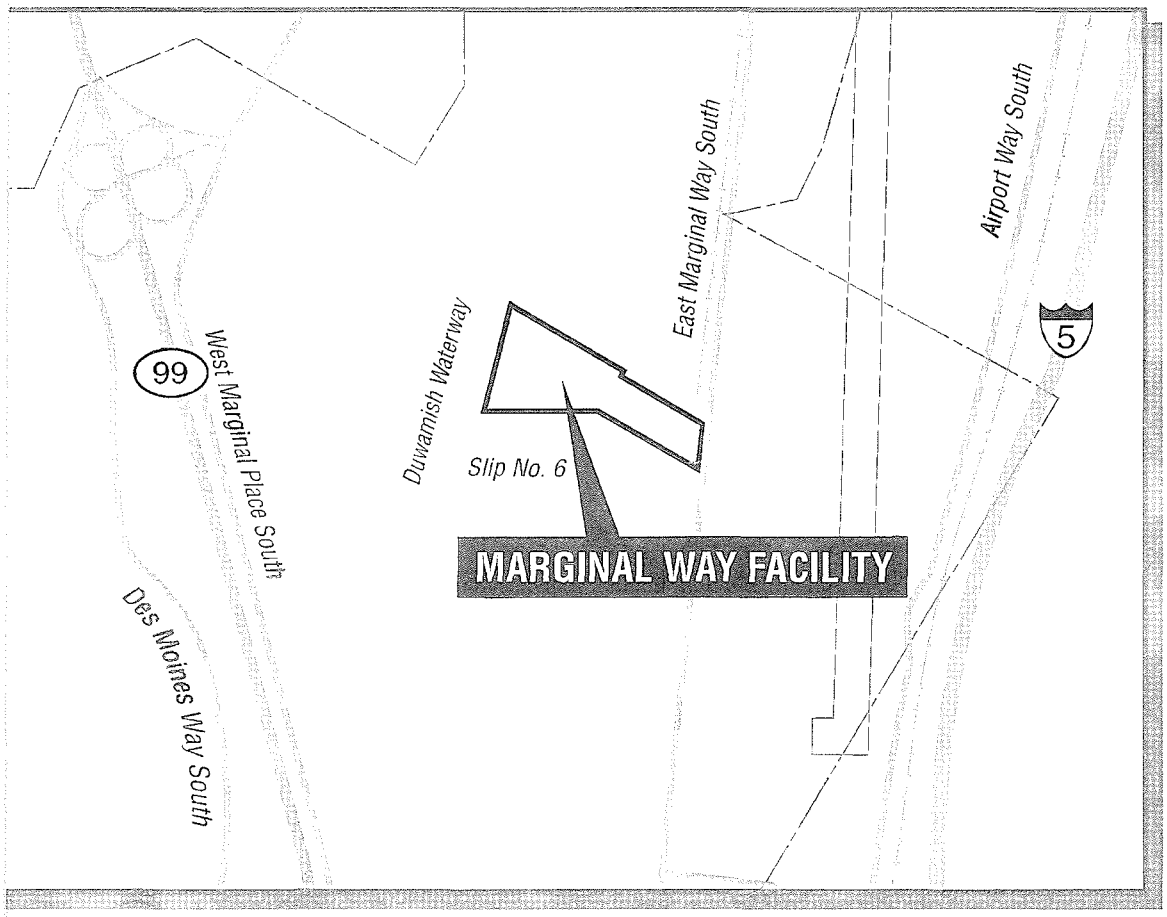
Volume III: Appendices

RCRA Facility Investigation (RFI) Report

for the

Marginal Way Facility *Tukwila, Washington*



Prepared for

U.S. Environmental Protection Agency, Region 10

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CONTENTS

Appendix A:	RFI Field Sampling Plan
Appendix B:	Addendum to the RFI Workplan
Appendix C:	Modifications to Methods and Procedures Specified in the RFI Workplan
Appendix D:	RFI Database of Detected Results
Appendix E:	RFI Soil and HydroPunch Boring Logs
Appendix F:	Geologic and Construction Logs for pre-RFI and RFI Monitoring Wells
Appendix G:	RFI Survey Data
Appendix H:	Results of Physical Property Tests for Soil
Appendix I:	Comparison of Toluene in Groundwater for Samples Collected with Waterra Pumps and Bailers
Appendix J:	Data Review of Arsenic and PAH Occurrences in the Vicinity of RPI's Marginal Way Facility
Appendix K:	Supporting Information for Fate and Transport Analyses

APPENDIX A

RFI Field Sampling Plan

Appendix A
RFI Field Sampling Plan
(Section 5 of the RFI Workplan)

Section 5
Field Sampling Plan

This Field Sampling Plan describes the methodologies for collecting environmental samples and hydrogeologic data from the Facility during the RFI. Sample collection methods are described for soils, sediments, seeps, groundwater, and air. In addition, procedures for drilling and well construction, aquifer testing, and water level monitoring are included. Other RFI elements addressed in the plan include a sample identification numbering scheme, field documentation, equipment decontamination procedures, and surveying.

5.1 Soil Investigation Methods

Soil Sampling Locations. Soil samples will be collected from a minimum of 7 sampling locations within each of the 10 soil investigation areas and the one background area at the Facility. Two soil sample collection methods will be used, depending on the final sampling depth. Surficial (zero to 0.5-foot) soil samples will be collected using a decontaminated stainless-steel spoon. Locations where both shallow (zero to 0.5-foot) and deeper (7- to 9-foot) soil samples will be collected will be sampled using a hollow-stem-auger drilling rig to drive a 3-inch-outside-diameter split-spoon sampler. Sample locations are arranged in a regular grid pattern with a randomly-chosen starting point for each area (with the exception of areas A4 and A10) as shown in Figures 4-3 through 4-14 in Section 4.

Soils Physical Properties Testing. Approximately 140 to 170 soil samples will be collected at the Facility during the RFI soil investigation. Selected soil samples will be tested to supplement field observations and to assess the general physical and hydraulic properties of subsurface soils. Basic classification tests (moisture content, dry density, and particle size analysis) will be conducted for selected samples representative of the stratigraphic units encountered during the soil investigation. In addition to the basic classification tests noted above, permeability testing will be performed on samples from aquitard stratigraphic units. Table 5-1 summarizes the physical parameter testing of soils at the Facility.

All soil samples will be visually examined by a CH2M HILL field representative at the time of sample collection. The soil samples will be described and classified based on the Unified Soil Classification System (ASTM 2488-89) and the professional judgment of the CH2M HILL representative. Selected soil samples will be tested for particle size distribution and hydrometer analysis to confirm the field classification of the samples and to more accurately describe the particle size distribution than is possible in the field. The particle size analysis will be performed in general accordance with ASTM D-422-63. These tests will be performed to support the identification and screening of potential remedial alternatives.

Table 5-1 Summary of Physical Parameter Analyses for the Soil Investigation		
Investigation Area	**Sampling Interval**	**Analyses**
A2	Perching layer	Grain size (sieve, hydrometer) ASTM-D422, lab permeability
	Upper Aquifer	Grain size (sieve, hydrometer) ASTM-D422, dry density, total organic carbon (Method 9060), cation exchange capacity (Method 9080 or 9081)
	Aquitard layer	Grain size (sieve, hydrometer) ASTM-D422, lab permeability
A4	Perching layer	Grain size (sieve, hydrometer) ASTM-D422, lab permeability
	Upper Aquifer	Grain size (sieve, hydrometer) ASTM-D422, dry density, total organic carbon (Method 9060), cation exchange capacity (Method 9080 or 9081)
	Aquitard layer	Grain size (sieve, hydrometer) ASTM-D422, lab permeability
A5	Upper Aquifer	Grain size (sieve, hydrometer) ASTM-D422, dry density, total organic carbon (Method 9060), cation exchange capacity (Method 9080 or 9081)
A9	Upper Aquifer	Grain size (sieve, hydrometer) ASTM-D422, dry density, total organic carbon (Method 9060), cation exchange capacity (Method 9080 or 9081)

Moisture content and dry-density tests will be conducted on selected samples to evaluate the in-situ moisture content and the associated dry unit weight (dry density) of each soil sample. The moisture content of a sample will be determined in general accordance with ASTM D-2216-80. The dry-density weight will be calculated on the basis of the moisture content and the sample volume. Porosity can then be calculated using the following formula:

$$Porosity(n) = 1 - \frac{\gamma_d}{G_s}$$

where:

γ_d = dry density (lb/ft^3)
G_s = specific gravity of soil (lb/ft^3)

Constant-head permeability tests will be conducted on selected samples from aquitard units containing finer-grained silts and clays. The tests will be conducted in general accordance with the U.S. Army Corps of Engineers EM110-2-1906, Appendix VII.

Soil Sampling Analytes. Analytical parameters to be included in the Phase I soil sampling event are specific to each investigation area. They have been selected based on past practices, as well as the frequency with which they were detected in previous investigations. Parameters for each area include a subset of the following: metals and cyanide, volatiles, semivolatiles, pesticides/PCBs, vanillin, isopropyl alcohol, and formaldehyde. The specific analyses to be performed in each investigation area are listed in Table 5-2. Table 5-3 lists the method number, type of container, sample preservative, and sample holding time associated with each analysis.

Parameters may be added or deleted from the list of analytes as additional data are collected and the understanding of the soil chemistry at the Facility increases. Parameters to be analyzed in a second phase of soil sampling, if needed, will be based on results from the first phase. Sampling procedures to be followed at the Facility are listed below.

Soil Sample Collection Procedures. Much of the Facility is covered with concrete foundations and slabs or asphalt. Soil samples from locations that are below existing concrete structures will be collected by using a concrete coring saw, a jackhammer, or another tool to break up the concrete to gain access to the underlying soil. If the concrete is cored or sawed, a special dry bit or blade will be used so that water, used to cool conventional blades, will not affect the chemistry of the soil beneath the concrete.

Asphalt will be removed from sampling locations using a decontaminated pick axe or a dry asphalt saw to gain access to the underlying soil. Much of the asphalt and underlying granular fill (sand) at the Facility was placed after plant demolition. Granular fill material that was placed beneath the asphalt after plant operations were discontinued will be removed prior to sampling, to expose soil at pre-demolition grade. The pre-demolition Facility grade will be used as the datum for sample depths in the underlying soil.

Soil Sampling Procedures. Soil samples will be collected from the upper 0.5 foot of soil in investigation areas A1, A3, A5, A6, A8, A9, and A10. In areas A2, A4, A7, and the background area BG, soil samples will be collected from the upper 0.5 foot of soil and at selected intervals to a depth of 9 feet (as described below). Samples will be collected by first removing any cover material (e.g., concrete or asphalt) using the procedures discussed above. At sampling locations where only shallow samples will be collected, a decontaminated stainless-steel spoon will be used to collect a sample from the zero to 0.5-foot interval. At sampling

Table 5-2
Soil Sampling Analytes by Investigation Area

Investigation Area	Metals	Volatiles	Semivolatiles	Pesticides/ PCBs	Vanillin	Formaldehyde	Isopropyl Alcohol	Pentachlorophenol	TPH
A1/Boneyard/ Distribution Center	x	x				x		x	
A2/Vanillin Production Area	x	x	x		x		x		
A3/Laboratory and Compressor Area	x	x		x[a]					x
A4/Toluene Area	x	x	x						
A5/Tank Farm	x	x		x	x		x		
A6/Maintenance Shop	x	x				x			x
A7/Former Railroad Loading/ Unloading Area	x	x							
A8/Former Maintenance Area	x	x							x
A9/Non-process Area	x	x							
A10/Spill Control Reservoir and Sumps	x	x							
BG/Background Area	x	x	x (PAH)			x			

[a]Soil samples around the former compressor locations will be analyzed for PCBs.

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Table 5-3
Soil Sample Locations, Analyses, Bottle Types, and Holding Times

Investigation Area	Analysis/Method Number	Bottle Type	Holding Time
A1/Boneyard/ Distribution Center	metals/6010/CLP volatiles/8240/CLP pentachlorophenol/ formaldehyde/8315	8 oz CWM 4 oz CWM 16 oz CWM 16 oz CWM	6 months 14 days 7 days[1] 7 days[1]
A2/Vanillin Production Area	metals/6010/CLP volatiles/8240/CLP semivolatiles/8270/CLP vanillin isopropyl alcohol/8015 modified	8 oz CWM 4 oz CWM 16 oz CWM	6 months 14 days 7 days[1]
A3/Laboratory and Compressor Area	WTPH/418.1 (modified) metals/6010/CLP volatiles/8240/CLP PCBs/8080/CLP chlorinated benzenes/8270/CLP	8 oz CWM 8 oz CWM 4 oz CWM 8 oz CWM	14 days 6 months 14 days 7 days[1]
A4/Toluene Area	metals/6010/CLP volatiles/8240/CLP semivolatiles/8270/CLP	8 oz CWM 4 oz CWM 16 oz CWM	6 months 14 days 7 days[1]
A5/Tank Farm	isopropyl alcohol/8015 modified metals/6010/CLP volatiles/8240/CLP pesticides/PCB/8080 vanillin/8270/CLP	4 oz CWM 8 oz CWM 4 oz CWM 8 oz CWM 16 oz CWM	14 days 6 months 14 days 7 days[1] 7 days[1]
A6/Maintenance Shop	WTPH 418.1 (modified) metals/6010/CLP volatiles/8240/CLP formaldehyde/8315	8 oz CWM 8 oz CWM 8 oz CWM 16 oz CWM	14 days 6 months 14 days 7 days[1]
A7/Former Railroad Loading/Unloading Area	metals/6010/CLP volatiles/8240/CLP	8 oz CWM 4 oz CWM	6 months 14 days
A8/Former Maintenance Area	metals/6010/CLP volatiles/8240/CLP WTPH 418.1 (modified)	8 oz CWM 4 oz CWM 8 oz CWM	6 months 14 days 14 days
A9/Non-process Area	metals/6010/CLP volatiles/8240/CLP	8 oz CWM 4 oz CWM	6 months 14 days
A10/Spill Control Reservoir and Sumps	metals/6010/CLP volatiles/8240/CLP	8 oz CWM 4 oz CWM	6 months 14 days
BG/Background Area	volatiles metals/6010/CLP formaldehyde/8315 semivolatiles (PAH)/8270/CLP	4 oz CWM 8 oz CWM 16 oz CWM 16 oz CWM	14 days 6 months 7 days[1] 7 days[1]

[1]Sample holding time is 7 days until extraction, 40 days after extraction.

locations where shallow and deeper samples will be collected, a hollow-stem-auger drilling rig equipped with a 300-pound drop hammer to drive decontaminated steel split-barrel samplers. The split-barrel samplers will be approximately 24 inches long with a 3-inch outside diameter. Sampling will be continuous from the surface to 9 feet bgs.

Split-barrel samplers will be opened on clean polyethylene sheeting. The soil column in the sampler will be cut lengthwise using a decontaminated stainless-steel knife or spoon handle. A photoionization detector (PID) will then be used to screen for areas of high volatile organics concentrations within the sample interval. PID readings and their corresponding depths will be recorded in the field notebook.

Each sample will be field-screened for volatile organics by performing headspace analyses using a PID. To perform the headspace analysis, a representative portion of the soil sample will be sealed in a Ziplock™ bag and allowed to volatilize for 10 minutes. At the end of the 10-minute period, the tip of the PID will be inserted through the bag and a volatile organics concentration will be measured and recorded in the field notebook. Laboratory results will be correlated with the results of PID field screening of all sample depths to yield estimated concentrations of volatile organics for soil samples not analyzed in the laboratory.

Samples will be collected for laboratory analysis from zero to 0.5 foot and from the two intervals with the highest PID headspace results in each boring. If the zero to 0.5-foot interval is one of the two highest headspace results, only one additional (deeper) soil sample will be collected for laboratory analysis (a total of two samples per borehole). If the zero to 0.5-foot interval is not one of the two highest headspace results, two additional (deeper) samples will be collected (a total of three samples per borehole). If headspace analysis results indicate no contamination, or headspace readings are equal throughout the borehole, samples will be collected for laboratory analysis from the zero to 0.5-foot interval and 7- to 9-foot interval (a total of two samples per borehole).

Any "slough" in the sampler that is not representative of the soil formation will be excluded from the sample. Zero to 0.5-foot samples will be collected from the upper 0.5 foot of soil (excluding slough) in the sampler.

Samples for volatile organic analysis from the split-barrel sampler will be collected by splitting the sample tube and collecting representative soil from the interior of the soil core over the entire sampling interval. Volatile organics samples will be collected first and will be transferred directly from the environment or the split-barrel sampler to a pre-labeled, laboratory-prepared sample container without homogenization.

Samples collected for other (nonvolatile) analyses will be collected by mixing the remaining sample material in a decontaminated stainless-steel bowl until it is visually homogeneous. Following homogenization, samples will be transferred to appropriate laboratory-prepared, pre-labeled sample containers using a decontaminated stainless-steel spoon. All filled sample jars will be stored in an iced cooler at 4°C until delivery to the laboratory.

The following information will be recorded in the field logbook for each sample collected:

- Date (start and finish) of drilling or hand-augering
- Monitoring well or soil boring number
- Geologic sample depth and time collected
- Blow counts per 6-inch interval of sampler
- Sampler penetration and sample recovery lengths
- Visual evidence of contamination
- Description of layering, mottling, or other features
- Description of soil type (ASTM-2488-89)
- PID readings within the sample interval
- Results of the headspace analysis

5.2 Sediments and Seeps Investigation Methods

5.2.1 Sediment Investigation Methods

Sediments in the offshore investigation area A11 along the western portion of the Facility will be collected for the analytes presented in Table 5-4.

Table 5-4
Analytes, Method Numbers, Bottle Types, Preservatives, and Holding Times for Sediment Samples

Analysis	Method Number	Container Type	Sample Preservative	Holding Time
Semivolatile Organics	8270/CLP	16-oz. clear wide mouth	Iced to 4°C	7 days to extraction, 40 days after extraction
Metals	6010/CLP	8-oz clear wide mouth	Iced to 4°C	6 months
PCBs	8080/CLP	8-oz clear wide mouth	Iced to 4°C	7 days to extraction, 40 days after extraction

Sediment samples will be collected from the intertidal zone during low tide using a decontaminated stainless steel flat bottom scoop. The scoop will be used to collect grab sediment samples at each sampling location from a depth of zero to 2 centimeters below mudline. Each sediment sample will be placed in a decontaminated stainless steel bowl for homogenization. The remaining sediment material will be mixed to visible uniformity using the stainless steel scoop, then transferred to laboratory-cleaned, pre-labeled sample jars with

Teflon-lined lids. All filled sample jars will be stored in an iced cooler at 4°C until delivered to the laboratory.

Sediment samples from continuously submerged areas will be collected during low tide using a decontaminated stainless steel Van-Veen or Ponar dredge. The sampling device will be lowered from a boat into the underlying sediment. It is expected that sediment from approximately 2 to 5 centimeters below mudline can be collected using these sampling devices. The filled sampling dredge will be raised to the boat using a hand-operated or electric winch. For the remaining analyses, the remaining sediment will be mixed to visible uniformity in a decontaminated stainless steel bowl and then placed into laboratory-cleaned, pre-labeled sample jars using a decontaminated stainless steel spoon. All filled sample jars will be stored in an iced cooler at 4°C until delivered to the laboratory.

Sediment samples will be analyzed for the parameters listed in Table 5-4.

All sampling equipment will be decontaminated following the procedures listed in Section 5.6.4, Equipment Decontamination.

5.2.2 Seep Investigation Methods

Groundwater seeps have been observed in the shoreline area at the southern end of investigation area A11. Landau (1991) documented and sampled three seeps in that general area. The seeps documented by Landau were designated Seeps 1, 2, and 3. The current status of the seeps was investigated during a Facility reconnaissance conducted on May 6, 1993, to identify potential interim measures. At the time of the site visit, Seep 1 could not be located but may have been under water. Seeps 2 and 3 appeared to be dry. One small seep, slightly tinted brown, was visible north of Seep 2 and west of Seep 3. Other groundwater seeps observed along the banks of the Duwamish Waterway were not discolored.

The existence of seeps will be investigated during sediment sampling and after a large rainfall event. If seeps are noted, their discharge will be sampled (up to seven samples) by holding a laboratory-prepared, pre-labeled sample bottle under the flowing water until the bottle is filled. Water collected from groundwater seeps will be analyzed for the following analytes:

- Volatiles
- Semivolatiles
- Metals (copper, chromium III and VI, manganese, and iron)

- Common ions (alkalinity as $CaCO_3$, carbonate/bicarbonate, nitrate, total Kjeldahl nitrogen (TKN), total dissolved solids (TDS), total organic carbon (TOC), sulfate, sulfide, phosphorus, and chloride

- Formaldehyde

One seep sample will be analyzed for Appendix IX parameters.

5.3 Groundwater Quality Investigation Methods

The groundwater quality investigation of the Facility is composed of two major elements and several sub-elements associated with each. The major elements of the groundwater quality investigation along with the associated sub-elements are:

- An investigation of hydrogeology (hydrostratigraphy and aquifer hydraulics)
  - Drilling and well construction
  - Groundwater level and tidal monitoring
  - Single-well aquifer testing (slug tests)

- An investigation of groundwater quality
  - Investigation of toluene and LNAPL in the MW-12 area (Hydro-Punch survey)
  - Investigation of groundwater where Black Liquid is present for chromium
  - Monitoring well sampling

The methodologies and procedures associated with these groundwater quality investigation elements are described in the sections that follow.

5.3.1 Hydrogeologic Investigation Methods

Currently, there are 30 monitoring wells and 37 shallow soil boring locations at the site. Additional wells will be installed if necessary based on the results of the initial RFI activities. At a minimum, data from the soil investigation (Section 4.2), the HydroPunch investigation (Section 4.5), and the first round of groundwater sampling (Section 4.5) will be used to locate any new monitoring wells considered necessary. Any additional well(s) will be installed following the procedures outlined below.

Drilling and Geologic Sampling. Monitoring wells (if needed) or soil borings scheduled for the vadose zone of the upper aquifer will be drilled using hollow-stem-auger drilling equipment. Drill cuttings will be collected, placed in 55-gallon drums, and stored onsite pending the results of soil analyses. Soil analysis results will be evaluated to determine a proper disposal method for the drummed drill cuttings.

The drill cuttings drums will be labeled as follows:

- Drum identification number (sequential)
- Drum contents (soil, sediment)
- Source of drum contents (borehole or well number and depth interval)
- Date of drilling

The site hydrogeologist will be responsible for establishing monitoring well locations in the field, directing drilling activities, logging the hydrostratigraphy observed at each boring (using split-barrel soil samplers) and observing that the monitoring wells are installed to Washington State standards as set forth in WAC 173-160. The site hydrogeologist will also keep a daily log of all activities performed and materials used that will be reconciled with the drilling contractor at the end of each work day.

Soil samples will be collected at a maximum depth interval of 2-1/2 feet as an aid to geologic logging. Samples for chemical analysis will be collected using a decontaminated 3-inch-outside-diameter by 24-inch-long split-barrel sampler. Additional samples will be collected at all changes in lithology, and at depth intervals specified by the site hydrogeologist. The split-barrel sampler will be decontaminated following the steps outlined in Section 5.6.4, Equipment Decontamination. The following information will be recorded in the field notebook for each sample collected:

- Monitoring well or borehole number
- Geologic sample depth and time collected
- Blow counts per 6-inch interval of sample penetration
- Recovery lengths or percent recovery
- Visual evidence of contamination
- Description of layering or other features
- Description of soil following ASTM D2488-89 guidelines

Geologic soil samples collected for physical properties testing will be retained in prelabeled sample jars. Handling of soil samples collected for laboratory analysis is discussed in Soil Sample Collection Procedures in Section 5.1.1.

Monitoring Well Installation, Construction, and Development. Upper Aquifer monitoring wells will be drilled using a hollow-stem-auger drilling rig. The rig will be equipped with 8-inch minimum inside-diameter augers for 4-inch-diameter wells or 6-inch minimum inside-diameter augers for 2-inch-diameter wells. Each boring will be logged following procedures outlined in Drilling and Geologic Sampling earlier in this section.

Upper Aquifer monitoring wells installed in the MW-12 area will be constructed of 4-inch-diameter, flush-threaded, Type 304 stainless steel well casing and screen. A 4-inch-diameter well will be constructed if it has potential use as an LNAPL or groundwater recovery well. It is anticipated that the well screen will be 15 feet of 0.010-inch (10-slot) or 0.020-inch (20-slot), flush-threaded, wire-wrapped, Type 304 stainless steel well screen.

A 10-foot length of screen may be used if the well is not screened across the water table. The well design includes a 2-foot-long Type 304, flush-threaded stainless steel sump with flush-threaded end cap as shown in Figure 5-1. Wells installed outside of the MW-12 area may be constructed of 2-inch-diameter, flush-threaded, Schedule 40 PVC using the same design. Screen slot sizes will be selected based on site-specific conditions and the grain-size distribution of the aquifer material. All well components will be steam-cleaned to the satisfaction of the site hydrogeologist prior to use.

The top of the screened interval will be placed approximately 5 feet above the highest anticipated water level in the Upper Aquifer for wells designed to monitor LNAPL thickness (15-foot-long screens will be used for wells screened across the groundwater table). The highest anticipated water level will be based on historical water levels measured in nearby wells. At other wells, the top of the screen will be placed at an elevation consistent with the target zone to be monitored.

Well casing will extend from the top of the screened interval to approximately 6 inches below ground surface and will have stainless steel centralizers installed immediately above and below the screened interval. A watertight, compression-fit, lockable well cap will be used to secure the well casing.

A sand filter pack consisting of Colorado Silica Sand Company No. 20-40 or 10-20 sand (or equivalent), depending on grain size distribution of aquifer material and screen slot size, will be installed from the bottom of the well to 3 feet above the top of the screened interval. The sand filter pack will be installed by pouring sand into the annulus between the well casing and the auger as the auger is withdrawn. A weighted tape will be used to check filter pack placement and depth during installation. Wells will be surged with a surge block to settle the sand filter pack. Additional sand will be added to bring the top of the sand pack up to design specifications after surging.

A minimum 2-foot-thick seal of hydrated bentonite chips will be installed in the annular space immediately above the sand filter pack. The annular space from the top of the bentonite plug to approximately 2 feet bgs will be filled with bentonite chips (hydrated as placed) or bentonite grout. On flush-mount wells, the remaining annulus will be filled with sand or pea gravel for drainage as shown in Figure 5-1. It is anticipated that most wells will be completed with flush-mount, watertight, heavy-duty steel or cast-iron monuments set in a sloping concrete pad. Depending on conditions at the well site, an above-ground well completion using 8-inch-diameter steel protective casing may be preferable. If the above-ground completion is used, a hole will be drilled in the side of the steel casing for drainage.

Monitoring wells will be developed after the bentonite seals in the wells are allowed to swell for a minimum of 24 hours. Wells will be developed using a combination of surging and air-lift pumping. In-line filters will be used to filter potential contaminants from the air stream directed into the eductor pipe. Well development will continue for a minimum

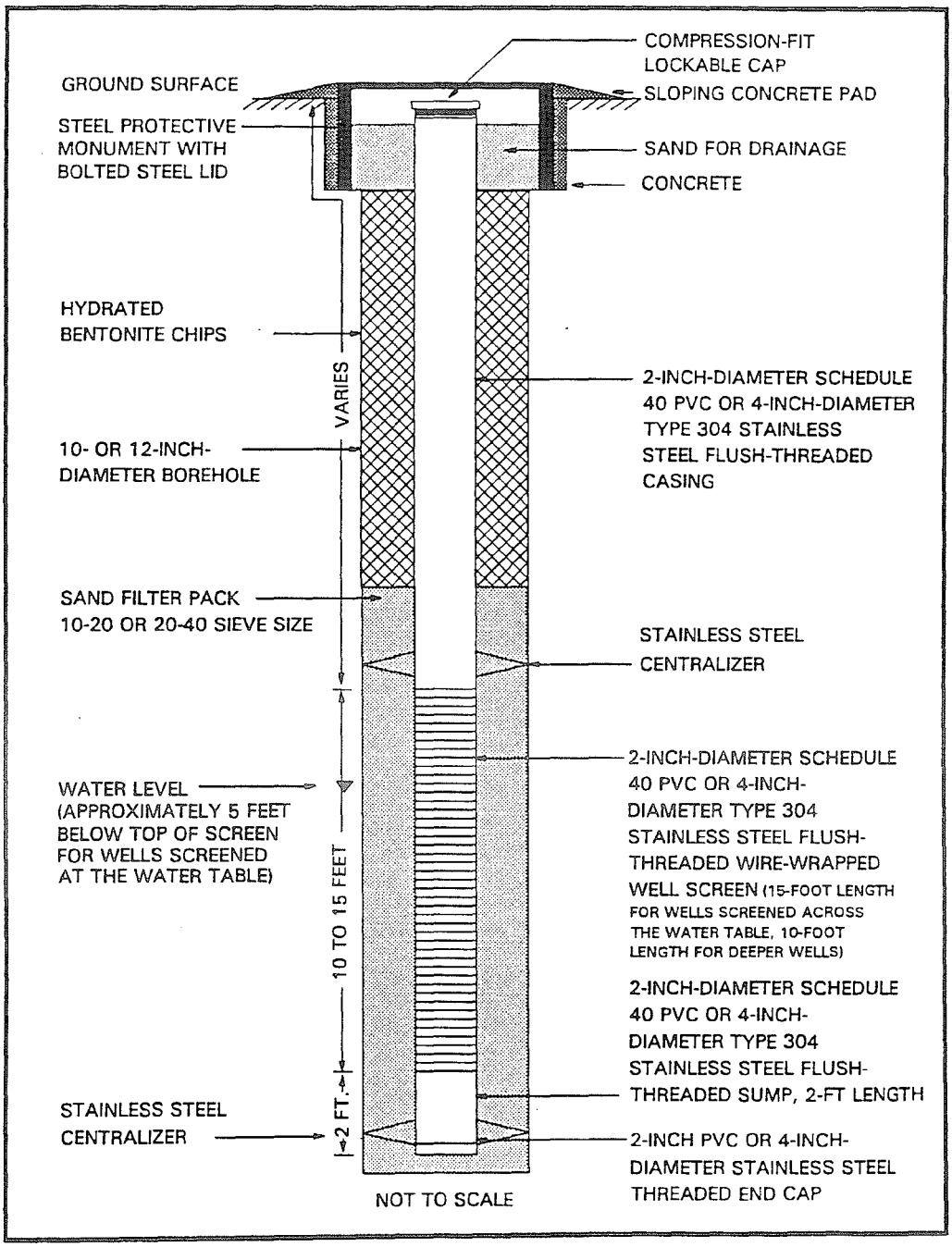


Figure 5-1
Generalized Design for Upper Aquifer Monitoring Wells

of one hour and then cease when the turbidity of the discharge water has decreased to the satisfaction of the site hydrogeologist.

All development tools or any other tool or device that is to be used inside a well will be decontaminated by steam cleaning to the satisfaction of the site hydrogeologist prior to use. Water generated by steam-cleaning will be collected and stored onsite pending discharge to Metro.

Groundwater Level and Tidal Monitoring. Water level elevations in the Duwamish Waterway and the upper portion of the Upper Aquifer, the lower portion of the Upper Aquifer, and the Lower Aquifer will be monitored over a 3-week period. This long-term monitoring will allow an evaluation of the tidal effects on groundwater elevations.

Monitoring well water levels will be collected using pressure-sensing transducers connected to electronic data loggers. Electronic water-level data will be collected at 15-minute intervals over a 3-week monitoring period. Data will be downloaded from the data loggers at the end of each week of the monitoring program. Water levels will be taken manually at least twice a week using an electronic water-level indicator and an oil-water interface probe to identify/quantify transducer drift. Transducers will be recalibrated as needed.

Pressure-sensing transducers will be calibrated at the beginning of the 3-week monitoring period and, at a minimum, twice weekly thereafter, following the manufacturer's calibration procedures. Water levels will be checked manually using an electronic water-level indicator and an oil-water interface probe to confirm calibration of the transducers.

Water levels will be corrected for the effects of LNAPL displacement using the equation below:

$$W_c = W_m + (L)\left(\frac{S_l}{S_w}\right)$$

where:

W_c	=	Water level elevation (corrected)
W_m	=	Water level elevation (measured)
L	=	LNAPL thickness
S_l	=	Specific gravity of LNAPL
S_w	=	Specific gravity of water

The monitoring network will include wells screened in the upper portion of the Upper Aquifer (i.e., monitoring the phreatic surface), the lower portion of the Upper Aquifer, and the Lower Aquifer. A list of proposed wells to be monitored for hourly water-level elevations along with construction details is presented in Table 5-5.

Table 5-5 Proposed Monitoring Wells for Water Level Monitoring			
Measurement Location	**Total Depth (ft)**	**Screened Interval (ft)**	**Aquifer**
DM-1A	27.10	7 to 27	Upper Aquifer
DM-1B	102.75	85 to 95	Lower Aquifer
DM-3A	27.10	7 to 27	Upper Aquifer
DM-3B	95.30	85 to 95	Lower Aquifer
B1A	16.70	6.7 to 16.7	Upper Aquifer
B1B	97.10	87.1 to 97.1	Lower Aquifer
DM-2A	29.00	9 to 29	Upper Aquifer
DM-2B	94.00	84 to 94	Lower Aquifer
H1	55.00	45 to 55	Lower Upper Aquifer[1]
H10	20.00	10 to 20	Upper Aquifer[1]

[1]Monitoring wells H1 and H10 are adjacent wells screened at the bottom and top of the Upper Aquifer, respectively.

The surface water elevation of the Duwamish River will be monitored at a stilling well to be installed in a secure location that is continuously submerged throughout the tidal cycle. The stilling well will be secured to a piling located near the end of the pier that extends into the Duwamish Waterway. The well will be constructed with PVC casing and a PVC piezometer tip, and located so that the piezometer tip remains submerged during low tide. The elevation at the top of the stilling well, or another suitable benchmark, will be surveyed to ± 0.01 feet. During the 3-week groundwater level monitoring program, the water level in the stilling well will be monitored continuously with a transducer and data logger.

Standard equipment decontamination steps as outlined in Section 5.6.4 will be modified for decontamination of transducers and other sensitive water-level logging equipment. The acid-rinse step has been removed to protect the equipment from potential damage caused by the acid. Transducers and transducer cables that will be inserted into monitoring wells will be decontaminated using the following procedures:

- Wash in solution of tap water and Alconox
- Spray-rinse with distilled and deionized water (ASTM Type II)

- Spray-rinse with acetone (pesticide-grade)
- Spray-rinse with distilled and deionized water (ASTM Type II)

Decontamination fluids will be collected and stored in an onsite holding tank pending discharge to Metro.

In addition to the 3-week water level monitoring program described above, manual water-level elevation measurements will be taken on one day using electronic water-level indicators in all onsite wells and in the Duwamish Waterway during the following tide stages:

- A daily peak high-tide event
- A daily peak low-tide event
- Between high tide and low tide (tide going out)
- Between high tide and low tide (tide coming in)

These manual water-level measurement events will occur during the 3-week water-level monitoring program. Water levels will be measured to the nearest 0.01 foot and will be recorded in field notebooks along with the time the measurement was made. Because aquifers may be tidally influenced at the site, water levels will be measured rapidly in a pattern starting with wells closest to surface water influences and ending with the background wells in the eastern portion of the site. All monitoring wells will be measured within a 1-hour period.

Slug Testing. A previous investigation by CH2M HILL (1991) included slug tests in five Upper Aquifer monitoring wells located in the central portion of the Facility. In order to obtain aquifer parameter data from other areas of the Facility and from the Lower Aquifer, slug tests will be performed on six existing monitoring wells, three in the Upper Aquifer and three in the Lower Aquifer. The Upper Aquifer wells are: DM-1A, DM-2A, and DM-3A. Lower Aquifer wells are: DM-1B, DM-2B, and DM-3B.

To perform the slug test, a known volume of water in each well will be displaced with a sealed and weighted pipe or "slug rod." The slug rod will be lowered nearly instantaneously into each well and recovery of the water level will be monitored over time using an electronic pressure transducer and a data acquisition unit. When the water level recovers to the pre-test static level, the slug rod will be removed and the rising head portion of the test will be monitored during each test with an electronic water-level indicator to provide backup and confirmatory data. All equipment lowered into a well will be decontaminated before each use following the decontamination steps listed in Section 5.6.4.

Data Analysis

Slug test data will be analyzed using the method described by Bouwer and Rice (1976) and Bouwer (1989). The analytical method is based on the Thiem equation and is applicable to partially penetrating wells screened in unconfined and confined aquifers. Three of the wells, DM-1A, DM-2A, and DM-3A, are .screened across the water table and the

unsaturated zone; therefore, only the rising head data will be used to estimate hydraulic conductivity in these wells. Both rising and falling head data will be used to estimate hydraulic conductivity for wells screened in the Lower Aquifer. The results of the rising and falling head data will be compared for consistency.

Using the Bouwer and Rice method, hydraulic conductivity is calculated by the following equation:

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2tL_e} \ln (y_o/y_t)$$

where:

K	=	hydraulic conductivity (ft/day)
R_e	=	effective radius over which the head difference is dissipated (ft)
r_w	=	borehole radius (ft)
r_c	=	well casing radius (ft)
L_e	=	screen length (ft)
y_o	=	head difference at time t_o (ft)
y_t	=	head difference at time t (ft)
t	=	time since y_o (days)

Bouwer and Rice present an empirical formula to calculate R_e based on the geometry of the aquifer, borehole, and well. For wells screened across the water table, an effective well casing radius (r_c) will be calculated using the method described by Bouwer (1989, p. 305) assuming a filter pack porosity of 0.30.

5.3.2 Groundwater Quality Investigation Methods

HydroPunch Survey

Introduction. Upper Aquifer groundwater in the vicinity of MW-12 (formerly MW-G5) will be investigated using a HydroPunch sampling device and a close-support analytical laboratory to evaluate the areal extent and concentration of toluene in groundwater and the limits of the Light Non-Aqueous Phase Liquid (LNAPL) at the site. Laboratory investigation of the LNAPL has identified it to be approximately 82 percent Peneteck oil (a mineral oil) and 11 percent toluene. Soil sampling in RFI investigation area A4, the Toluene Area (see Section 4.2), will occur concurrently with the groundwater investigation.

The 1991 Landau investigation indicated that toluene is present in groundwater in the vicinity of monitoring wells MW-12, B6, H11, and H10 (see Figure 2-6). In addition, the

presence of a LNAPL in wells MW-12, H10, and H11 has been documented by Landau (Figure 2-6). However, the lateral extent and concentration depth profile of the toluene and LNAPL were not evaluated during the Landau investigation.

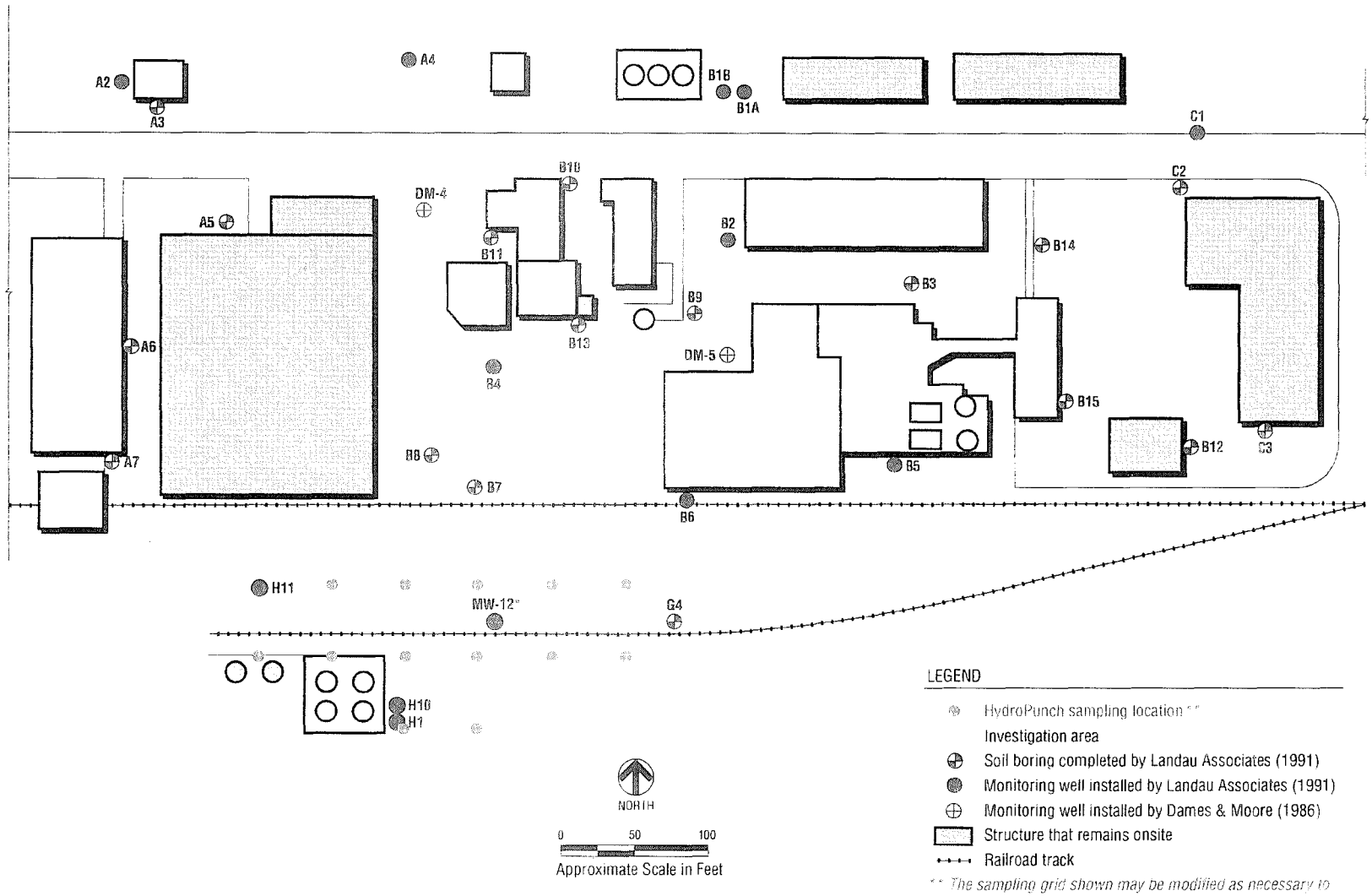
As part of the RFI, the lateral extent and concentration stratification of the toluene and LNAPL will be investigated using a HydroPunch sampling device to collect groundwater samples on 50-foot centers in a grid pattern. The proposed grid is shown in Figure 5-2. Headspace analysis and close-support laboratory results will be used as a tool to aid in assessment of plume boundaries while the investigation is occurring. Modifications to the grid may be made in the field based on accessibility, field screening of groundwater samples (headspace analysis), laboratory analysis results, visual indications of contamination, and professional judgment.

Toluene and LNAPL Delineation Investigation. The areal extent of the toluene and LNAPL at the Facility will be investigated using a HydroPunch to collect groundwater samples from up to four depth intervals at each sampling node in the Upper Aquifer.

At all HydroPunch sampling locations, samples will be collected from the Upper Aquifer water table. Groundwater (if encountered) will also be collected from the perched groundwater zone at a minimum of three locations. Perched groundwater may not be present at all locations. If LNAPL is encountered at the Upper Aquifer water table, a deeper groundwater sample will automatically be collected from the interval 6 to 10 feet below the water table. This sample will be collected to evaluate chemical parameter concentrations in the shallow groundwater without the influence of the LNAPL layer. If LNAPL is not encountered at the water table at a sampling location, a deeper sample (i.e., 6 to 10 feet below the water table) will not be collected.

