Dilution: 1
Analysis Date: 10/8/2003 12:40:00PM Client Sample: MB
Batch Number: A031003006 Data File: R3100729.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	100	60	120		Complete
Squalane	98	60	120		Complete

Lab Sample #: A031003006-LCS Dilution: 1
Analysis Date: 10/6/2003 9:11:00PM Client Sample: LCS
Batch Number: A031003006 Data File: R3100613.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	89	60	120		Complete
Squalane	97	60	120		Complete

Lab Sample #: A031003006-LCSD Dilution: 1
Analysis Date: 10/8/2003 1:08:00PM Client Sample: LCSD
Batch Number: A031003006 Data File: R3100730.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
o-Terphenyl	79	60	120		Complete
Squalane	84	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC
Test Method: GRO by ADEC AK101 & BTEX by 8021B

Lab Sample #:	A0309186-01A	Dilution:	1		
Analysis Date:	10/2/2003 6:11:00PM	Client Sample:	<u>03RDVMW6</u>		
Batch Number:	A031002002	Data File:	N3100222.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	75	50	150		Complete
Bromofluorobenzene(PID)	101	50	150		Complete
Difluorobenzene	93	50	150		Complete
Difluorobenzene(PID)	100	50	150		Complete

Lab Sample #:	A0309186-02A	Dilution:	1		
Analysis Date:	10/2/2003 6:41:00PM	Client Sample:	<u>03RDVMW1</u>		
Batch Number:	A031002002	Data File:	N3100223.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	72	50	150		Complete
Bromofluorobenzene(PID)	107	50	150		Complete
Difluorobenzene	88	50	150		Complete
Difluorobenzene(PID)	104	50	150		Complete

Lab Sample #:	A0309186-03A	Dilution:	1		
Analysis Date:	10/2/2003 7:10:00PM	Client Sample:	<u>03RDVMW10</u>		
Batch Number:	A031002002	Data File:	N3100224.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	72	50	150		Complete
Bromofluorobenzene(PID)	104	50	150		Complete
Difluorobenzene	90	50	150		Complete
Difluorobenzene(PID)	104	50	150		Complete

Lab Sample #:	A0309186-04A	Dilution:	1		
Analysis Date:	10/2/2003 7:40:00PM	Client Sample:	<u>03RDVMW7</u>		
Batch Number:	A031002002	Data File:	N3100225.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	71	50	150		Complete
Bromofluorobenzene(PID)	100	50	150		Complete
Difluorobenzene	90	50	150		Complete
Difluorobenzene(PID)	101	50	150		Complete

Lab Sample #:	A0309186-05A	Dilution:	1		
Analysis Date:	10/2/2003 8:10:00PM	Client Sample:	<u>TRIP BLANK</u>		
Batch Number:	A031002002	Data File:	N3100226.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	72	50	150		Complete
Bromofluorobenzene(PID)	107	50	150		Complete
Difluorobenzene	88	50	150		Complete
Difluorobenzene(PID)	104	50	150		Complete

Lab Sample #:	A031002002-MB	Dilution:	1		
Analysis Date:	10/2/2003 9:07:00AM	Client Sample:	<u>MB</u>		
Batch Number:	A031002002	Data File:	N3100204.D		
<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186

Project: Red Devil AST

Client: Mactec Engineering & Consulting Inc.

Client Project Number: MACTEC

Test Method: GRO by ADEC AK101 & BTEX by 8021B

Lab Sample #: A031002002-MB Dilution: 1
Analysis Date: 10/2/2003 9:07:00AM Client Sample: MB
Batch Number: A031002002 Data File: N3100204.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	79	60	120		Complete
Bromofluorobenzene(PID)	107	60	120		Complete
Difluorobenzene	93	60	120		Complete
Difluorobenzene(PID)	100	60	120		Complete

Lab Sample #: A031002002-LCS Dilution: 1
Analysis Date: 10/2/2003 9:37:00AM Client Sample: LCS
Batch Number: A031002002 Data File: N3100205.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	82	60	120		Complete
Bromofluorobenzene(PID)	92	60	120		Complete
Difluorobenzene	91	60	120		Complete
Difluorobenzene(PID)	97	60	120		Complete

Lab Sample #: A031002002-LCSD Dilution: 1
Analysis Date: 10/2/2003 10:07:00AM Client Sample: LCSD
Batch Number: A031002002 Data File: N3100206.D

<u>AnalyteName</u>	<u>SSRecov</u>	<u>LCL</u>	<u>UCL</u>	<u>SSFlag</u>	<u>Result Status</u>
Bromofluorobenzene	85	60	120		Complete
Bromofluorobenzene(PID)	92	60	120		Complete
Difluorobenzene	93	60	120		Complete
Difluorobenzene(PID)	97	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 19,918 Lab Project Number: A0309186

Prep Date: 10/2/2003

Lab Method Blank Id: A031002002-MB
Prep Batch ID: A031002002
Method: GRO by ADEC AK101 & BTEX by 8021B

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A0309186-05A	TRIP BLANK	N3100226.D	10/2/2003 8:10:00PM
A0309186-02A	03RDVMW1	N3100223.D	10/2/2003 6:41:00PM
A0309186-03A	03RDVMW10	N3100224.D	10/2/2003 7:10:00PM
A0309186-04A	03RDVMW7	N3100225.D	10/2/2003 7:40:00PM
A031002002-LCS	LCS	N3100205.D	10/2/2003 9:37:00AM
A031002002-LCSD	LCSD	N3100206.D	10/2/2003 10:07:00AM
A0309186-01A	03RDVMW6	N3100222.D	10/2/2003 6:11:00PM

Prep Date: 10/3/2003

Lab Method Blank Id: A031003006-MB
Prep Batch ID: A031003006
Method: ADEC AK102/103 - (DRO & RRO)

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A0309186-03B	03RDVMW10	R3100711.D	10/7/2003 7:07:00PM
A0309186-04B	03RDVMW7	R3100712.D	10/7/2003 7:35:00PM
A031003006-LCSD	LCSD	R3100730.D	10/8/2003 1:08:00PM
A031003006-LCS	LCS	R3100613.D	10/6/2003 9:11:00PM
A0309186-01B	03RDVMW6	R3100703.D	10/7/2003 3:28:00PM
A0309186-02B	03RDVMW1	R3100704.D	10/7/2003 3:55:00PM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 19,918 Lab Project Number: A0309186

Prep Date: 10/8/2003

Lab Method Blank Id: T031008002-MB
Prep Batch ID: T031008002
Method: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A0309186-04D	03RDVMW7	B031011W.WKS	10/11/2003 3:03:59PM
B0309287-01A-MS	MS	B031011W.WKS	10/11/2003 2:33:08PM
A0309186-01D	03RDVMW6	B031011W.WKS	10/11/2003 2:56:40PM
A0309186-02D	03RDVMW1	B031011W.WKS	10/11/2003 2:59:08PM
A0309186-03D	03RDVMW10	B031011W.WKS	10/11/2003 3:01:26PM
B0309287-01A	Batch QC	B031010W.WKS	10/10/2003 5:08:45PM
T031008002-LCS	LCS	B031010W.WKS	10/10/2003 5:06:21PM
B0309287-01A-DUP	DUP	B031010W.WKS	10/10/2003 5:11:09PM

DATA FLAGS AND DEFINITIONS

The PQL is the Method Quantitation Limit as defined by USACE.

Reporting Limit: Limit below which results are shown as "ND". This may be the PQL, MDL, or a value between. See the report conventions below.