Boreholes at approximately 20 percent of the HydroPunch sampling locations (regardless of the presence or absence of LNAPL) will be drilled deeper into the Upper Aquifer. The locations where the boreholes will be advanced deeper into the aquifer will be selected according to the need to estimate the vertical extent of contamination within the lateral extent of the plume, and to achieve good spatial coverage within the HydroPunch investigation area. Groundwater samples will be collected at approximately 15, 30, and 45 feet below the water table at these locations. The deeper samples will be collected to evaluate the vertical extent of groundwater contamination. These deeper groundwater samples will be in addition to the water table sample discussed in the previous paragraph. Three of the deeper HydroPunch sampling locations will be drilled 5 feet into the aquitard beneath the Upper Aquifer to confirm the lateral extent and minimum thickness of the aquitard. One of these three deeper borehole locations will be in the vicinity of well MW-12; the other two boreholes will be drilled at the east and west ends of soil investigation area A4.

In addition to groundwater sample collection, soil samples associated with the soil investigation (Section 4.2) will be collected at selected HydroPunch locations within area A4.



* Monitoring well MW-12 was installed by CH2M Hill in July 1993 to replace Landau Associates' well G5.

Figure 5-2
HydroPunch Survey Grid

Soil sampling procedures are outlined in Section 5.1, Soil Investigation Methods.

HydroPunch Sample Collection Methods. Prior to drilling, water level estimates will be made based on measurements from existing wells in the vicinity of the HydroPunch investigation. A hollow-stem-auger drill rig will be used to advance a borehole to approximately 2 feet above the planned sample interval. The HydroPunch sampling device will be inserted inside the augers and driven to the first sampling interval in the Upper Aquifer. Typically, this interval will be at the water table to detect LNAPL that may be present and to collect groundwater samples for field screening and laboratory analysis. After driving the HydroPunch to the first planned sampling depth, the sampler will be pulled back approximately 48 inches to expose the screened interval and allow formation water to fill the sampler (filling time varies according to submergence and formation yield). When the sampler has filled with water, a decontaminated bailer will be lowered through the HydroPunch drive rod to collect samples and provide an estimate of the thickness of the floating layer, if present.

Deeper samples collected at HydroPunch locations where LNAPL is detected present a special sampling problem. The potential for cross-contamination exists when the HydroPunch sampler is lowered through any LNAPL that may be present inside the augers before being driven to the target sample depth. To minimize the chance of contamination from the LNAPL entering the sampler, teflon tape will be used on the drive rod threads to prevent leakage into the sampler. In addition, the bottom 4 feet of the HydroPunch will be sealed in a large plastic bag secured to the sampler with a stainless steel hose clamp. The bag will keep LNAPL off the sampler as it passes through any LNAPL that may be present in the augers. The HydroPunch will be driven through the bag upon entering sediments at the auger bit. This will reduce the chance of contaminants in the LNAPL being carried into deeper sediments and contaminating the sample.

The bailer will be used to collect groundwater samples for field parameters, headspace analysis, and laboratory analysis. Groundwater samples for laboratory analysis will be collected into pre-labeled, laboratory-prepared sample bottles as described in Groundwater Sample Collection later in this section. Groundwater samples will be analyzed by ETC in a close-support laboratory. Laboratory analysis of groundwater samples will be on a fast turnaround basis (24 hours) so that results may be used to help direct the progress of the HydroPunch investigation.

HydroPunch samples will be collected beginning at well MW-12 and continuing outward following the established grid pattern (Figure 5-2). Sampling will continue outward from MW-12 along a grid line until the MCL for toluene (1,000 ppb) is met. If toluene concentrations are higher than the MCL at the last node of the grid line, the grid line will be extended until the MCL is met. Conversely, if the MCL is met before all nodes along a grid line have been sampled, drilling may be terminated at that point.

Groundwater samples collected for laboratory analysis using the HydroPunch will be analyzed for the constituents and analytical methods listed in Table 5-6.

Table 5-6 Analyte List for HydroPunch Plume Delineation			
Analyte	Method Number	Bottle Type and Preservative	Holding Time
VOC	8020 (with confirmation on 10 percent of samples)	40 ml VOA with HCl pH <2	14 days
Total petroleum hydrocarbon	WTPH-418.1 (modified)	1 liter AG, NCL pH <2	7 days
Total organic carbon	415	125 ml HDPE H_2SO_4, pH <2	28 days

The field parameters, pH, conductivity, and temperature, will be measured at each sampling location. The following procedures will be used to measure pH, specific conductance, and temperature:

- Calibrate instruments according to manufacturers instructions. Record instrument make, model number, serial number, and calibration comments in the field notebook.
- Fill two disposable plastic cups with sample water.
- Insert decontaminated, calibrated, pH/temperature and conductivity probes into the cups and allow the instruments to equilibrate.
- Record the results of each analysis in the field notebook.
- After each use, decontaminate the instrument probes by rinsing thoroughly with distilled water.

In addition to collecting a groundwater sample for laboratory analysis and field parameter analysis, a headspace analysis will be performed in the field for every sample collected. Headspace analysis will be performed by pouring approximately 150 ml of sample water into a decontaminated or new 1-pint Mason jar and sealing the top of the jar with aluminum foil. The sample water in the jar will be allowed to equilibrate for 10 minutes. At the end of the 10-minute equilibration period the probe of a photoionization detector (PID) equipped with a 10.2-eV lamp will be inserted through the foil seal and a headspace measurement will be recorded. The highest concentration to register on the PID for each headspace sample will be recorded in the field notebook. The headspace analysis will be used as a general guide to aid in delineation of the toluene or other volatile organics that may be present. Results are not intended to represent concentrations of contaminants in the groundwater.

HydroPunch Equipment Decontamination. The sampling bailer will be decontaminated following the steps outlined in Section 5.6.4, Equipment Decontamination. After each

depth interval from which a groundwater sample is collected, the HydroPunch sampling device will be removed from the borehole and decontaminated by steam cleaning to the satisfaction of the CH2M HILL hydrogeologist. Water generated during steam cleaning will be collected and stored onsite and will be discharged to Metro pending satisfactory analytical results of decontamination water samples.

Monitoring Well Sampling

Groundwater Sampling Events. Three rounds of groundwater sampling are proposed to assess current groundwater quality at the site. Round 1 will occur as the first groundwater investigation activity, and will include all 30 existing monitoring wells at the site (all the Dames & Moore and Landau wells, and well MW-12). Round 2 of groundwater sampling will occur approximately 3 months after the completion of Round 1 and will include all newly installed monitoring wells in addition to selected Dames & Moore and Landau monitoring wells. Round 3 will include all newly installed wells and any Dames & Moore and Landau wells with contaminant concentrations exceeding groundwater cleanup criteria based on the results of Rounds 1 and 2.

Groundwater Sampling Analytes. During Round 1 of groundwater sampling, analytical parameters will include Appendix IX constituents for selected wells and parameter lists based on historical detections in other wells. Other parameters include VOCs, arsenic, copper, chromium, nickel, lead, TOC, formaldehyde, and semivolatile organics (SVOCs). Metals analyses will be conducted on both filtered and unfiltered samples. Parameters may be added or deleted from the list of analytes as additional data are collected and CH2M HILL's understanding of the site hydrochemistry increases. Table 5-7 presents a list of parameters to be analyzed for at each well during Round 1. Method numbers, bottle types, preservatives, and holding times for analyses performed during Round 1 are listed in Table 5-8. Groundwater sampling analytes for Rounds 2 and 3 will be based on the results of Round 1. Selected new monitoring wells will be sampled for Appendix IX parameters. Wells to be sampled and parameter lists will be discussed in technical memoranda that will follow Round 1.

Groundwater sampling will include static water-level measurements, collection of pH, conductivity, and temperature data in the field, and collection of samples for laboratory analysis. Sampling procedures to be followed at the site are listed in the following sections.

At least two samples of LNAPL will also be collected to measure density, viscosity, and interfacial tension. One of these samples will be collected from monitoring well MW-12; the other sampling location will be selected in the field. The laboratory testing methods for these parameters are shown in Table 5-8.

Groundwater Elevation Measurements. The initial step for measuring the static water level in a well will be to unlock the security cap and inspect the well for damaged surface seals or need of routine maintenance. The depth to the static water level will be measured

Table 5-7
Schedule for Round 1 of Groundwater Analyses

Monitoring Well	Area	Appendix IX[a]	SVOCs	VOCs	Metals[b]	Formaldehyde	Vanillin & Isopropyl Alcohol	General Water Quality Parameters[c]	Biological Activity Indicators[d]
A2	A1		X	X	X	X	X	X	
A4	A9		X	X	X	X	X	X	
A9	A1		X	X	X	X	X	X	
B1A	A9		X	X	X		X	X	
B1B	A9		X	X	X		X	X	
B2	A2		X	X	X		X	X	X
B4	A2		X	X	X	X	X	X	X
B5	A2		X	X	X		X	X	X
B6	A2	X				X	X	X	X
C1	A9		X	X	X			X	
DM-1A	BG	X				X	X	X	
DM-1B	BG	X				X	X	X	
DM-2A	A5	X					X	X	
DM-2B	A5	X					X	X	
DM-3A	A1	X					X	X	
DM-3B	A1	X					X	X	
DM-4	A2		X	X	X	X	X	X	X

Table 5-7
Schedule for Round 1 of Groundwater Analyses

Monitoring Well	Area	Appendix IX[a]	SVOCs	VOCs	Metals[b]	Formaldehyde	Vanillin & Isopropyl Alcohol	General Water Quality Parameters[c]	Biological Activity Indicators[d]
DM-5	A2		X	X	X		X	X	X
DM-6	A8		X	X	X			X	
DM-7	A6		X	X	X	X	X	X	X
DM-8	A5		X	X	X	X	X	X	X
E3	BG		X	X	X	X		X	
G1	A7		X	X	X			X	
G3	A6		X	X	X	X	X	X	
H1	A4		X	X	X	X	X	X	X
H10	A4		X	X	X	X	X	X	X
H11	A4		X	X	X	X	X	X	X
H6	A5		X	X	X		X	X	
H9	A7		X	X	X	X	X	X	
MW-12(G5)[e]	A4	X				X	X	X	X

[a]Code of Federal Regulations 40 CFR Part 264, Appendix IX.
[b]Metals include the Target Compound List (TCL).
[c]General water quality indicators include the following: sodium, potassium, magnesium, calcium, sulfate, sulfide, chloride, alkalinity as $CaCO_3$, carbonate/bicarbonate, Total Dissolved Solids, and Total Organic Carbon.
[d]Biological activity indicators include the following: phosphorous, nitrate, and total Kjeldahl nitrogen.
[e]Monitoring Well MW-12 was installed in July 1993 to replace MW-G5.

Monsanto Company 104(e) Response

Monsanto 2A001505

Table 5-8
Method Numbers, Bottle Types, Preservatives, and Holding Times for Round 1 of Groundwater Sampling

Analysis	Method Number	Type of Container	Sample Preservative	Sample Holding Time
Volatile Organic Compounds	8240/CLP	(3) 40-ml VOA vials	2 drops 1:1 HCl, iced to 4°C, no headspace	14 days
Semivolatile Organics	8270/CLP	1-liter amber glass bottle with Teflon-lined lid	fill bottle to neck, iced to 4°C, keep away from sunlight	7 days
Pesticides/PCBs	8080/CLP	1-liter amber glass bottle with Teflon-lined lid	fill bottle to neck, iced to 4°C, keep away from sunlight	7 days
Herbicides	8150	1-liter amber glass bottle with Teflon-lined lid	fill bottle to neck, iced to 4°C, keep away from sunlight	7 days
Organophosphorus Pesticides	8140	1-liter amber glass bottle with Teflon-lined lid	fill bottle to neck, iced to 4°C, keep away from sunlight	7 days
Metals (filtered)	6010/CLP	500-ml high-density polyethylene bottle	field filter through 0.45-micron filter, nitric acid to pH<2, iced to 4°C	6 months
Metals (unfiltered)	6010/CLP	500-ml high-density polyethylene bottle	nitric acid to pH<2, iced to 4°C	6 months
Cyanide	9010/CLP	500-ml high-density polyethylene bottle	NaOH to pH>12, 0.06 grams ascorbic acid, iced to 4°C	14 days
Sulfide	9030	500-ml high-density polyethylene bottle	ZnAc plus NaOH to pH>9, iced to 4°C	7 days
Chromium VI	7196	250-ml high-density polyethylene bottle	iced to 4°C	24 hours
Isopropyl alcohol	8015 modified	(3) 40 ml VOA vials	4°C, no headspace	7 days
Formaldehyde	8315	(3) 40-ml VOA vials	iced to 4°C	14 days
Vanillin	8270/CLP	1-liter amber glass bottle with Teflon-lined lid	fill bottle to neck, iced to 4°C, keep away from sunlight	7 days

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Table 5-8
Method Numbers, Bottle Types, Preservatives, and Holding Times for Round 1 of Groundwater Sampling

Analysis	Method Number	Type of Container	Sample Preservative	Sample Holding Time
Sulfate	375.2 or 375.4	125-ml high density polyethylene bottle	iced to 4°C	28 days
Alkalinity as $CaCO_3$	403	250-ml high density polyethylene bottle	iced to 4°C	14 days
Carbonate/bicarbonate	403	250-ml high density polyethylene bottle	iced to 4°C	14 days
Nitrate	352.1 or 300.0	250-ml high density polyethylene bottle	iced to 4°C	48 hours
Total kjeldahl nitrogen	351	1-liter high density polyethylene bottle	H_2SO_4 to pH<2, iced to 4°C	28 days
Total dissolved solids	1601			
Total organic carbon	415	125-ml high density polyethylene bottle	H_2SO_4 to pH<2, iced to 4°C	28 days
Phosphorus	365.2	125-ml high density polyethylene bottle	H_2SO_4 to pH<2, iced to 4°C	28 days
Chloride	325.3 or 300	125-ml high density polyethylene bottle	iced to 4°C	28 days
Density (by pycnometer)	ASTM D369	One 500-ml amber glass bottle for LNAPL plus one 500-ml amber glass bottle of groundwater (for interfacial tension analysis		
Viscosity (by rotational viscometer)	ASTM D2196			
Interfacial tension (Du Nouy Ring)	ASTM D1331			

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(to the nearest 0.01 foot) prior to groundwater sampling using a decontaminated electronic water-level indicator. Wells suspected of containing LNAPL will be measured using an oil-water interface probe. If LNAPL is present, the measured water level will be corrected using the equation:

$$W_c = W_m + \left[(L)\ (\frac{S_l}{S_w})\right]$$

where:

W_c	=	Water level elevation (corrected)
W_m	=	Water level elevation (measured)
L	=	LNAPL thickness
S_l	=	Specific gravity of LNAPL
S_w	=	Specific gravity of water

Well number, depth to water, time and date of measurement, measuring point elevation, and water level elevation will be documented in the field notebook. The water level indicator and oil-water interface probe will be decontaminated between use at each monitoring well following the steps outlined in Section 5.6.4, Equipment Decontamination.

Well Purging. Monitoring wells will be purged prior to sampling by removing a minimum of three and no more than five casing volumes of water using a peristaltic purge pump. Purge water will be collected and stored onsite, and will be discharged to Metro pending satisfactory analytical results of purge water samples. The peristaltic purge pump will employ single-use, disposable polyethylene intake tubing that will be changed between wells.

The following equation will be used to calculate the volume of water to purge from each well prior to sampling:

$$V=(H)[(\pi r^2)(7.48)]$$

where:

V	=	Volume of water to evacuate per one casing volume, in gallons.
H	=	Total well depth minus depth to water in feet.
r	=	Radius of well casing in feet.
7.48	=	Conversion from ft^3 to gallons.

Well evacuation will begin at a low flow rate and will be increased gradually to achieve the maximum pump discharge rate or sustainable well yield. However, the purge rate should be restricted as necessary so as to not pump the well to dryness. The pump intake will be lowered to a level just below the water surface. The pump intake will be maintained at this level during purging (this may require lowering of the pump intake during pumping). This procedure will ensure a more complete removal of the casing water than that achieved by withdrawal of water from the well bottom.

Field Parameters. The parameters temperature, pH, specific conductance, and appearance of the purged water will be measured and recorded in the field notebook after each well volume is removed. If the field parameters measured after the second and third purge volumes are within 10 percent of each other, no further purging is required. If not, purging will continue until the parameters have stabilized or five casing volumes have been removed from the well. The total volume of water purged from each well will be recorded in the field notebook.

The following procedure will be used for measuring pH, specific conductance, and temperature:

- Calibrate instruments according to the manufacturer's instructions. Record instrument make, model number, serial number, and calibration comments in the field notebook.
- Fill two disposable plastic cups with purged water.
- Insert decontaminated, calibrated, pH/temperature and conductivity probes into the cups and allow the instruments to equilibrate.
- Record the results of each analysis in the field notebook.
- After each use, decontaminate the instrument probes by rinsing thoroughly with distilled water.

To the extent possible, a well will not be purged to dryness. If this occurs, however, a groundwater sample may be collected upon sufficient recovery of the well to yield adequate sample volume. Sampling must be completed within 24 hours of purging in any well that is pumped to dryness, or the well must be purged again.

All purge water will be collected and stored onsite pending laboratory analysis and discharge to Metro.

Groundwater Sample Collection. Groundwater samples will be collected using decontaminated stainless steel bailers. The bailer will be raised and lowered in the well using a single-use nylon monofilament line attached to a decontaminated plastic cord reel. The cord reel will be decontaminated following the procedures outlined in Section 5.6.4,

Equipment Decontamination. Bailers will be decontaminated by ETC Analytical Laboratories following the steps listed in Section 5.6.4. All other sampling equipment will be single-use, disposable equipment that will be replaced between wells. All sampling personnel will wear two layers of nitrile gloves during sample collection. Gloves will be changed, at a minimum, between wells and whenever the potential for cross-contamination is suspected.

Groundwater samples will be collected into laboratory-cleaned, pre-labeled sample bottles. Groundwater samples collected for dissolved metals analysis will be field-filtered through a disposable 0.45 micron filter prior to preservation with 1:1 nitric acid to a pH of less than 2.0 (checked in the field). After collection, all samples will be placed in a cooler with enough ice to maintain a temperature of 4°C for the duration of the sampling and transportation period.

Field Documentation. Groundwater sampling information to be recorded in the field notebook includes the following:

- Date and time
- General condition of the well
- Weather conditions
- Names of sampling personnel
- Static depth to water
- Total well depth
- Manufacturer, model number, serial number, and calibration notes for any instrument used for static water-level measurement or field parameter analysis.
- Well purge volume calculations
- Well purge start time, finish time, and total volume purged
- Field parameter measurements made after each of three (minimum) casing volumes have been purged from the wells
- Other pertinent comments or observations

5.4 Air Emissions Investigation Methods

Potential volatiles organic air emissions will be sampled from two specific sources (see Section 5.4.2) by using flux chambers. The specific constituents to be analyzed are listed in Table 5-9 at the noted detection levels. These constituents were selected based on volatile organic detections noted in soils and groundwater.

5.4.1 Area/Fugitive Source Sampling Using the Surface Emission Isolation Flux Chamber for VOCs

Potential volatile emissions from soil surfaces will be characterized for the volatile compounds presented in Table 5-9. These compounds are part of the list of compounds listed under Method TO-14. Figure 5-3 presents a schematic representation of a flux chamber. The flux chamber is used to quantify the emissions of VOCs from open area sources. By encapsulating a defined and flat surface area of the emitting source, a concentration and emission rate per unit area can be determined for a given air contaminant. The chamber is a dome-topped acrylic cylinder designed to penetrate the sampling surface. The chamber has a 0.13-m^2 exposed surface area and a volume of approximately 0.030 m^3. One 3/8-inch port will be used to withdraw sample gas.

Table 5-9
Marginal Way Facility
Air Monitoring Target Compounds

Compounds	Detection Limits (ppbv)	Compounds	Detection Limits (ppbv)
Benzene	0.20	Toluene	0.50
Acetone	0.50	Methylene Chloride	0.30

Note: Total hydrocarbons to be determined by summing compounds detected on an equivalent basis.

Dry, hydrocarbon-free sweep air (zero-grade air) will be provided from compressed gas cylinders, or if convenient onsite power is available, from cleaned ambient air. The sweep air will pass through a calibrated rotameter with a needle-valve flow control.

Inlet and outlet lines are made of Teflon®, and all fittings in contact with the gas will be Teflon or stainless steel. The outlet line will include a sampling manifold for monitoring and/or collection of the gaseous specie(s) of interest. Previous laboratory tests have demonstrated that recovery of multicomponent standards is 90 to 120 percent for both short (5-foot) and long (100-foot) sampling lines. This manifold will consist of ports for

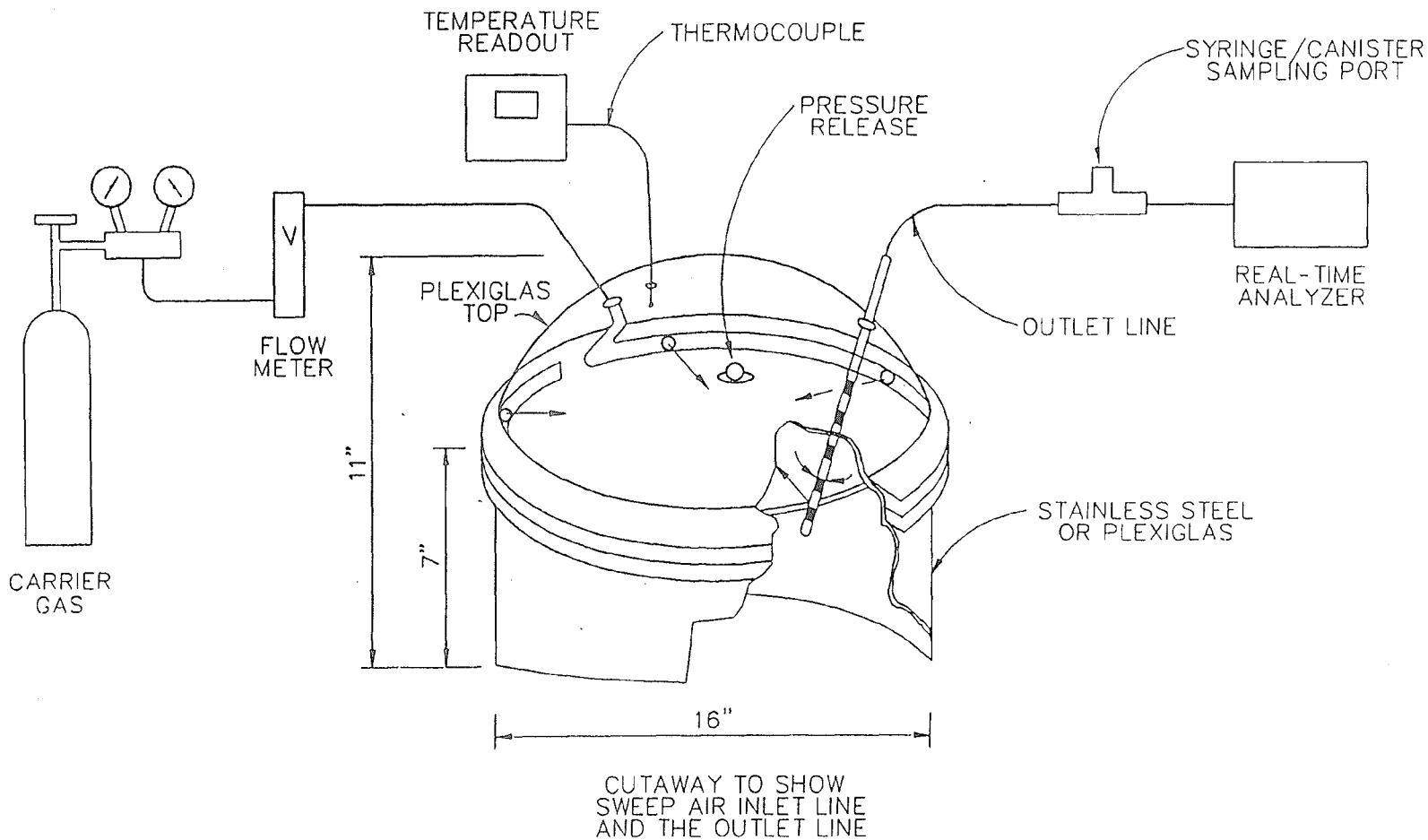

Figure 5-3
Surface Emission Isolation Flux Chamber

gas-canister sample and gas-syringe collection. A thermocouple and readout will be used to measure the surface and air temperatures inside the flux chamber at the sample point.

All flux chamber measurements will be conducted as per the U.S. EPA guidance document, *Measurement of Gaseous Emission Rates from Land Surfaces Using an Emission Isolation Flux Chamber,* December 1985. The only difference in flux chamber usage will be in the application and interface to the VOC source.

The chamber temperature and volumetric flow rate of air through the chamber is recorded and the concentration of the species of interest is measured at the exit of the chamber. The emission rate is calculated as

$$E.R._i = \frac{(C_i)(Q)}{A}$$

where:

$E.R._i$ = emission rate of species i ($\mu g/m^2 min$)
C_i = measured concentration of species i (ppmv converted to $\mu g/l$)
Q = air flow rate (l/min)
A = exposed surface area (m^2)

The response time of the flux chamber is characterized by the residence time. The chamber residence time (τ) is a function of the chamber volume (V) and air flow rate (Q). The quotient of volume and flow rate ($V/Q = \tau$) is the theoretical residence time. Five to six residence times are normally needed to establish steady-state conditions in the chamber at which time representative sampling can occur. This will require 25 to 30 minutes per sampling point.

Real-time screening data will be collected using a calibrated organic vapor analyzer (OVA) during the purge of the flux chamber. (Other field instruments may also be considered for use in this function if they provide improved sensitivity to toluene; for example, an HNU may provide adequate method information.) The primary purpose for this screening is to efficiently purge the sample lines and to indicate steady-state conditions in the flux chamber. These data will be recorded on field data collection sheets.

5.4.2 Surface Emission Isolation Flux Chamber Operation

The operation of the surface emission isolation flux chamber is summarized below. The flux chamber will be wiped clean and dried before each use and then placed over the sampling area. The sweep air is added at a flow rate of 5.0 liters per minute, and the time is noted when the chamber is placed on the test surface. The outlet gas concentration will be monitored using the field screening instrument (i.e., OVA or HNU) until steady-state

conditions are reached (typically 5 residence times); gas concentrations are recorded every residence time. Air temperatures inside and outside the chamber are also taken and recorded. Once steady-state conditions have been reached (about 25 minutes), gas samples will be collected.

Samples will be collected using SUMMA™ passivated stainless steel canisters in an evacuated mode as described in Method TO-14. Before sample collection, each canister will be cleaned and evacuated in the laboratory, and the absolute pressure will be recorded. Ten percent of all canisters will be blank tested for total VOC concentration. A blank canister value of <50 parts per billion by volume (ppbv) is acceptable or defined as clean. Laboratory records of the sample history (ambient or source) for each canister will be kept throughout the program to prevent sample contamination. Stainless-steel 7-micron filters will be attached to the flow controller inlet to remove particulate material in the gas prior to the canister inlet.

Data will be recorded on the Isolation Flux Chamber Data Sheet, shown in Appendix E. The following data collection steps will be taken:

- Contact Facility personnel and explain sampling activities.
- Locate equipment at the sampling location.
- Document the location of measurement, date, time, and operator/sampler.
- Initiate sampling by starting sweep air, checking the flow rate, and placing the chamber on the testing location.
- Document the gas flow rate. Record the initial and final temperatures of the ambient air, the air inside the chamber, and the bulk liquid/solid surface.
- Document any other analytical data such as waste characteristics, meteorological conditions, etc., for possible correlations with emission rate measurements.
- Monitor the gas concentrations and record data every residence time.
- Collect gas sample at steady state in duplicate.
- Discontinue testing and backflush the sample collection line with ultra-high purity (UHP) air for a minimum of 6 minutes at 0.5 lpm.
- Fill out appropriate chain-of-custody forms and master sample log entries for samples collected.

Sample activities will be scheduled so that flux chamber testing will start with low-level emission sources and finish with high-level emission sources. The chamber will be decontaminated by thorough rinsing between sample locations using deionized water. Decontamination at the close of testing will include washing the chamber and lines with water and detergent (including sampling lines), rinsing with water, and towel-drying all equipment. All rinsed lines will be dried with UHP air.

5.5 Field QA/QC Samples

Quality assurance and quality control (QA/QC) measures will be taken to evaluate the following:

- Laboratory precision
- Contamination introduced by sampling equipment or methods
- Sample contamination from ambient conditions
- Matrix interference

Four types of samples will be collected as part of the field QA/QC program: field duplicates, equipment blanks, trip blanks, and matrix spikes/matrix spike duplicates. Each of these QA/QC sample types is discussed below.

Field Duplicates. Laboratory precision will be evaluated by collecting blind field duplicate samples. Field duplicates will be collected on approximately 10 percent of the total number of aqueous samples collected. Field duplicates will be collected under conditions that are as nearly identical as possible to the original sample. Field duplicates will be designated and labeled like standard samples and will only be distinguished as duplicates in the field notes. Field duplicate samples will be analyzed for the same parameter list as the original sample.

Equipment Blanks. Equipment blanks will be collected to evaluate contamination introduced by sampling equipment or methods. Equipment blanks will be collected if nondedicated sampling equipment is used during a sampling event. Equipment blanks for nonaqueous sampling equipment will be collected at a frequency of 10 percent, not to exceed one equipment blank per day of sampling. Equipment blank samples for aqueous sampling equipment will be collected at a frequency of one per day of sampling. Samples will be collected by pouring high-performance liquid chromatography (HPLC) water over the decontaminated sampling equipment and collecting the rinsate into VOA vials or other laboratory-prepared sample bottles. The equipment blank sample will be designated as an equipment blank on the chain-of-custody form. Equipment blank samples will be analyzed for VOCs (nonaqueous samples) or for the same parameters as samples collected that day (aqueous samples).

Trip Blanks. Laboratory-prepared 40-ml VOA vials containing ASTM Type II organic-free water or HPLC water will be carried by the field sampling team throughout the day's

sampling effort when the sample matrix is aqueous; trip blanks are not required for non-aqueous samples. Trip blanks will be collected at a frequency of one per sample shipment, not to exceed two consecutive field days. The trip blanks will be analyzed for volatile organics only and will be designated as trip blanks on the chain-of-custody forms.

Matrix Spikes/Matrix Spike Duplicates. Triplicate volumes of sample will be collected at a frequency of 10 percent of the total number of samples collected. The additional volume of sample will be used by the laboratory for matrix spikes and matrix spike duplicates (MSs/MSDs). MSs/MSDs will be given the same sample number as the original sample, and, in addition, will be designated as MSs and MSDs on the chain-of-custody form. MS/MSD samples will be analyzed for the same parameter list as the original sample.

5.6 Other Plan Elements

5.6.1 Sample Identification Numbers

Each sample will be designated by a unique alpha-numeric identifier ("sample number") according to the following scheme:

01-ABCD

where:

01 = Two-digit sequential number of sample (use zeros as place holders where necessary, e.g., 01, 09)

ABCD = Location code of up to four letters or numbers, from the following:

MWXX = Monitoring well number
BHXX = Borehole number
HPXX = HydroPunch sampling location number
SDXX = Sediment sampling location number

Character groups will be separated by a "-" dash. An example of a completed sample identification number is:

05-MW12- (Groundwater sample number 5, collected from monitoring well MW-12)

Sample numbers will be recorded in the field notebook, on sample container labels, and chain-of-custody forms. Other information to be shown on the sample container label includes:

- Time and date of sample collection
- Initials of sampler(s)
- Laboratory analyses to be performed
- Preservatives used

Quality assurance/quality control (QA/QC) samples will be identified like true samples and will be called out as QA/QC samples in the field notes only. QA/QC samples will not be identifiable by the laboratory.

5.6.2 Field Documentation

Groundwater Sampling Field Documentation. Groundwater sampling information to be recorded in the field notebook includes the following:

- Date and time of sampling
- General condition of well
- Weather conditions
- Names of sampling personnel
- Static water level
- Total depth of well
- Manufacturer, model number, serial number, and calibration notes for any instrument used for static water level measurement or field parameter analysis
- Well purge volume calculations
- Well purge start time, finish time, and total volume purged
- Field parameter measurements made after each of three (minimum) casing volumes have been purged from the wells
- Any miscellaneous comments or observations

Soil Sampling Field Documentation. Soil sampling information to be recorded in the field notebook includes the following:

- Monitoring well or borehole number
- Soil cover material (concrete, asphalt, etc.)
- Date and time of sampling

- Weather conditions
- Geologic sample collection interval
- Blowcount per 6-inch interval of sample penetration
- Penetration and recovery lengths
- Visual evidence of contamination
- Description of layering, mottling, or other features
- Description of soil type (ASTM D2488-89)
- Any miscellaneous comment or observation

5.6.3 Sample Custody and Transport

Sample possession will be traceable from the time of sample collection until receipt of samples at the analytical laboratory. Sample possession will be documented following the chain-of-custody procedures outlined below.

Field Custody

Samples will be in the custody of the field sampler(s) from the time of sample collection until the samples are transferred or dispatched properly. Samples will be retained in coolers with sufficient ice to maintain an internal temperature of 4°C. The Project Manager will evaluate whether proper custody procedures were followed during the fieldwork by inspection of the documentation and discussions with sampling personnel. It will be the responsibility of the Project Manager to decide if additional samples are required.

Sample Transfer of Custody and Shipment

Samples will be accompanied by a chain-of-custody record (see Appendix E for a blank chain-of-custody record). When transferring custody of the samples, the individuals relinquishing and receiving them will sign, date, and note the time of transfer on the chain-of-custody record. This record documents sample custody transfer from the sampler, often through another person, to the analyst at the analytical laboratory.

Samples will be packed in iced coolers with a separate chain-of-custody record accompanying each cooler. Coolers will be sealed with fiber tape and will have signed and dated custody seals attached to the cooler such that the cooler cannot be opened without breaking the custody seals. Two seals must be placed on each cooler, one at the front and one at the back. The method of shipment, courier name(s), and other pertinent information will be entered in the Remarks section of the chain-of-custody record.

If sent by mail, the package will be registered with a return receipt requested. If sent by common carrier, a bill of lading will be used. Air freight shipments will be sent collect. Freight bills, postal service receipts, and bills of lading will be retained as part of the permanent documentation. Documents will be distributed as follows:

- Ship with samples:
  - Chain-of-custody form (original)

- Send to Project Manager:
  - Field logbooks (at completion of project)
  - Chain-of-custody form (copy)

- Return to project files:
  - Chain-of-custody form (copy)
  - Shipping records

5.6.4 Decontamination Procedures

Purging and sampling equipment that directly comes into contact with sample media, sample containers, or the inside of a monitoring well will be single-use disposable equipment that is replaced between each sampling event. If the sampling equipment is not single-use disposable equipment it will be decontaminated between each sampling event using the following procedure:

Aqueous Sampling Equipment Decontamination

1. Wash in a solution of Alconox and potable tap water.
2. Generous tap water rinse.
3. Rinse with distilled and deionized water (ASTM Type II).
4. Rinse with 10 percent nitric acid[1] (trace metal or higher-grade HNO_3)
5. Rinse with distilled and deionized water (ASTM Type II).
6. Rinse with acetone[2] (pesticide-grade)
7. Total air dry or pure nitrogen blow out.[2]
8. Rinse with distilled and deionized water (ASTM Type II).

Nonaqueous Sampling Equipment Decontamination

1. Wash in a solution of Alconox and potable tap water.
2. Rinse with potable tap water.
3. Rinse with distilled and deionized water (ASTM Type II).

Note: If visual contamination persists, or gross contamination is suspected, the decontamination steps used for aqueous sampling equipment should be used.

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[1]Only if sample is to be analyzed for metals.

[2]Only if sample is to be analyzed for organics.

When analysis for metals is required, it may be necessary to use carbon-steel, split-spoon sampling devices instead of stainless steel. If this is the case, and it is necessary to use the acid rinse, the nitric acid rinse may be lowered to a concentration of 1 percent instead of 10 percent to reduce the possibility of leaching metals from the sampler itself.

Multiple-use sampling equipment such as stainless steel bowls and spoons used for soil or sediment sampling will be wrapped in aluminum foil after being decontaminated unless they will be used immediately after decontamination.

All drilling equipment used in a borehole or a well will be decontaminated by steam cleaning before use and between use in different boreholes or wells. Steam-cleaned equipment will be inspected by CH2M HILL personnel prior to use in any borehole or well.

Stainless steel bailers used for groundwater sampling and stainless steel bowls, scoops, and spoons used for soil and sediment sampling will be decontaminated by ETC Analytical Laboratories.

All decontamination fluids generated onsite, including steam-cleaner water, will be stored onsite pending laboratory analysis of decontamination fluids and discharge to Metro.

A decontamination pad will be constructed by the drilling subcontractor for use during steam cleaning of drilling rigs, augers, well development equipment, and other downhole tools. Fluids collected in the decontamination pad will be pumped to a nearby stainless steel fluid containment tank for storage pending analytical results of tank samples. Decontamination fluids will be disposed of in a manner consistent with the results of sample analysis. It is anticipated that decontamination fluids will be discharged to Metro. The containment tank was installed within a concrete secondary containment structure capable of containing the full contents of the tank.

Decontamination of Workers and Personal Protective Equipment

It is anticipated that all work will be conducted in modified Level D protection. Modified Level D protection includes:

- Cotton coveralls or Tyvek
- Steel-toed, steel-shank rubber boots
- Hard hat
- Safety glasses or equivalent
- Nitrile inner and outer gloves

Requirements for upgrading to Level C protection are outlined in the Health and Safety Plan, Appendix I of this Workplan.

Decontamination of Sample Containers

All sample containers will be laboratory-prepared and precleaned to Level II standards as required under U.S. EPA SW-846 protocol. Certification of Level II cleaning will accompany all sample bottles sent from the laboratory to CH2M HILL.

5.6.5 Disposal of Sampling-Derived Waste

Purged and extracted groundwater and steam-cleaner water will be discharged to the Metro sewer system pending acceptable analytical results. Solids will be collected in DOT-approved steel drums, tested, and disposed of appropriately at an approved facility. RPI may also pursue U.S. EPA's approval for a temporary unit (TU) in order to accumulate solids onsite beyond the 90-day RCRA generator time limit if it appears likely such storage will be both economical and protective of the environment.

5.6.6 Revisions to Sampling Procedures

This RFI Workplan describes a phased investigation approach, with decision points that may eliminate the need or expand the scope for certain planned subsequent investigative phases, based on the results of prior phases. Requests to expand, limit, or eliminate any investigative phases of this work plan will be reported to U.S. EPA for approval.

5.6.7 Surveying

Vertical and horizontal control of sampling point locations will be established by surveying. Sampling point elevations will be surveyed by the National Geodetic Vertical Datum (NGVD), 1929, to an accuracy of within 0.01 foot. Horizontal control accuracy will be within 0.1 foot. Sampling locations that will be surveyed include:

- Monitoring well locations and surface elevations
- Monitoring well measuring point elevations
- Soil boring locations and surface elevations
- HydroPunch sampling locations and surface elevations
- Staff gauge or stilling well in the Duwamish Waterway

It is anticipated that surveying will be completed in phases, approximating the phased investigation approach. All existing monitoring wells at the site will be surveyed relative to established U.S. Geological Survey (USGS) benchmarks early in the investigation, and control points will be set up throughout the site for use in future surveys. During the course of the investigation new sampling locations will be added at the site. Vertical and horizontal control will be established for these new sampling locations via short survey loops using the nearest control point as the datum.

5.7 References

1. Bouwer, H. and Rice, R.D. "A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells." *Water Resources Research*, Vol. 12, 1976, pp. 423-428; Bouwer, H. "The Bouwer and Rice Slug Test—an Update." *Groundwater*, Vol. 27, No. 3, 1989, pp. 304-309.

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APPENDIX B

RHÔNE-POULENC

RHÔNE-POULENC INC.
CN 7500, CRANBURY, NJ 08512-7500
TELEPHONE: (609) 860-4000

July 25, 1994

Tom Post, Project Coordinator
U.S. Environmental Protection Agency Region 10
1200 Sixth Avenue, HW-104
Seattle, Washington 98101

Subject: Rhône-Poulenc's Marginal Way Facility, Tukwila, Washington
RCRA Facility Investigation (RFI)--Round 2

Dear Mr. Post:

Thank you for your July 1, 1994, written and verbal notification of EPA's approval of the approach and schedule for Round 2 of the RFI at the Marginal Way Facility. As you know, the Round 2 approach and schedule were proposed by Rhône-Poulenc and CH2M HILL at a meeting with you at CH2M HILL's Bellevue, Washington, office on June 21, 1994.

We are submitting the attached document which will serve as an Addendum to the RFI Workplan that was approved by U.S. EPA on January 21, 1994. The Addendum documents the information presented at our June 21 meeting, including a summary of the results of Round 1 of the RFI, and a description of the proposed approach and schedule for Round 2. In accordance with Section 3.4 (page 3-8) of the approved RFI Workplan, this Addendum is being submitted formally to U.S. EPA. The Round 2 field investigation has been tentatively scheduled for Aug. 3, 1994 pending formal approval by U.S. EPA.

Please call me at Rhône-Poulenc or Patt O'Flaherty at CH2M HILL if you have questions or comments concerning this submittal.

Sincerely,

Edwin Liu

Edwin Liu, Project Director

cc: Rene' Fuentes

ADDENDUM

to the

RCRA FACILITY INVESTIGATION (RFI) WORKPLAN for Rhône-Poulenc's Marginal Way Facility, Tukwila, Washington

submitted to

U.S. Environmental Protection Agency Region 10

prepared by

Rhône-Poulenc Inc. and CH2M HILL

July 1994

1. Introduction

Under the authority vested in the Regional Administrator of the U.S. Environmental Protection Agency (U.S. EPA Region 10) by Sections of the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984, U.S. EPA and Rhône-Poulenc Inc. entered into Administrative Order on Consent No. 1091-11-20-3008(h), which became effective on May 6, 1993. The Order specified the actions to be taken to investigate and remediate hazardous wastes and constituents at RPI's Marginal Way Facility in Tukwila, Washington ("the Facility").

The Order requires that RPI conduct a RCRA Facility Investigation (RFI) at the Facility. The objectives of the RFI are to determine the nature and extent of any releases of hazardous wastes and/or constituents at or from the Facility, assess the human health and environmental risks posed by those wastes and/or constituents, and identify appropriate methods of cleanup to protect human health and the environment. Upon completion of the RFI, RPI will provide a report for U.S. EPA's review that documents the findings and the Corrective Measures, if any, that are recommended for the Facility.

On October 1, 1993, RPI submitted a draft of the RFI Workplan to U.S. EPA Region 10. Following U.S. EPA's review and incorporation of final changes to the document, U.S. EPA approved the final RFI Workplan on January 24, 1994. Since that time, field investigation including sampling and laboratory analysis have proceeded as specified in the approved Workplan.

The approved Workplan specified that two, and possibly three, rounds of investigation would be conducted at the Marginal Way Facility. On June 21, 1994, RPI and CH2M HILL project team members presented the findings of "Round 1" of the RFI to U.S. EPA, and outlined their proposed approach and schedule for additional investigation and sampling required to meet the objectives of the RFI, hereinafter referred to as "Round 2." The presentation was accompanied by handouts of the presentation text and graphics, and of analytical data results from Round 1.

On July 1, 1994, U.S. EPA verbally informed RPI of its approval of the proposed approach and schedule for Round 2 of the RFI. This document is submitted to U.S. EPA as an Addendum to the approved RFI Workplan, and summarizes the Round 1 findings and the Round 2 approach and schedule.

2. RFI Round 1 Results

The results of Round 1 of the RFI are presented in the following categories: (1) soil investigation, (2) sediment investigation, (3) hydrogeology investigation, (4) groundwater quality investigation, (5) data quality and validation, and (6) Interim Measures.

2.1 Soil Investigation

The Round 1 soil investigation consisted of the sampling and analysis of a total of 62 surficial soil samples and 116 subsurface soil samples collected from the 11 investigation areas identified in the approved RFI Workplan. The data indicate that, with two exceptions, soil contamination at the Facility is below MTCA Method C cleanup levels. The two exceptions were (1) a soil sample containing mercury collected from Investigation Area A6 (which probably results from former maintenance shop activities--see Figure 1); and (2) a soil sample containing arsenic collected from Area A10 (Figure 2).

The Round 1 investigation indicated that the contaminants detected in subsurface soils are below MTCA C cleanup levels and do not appear to correlate with the constituents detected in groundwater at the Facility. Toluene was detected in some soils, but the concentrations do not correspond to the levels detected in groundwater. During Round 2 when additional monitoring wells are installed , soil will be screened with a PID and selected samples will be analyzed for toluene.

Some unexpected contaminants were detected in groundwater such as antimony, beryllium, and vanadium, but these constituents were not present in soil above MTCA Method C cleanup levels. These constituents also are not associated with any previous onsite activity and are believed to be from offsite source(s).

2.2 Sediment Investigation

For the Round 1 sediment investigation, 7 samples and one field duplicate were taken in the offshore portion of the Facility, the Duwamish Waterway (Investigation Area A11). Constituents detected in sediments do not appear to exceed MTCA Method C or Washington State sediment standards, or to be related to previous plant activities.

The National Oceanic and Atmospheric Administration (NOAA) is currently conducting a sediment investigation in Elliott Bay and the lower Duwamish River as part of a regional assessment of natural resources damage, and will provide the results of their analyses to RPI if they sample sediments offshore of the Facility. Depending on the NOAA results, additional sediment sampling may be appropriate.

2.3 Hydrogeology Investigation

For the Round 1 hydrogeology investigation, approximately 60 borings were drilled to various depths, including 5 deep borings through the Upper Aquifer to depths of up to 80 feet below ground surface (bgs). Soil samples were analyzed for the following physical parameters: grain size/hydrometer, bulk density, moisture, and specific gravity, and laboratory permeability. To determine groundwater flow at the Facility, a 3-week water-level monitoring program was conducted at 10 wells and in the Duwamish Waterway,

and four rounds of water-level monitoring were performed at all 30 existing monitoring wells (see Figure 3). Slug tests were also conducted at 3 Upper Aquifer wells (DM 1A, 2A and 3A) and 3 Lower Aquifer wells (DM 1B, 2B and 3B).

The Round 1 results fall into three categories: (1) geology, (2) groundwater flow, and (3) slug testing.

Geology. The 5 deep borings confirmed the presence of a silt/clay aquitard beginning at a depth of about 70 feet bgs, and separating the Upper and Lower Aquifers. The aquitard was previously identified in the investigations conducted by Landau and Dames & Moore. The laboratory permeability of the aquitard materials is in the range of 1E-8 cm/sec. In addition, numerous shallow borings confirmed the presence of "perching layer" in the unsaturated zone above the Upper Aquifer.

Groundwater Flow. Groundwater flow was found to be tidally influenced in both the Upper and Lower Aquifers, with upward vertical gradients between the Lower and Upper Aquifers. Flow in the Upper Aquifer is generally east to west in the eastern half of the Facility, and north toward the Kenworth property in the western part of the Facility. An exception is at low tide when flow toward Kenworth is not evident. Flow toward Kenworth may be influenced by groundwater extraction activities conducted by Kenworth as part of a voluntary MTCA cleanup.

Slug Testing. Slug testing produced results similar to those obtained by CH2M HILL in 1991 in the Upper Aquifer wells. The average hydraulic conductivity value for three Upper Aquifer wells tested was 3 feet/day. The average value for three Lower Aquifer wells tested was 0.4 feet/day.

2.4 Groundwater Quality Investigation

During the Round 1 groundwater quality investigation, all 30 existing monitoring wells (Figure 3) were sampled. Additional groundwater quality conditions were investigated using a HydroPunch tool, wherein 29 borings were drilled to depths of up to 80 feet bgs. LNAPL monitoring took place at each location, and over 40 groundwater samples were collected for benzene, toluene, ethylbenzene, and xylene (BTEX) analysis along with 3 perched groundwater samples.

The groundwater quality findings, confirmed that toluene is the contaminant of primary concern in groundwater at the Facility. Samples from monitoring wells indicated concentrations in the same general range as those found by Landau in their 1991 investigation in the same wells (Figure 4). These results were further substantiated by the Round 1 HydroPunch investigation (Figures 5 and 6), which detected toluene in most of the Upper Aquifer borings. The HydroPunch investigation also detected toluene at levels above the MTCA Method C cleanup standard in about one-half of the borings. In addition, the HydroPunch investigation facilitated identification of the vertical extent of

the toluene plume (Figure 7). At this time the lateral extent of the toluene plume appears to cover approximately 1-3/4 acres.

Some other constituents detected in groundwater exceeded MTCA Method C cleanup standards. High numbers of exceedances of arsenic (believed to be area-wide background contamination) and manganese (known to be naturally occurring) were expected. More unexpected were exceedances of antimony, beryllium, and vanadium, which are believed to result from offsite sources. The groundwater results also included one exceedance of copper in Area A4, and four of benzo(a)pyrene--the only PAH exceedance detected, and also believed to be area-wide background contamination unrelated to past manufacturing activities at the Facility.

Additional HydroPunch findings included LNAPL detections at the water table at borings No. 1, 8 and 24.

2.5 Data Quality and Validation

ETC Analytical Laboratories conducted the sample analyses using standard EPA methods as specified in CH2M HILL's project-specific Statement of Work. EPA Contract Laboratory Program (CLP) quality control procedures were followed for several CLP analytes of concern. For non-CLP parameters, the quality-control level of effort was equal to CLP requirements. ETC's data packages were reviewed by CH2M HILL and were found to be over 95 percent complete and acceptable.

2.6 Interim Measures

LNAPL Removal. U.S. EPA identified the removal of LNAPL as an Interim Measure at the Facility on September 15, 1993. In Round 1 of the RFI, LNAPL was detected intermittently in two monitoring wells, MW-12 and H-10. LNAPL was not detected in well MW-12 (the well installed by CH2M HILL in July 1993) in March, April, or May, although 1 inch was found to be present in the recovery sump on June 17. In well H-10, where up to 14 inches of LNAPL was observed during March, use of a hydrophobic air-lift pump has removed the limited LNAPL encountered. Subsequent LNAPL recharge to the well was very slow, and no LNAPL has been observed in the well since early May. For now, LNAPL removal efforts have been discontinued and the recovery pump has been removed from well H-10. However, wells in the vicinity of MW-12 and H-10 will continue to be monitored regularly for LNAPL.

Chromium in Groundwater. The other proposed Interim Measure was to evaluate whether the "black liquid" described in the approved RFI Workplan contained chromium and, if so, whether it is in the trivalent or hexavalent form. The findings (comparing chromium vs. total organic carbon and chromium vs. soluble iron) indicate overwhelmingly that where chromium is present, it is minimal and it is in the trivalent form. Further, total chromium is not present in quantities significant enough to exceed

either MTCA Method B or Method C cleanup standards. RPI and CH2M HILL continue to believe that the "black liquid" in groundwater contains tannins and lignins resulting from past use of wood pulp liquors in manufacturing activities at the Facility.

3. Approach to RFI Round 2

3.1 Soil Investigation

The Round 2 soil investigation will consist of confirming and measuring the presence of mercury in Area A6. A sample grid will be located over and around Sample No. A06-03 where mercury was previously detected. A total of 10 soil samples will be collected and tested for mercury. The sample grid will consist of 5 sampling locations wherein, at each location, samples from 2 discrete soil depths (0 to 0.5 feet and 1.5 to 2.0 feet bgs) will be collected and tested. The sample grid will be laid out as follows:

- Sample Location No. 1: Resample the location of soil sample No. A06-03
- Sample Location No. 2: 2 feet north of Sample Location No. 1
- Sample Location No. 3: 2 feet east of Sample Location No. 1
- Sample Location No. 4: 2 feet south of Sample Location No. 1
- Sample Location No. 5: 2 feet west of Sample Location No. 1

Figure 8 depicts the configuration of this sample grid.

Once the soil samples are tested, it is expected that only a localized occurrence of mercury will be defined at the Facility. If its presence and extent are confirmed, an Interim Measure may be merited for removal of mercury-contaminated soil.

No action is currently planned to address arsenic occurrences at the Facility, which are believed to represent area-wide background conditions.

3.2 Sediment Investigation

The Round 1 sediment investigation results will be compared to any results from the ongoing NOAA investigation described in Section 2.2. An ecological assessment of the Facility, focusing on the Duwamish River shoreline and sediments, will be conducted during Round 2. The assessment will consist of a field visit to the Facility to inventory obvious ecological characteristics of the shoreline area. The findings of the ecological assessment will be documented and used during the evaluation of the RFI results.

3.3 Hydrogeology and Groundwater Quality Investigation

This Round 2 investigation will consist of the following:

- Ten existing wells will be re-sampled and 8 new monitoring wells drilled and sampled, primarily to confirm and monitor the vertical distribution of toluene at the Facility, and also to provide additional locations for detecting and monitoring LNAPL. The existing and new wells to be sampled in Round 2 are shown in Figures 9 and 10.

- Analyses for antimony, beryllium, and vanadium will be conducted at two background wells to confirm previous detections.

- Toluene will be analyzed in all but the two background wells DM-1B and MW-E3 to confirm consistency with the HydroPunch findings and its spatial extent.

- Methylphenol (MW-H11 and MW-12), bis(2)-chloroethyl ether (MW-A2), and acetone (MW-H11) will be analyzed at the wells indicated to confirm their presence.

- Herbicides will be sampled from groundwater in 9 wells (DM-1A and 1B, DM-2A and 2B, DM-3A and 3B, DM-9, MW-B6, and MW-12) in order to complete analysis for Appendix IX purposes (ETC Analytical Laboratories did not produce valid herbicide data during Round 1).

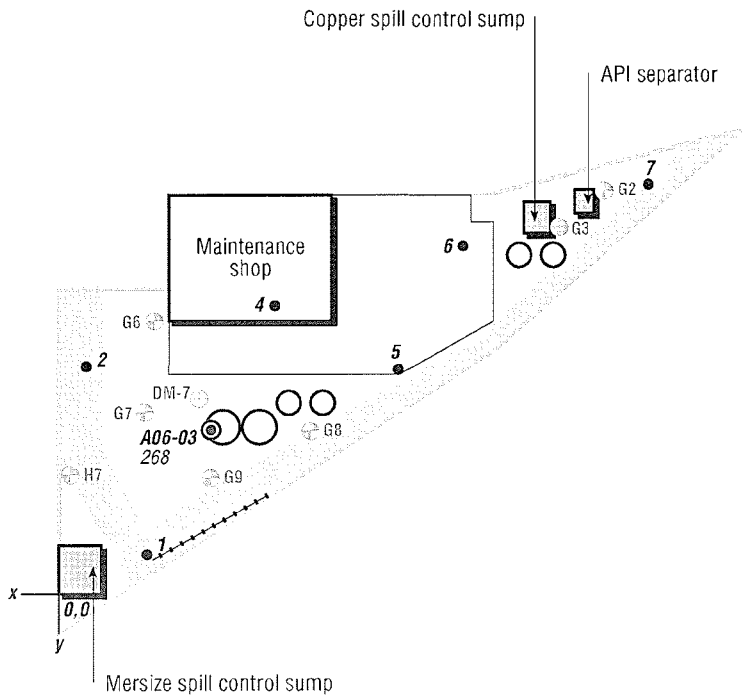
Of the eight new monitoring wells installed in the vicinity of the toluene plume (Figure 9), six "shallow" wells will be screened at the top of the Upper Aquifer, and two "deep" wells will be screened in the lower part of the Upper Aquifer.

All eight monitoring wells will be constructed using 4-inch-diameter PVC casing and screen to allow their potential use as extraction wells in the future, if necessary. With one exception, all shallow wells will be constructed with a 15-foot-long screen. Approximately 5 feet of screen will be positioned above the water table and 10 feet below. The shallow well planned for the southwest corner of the toluene tank farm (approximately 75 feet west-southwest of well MW-H10 as shown in Figure 9) will be constructed using a 25-foot-long screen (5 feet above the water table and 20 feet below). Of the six shallow wells installed, this well appears the most likely to be used as a pumping well in the future based on the configuration of the toluene plume and preliminary groundwater flow modeling conducted by RPI staff. Use of the longer screen will provide more available drawdown and allow higher pumping rates. The two deep wells will be constructed using 10-foot-long screens. All the new wells will be constructed with a 2- to 3-foot-long sump.

3.4 Round 2 Schedule

Round 2 of the RFI is scheduled to begin during the first week of August 1994, and last for approximately one month (see Figure 11).

For further discussion of the approach and schedule for Round 2 of the RFI, please contact Edwin Liu at Rhône-Poulenc (609/860-3304) or Patt O'Flaherty at CH2M HILL (206/453-5000).



AREA IN SQUARE FEET: **45,217 ft^2**
RANDOM STARTING COORDINATES: **x = 50 ft, y = 22 ft**
RANDOM ANGLE OF ROTATION: **153º**
GRID INTERVAL: **80 ft**

LEGEND

- Concentrations over MTCA Method C cleanup level
- Sampling location
- Soil boring completed by Landau Associates (1991)
- Monitoring well installed by Landau Associates (1991)
- Monitoring well installed by Dames & Moore (1986)
- Structure that remains onsite
- Shoreline area

NORTH

0 50 100

Approximate Scale in Feet

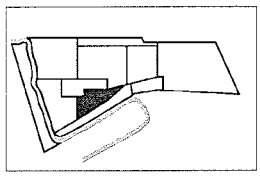


Figure 1

RFI Soil Investigation Area A6/ Maintenance Shop Area
Mercury Concentrations (μg/kg)

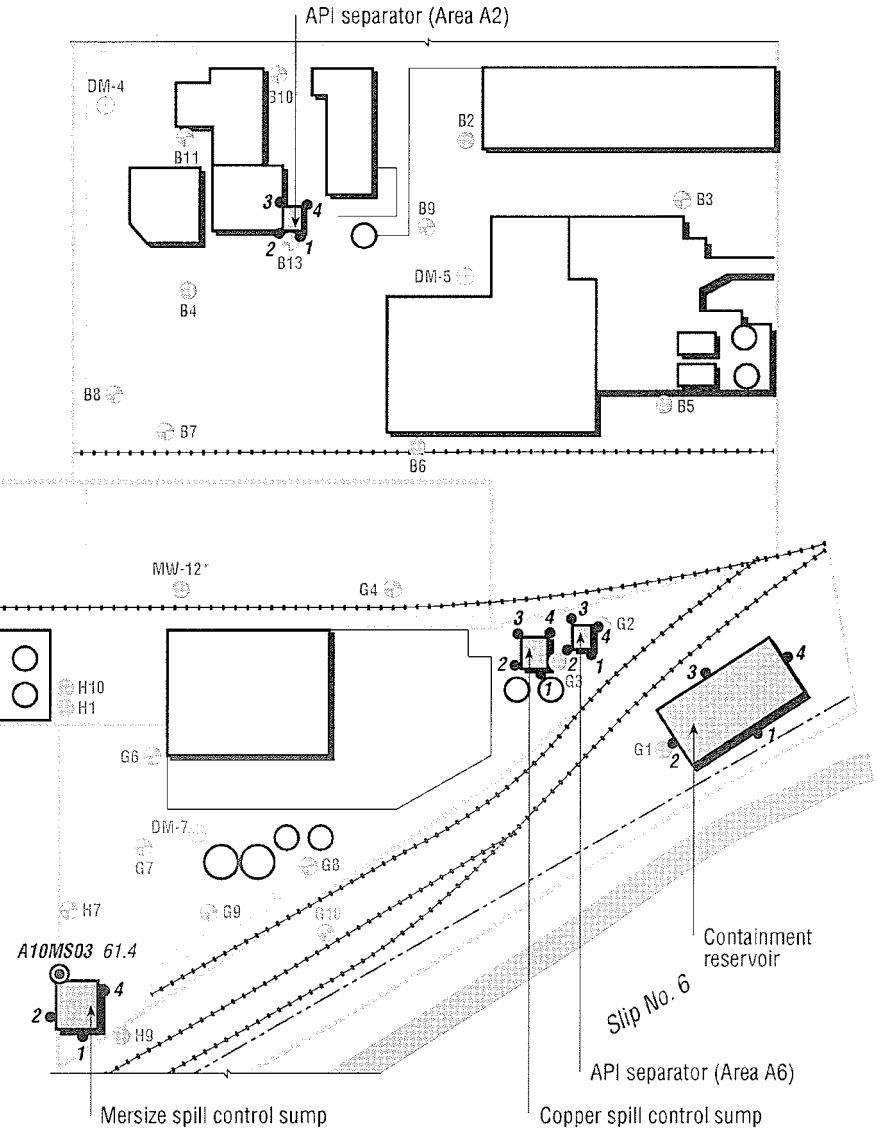
API SEPARATOR (AREA A2)
PERIMETER: **60 ft**
RANDOM STARTING COORDINATES:
x = 11 ft, y = 0 ft
GRID INTERVAL: **15 ft**

COPPER SPILL CONTROL SUMP
PERIMETER: **56 ft**
RANDOM STARTING COORDINATES:
x = 10 ft, y = 0 ft
GRID INTERVAL: **14 ft**

API SEPARATOR (AREA A6)
PERIMETER: **60 ft**
RANDOM STARTING COORDINATES:
x = 11 ft, y = 0 ft
GRID INTERVAL: **15 ft**

CONTAINMENT RESERVOIR
PERIMETER: **230 ft**
RANDOM STARTING COORDINATES:
x = 41.5 ft, y = 0 ft
GRID INTERVAL: **57.5 ft**

MERSIZE SPILL CONTROL SUMP
PERIMETER: **92 ft**
RANDOM STARTING COORDINATES:
x = 17 ft, y = 0 ft
GRID INTERVAL: **23 ft**

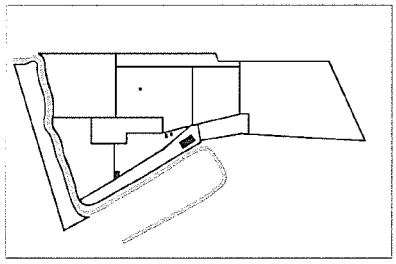


LEGEND

- Concentrations over MTCA Method C cleanup level
- Sampling location
- Soil boring completed by Landau Associates (1991)
- Monitoring well installed by Landau Associates (1991)
- Monitoring well installed by Dames & Moore (1986)
- Riprap
- Structure that remains onsite
- Shoreline area

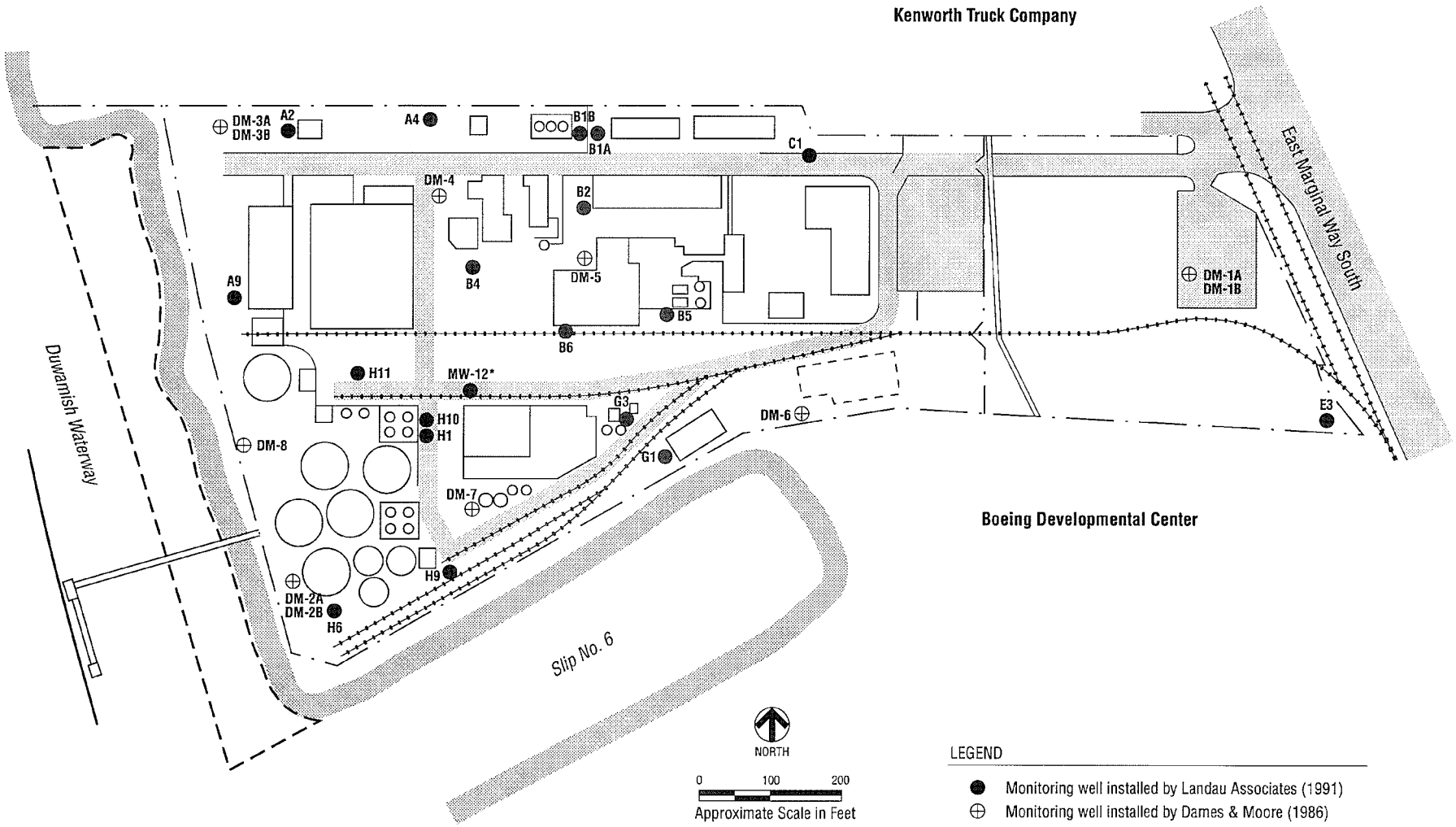
NORTH

0 50 100
Approximate Scale in Feet



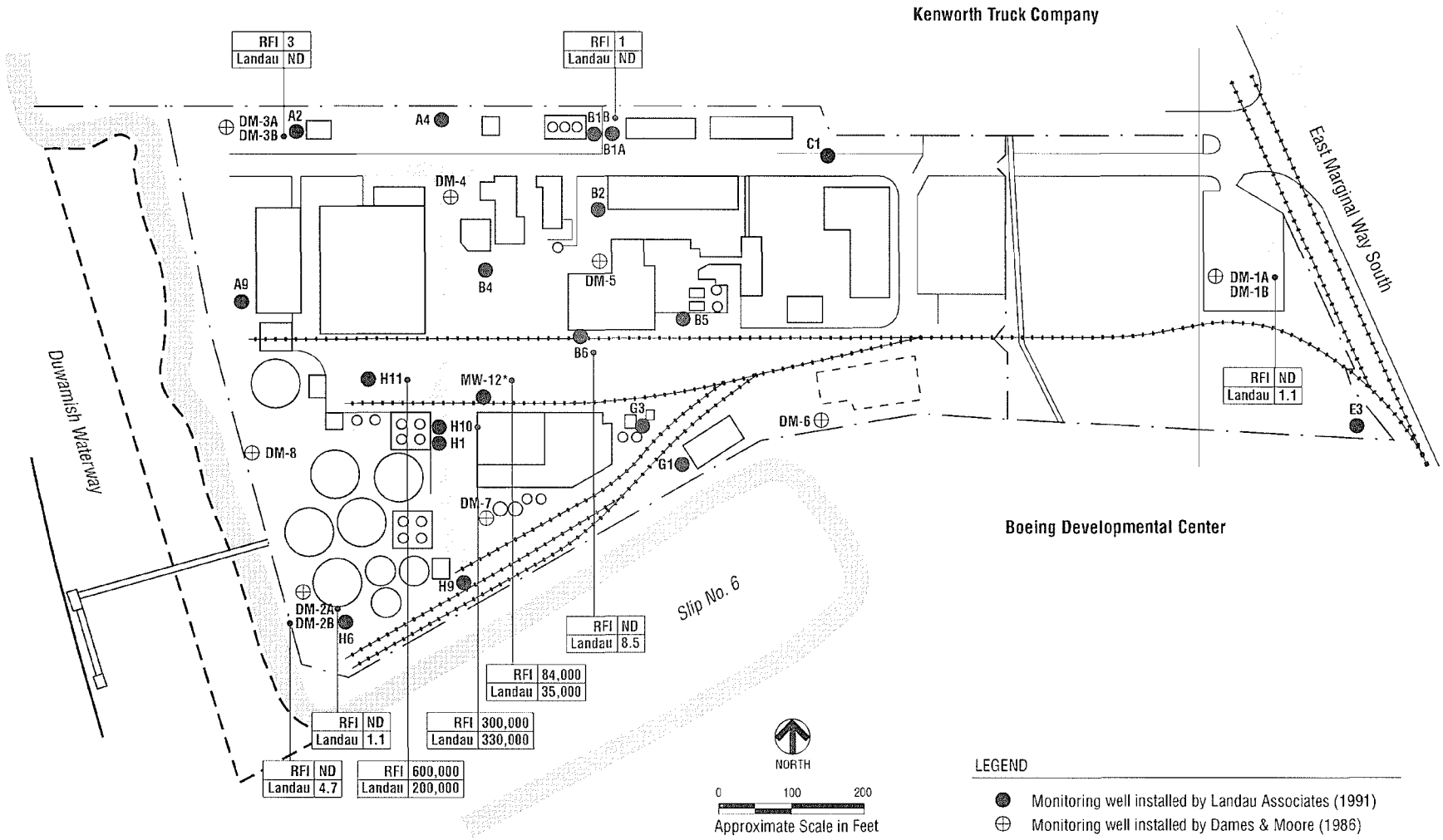
** Monitoring well MW-12 was installed by CH2M Hill in July 1993 to replace Landau Associates' well G5.*

Figure 2
RFI Soil Investigation Area A10/ Spill Control Reservoir and Sumps
Arsenic Concentrations (mg/kg)



** Monitoring well MW-12 was installed by CH2M Hill in July 1993 to replace Landau Associates' well G5.*

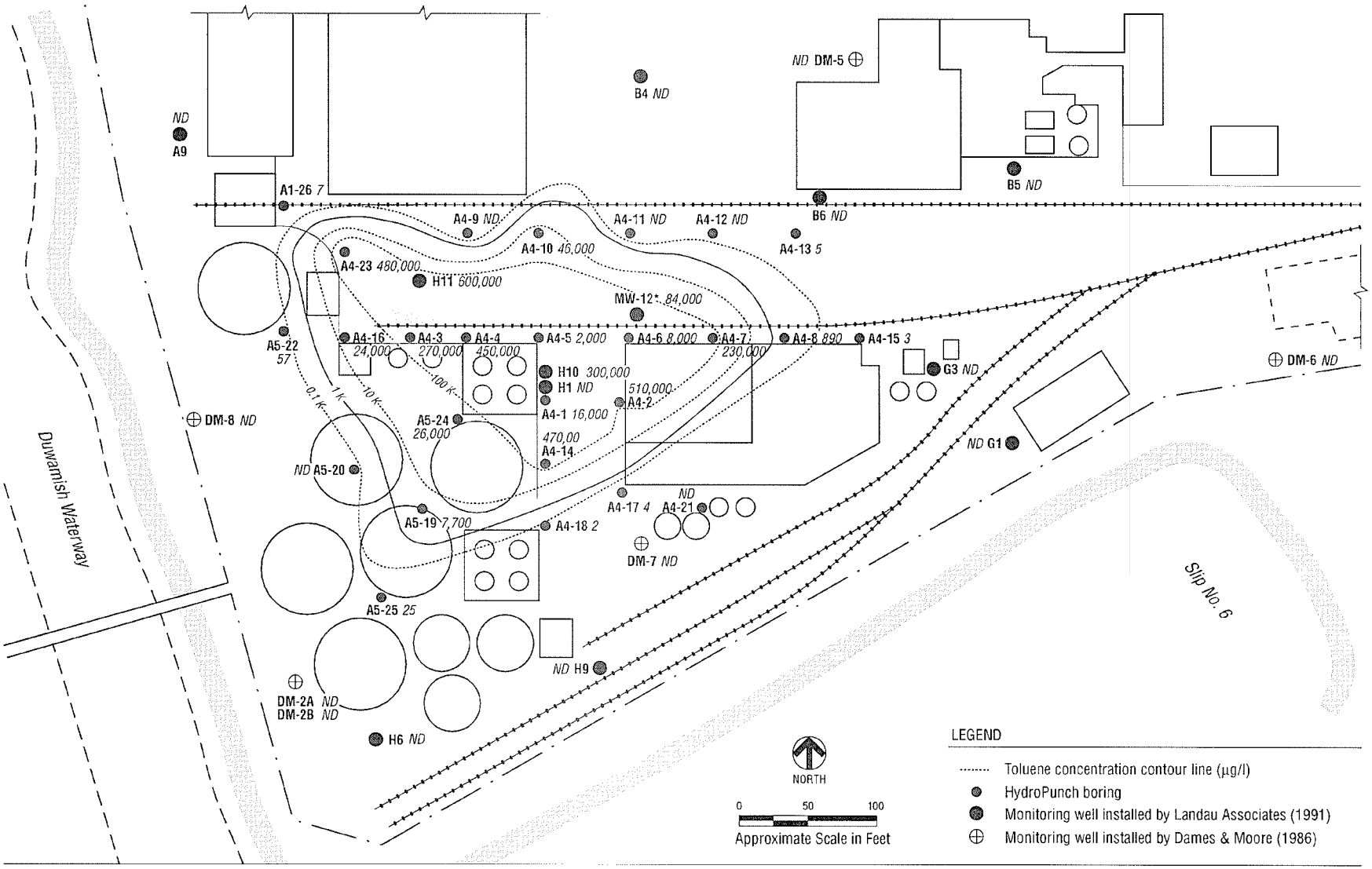
Figure 3
Existing Monitoring Wells



** Monitoring well MW-12 was installed by CH2M Hill in July 1993 to replace Landau Associates' well G5.*

Figure 4

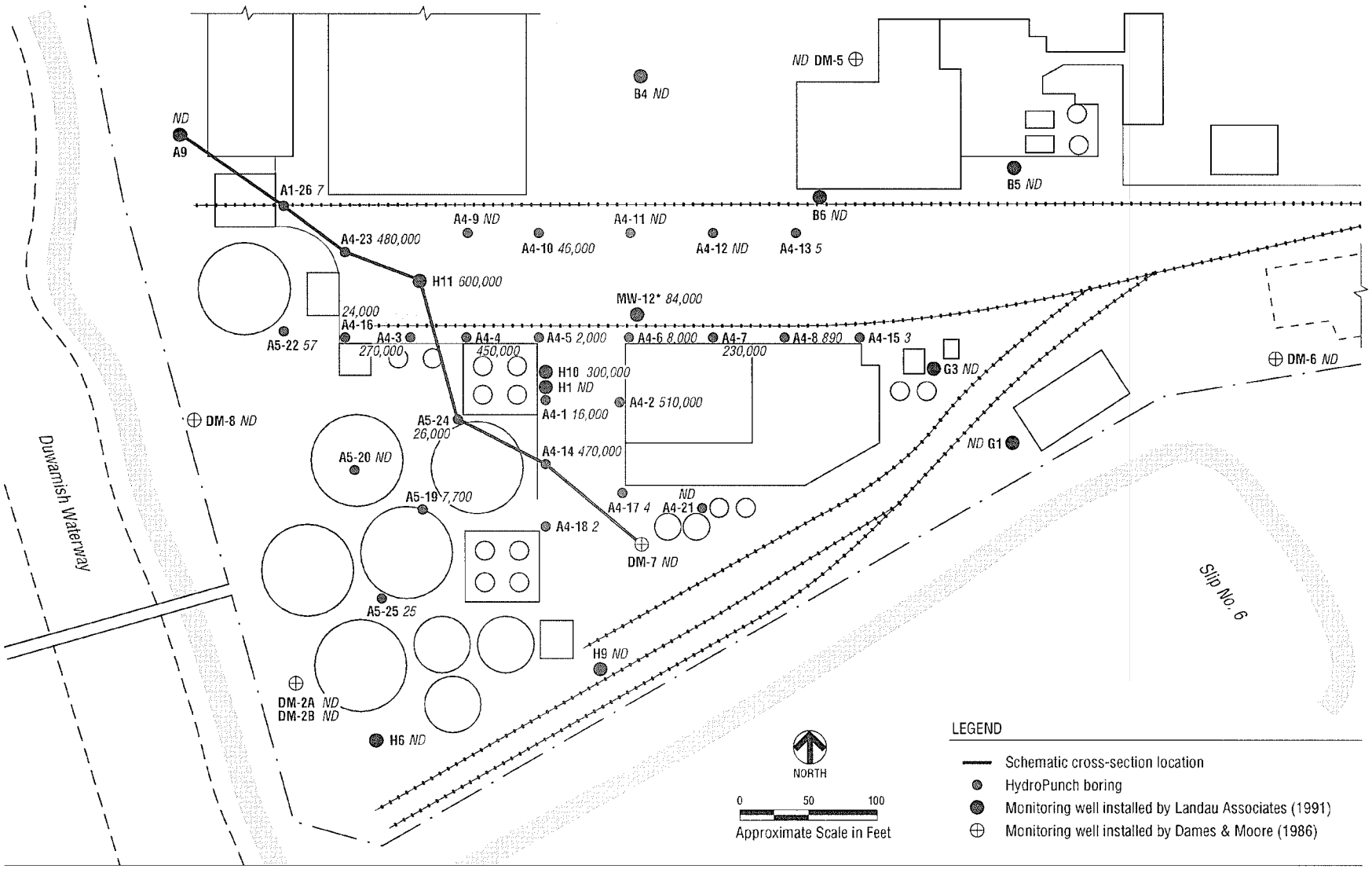
Comparison of Toluene Results for Groundwater Landau versus RFI



** Monitoring well MW-12 was installed by CH2M Hill in July 1993 to replace Landau Associates' well G5.*

Figure 5

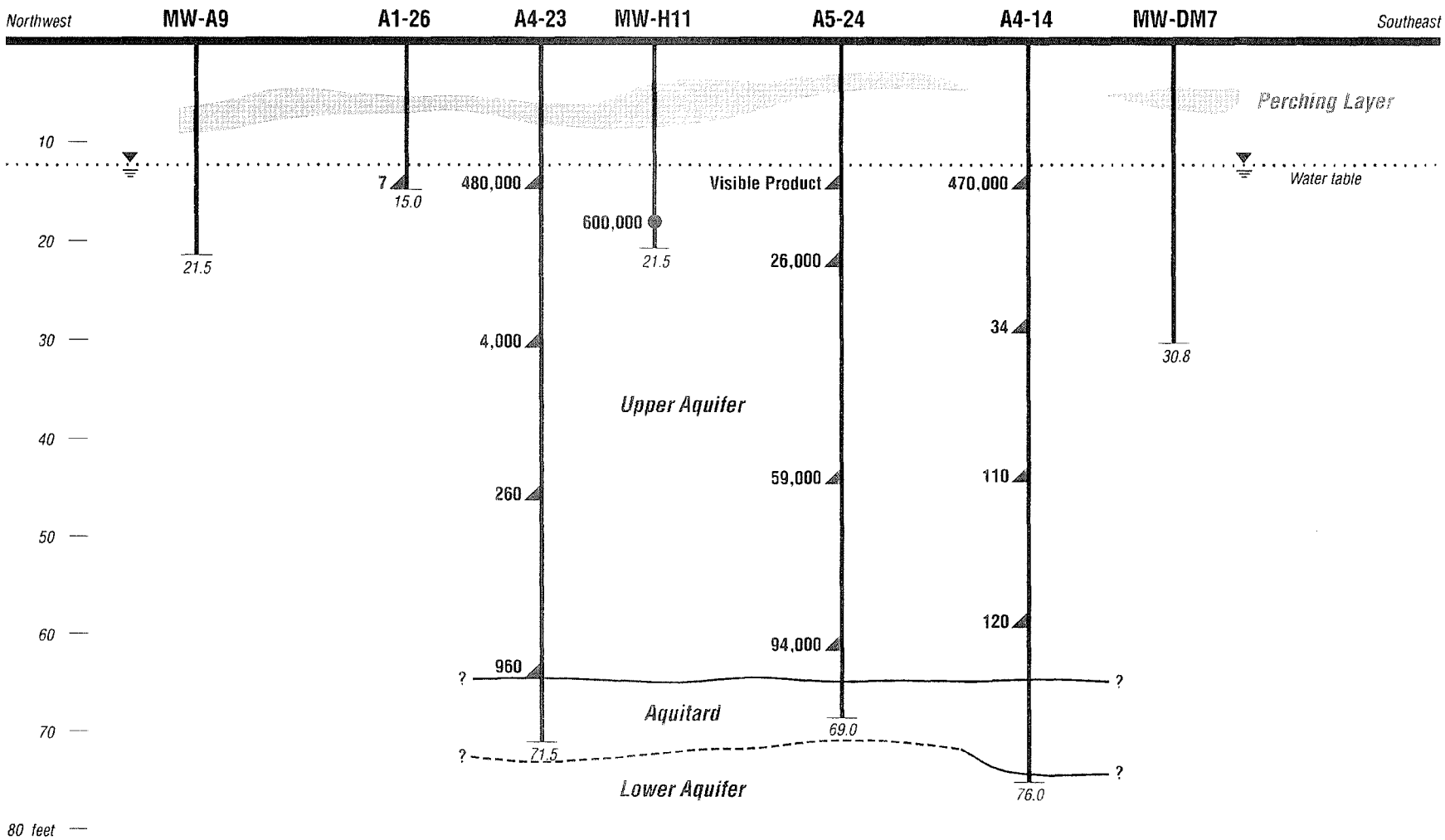
Toluene Concentrations (µg/l) in HydroPunch and Monitoring Well Samples



** Monitoring well MW-12 was installed by CH2M Hill in July 1993 to replace Landau Associates' well G5.*

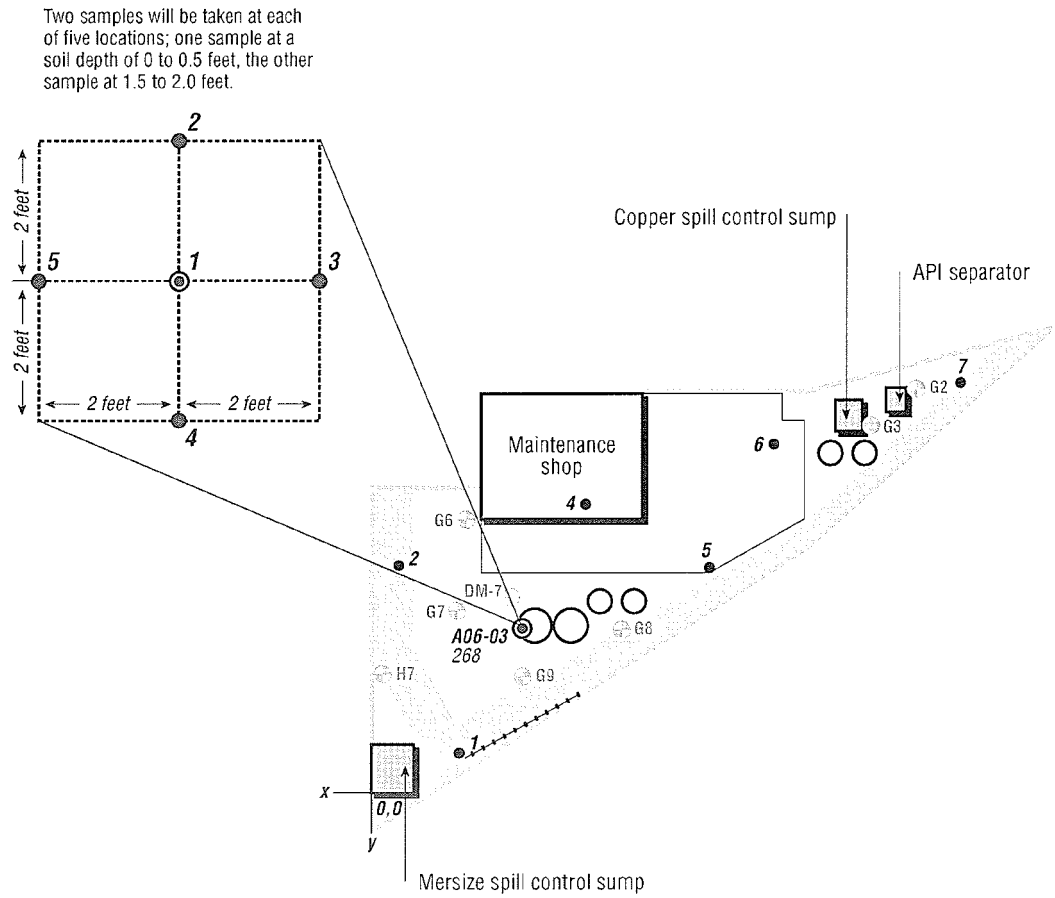
Figure 6

Toluene Concentrations (µg/l) in HydroPunch and Monitoring Well Samples



7 ◢ = HydroPunch toluene concentration (µg/l)
600,000 ● = Monitoring well toluene concentration (µg/l)

Figure 7
Schematic Cross-Section of Toluene Plume Area



AREA IN SQUARE FEET: **45,217 ft^2**
RANDOM STARTING COORDINATES: **x = 50 ft, y = 22 ft**
RANDOM ANGLE OF ROTATION: **153°**
GRID INTERVAL: **80 ft**

LEGEND

- Concentrations over MTCA Method C cleanup level
- Sampling location
- Soil boring completed by Landau Associates (1991)
- Monitoring well installed by Landau Associates (1991)
- Monitoring well installed by Dames & Moore (1986)
- Structure that remains onsite
- Shoreline area

NORTH

0 50 100

Approximate Scale in Feet

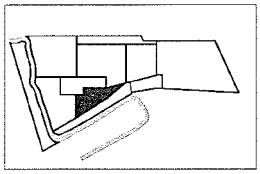
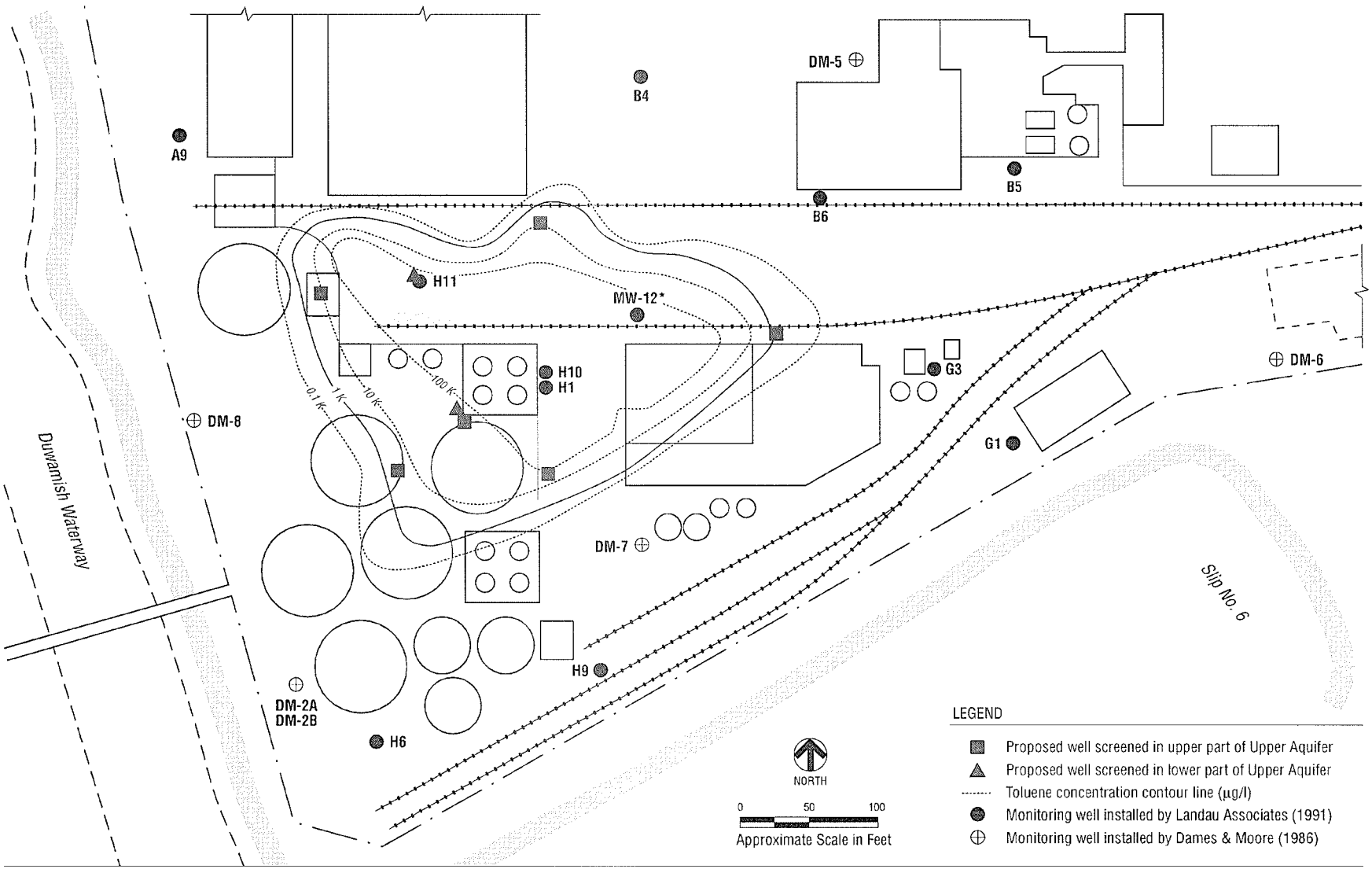