Result Field:

ND = Not Detected at or above the Reporting Limit
NA = Analyte not applicable (see Case Narrative for discussion)

Qualifier Fields:

LOW = Recovery is below Lower Control Limit
HIGH = Recovery, RPD, or other parameter is above Upper Control Limit
E = Reported concentration is above the instrument calibration upper range

Organic Analysis Flags:

B = Analyte was detected in the laboratory method blank
J = Analyte was detected above MDL or Reporting Limit but below the Quant Limit (PQL)

Inorganic Analysis Flags:

J = Analyte was detected above the Reporting Limit but below the Quant Limit (PQL)
W = Post digestion spike did not meet criteria
S = Reported value determined by the Method of Standard Additions (MSA)

Other Flags may be applied. See Case Narrative for Description

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186
Project: Red Devil AST
Client: Mactec Engineering & Consulting Inc.
Client Project Number: MACTEC

REPORTING CONVENTIONS FOR THIS REPORT

A0309186

<u>TestPkgName</u>	<u>Basis</u>	<u># Sig Figs</u>	<u>Reporting Limit</u>
6020/3010A (Aqueous) - Total BC Research	As Received	3	Report to PQL
7470A/7470A (Aqueous) - Total Hg	As Received	2	Report to PQL
AK101GRO/8021BTEX/5030 (Aqueous)	As Received	2	Report to PQL
AK102/103/3510 (Aqueous) - (DRO & RRO)	As Received	2	Report to PQL



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Page 1 of 1
No 30382

LGN: A0309186
Quote:
Project ID #:

Chain of Custody Record / Analysis Request

Company Name: MACTEC		Project Name: RED DEVIL AST		GPO/BREX (HCl preserved) AK102/103 (HCl preserved) 6020/7470 (HCl preserved) METS INCL AS, Sb, Hg (circled)																	
Company Address: 601 EAST 57th PLACE ANC. AK 99518		Report To: BRYAN LUND																			
Telephone: 907-563-8102		Invoice To: BRYAN LUND																			
Fax: 907-563-4574		P.O. Number: 4034030008																			
Email: B.LUND@mactec.com																					
Sample ID		Date Collected	Time collected	Matrix	# Containers																
					VQA	ILAE	12.5ml														
RF																					
03RDV MW10		9/22/03	1542	H₂O	2	1	1	X	X	X											
03RDV MW1		9/22/03	1725	H₂O	2	1	1	X	X	X											
03RDV MW10		9/22/03	1728	H₂O	2	1	1	X	X	X											
03RDV MW7		9/23/03	1635	H₂O	2	1/2	1	X	X	X											
TRIP BLANK x WATER TEMP								X													

COMMENTS samples (all H₂O) very turbid @ time of sampling; 03RDV MW7 VERY TURBID; not enough recharge to sample for all parameters only 1/2 liter for AK102/103
 O-AEL D-SE
 10 Business Days **Standard**
 15 Business Days **TAT**
 other _____ # Business Days
 (Prior Authorization Required.)

RELINQUISHED BY SAMPLER:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:	Cooler Receipt Information
Signature: R Farrage	Signature: S Finnegan	Signature: S Finnegan	Signature: Dolan Wheeler	Temp Received: 2.1 °C
Printed Name: R. FARRAGE	Printed Name: S. FINNEGAN	Printed Name: S. FINNEGAN	Printed Name: Dolan Wheeler	Temp Received: 4.2 °C
Firm: MACTEC	Firm: MACTEC	Firm: MACTEC	Firm: MAI	Coolers: 2
Date/Time: 9/25/03 11AM	Date/Time: 9/24/03 9:30AM	Date/Time: 9/24/03 11:45	Date/Time: 9-24-03 11:45	Seals: 2 SF
				Means of Delivery / Way Bill # Clint

Relinqu-DW 9-29-03 1pm, 4pm



Cooler Receipt Form

AAI-ANCHORAGE

Client: Mactec Engineering & Consul Client Code: 010400
Project: Red Devel AST/

Order #: A0309186

Cooler ID: 1

A. Preliminary Examination Phase:

Date cooler opened: 9/26/2003
Cooler opened by: dw

Signature: D. Wheeler

- 1. Was airbill Attached? No Airbill #: Carrier Name: Client
- 2. Custody Seals? Yes How many? 2 Location: LID Seal Name: SF
- 3. Seals intact? Yes
- 4. Screened for radiation? N/A
- 5. COC Attached? Yes Properly Completed? Yes Signed by AEL employee? Yes
- 6. Project Identification from custody paper: RED DEVIL AST
- 7. Preservative: BlueGel Temperature: 2.4

Designated person initial here to acknowledge receipt: DW

Date: 9-29-03

COMMENTS: 2 COOLERS RECEIVED AT AAI 2.4, 4.2

B. Log-In Phase: Samples Log-in Date: 9/29/2003 Log-in By: dw

Signature: D. Wheeler

- 1. Packing Type: Bubblewrap
- 2. Were samples in separate bags? Yes
- 3. Were containers intact? Yes Labels agree with COC? Yes
- 4. Number of bottles received: 19 Number of samples received: 5
- 5. Correct containers used? Yes Correct preservatives added? Yes
- 6. Sufficient sample volume? Yes
- 7. Bubbles in VOA samples? No
- 8. Was Project manager called and status discussed? No
- 9. Was anyone called? No Who was called? _____ By whom? _____ Date: _____

COMMENTS: Samples very turbid at time of sampling 03RDVMW7 very turbid; not enough recharge to sample for all parameters. Only .5 liter for aK102/103. R.Farrage with Mactec 9/25/03



Cooler Receipt Form

AEL-THORNTON

Client: Mactec Engineering & Consul Client Code: 010400
Project: Red Devel AST/

Order #: A0309186

Cooler ID: 2

A. Preliminary Examination Phase:

Date cooler opened: 9/30/2003
Cooler opened by: RA

Signature: [Handwritten Signature]

- 1. Was airbill Attached? Yes
2. Custody Seals? Yes
3. Seals intact? Yes
4. Screened for radiation? N/A
5. COC Attached? N/A
6. Project Identification from custody paper: Red Devel AST/
7. Preservative: BlueGel
Temperature: 2.3

Designated person initial here to acknowledge receipt:

[Handwritten Initials] Date: 9-30-03

COMMENTS:

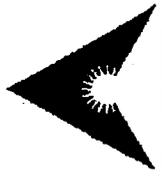
B. Log-In Phase:

Samples Log-in Date: 9/30/2003 Log-in By: dm

Signature: [Handwritten Signature]

- 1. Packing Type: Bubblewrap
2. Were samples in separate bags? No
3. Were containers intact? Yes
4. Number of bottles received: 4
5. Correct containers used? Yes
6. Sufficient sample volume? Yes
7. Bubbles in VOA samples? N/A
8. Was Project manager called and status discussed? No
9. Was anyone called? No

COMMENTS:



ANALYTICA GROUP
www.analyticagroup.com

811 W. 8th Ave.
Anchorage, AK 99501
(907) 258-2155
FAX: (907) 258-8834
AEL-THORNTON

6438 Shauna Drive
Juneau, AK 99801
(907) 780-6689
FAX: (907) 780-5670

12189 Pennsylvania Street
Thornton, CO 80241
(303) 469-8868
FAX: (303) 469-5254

No 30382
LGN: A0309186
Quote:
Project ID #:

Chain of Custody Record / Analysis Request

Company Name: MACTEC	Project Name: RED DEVIL AST	Sample ID	Date Collected	Time collected	Maxtx	# Containers			MS / MSD	Preserved?	Highly Concentrated?	LAB ID
						VOL	1Ltr	125ml				
Company Address: 601 EAST 57th PLACE ANC. AK 99518	Report To: BRYAN LUND		9/22/03 1542 hrs	2	1	1	X	X	X			
Telephone: 907-563-8102	Invoice To: BRYAN LUND		9/22/03 1725 hrs	2	1	1	X	X	X			
Fax: 907-563-4574	P.O. Number: 4034030008		9/22/03 1728 hrs	2	1	1	X	X	X			
Email: B.LUND@mactec.com			9/23/03 1635 hrs	2	1	1	X	X	X			
RF												
ESBND O3EDV MW10												
O3EDV MW1												
O3EDV MW10												
O3EDV MW17												
TRIP BLANK v WATER TEMP												