Figure 8

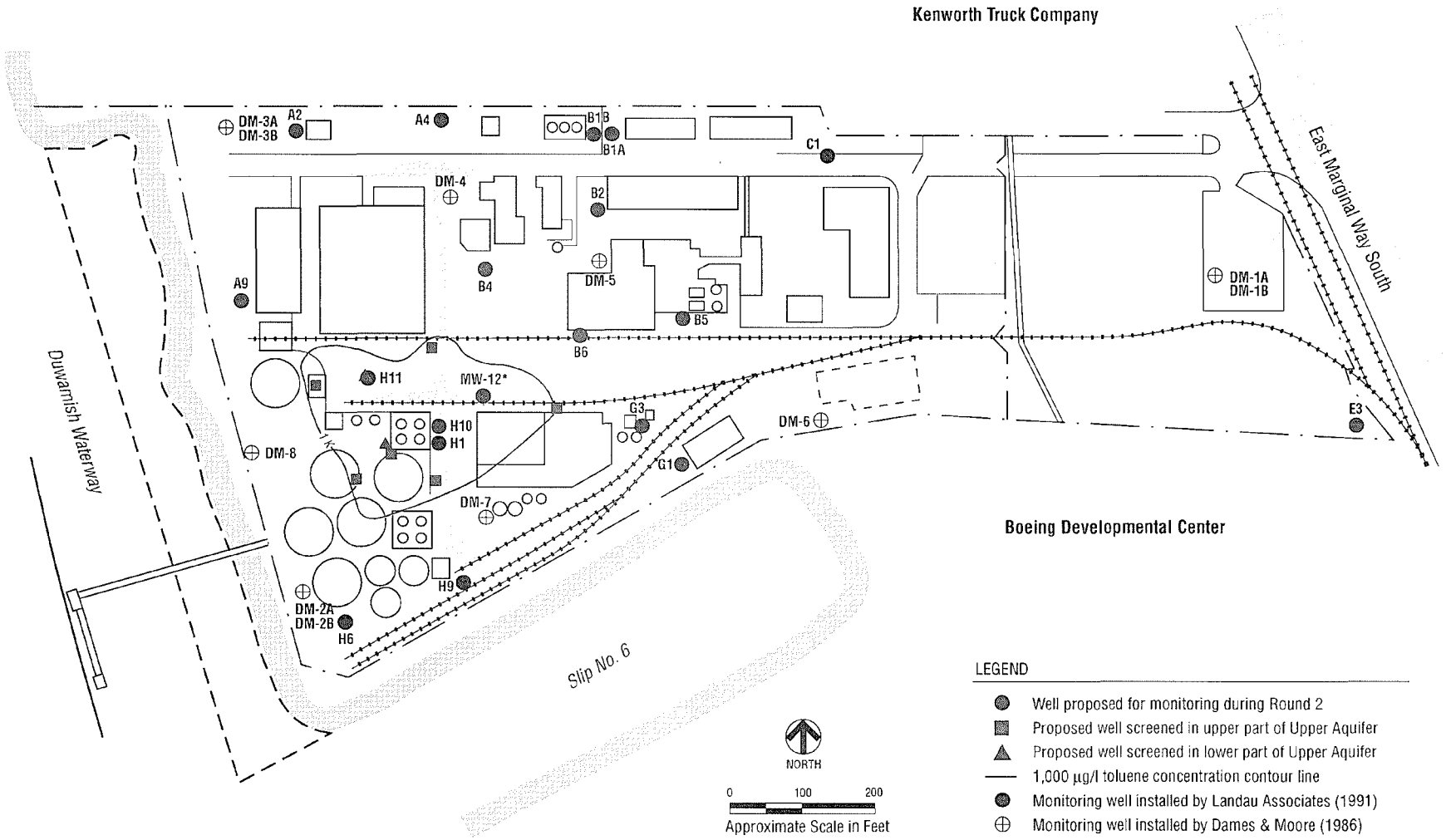
RFI Soil Investigation Area A6/ Maintenance Shop Area
Mercury Concentrations (μg/kg)



** Monitoring well MW-12 was installed by CH2M Hill in July 1993 to replace Landau Associates' well G5.*

Figure 9

Proposed Locations for Eight New Monitoring Wells



** Monitoring well MW-12 was installed by CH2M Hill in July 1993 to replace Landau Associates' well G5.*

Figure 10
Wells Proposed for Monitoring during Round 2

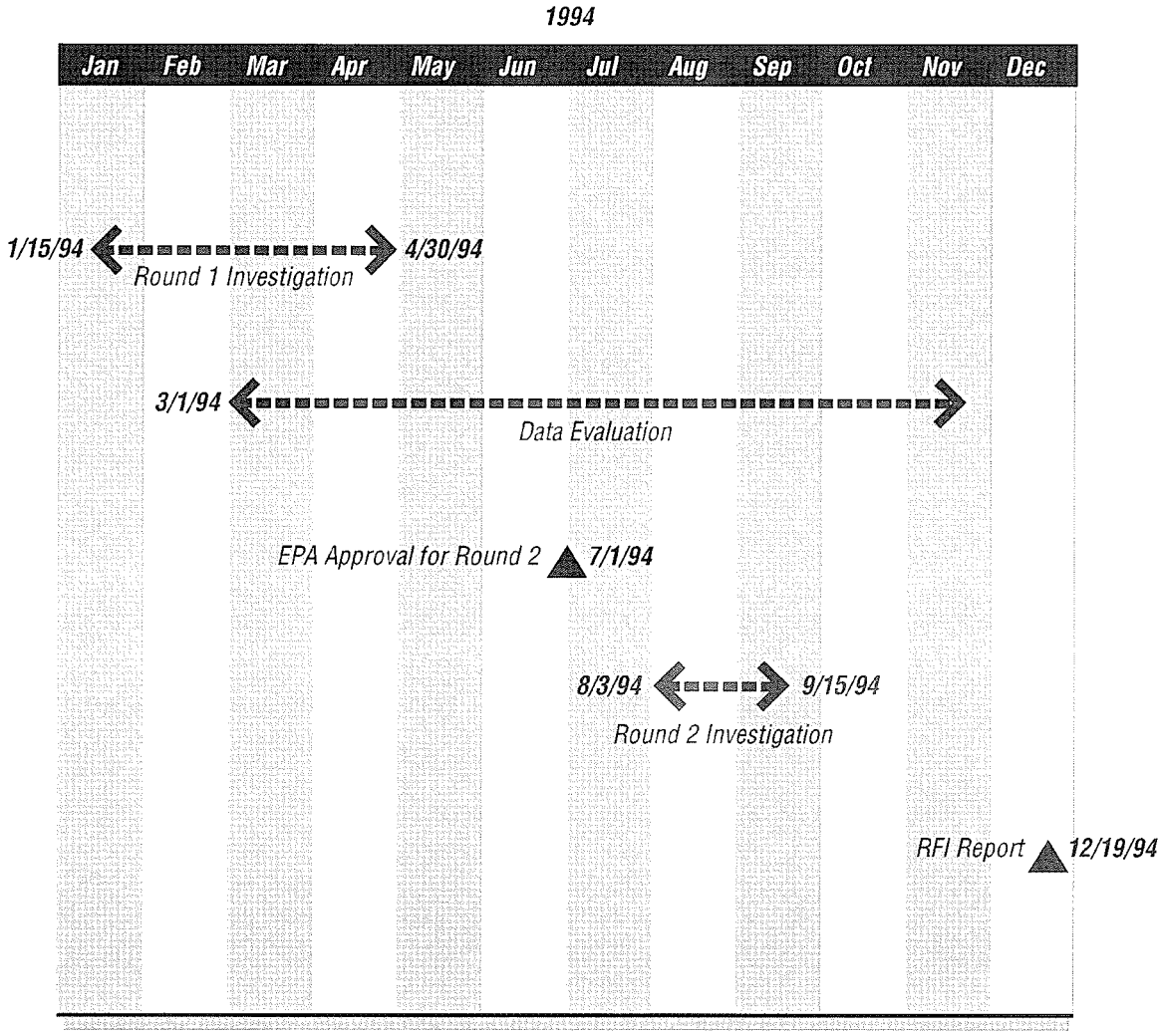


Figure 11
RFI Schedule

MEMORANDUM

CH2M HILL

TO: Tom Post/U.S. EPA

FROM: Edwin Liu/RPI

PREPARED BY: Patt O'Flaherty/CH2M HILL

DATE: August 8, 1994

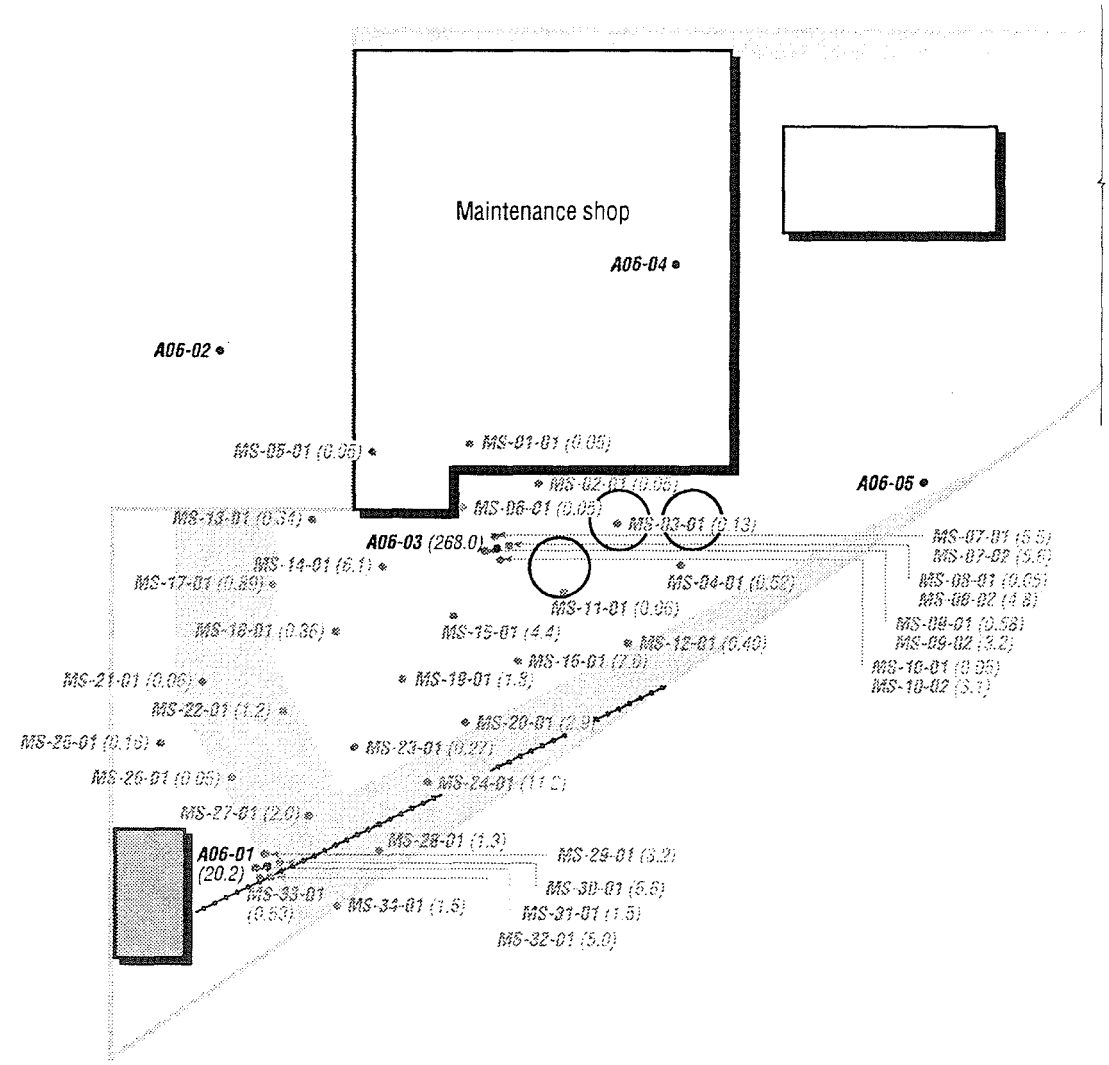
The purpose of this memorandum is to notify you of RPI's decision to expand the second round of the RFI field investigation currently underway at the East Marginal Way Facility.

The first expansion relates to the soils investigation in Investigation Area A6 for mercury. A more detailed sampling grid has been developed around Round One Sample Number A06-03 and Sample Number A06-01. A total of 33 sample locations will be sampled including surficial (0 - 0.5 ft. bgs) and deeper (1.5 - 2.0 ft. bgs) soils. These locations include four sample locations on 2 foot centers positioned directionally around the above mentioned Round One samples (North, South, East, and West) and 25 random sample locations laid out along a systematic grid. The deeper samples will not be analyzed if the surficial ones are below concern (i.e. MTCA B). The attached figure depicts these soil sample locations.

The second expansion concerns RPI's intention to sample one additional monitoring well (MW H-1) from Investigation Area A4. This monitoring well will be tested for toluene and will help to better define the extent of toluene in groundwater.

Please call me or Patt O'Flaherty at CH2M HILL if you have any questions concerning these additions.

NPE35051.A6 Rhône-Poulenc 4-43/Area A6 Mercury 10/31/94



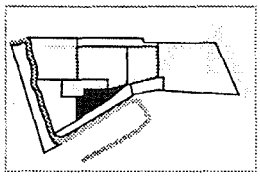
LEGEND

- Round 1 soil sampling location [January – March 1994]
- Round 2 sampling location (25 on 20-foot centers) [August 1994]
- Round 2 sampling location (8 on 2-foot centers) [August 1994]
- (0.53) Sample concentration in mg/kg
- Structure that remains onsite

NORTH

0 50

Approximate Scale in Feet



Notes:

1. *MCTA Method C Cleanup Level for mercury is 96 mg/kg.*
2. *Surface sampling is 0.0-0.5 ft deep/subsurface sampling is 1.5-2.0 ft deep.*

Figure 4-43

RFI Soil Investigation Area A6/ Maintenance Shop Area
Mercury Sample Locations

APPENDIX C

Modifications to Methods and Procedures Specified in the RFI Workplan

Appendix C
Modifications to Methods and Procedures Specified in the RFI Workplan

This appendix contains a list of the modifications that, during the actual RFI work conducted in 1994, were made to the methods and procedures specified in the RFI Workplan (December 1993). The modifications are presented in the following sequence:

- Soil investigation
- Groundwater investigation
- Sediment sampling
- Air emissions sampling

Appendix C concludes with a letter from U.S. EPA Region 10 to Rhône-Poulenc Inc. (RPI), dated September 6, 1994, regarding the Risk Assessment and Media Cleanup Standards evaluation that RPI will submit 30 days after the final RFI Report. The letter documents an EPA-approved revision to the requirements for the forthcoming Risk Assessment and selection of Media Cleanup Standards as outlined in the Administrative Order on Consent.

sea10029C0C.wp5

Modifications to Methods and Procedures Specified in the RFI Workplan

Number	Original RFI Workplan Procedure or Wording	Page Reference in RFI Workplan	Modification
Modifications to Soil Investigation Procedures			
1	**Proposed Soil Analyses.** Figure 4-3. Vanillin was not proposed as one of the soil analytical parameters for Area A1.	4-17	The laboratory voluntarily provided the vanillin data, and they have been included in the RFI Report.
2	**Soil Sampling Locations.** Figure 4-9. Seven sample locations are proposed.	4-29	Sample location 1 was abandoned and replaced by location 8, approximately 50 feet NE of location 1. This was necessary because of old wharf timber remnants at location 1.
3	**Soil Sampling Intervals.** Figure 4-9. Two sample depths are proposed.	4-29	At sample location 4 the shallow interval sample could not be collected. A large rock plugged the sampler.
4	**Area A2 Sampling.** Additional soil samples beyond those depicted on Figure 4-4 may be collected if it is necessary to define a zone of subsurface contamination.	4-42	No additional samples were determined to be necessary.
5	**Area A3 Sampling.** In addition to the seven grid sample locations, two shallow (0- to 0.5-foot) soil samples will be collected from the location of the former compressor shed. These samples will be collected to evaluate the presence of PCBs. The two additional sampling locations are shown in Figure 4-5.	4-42 4-43	Because of the thickness of concrete encountered, the PCB sample locations were relocated to correspond to locations 2 and 4, which lie west and north of the pad edge. This relocation was approved by U.S. EPA.
6	**Area A4 Sampling.** The configuration of the boreholes may not exactly reflect that shown in Figure 4-6 but will correspond to expansion of the sampling grid in response to the subsurface soil and groundwater contamination encountered.	4-43	The original 13 soil borings to be drilled concurrent with the HydroPunch investigation were completed essentially as planned (minor location changes occurred because of site conditions such as railroad tracks and buried steam pipes). Sixteen (16) additional HydroPunch borings were completed for groundwater sampling only and extended into Areas A1, A5, and A6. No soil samples were collected from these additional borings because the focus of the expanded HydroPunch grid was on identifying the extent of groundwater contamination.

Modifications to Methods and Procedures Specified in the RFI Workplan

Number	Original RFI Workplan Procedure or Wording	Page Reference in RFI Workplan	Modification
7	**Physical Parameter Sampling and Analyses.** Table 5-1, Summary of Physical Parameter Analyses for the Soil Investigation. Permeability tests will be conducted in accordance with U.S. Army Corps of Engineers Method EM1110-2-1906, Appendix VII.	5-2 and 5-3	The Upper Aquifer samples were collected from Areas A2 and A4. The Unsaturated Zone perching layer sample was not collected from Area A4 because a suitable sample location was not found in Area A4. Areas A5 and A9 were not sampled because only shallow surface samples were proposed. Laboratory permeability (hydraulic conductivity) tests were conducted using ASTM D-5084 for Round 1 samples and the U.S. Army Corps of Engineers method for Round 2 samples.
8	**Soil Sample Collection Procedures.** If the concrete is cored or sawed, a special dry bit or blade will be used so that water, used to cool conventional blades, will not affect the chemistry of the soil beneath the concrete.	5-3	A conventional blade, cooled by water, was used. The intent of the Workplan to prevent alteration of the soil chemistry beneath the concrete was maintained by collecting all cooling water as coring progressed. A strong vacuum was used to collect the water and prevent infiltration into the underlying soil.
9	**Soil Sample Collection Procedures.** The predemolition Facility grade will be used as the datum for sample depths in the underlying soil.	5-3	The depth interval for the shallow-most soil samples (scheduled for a depth of 0 to 0.5 foot bgs) was adjusted downward where necessary to avoid sampling pavement and underlying base-course materials. This change is consistent with the RFI intent to characterize potentially contaminated soils.
10	**Soil Sampling Procedures.** ...a hollow-stem-auger drilling rig equipped with a 300-lb drop hammer...	5-6	A 140-lb hammer was used. The 300-lb hammer was determined to be unnecessary due to the soft condition of the subsurface soil.
11	**Soil Sampling Procedures.** Soil samples will be collected at a maximum depth interval of 2-1/2 feet as an aid to geologic logging.	5-10	For HydroPunch samples, soil was sampled continuously in the Unsaturated Zone.
12	**Soil Sampling Procedures.** Geologic soil samples collected for physical properties testing will be retained in prelabeled sample jars.	5-10	Undisturbed physical samples required collection and transport in Shelby tubes, sleeves, and plastic bags as well as jars.

Modifications to Methods and Procedures Specified in the RFI Workplan

Number	Original RFI Workplan Procedure or Wording	Page Reference in RFI Workplan	Modification
13	**Soil Sampling QA/QC Procedures.** Equipment blanks for nonaqueous sampling equipment will be collected at a frequency of 10 percent, not to exceed one equipment blank sample per day of sampling.	5-33	During Round 1 soil sampling, equipment blanks were collected at a 9 percent frequency instead of a 10 percent frequency. Approximately 160 soil samples were collected and 14 equipment blanks were collected. During Round 2 soil sampling, equipment blanks were collected at a soil sampling rate of one per day, resulting in an 8 percent frequency instead of a 10 percent frequency. A total of 51 soil samples and 4 equipment blanks were collected.
Modifications to Groundwater Investigation Procedures			
1	**HydroPunch Survey.** A series of borings will be drilled on 50-foot centers in a grid located in the MW-12 area. The initial grid consists of approximately 10 to 20 borings as shown in Figure 4-21.	4-61	A total of 29 borings were completed to assist in estimating the limits of groundwater contamination.
2	**HydroPunch Survey.** Drilling will be halted for several minutes to allow groundwater and LNAPL (if present) to enter the HydroPunch.	4-65	Drilling was typically halted for 30 minutes to allow sufficient time for fluid to enter the HydroPunch screen.
3	**Installation of Additional Monitoring Wells.** New wells in the MW-12 area will be constructed with Type 304 stainless-steel screen and casing.	4-65	Four-inch-inside-diameter PVC screen and casing were used for the eight new wells installed in Round 2. The use of PVC instead of stainless steel is consistent with other well construction materials used on the site.
4	**Installation of Additional Monitoring Wells.** Upper Aquifer monitoring wells installed in the MW-12 area will be constructed of 4-inch-diameter, flush-threaded, Type 304 stainless-steel well casing and screen... wire-wrapped, Type 304 stainless-steel well screen.	5-10	Actual materials used were Schedule 40 PVC casing and continuous-slot PVC screen. These materials are consistent with other well construction materials used on the site.

Modifications to Methods and Procedures Specified in the RFI Workplan

Number	Original RFI Workplan Procedure or Wording	Page Reference in RFI Workplan	Modification
5	**Installation of Additional Monitoring Wells.** Wells installed outside the MW-12 area may be constructed of 2-inch-diameter, flush-threaded, Schedule 40 PVC.	5-11	Four-inch-diameter PVC was used for all wells installed. This provides the flexibility to install extraction pumps in the future, if needed.
6	**Installation of Additional Monitoring Wells.** A watertight, compression-fit, lockable well cap will be used to secure the well casing.	5-11	PVC slip caps were used for above-ground well completions. The protective steel outer casing is lockable.
7	**Installation of Additional Monitoring Wells.** Wells will be surged with a surge block to settle the sand filter pack.	5-11	This was not done. Heaving sand conditions required that the filter pack be installed as quickly as possible to avoid collapse of aquifer material (typically fine sand) against the screen.
8	**HydroPunch Survey.** ...a close-support analytical laboratory	5-16	No onsite laboratory was used. ETC provided quick turnaround (24-hour) analyses and was situated within 25 miles of the Facility.
9	**HydroPunch Sample Collection Methods.** Groundwater samples will be analyzed by ETC in a close-support laboratory.	5-19	ETC provided 24-hour turnaround as discussed above.
10	**HydroPunch Sample Collection Methods.** The field parameters pH, conductivity, and temperature will be measured at each sampling location.	5-20	Insufficient capacity of the groundwater-mode HydroPunch combined with analytical sample volume requirements precluded field parameters from being measured for samples collected in the aquifer.
11	**Monitoring Well Sampling.** Round 2 of groundwater sampling will occur approximately 3 months after the completion of Round 1.	5-21	Round 2 of groundwater sampling occurred approximately 6 months after Round 1 to allow sufficient time for interpretation of Round 1 sampling results and discussion with U.S. EPA.

Modifications to Methods and Procedures Specified in the RFI Workplan

Number	Original RFI Workplan Procedure or Wording	Page Reference in RFI Workplan	Modification
12	**Monitoring Well Sampling.** Well number, depth to water, time and date of measurement, measuring point elevation, and water level elevation will be documented in the field notebook.	5-26	Well number, depth to water, time and date of measurement, total well depth, and submerged casing depth were documented in the field logbook. Measuring-point and water-level elevations are not needed for purge volume calculations and, therefore, were not noted in the field logbook during groundwater sampling.
13	**Monitoring Well Sampling.** Monitoring wells will be purged prior to sampling by removing a minimum of three and no more than five casing volumes of water using a peristaltic purge pump.	5-26	Monitoring wells were purged prior to sampling using a decontaminated stainless-steel bailer or a Waterra pump. The peristaltic pump could not purge at a sufficient rate in most wells and not at all in other wells. Peristaltic performance was adversely affected by depth to water and drawdown during purging.
14	**Monitoring Well Sampling.** Groundwater samples will be collected using decontaminated stainless-steel bailers.	5-27	Groundwater samples were collected using decontaminated stainless-steel bailers or new, dedicated Waterra pumps.
15	**Monitoring Well Sampling.** Groundwater sampling information to be recorded in the field notebook includes the following: ...general condition of the well.	5-28	The condition of the well was noted if repair or maintenance was needed.
16	**Field QA/QC Samples.** Equipment blank samples for aqueous sampling equipment will be collected at a frequency of one per day of sampling.	5-33	As agreed by U.S. EPA, one equipment blank was collected for each batch of bailers decontaminated by the laboratory. Batches were distinguished by dated custody seals placed on the aluminum foil wrapping on all the bailers.
17	**Groundwater Sampling QA/QC Procedures.** Equipment blanks for aqueous sampling equipment will be collected at a frequency of 10 percent, not to exceed one equipment blank sample per day of sampling.	5-33	Equipment blank samples were collected from laboratory-decontaminated stainless steel bailers at a frequency of one per batch sent from the laboratory. Batches were distinguished by dated custody seals attached to the aluminum foil wrapping on all the bailers.

Modifications to Methods and Procedures Specified in the RFI Workplan

Number	Original RFI Workplan Procedure or Wording	Page Reference in RFI Workplan	Modification
18	**Groundwater Sampling QA/QC Procedures.** (Equipment blank) Samples will be collected by pouring high-performance liquid chromatography (HPLC) water over the decontaminated sampling equipment and collecting the rinsate into VOA vials or other laboratory-prepared sample bottles.	5-33	During Round 1 of groundwater sampling, the first of four equipment blank samples was collected by pouring organic-free, metals-free, Baker-analyzed water over the decontaminated sampling equipment (bailer) and collecting the rinsate into VOA vials or other laboratory-prepared sample bottles. The aliquot for dissolved metals analysis was filtered through a 0.45-micron Nalgene filter prior to collection and preservation. The remaining three equipment blank samples were collected by pouring ASTM Type II water over the decontaminated sampling equipment (bailers) and collecting the rinsate into VOA vials or other laboratory-prepared sample bottles. The aliquot for dissolved metals analysis was filtered through a 0.45-micron Nalgene filter prior to collection and preservation. No equipment blanks were collected because equipment was not decontaminated and reused; during Round 2 of groundwater sampling, all sampling equipment was either single-use disposable equipment or was dedicated to a particular monitoring well.
19	**Matrix Spikes/Matrix Spike Duplicates.** Triplicate volumes of sample will be collected at a frequency of 10 percent of the total number of samples collected.	5-34	During Round 1 of groundwater sampling three MS/MSD samples were collected, representing 10 percent of the 30 wells sampled. During Round 2 of groundwater sampling, the analyte lists for each well varied. Some analytes were sampled from one or two of the wells in Round 2. It was decided that each analyte would have an MS/MSD sample collected with the exception of toluene, which had two MS/MSD samples collected. The frequency of MS/MSD collection exceeded 10 percent.

Modifications to Methods and Procedures Specified in the RFI Workplan

Number	Original RFI Workplan Procedure or Wording	Page Reference in RFI Workplan	Modification
20	**Field QA/QC Samples.** Section 5.6.1, Sample Identification Numbers.	5-34	A modified sample identification numbering scheme was used to correlate with the laboratory's computer printout.
21	**Aqueous Sampling Equipment Decontamination.** ...1. Wash in a solution of Alconox and potable tap water.	5-37	Liquinox (a nonphosphate detergent) was used instead of Alconox. Alconox contains phosphates.
22	**Aqueous Sampling Equipment Decontamination.** Rinse with acetone (pesticide-grade).	5-37	Methanol was substituted because acetone was one of the analytes being investigated.
23	**Nonaqueous Sampling Equipment Decontamination.** ...1. Washing in a solution of Alconox and potable tap water.	5-37	Liquinox (a nonphosphate detergent) was used instead of Alconox. Alconox contains phosphates.
24	**Nonaqueous Sampling Equipment Decontamination** ...stainless-steel bowls, scoops, and spoons used for soil and sediment sampling will be decontaminated by ETC Analytical Laboratories.	5-38	The nonaqueous sampling equipment was field-decontaminated following the decontamination scheme in the RFI Workplan. This method was implemented as an alternative plan when the onsite laboratory was cancelled. The onsite laboratory would have carried out sampling equipment decontamination.
25	**Surveying.** Sampling point elevations will be surveyed by the National Geodetic Vertical Datum (NGVD), 1929, to an accuracy of within 0.01 foot. Horizontal control accuracy will be within 0.1 foot.	5-39	Sampling location elevations were to an accuracy of 0.1 foot. Monitoring well measuring point and ground surface elevations were surveyed to ± 0.01 foot. Horizontal control was to ± 0.01 foot.
26	**Number of Pre-RFI Wells to be Sampled.** Ten wells will be resampled and eight new monitoring wells ...sampled.	Page 6 of RFI Workplan Addendum	Well H1 was sampled in addition to the 10 pre-RFI wells identified in the Addendum.
Modifications to Sediment Sampling Procedures			
1	**Sediment Sampling.** Sediment samples will be collected from the intertidal zone during low tide using a decontaminated stainless-steel flat-bottom scoop.	5-7	Sediment samples were collected using a round-bottom scoop.

Modifications to Methods and Procedures Specified in the RFI Workplan

Number	Original RFI Workplan Procedure or Wording	Page Reference in RFI Workplan	Modification
2	**Sediment Sampling.** The sediment samples will be collected from approximately 0 to 2 cm below mudline.	5-8	Round 1 samples were inadvertently collected from 0 to 0.5 foot (0 to 15 cm) below the mudline. However, Round 2 samples were collected from 0 to 2 cm below the mudline per Puget Sound Estuary Program (PSEP) protocols.
3	**Sediment Sampling.** Sediment samples from continuously submerged areas will be collected during low tide using a decontaminated stainless-steel Van-Veen or Ponar dredge.	5-8	None of the sediment sample locations was continuously submerged during sampling activities. Neither the Van-Veen nor the Ponar dredge was used.
4	**Sediment Sampling QA/QC Procedures.** Equipment blanks for non-aqueous sampling equipment will be collected at a frequency of 10 percent, not to exceed one equipment blank sample per day of sampling.	5-33	During Round 2 sediment sampling, no equipment blanks were collected. Dedicated sampling equipment was used during the sampling event.
5	**Sediment Sampling QA/QC Procedures.** (Equipment blank) Samples will be collected by pouring high-performance liquid chromatography (HPLC) water over the decontaminated sampling equipment and collecting the rinsate into VOA vials or other laboratory-prepared sample bottles.	5-33	Equipment blanks were not collected for sediment samples. However, equipment blanks were collected for soil samples. Sampling equipment was decontaminated prior to the sampling activity. Bowls and spoons were dedicated for each sample location.
Modifications to Air Emissions Sampling Procedures			
1	**Flux Chamber Sampling.** The flux chamber sampling method . . . is applicable to solid (soil) surfaces . . .	4-68	One of the flux chamber locations was over a paved area that was subsequently cored for air sampling purposes.

sea10029A7B.wp5

Letter from U.S. EPA to Rhône-Poulenc Inc.
Regarding Risk Assessment and Media Cleanup Standards Evaluation

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington

EPA

SEP 06 1994

Reply to
Attn. of: HW-104

Edwin Liu
Remediation Engineer
Specialty Chemicals Division
Rhone-Poulenc, Inc.
CN7500
Cranbury, New Jersey 08512

Re: RCRA Facility Investigation Development of Cleanup Goals
Docket No. 1091-11-20-3008(h)
EPA ID No. WAD 00928 2302

Dear Edwin,

This letter serves as documentation of our meeting on September 1, 1994 regarding the risk assessment process and development of clean-up goals during Rhone-Poulenc's RFI. As we agreed to, Rhone-Poulenc will perform a risk assessment and propose media cleanup goals using "Guidelines for Developing Health-Based Clean-Up Levels at RCRA Sites in Region 10", U.S. EPA guidance 910/9-92-019. Additional risk assessment guidance identified in Paragraphs 6.13 and 6.15 of the Administrative Order on Consent and in the approved RFI Workplan will not be required at this time. However, additional risk assessment work may be necessary at a later time in the corrective action process.

If you or your representatives have any questions regarding this letter please call me at (206) 553-1604.

Sincerely,

Tom C. Post

Tom C. Post, Environmental Engineer
RCRA Compliance Section

cc: Byung Maeng, WDOE NWRO

APPENDIX D

RFI Database of Detected Results

Appendix D
RFI Database of Detected Results

This appendix lists all *detected* values for samples analyzed during the RFI. Constituents that were not detected are not listed here because of the large quantity of data that fall into this category. A complete listing of the RFI data for both detected and undetected constituents is maintained in a computerized database. The database files are available to the U.S. EPA upon request, as required by the Administrative Order on Consent.

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DATA REPORTING QUALIFIERS

Some of these qualifiers may appear in this analytical data report. Soil samples are analyzed and reported on a dry weight basis unless otherwise noted.

Organics Data Qualifiers .....

Y - Raised detection limit. Unable to quantify at regular detection limit due to matrix interference.
A - This flag indicates that a TIC is a suspected aldol-condensation product.
B - Indicates compound was found in the associated blank as well as in the sample.
C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.
D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.
E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.
J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a target compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
L - Compound detected in leachate blank.
M - Indicates value is taken from a medium level analysis.
N - Indicates that the identity of the compound is based upon a mass spectral library search (applies to tentatively identified compounds only).
ND- Not detected. Detection limit shown in parentheses.
NQ- Not quantitated as...
U - Indicates compound was analyzed for but not detected at the given detection limit. The sample quantitation limit was corrected for dilution and for percent moisture, when applicable.
X - Other specific flags and footnotes may be required to properly define the results. If more than two qualifiers are required for a sample result, the "X" flag combines several flags, as needed. For instance, the "X" flag might combine the "A," "B," and "D" flags for some sample.
Z - Spike compound diluted out, recovery value could not be determined.
P - Quantitation value on 2 columns vary by >25% (Pesticides only).

Inorganics Data Qualifiers .....

NA- Relative percent difference calculation is not applicable to analytes when not detected.
NC- Not calculated when analyte is not detected.
NS- Not calculated when sample concentration of analyte exceeds spike level by a factor of four or more.
U - Indicates that analyte was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.
B - Indicates that the reported value is less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).
E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the Cover Page (if the problem applies to all samples) or on the specific FORM-I (if it is an isolated problem).
M - Duplicate injection precision not met.
N - Spike sample recovery not within control limits.
S - The reported value was determined by the Method of Standard Additions (MSA).
W - Post-digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance. (See Exhibit E.)
* - Duplicate analysis not within control limits.
+ - Correlation coefficient for the MSA is less than 0.995.

Inorganics Method Qualifiers .....

CV- Manual Cold Vapor AA
F - FURNACE AA
P - ICP

Round 1 Soil Results

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Inorganics								
01	A01-01-01		0	0.5	Aluminum, Total	10100		mg/kg
01	A01-01-01		0	0.5	Arsenic, Total	7.6	N	mg/kg
01	A01-01-01		0	0.5	Barium, Total	48.8		mg/kg
01	A01-01-01		0	0.5	Calcium, Total	19900		mg/kg
01	A01-01-01		0	0.5	Chromium, Total	17.1		mg/kg
01	A01-01-01		0	0.5	Cobalt, Total	8.7	B	mg/kg
01	A01-01-01		0	0.5	Copper, Total	196	*	mg/kg
01	A01-01-01		0	0.5	Iron, Total	16800		mg/kg
01	A01-01-01		0	0.5	Lead, Total	48.2	N	mg/kg
01	A01-01-01		0	0.5	Magnesium, Total	4080		mg/kg
01	A01-01-01		0	0.5	Manganese, Total	203		mg/kg
01	A01-01-01		0	0.5	Mercury, Total	0.34		mg/kg
01	A01-01-01		0	0.5	Nickel, Total	21.1		mg/kg
01	A01-01-01		0	0.5	Potassium, Total	618	B	mg/kg
01	A01-01-01		0	0.5	Vanadium, Total	50.1		mg/kg
01	A01-01-01		0	0.5	Zinc, Total	115		mg/kg
Semivolatiles								
01	A01-01-01		0	0.5	Pentachlorophenol	0.61	J	mg/kg
01	A01-01-01		0	0.5	Vanillin	0.13	J	mg/kg
Volatiles								
01	A01-01-01		0	0.5	Formaldehyde	0.096	J	mg/kg
Inorganics								
01	A01-02-01		0	0.5	Aluminum, Total	13100		mg/kg
01	A01-02-01		0	0.5	Arsenic, Total	5	NS	mg/kg
01	A01-02-01		0	0.5	Barium, Total	40.9		mg/kg
01	A01-02-01		0	0.5	Beryllium, Total	0.43	B	mg/kg
01	A01-02-01		0	0.5	Calcium, Total	14800		mg/kg
01	A01-02-01		0	0.5	Chromium, Total	29.5		mg/kg
01	A01-02-01		0	0.5	Cobalt, Total	13.9		mg/kg
01	A01-02-01		0	0.5	Copper, Total	603	*	mg/kg
01	A01-02-01		0	0.5	Iron, Total	26100		mg/kg
01	A01-02-01		0	0.5	Lead, Total	30.4	N	mg/kg
01	A01-02-01		0	0.5	Magnesium, Total	8420		mg/kg
01	A01-02-01		0	0.5	Manganese, Total	343		mg/kg
01	A01-02-01		0	0.5	Mercury, Total	0.29		mg/kg
01	A01-02-01		0	0.5	Nickel, Total	32.8		mg/kg
01	A01-02-01		0	0.5	Potassium, Total	642	B	mg/kg
01	A01-02-01		0	0.5	Vanadium, Total	76.6		mg/kg
01	A01-02-01		0	0.5	Zinc, Total	96.5		mg/kg
Semivolatiles								
01	A01-02-01		0	0.5	Vanillin	450	D	mg/kg
Volatiles								
01	A01-02-01		0	0.5	2-Butanone	0.002	J	mg/kg
01	A01-02-01		0	0.5	Formaldehyde	0.058	J	mg/kg
Inorganics								
01	A01-03-01		0	0.5	Aluminum, Total	9260		mg/kg
01	A01-03-01		0	0.5	Arsenic, Total	2.9		mg/kg
01	A01-03-01		0	0.5	Barium, Total	36.5	B	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
01	A01-03-01		0	0.5	Beryllium, Total	0.53	B	mg/kg
01	A01-03-01		0	0.5	Calcium, Total	4400		mg/kg
01	A01-03-01		0	0.5	Chromium, Total	14.2		mg/kg
01	A01-03-01		0	0.5	Cobalt, Total	8.6	B	mg/kg
01	A01-03-01		0	0.5	Iron, Total	15200		mg/kg
01	A01-03-01		0	0.5	Lead, Total	4.2		mg/kg
01	A01-03-01		0	0.5	Magnesium, Total	2950		mg/kg
01	A01-03-01		0	0.5	Manganese, Total	160		mg/kg
01	A01-03-01		0	0.5	Nickel, Total	19.2		mg/kg
01	A01-03-01		0	0.5	Silver, Total	2.3	*	mg/kg
01	A01-03-01		0	0.5	Sodium, Total	751	B	mg/kg
01	A01-03-01		0	0.5	Vanadium, Total	47.6		mg/kg
01	A01-03-01		0	0.5	Zinc, Total	36.4		mg/kg
Volatiles								
01	A01-03-01		0	0.5	Formaldehyde	0.1	J	mg/kg
Inorganics								
01	A01-04-01		0	0.5	Aluminum, Total	10200		mg/kg
01	A01-04-01		0	0.5	Arsenic, Total	6	N	mg/kg
01	A01-04-01		0	0.5	Barium, Total	65		mg/kg
01	A01-04-01		0	0.5	Calcium, Total	32700		mg/kg
01	A01-04-01		0	0.5	Chromium, Total	18.9		mg/kg
01	A01-04-01		0	0.5	Cobalt, Total	8.8	B	mg/kg
01	A01-04-01		0	0.5	Copper, Total	6850	*	mg/kg
01	A01-04-01		0	0.5	Iron, Total	15700		mg/kg
01	A01-04-01		0	0.5	Lead, Total	73.2	N	mg/kg
01	A01-04-01		0	0.5	Magnesium, Total	4050		mg/kg
01	A01-04-01		0	0.5	Manganese, Total	289		mg/kg
01	A01-04-01		0	0.5	Mercury, Total	0.45		mg/kg
01	A01-04-01		0	0.5	Nickel, Total	23.5		mg/kg
01	A01-04-01		0	0.5	Potassium, Total	657	B	mg/kg
01	A01-04-01		0	0.5	Silver, Total	3.5		mg/kg
01	A01-04-01		0	0.5	Vanadium, Total	47		mg/kg
01	A01-04-01		0	0.5	Zinc, Total	121		mg/kg
Semivolatiles								
01	A01-04-01		0	0.5	Pentachlorophenol	0.9	J	mg/kg
Volatiles								
01	A01-04-01		0	0.5	Acetone	0.003	J	mg/kg
01	A01-04-01		0	0.5	Formaldehyde	0.066	J	mg/kg
Inorganics								
01	A01-05-01		0	0.5	Aluminum, Total	8910		mg/kg
01	A01-05-01		0	0.5	Arsenic, Total	2.1	N	mg/kg
01	A01-05-01		0	0.5	Barium, Total	31.3	B	mg/kg
01	A01-05-01		0	0.5	Calcium, Total	4660		mg/kg
01	A01-05-01		0	0.5	Chromium, Total	15.4		mg/kg
01	A01-05-01		0	0.5	Cobalt, Total	6.7	B	mg/kg
01	A01-05-01		0	0.5	Copper, Total	15.1	*	mg/kg
01	A01-05-01		0	0.5	Iron, Total	13000		mg/kg
01	A01-05-01		0	0.5	Lead, Total	2.9	N	mg/kg
01	A01-05-01		0	0.5	Magnesium, Total	4480		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
01	A01-05-01		0	0.5	Manganese, Total	221		mg/kg
01	A01-05-01		0	0.5	Nickel, Total	25.5		mg/kg
01	A01-05-01		0	0.5	Potassium, Total	535	B	mg/kg
01	A01-05-01		0	0.5	Vanadium, Total	33.8		mg/kg
01	A01-05-01		0	0.5	Zinc, Total	28		mg/kg
Semivolatiles								
01	A01-05-01		0	0.5	Vanillin	0.063	J	mg/kg
Inorganics								
01	A01-06-01		0	0.5	Aluminum, Total	8600		mg/kg
01	A01-06-01		0	0.5	Arsenic, Total	7.05		mg/kg
01	A01-06-01		0	0.5	Barium, Total	30.8	B	mg/kg
01	A01-06-01		0	0.5	Beryllium, Total	0.305	B	mg/kg
01	A01-06-01		0	0.5	Calcium, Total	3940		mg/kg
01	A01-06-01		0	0.5	Chromium, Total	11.85		mg/kg
01	A01-06-01		0	0.5	Cobalt, Total	7	B	mg/kg
01	A01-06-01		0	0.5	Copper, Total	28.25		mg/kg
01	A01-06-01		0	0.5	Iron, Total	14250		mg/kg
01	A01-06-01		0	0.5	Lead, Total	7		mg/kg
01	A01-06-01		0	0.5	Magnesium, Total	2770		mg/kg
01	A01-06-01		0	0.5	Manganese, Total	152		mg/kg
01	A01-06-01		0	0.5	Nickel, Total	13.35		mg/kg
01	A01-06-01		0	0.5	Potassium, Total	640	B	mg/kg
01	A01-06-01		0	0.5	Selenium, Total	0.42	B	mg/kg
01	A01-06-01		0	0.5	Vanadium, Total	46.1		mg/kg
01	A01-06-01		0	0.5	Zinc, Total	58.9		mg/kg
Semivolatiles								
01	A01-06-01		0	0.5	Pentachlorophenol	4.9	D	mg/kg
Volatiles								
01	A01-06-01		0	0.5	Acetone	0.004	J	mg/kg
01	A01-06-01		0	0.5	Formaldehyde	0.096	J	mg/kg
Inorganics								
01	A01-07-01		0	0.5	Aluminum, Total	10900		mg/kg
01	A01-07-01		0	0.5	Arsenic, Total	3.7		mg/kg
01	A01-07-01		0	0.5	Barium, Total	33.9	B	mg/kg
01	A01-07-01		0	0.5	Beryllium, Total	0.67	B	mg/kg
01	A01-07-01		0	0.5	Calcium, Total	6180		mg/kg
01	A01-07-01		0	0.5	Chromium, Total	14.6		mg/kg
01	A01-07-01		0	0.5	Cobalt, Total	10.7		mg/kg
01	A01-07-01		0	0.5	Copper, Total	79.5		mg/kg
01	A01-07-01		0	0.5	Iron, Total	18900		mg/kg
01	A01-07-01		0	0.5	Lead, Total	7.3		mg/kg
01	A01-07-01		0	0.5	Magnesium, Total	3830		mg/kg
01	A01-07-01		0	0.5	Manganese, Total	226		mg/kg
01	A01-07-01		0	0.5	Nickel, Total	18.4		mg/kg
01	A01-07-01		0	0.5	Silver, Total	2.1		mg/kg
01	A01-07-01		0	0.5	Sodium, Total	798	B	mg/kg
01	A01-07-01		0	0.5	Vanadium, Total	64.5		mg/kg
01	A01-07-01		0	0.5	Zinc, Total	51.2		mg/kg
Semivolatiles								