COMMENTS: samples (one H2O) very turbid @ time of sampling; O3EDV MW17 VERY TURBID; not enough recharge to sample for all parameters only 1/2 liter for AK-1021103
O-AEL D-SE

RELINQUISHED BY SAMPLER:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: <u>[Signature]</u> Printed Name: <u>S. FINNIGAN</u> Firm: <u>MACTEC</u>			
Date/Time: <u>9/22/03 11:00</u>	Date/Time: <u>9/22/03 11:45</u>	Date/Time: <u>9/22/03 11:45</u>	Date/Time: <u>9/22/03 10:00</u>

Temp Received: 4.2 °C
Temp Received: 4.2 °C
Coolers: 2 SF
Seals: 2 SF
Means of Delivery / Way Bill #
[Signature]

10 Business Days
 15 Business Days
 Other: Standard TAT # Business Days
(Prior Authorization Required.)

Cooler Receipt Information

ANALYTICA GROUP

811 W. 8th Ave.
Anchorage, AK 99501
(907) 258-2155
FAX: (907) 258-8534

5438 Shaune Drive
Juneau, AK 99801
(907) 780-8688
FAX: (907) 780-8570

12189 Pennsylvania Street
Thornton, CO 80241
(303) 469-8888
FAX: (303) 469-5254

No 30382

LAB ID: AD309186
 Quote: AD309186
 Project ID #:

Chain of Custody Record / Analysis Request

www.analyticagroup.com AISE-JUNEAU

Company Name: MACTEC	Project Name: RED DEVIL AS	Date Collected	Time collected	Matrix	# Containers		MS / MSD	Preserved?	Highly Concentrated?	LAB ID
					VOL	1/2				
Company Address: 601 EAST 57th PLACE ANC. AK 99518	Report To: BRYAN LUND	9/22/03	1542 hrs	h2o	2	1		X		
Telephone: 907-563-8102	Invoiced To: BRYAN LUND	9/22/03	1725 hrs	h2o	2	1		X		
Fax: 907-563-4574	P.O. Number: 4034030008	9/22/03	1728 hrs	h2o	2	1		X		
Email: B.LUND@mactec.com		9/23/03	1635 hrs	h2o	2	1		X		
Sample ID										
RF										
03RDY MW10										
03RDY MW1										
03RDY MW10										
03RDY MW17										
TRIP BLANK & WATER TEMP										

GC/MS (HPL) (MS/MS)
 HPL/MS (HPL) (MS/MS)
 GC/MS (HPL) (MS/MS)
 METS INC. AS, SB, (MS/MS)

COMMENTS: Samples (one h2o) very turbid @ time of sampling; 03RDY MW17 VERY TURBID; not enough recharge to sample for all parameters only 1/2 liter for AK-102103 O-AEL D-SE

RELINQUISHED BY SAMPLER:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: <u>[Signature]</u> Printed Name: <u>S. FINNIGAN</u> Firm: <u>MACTEC</u> Date/Time: <u>9/22/03 9:30AM</u>	Signature: <u>[Signature]</u> Printed Name: <u>S. FINNIGAN</u> Firm: <u>MACTEC</u> Date/Time: <u>9/22/03 11:45</u>	Signature: <u>[Signature]</u> Printed Name: <u>S. FINNIGAN</u> Firm: <u>MACTEC</u> Date/Time: <u>9/22/03 11:45</u>	Signature: <u>[Signature]</u> Printed Name: <u>S. FINNIGAN</u> Firm: <u>MACTEC</u> Date/Time: <u>9/22/03 11:45</u>

10 Business Days Standard
 15 Business Days THT
 other: # Business Days
 (Prior Authorization Required.)

Cooler Receipt Information
 Temp Received: 21.1 °C 3.6 °C
 Temp Received: 4.2 °C
 Coolers: 3 SF
 Seals: 1 y-DW