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
01	A01-07-01		0	0.5	Pentachlorophenol	0.083	J	mg/kg
Volatiles								
01	A01-07-01		0	0.5	Formaldehyde	0.47		mg/kg
01	A01-07-01		0	0.5	Toluene	0.022		mg/kg
Inorganics								
01	SEB-01	EB			Calcium, Total	300	B	ug/L
Inorganics								
02	A02-01-01		0	0.5	Aluminum, Total	8990		mg/kg
02	A02-01-01		0	0.5	Arsenic, Total	4.5		mg/kg
02	A02-01-01		0	0.5	Barium, Total	27.2	B	mg/kg
02	A02-01-01		0	0.5	Calcium, Total	4210		mg/kg
02	A02-01-01		0	0.5	Chromium, Total	17.4		mg/kg
02	A02-01-01		0	0.5	Cobalt, Total	6	B	mg/kg
02	A02-01-01		0	0.5	Iron, Total	12000		mg/kg
02	A02-01-01		0	0.5	Lead, Total	14.5	*	mg/kg
02	A02-01-01		0	0.5	Magnesium, Total	3280	*	mg/kg
02	A02-01-01		0	0.5	Manganese, Total	161		mg/kg
02	A02-01-01		0	0.5	Nickel, Total	21.9		mg/kg
02	A02-01-01		0	0.5	Sodium, Total	355	B	mg/kg
02	A02-01-01		0	0.5	Vanadium, Total	34.2		mg/kg
02	A02-01-01		0	0.5	Zinc, Total	47.9		mg/kg
Semivolatiles								
02	A02-01-01		0	0.5	Pentachlorophenol	0.2	J	mg/kg
Volatiles								
02	A02-01-01		0	0.5	Formaldehyde	0.34		mg/kg
02	A02-01-01		0	0.5	Toluene	0.016		mg/kg
Inorganics								
02	A02-01-05		7	9	Aluminum, Total	13800		mg/kg
02	A02-01-05		7	9	Arsenic, Total	3		mg/kg
02	A02-01-05		7	9	Barium, Total	55.7		mg/kg
02	A02-01-05		7	9	Beryllium, Total	0.48	B	mg/kg
02	A02-01-05		7	9	Calcium, Total	4020		mg/kg
02	A02-01-05		7	9	Chromium, Total	17.7		mg/kg
02	A02-01-05		7	9	Cobalt, Total	8.3	B	mg/kg
02	A02-01-05		7	9	Iron, Total	15000		mg/kg
02	A02-01-05		7	9	Lead, Total	3.6	*	mg/kg
02	A02-01-05		7	9	Magnesium, Total	2990	*	mg/kg
02	A02-01-05		7	9	Manganese, Total	142		mg/kg
02	A02-01-05		7	9	Nickel, Total	15.4		mg/kg
02	A02-01-05		7	9	Potassium, Total	902	B	mg/kg
02	A02-01-05		7	9	Sodium, Total	714	B	mg/kg
02	A02-01-05		7	9	Vanadium, Total	53.2		mg/kg
02	A02-01-05		7	9	Zinc, Total	35.4		mg/kg
Volatiles								
02	A02-01-05		7	9	2-Butanone	0.02	J	mg/kg
02	A02-01-05		7	9	Acetone	0.1		mg/kg
02	A02-01-05		7	9	Formaldehyde	3.4		mg/kg
02	A02-01-05		7	9	Toluene	0.043		mg/kg
Inorganics								

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-02-01		1	1.5	Aluminum, Total	10450		mg/kg
02	A02-02-01		1	1.5	Arsenic, Total	2.75		mg/kg
02	A02-02-01		1	1.5	Barium, Total	36.95	B	mg/kg
02	A02-02-01		1	1.5	Beryllium, Total	0.51	B	mg/kg
02	A02-02-01		1	1.5	Calcium, Total	4560		mg/kg
02	A02-02-01		1	1.5	Chromium, Total	13.8		mg/kg
02	A02-02-01		1	1.5	Cobalt, Total	7.75	B	mg/kg
02	A02-02-01		1	1.5	Iron, Total	15900		mg/kg
02	A02-02-01		1	1.5	Lead, Total	3.1		mg/kg
02	A02-02-01		1	1.5	Magnesium, Total	2955		mg/kg
02	A02-02-01		1	1.5	Manganese, Total	166		mg/kg
02	A02-02-01		1	1.5	Nickel, Total	15.35		mg/kg
02	A02-02-01		1	1.5	Silver, Total	2.75		mg/kg
02	A02-02-01		1	1.5	Sodium, Total	588	B	mg/kg
02	A02-02-01		1	1.5	Vanadium, Total	51		mg/kg
02	A02-02-01		1	1.5	Zinc, Total	33.9		mg/kg
Volatiles								
02	A02-02-01		1	1.5	Toluene	0.021		mg/kg
Inorganics								
02	A02-02-05		7	9	Aluminum, Total	16100		mg/kg
02	A02-02-05		7	9	Arsenic, Total	3	BS	mg/kg
02	A02-02-05		7	9	Barium, Total	59.3		mg/kg
02	A02-02-05		7	9	Beryllium, Total	0.67	B	mg/kg
02	A02-02-05		7	9	Calcium, Total	4720		mg/kg
02	A02-02-05		7	9	Chromium, Total	19.2		mg/kg
02	A02-02-05		7	9	Cobalt, Total	8.1	B	mg/kg
02	A02-02-05		7	9	Iron, Total	16300		mg/kg
02	A02-02-05		7	9	Lead, Total	3.9		mg/kg
02	A02-02-05		7	9	Magnesium, Total	3240		mg/kg
02	A02-02-05		7	9	Manganese, Total	135		mg/kg
02	A02-02-05		7	9	Nickel, Total	18.3		mg/kg
02	A02-02-05		7	9	Silver, Total	2.6		mg/kg
02	A02-02-05		7	9	Sodium, Total	1100		mg/kg
02	A02-02-05		7	9	Vanadium, Total	55.2		mg/kg
02	A02-02-05		7	9	Zinc, Total	37.7		mg/kg
Volatiles								
02	A02-02-05		7	9	2-Butanone	0.019	J	mg/kg
02	A02-02-05		7	9	Acetone	0.073		mg/kg
02	A02-02-05		7	9	Carbon Disulfide	0.001	J	mg/kg
02	A02-02-05		7	9	Toluene	0.008		mg/kg
Inorganics								
02	A02-03-01		1	1.5	Aluminum, Total	6920		mg/kg
02	A02-03-01		1	1.5	Arsenic, Total	1.8	B	mg/kg
02	A02-03-01		1	1.5	Barium, Total	24.9	B	mg/kg
02	A02-03-01		1	1.5	Calcium, Total	2950		mg/kg
02	A02-03-01		1	1.5	Chromium, Total	10		mg/kg
02	A02-03-01		1	1.5	Cobalt, Total	6.1	B	mg/kg
02	A02-03-01		1	1.5	Iron, Total	11700		mg/kg
02	A02-03-01		1	1.5	Lead, Total	2.3	*	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-03-01		1	1.5	Magnesium, Total	2480	*	mg/kg
02	A02-03-01		1	1.5	Manganese, Total	124		mg/kg
02	A02-03-01		1	1.5	Nickel, Total	12.3		mg/kg
02	A02-03-01		1	1.5	Sodium, Total	282	B	mg/kg
02	A02-03-01		1	1.5	Vanadium, Total	34.2		mg/kg
02	A02-03-01		1	1.5	Zinc, Total	27.3		mg/kg
Semivolatiles								
02	A02-03-01		1	1.5	Bis(2-Ethylhexyl)Phthalate	0.095	J	mg/kg
Volatiles								
02	A02-03-01		1	1.5	Acetone	0.012	J	mg/kg
02	A02-03-01		1	1.5	Toluene	0.002	J	mg/kg
Inorganics								
02	A02-03-05		7	9	Aluminum, Total	12300		mg/kg
02	A02-03-05		7	9	Arsenic, Total	5		mg/kg
02	A02-03-05		7	9	Barium, Total	49.7		mg/kg
02	A02-03-05		7	9	Calcium, Total	3830		mg/kg
02	A02-03-05		7	9	Chromium, Total	17.8		mg/kg
02	A02-03-05		7	9	Cobalt, Total	7.3	B	mg/kg
02	A02-03-05		7	9	Iron, Total	14100		mg/kg
02	A02-03-05		7	9	Lead, Total	11.2	*	mg/kg
02	A02-03-05		7	9	Magnesium, Total	3560	*	mg/kg
02	A02-03-05		7	9	Manganese, Total	162		mg/kg
02	A02-03-05		7	9	Nickel, Total	15		mg/kg
02	A02-03-05		7	9	Sodium, Total	1250		mg/kg
02	A02-03-05		7	9	Vanadium, Total	46.1		mg/kg
02	A02-03-05		7	9	Zinc, Total	45.4		mg/kg
Volatiles								
02	A02-03-05		7	9	2-Butanone	0.018	J	mg/kg
02	A02-03-05		7	9	Acetone	0.055	J	mg/kg
02	A02-03-05		7	9	Toluene	0.003	J	mg/kg
Inorganics								
02	A02-04-01		1	1.5	Aluminum, Total	6730		mg/kg
02	A02-04-01		1	1.5	Arsenic, Total	1.9		mg/kg
02	A02-04-01		1	1.5	Barium, Total	24.5	B	mg/kg
02	A02-04-01		1	1.5	Calcium, Total	2730		mg/kg
02	A02-04-01		1	1.5	Chromium, Total	10.5		mg/kg
02	A02-04-01		1	1.5	Cobalt, Total	6	B	mg/kg
02	A02-04-01		1	1.5	Iron, Total	11300		mg/kg
02	A02-04-01		1	1.5	Lead, Total	1.9	*	mg/kg
02	A02-04-01		1	1.5	Magnesium, Total	2540	*	mg/kg
02	A02-04-01		1	1.5	Manganese, Total	127		mg/kg
02	A02-04-01		1	1.5	Nickel, Total	11.7		mg/kg
02	A02-04-01		1	1.5	Sodium, Total	279	B	mg/kg
02	A02-04-01		1	1.5	Vanadium, Total	31.6		mg/kg
02	A02-04-01		1	1.5	Zinc, Total	25.4		mg/kg
Volatiles								
02	A02-04-01		1	1.5	Acetone	0.025	J	mg/kg
02	A02-04-01		1	1.5	Formaldehyde	1.6		mg/kg
02	A02-04-01		1	1.5	Toluene	0.008		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Inorganics								
02	A02-04-05		7	9	Aluminum, Total	14600		mg/kg
02	A02-04-05		7	9	Arsenic, Total	3.3		mg/kg
02	A02-04-05		7	9	Barium, Total	59.9		mg/kg
02	A02-04-05		7	9	Beryllium, Total	0.59	B	mg/kg
02	A02-04-05		7	9	Calcium, Total	4020		mg/kg
02	A02-04-05		7	9	Chromium, Total	16.4		mg/kg
02	A02-04-05		7	9	Cobalt, Total	7.2	B	mg/kg
02	A02-04-05		7	9	Iron, Total	13900		mg/kg
02	A02-04-05		7	9	Lead, Total	7.3	*	mg/kg
02	A02-04-05		7	9	Magnesium, Total	3580	*	mg/kg
02	A02-04-05		7	9	Manganese, Total	150		mg/kg
02	A02-04-05		7	9	Nickel, Total	17.2		mg/kg
02	A02-04-05		7	9	Sodium, Total	1550		mg/kg
02	A02-04-05		7	9	Vanadium, Total	42.6		mg/kg
02	A02-04-05		7	9	Zinc, Total	42.5		mg/kg
Volatiles								
02	A02-04-05		7	9	2-Butanone	0.014	J	mg/kg
02	A02-04-05		7	9	Formaldehyde	2.9		mg/kg
02	A02-04-05		7	9	Toluene	0.022		mg/kg
Inorganics								
02	A02-05-01		1	1.5	Aluminum, Total	9440		mg/kg
02	A02-05-01		1	1.5	Arsenic, Total	1.7		mg/kg
02	A02-05-01		1	1.5	Barium, Total	27.7	B	mg/kg
02	A02-05-01		1	1.5	Beryllium, Total	0.66	B	mg/kg
02	A02-05-01		1	1.5	Calcium, Total	4420		mg/kg
02	A02-05-01		1	1.5	Chromium, Total	13.9		mg/kg
02	A02-05-01		1	1.5	Cobalt, Total	7.6		mg/kg
02	A02-05-01		1	1.5	Iron, Total	14800		mg/kg
02	A02-05-01		1	1.5	Lead, Total	3.3		mg/kg
02	A02-05-01		1	1.5	Magnesium, Total	2730		mg/kg
02	A02-05-01		1	1.5	Manganese, Total	154		mg/kg
02	A02-05-01		1	1.5	Nickel, Total	13.4		mg/kg
02	A02-05-01		1	1.5	Silver, Total	1.6		mg/kg
02	A02-05-01		1	1.5	Sodium, Total	828		mg/kg
02	A02-05-01		1	1.5	Vanadium, Total	50.4		mg/kg
02	A02-05-01		1	1.5	Zinc, Total	31.3		mg/kg
Semivolatiles								
02	A02-05-01		1	1.5	Phenanthrene	0.042	J	mg/kg
Volatiles								
02	A02-05-01		1	1.5	Toluene	0.01		mg/kg
Inorganics								
02	A02-05-02		1	3	Aluminum, Total	10050		mg/kg
02	A02-05-02		1	3	Arsenic, Total	2.6		mg/kg
02	A02-05-02		1	3	Barium, Total	39.4		mg/kg
02	A02-05-02		1	3	Beryllium, Total	0.335	B	mg/kg
02	A02-05-02		1	3	Calcium, Total	3450		mg/kg
02	A02-05-02		1	3	Chromium, Total	13.35		mg/kg
02	A02-05-02		1	3	Cobalt, Total	7.8	B	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-05-02		1	3	Iron, Total	14300		mg/kg
02	A02-05-02		1	3	Lead, Total	2.8		mg/kg
02	A02-05-02		1	3	Magnesium, Total	2870		mg/kg
02	A02-05-02		1	3	Manganese, Total	148.5		mg/kg
02	A02-05-02		1	3	Nickel, Total	15.65		mg/kg
02	A02-05-02		1	3	Sodium, Total	1020		mg/kg
02	A02-05-02		1	3	Vanadium, Total	38.8		mg/kg
02	A02-05-02		1	3	Zinc, Total	36.8		mg/kg
Semivolatiles								
02	A02-05-02		1	3	Phenanthrene	0.048	J	mg/kg
Volatiles								
02	A02-05-02		1	3	2-Butanone	0.004	J	mg/kg
02	A02-05-02		1	3	Toluene	0.011		mg/kg
Inorganics								
02	A02-05-05		7	9	Aluminum, Total	12400	*	mg/kg
02	A02-05-05		7	9	Arsenic, Total	4.8		mg/kg
02	A02-05-05		7	9	Barium, Total	53		mg/kg
02	A02-05-05		7	9	Beryllium, Total	0.46	B	mg/kg
02	A02-05-05		7	9	Calcium, Total	3770		mg/kg
02	A02-05-05		7	9	Chromium, Total	13.9	*	mg/kg
02	A02-05-05		7	9	Cobalt, Total	8.7	B	mg/kg
02	A02-05-05		7	9	Iron, Total	16600	*	mg/kg
02	A02-05-05		7	9	Lead, Total	4.9	*	mg/kg
02	A02-05-05		7	9	Magnesium, Total	3440		mg/kg
02	A02-05-05		7	9	Manganese, Total	193	N*	mg/kg
02	A02-05-05		7	9	Nickel, Total	17.9		mg/kg
02	A02-05-05		7	9	Sodium, Total	3120		mg/kg
02	A02-05-05		7	9	Vanadium, Total	38.6		mg/kg
02	A02-05-05		7	9	Zinc, Total	39.3	*	mg/kg
Semivolatiles								
02	A02-05-05		7	9	2,4-Dimethylphenol	0.29	J	mg/kg
02	A02-05-05		7	9	2-Methylnaphthalene	0.054	J	mg/kg
02	A02-05-05		7	9	2-Methylphenol	0.082	J	mg/kg
02	A02-05-05		7	9	4-Methylphenol	0.28	J	mg/kg
02	A02-05-05		7	9	Phenanthrene	0.098	J	mg/kg
02	A02-05-05		7	9	Phenol	0.054	J	mg/kg
Volatiles								
02	A02-05-05		7	9	Benzene	0.002	J	mg/kg
02	A02-05-05		7	9	Toluene	0.092		mg/kg
Conventionals								
02	A02-05-06		5	7	Cation Exchange Capacity	8.51		meq/100g
02	A02-05-06		5	7	Total Organic Carbon	637		mg/kg
Inorganics								
02	A02-05-08		12.5	14	Aluminum, Total	18650		mg/kg
02	A02-05-08		12.5	14	Arsenic, Total	4		mg/kg
02	A02-05-08		12.5	14	Barium, Total	69.9		mg/kg
02	A02-05-08		12.5	14	Beryllium, Total	0.4175	B	mg/kg
02	A02-05-08		12.5	14	Calcium, Total	4830		mg/kg
02	A02-05-08		12.5	14	Chromium, Total	20.75		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-05-08		12.5	14	Cobalt, Total	8.7	B	mg/kg
02	A02-05-08		12.5	14	Copper, Total	33.4		mg/kg
02	A02-05-08		12.5	14	Iron, Total	16500		mg/kg
02	A02-05-08		12.5	14	Lead, Total	6.55		mg/kg
02	A02-05-08		12.5	14	Magnesium, Total	3890		mg/kg
02	A02-05-08		12.5	14	Manganese, Total	167		mg/kg
02	A02-05-08		12.5	14	Nickel, Total	15.45		mg/kg
02	A02-05-08		12.5	14	Sodium, Total	4080		mg/kg
02	A02-05-08		12.5	14	Vanadium, Total	55.45		mg/kg
02	A02-05-08		12.5	14	Zinc, Total	51.55		mg/kg
Semivolatiles								
02	A02-05-08		12.5	14	2-Methylphenol	0.23	J	mg/kg
02	A02-05-08		12.5	14	4-Methylphenol	3.4		mg/kg
02	A02-05-08		12.5	14	Phenol	0.067	J	mg/kg
Volatiles								
02	A02-05-08		12.5	14	2-Butanone	0.038	J	mg/kg
02	A02-05-08		12.5	14	Acetone	0.11	J	mg/kg
02	A02-05-08		12.5	14	Benzene	0.017	J	mg/kg
02	A02-05-08		12.5	14	Toluene	71	DE	mg/kg
02	A02-05-08		12.5	14	Xylene (Total)	0.012	J	mg/kg
Inorganics								
02	A02-06-01		1	1.5	Aluminum, Total	7480	*	mg/kg
02	A02-06-01		1	1.5	Barium, Total	41.5	B	mg/kg
02	A02-06-01		1	1.5	Calcium, Total	13300		mg/kg
02	A02-06-01		1	1.5	Chromium, Total	14.3	*	mg/kg
02	A02-06-01		1	1.5	Cobalt, Total	6.5	B	mg/kg
02	A02-06-01		1	1.5	Copper, Total	563	*	mg/kg
02	A02-06-01		1	1.5	Iron, Total	12100	*	mg/kg
02	A02-06-01		1	1.5	Lead, Total	43.9	*	mg/kg
02	A02-06-01		1	1.5	Magnesium, Total	3080		mg/kg
02	A02-06-01		1	1.5	Manganese, Total	189	N*	mg/kg
02	A02-06-01		1	1.5	Mercury, Total	0.19		mg/kg
02	A02-06-01		1	1.5	Nickel, Total	15.3		mg/kg
02	A02-06-01		1	1.5	Silver, Total	2.1		mg/kg
02	A02-06-01		1	1.5	Sodium, Total	871	B	mg/kg
02	A02-06-01		1	1.5	Vanadium, Total	35.7		mg/kg
02	A02-06-01		1	1.5	Zinc, Total	118	*	mg/kg
Volatiles								
02	A02-06-01		1	1.5	Methylene Chloride	0.003	J	mg/kg
02	A02-06-01		1	1.5	Toluene	0.005	J	mg/kg
Inorganics								
02	A02-06-05		7	9	Aluminum, Total	9170	*	mg/kg
02	A02-06-05		7	9	Arsenic, Total	2.1	B	mg/kg
02	A02-06-05		7	9	Barium, Total	33	B	mg/kg
02	A02-06-05		7	9	Beryllium, Total	0.43	B	mg/kg
02	A02-06-05		7	9	Calcium, Total	5690		mg/kg
02	A02-06-05		7	9	Chromium, Total	12	*	mg/kg
02	A02-06-05		7	9	Cobalt, Total	6.7	B	mg/kg
02	A02-06-05		7	9	Copper, Total	120	*	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-06-05		7	9	Iron, Total	13400	*	mg/kg
02	A02-06-05		7	9	Lead, Total	9.5	S*	mg/kg
02	A02-06-05		7	9	Magnesium, Total	2710		mg/kg
02	A02-06-05		7	9	Manganese, Total	163	N*	mg/kg
02	A02-06-05		7	9	Nickel, Total	13.4		mg/kg
02	A02-06-05		7	9	Sodium, Total	2720		mg/kg
02	A02-06-05		7	9	Vanadium, Total	38.1		mg/kg
02	A02-06-05		7	9	Zinc, Total	47.3	*	mg/kg
Semivolatiles								
02	A02-06-05		7	9	4-Methylphenol	1.3		mg/kg
Volatiles								
02	A02-06-05		7	9	Acetone	0.01	J	mg/kg
02	A02-06-05		7	9	Benzene	0.002	J	mg/kg
02	A02-06-05		7	9	Toluene	0.038		mg/kg
Inorganics								
02	A02-06-EB	EB			Calcium, Total	249	B	ug/L
02	A02-06-EB	EB			Iron, Total	67.1	B	ug/L
02	A02-06-EB	EB			Sodium, Total	744	B	ug/L
Inorganics								
02	A02-07-01		1	1.5	Aluminum, Total	13800		mg/kg
02	A02-07-01		1	1.5	Arsenic, Total	3.3		mg/kg
02	A02-07-01		1	1.5	Barium, Total	48.7		mg/kg
02	A02-07-01		1	1.5	Beryllium, Total	0.71	B	mg/kg
02	A02-07-01		1	1.5	Calcium, Total	7010		mg/kg
02	A02-07-01		1	1.5	Chromium, Total	15.3		mg/kg
02	A02-07-01		1	1.5	Cobalt, Total	11.1	B	mg/kg
02	A02-07-01		1	1.5	Iron, Total	20300		mg/kg
02	A02-07-01		1	1.5	Lead, Total	5.8		mg/kg
02	A02-07-01		1	1.5	Magnesium, Total	4480		mg/kg
02	A02-07-01		1	1.5	Manganese, Total	212		mg/kg
02	A02-07-01		1	1.5	Nickel, Total	20.3		mg/kg
02	A02-07-01		1	1.5	Sodium, Total	1270		mg/kg
02	A02-07-01		1	1.5	Vanadium, Total	74.5		mg/kg
02	A02-07-01		1	1.5	Zinc, Total	43.5		mg/kg
Semivolatiles								
02	A02-07-01		1	1.5	Acenaphthene	0.13	J	mg/kg
02	A02-07-01		1	1.5	Anthracene	0.26	J	mg/kg
02	A02-07-01		1	1.5	Benzo(A)Anthracene	0.46		mg/kg
02	A02-07-01		1	1.5	Benzo(A)Pyrene	0.29	J	mg/kg
02	A02-07-01		1	1.5	Benzo(B)Fluoranthene	0.43		mg/kg
02	A02-07-01		1	1.5	Benzo(K)Fluoranthene	0.36	J	mg/kg
02	A02-07-01		1	1.5	Bis(2-Ethylhexyl)Phthalate	0.06	J	mg/kg
02	A02-07-01		1	1.5	Carbazole	0.11	J	mg/kg
02	A02-07-01		1	1.5	Chrysene	0.48		mg/kg
02	A02-07-01		1	1.5	Dibenzofuran	0.083	J	mg/kg
02	A02-07-01		1	1.5	Fluoranthene	1.1		mg/kg
02	A02-07-01		1	1.5	Fluorene	0.15	J	mg/kg
02	A02-07-01		1	1.5	Indeno(1,2,3-CD)Pyrene	0.14	J	mg/kg
02	A02-07-01		1	1.5	Phenanthrene	1		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-07-01		1	1.5	Pyrene	1.2		mg/kg
Volatiles								
02	A02-07-01		1	1.5	Acetone	0.028	J	mg/kg
02	A02-07-01		1	1.5	Toluene	0.014		mg/kg
Inorganics								
02	A02-07-02		1.5	3	Aluminum, Total	15000		mg/kg
02	A02-07-02		1.5	3	Arsenic, Total	4		mg/kg
02	A02-07-02		1.5	3	Barium, Total	40.4	B	mg/kg
02	A02-07-02		1.5	3	Beryllium, Total	0.79	B	mg/kg
02	A02-07-02		1.5	3	Calcium, Total	7660		mg/kg
02	A02-07-02		1.5	3	Chromium, Total	15.9		mg/kg
02	A02-07-02		1.5	3	Cobalt, Total	14.8		mg/kg
02	A02-07-02		1.5	3	Copper, Total	78		mg/kg
02	A02-07-02		1.5	3	Iron, Total	27700		mg/kg
02	A02-07-02		1.5	3	Lead, Total	6.8		mg/kg
02	A02-07-02		1.5	3	Magnesium, Total	6160		mg/kg
02	A02-07-02		1.5	3	Manganese, Total	280		mg/kg
02	A02-07-02		1.5	3	Nickel, Total	22.7		mg/kg
02	A02-07-02		1.5	3	Sodium, Total	1240		mg/kg
02	A02-07-02		1.5	3	Vanadium, Total	95		mg/kg
02	A02-07-02		1.5	3	Zinc, Total	53.4		mg/kg
Semivolatiles								
02	A02-07-02		1.5	3	Bis(2-Ethylhexyl)Phthalate	0.097	J	mg/kg
Volatiles								
02	A02-07-02		1.5	3	2-Butanone	0.009	J	mg/kg
02	A02-07-02		1.5	3	Acetone	0.029	J	mg/kg
Inorganics								
02	A02-07-04		5	7	Aluminum, Total	12200		mg/kg
02	A02-07-04		5	7	Arsenic, Total	4.4		mg/kg
02	A02-07-04		5	7	Barium, Total	41.4	B	mg/kg
02	A02-07-04		5	7	Beryllium, Total	0.54	B	mg/kg
02	A02-07-04		5	7	Calcium, Total	4830		mg/kg
02	A02-07-04		5	7	Chromium, Total	16.4		mg/kg
02	A02-07-04		5	7	Cobalt, Total	8.3	B	mg/kg
02	A02-07-04		5	7	Iron, Total	16900		mg/kg
02	A02-07-04		5	7	Lead, Total	4		mg/kg
02	A02-07-04		5	7	Magnesium, Total	3020		mg/kg
02	A02-07-04		5	7	Manganese, Total	210		mg/kg
02	A02-07-04		5	7	Nickel, Total	16.6		mg/kg
02	A02-07-04		5	7	Sodium, Total	949	B	mg/kg
02	A02-07-04		5	7	Vanadium, Total	52.9		mg/kg
02	A02-07-04		5	7	Zinc, Total	35.2		mg/kg
Semivolatiles								
02	A02-07-04		5	7	2,4-Dimethylphenol	0.044	J	mg/kg
02	A02-07-04		5	7	2-Methylphenol	0.16	J	mg/kg
02	A02-07-04		5	7	4-Methylphenol	2.7		mg/kg
02	A02-07-04		5	7	Naphthalene	0.051	J	mg/kg
02	A02-07-04		5	7	Phenol	0.52		mg/kg
Volatiles								

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-07-04		5	7	2-Butanone	0.012	J	mg/kg
02	A02-07-04		5	7	Acetone	0.043	J	mg/kg
02	A02-07-04		5	7	Toluene	0.17		mg/kg
Inorganics								
02	A02-07-EB	EB			Calcium, Total	177	B	ug/L
02	A02-07-EB	EB			Iron, Total	60.6	B	ug/L
02	A02-07-EB	EB			Sodium, Total	527	B	ug/L
Volatiles								
02	A02-07-EB	EB			Methylene Chloride	0.3	J	ug/L
Inorganics								
02	A02-08-01		1	1.5	Aluminum, Total	8560	*	mg/kg
02	A02-08-01		1	1.5	Arsenic, Total	2.3		mg/kg
02	A02-08-01		1	1.5	Barium, Total	35.8		mg/kg
02	A02-08-01		1	1.5	Beryllium, Total	0.43	B	mg/kg
02	A02-08-01		1	1.5	Calcium, Total	4580		mg/kg
02	A02-08-01		1	1.5	Chromium, Total	11.1	*	mg/kg
02	A02-08-01		1	1.5	Cobalt, Total	8	B	mg/kg
02	A02-08-01		1	1.5	Iron, Total	14900	*	mg/kg
02	A02-08-01		1	1.5	Lead, Total	7.8	S*	mg/kg
02	A02-08-01		1	1.5	Magnesium, Total	3540		mg/kg
02	A02-08-01		1	1.5	Manganese, Total	198	N*	mg/kg
02	A02-08-01		1	1.5	Nickel, Total	14		mg/kg
02	A02-08-01		1	1.5	Sodium, Total	473	B	mg/kg
02	A02-08-01		1	1.5	Vanadium, Total	47.8		mg/kg
02	A02-08-01		1	1.5	Zinc, Total	62.9	*	mg/kg
Volatiles								
02	A02-08-01		1	1.5	Toluene	0.18		mg/kg
02	A02-08-01		1	1.5	Xylene (Total)	0.004	J	mg/kg
Inorganics								
02	A02-08-02		1.5	3	Aluminum, Total	10300	*	mg/kg
02	A02-08-02		1.5	3	Arsenic, Total	1.9		mg/kg
02	A02-08-02		1.5	3	Barium, Total	32.5	B	mg/kg
02	A02-08-02		1.5	3	Beryllium, Total	0.64	B	mg/kg
02	A02-08-02		1.5	3	Calcium, Total	7050		mg/kg
02	A02-08-02		1.5	3	Chromium, Total	11.9	*	mg/kg
02	A02-08-02		1.5	3	Cobalt, Total	12.2		mg/kg
02	A02-08-02		1.5	3	Copper, Total	62.6	*	mg/kg
02	A02-08-02		1.5	3	Iron, Total	21700	*	mg/kg
02	A02-08-02		1.5	3	Lead, Total	8.5	S*	mg/kg
02	A02-08-02		1.5	3	Magnesium, Total	5990		mg/kg
02	A02-08-02		1.5	3	Manganese, Total	266	N*	mg/kg
02	A02-08-02		1.5	3	Nickel, Total	20.4		mg/kg
02	A02-08-02		1.5	3	Sodium, Total	711	B	mg/kg
02	A02-08-02		1.5	3	Vanadium, Total	67.9		mg/kg
02	A02-08-02		1.5	3	Zinc, Total	91.5	*	mg/kg
Semivolatiles								
02	A02-08-02		1.5	3	Phenanthrene	0.082	J	mg/kg
02	A02-08-02		1.5	3	Pyrene	0.1	J	mg/kg
Volatiles								

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-08-02		1.5	3	Toluene	0.64	D	mg/kg
02	A02-08-02		1.5	3	Xylene (Total)	0.002	J	mg/kg
Inorganics								
02	A02-08-03		3	5	Aluminum, Total	8050	*	mg/kg
02	A02-08-03		3	5	Arsenic, Total	2.8		mg/kg
02	A02-08-03		3	5	Barium, Total	29.1	B	mg/kg
02	A02-08-03		3	5	Calcium, Total	3350		mg/kg
02	A02-08-03		3	5	Chromium, Total	11.8	*	mg/kg
02	A02-08-03		3	5	Cobalt, Total	6.6	B	mg/kg
02	A02-08-03		3	5	Iron, Total	13100	*	mg/kg
02	A02-08-03		3	5	Lead, Total	2.1	*	mg/kg
02	A02-08-03		3	5	Magnesium, Total	2580		mg/kg
02	A02-08-03		3	5	Manganese, Total	138	N*	mg/kg
02	A02-08-03		3	5	Nickel, Total	13.2		mg/kg
02	A02-08-03		3	5	Sodium, Total	567	B	mg/kg
02	A02-08-03		3	5	Vanadium, Total	39.6		mg/kg
02	A02-08-03		3	5	Zinc, Total	28.2	*	mg/kg
Volatiles								
02	A02-08-03		3	5	Acetone	0.006	J	mg/kg
02	A02-08-03		3	5	Toluene	0.007		mg/kg
Inorganics								
02	A02-09-01		1	1.5	Aluminum, Total	9800		mg/kg
02	A02-09-01		1	1.5	Arsenic, Total	2.3		mg/kg
02	A02-09-01		1	1.5	Barium, Total	31.1	B	mg/kg
02	A02-09-01		1	1.5	Beryllium, Total	0.48	B	mg/kg
02	A02-09-01		1	1.5	Calcium, Total	4640		mg/kg
02	A02-09-01		1	1.5	Chromium, Total	14.1		mg/kg
02	A02-09-01		1	1.5	Cobalt, Total	7.8	B	mg/kg
02	A02-09-01		1	1.5	Iron, Total	15400		mg/kg
02	A02-09-01		1	1.5	Lead, Total	2.4		mg/kg
02	A02-09-01		1	1.5	Magnesium, Total	2700		mg/kg
02	A02-09-01		1	1.5	Manganese, Total	157		mg/kg
02	A02-09-01		1	1.5	Nickel, Total	14.6		mg/kg
02	A02-09-01		1	1.5	Sodium, Total	698	B	mg/kg
02	A02-09-01		1	1.5	Vanadium, Total	53.3		mg/kg
02	A02-09-01		1	1.5	Zinc, Total	30.7		mg/kg
Semivolatiles								
02	A02-09-01		1	1.5	Pentachlorophenol	0.074	J	mg/kg
Volatiles								
02	A02-09-01		1	1.5	Acetone	0.01	J	mg/kg
02	A02-09-01		1	1.5	Toluene	0.015		mg/kg
Inorganics								
02	A02-09-04		5	7	Aluminum, Total	19000		mg/kg
02	A02-09-04		5	7	Arsenic, Total	5.3		mg/kg
02	A02-09-04		5	7	Barium, Total	72.4		mg/kg
02	A02-09-04		5	7	Beryllium, Total	1.1		mg/kg
02	A02-09-04		5	7	Calcium, Total	5710		mg/kg
02	A02-09-04		5	7	Chromium, Total	20.5		mg/kg
02	A02-09-04		5	7	Cobalt, Total	11		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-09-04		5	7	Iron, Total	22900		mg/kg
02	A02-09-04		5	7	Lead, Total	7.3		mg/kg
02	A02-09-04		5	7	Magnesium, Total	4270		mg/kg
02	A02-09-04		5	7	Manganese, Total	236		mg/kg
02	A02-09-04		5	7	Nickel, Total	21.3		mg/kg
02	A02-09-04		5	7	Sodium, Total	2700		mg/kg
02	A02-09-04		5	7	Vanadium, Total	66.2		mg/kg
02	A02-09-04		5	7	Zinc, Total	50.7		mg/kg
Semivolatiles								
02	A02-09-04		5	7	2-Methylphenol	1.7		mg/kg
02	A02-09-04		5	7	4-Methylphenol	3.3		mg/kg
02	A02-09-04		5	7	Benzyl Alcohol	0.058	J	mg/kg
02	A02-09-04		5	7	Phenol	0.36	J	mg/kg
Volatiles								
02	A02-09-04		5	7	2-Butanone	0.039	J	mg/kg
02	A02-09-04		5	7	Acetone	1.1	E	mg/kg
02	A02-09-04		5	7	Carbon Disulfide	0.002	J	mg/kg
02	A02-09-04		5	7	Ethylbenzene	0.022		mg/kg
02	A02-09-04		5	7	Toluene	180	D	mg/kg
02	A02-09-04		5	7	Xylene (Total)	0.022		mg/kg
Inorganics								
02	A02-09-05		7	9	Aluminum, Total	19700		mg/kg
02	A02-09-05		7	9	Arsenic, Total	3.3		mg/kg
02	A02-09-05		7	9	Barium, Total	58.2		mg/kg
02	A02-09-05		7	9	Beryllium, Total	0.68999	B	mg/kg
02	A02-09-05		7	9	Calcium, Total	5930		mg/kg
02	A02-09-05		7	9	Chromium, Total	21.1		mg/kg
02	A02-09-05		7	9	Cobalt, Total	10.1	B	mg/kg
02	A02-09-05		7	9	Iron, Total	17000		mg/kg
02	A02-09-05		7	9	Lead, Total	6.5		mg/kg
02	A02-09-05		7	9	Magnesium, Total	3630		mg/kg
02	A02-09-05		7	9	Manganese, Total	195		mg/kg
02	A02-09-05		7	9	Nickel, Total	20.5		mg/kg
02	A02-09-05		7	9	Sodium, Total	2610		mg/kg
02	A02-09-05		7	9	Vanadium, Total	57.7		mg/kg
02	A02-09-05		7	9	Zinc, Total	37.5		mg/kg
Semivolatiles								
02	A02-09-05		7	9	2-Methylphenol	0.37	J	mg/kg
02	A02-09-05		7	9	4-Methylphenol	0.39	J	mg/kg
02	A02-09-05		7	9	Phenol	0.051	J	mg/kg
Volatiles								
02	A02-09-05		7	9	Acetone	0.11	J	mg/kg
02	A02-09-05		7	9	Toluene	5	D	mg/kg
Inorganics								
02	A02-10-01		0.5	1	Aluminum, Total	11400		mg/kg
02	A02-10-01		0.5	1	Arsenic, Total	4.1		mg/kg
02	A02-10-01		0.5	1	Barium, Total	45.7		mg/kg
02	A02-10-01		0.5	1	Calcium, Total	5590		mg/kg
02	A02-10-01		0.5	1	Chromium, Total	16.4		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-10-01		0.5	1	Cobalt, Total	8.9	B	mg/kg
02	A02-10-01		0.5	1	Iron, Total	16200		mg/kg
02	A02-10-01		0.5	1	Lead, Total	15.4		mg/kg
02	A02-10-01		0.5	1	Magnesium, Total	3390		mg/kg
02	A02-10-01		0.5	1	Manganese, Total	208		mg/kg
02	A02-10-01		0.5	1	Nickel, Total	19.1		mg/kg
02	A02-10-01		0.5	1	Silver, Total	2.1		mg/kg
02	A02-10-01		0.5	1	Sodium, Total	793	B	mg/kg
02	A02-10-01		0.5	1	Vanadium, Total	59.1		mg/kg
02	A02-10-01		0.5	1	Zinc, Total	47.4		mg/kg
Semivolatiles								
02	A02-10-01		0.5	1	2-Methylnaphthalene	0.046	J	mg/kg
02	A02-10-01		0.5	1	Acenaphthene	0.042	J	mg/kg
02	A02-10-01		0.5	1	Chrysene	0.043	J	mg/kg
02	A02-10-01		0.5	1	Fluoranthene	0.06	J	mg/kg
02	A02-10-01		0.5	1	Pentachlorophenol	0.063	J	mg/kg
02	A02-10-01		0.5	1	Phenanthrene	0.18	J	mg/kg
02	A02-10-01		0.5	1	Pyrene	0.12	J	mg/kg
Volatiles								
02	A02-10-01		0.5	1	Toluene	0.004	J	mg/kg
Inorganics								
02	A02-10-07		10.5	12	Aluminum, Total	8060		mg/kg
02	A02-10-07		10.5	12	Arsenic, Total	2.6		mg/kg
02	A02-10-07		10.5	12	Barium, Total	23.2	B	mg/kg
02	A02-10-07		10.5	12	Beryllium, Total	0.42	B	mg/kg
02	A02-10-07		10.5	12	Calcium, Total	3670		mg/kg
02	A02-10-07		10.5	12	Chromium, Total	11.1		mg/kg
02	A02-10-07		10.5	12	Cobalt, Total	6.1	B	mg/kg
02	A02-10-07		10.5	12	Iron, Total	13200		mg/kg
02	A02-10-07		10.5	12	Lead, Total	1.2		mg/kg
02	A02-10-07		10.5	12	Magnesium, Total	1710		mg/kg
02	A02-10-07		10.5	12	Manganese, Total	110		mg/kg
02	A02-10-07		10.5	12	Nickel, Total	12.2		mg/kg
02	A02-10-07		10.5	12	Silver, Total	1.6		mg/kg
02	A02-10-07		10.5	12	Sodium, Total	943		mg/kg
02	A02-10-07		10.5	12	Vanadium, Total	47.4		mg/kg
02	A02-10-07		10.5	12	Zinc, Total	23.3		mg/kg
Inorganics								
02	A02-10-EB	EB			Aluminum, Total	26.8	B	ug/L
02	A02-10-EB	EB			Calcium, Total	289	B	ug/L
02	A02-10-EB	EB			Iron, Total	46.1	B	ug/L
02	A02-10-EB	EB			Sodium, Total	705	B	ug/L
Inorganics								
02	A02-11-01		1	1.5	Aluminum, Total	7370		mg/kg
02	A02-11-01		1	1.5	Arsenic, Total	2.2		mg/kg
02	A02-11-01		1	1.5	Barium, Total	22.2	B	mg/kg
02	A02-11-01		1	1.5	Calcium, Total	3285		mg/kg
02	A02-11-01		1	1.5	Chromium, Total	12.25		mg/kg
02	A02-11-01		1	1.5	Cobalt, Total	6.05	B	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-11-01		1	1.5	Iron, Total	11250		mg/kg
02	A02-11-01		1	1.5	Lead, Total	2.5		mg/kg
02	A02-11-01		1	1.5	Magnesium, Total	2270		mg/kg
02	A02-11-01		1	1.5	Manganese, Total	117		mg/kg
02	A02-11-01		1	1.5	Nickel, Total	12.7		mg/kg
02	A02-11-01		1	1.5	Sodium, Total	781		mg/kg
02	A02-11-01		1	1.5	Vanadium, Total	34.5		mg/kg
02	A02-11-01		1	1.5	Zinc, Total	29.15		mg/kg
Semivolatiles								
02	A02-11-01		1	1.5	2-Methylphenol	1.6		mg/kg
02	A02-11-01		1	1.5	4-Methylphenol	0.38		mg/kg
02	A02-11-01		1	1.5	Bis(2-Ethylhexyl)Phthalate	0.2	J	mg/kg
02	A02-11-01		1	1.5	Di-n-Butyl Phthalate	0.31	J	mg/kg
Volatiles								
02	A02-11-01		1	1.5	Ethylbenzene	2.5	J	mg/kg
02	A02-11-01		1	1.5	Toluene	3600	DE	mg/kg
02	A02-11-01		1	1.5	Xylene (Total)	4	J	mg/kg
Inorganics								
02	A02-11-02		1.5	3	Aluminum, Total	8150		mg/kg
02	A02-11-02		1.5	3	Arsenic, Total	3.3	BS	mg/kg
02	A02-11-02		1.5	3	Barium, Total	27.3	B	mg/kg
02	A02-11-02		1.5	3	Calcium, Total	3420		mg/kg
02	A02-11-02		1.5	3	Chromium, Total	10.9		mg/kg
02	A02-11-02		1.5	3	Cobalt, Total	6.1	B	mg/kg
02	A02-11-02		1.5	3	Copper, Total	97.4	E	mg/kg
02	A02-11-02		1.5	3	Iron, Total	12500		mg/kg
02	A02-11-02		1.5	3	Lead, Total	2.7		mg/kg
02	A02-11-02		1.5	3	Magnesium, Total	2330		mg/kg
02	A02-11-02		1.5	3	Manganese, Total	115		mg/kg
02	A02-11-02		1.5	3	Nickel, Total	12.2		mg/kg
02	A02-11-02		1.5	3	Sodium, Total	959		mg/kg
02	A02-11-02		1.5	3	Vanadium, Total	35.5		mg/kg
02	A02-11-02		1.5	3	Zinc, Total	36.2		mg/kg
Semivolatiles								
02	A02-11-02		1.5	3	2-Methylphenol	7.5	D	mg/kg
02	A02-11-02		1.5	3	4-Methylphenol	2.7		mg/kg
02	A02-11-02		1.5	3	Anthracene	0.1	J	mg/kg
02	A02-11-02		1.5	3	Benzyl Alcohol	0.19	J	mg/kg
02	A02-11-02		1.5	3	Bis(2-Ethylhexyl)Phthalate	0.31	J	mg/kg
02	A02-11-02		1.5	3	Chrysene	0.051	J	mg/kg
02	A02-11-02		1.5	3	Di-n-Butyl Phthalate	0.43		mg/kg
02	A02-11-02		1.5	3	Fluoranthene	0.075	J	mg/kg
02	A02-11-02		1.5	3	Pentachlorophenol	0.04	J	mg/kg
02	A02-11-02		1.5	3	Phenanthrene	0.11	J	mg/kg
02	A02-11-02		1.5	3	Pyrene	0.077	J	mg/kg
Volatiles								
02	A02-11-02		1.5	3	Toluene	1100		mg/kg
Inorganics								
02	A02-11-03		3	5	Aluminum, Total	7380		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-11-03		3	5	Arsenic, Total	2.3	+	mg/kg
02	A02-11-03		3	5	Barium, Total	24.7	B	mg/kg
02	A02-11-03		3	5	Calcium, Total	3010		mg/kg
02	A02-11-03		3	5	Chromium, Total	9.3		mg/kg
02	A02-11-03		3	5	Cobalt, Total	6.1	B	mg/kg
02	A02-11-03		3	5	Iron, Total	12300		mg/kg
02	A02-11-03		3	5	Lead, Total	2.2		mg/kg
02	A02-11-03		3	5	Magnesium, Total	2090		mg/kg
02	A02-11-03		3	5	Manganese, Total	109		mg/kg
02	A02-11-03		3	5	Nickel, Total	11.2		mg/kg
02	A02-11-03		3	5	Sodium, Total	870	B	mg/kg
02	A02-11-03		3	5	Vanadium, Total	33.2		mg/kg
02	A02-11-03		3	5	Zinc, Total	26.5		mg/kg
Semivolatiles								
02	A02-11-03		3	5	2-Methylphenol	2		mg/kg
02	A02-11-03		3	5	4-Methylphenol	2.5		mg/kg
02	A02-11-03		3	5	Benzyl Alcohol	0.1	J	mg/kg
Volatiles								
02	A02-11-03		3	5	2-Butanone	0.025	J	mg/kg
02	A02-11-03		3	5	Toluene	0.45		mg/kg
Inorganics								
02	A02-12-01		1	1.5	Aluminum, Total	6820	*	mg/kg
02	A02-12-01		1	1.5	Arsenic, Total	1.2	B	mg/kg
02	A02-12-01		1	1.5	Barium, Total	24		mg/kg
02	A02-12-01		1	1.5	Calcium, Total	7970		mg/kg
02	A02-12-01		1	1.5	Chromium, Total	11.4	*	mg/kg
02	A02-12-01		1	1.5	Cobalt, Total	6.6	B	mg/kg
02	A02-12-01		1	1.5	Copper, Total	452	*	mg/kg
02	A02-12-01		1	1.5	Iron, Total	12600	*	mg/kg
02	A02-12-01		1	1.5	Lead, Total	14.8	*	mg/kg
02	A02-12-01		1	1.5	Magnesium, Total	2560		mg/kg
02	A02-12-01		1	1.5	Manganese, Total	162	N*	mg/kg
02	A02-12-01		1	1.5	Mercury, Total	0.62		mg/kg
02	A02-12-01		1	1.5	Nickel, Total	13.5		mg/kg
02	A02-12-01		1	1.5	Sodium, Total	1320		mg/kg
02	A02-12-01		1	1.5	Vanadium, Total	35.1		mg/kg
02	A02-12-01		1	1.5	Zinc, Total	64.5	*	mg/kg
Semivolatiles								
02	A02-12-01		1	1.5	Phenanthrene	1.4	J	mg/kg
Volatiles								
02	A02-12-01		1	1.5	Ethylbenzene	0.92		mg/kg
02	A02-12-01		1	1.5	Toluene	120	D	mg/kg
02	A02-12-01		1	1.5	Xylene (Total)	1.8		mg/kg
Inorganics								
02	A02-12-02		1.5	3	Aluminum, Total	7220	*	mg/kg
02	A02-12-02		1.5	3	Arsenic, Total	1.4	B	mg/kg
02	A02-12-02		1.5	3	Barium, Total	27	B	mg/kg
02	A02-12-02		1.5	3	Calcium, Total	3410		mg/kg
02	A02-12-02		1.5	3	Chromium, Total	12.8	*	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-12-02		1.5	3	Cobalt, Total	6.6	B	mg/kg
02	A02-12-02		1.5	3	Copper, Total	71.7	*	mg/kg
02	A02-12-02		1.5	3	Iron, Total	13100	*	mg/kg
02	A02-12-02		1.5	3	Lead, Total	3.7	*	mg/kg
02	A02-12-02		1.5	3	Magnesium, Total	2760		mg/kg
02	A02-12-02		1.5	3	Manganese, Total	143	N*	mg/kg
02	A02-12-02		1.5	3	Mercury, Total	0.13		mg/kg
02	A02-12-02		1.5	3	Nickel, Total	15.1		mg/kg
02	A02-12-02		1.5	3	Sodium, Total	1120	B	mg/kg
02	A02-12-02		1.5	3	Vanadium, Total	33		mg/kg
02	A02-12-02		1.5	3	Zinc, Total	32.4	*	mg/kg
Volatiles								
02	A02-12-02		1.5	3	Toluene	32	D	mg/kg
Inorganics								
02	A02-12-04		5	7	Aluminum, Total	10100	*	mg/kg
02	A02-12-04		5	7	Arsenic, Total	4.5	S	mg/kg
02	A02-12-04		5	7	Barium, Total	38.6	B	mg/kg
02	A02-12-04		5	7	Calcium, Total	5220		mg/kg
02	A02-12-04		5	7	Chromium, Total	11.1	*	mg/kg
02	A02-12-04		5	7	Cobalt, Total	7.6	B	mg/kg
02	A02-12-04		5	7	Copper, Total	175	*	mg/kg
02	A02-12-04		5	7	Iron, Total	14500	*	mg/kg
02	A02-12-04		5	7	Lead, Total	6.7	*	mg/kg
02	A02-12-04		5	7	Magnesium, Total	3000		mg/kg
02	A02-12-04		5	7	Manganese, Total	171	N*	mg/kg
02	A02-12-04		5	7	Mercury, Total	0.29		mg/kg
02	A02-12-04		5	7	Nickel, Total	16.4		mg/kg
02	A02-12-04		5	7	Sodium, Total	1830		mg/kg
02	A02-12-04		5	7	Vanadium, Total	35.5		mg/kg
02	A02-12-04		5	7	Zinc, Total	48.3	*	mg/kg
Semivolatiles								
02	A02-12-04		5	7	2,4-Dimethylphenol	0.2	J	mg/kg
02	A02-12-04		5	7	2-Methylnaphthalene	0.05	J	mg/kg
02	A02-12-04		5	7	2-Methylphenol	0.38	J	mg/kg
02	A02-12-04		5	7	4-Methylphenol	4.2	D	mg/kg
02	A02-12-04		5	7	Fluoranthene	0.12	J	mg/kg
02	A02-12-04		5	7	Naphthalene	0.12	J	mg/kg
02	A02-12-04		5	7	Phenanthrene	0.14	J	mg/kg
02	A02-12-04		5	7	Phenol	0.15	J	mg/kg
02	A02-12-04		5	7	Pyrene	0.096	J	mg/kg
Volatiles								
02	A02-12-04		5	7	Toluene	3.6		mg/kg
Inorganics								
02	A02-13-01		1	1.5	Aluminum, Total	7980	*	mg/kg
02	A02-13-01		1	1.5	Arsenic, Total	2.2		mg/kg
02	A02-13-01		1	1.5	Barium, Total	27.9	B	mg/kg
02	A02-13-01		1	1.5	Cadmium, Total	0.81		mg/kg
02	A02-13-01		1	1.5	Calcium, Total	3420		mg/kg
02	A02-13-01		1	1.5	Chromium, Total	11.5	*	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-13-01		1	1.5	Cobalt, Total	6.1	B	mg/kg
02	A02-13-01		1	1.5	Iron, Total	12700	*	mg/kg
02	A02-13-01		1	1.5	Lead, Total	3.4	*	mg/kg
02	A02-13-01		1	1.5	Magnesium, Total	2590		mg/kg
02	A02-13-01		1	1.5	Manganese, Total	123	N*	mg/kg
02	A02-13-01		1	1.5	Nickel, Total	13.2		mg/kg
02	A02-13-01		1	1.5	Sodium, Total	432	B	mg/kg
02	A02-13-01		1	1.5	Vanadium, Total	36		mg/kg
02	A02-13-01		1	1.5	Zinc, Total	32.7	*	mg/kg
Semivolatiles								
02	A02-13-01		1	1.5	2-Methylphenol	6	J	mg/kg
Volatiles								
02	A02-13-01		1	1.5	2-Butanone	0.006	J	mg/kg
02	A02-13-01		1	1.5	Acetone	0.024	J	mg/kg
02	A02-13-01		1	1.5	Toluene	31	D	mg/kg
02	A02-13-01		1	1.5	Xylene (Total)	0.3	E	mg/kg
Inorganics								
02	A02-13-03		3	5	Aluminum, Total	8960	*	mg/kg
02	A02-13-03		3	5	Arsenic, Total	2.4		mg/kg
02	A02-13-03		3	5	Barium, Total	33.3	B	mg/kg
02	A02-13-03		3	5	Calcium, Total	3940		mg/kg
02	A02-13-03		3	5	Chromium, Total	11.7	*	mg/kg
02	A02-13-03		3	5	Cobalt, Total	8.5	B	mg/kg
02	A02-13-03		3	5	Iron, Total	12500	*	mg/kg
02	A02-13-03		3	5	Lead, Total	3.1	*	mg/kg
02	A02-13-03		3	5	Magnesium, Total	2550		mg/kg
02	A02-13-03		3	5	Manganese, Total	117	N*	mg/kg
02	A02-13-03		3	5	Nickel, Total	15.7		mg/kg
02	A02-13-03		3	5	Sodium, Total	645	B	mg/kg
02	A02-13-03		3	5	Vanadium, Total	34.7		mg/kg
02	A02-13-03		3	5	Zinc, Total	34.1	*	mg/kg
Semivolatiles								
02	A02-13-03		3	5	2-Methylphenol	2	J	mg/kg
02	A02-13-03		3	5	4-Methylphenol	5.1	J	mg/kg
Volatiles								
02	A02-13-03		3	5	Ethylbenzene	6.4		mg/kg
02	A02-13-03		3	5	Toluene	180	D	mg/kg
02	A02-13-03		3	5	Xylene (Total)	13		mg/kg
Inorganics								
02	A02-13-05		7	9	Aluminum, Total	14000	*	mg/kg
02	A02-13-05		7	9	Arsenic, Total	5.2	S	mg/kg
02	A02-13-05		7	9	Barium, Total	59.9		mg/kg
02	A02-13-05		7	9	Calcium, Total	4400		mg/kg
02	A02-13-05		7	9	Chromium, Total	16.6	*	mg/kg
02	A02-13-05		7	9	Cobalt, Total	8.2	B	mg/kg
02	A02-13-05		7	9	Iron, Total	19000	*	mg/kg
02	A02-13-05		7	9	Lead, Total	3.3	*	mg/kg
02	A02-13-05		7	9	Magnesium, Total	3240		mg/kg
02	A02-13-05		7	9	Manganese, Total	233	N*	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-13-05		7	9	Nickel, Total	19		mg/kg
02	A02-13-05		7	9	Sodium, Total	1870		mg/kg
02	A02-13-05		7	9	Vanadium, Total	31.8		mg/kg
02	A02-13-05		7	9	Zinc, Total	39.6	*	mg/kg
Semivolatiles								
02	A02-13-05		7	9	2,4-Dimethylphenol	0.17	J	mg/kg
02	A02-13-05		7	9	2-Methylphenol	1.4		mg/kg
02	A02-13-05		7	9	2-Propanol (Isopropanol)	10		mg/kg
02	A02-13-05		7	9	4-Methylphenol	4.2	D	mg/kg
02	A02-13-05		7	9	Naphthalene	0.057	J	mg/kg
02	A02-13-05		7	9	Phenol	6.2	D	mg/kg
Volatiles								
02	A02-13-05		7	9	Acetone	4.8	J	mg/kg
02	A02-13-05		7	9	Toluene	15		mg/kg
Inorganics								
02	A02-13-EB	EB			Aluminum, Total	29	B	ug/L
02	A02-13-EB	EB			Calcium, Total	287	B	ug/L
02	A02-13-EB	EB			Sodium, Total	683	B	ug/L
Volatiles								
02	A02-13-EB	EB			Toluene	0.7	J	ug/L
Volatiles								
02	A02-14-01		1	1.5	Toluene	0.032		mg/kg
Inorganics								
02	A02-14-02		1.5	3	Aluminum, Total	9270	*	mg/kg
02	A02-14-02		1.5	3	Arsenic, Total	4.4	S	mg/kg
02	A02-14-02		1.5	3	Barium, Total	35.4	B	mg/kg
02	A02-14-02		1.5	3	Calcium, Total	4210		mg/kg
02	A02-14-02		1.5	3	Chromium, Total	20.4	*	mg/kg
02	A02-14-02		1.5	3	Cobalt, Total	7.1	B	mg/kg
02	A02-14-02		1.5	3	Copper, Total	103	*	mg/kg
02	A02-14-02		1.5	3	Iron, Total	13700	*	mg/kg
02	A02-14-02		1.5	3	Lead, Total	14.5	S*	mg/kg
02	A02-14-02		1.5	3	Magnesium, Total	3250		mg/kg
02	A02-14-02		1.5	3	Manganese, Total	189	N*	mg/kg
02	A02-14-02		1.5	3	Mercury, Total	0.19		mg/kg
02	A02-14-02		1.5	3	Nickel, Total	19.1		mg/kg
02	A02-14-02		1.5	3	Sodium, Total	706	B	mg/kg
02	A02-14-02		1.5	3	Vanadium, Total	38.1		mg/kg
02	A02-14-02		1.5	3	Zinc, Total	60.6	*	mg/kg
Semivolatiles								
02	A02-14-02		1.5	3	Fluoranthene	0.039	J	mg/kg
02	A02-14-02		1.5	3	Pyrene	0.064	J	mg/kg
Inorganics								
02	A02-14-05		7	9	Aluminum, Total	15500	*	mg/kg
02	A02-14-05		7	9	Arsenic, Total	5.6	S	mg/kg
02	A02-14-05		7	9	Barium, Total	64.5		mg/kg
02	A02-14-05		7	9	Calcium, Total	4830		mg/kg
02	A02-14-05		7	9	Chromium, Total	18.6	*	mg/kg
02	A02-14-05		7	9	Cobalt, Total	9.2	B	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
02	A02-14-05		7	9	Iron, Total	17100	*	mg/kg
02	A02-14-05		7	9	Lead, Total	5.4	*	mg/kg
02	A02-14-05		7	9	Magnesium, Total	3890		mg/kg
02	A02-14-05		7	9	Manganese, Total	217	N*	mg/kg
02	A02-14-05		7	9	Nickel, Total	19		mg/kg
02	A02-14-05		7	9	Sodium, Total	1410		mg/kg
02	A02-14-05		7	9	Vanadium, Total	55.8		mg/kg
02	A02-14-05		7	9	Zinc, Total	43.2	*	mg/kg
Semivolatiles								
02	A02-14-05		7	9	4-Methylphenol	0.11	J	mg/kg
Volatiles								
02	A02-14-05		7	9	2-Butanone	0.016	J	mg/kg
02	A02-14-05		7	9	Acetone	0.051	J	mg/kg
02	A02-14-05		7	9	Toluene	0.068		mg/kg
02	A02-14-05		7	9	Xylene (Total)	0.006	J	mg/kg
Inorganics								
03	A03-01-01		0	0.5	Aluminum, Total	8340		mg/kg
03	A03-01-01		0	0.5	Arsenic, Total	3.2		mg/kg
03	A03-01-01		0	0.5	Barium, Total	37.1	B	mg/kg
03	A03-01-01		0	0.5	Beryllium, Total	0.4	B	mg/kg
03	A03-01-01		0	0.5	Calcium, Total	3770		mg/kg
03	A03-01-01		0	0.5	Chromium, Total	11.7		mg/kg
03	A03-01-01		0	0.5	Cobalt, Total	7	B	mg/kg
03	A03-01-01		0	0.5	Iron, Total	13200		mg/kg
03	A03-01-01		0	0.5	Lead, Total	8.1	*	mg/kg
03	A03-01-01		0	0.5	Magnesium, Total	2990	*	mg/kg
03	A03-01-01		0	0.5	Manganese, Total	148		mg/kg
03	A03-01-01		0	0.5	Nickel, Total	13.6		mg/kg
03	A03-01-01		0	0.5	Sodium, Total	401	B	mg/kg
03	A03-01-01		0	0.5	Vanadium, Total	36		mg/kg
03	A03-01-01		0	0.5	Zinc, Total	30.2		mg/kg
Volatiles								
03	A03-01-01		0	0.5	Toluene	0.019		mg/kg
Conventionals								
03	A03-02-01		0	0.5	Total Petroleum Hydrocarbons	635		mg/kg
Inorganics								
03	A03-02-01		0	0.5	Aluminum, Total	10200		mg/kg
03	A03-02-01		0	0.5	Arsenic, Total	2.8	NS	mg/kg
03	A03-02-01		0	0.5	Barium, Total	31	B	mg/kg
03	A03-02-01		0	0.5	Beryllium, Total	0.45	B	mg/kg
03	A03-02-01		0	0.5	Calcium, Total	9420		mg/kg
03	A03-02-01		0	0.5	Chromium, Total	17.6		mg/kg
03	A03-02-01		0	0.5	Copper, Total	485	*	mg/kg
03	A03-02-01		0	0.5	Iron, Total	21200		mg/kg
03	A03-02-01		0	0.5	Lead, Total	16.3	N	mg/kg
03	A03-02-01		0	0.5	Magnesium, Total	5600		mg/kg
03	A03-02-01		0	0.5	Manganese, Total	309		mg/kg
03	A03-02-01		0	0.5	Mercury, Total	0.32		mg/kg
03	A03-02-01		0	0.5	Nickel, Total	24.9		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
03	A03-02-01		0	0.5	Potassium, Total	590	B	mg/kg
03	A03-02-01		0	0.5	Vanadium, Total	62.1		mg/kg
03	A03-02-01		0	0.5	Zinc, Total	153		mg/kg
Volatiles								
03	A03-02-01		0	0.5	Acetone	0.004	J	mg/kg
Conventionals								
03	A03-03-01		0	0.5	Total Petroleum Hydrocarbons	175		mg/kg
Inorganics								
03	A03-03-01		0	0.5	Aluminum, Total	7030		mg/kg
03	A03-03-01		0	0.5	Arsenic, Total	2.4		mg/kg
03	A03-03-01		0	0.5	Barium, Total	24	B	mg/kg
03	A03-03-01		0	0.5	Calcium, Total	3260		mg/kg
03	A03-03-01		0	0.5	Chromium, Total	11.5		mg/kg
03	A03-03-01		0	0.5	Cobalt, Total	6.4	B	mg/kg
03	A03-03-01		0	0.5	Iron, Total	12700		mg/kg
03	A03-03-01		0	0.5	Lead, Total	4.4	*	mg/kg
03	A03-03-01		0	0.5	Magnesium, Total	2890	*	mg/kg
03	A03-03-01		0	0.5	Manganese, Total	146		mg/kg
03	A03-03-01		0	0.5	Nickel, Total	13.3		mg/kg
03	A03-03-01		0	0.5	Sodium, Total	307	B	mg/kg
03	A03-03-01		0	0.5	Vanadium, Total	35.1		mg/kg
03	A03-03-01		0	0.5	Zinc, Total	27.4		mg/kg
Volatiles								
03	A03-03-01		0	0.5	Toluene	0.003	J	mg/kg
Conventionals								
03	A03-04-01		0	0.5	Total Petroleum Hydrocarbons	88.8		mg/kg
Inorganics								
03	A03-04-01		0	0.5	Aluminum, Total	11400		mg/kg
03	A03-04-01		0	0.5	Arsenic, Total	3.4	NS	mg/kg
03	A03-04-01		0	0.5	Barium, Total	34.4	B	mg/kg
03	A03-04-01		0	0.5	Calcium, Total	8680		mg/kg
03	A03-04-01		0	0.5	Chromium, Total	23.2		mg/kg
03	A03-04-01		0	0.5	Copper, Total	204	*	mg/kg
03	A03-04-01		0	0.5	Iron, Total	22800		mg/kg
03	A03-04-01		0	0.5	Lead, Total	38.9	N	mg/kg
03	A03-04-01		0	0.5	Magnesium, Total	8070		mg/kg
03	A03-04-01		0	0.5	Manganese, Total	278		mg/kg
03	A03-04-01		0	0.5	Mercury, Total	0.15		mg/kg
03	A03-04-01		0	0.5	Nickel, Total	32.4		mg/kg
03	A03-04-01		0	0.5	Potassium, Total	554	B	mg/kg
03	A03-04-01		0	0.5	Vanadium, Total	61.6		mg/kg
03	A03-04-01		0	0.5	Zinc, Total	138		mg/kg
Volatiles								
03	A03-04-01		0	0.5	Methylene Chloride	0.002	J	mg/kg
Inorganics								
03	A03-05-01		0	0.5	Aluminum, Total	6040		mg/kg
03	A03-05-01		0	0.5	Arsenic, Total	4.3	N	mg/kg
03	A03-05-01		0	0.5	Barium, Total	44.4	B	mg/kg
03	A03-05-01		0	0.5	Calcium, Total	6730		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
03	A03-05-01		0	0.5	Chromium, Total	12.2		mg/kg
03	A03-05-01		0	0.5	Copper, Total	59.6	*	mg/kg
03	A03-05-01		0	0.5	Iron, Total	10300		mg/kg
03	A03-05-01		0	0.5	Lead, Total	21.7	N	mg/kg
03	A03-05-01		0	0.5	Magnesium, Total	2700		mg/kg
03	A03-05-01		0	0.5	Manganese, Total	197		mg/kg
03	A03-05-01		0	0.5	Nickel, Total	15.9		mg/kg
03	A03-05-01		0	0.5	Potassium, Total	441	B	mg/kg
03	A03-05-01		0	0.5	Vanadium, Total	31.6		mg/kg
03	A03-05-01		0	0.5	Zinc, Total	66.5		mg/kg
Volatiles								
03	A03-05-01		0	0.5	Methylene Chloride	0.004	J	mg/kg
Inorganics								
03	A03-06-01		0	0.5	Aluminum, Total	11700		mg/kg
03	A03-06-01		0	0.5	Arsenic, Total	5.2		mg/kg
03	A03-06-01		0	0.5	Barium, Total	46.2		mg/kg
03	A03-06-01		0	0.5	Calcium, Total	4430		mg/kg
03	A03-06-01		0	0.5	Chromium, Total	14.6		mg/kg
03	A03-06-01		0	0.5	Cobalt, Total	8.8	B	mg/kg
03	A03-06-01		0	0.5	Iron, Total	15700		mg/kg
03	A03-06-01		0	0.5	Lead, Total	6.6		mg/kg
03	A03-06-01		0	0.5	Magnesium, Total	3520		mg/kg
03	A03-06-01		0	0.5	Manganese, Total	169		mg/kg
03	A03-06-01		0	0.5	Nickel, Total	14.3		mg/kg
03	A03-06-01		0	0.5	Sodium, Total	599	B	mg/kg
03	A03-06-01		0	0.5	Vanadium, Total	48.8		mg/kg
03	A03-06-01		0	0.5	Zinc, Total	36.5		mg/kg
Volatiles								
03	A03-06-01		0	0.5	Acetone	0.004	J	mg/kg
03	A03-06-01		0	0.5	Toluene	0.009		mg/kg
Inorganics								
03	A03-06-EB	EB			Aluminum, Total	396		ug/L
03	A03-06-EB	EB			Calcium, Total	324	B	ug/L
03	A03-06-EB	EB			Iron, Total	484		ug/L
03	A03-06-EB	EB			Magnesium, Total	160	B	ug/L
03	A03-06-EB	EB			Manganese, Total	8.2	B	ug/L
03	A03-06-EB	EB			Sodium, Total	573	B	ug/L
Volatiles								
03	A03-06-EB	EB			Methylene Chloride	0.4	J	ug/L
Inorganics								
03	A03-07-01		0	0.5	Aluminum, Total	9665		mg/kg
03	A03-07-01		0	0.5	Arsenic, Total	3.45		mg/kg
03	A03-07-01		0	0.5	Barium, Total	35.05	B	mg/kg
03	A03-07-01		0	0.5	Beryllium, Total	0.54	B	mg/kg
03	A03-07-01		0	0.5	Calcium, Total	5480		mg/kg
03	A03-07-01		0	0.5	Chromium, Total	14.2		mg/kg
03	A03-07-01		0	0.5	Cobalt, Total	10.75		mg/kg
03	A03-07-01		0	0.5	Iron, Total	19900		mg/kg
03	A03-07-01		0	0.5	Lead, Total	89.3		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
03	A03-07-01		0	0.5	Magnesium, Total	5690		mg/kg
03	A03-07-01		0	0.5	Manganese, Total	396.5		mg/kg
03	A03-07-01		0	0.5	Nickel, Total	18.5		mg/kg
03	A03-07-01		0	0.5	Sodium, Total	541	B	mg/kg
03	A03-07-01		0	0.5	Vanadium, Total	58.9		mg/kg
03	A03-07-01		0	0.5	Zinc, Total	47.4		mg/kg
Volatiles								
03	A03-07-01		0	0.5	Toluene	0.007		mg/kg
Pesticides/PCB's								
03	A03-08-01		0	0.5	Aroclor-1254	0.23		mg/kg
Pesticides/PCB's								
03	A03-09-01		0	0.5	Aroclor-1254	0.58		mg/kg
Inorganics								
04	A04-01-01		1	1.5	Aluminum, Total	8270		mg/kg
04	A04-01-01		1	1.5	Arsenic, Total	1.9	B	mg/kg
04	A04-01-01		1	1.5	Barium, Total	29	B	mg/kg
04	A04-01-01		1	1.5	Calcium, Total	3790		mg/kg
04	A04-01-01		1	1.5	Chromium, Total	13.1		mg/kg
04	A04-01-01		1	1.5	Cobalt, Total	8.2	B	mg/kg
04	A04-01-01		1	1.5	Iron, Total	14900		mg/kg
04	A04-01-01		1	1.5	Lead, Total	2.7		mg/kg
04	A04-01-01		1	1.5	Magnesium, Total	3100		mg/kg
04	A04-01-01		1	1.5	Manganese, Total	164		mg/kg
04	A04-01-01		1	1.5	Nickel, Total	12.4		mg/kg
04	A04-01-01		1	1.5	Sodium, Total	457	B	mg/kg
04	A04-01-01		1	1.5	Vanadium, Total	49.3		mg/kg
04	A04-01-01		1	1.5	Zinc, Total	31.5		mg/kg
Semivolatiles								
04	A04-01-01		1	1.5	4-Methylphenol	0.04	J	mg/kg
Volatiles								
04	A04-01-01		1	1.5	2-Butanone	0.015	J	mg/kg
04	A04-01-01		1	1.5	Acetone	0.045	J	mg/kg
04	A04-01-01		1	1.5	Toluene	0.008		mg/kg
Inorganics								
04	A04-01-05		7	9	Aluminum, Total	12600		mg/kg
04	A04-01-05		7	9	Arsenic, Total	2.9	S	mg/kg
04	A04-01-05		7	9	Barium, Total	52.9		mg/kg
04	A04-01-05		7	9	Calcium, Total	4130		mg/kg
04	A04-01-05		7	9	Chromium, Total	14.3		mg/kg
04	A04-01-05		7	9	Cobalt, Total	7.9	B	mg/kg
04	A04-01-05		7	9	Iron, Total	14300		mg/kg
04	A04-01-05		7	9	Lead, Total	2.5		mg/kg
04	A04-01-05		7	9	Magnesium, Total	3090		mg/kg
04	A04-01-05		7	9	Manganese, Total	117		mg/kg
04	A04-01-05		7	9	Nickel, Total	14		mg/kg
04	A04-01-05		7	9	Sodium, Total	1150	B	mg/kg
04	A04-01-05		7	9	Vanadium, Total	50.8		mg/kg
04	A04-01-05		7	9	Zinc, Total	32.6		mg/kg
Semivolatiles								

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-01-05		7	9	2-Methylnaphthalene	0.1	J	mg/kg
04	A04-01-05		7	9	2-Methylphenol	0.2	J	mg/kg
04	A04-01-05		7	9	4-Methylphenol	0.18	J	mg/kg
04	A04-01-05		7	9	Bis(2-Ethylhexyl)Phthalate	1.9		mg/kg
04	A04-01-05		7	9	Fluoranthene	0.05	J	mg/kg
04	A04-01-05		7	9	Naphthalene	0.11	J	mg/kg
Volatiles								
04	A04-01-05		7	9	Acetone	8.8		mg/kg
04	A04-01-05		7	9	Ethylbenzene	2	J	mg/kg
04	A04-01-05		7	9	Methylene Chloride	1.6	J	mg/kg
04	A04-01-05		7	9	Toluene	4900	D	mg/kg
04	A04-01-05		7	9	Xylene (Total)	3	J	mg/kg
Inorganics								
04	A04-01-06		9	11	Aluminum, Total	6680		mg/kg
04	A04-01-06		9	11	Arsenic, Total	1.3	B	mg/kg
04	A04-01-06		9	11	Barium, Total	24.8	B	mg/kg
04	A04-01-06		9	11	Calcium, Total	2710		mg/kg
04	A04-01-06		9	11	Chromium, Total	9.3		mg/kg
04	A04-01-06		9	11	Cobalt, Total	5.6	B	mg/kg
04	A04-01-06		9	11	Iron, Total	10500		mg/kg
04	A04-01-06		9	11	Lead, Total	1.3		mg/kg
04	A04-01-06		9	11	Magnesium, Total	1780		mg/kg
04	A04-01-06		9	11	Manganese, Total	88.5		mg/kg
04	A04-01-06		9	11	Nickel, Total	9.9		mg/kg
04	A04-01-06		9	11	Sodium, Total	729	B	mg/kg
04	A04-01-06		9	11	Vanadium, Total	40.4		mg/kg
04	A04-01-06		9	11	Zinc, Total	19.2		mg/kg
Semivolatiles								
04	A04-01-06		9	11	2-Methylphenol	0.059	J	mg/kg
04	A04-01-06		9	11	4-Methylphenol	0.042	J	mg/kg
04	A04-01-06		9	11	Bis(2-Ethylhexyl)Phthalate	0.058	J	mg/kg
04	A04-01-06		9	11	Pentachlorophenol	0.13	J	mg/kg
Volatiles								
04	A04-01-06		9	11	2-Butanone	1.1	J	mg/kg
04	A04-01-06		9	11	Acetone	11		mg/kg
04	A04-01-06		9	11	Toluene	14		mg/kg
Inorganics								
04	A04-02-01		0.5	1	Aluminum, Total	7850		mg/kg
04	A04-02-01		0.5	1	Arsenic, Total	2.8		mg/kg
04	A04-02-01		0.5	1	Barium, Total	42.9		mg/kg
04	A04-02-01		0.5	1	Calcium, Total	3310		mg/kg
04	A04-02-01		0.5	1	Chromium, Total	12.2		mg/kg
04	A04-02-01		0.5	1	Cobalt, Total	6.8	B	mg/kg
04	A04-02-01		0.5	1	Iron, Total	12900		mg/kg
04	A04-02-01		0.5	1	Lead, Total	3.7		mg/kg
04	A04-02-01		0.5	1	Magnesium, Total	2370		mg/kg
04	A04-02-01		0.5	1	Manganese, Total	136		mg/kg
04	A04-02-01		0.5	1	Mercury, Total	0.27		mg/kg
04	A04-02-01		0.5	1	Nickel, Total	11.5		mg/kg

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EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-02-01		0.5	1	Sodium, Total	371	B	mg/kg
04	A04-02-01		0.5	1	Vanadium, Total	40.2		mg/kg
04	A04-02-01		0.5	1	Zinc, Total	79.6		mg/kg
Semivolatiles								
04	A04-02-01		0.5	1	Pentachlorophenol	0.19	J	mg/kg
04	A04-02-01		0.5	1	Pyrene	0.049	J	mg/kg
Volatiles								
04	A04-02-01		0.5	1	2-Butanone	0.006	J	mg/kg
04	A04-02-01		0.5	1	Acetone	0.11		mg/kg
04	A04-02-01		0.5	1	Toluene	0.013		mg/kg
Inorganics								
04	A04-02-06		8.5	10.5	Aluminum, Total	13800		mg/kg
04	A04-02-06		8.5	10.5	Arsenic, Total	1.6	B	mg/kg
04	A04-02-06		8.5	10.5	Barium, Total	52.5		mg/kg
04	A04-02-06		8.5	10.5	Calcium, Total	4090		mg/kg
04	A04-02-06		8.5	10.5	Chromium, Total	14.6		mg/kg
04	A04-02-06		8.5	10.5	Cobalt, Total	8.8	B	mg/kg
04	A04-02-06		8.5	10.5	Iron, Total	14300		mg/kg
04	A04-02-06		8.5	10.5	Lead, Total	2.7		mg/kg
04	A04-02-06		8.5	10.5	Magnesium, Total	2690		mg/kg
04	A04-02-06		8.5	10.5	Manganese, Total	120		mg/kg
04	A04-02-06		8.5	10.5	Nickel, Total	12.4		mg/kg
04	A04-02-06		8.5	10.5	Sodium, Total	820	B	mg/kg
04	A04-02-06		8.5	10.5	Vanadium, Total	54.8		mg/kg
04	A04-02-06		8.5	10.5	Zinc, Total	39.2		mg/kg
Semivolatiles								
04	A04-02-06		8.5	10.5	4-Methylphenol	0.044	J	mg/kg
Volatiles								
04	A04-02-06		8.5	10.5	Acetone	0.032	J	mg/kg
04	A04-02-06		8.5	10.5	Toluene	0.35		mg/kg
Inorganics								
04	A04-03-01		1	1.5	Aluminum, Total	6695		mg/kg
04	A04-03-01		1	1.5	Arsenic, Total	6		mg/kg
04	A04-03-01		1	1.5	Barium, Total	27.55	B	mg/kg
04	A04-03-01		1	1.5	Beryllium, Total	0.405	B	mg/kg
04	A04-03-01		1	1.5	Calcium, Total	3110		mg/kg
04	A04-03-01		1	1.5	Chromium, Total	10.35		mg/kg
04	A04-03-01		1	1.5	Cobalt, Total	5.75	B	mg/kg
04	A04-03-01		1	1.5	Copper, Total	75		mg/kg
04	A04-03-01		1	1.5	Iron, Total	11350		mg/kg
04	A04-03-01		1	1.5	Lead, Total	5.65		mg/kg
04	A04-03-01		1	1.5	Magnesium, Total	2405		mg/kg
04	A04-03-01		1	1.5	Manganese, Total	129		mg/kg
04	A04-03-01		1	1.5	Nickel, Total	7.95		mg/kg
04	A04-03-01		1	1.5	Sodium, Total	386	B	mg/kg
04	A04-03-01		1	1.5	Vanadium, Total	30.3		mg/kg
04	A04-03-01		1	1.5	Zinc, Total	70.9		mg/kg
Volatiles								
04	A04-03-01		1	1.5	Toluene	0.001	J	mg/kg