Megs of Delivery / Way Bill #
Quint
 DHL # 8785380673

reling - DW 9/29/03 1:00 pm
 rec. by: Karan Schroeder 10/3/03 0905



Cooler Receipt Form

AAISE-JUNEAU

Client: Mactec Engineering & Consul Client Code: 010400
Project: Red Devil AST/

Order #: A0309186

Cooler ID: 3

A. Preliminary Examination Phase:

Date cooler opened: 10/3/2003
Cooler opened by: KS

Signature: *Kerwin Schmal*

- 1. Was airbill Attached? Yes Airbill #: DHL# 8785388673 Carrier Name: DHL
- 2. Custody Seals? Yes How many? 1 Location: Cooler Seal Name: DW
- 3. Seals intact? Yes
- 4. Screened for radiation? No
- 5. COC Attached? Yes Properly Completed? Yes Signed by AEL employee? Yes
- 6. Project Identification from custody paper: Red Devil AST
- 7. Preservative: BlueGel Temperature: 3.6

Designated person initial here to acknowledge receipt:

ML Date: 10/6/03

COMMENTS:

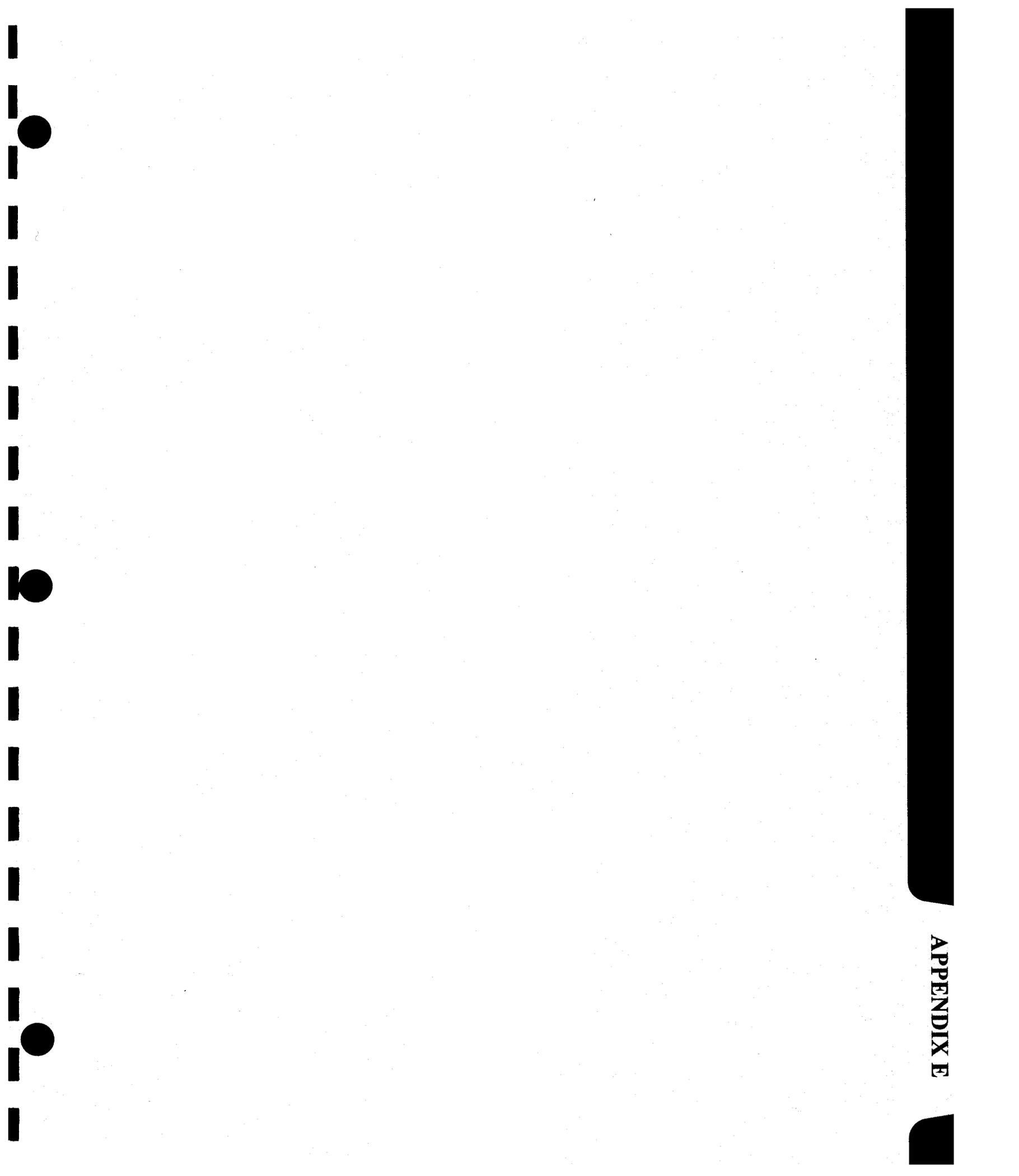
B. Log-In Phase:

Samples Log-in Date: 10/6/2003 Log-in By: ML

Signature: *[Signature]*

- 1. Packing Type: Other
- 2. Were samples in separate bags? No
- 3. Were containers intact? Yes Labels agree with COC? Yes
- 4. Number of bottles received: 4 Number of samples received: 4
- 5. Correct containers used? Yes Correct preservatives added? Yes
- 6. Sufficient sample volume? Yes
- 7. Bubbles in VOA samples? N/A
- 8. Was Project manager called and status discussed? No
- 9. Was anyone called? No Who was called? _____ By whom? _____ Date: _____

COMMENTS:



APPENDIX E
PROPOSED CLEANUP LEVELS

**Proposed Cleanup Levels
BLM Red Devil Aboveground Storage Tanks**

The proposed cleanup levels presented in the table below are based on site-specific data collected by MACTEC Engineering and Consulting, Inc. (MACTEC); calculations performed by the Alaska Department of Environmental Conservation (ADEC); and calculations performed by MACTEC. This table was originally presented in ADEC comments to the Bureau of Land Management (BLM) regarding the draft petroleum release investigation report prepared by MACTEC for the BLM.

Contaminant of Concern	Cleanup Level (mg/kg)	Governing Risk-Based Pathway	Maximum Level Found Onsite (mg/kg)
GRO	1,380	Migration to Groundwater	214 / 120
DRO	1,190	Migration to Groundwater	22,900 / 3,400
RRO	10,000	Ingestion	194 / 12
Benzene	0.087	Migration to Groundwater	0.095 / 0.053
Toluene	25.2	Migration to Groundwater	0.16
Ethylbenzene	25.7	Migration to Groundwater	0.18
Total Xylenes	362	Migration to Groundwater	2.3
Naphthalene	21	Migration to Groundwater	0.4
Phenanthrene	4,300	Migration to Groundwater	0.15

1. The values listed for gasoline-range organics (GRO), diesel-range organics (DRO), residual-range organics (RRO), and benzene show results from both the 2000 and 2003 sampling events: 2000 result/2003 result. The remaining contaminants of concern levels are only from 2003.

DISTRIBUTION

Aboveground Storage Tanks/Ore Hopper Demolition and
Petroleum Release Investigation
Red Devil Mine
Red Devil, Alaska

June 11, 2004

1 Copy: Mr. Wayne Svejnoha
U.S. Department of the Interior
Bureau of Land Management
Alaska State Office
222 West Seventh Avenue, #13
Anchorage, Alaska 99513-7599

3 Copies: Mr. Larry Beck
U.S. Department of the Interior
Bureau of Land Management
Anchorage Field Office
6881 Abbot Loop Road
Anchorage, Alaska 99507

1 Copy: Project File

1 Copy: Bound Report File

Quality Control Reviewer


Jason E. Ditsworth, P.E.
Civil Engineer - 10185

owc
TE/cc/A0223R