FD= Field Duplicate
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Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Inorganics								
04	A04-03-02		1.5	3	Aluminum, Total	7540		mg/kg
04	A04-03-02		1.5	3	Arsenic, Total	2.5	N*	mg/kg
04	A04-03-02		1.5	3	Barium, Total	30.9	B	mg/kg
04	A04-03-02		1.5	3	Beryllium, Total	0.43	B	mg/kg
04	A04-03-02		1.5	3	Calcium, Total	3070		mg/kg
04	A04-03-02		1.5	3	Chromium, Total	11.8		mg/kg
04	A04-03-02		1.5	3	Cobalt, Total	5.9	B	mg/kg
04	A04-03-02		1.5	3	Copper, Total	33.4		mg/kg
04	A04-03-02		1.5	3	Iron, Total	11900		mg/kg
04	A04-03-02		1.5	3	Lead, Total	3.5		mg/kg
04	A04-03-02		1.5	3	Magnesium, Total	2370		mg/kg
04	A04-03-02		1.5	3	Manganese, Total	117		mg/kg
04	A04-03-02		1.5	3	Nickel, Total	8.3		mg/kg
04	A04-03-02		1.5	3	Sodium, Total	628	B	mg/kg
04	A04-03-02		1.5	3	Vanadium, Total	35.2		mg/kg
04	A04-03-02		1.5	3	Zinc, Total	60.7		mg/kg
Semivolatiles								
04	A04-03-02		1.5	3	2-Methylnaphthalene	0.088	J	mg/kg
04	A04-03-02		1.5	3	Pentachlorophenol	0.46	J	mg/kg
04	A04-03-02		1.5	3	Phenanthrene	0.13	J	mg/kg
04	A04-03-02		1.5	3	Pyrene	0.71		mg/kg
Volatiles								
04	A04-03-02		1.5	3	1,1,2-Trichloroethane	0.003	J	mg/kg
04	A04-03-02		1.5	3	2-Butanone	0.007	J	mg/kg
04	A04-03-02		1.5	3	Acetone	0.008	J	mg/kg
04	A04-03-02		1.5	3	Bromoform	0.002	J	mg/kg
04	A04-03-02		1.5	3	Methylene Chloride	0.003	J	mg/kg
04	A04-03-02		1.5	3	Toluene	0.009		mg/kg
04	A04-03-02		1.5	3	Trichloroethene	0.001	J	mg/kg
Inorganics								
04	A04-03-06		9	11	Aluminum, Total	6380		mg/kg
04	A04-03-06		9	11	Arsenic, Total	1.7	N*	mg/kg
04	A04-03-06		9	11	Barium, Total	25	B	mg/kg
04	A04-03-06		9	11	Calcium, Total	2200		mg/kg
04	A04-03-06		9	11	Chromium, Total	9.3		mg/kg
04	A04-03-06		9	11	Cobalt, Total	5	B	mg/kg
04	A04-03-06		9	11	Copper, Total	10.5		mg/kg
04	A04-03-06		9	11	Iron, Total	8950		mg/kg
04	A04-03-06		9	11	Lead, Total	1.2		mg/kg
04	A04-03-06		9	11	Magnesium, Total	1640		mg/kg
04	A04-03-06		9	11	Manganese, Total	84.7		mg/kg
04	A04-03-06		9	11	Nickel, Total	4.9	B	mg/kg
04	A04-03-06		9	11	Sodium, Total	641	B	mg/kg
04	A04-03-06		9	11	Vanadium, Total	34.9		mg/kg
04	A04-03-06		9	11	Zinc, Total	16.5		mg/kg
Semivolatiles								
04	A04-03-06		9	11	2-Methylphenol	0.086	J	mg/kg
04	A04-03-06		9	11	4-Methylphenol	0.12	J	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Volatiles								
04	A04-03-06		9	11	2-Butanone	0.005	J	mg/kg
04	A04-03-06		9	11	Acetone	0.022	J	mg/kg
04	A04-03-06		9	11	Toluene	0.14		mg/kg
Inorganics								
04	A04-03-EB	EB			Aluminum, Total	39.6	B	ug/L
04	A04-03-EB	EB			Calcium, Total	271	B	ug/L
04	A04-03-EB	EB			Sodium, Total	693	B	ug/L
Inorganics								
04	A04-04-01		1	1.5	Aluminum, Total	7480		mg/kg
04	A04-04-01		1	1.5	Arsenic, Total	1.6	B	mg/kg
04	A04-04-01		1	1.5	Barium, Total	30.1	B	mg/kg
04	A04-04-01		1	1.5	Calcium, Total	3200		mg/kg
04	A04-04-01		1	1.5	Chromium, Total	10.9		mg/kg
04	A04-04-01		1	1.5	Cobalt, Total	7.4	B	mg/kg
04	A04-04-01		1	1.5	Iron, Total	13400		mg/kg
04	A04-04-01		1	1.5	Lead, Total	2.9		mg/kg
04	A04-04-01		1	1.5	Magnesium, Total	2620		mg/kg
04	A04-04-01		1	1.5	Manganese, Total	129		mg/kg
04	A04-04-01		1	1.5	Nickel, Total	11.5		mg/kg
04	A04-04-01		1	1.5	Sodium, Total	581	B	mg/kg
04	A04-04-01		1	1.5	Vanadium, Total	37.7		mg/kg
04	A04-04-01		1	1.5	Zinc, Total	28.7		mg/kg
Semivolatiles								
04	A04-04-01		1	1.5	2-Methylnaphthalene	0.084	J	mg/kg
04	A04-04-01		1	1.5	2-Methylphenol	3		mg/kg
04	A04-04-01		1	1.5	4-Methylphenol	0.48		mg/kg
04	A04-04-01		1	1.5	Acenaphthene	0.13	J	mg/kg
04	A04-04-01		1	1.5	Anthracene	0.087	J	mg/kg
04	A04-04-01		1	1.5	Benzo(A)Anthracene	0.099	J	mg/kg
04	A04-04-01		1	1.5	Bis(2-Ethylhexyl)Phthalate	1.6	DJ	mg/kg
04	A04-04-01		1	1.5	Chrysene	0.11	J	mg/kg
04	A04-04-01		1	1.5	Dibenzofuran	0.073	J	mg/kg
04	A04-04-01		1	1.5	Fluoranthene	0.33	J	mg/kg
04	A04-04-01		1	1.5	Fluorene	0.1	J	mg/kg
04	A04-04-01		1	1.5	Naphthalene	0.29	J	mg/kg
04	A04-04-01		1	1.5	Phenanthrene	0.35	J	mg/kg
04	A04-04-01		1	1.5	Pyrene	0.8		mg/kg
Volatiles								
04	A04-04-01		1	1.5	Ethylbenzene	1.1	J	mg/kg
04	A04-04-01		1	1.5	Toluene	4400	D	mg/kg
04	A04-04-01		1	1.5	Xylene (Total)	2	J	mg/kg
Inorganics								
04	A04-04-03		3	5	Aluminum, Total	11300		mg/kg
04	A04-04-03		3	5	Arsenic, Total	5.4		mg/kg
04	A04-04-03		3	5	Barium, Total	46.4		mg/kg
04	A04-04-03		3	5	Beryllium, Total	0.4	B	mg/kg
04	A04-04-03		3	5	Calcium, Total	4040		mg/kg
04	A04-04-03		3	5	Chromium, Total	13.1		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-04-03		3	5	Cobalt, Total	8.6	B	mg/kg
04	A04-04-03		3	5	Iron, Total	15200		mg/kg
04	A04-04-03		3	5	Lead, Total	5.3		mg/kg
04	A04-04-03		3	5	Magnesium, Total	3190		mg/kg
04	A04-04-03		3	5	Manganese, Total	158		mg/kg
04	A04-04-03		3	5	Nickel, Total	14.3		mg/kg
04	A04-04-03		3	5	Sodium, Total	2500		mg/kg
04	A04-04-03		3	5	Vanadium, Total	42.4		mg/kg
04	A04-04-03		3	5	Zinc, Total	48		mg/kg
Semivolatiles								
04	A04-04-03		3	5	2-Methylnaphthalene	0.097	J	mg/kg
04	A04-04-03		3	5	2-Methylphenol	5.7	D	mg/kg
04	A04-04-03		3	5	4-Methylphenol	3	D	mg/kg
04	A04-04-03		3	5	Benzo(A)Pyrene	0.087	J	mg/kg
04	A04-04-03		3	5	Bis(2-Ethylhexyl)Phthalate	0.68		mg/kg
04	A04-04-03		3	5	Naphthalene	0.051	J	mg/kg
04	A04-04-03		3	5	Pentachlorophenol	0.055	J	mg/kg
04	A04-04-03		3	5	Phenanthrene	0.071	J	mg/kg
04	A04-04-03		3	5	Phenol	0.78		mg/kg
Volatiles								
04	A04-04-03		3	5	Acetone	2.1	J	mg/kg
04	A04-04-03		3	5	Ethylbenzene	0.91		mg/kg
04	A04-04-03		3	5	Toluene	1900	D	mg/kg
04	A04-04-03		3	5	Xylene (Total)	1.6		mg/kg
Inorganics								
04	A04-04-06		9	11	Aluminum, Total	5940		mg/kg
04	A04-04-06		9	11	Arsenic, Total	1.4	B	mg/kg
04	A04-04-06		9	11	Barium, Total	19	B	mg/kg
04	A04-04-06		9	11	Calcium, Total	2530		mg/kg
04	A04-04-06		9	11	Chromium, Total	9		mg/kg
04	A04-04-06		9	11	Cobalt, Total	5.5	B	mg/kg
04	A04-04-06		9	11	Iron, Total	10400		mg/kg
04	A04-04-06		9	11	Lead, Total	1.1		mg/kg
04	A04-04-06		9	11	Magnesium, Total	1820		mg/kg
04	A04-04-06		9	11	Manganese, Total	95.5		mg/kg
04	A04-04-06		9	11	Nickel, Total	9.3		mg/kg
04	A04-04-06		9	11	Sodium, Total	692	B	mg/kg
04	A04-04-06		9	11	Vanadium, Total	37.8		mg/kg
04	A04-04-06		9	11	Zinc, Total	19.2		mg/kg
Semivolatiles								
04	A04-04-06		9	11	2-Methylphenol	1.3		mg/kg
04	A04-04-06		9	11	4-Methylphenol	0.59		mg/kg
04	A04-04-06		9	11	Phenol	0.24	J	mg/kg
Volatiles								
04	A04-04-06		9	11	Acetone	0.85	J	mg/kg
04	A04-04-06		9	11	Ethylbenzene	0.29	J	mg/kg
04	A04-04-06		9	11	Methylene Chloride	1.3		mg/kg
04	A04-04-06		9	11	Toluene	400	D	mg/kg
04	A04-04-06		9	11	Xylene (Total)	0.53	J	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Inorganics								
04	A04-05-01		1	1.5	Aluminum, Total	7050		mg/kg
04	A04-05-01		1	1.5	Arsenic, Total	1.6	B	mg/kg
04	A04-05-01		1	1.5	Barium, Total	25.8	B	mg/kg
04	A04-05-01		1	1.5	Calcium, Total	2820		mg/kg
04	A04-05-01		1	1.5	Chromium, Total	11.8		mg/kg
04	A04-05-01		1	1.5	Cobalt, Total	6.6	B	mg/kg
04	A04-05-01		1	1.5	Iron, Total	12400		mg/kg
04	A04-05-01		1	1.5	Lead, Total	2.8		mg/kg
04	A04-05-01		1	1.5	Magnesium, Total	2500		mg/kg
04	A04-05-01		1	1.5	Manganese, Total	137		mg/kg
04	A04-05-01		1	1.5	Nickel, Total	11.5		mg/kg
04	A04-05-01		1	1.5	Sodium, Total	462	B	mg/kg
04	A04-05-01		1	1.5	Vanadium, Total	36.3		mg/kg
04	A04-05-01		1	1.5	Zinc, Total	26.8		mg/kg
Semivolatiles								
04	A04-05-01		1	1.5	Benzyl Butyl Phthalate	0.04	J	mg/kg
Volatiles								
04	A04-05-01		1	1.5	Toluene	7		mg/kg
Inorganics								
04	A04-05-05		7	9	Aluminum, Total	10700		mg/kg
04	A04-05-05		7	9	Arsenic, Total	0.98	B	mg/kg
04	A04-05-05		7	9	Barium, Total	42.7	B	mg/kg
04	A04-05-05		7	9	Calcium, Total	3050		mg/kg
04	A04-05-05		7	9	Chromium, Total	10.5		mg/kg
04	A04-05-05		7	9	Cobalt, Total	6.8	B	mg/kg
04	A04-05-05		7	9	Iron, Total	12900		mg/kg
04	A04-05-05		7	9	Lead, Total	2.4		mg/kg
04	A04-05-05		7	9	Magnesium, Total	2350		mg/kg
04	A04-05-05		7	9	Manganese, Total	119		mg/kg
04	A04-05-05		7	9	Nickel, Total	12		mg/kg
04	A04-05-05		7	9	Sodium, Total	2520		mg/kg
04	A04-05-05		7	9	Vanadium, Total	35.5		mg/kg
04	A04-05-05		7	9	Zinc, Total	25.5		mg/kg
Semivolatiles								
04	A04-05-05		7	9	2-Methylphenol	0.14	J	mg/kg
04	A04-05-05		7	9	4-Methylphenol	0.3	J	mg/kg
04	A04-05-05		7	9	Bis(2-Ethylhexyl)Phthalate	0.083	J	mg/kg
Volatiles								
04	A04-05-05		7	9	Acetone	13	J	mg/kg
04	A04-05-05		7	9	Toluene	1200	D	mg/kg
Inorganics								
04	A04-05-06		9	11	Aluminum, Total	8760		mg/kg
04	A04-05-06		9	11	Arsenic, Total	2.1		mg/kg
04	A04-05-06		9	11	Barium, Total	33.4	B	mg/kg
04	A04-05-06		9	11	Calcium, Total	2560		mg/kg
04	A04-05-06		9	11	Chromium, Total	11.5		mg/kg
04	A04-05-06		9	11	Cobalt, Total	6.5	B	mg/kg
04	A04-05-06		9	11	Iron, Total	12000		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-05-06		9	11	Lead, Total	1.9		mg/kg
04	A04-05-06		9	11	Magnesium, Total	1990		mg/kg
04	A04-05-06		9	11	Manganese, Total	108		mg/kg
04	A04-05-06		9	11	Nickel, Total	11.5		mg/kg
04	A04-05-06		9	11	Sodium, Total	1680		mg/kg
04	A04-05-06		9	11	Vanadium, Total	39.6		mg/kg
04	A04-05-06		9	11	Zinc, Total	20.9		mg/kg
Semivolatiles								
04	A04-05-06		9	11	2-Methylphenol	0.27	J	mg/kg
04	A04-05-06		9	11	4-Methylphenol	1		mg/kg
04	A04-05-06		9	11	Benzyl Butyl Phthalate	0.09	J	mg/kg
04	A04-05-06		9	11	Bis(2-Ethylhexyl)Phthalate	0.3	J	mg/kg
Volatiles								
04	A04-05-06		9	11	Acetone	11	J	mg/kg
04	A04-05-06		9	11	Ethylbenzene	2.3	J	mg/kg
04	A04-05-06		9	11	Toluene	1800	D	mg/kg
04	A04-05-06		9	11	Xylene (Total)	3.6	J	mg/kg
Inorganics								
04	A04-06-01		2	4	Aluminum, Total	7880		mg/kg
04	A04-06-01		2	4	Arsenic, Total	6.8	N*	mg/kg
04	A04-06-01		2	4	Barium, Total	30.4	B	mg/kg
04	A04-06-01		2	4	Calcium, Total	6140		mg/kg
04	A04-06-01		2	4	Chromium, Total	12.1		mg/kg
04	A04-06-01		2	4	Cobalt, Total	7	B	mg/kg
04	A04-06-01		2	4	Copper, Total	38.7		mg/kg
04	A04-06-01		2	4	Iron, Total	12200		mg/kg
04	A04-06-01		2	4	Lead, Total	5.1		mg/kg
04	A04-06-01		2	4	Magnesium, Total	2710		mg/kg
04	A04-06-01		2	4	Manganese, Total	153		mg/kg
04	A04-06-01		2	4	Nickel, Total	10.2		mg/kg
04	A04-06-01		2	4	Sodium, Total	421	B	mg/kg
04	A04-06-01		2	4	Vanadium, Total	36.5		mg/kg
04	A04-06-01		2	4	Zinc, Total	39.3		mg/kg
Semivolatiles								
04	A04-06-01		2	4	Phenanthrene	0.039	J	mg/kg
Volatiles								
04	A04-06-01		2	4	Acetone	0.014	J	mg/kg
04	A04-06-01		2	4	Toluene	0.003	J	mg/kg
Inorganics								
04	A04-06-06		10	12	Aluminum, Total	5910		mg/kg
04	A04-06-06		10	12	Arsenic, Total	1.4	BN*	mg/kg
04	A04-06-06		10	12	Barium, Total	18.9		mg/kg
04	A04-06-06		10	12	Calcium, Total	2580		mg/kg
04	A04-06-06		10	12	Chromium, Total	13.4		mg/kg
04	A04-06-06		10	12	Cobalt, Total	5.9	B	mg/kg
04	A04-06-06		10	12	Copper, Total	8.5		mg/kg
04	A04-06-06		10	12	Iron, Total	10000		mg/kg
04	A04-06-06		10	12	Lead, Total	0.96		mg/kg
04	A04-06-06		10	12	Magnesium, Total	1800		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-06-06		10	12	Manganese, Total	98.6		mg/kg
04	A04-06-06		10	12	Nickel, Total	6.4		mg/kg
04	A04-06-06		10	12	Sodium, Total	550	B	mg/kg
04	A04-06-06		10	12	Vanadium, Total	41.8		mg/kg
04	A04-06-06		10	12	Zinc, Total	17.8		mg/kg
Semivolatiles								
04	A04-06-06		10	12	Bis(2-Ethylhexyl)Phthalate	6.8	J	mg/kg
04	A04-06-06		10	12	Vanillin	0.68	J	mg/kg
Volatiles								
04	A04-06-06		10	12	Acetone	0.68	J	mg/kg
04	A04-06-06		10	12	Benzene	0.23	J	mg/kg
04	A04-06-06		10	12	Ethylbenzene	0.27	J	mg/kg
04	A04-06-06		10	12	Toluene	45	D	mg/kg
04	A04-06-06		10	12	Trichloroethene	0.2	J	mg/kg
04	A04-06-06		10	12	Xylene (Total)	0.16	J	mg/kg
Conventionals								
04	A04-06-07		17	19	Total Organic Carbon	318		mg/kg
Inorganics								
04	A04-06-EB	EB			Aluminum, Total	30.8	B	ug/L
04	A04-06-EB	EB			Calcium, Total	268	B	ug/L
04	A04-06-EB	EB			Iron, Total	29	B	ug/L
04	A04-06-EB	EB			Sodium, Total	699	B	ug/L
Inorganics								
04	A04-07-01		1.5	2	Aluminum, Total	8020		mg/kg
04	A04-07-01		1.5	2	Arsenic, Total	2.9	N*	mg/kg
04	A04-07-01		1.5	2	Barium, Total	28.4	B	mg/kg
04	A04-07-01		1.5	2	Beryllium, Total	0.43	B	mg/kg
04	A04-07-01		1.5	2	Calcium, Total	3310		mg/kg
04	A04-07-01		1.5	2	Chromium, Total	13.3		mg/kg
04	A04-07-01		1.5	2	Cobalt, Total	6.7	B	mg/kg
04	A04-07-01		1.5	2	Copper, Total	11.3		mg/kg
04	A04-07-01		1.5	2	Iron, Total	12400		mg/kg
04	A04-07-01		1.5	2	Lead, Total	1.9		mg/kg
04	A04-07-01		1.5	2	Magnesium, Total	2460		mg/kg
04	A04-07-01		1.5	2	Manganese, Total	141		mg/kg
04	A04-07-01		1.5	2	Nickel, Total	8.1		mg/kg
04	A04-07-01		1.5	2	Potassium, Total	129	B	mg/kg
04	A04-07-01		1.5	2	Sodium, Total	546	B	mg/kg
04	A04-07-01		1.5	2	Vanadium, Total	37.9		mg/kg
04	A04-07-01		1.5	2	Zinc, Total	26.1		mg/kg
Volatiles								
04	A04-07-01		1.5	2	Acetone	0.015	J	mg/kg
04	A04-07-01		1.5	2	Toluene	0.005	J	mg/kg
Inorganics								
04	A04-07-05		7.5	9.5	Aluminum, Total	9940		mg/kg
04	A04-07-05		7.5	9.5	Arsenic, Total	2.7	N*	mg/kg
04	A04-07-05		7.5	9.5	Barium, Total	40.6		mg/kg
04	A04-07-05		7.5	9.5	Beryllium, Total	0.48	B	mg/kg
04	A04-07-05		7.5	9.5	Calcium, Total	3230		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-07-05		7.5	9.5	Chromium, Total	12.5		mg/kg
04	A04-07-05		7.5	9.5	Cobalt, Total	6.4	B	mg/kg
04	A04-07-05		7.5	9.5	Copper, Total	13.9		mg/kg
04	A04-07-05		7.5	9.5	Iron, Total	12100		mg/kg
04	A04-07-05		7.5	9.5	Lead, Total	2.2		mg/kg
04	A04-07-05		7.5	9.5	Magnesium, Total	2280		mg/kg
04	A04-07-05		7.5	9.5	Manganese, Total	105		mg/kg
04	A04-07-05		7.5	9.5	Nickel, Total	7.7		mg/kg
04	A04-07-05		7.5	9.5	Potassium, Total	166	B	mg/kg
04	A04-07-05		7.5	9.5	Sodium, Total	828	B	mg/kg
04	A04-07-05		7.5	9.5	Vanadium, Total	41.2		mg/kg
04	A04-07-05		7.5	9.5	Zinc, Total	21.8		mg/kg
Volatiles								
04	A04-07-05		7.5	9.5	2-Butanone	0.006	J	mg/kg
04	A04-07-05		7.5	9.5	Acetone	0.029	J	mg/kg
04	A04-07-05		7.5	9.5	Toluene	0.003	J	mg/kg
Inorganics								
04	A04-07-06		10.5	12.5	Aluminum, Total	14100		mg/kg
04	A04-07-06		10.5	12.5	Arsenic, Total	4.2	N*	mg/kg
04	A04-07-06		10.5	12.5	Barium, Total	60.9		mg/kg
04	A04-07-06		10.5	12.5	Beryllium, Total	0.66	B	mg/kg
04	A04-07-06		10.5	12.5	Calcium, Total	3210		mg/kg
04	A04-07-06		10.5	12.5	Chromium, Total	16.1		mg/kg
04	A04-07-06		10.5	12.5	Cobalt, Total	8	B	mg/kg
04	A04-07-06		10.5	12.5	Copper, Total	21.4		mg/kg
04	A04-07-06		10.5	12.5	Iron, Total	15800		mg/kg
04	A04-07-06		10.5	12.5	Lead, Total	2.9		mg/kg
04	A04-07-06		10.5	12.5	Magnesium, Total	2880		mg/kg
04	A04-07-06		10.5	12.5	Manganese, Total	138		mg/kg
04	A04-07-06		10.5	12.5	Nickel, Total	11.1		mg/kg
04	A04-07-06		10.5	12.5	Potassium, Total	368	B	mg/kg
04	A04-07-06		10.5	12.5	Sodium, Total	992		mg/kg
04	A04-07-06		10.5	12.5	Vanadium, Total	52.5		mg/kg
04	A04-07-06		10.5	12.5	Zinc, Total	24.9		mg/kg
Semivolatiles								
04	A04-07-06		10.5	12.5	Bis(2-Ethylhexyl)Phthalate	0.11	J	mg/kg
Volatiles								
04	A04-07-06		10.5	12.5	Acetone	0.012	J	mg/kg
04	A04-07-06		10.5	12.5	Benzene	0.003	J	mg/kg
04	A04-07-06		10.5	12.5	Ethylbenzene	0.013		mg/kg
04	A04-07-06		10.5	12.5	Toluene	8.9	D	mg/kg
04	A04-07-06		10.5	12.5	Xylene (Total)	0.002	J	mg/kg
Inorganics								
04	A04-08-01		1.5	2	Aluminum, Total	8490		mg/kg
04	A04-08-01		1.5	2	Arsenic, Total	2.4	N*	mg/kg
04	A04-08-01		1.5	2	Barium, Total	36.4	B	mg/kg
04	A04-08-01		1.5	2	Calcium, Total	4660		mg/kg
04	A04-08-01		1.5	2	Chromium, Total	12.8		mg/kg
04	A04-08-01		1.5	2	Cobalt, Total	8.1	B	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-08-01		1.5	2	Copper, Total	47.8		mg/kg
04	A04-08-01		1.5	2	Iron, Total	15600		mg/kg
04	A04-08-01		1.5	2	Lead, Total	8.7		mg/kg
04	A04-08-01		1.5	2	Magnesium, Total	4390		mg/kg
04	A04-08-01		1.5	2	Manganese, Total	172		mg/kg
04	A04-08-01		1.5	2	Mercury, Total	0.4		mg/kg
04	A04-08-01		1.5	2	Nickel, Total	11.1		mg/kg
04	A04-08-01		1.5	2	Sodium, Total	555	B	mg/kg
04	A04-08-01		1.5	2	Vanadium, Total	41.4		mg/kg
04	A04-08-01		1.5	2	Zinc, Total	39.6		mg/kg
Semivolatiles								
04	A04-08-01		1.5	2	Acenaphthene	0.052	J	mg/kg
04	A04-08-01		1.5	2	Anthracene	0.074	J	mg/kg
04	A04-08-01		1.5	2	Benzo(A)Anthracene	0.46		mg/kg
04	A04-08-01		1.5	2	Benzo(A)Pyrene	0.65		mg/kg
04	A04-08-01		1.5	2	Benzo(B)Fluoranthene	0.72		mg/kg
04	A04-08-01		1.5	2	Benzo(GHI)Perylene	0.41		mg/kg
04	A04-08-01		1.5	2	Benzo(K)Fluoranthene	0.59		mg/kg
04	A04-08-01		1.5	2	Bis(2-Ethylhexyl)Phthalate	0.067	J	mg/kg
04	A04-08-01		1.5	2	Carbazole	0.17	J	mg/kg
04	A04-08-01		1.5	2	Chrysene	0.84		mg/kg
04	A04-08-01		1.5	2	Fluoranthene	1.8		mg/kg
04	A04-08-01		1.5	2	Indeno(1,2,3-CD)Pyrene	0.44		mg/kg
04	A04-08-01		1.5	2	Pentachlorophenol	0.43	J	mg/kg
04	A04-08-01		1.5	2	Phenanthrene	0.89		mg/kg
04	A04-08-01		1.5	2	Pyrene	1.5		mg/kg
Volatiles								
04	A04-08-01		1.5	2	Toluene	0.009		mg/kg
Inorganics								
04	A04-08-05		7.5	9.5	Aluminum, Total	11200		mg/kg
04	A04-08-05		7.5	9.5	Arsenic, Total	3	N*	mg/kg
04	A04-08-05		7.5	9.5	Barium, Total	45.8		mg/kg
04	A04-08-05		7.5	9.5	Beryllium, Total	0.45	B	mg/kg
04	A04-08-05		7.5	9.5	Calcium, Total	3170		mg/kg
04	A04-08-05		7.5	9.5	Chromium, Total	13.8		mg/kg
04	A04-08-05		7.5	9.5	Cobalt, Total	6.9	B	mg/kg
04	A04-08-05		7.5	9.5	Copper, Total	17.7		mg/kg
04	A04-08-05		7.5	9.5	Iron, Total	12800		mg/kg
04	A04-08-05		7.5	9.5	Lead, Total	2.2	S	mg/kg
04	A04-08-05		7.5	9.5	Magnesium, Total	2380		mg/kg
04	A04-08-05		7.5	9.5	Manganese, Total	122		mg/kg
04	A04-08-05		7.5	9.5	Mercury, Total	0.3		mg/kg
04	A04-08-05		7.5	9.5	Nickel, Total	8.6		mg/kg
04	A04-08-05		7.5	9.5	Potassium, Total	250	B	mg/kg
04	A04-08-05		7.5	9.5	Sodium, Total	837	B	mg/kg
04	A04-08-05		7.5	9.5	Vanadium, Total	47		mg/kg
04	A04-08-05		7.5	9.5	Zinc, Total	23		mg/kg
Semivolatiles								
04	A04-08-05		7.5	9.5	Bis(2-Ethylhexyl)Phthalate	0.051	J	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Volatiles								
04	A04-08-05		7.5	9.5	Acetone	0.034		mg/kg
04	A04-08-05		7.5	9.5	Toluene	0.003	J	mg/kg
Inorganics								
04	A04-09-01		1	1.5	Aluminum, Total	7560		mg/kg
04	A04-09-01		1	1.5	Arsenic, Total	6.3		mg/kg
04	A04-09-01		1	1.5	Barium, Total	34.3		mg/kg
04	A04-09-01		1	1.5	Beryllium, Total	0.3	B	mg/kg
04	A04-09-01		1	1.5	Calcium, Total	3530		mg/kg
04	A04-09-01		1	1.5	Chromium, Total	12.3		mg/kg
04	A04-09-01		1	1.5	Cobalt, Total	7.9		mg/kg
04	A04-09-01		1	1.5	Iron, Total	14800		mg/kg
04	A04-09-01		1	1.5	Lead, Total	18.2		mg/kg
04	A04-09-01		1	1.5	Magnesium, Total	3520		mg/kg
04	A04-09-01		1	1.5	Manganese, Total	175		mg/kg
04	A04-09-01		1	1.5	Nickel, Total	13.1		mg/kg
04	A04-09-01		1	1.5	Sodium, Total	347	B	mg/kg
04	A04-09-01		1	1.5	Vanadium, Total	43.4		mg/kg
04	A04-09-01		1	1.5	Zinc, Total	39.4		mg/kg
Semivolatiles								
04	A04-09-01		1	1.5	Pentachlorophenol	4.8	DJ	mg/kg
Volatiles								
04	A04-09-01		1	1.5	2-Butanone	0.025	J	mg/kg
04	A04-09-01		1	1.5	Acetone	0.069		mg/kg
04	A04-09-01		1	1.5	Toluene	0.022		mg/kg
Inorganics								
04	A04-09-05		6.5	8.5	Aluminum, Total	13200		mg/kg
04	A04-09-05		6.5	8.5	Arsenic, Total	3.1	S	mg/kg
04	A04-09-05		6.5	8.5	Barium, Total	65.5		mg/kg
04	A04-09-05		6.5	8.5	Calcium, Total	3640		mg/kg
04	A04-09-05		6.5	8.5	Chromium, Total	15.3		mg/kg
04	A04-09-05		6.5	8.5	Cobalt, Total	8.8	B	mg/kg
04	A04-09-05		6.5	8.5	Iron, Total	15500		mg/kg
04	A04-09-05		6.5	8.5	Lead, Total	2.8		mg/kg
04	A04-09-05		6.5	8.5	Magnesium, Total	2910		mg/kg
04	A04-09-05		6.5	8.5	Manganese, Total	147		mg/kg
04	A04-09-05		6.5	8.5	Nickel, Total	13.6		mg/kg
04	A04-09-05		6.5	8.5	Potassium, Total	523	B	mg/kg
04	A04-09-05		6.5	8.5	Sodium, Total	676	B	mg/kg
04	A04-09-05		6.5	8.5	Vanadium, Total	50.8		mg/kg
04	A04-09-05		6.5	8.5	Zinc, Total	35.3		mg/kg
Volatiles								
04	A04-09-05		6.5	8.5	Toluene	0.018		mg/kg
Inorganics								
04	A04-10-01		1	1.5	Aluminum, Total	7180		mg/kg
04	A04-10-01		1	1.5	Arsenic, Total	2.2		mg/kg
04	A04-10-01		1	1.5	Barium, Total	29	B	mg/kg
04	A04-10-01		1	1.5	Calcium, Total	2920		mg/kg
04	A04-10-01		1	1.5	Chromium, Total	10.7		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-10-01		1	1.5	Cobalt, Total	7.1	B	mg/kg
04	A04-10-01		1	1.5	Copper, Total	9.8		mg/kg
04	A04-10-01		1	1.5	Iron, Total	13300		mg/kg
04	A04-10-01		1	1.5	Lead, Total	2.2		mg/kg
04	A04-10-01		1	1.5	Magnesium, Total	2780		mg/kg
04	A04-10-01		1	1.5	Manganese, Total	139		mg/kg
04	A04-10-01		1	1.5	Nickel, Total	11.8		mg/kg
04	A04-10-01		1	1.5	Sodium, Total	383	B	mg/kg
04	A04-10-01		1	1.5	Vanadium, Total	40.8		mg/kg
04	A04-10-01		1	1.5	Zinc, Total	26.7		mg/kg
Volatiles								
04	A04-10-01		1	1.5	Toluene	0.004	J	mg/kg
Inorganics								
04	A04-10-05		7	9	Aluminum, Total	11400		mg/kg
04	A04-10-05		7	9	Arsenic, Total	2.4		mg/kg
04	A04-10-05		7	9	Barium, Total	52.9		mg/kg
04	A04-10-05		7	9	Beryllium, Total	0.37	B	mg/kg
04	A04-10-05		7	9	Calcium, Total	3850		mg/kg
04	A04-10-05		7	9	Chromium, Total	14.6		mg/kg
04	A04-10-05		7	9	Cobalt, Total	7.5	B	mg/kg
04	A04-10-05		7	9	Copper, Total	18.3		mg/kg
04	A04-10-05		7	9	Iron, Total	14000		mg/kg
04	A04-10-05		7	9	Lead, Total	5.2		mg/kg
04	A04-10-05		7	9	Magnesium, Total	3300		mg/kg
04	A04-10-05		7	9	Manganese, Total	143		mg/kg
04	A04-10-05		7	9	Nickel, Total	14.2		mg/kg
04	A04-10-05		7	9	Sodium, Total	583	B	mg/kg
04	A04-10-05		7	9	Vanadium, Total	44.9		mg/kg
04	A04-10-05		7	9	Zinc, Total	37.5		mg/kg
Semivolatiles								
04	A04-10-05		7	9	Bis(2-Ethylhexyl)Phthalate	0.06	J	mg/kg
Volatiles								
04	A04-10-05		7	9	2-Butanone	0.013	J	mg/kg
04	A04-10-05		7	9	Acetone	0.031	J	mg/kg
04	A04-10-05		7	9	Ethylbenzene	0.003	J	mg/kg
04	A04-10-05		7	9	Methylene Chloride	0.002	J	mg/kg
04	A04-10-05		7	9	Toluene	0.037		mg/kg
04	A04-10-05		7	9	Xylene (Total)	0.013		mg/kg
Inorganics								
04	A04-11-01		0.5	2.5	Aluminum, Total	6670		mg/kg
04	A04-11-01		0.5	2.5	Arsenic, Total	3.1	N*	mg/kg
04	A04-11-01		0.5	2.5	Barium, Total	28.9	B	mg/kg
04	A04-11-01		0.5	2.5	Beryllium, Total	0.37	B	mg/kg
04	A04-11-01		0.5	2.5	Calcium, Total	3380		mg/kg
04	A04-11-01		0.5	2.5	Chromium, Total	9.7		mg/kg
04	A04-11-01		0.5	2.5	Cobalt, Total	6.3	B	mg/kg
04	A04-11-01		0.5	2.5	Copper, Total	15.4		mg/kg
04	A04-11-01		0.5	2.5	Iron, Total	10900		mg/kg
04	A04-11-01		0.5	2.5	Lead, Total	6.6	S	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-11-01		0.5	2.5	Magnesium, Total	2530		mg/kg
04	A04-11-01		0.5	2.5	Manganese, Total	141		mg/kg
04	A04-11-01		0.5	2.5	Nickel, Total	8		mg/kg
04	A04-11-01		0.5	2.5	Potassium, Total	113	B	mg/kg
04	A04-11-01		0.5	2.5	Sodium, Total	267	B	mg/kg
04	A04-11-01		0.5	2.5	Vanadium, Total	29.4		mg/kg
04	A04-11-01		0.5	2.5	Zinc, Total	28.5		mg/kg
Semivolatiles								
04	A04-11-01		0.5	2.5	Benzo(A)Anthracene	0.12	J	mg/kg
04	A04-11-01		0.5	2.5	Benzo(A)Pyrene	0.097	J	mg/kg
04	A04-11-01		0.5	2.5	Benzo(B)Fluoranthene	0.25	J	mg/kg
04	A04-11-01		0.5	2.5	Benzo(K)Fluoranthene	0.11	J	mg/kg
04	A04-11-01		0.5	2.5	Bis(2-Ethylhexyl)Phthalate	0.073	J	mg/kg
04	A04-11-01		0.5	2.5	Chrysene	0.18	J	mg/kg
04	A04-11-01		0.5	2.5	Fluoranthene	0.38		mg/kg
04	A04-11-01		0.5	2.5	Indeno(1,2,3-CD)Pyrene	0.058	J	mg/kg
04	A04-11-01		0.5	2.5	Phenanthrene	0.2	J	mg/kg
04	A04-11-01		0.5	2.5	Pyrene	0.38		mg/kg
Volatiles								
04	A04-11-01		0.5	2.5	Acetone	0.007	J	mg/kg
04	A04-11-01		0.5	2.5	Toluene	0.009		mg/kg
Inorganics								
04	A04-11-04		6.5	8.5	Aluminum, Total	9980		mg/kg
04	A04-11-04		6.5	8.5	Arsenic, Total	3.6	N*	mg/kg
04	A04-11-04		6.5	8.5	Barium, Total	45.9		mg/kg
04	A04-11-04		6.5	8.5	Calcium, Total	3140		mg/kg
04	A04-11-04		6.5	8.5	Chromium, Total	12.8		mg/kg
04	A04-11-04		6.5	8.5	Cobalt, Total	5.9	B	mg/kg
04	A04-11-04		6.5	8.5	Copper, Total	13.3		mg/kg
04	A04-11-04		6.5	8.5	Iron, Total	11300		mg/kg
04	A04-11-04		6.5	8.5	Lead, Total	6	S	mg/kg
04	A04-11-04		6.5	8.5	Magnesium, Total	2810		mg/kg
04	A04-11-04		6.5	8.5	Manganese, Total	119		mg/kg
04	A04-11-04		6.5	8.5	Nickel, Total	6.8	B	mg/kg
04	A04-11-04		6.5	8.5	Potassium, Total	227	B	mg/kg
04	A04-11-04		6.5	8.5	Sodium, Total	460	B	mg/kg
04	A04-11-04		6.5	8.5	Vanadium, Total	36.2		mg/kg
04	A04-11-04		6.5	8.5	Zinc, Total	29.2		mg/kg
Volatiles								
04	A04-11-04		6.5	8.5	2-Butanone	0.016	J	mg/kg
04	A04-11-04		6.5	8.5	Acetone	0.044	J	mg/kg
04	A04-11-04		6.5	8.5	Toluene	0.012		mg/kg
Inorganics								
04	A04-12-01		0.5	1	Aluminum, Total	7210		mg/kg
04	A04-12-01		0.5	1	Arsenic, Total	2.8	N*	mg/kg
04	A04-12-01		0.5	1	Barium, Total	29.9	B	mg/kg
04	A04-12-01		0.5	1	Calcium, Total	2520		mg/kg
04	A04-12-01		0.5	1	Chromium, Total	10.5		mg/kg
04	A04-12-01		0.5	1	Cobalt, Total	6	B	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-12-01		0.5	1	Copper, Total	8.6		mg/kg
04	A04-12-01		0.5	1	Iron, Total	11500		mg/kg
04	A04-12-01		0.5	1	Lead, Total	2.2	S	mg/kg
04	A04-12-01		0.5	1	Magnesium, Total	2720		mg/kg
04	A04-12-01		0.5	1	Manganese, Total	121		mg/kg
04	A04-12-01		0.5	1	Nickel, Total	7.2	B	mg/kg
04	A04-12-01		0.5	1	Potassium, Total	257	B	mg/kg
04	A04-12-01		0.5	1	Sodium, Total	293	B	mg/kg
04	A04-12-01		0.5	1	Vanadium, Total	29.9		mg/kg
04	A04-12-01		0.5	1	Zinc, Total	24.8		mg/kg
Inorganics								
04	A04-12-05		6.5	8.5	Aluminum, Total	9910		mg/kg
04	A04-12-05		6.5	8.5	Arsenic, Total	2.6	N*	mg/kg
04	A04-12-05		6.5	8.5	Barium, Total	39.6		mg/kg
04	A04-12-05		6.5	8.5	Beryllium, Total	0.5	B	mg/kg
04	A04-12-05		6.5	8.5	Calcium, Total	2520		mg/kg
04	A04-12-05		6.5	8.5	Chromium, Total	13		mg/kg
04	A04-12-05		6.5	8.5	Cobalt, Total	6	B	mg/kg
04	A04-12-05		6.5	8.5	Copper, Total	16.4		mg/kg
04	A04-12-05		6.5	8.5	Iron, Total	10300		mg/kg
04	A04-12-05		6.5	8.5	Lead, Total	2.4	S	mg/kg
04	A04-12-05		6.5	8.5	Magnesium, Total	2300		mg/kg
04	A04-12-05		6.5	8.5	Manganese, Total	99.9		mg/kg
04	A04-12-05		6.5	8.5	Nickel, Total	5.6		mg/kg
04	A04-12-05		6.5	8.5	Sodium, Total	519	B	mg/kg
04	A04-12-05		6.5	8.5	Vanadium, Total	36.7		mg/kg
04	A04-12-05		6.5	8.5	Zinc, Total	19.8		mg/kg
Volatiles								
04	A04-12-05		6.5	8.5	2-Butanone	0.013	J	mg/kg
04	A04-12-05		6.5	8.5	Acetone	0.033	J	mg/kg
04	A04-12-05		6.5	8.5	Toluene	0.01		mg/kg
Inorganics								
04	A04-12-EB	EB			Aluminum, Total	36	B	ug/L
04	A04-12-EB	EB			Calcium, Total	264	B	ug/L
04	A04-12-EB	EB			Iron, Total	25.4	B	ug/L
04	A04-12-EB	EB			Lead, Total	3		ug/L
04	A04-12-EB	EB			Sodium, Total	882	B	ug/L
Volatiles								
04	A04-12-EB	EB			Acetone	0.4	J	ug/L
Inorganics								
04	A04-13-01		1.5	2	Aluminum, Total	6840		mg/kg
04	A04-13-01		1.5	2	Arsenic, Total	2.6	N*	mg/kg
04	A04-13-01		1.5	2	Barium, Total	25.8	B	mg/kg
04	A04-13-01		1.5	2	Beryllium, Total	0.37	B	mg/kg
04	A04-13-01		1.5	2	Calcium, Total	2850		mg/kg
04	A04-13-01		1.5	2	Chromium, Total	11		mg/kg
04	A04-13-01		1.5	2	Cobalt, Total	6.2	B	mg/kg
04	A04-13-01		1.5	2	Copper, Total	10.2		mg/kg
04	A04-13-01		1.5	2	Iron, Total	12200		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-13-01		1.5	2	Lead, Total	2.1	S	mg/kg
04	A04-13-01		1.5	2	Magnesium, Total	2770		mg/kg
04	A04-13-01		1.5	2	Manganese, Total	129		mg/kg
04	A04-13-01		1.5	2	Nickel, Total	8.2		mg/kg
04	A04-13-01		1.5	2	Potassium, Total	260	B	mg/kg
04	A04-13-01		1.5	2	Sodium, Total	373	B	mg/kg
04	A04-13-01		1.5	2	Vanadium, Total	35.4		mg/kg
04	A04-13-01		1.5	2	Zinc, Total	25.1		mg/kg
Inorganics								
04	A04-13-05		7.5	9.5	Aluminum, Total	15200		mg/kg
04	A04-13-05		7.5	9.5	Arsenic, Total	3.3	N*	mg/kg
04	A04-13-05		7.5	9.5	Barium, Total	66.3		mg/kg
04	A04-13-05		7.5	9.5	Calcium, Total	3220		mg/kg
04	A04-13-05		7.5	9.5	Chromium, Total	17		mg/kg
04	A04-13-05		7.5	9.5	Cobalt, Total	9.5	B	mg/kg
04	A04-13-05		7.5	9.5	Copper, Total	18.1		mg/kg
04	A04-13-05		7.5	9.5	Iron, Total	17000		mg/kg
04	A04-13-05		7.5	9.5	Lead, Total	3.1	S	mg/kg
04	A04-13-05		7.5	9.5	Magnesium, Total	3170		mg/kg
04	A04-13-05		7.5	9.5	Manganese, Total	146		mg/kg
04	A04-13-05		7.5	9.5	Nickel, Total	9	B	mg/kg
04	A04-13-05		7.5	9.5	Potassium, Total	255	B	mg/kg
04	A04-13-05		7.5	9.5	Sodium, Total	1060	B	mg/kg
04	A04-13-05		7.5	9.5	Vanadium, Total	54.4		mg/kg
04	A04-13-05		7.5	9.5	Zinc, Total	25.9		mg/kg
Volatiles								
04	A04-13-05		7.5	9.5	2-Butanone	0.006	J	mg/kg
04	A04-13-05		7.5	9.5	Acetone	0.011	J	mg/kg
Conventionals								
04	A04-14-01		3	4.5	Cation Exchange Capacity	8.6		neq/100g
04	A04-14-01		3	4.5	Total Organic Carbon	1150		mg/kg
Inorganics								
04	A04-14EB2	EB			Aluminum, Total	57.7	B	ug/L
04	A04-14EB2	EB			Calcium, Total	305	B	ug/L
04	A04-14EB2	EB			Iron, Total	70.5	B	ug/L
04	A04-14EB2	EB			Sodium, Total	727	B	ug/L
Conventionals								
04	A04-23-01		2.5	4	Cation Exchange Capacity	11300		neq/100g
04	A04-23-01		2.5	4	Total Organic Carbon	864		mg/kg
Conventionals								
04	A04-23-05		15	16.5	Cation Exchange Capacity	4400		neq/100g
04	A04-23-05		15	16.5	Total Organic Carbon	449		mg/kg
Inorganics								
05	A05-01-01		0.5	1	Aluminum, Total	9070	*	mg/kg
05	A05-01-01		0.5	1	Arsenic, Total	4.3		mg/kg
05	A05-01-01		0.5	1	Barium, Total	39		mg/kg
05	A05-01-01		0.5	1	Cadmium, Total	0.92		mg/kg
05	A05-01-01		0.5	1	Calcium, Total	5180	*	mg/kg
05	A05-01-01		0.5	1	Chromium, Total	20.8	N*	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
05	A05-01-01		0.5	1	Cobalt, Total	7.2	B	mg/kg
05	A05-01-01		0.5	1	Copper, Total	114	N*	mg/kg
05	A05-01-01		0.5	1	Iron, Total	14700	*	mg/kg
05	A05-01-01		0.5	1	Lead, Total	26.2		mg/kg
05	A05-01-01		0.5	1	Magnesium, Total	2980	*	mg/kg
05	A05-01-01		0.5	1	Manganese, Total	173	N*	mg/kg
05	A05-01-01		0.5	1	Mercury, Total	0.4		mg/kg
05	A05-01-01		0.5	1	Nickel, Total	12.7	*	mg/kg
05	A05-01-01		0.5	1	Sodium, Total	1130		mg/kg
05	A05-01-01		0.5	1	Vanadium, Total	45.4	N*	mg/kg
05	A05-01-01		0.5	1	Zinc, Total	70	*	mg/kg
Pesticides/PCB's								
05	A05-01-01		0.5	1	4,4'-DDD	0.049	J	mg/kg
05	A05-01-01		0.5	1	4,4'-DDE	0.084	J	mg/kg
05	A05-01-01		0.5	1	4,4'-DDT	0.19	J	mg/kg
05	A05-01-01		0.5	1	Alpha-Chlordane	0.0056	JP	mg/kg
05	A05-01-01		0.5	1	Endosulfan I	0.0065	P	mg/kg
05	A05-01-01		0.5	1	Endosulfan II	0.0076	JP	mg/kg
05	A05-01-01		0.5	1	Endosulfan Sulfate	0.0096	J	mg/kg
05	A05-01-01		0.5	1	Endrin	0.012	JP	mg/kg
05	A05-01-01		0.5	1	Endrin Aldehyde	0.012	JP	mg/kg
05	A05-01-01		0.5	1	Endrin Ketone	0.019		mg/kg
05	A05-01-01		0.5	1	Gamma-Chlordane	0.0045	JP	mg/kg
05	A05-01-01		0.5	1	Methoxychlor	0.00078	JP	mg/kg
Semivolatiles								
05	A05-01-01		0.5	1	Bis(2-Ethylhexyl)Phthalate	0.044	J	mg/kg
Volatiles								
05	A05-01-01		0.5	1	Formaldehyde	0.12	J	mg/kg
05	A05-01-01		0.5	1	Trichloroethene	0.002	J	mg/kg
Inorganics								
05	A05-02-01		0	0.5	Aluminum, Total	9940		mg/kg
05	A05-02-01		0	0.5	Arsenic, Total	4		mg/kg
05	A05-02-01		0	0.5	Barium, Total	39.5	B	mg/kg
05	A05-02-01		0	0.5	Beryllium, Total	0.54	B	mg/kg
05	A05-02-01		0	0.5	Calcium, Total	4920		mg/kg
05	A05-02-01		0	0.5	Chromium, Total	11.9		mg/kg
05	A05-02-01		0	0.5	Cobalt, Total	7.1	B	mg/kg
05	A05-02-01		0	0.5	Iron, Total	12400		mg/kg
05	A05-02-01		0	0.5	Lead, Total	10.6		mg/kg
05	A05-02-01		0	0.5	Magnesium, Total	2450		mg/kg
05	A05-02-01		0	0.5	Manganese, Total	195		mg/kg
05	A05-02-01		0	0.5	Nickel, Total	14.9		mg/kg
05	A05-02-01		0	0.5	Sodium, Total	639	B	mg/kg
05	A05-02-01		0	0.5	Vanadium, Total	40.4		mg/kg
05	A05-02-01		0	0.5	Zinc, Total	43.9		mg/kg
Pesticides/PCB's								
05	A05-02-01		0	0.5	4,4'-DDD	0.023	PJ	mg/kg
05	A05-02-01		0	0.5	4,4'-DDE	0.31	DJ	mg/kg
05	A05-02-01		0	0.5	4,4'-DDT	0.68	DPJ	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
05	A05-02-01		0	0.5	Dieldrin	0.0038	PJ	mg/kg
05	A05-02-01		0	0.5	Endosulfan II	0.0038	P	mg/kg
05	A05-02-01		0	0.5	Endosulfan Sulfate	0.0017	JP	mg/kg
05	A05-02-01		0	0.5	Endrin	0.0037	J	mg/kg
05	A05-02-01		0	0.5	Endrin Aldehyde	0.0028	JP	mg/kg
05	A05-02-01		0	0.5	Gamma-Chlordane	0.00085	JP	mg/kg
Volatiles								
05	A05-02-01		0	0.5	Formaldehyde	0.13	J	mg/kg
Inorganics								
05	A05-03-01		0	0.5	Aluminum, Total	12600		mg/kg
05	A05-03-01		0	0.5	Arsenic, Total	3.8		mg/kg
05	A05-03-01		0	0.5	Barium, Total	55.5		mg/kg
05	A05-03-01		0	0.5	Beryllium, Total	0.62	B	mg/kg
05	A05-03-01		0	0.5	Calcium, Total	5610		mg/kg
05	A05-03-01		0	0.5	Chromium, Total	16.2		mg/kg
05	A05-03-01		0	0.5	Cobalt, Total	9.3	B	mg/kg
05	A05-03-01		0	0.5	Copper, Total	49.6		mg/kg
05	A05-03-01		0	0.5	Iron, Total	17700		mg/kg
05	A05-03-01		0	0.5	Lead, Total	10.6		mg/kg
05	A05-03-01		0	0.5	Magnesium, Total	3450		mg/kg
05	A05-03-01		0	0.5	Manganese, Total	203		mg/kg
05	A05-03-01		0	0.5	Nickel, Total	18.2		mg/kg
05	A05-03-01		0	0.5	Silver, Total	2		mg/kg
05	A05-03-01		0	0.5	Sodium, Total	1630		mg/kg
05	A05-03-01		0	0.5	Vanadium, Total	56		mg/kg
05	A05-03-01		0	0.5	Zinc, Total	46		mg/kg
Volatiles								
05	A05-03-01		0	0.5	2-Butanone	0.004	J	mg/kg
05	A05-03-01		0	0.5	Formaldehyde	1.1		mg/kg
05	A05-03-01		0	0.5	Toluene	0.024		mg/kg
Inorganics								
05	A05-04-01		0	0.5	Aluminum, Total	16900		mg/kg
05	A05-04-01		0	0.5	Arsenic, Total	0.5	B	mg/kg
05	A05-04-01		0	0.5	Barium, Total	22.1	B	mg/kg
05	A05-04-01		0	0.5	Beryllium, Total	0.48	B	mg/kg
05	A05-04-01		0	0.5	Calcium, Total	14000		mg/kg
05	A05-04-01		0	0.5	Chromium, Total	24.2		mg/kg
05	A05-04-01		0	0.5	Cobalt, Total	14.5		mg/kg
05	A05-04-01		0	0.5	Copper, Total	749		mg/kg
05	A05-04-01		0	0.5	Iron, Total	23300		mg/kg
05	A05-04-01		0	0.5	Lead, Total	3.1		mg/kg
05	A05-04-01		0	0.5	Magnesium, Total	7800		mg/kg
05	A05-04-01		0	0.5	Manganese, Total	331		mg/kg
05	A05-04-01		0	0.5	Nickel, Total	32		mg/kg
05	A05-04-01		0	0.5	Silver, Total	1.8		mg/kg
05	A05-04-01		0	0.5	Sodium, Total	4070		mg/kg
05	A05-04-01		0	0.5	Vanadium, Total	70.9		mg/kg
05	A05-04-01		0	0.5	Zinc, Total	123		mg/kg
Volatiles								

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
05	A05-04-01		0	0.5	Carbon Disulfide	0.003	J	mg/kg
05	A05-04-01		0	0.5	Formaldehyde	3.3		mg/kg
05	A05-04-01		0	0.5	Toluene	0.044		mg/kg
Inorganics								
05	A05-05-01		0	0.5	Aluminum, Total	10600		mg/kg
05	A05-05-01		0	0.5	Arsenic, Total	6.4		mg/kg
05	A05-05-01		0	0.5	Barium, Total	74.3		mg/kg
05	A05-05-01		0	0.5	Calcium, Total	24800		mg/kg
05	A05-05-01		0	0.5	Chromium, Total	17.5		mg/kg
05	A05-05-01		0	0.5	Cobalt, Total	10.1		mg/kg
05	A05-05-01		0	0.5	Copper, Total	270		mg/kg
05	A05-05-01		0	0.5	Iron, Total	17800		mg/kg
05	A05-05-01		0	0.5	Lead, Total	41.1		mg/kg
05	A05-05-01		0	0.5	Magnesium, Total	4610		mg/kg
05	A05-05-01		0	0.5	Manganese, Total	253		mg/kg
05	A05-05-01		0	0.5	Mercury, Total	0.29	*	mg/kg
05	A05-05-01		0	0.5	Nickel, Total	28.5		mg/kg
05	A05-05-01		0	0.5	Silver, Total	2.6	*	mg/kg
05	A05-05-01		0	0.5	Sodium, Total	766	B	mg/kg
05	A05-05-01		0	0.5	Vanadium, Total	50.7		mg/kg
05	A05-05-01		0	0.5	Zinc, Total	88.3		mg/kg
Pesticides/PCB's								
05	A05-05-01		0	0.5	4,4'-DDD	0.2	PJ	mg/kg
05	A05-05-01		0	0.5	4,4'-DDE	0.62	DJ	mg/kg
05	A05-05-01		0	0.5	4,4'-DDT	2.6	DJ	mg/kg
05	A05-05-01		0	0.5	Alpha-Chlordane	0.018	P	mg/kg
05	A05-05-01		0	0.5	Aroclor-1254	0.65	P	mg/kg
05	A05-05-01		0	0.5	Dieldrin	0.0095	JP	mg/kg
05	A05-05-01		0	0.5	Endosulfan II	0.024	P	mg/kg
05	A05-05-01		0	0.5	Endrin	0.022	PJ	mg/kg
05	A05-05-01		0	0.5	Endrin Aldehyde	0.11	P	mg/kg
05	A05-05-01		0	0.5	Endrin Ketone	0.013	JP	mg/kg
05	A05-05-01		0	0.5	Gamma-Chlordane	0.026	P	mg/kg
05	A05-05-01		0	0.5	Methoxychlor	0.04	JP	mg/kg
Volatiles								
05	A05-05-01		0	0.5	Formaldehyde	0.066	J	mg/kg
Inorganics								
05	A05-06-01		0.5	1	Aluminum, Total	15100	*	mg/kg
05	A05-06-01		0.5	1	Arsenic, Total	2.8	S	mg/kg
05	A05-06-01		0.5	1	Barium, Total	22.8	B	mg/kg
05	A05-06-01		0.5	1	Beryllium, Total	0.48	B	mg/kg
05	A05-06-01		0.5	1	Cadmium, Total	2.3		mg/kg
05	A05-06-01		0.5	1	Calcium, Total	16100	*	mg/kg
05	A05-06-01		0.5	1	Chromium, Total	42.7	N*	mg/kg
05	A05-06-01		0.5	1	Cobalt, Total	28.7		mg/kg
05	A05-06-01		0.5	1	Copper, Total	303	N*	mg/kg
05	A05-06-01		0.5	1	Iron, Total	50400	*	mg/kg
05	A05-06-01		0.5	1	Lead, Total	16.6		mg/kg
05	A05-06-01		0.5	1	Magnesium, Total	15100	*	mg/kg

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EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
05	A05-06-01		0.5	1	Manganese, Total	941	N*	mg/kg
05	A05-06-01		0.5	1	Nickel, Total	65.7	*	mg/kg
05	A05-06-01		0.5	1	Sodium, Total	1550		mg/kg
05	A05-06-01		0.5	1	Vanadium, Total	106	N*	mg/kg
05	A05-06-01		0.5	1	Zinc, Total	1990	*	mg/kg
Pesticides/PCB's								
05	A05-06-01		0.5	1	4,4'-DDD	0.0045	J	mg/kg
05	A05-06-01		0.5	1	4,4'-DDE	0.0023	JP	mg/kg
05	A05-06-01		0.5	1	4,4'-DDT	0.014	J	mg/kg
05	A05-06-01		0.5	1	Endosulfan II	0.00091	JP	mg/kg
05	A05-06-01		0.5	1	Endrin	0.0024	JP	mg/kg
05	A05-06-01		0.5	1	Endrin Aldehyde	0.0021	JP	mg/kg
05	A05-06-01		0.5	1	Methoxychlor	0.0016	JP	mg/kg
Semivolatiles								
05	A05-06-01		0.5	1	Bis(2-Ethylhexyl)Phthalate	0.044	J	mg/kg
Volatiles								
05	A05-06-01		0.5	1	Formaldehyde	0.14	J	mg/kg
05	A05-06-01		0.5	1	Toluene	0.003	J	mg/kg
Inorganics								
05	A05-07-01		0.5	1	Aluminum, Total	7315		mg/kg
05	A05-07-01		0.5	1	Arsenic, Total	1.6		mg/kg
05	A05-07-01		0.5	1	Barium, Total	22.05	B	mg/kg
05	A05-07-01		0.5	1	Calcium, Total	3630		mg/kg
05	A05-07-01		0.5	1	Chromium, Total	16.7		mg/kg
05	A05-07-01		0.5	1	Cobalt, Total	6.3	B	mg/kg
05	A05-07-01		0.5	1	Iron, Total	11870		mg/kg
05	A05-07-01		0.5	1	Lead, Total	2.3		mg/kg
05	A05-07-01		0.5	1	Magnesium, Total	3925		mg/kg
05	A05-07-01		0.5	1	Manganese, Total	197.5		mg/kg
05	A05-07-01		0.5	1	Nickel, Total	23.9		mg/kg
05	A05-07-01		0.5	1	Sodium, Total	318.5	B	mg/kg
05	A05-07-01		0.5	1	Vanadium, Total	27.05		mg/kg
05	A05-07-01		0.5	1	Zinc, Total	26.8		mg/kg
Semivolatiles								
05	A05-07-01		0.5	1	Benzo(A)Anthracene	0.04	J	mg/kg
05	A05-07-01		0.5	1	Benzo(A)Pyrene	0.044	J	mg/kg
05	A05-07-01		0.5	1	Benzo(K)Fluoranthene	0.055	J	mg/kg
05	A05-07-01		0.5	1	Chrysene	0.053	J	mg/kg
05	A05-07-01		0.5	1	Fluoranthene	0.091	J	mg/kg
05	A05-07-01		0.5	1	Phenanthrene	0.047	J	mg/kg
05	A05-07-01		0.5	1	Pyrene	0.087	J	mg/kg
Volatiles								
05	A05-07-01		0.5	1	Formaldehyde	0.049	J	mg/kg
Conventionals								
05	A05-24-01		22	24	Cation Exchange Capacity	6.84		meq/100g
05	A05-24-01		22	24	Total Organic Carbon	385		mg/kg
Conventionals								
06	A06-01-01		0	0.5	Total Petroleum Hydrocarbons	645		mg/kg
Inorganics								

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Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
06	A06-01-01		0	0.5	Aluminum, Total	13100	B	mg/kg
06	A06-01-01		0	0.5	Arsenic, Total	6.4	S	mg/kg
06	A06-01-01		0	0.5	Barium, Total	80.3		mg/kg
06	A06-01-01		0	0.5	Beryllium, Total	0.79	B	mg/kg
06	A06-01-01		0	0.5	Calcium, Total	7000		mg/kg
06	A06-01-01		0	0.5	Chromium, Total	18.4		mg/kg
06	A06-01-01		0	0.5	Cobalt, Total	10		mg/kg
06	A06-01-01		0	0.5	Copper, Total	132		mg/kg
06	A06-01-01		0	0.5	Iron, Total	18800		mg/kg
06	A06-01-01		0	0.5	Lead, Total	24.4		mg/kg
06	A06-01-01		0	0.5	Magnesium, Total	3740		mg/kg
06	A06-01-01		0	0.5	Manganese, Total	240		mg/kg
06	A06-01-01		0	0.5	Mercury, Total	20.2		mg/kg
06	A06-01-01		0	0.5	Nickel, Total	18.4		mg/kg
06	A06-01-01		0	0.5	Silver, Total	1.9		mg/kg
06	A06-01-01		0	0.5	Sodium, Total	877	B	mg/kg
06	A06-01-01		0	0.5	Vanadium, Total	62.9		mg/kg
06	A06-01-01		0	0.5	Zinc, Total	75.6		mg/kg
Volatiles								
06	A06-01-01		0	0.5	Formaldehyde	0.94		mg/kg
06	A06-01-01		0	0.5	Toluene	0.022		mg/kg
Inorganics								
06	A06-02-01		0	0.5	Aluminum, Total	7880		mg/kg
06	A06-02-01		0	0.5	Arsenic, Total	2.7	S	mg/kg
06	A06-02-01		0	0.5	Barium, Total	24.1	B	mg/kg
06	A06-02-01		0	0.5	Calcium, Total	3240		mg/kg
06	A06-02-01		0	0.5	Chromium, Total	11.3		mg/kg
06	A06-02-01		0	0.5	Cobalt, Total	6.4	B	mg/kg
06	A06-02-01		0	0.5	Iron, Total	13500		mg/kg
06	A06-02-01		0	0.5	Lead, Total	2.3		mg/kg
06	A06-02-01		0	0.5	Magnesium, Total	2670		mg/kg
06	A06-02-01		0	0.5	Manganese, Total	156		mg/kg
06	A06-02-01		0	0.5	Nickel, Total	13.2		mg/kg
06	A06-02-01		0	0.5	Sodium, Total	488	B	mg/kg
06	A06-02-01		0	0.5	Vanadium, Total	37.3		mg/kg
06	A06-02-01		0	0.5	Zinc, Total	31.5		mg/kg
Volatiles								
06	A06-02-01		0	0.5	Formaldehyde	0.48		mg/kg
06	A06-02-01		0	0.5	Toluene	0.002	J	mg/kg
Inorganics								
06	A06-02-EB	EB			Calcium, Total	222	B	ug/L
06	A06-02-EB	EB			Iron, Total	100		ug/L
06	A06-02-EB	EB			Sodium, Total	615	B	ug/L
Inorganics								
06	A06-03-01		0	0.5	Aluminum, Total	14600		mg/kg
06	A06-03-01		0	0.5	Arsenic, Total	1.1	B	mg/kg
06	A06-03-01		0	0.5	Barium, Total	23.4	B	mg/kg
06	A06-03-01		0	0.5	Beryllium, Total	0.79	B	mg/kg
06	A06-03-01		0	0.5	Calcium, Total	15300		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
06	A06-03-01		0	0.5	Chromium, Total	28.6		mg/kg
06	A06-03-01		0	0.5	Cobalt, Total	23.1		mg/kg
06	A06-03-01		0	0.5	Copper, Total	109		mg/kg
06	A06-03-01		0	0.5	Iron, Total	41100		mg/kg
06	A06-03-01		0	0.5	Lead, Total	38.4		mg/kg
06	A06-03-01		0	0.5	Magnesium, Total	12700		mg/kg
06	A06-03-01		0	0.5	Manganese, Total	672		mg/kg
06	A06-03-01		0	0.5	Mercury, Total	268	*	mg/kg
06	A06-03-01		0	0.5	Nickel, Total	55.4		mg/kg
06	A06-03-01		0	0.5	Silver, Total	2.2	*	mg/kg
06	A06-03-01		0	0.5	Sodium, Total	1370		mg/kg
06	A06-03-01		0	0.5	Vanadium, Total	88.8		mg/kg
06	A06-03-01		0	0.5	Zinc, Total	89.8		mg/kg
Inorganics								
06	A06-04-01		0	0.5	Aluminum, Total	11100	*	mg/kg
06	A06-04-01		0	0.5	Arsenic, Total	2.4		mg/kg
06	A06-04-01		0	0.5	Barium, Total	39.2		mg/kg
06	A06-04-01		0	0.5	Cadmium, Total	0.93		mg/kg
06	A06-04-01		0	0.5	Calcium, Total	5950	*	mg/kg
06	A06-04-01		0	0.5	Chromium, Total	28.7	N*	mg/kg
06	A06-04-01		0	0.5	Cobalt, Total	11.3		mg/kg
06	A06-04-01		0	0.5	Copper, Total	712	N*	mg/kg
06	A06-04-01		0	0.5	Iron, Total	18900	*	mg/kg
06	A06-04-01		0	0.5	Lead, Total	16.1		mg/kg
06	A06-04-01		0	0.5	Magnesium, Total	6150	*	mg/kg
06	A06-04-01		0	0.5	Manganese, Total	267	N*	mg/kg
06	A06-04-01		0	0.5	Nickel, Total	44.3	*	mg/kg
06	A06-04-01		0	0.5	Sodium, Total	465	B	mg/kg
06	A06-04-01		0	0.5	Vanadium, Total	41.9	N*	mg/kg
06	A06-04-01		0	0.5	Zinc, Total	244	*	mg/kg
Volatiles								
06	A06-04-01		0	0.5	Acetone	0.003	J	mg/kg
06	A06-04-01		0	0.5	Formaldehyde	0.56	J	mg/kg
06	A06-04-01		0	0.5	Toluene	0.005	J	mg/kg
Conventionals								
06	A06-05-01		0	0.5	Total Petroleum Hydrocarbons	227		mg/kg
Inorganics								
06	A06-05-01		0	0.5	Aluminum, Total	11800		mg/kg
06	A06-05-01		0	0.5	Arsenic, Total	4.9	S	mg/kg
06	A06-05-01		0	0.5	Barium, Total	28.3	B	mg/kg
06	A06-05-01		0	0.5	Beryllium, Total	0.41	B	mg/kg
06	A06-05-01		0	0.5	Calcium, Total	10100		mg/kg
06	A06-05-01		0	0.5	Chromium, Total	23.1		mg/kg
06	A06-05-01		0	0.5	Cobalt, Total	14.2		mg/kg
06	A06-05-01		0	0.5	Copper, Total	519	E	mg/kg
06	A06-05-01		0	0.5	Iron, Total	24900		mg/kg
06	A06-05-01		0	0.5	Lead, Total	35.5		mg/kg
06	A06-05-01		0	0.5	Magnesium, Total	8130		mg/kg
06	A06-05-01		0	0.5	Manganese, Total	249		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
06	A06-05-01		0	0.5	Mercury, Total	0.62		mg/kg
06	A06-05-01		0	0.5	Nickel, Total	29.5		mg/kg
06	A06-05-01		0	0.5	Sodium, Total	1010		mg/kg
06	A06-05-01		0	0.5	Vanadium, Total	62.9		mg/kg
06	A06-05-01		0	0.5	Zinc, Total	84.3		mg/kg
Volatiles								
06	A06-05-01		0	0.5	Formaldehyde	0.19		mg/kg
06	A06-05-01		0	0.5	Toluene	0.025		mg/kg
Inorganics								
06	A06-06-01		0	0.5	Aluminum, Total	9520		mg/kg
06	A06-06-01		0	0.5	Arsenic, Total	6.7		mg/kg
06	A06-06-01		0	0.5	Barium, Total	38.2	B	mg/kg
06	A06-06-01		0	0.5	Calcium, Total	12300		mg/kg
06	A06-06-01		0	0.5	Chromium, Total	19.9		mg/kg
06	A06-06-01		0	0.5	Cobalt, Total	9	B	mg/kg
06	A06-06-01		0	0.5	Iron, Total	15900		mg/kg
06	A06-06-01		0	0.5	Lead, Total	11.1		mg/kg
06	A06-06-01		0	0.5	Magnesium, Total	3600		mg/kg
06	A06-06-01		0	0.5	Manganese, Total	173		mg/kg
06	A06-06-01		0	0.5	Mercury, Total	1.3	*	mg/kg
06	A06-06-01		0	0.5	Nickel, Total	25.5		mg/kg
06	A06-06-01		0	0.5	Silver, Total	3.1	*	mg/kg
06	A06-06-01		0	0.5	Sodium, Total	487	B	mg/kg
06	A06-06-01		0	0.5	Vanadium, Total	44.8		mg/kg
06	A06-06-01		0	0.5	Zinc, Total	53.9		mg/kg
Volatiles								
06	A06-06-01		0	0.5	Formaldehyde	0.3	J	mg/kg
Conventionals								
06	A06-07-01		0	0.5	Total Petroleum Hydrocarbons	92.7		mg/kg
Inorganics								
06	A06-07-01		0	0.5	Aluminum, Total	11400		mg/kg
06	A06-07-01		0	0.5	Arsenic, Total	3.5	S	mg/kg
06	A06-07-01		0	0.5	Barium, Total	31	B	mg/kg
06	A06-07-01		0	0.5	Beryllium, Total	0.54	B	mg/kg
06	A06-07-01		0	0.5	Calcium, Total	6550		mg/kg
06	A06-07-01		0	0.5	Chromium, Total	15.5		mg/kg
06	A06-07-01		0	0.5	Cobalt, Total	11.3		mg/kg
06	A06-07-01		0	0.5	Copper, Total	57.9	E	mg/kg
06	A06-07-01		0	0.5	Iron, Total	22700		mg/kg
06	A06-07-01		0	0.5	Lead, Total	11.2		mg/kg
06	A06-07-01		0	0.5	Magnesium, Total	6170		mg/kg
06	A06-07-01		0	0.5	Manganese, Total	271		mg/kg
06	A06-07-01		0	0.5	Mercury, Total	1.2		mg/kg
06	A06-07-01		0	0.5	Nickel, Total	23.2		mg/kg
06	A06-07-01		0	0.5	Sodium, Total	928		mg/kg
06	A06-07-01		0	0.5	Vanadium, Total	65.2		mg/kg
06	A06-07-01		0	0.5	Zinc, Total	51.7		mg/kg
Volatiles								
06	A06-07-01		0	0.5	Formaldehyde	0.77		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
06	A06-07-01		0	0.5	Toluene	0.008		mg/kg
Inorganics								
06	SEB-02	EB			Aluminum, Total	102	B	ug/L
06	SEB-02	EB			Calcium, Total	328	B	ug/L
06	SEB-02	EB			Copper, Total	6.7	B	ug/L
06	SEB-02	EB			Iron, Total	44.9	B	ug/L
06	SEB-02	EB			Sodium, Total	801	B	ug/L
06	SEB-02	EB			Zinc, Total	10	B	ug/L
Volatiles								
06	SEB-02	EB			Methylene Chloride	1		ug/L
Inorganics								
07	A07-02-01		1.5	3.5	Aluminum, Total	6520		mg/kg
07	A07-02-01		1.5	3.5	Arsenic, Total	6.1	S	mg/kg
07	A07-02-01		1.5	3.5	Barium, Total	33.9	B	mg/kg
07	A07-02-01		1.5	3.5	Calcium, Total	3100		mg/kg
07	A07-02-01		1.5	3.5	Chromium, Total	10.1	*	mg/kg
07	A07-02-01		1.5	3.5	Cobalt, Total	4.8	B	mg/kg
07	A07-02-01		1.5	3.5	Copper, Total	269	*	mg/kg
07	A07-02-01		1.5	3.5	Iron, Total	9590		mg/kg
07	A07-02-01		1.5	3.5	Lead, Total	10.5		mg/kg
07	A07-02-01		1.5	3.5	Magnesium, Total	2070		mg/kg
07	A07-02-01		1.5	3.5	Manganese, Total	107		mg/kg
07	A07-02-01		1.5	3.5	Nickel, Total	8.4		mg/kg
07	A07-02-01		1.5	3.5	Sodium, Total	416	B	mg/kg
07	A07-02-01		1.5	3.5	Vanadium, Total	28.9		mg/kg
07	A07-02-01		1.5	3.5	Zinc, Total	42	*	mg/kg
Volatiles								
07	A07-02-01		1.5	3.5	Acetone	0.003	J	mg/kg
07	A07-02-01		1.5	3.5	Trichloroethene	0.001	J	mg/kg
Inorganics								
07	A07-02-05		7.5	9	Aluminum, Total	8440		mg/kg
07	A07-02-05		7.5	9	Arsenic, Total	3.6	BS	mg/kg
07	A07-02-05		7.5	9	Barium, Total	38.6	B	mg/kg
07	A07-02-05		7.5	9	Beryllium, Total	0.61	B	mg/kg
07	A07-02-05		7.5	9	Calcium, Total	3150		mg/kg
07	A07-02-05		7.5	9	Chromium, Total	16.5	*	mg/kg
07	A07-02-05		7.5	9	Cobalt, Total	6.1	B	mg/kg
07	A07-02-05		7.5	9	Copper, Total	61.5	*	mg/kg
07	A07-02-05		7.5	9	Iron, Total	12000		mg/kg
07	A07-02-05		7.5	9	Lead, Total	23.5		mg/kg
07	A07-02-05		7.5	9	Magnesium, Total	2320		mg/kg
07	A07-02-05		7.5	9	Manganese, Total	93.2		mg/kg
07	A07-02-05		7.5	9	Mercury, Total	0.13		mg/kg
07	A07-02-05		7.5	9	Nickel, Total	10.2		mg/kg
07	A07-02-05		7.5	9	Sodium, Total	530	B	mg/kg
07	A07-02-05		7.5	9	Vanadium, Total	38.3		mg/kg
07	A07-02-05		7.5	9	Zinc, Total	53	*	mg/kg
Volatiles								
07	A07-02-05		7.5	9	Acetone	0.009	J	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
07	A07-02-05		7.5	9	Toluene	0.001	J	mg/kg
Inorganics								
07	A07-03-01		2	4	Aluminum, Total	9910		mg/kg
07	A07-03-01		2	4	Arsenic, Total	6.1		mg/kg
07	A07-03-01		2	4	Barium, Total	59.2		mg/kg
07	A07-03-01		2	4	Beryllium, Total	0.59	B	mg/kg
07	A07-03-01		2	4	Calcium, Total	3520		mg/kg
07	A07-03-01		2	4	Chromium, Total	15.3	*	mg/kg
07	A07-03-01		2	4	Cobalt, Total	7.7	B	mg/kg
07	A07-03-01		2	4	Copper, Total	177	*	mg/kg
07	A07-03-01		2	4	Iron, Total	14700		mg/kg
07	A07-03-01		2	4	Lead, Total	46.5	S	mg/kg
07	A07-03-01		2	4	Magnesium, Total	2950		mg/kg
07	A07-03-01		2	4	Manganese, Total	124		mg/kg
07	A07-03-01		2	4	Mercury, Total	0.22		mg/kg
07	A07-03-01		2	4	Nickel, Total	16.8		mg/kg
07	A07-03-01		2	4	Sodium, Total	784	B	mg/kg
07	A07-03-01		2	4	Vanadium, Total	32.3		mg/kg
07	A07-03-01		2	4	Zinc, Total	91.5	*	mg/kg
Volatiles								
07	A07-03-01		2	4	2-Butanone	0.004	J	mg/kg
07	A07-03-01		2	4	Acetone	0.052		mg/kg
Inorganics								
07	A07-03-05		8	9	Aluminum, Total	9090		mg/kg
07	A07-03-05		8	9	Arsenic, Total	4.3	S	mg/kg
07	A07-03-05		8	9	Barium, Total	40.9	B	mg/kg
07	A07-03-05		8	9	Calcium, Total	3360		mg/kg
07	A07-03-05		8	9	Chromium, Total	13.8	*	mg/kg
07	A07-03-05		8	9	Cobalt, Total	6.7	B	mg/kg
07	A07-03-05		8	9	Iron, Total	12300		mg/kg
07	A07-03-05		8	9	Lead, Total	2.9		mg/kg
07	A07-03-05		8	9	Magnesium, Total	2540		mg/kg
07	A07-03-05		8	9	Manganese, Total	133		mg/kg
07	A07-03-05		8	9	Nickel, Total	10.3		mg/kg
07	A07-03-05		8	9	Sodium, Total	2020		mg/kg
07	A07-03-05		8	9	Vanadium, Total	34.3		mg/kg
07	A07-03-05		8	9	Zinc, Total	23	*	mg/kg
Volatiles								
07	A07-03-05		8	9	2-Butanone	0.013	J	mg/kg
07	A07-03-05		8	9	Acetone	0.083		mg/kg
Inorganics								
07	A07-04-02		8	9	Aluminum, Total	10900		mg/kg
07	A07-04-02		8	9	Arsenic, Total	3.8	S	mg/kg
07	A07-04-02		8	9	Barium, Total	49.9	B	mg/kg
07	A07-04-02		8	9	Beryllium, Total	0.64	B	mg/kg
07	A07-04-02		8	9	Calcium, Total	3920		mg/kg
07	A07-04-02		8	9	Chromium, Total	13.6	*	mg/kg
07	A07-04-02		8	9	Cobalt, Total	7.5	B	mg/kg
07	A07-04-02		8	9	Iron, Total	14200		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
07	A07-04-02		8	9	Lead, Total	2.8		mg/kg
07	A07-04-02		8	9	Magnesium, Total	2520		mg/kg
07	A07-04-02		8	9	Manganese, Total	193		mg/kg
07	A07-04-02		8	9	Mercury, Total	0.13		mg/kg
07	A07-04-02		8	9	Nickel, Total	10.8		mg/kg
07	A07-04-02		8	9	Sodium, Total	4200		mg/kg
07	A07-04-02		8	9	Vanadium, Total	38.7		mg/kg
07	A07-04-02		8	9	Zinc, Total	29.1	*	mg/kg
Volatiles								
07	A07-04-02		8	9	Acetone	0.006	J	mg/kg
Inorganics								
07	A07-05-01		2	4	Aluminum, Total	10200		mg/kg
07	A07-05-01		2	4	Arsenic, Total	5.9	S	mg/kg
07	A07-05-01		2	4	Barium, Total	62.5		mg/kg
07	A07-05-01		2	4	Beryllium, Total	0.36	B	mg/kg
07	A07-05-01		2	4	Calcium, Total	21500		mg/kg
07	A07-05-01		2	4	Chromium, Total	15.1	*	mg/kg
07	A07-05-01		2	4	Cobalt, Total	9.6		mg/kg
07	A07-05-01		2	4	Copper, Total	98.2	*	mg/kg
07	A07-05-01		2	4	Iron, Total	16700		mg/kg
07	A07-05-01		2	4	Lead, Total	24.2		mg/kg
07	A07-05-01		2	4	Magnesium, Total	4880		mg/kg
07	A07-05-01		2	4	Manganese, Total	252		mg/kg
07	A07-05-01		2	4	Mercury, Total	1.1		mg/kg
07	A07-05-01		2	4	Nickel, Total	15.6		mg/kg
07	A07-05-01		2	4	Sodium, Total	2030		mg/kg
07	A07-05-01		2	4	Vanadium, Total	51.7		mg/kg
07	A07-05-01		2	4	Zinc, Total	67.5	*	mg/kg
Volatiles								
07	A07-05-01		2	4	Acetone	0.019	J	mg/kg
07	A07-05-01		2	4	Carbon Disulfide	0.006		mg/kg
07	A07-05-01		2	4	Toluene	0.047		mg/kg
Inorganics								
07	A07-05-05		8	9	Aluminum, Total	19300		mg/kg
07	A07-05-05		8	9	Arsenic, Total	0.98	BW	mg/kg
07	A07-05-05		8	9	Barium, Total	22.7	B	mg/kg
07	A07-05-05		8	9	Beryllium, Total	1.1		mg/kg
07	A07-05-05		8	9	Calcium, Total	7110		mg/kg
07	A07-05-05		8	9	Chromium, Total	13.6	*	mg/kg
07	A07-05-05		8	9	Cobalt, Total	24.8		mg/kg
07	A07-05-05		8	9	Copper, Total	200	*	mg/kg
07	A07-05-05		8	9	Iron, Total	43900		mg/kg
07	A07-05-05		8	9	Lead, Total	3.7		mg/kg
07	A07-05-05		8	9	Magnesium, Total	11200		mg/kg
07	A07-05-05		8	9	Manganese, Total	691		mg/kg
07	A07-05-05		8	9	Nickel, Total	25.1		mg/kg
07	A07-05-05		8	9	Sodium, Total	2560		mg/kg
07	A07-05-05		8	9	Vanadium, Total	185		mg/kg
07	A07-05-05		8	9	Zinc, Total	73.1	*	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Volatiles								
07	A07-05-05		8	9	Acetone	0.014		mg/kg
Inorganics								
07	A07-06-01		0.5	1.5	Aluminum, Total	7980		mg/kg
07	A07-06-01		0.5	1.5	Arsenic, Total	5.2	S	mg/kg
07	A07-06-01		0.5	1.5	Barium, Total	41.7		mg/kg
07	A07-06-01		0.5	1.5	Beryllium, Total	0.48	B	mg/kg
07	A07-06-01		0.5	1.5	Calcium, Total	3270		mg/kg
07	A07-06-01		0.5	1.5	Chromium, Total	14.5	*	mg/kg
07	A07-06-01		0.5	1.5	Cobalt, Total	6.4	B	mg/kg
07	A07-06-01		0.5	1.5	Iron, Total	13000		mg/kg
07	A07-06-01		0.5	1.5	Lead, Total	13.8	S	mg/kg
07	A07-06-01		0.5	1.5	Magnesium, Total	2800		mg/kg
07	A07-06-01		0.5	1.5	Manganese, Total	151		mg/kg
07	A07-06-01		0.5	1.5	Mercury, Total	6.4		mg/kg
07	A07-06-01		0.5	1.5	Nickel, Total	12.1		mg/kg
07	A07-06-01		0.5	1.5	Sodium, Total	447	B	mg/kg
07	A07-06-01		0.5	1.5	Vanadium, Total	38.9		mg/kg
07	A07-06-01		0.5	1.5	Zinc, Total	31.8	*	mg/kg
Inorganics								
07	A07-06-05		7.5	9	Aluminum, Total	5885		mg/kg
07	A07-06-05		7.5	9	Arsenic, Total	1.2	B	mg/kg
07	A07-06-05		7.5	9	Barium, Total	21	B	mg/kg
07	A07-06-05		7.5	9	Calcium, Total	2730		mg/kg
07	A07-06-05		7.5	9	Chromium, Total	9.75		mg/kg
07	A07-06-05		7.5	9	Cobalt, Total	4.3	B	mg/kg
07	A07-06-05		7.5	9	Iron, Total	8245		mg/kg
07	A07-06-05		7.5	9	Lead, Total	1.65		mg/kg
07	A07-06-05		7.5	9	Magnesium, Total	1570		mg/kg
07	A07-06-05		7.5	9	Manganese, Total	89.5		mg/kg
07	A07-06-05		7.5	9	Nickel, Total	7.6		mg/kg
07	A07-06-05		7.5	9	Sodium, Total	576	B	mg/kg
07	A07-06-05		7.5	9	Vanadium, Total	27.55		mg/kg
07	A07-06-05		7.5	9	Zinc, Total	19.95		mg/kg
Volatiles								
07	A07-06-05		7.5	9	Acetone	0.021		mg/kg
07	A07-06-05		7.5	9	Methylene Chloride	0.002	J	mg/kg
Inorganics								
07	A07-07-01		0	0.5	Aluminum, Total	8790		mg/kg
07	A07-07-01		0	0.5	Arsenic, Total	5.2	S	mg/kg
07	A07-07-01		0	0.5	Barium, Total	55.8		mg/kg
07	A07-07-01		0	0.5	Calcium, Total	4030		mg/kg
07	A07-07-01		0	0.5	Chromium, Total	14.4	*	mg/kg
07	A07-07-01		0	0.5	Cobalt, Total	7	B	mg/kg
07	A07-07-01		0	0.5	Copper, Total	210	*	mg/kg
07	A07-07-01		0	0.5	Iron, Total	14700		mg/kg
07	A07-07-01		0	0.5	Lead, Total	116		mg/kg
07	A07-07-01		0	0.5	Magnesium, Total	2800		mg/kg
07	A07-07-01		0	0.5	Manganese, Total	182		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
07	A07-07-01		0	0.5	Mercury, Total	0.42		mg/kg
07	A07-07-01		0	0.5	Nickel, Total	14.2		mg/kg
07	A07-07-01		0	0.5	Sodium, Total	969	B	mg/kg
07	A07-07-01		0	0.5	Vanadium, Total	37.5		mg/kg
07	A07-07-01		0	0.5	Zinc, Total	186	*	mg/kg
Volatiles								
07	A07-07-01		0	0.5	Methylene Chloride	0.002	J	mg/kg
Inorganics								
07	A07-07-05		6	8	Aluminum, Total	10200		mg/kg
07	A07-07-05		6	8	Arsenic, Total	7		mg/kg
07	A07-07-05		6	8	Barium, Total	44.5		mg/kg
07	A07-07-05		6	8	Beryllium, Total	0.54	B	mg/kg
07	A07-07-05		6	8	Calcium, Total	4800		mg/kg
07	A07-07-05		6	8	Chromium, Total	18.4	*	mg/kg
07	A07-07-05		6	8	Cobalt, Total	7.1	B	mg/kg
07	A07-07-05		6	8	Copper, Total	45.9	*	mg/kg
07	A07-07-05		6	8	Iron, Total	16400		mg/kg
07	A07-07-05		6	8	Lead, Total	37.3		mg/kg
07	A07-07-05		6	8	Magnesium, Total	3310		mg/kg
07	A07-07-05		6	8	Manganese, Total	132		mg/kg
07	A07-07-05		6	8	Mercury, Total	0.22		mg/kg
07	A07-07-05		6	8	Nickel, Total	13.4		mg/kg
07	A07-07-05		6	8	Sodium, Total	893	B	mg/kg
07	A07-07-05		6	8	Vanadium, Total	47.5		mg/kg
07	A07-07-05		6	8	Zinc, Total	123	*	mg/kg
Volatiles								
07	A07-07-05		6	8	Methylene Chloride	0.002	J	mg/kg
Inorganics								
07	A07-08-01		1.5	3.5	Aluminum, Total	6420		mg/kg
07	A07-08-01		1.5	3.5	Arsenic, Total	1.3	BW	mg/kg
07	A07-08-01		1.5	3.5	Barium, Total	24.7	B	mg/kg
07	A07-08-01		1.5	3.5	Beryllium, Total	0.42	B	mg/kg
07	A07-08-01		1.5	3.5	Calcium, Total	2690		mg/kg
07	A07-08-01		1.5	3.5	Chromium, Total	8.9	*	mg/kg
07	A07-08-01		1.5	3.5	Cobalt, Total	4.4	B	mg/kg
07	A07-08-01		1.5	3.5	Iron, Total	9010		mg/kg
07	A07-08-01		1.5	3.5	Lead, Total	12.2		mg/kg
07	A07-08-01		1.5	3.5	Magnesium, Total	1780		mg/kg
07	A07-08-01		1.5	3.5	Manganese, Total	69.5		mg/kg
07	A07-08-01		1.5	3.5	Nickel, Total	6.9		mg/kg
07	A07-08-01		1.5	3.5	Sodium, Total	451	B	mg/kg
07	A07-08-01		1.5	3.5	Vanadium, Total	30.4		mg/kg
07	A07-08-01		1.5	3.5	Zinc, Total	27.9	*	mg/kg
Inorganics								
07	A07-08-05		7.5	9	Aluminum, Total	6770		mg/kg
07	A07-08-05		7.5	9	Arsenic, Total	5	S	mg/kg
07	A07-08-05		7.5	9	Barium, Total	26.4	B	mg/kg
07	A07-08-05		7.5	9	Calcium, Total	2720		mg/kg
07	A07-08-05		7.5	9	Chromium, Total	12.7	*	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
07	A07-08-05		7.5	9	Cobalt, Total	6.2	B	mg/kg
07	A07-08-05		7.5	9	Iron, Total	10900		mg/kg
07	A07-08-05		7.5	9	Lead, Total	20.3	S	mg/kg
07	A07-08-05		7.5	9	Magnesium, Total	2220		mg/kg
07	A07-08-05		7.5	9	Manganese, Total	111		mg/kg
07	A07-08-05		7.5	9	Nickel, Total	11.6		mg/kg
07	A07-08-05		7.5	9	Sodium, Total	999	B	mg/kg
07	A07-08-05		7.5	9	Vanadium, Total	33.3		mg/kg
07	A07-08-05		7.5	9	Zinc, Total	58.5	*	mg/kg
Volatiles								
07	A07-08-05		7.5	9	2-Butanone	0.01	J	mg/kg
07	A07-08-05		7.5	9	Acetone	0.026		mg/kg
Conventionals								
08	A08-01-01		0	0.5	Total Petroleum Hydrocarbons	151		mg/kg
Inorganics								
08	A08-01-01		0	0.5	Aluminum, Total	11600		mg/kg
08	A08-01-01		0	0.5	Arsenic, Total	8.9	BN	mg/kg
08	A08-01-01		0	0.5	Barium, Total	72.7		mg/kg
08	A08-01-01		0	0.5	Beryllium, Total	0.44	B	mg/kg
08	A08-01-01		0	0.5	Calcium, Total	7290		mg/kg
08	A08-01-01		0	0.5	Chromium, Total	21.1		mg/kg
08	A08-01-01		0	0.5	Copper, Total	119	*	mg/kg
08	A08-01-01		0	0.5	Iron, Total	23400		mg/kg
08	A08-01-01		0	0.5	Lead, Total	53.3	N	mg/kg
08	A08-01-01		0	0.5	Magnesium, Total	5770		mg/kg
08	A08-01-01		0	0.5	Manganese, Total	359		mg/kg
08	A08-01-01		0	0.5	Mercury, Total	1.1		mg/kg
08	A08-01-01		0	0.5	Nickel, Total	22.6		mg/kg
08	A08-01-01		0	0.5	Potassium, Total	593	B	mg/kg
08	A08-01-01		0	0.5	Vanadium, Total	70.7		mg/kg
08	A08-01-01		0	0.5	Zinc, Total	250		mg/kg
Inorganics								
08	A08-02-01		0	0.5	Aluminum, Total	9350		mg/kg
08	A08-02-01		0	0.5	Arsenic, Total	3.25		mg/kg
08	A08-02-01		0	0.5	Barium, Total	36.5	B	mg/kg
08	A08-02-01		0	0.5	Beryllium, Total	0.3525	B	mg/kg
08	A08-02-01		0	0.5	Calcium, Total	4850		mg/kg
08	A08-02-01		0	0.5	Chromium, Total	12		mg/kg
08	A08-02-01		0	0.5	Cobalt, Total	8	B	mg/kg
08	A08-02-01		0	0.5	Iron, Total	15000		mg/kg
08	A08-02-01		0	0.5	Lead, Total	3.7		mg/kg
08	A08-02-01		0	0.5	Magnesium, Total	2860		mg/kg
08	A08-02-01		0	0.5	Manganese, Total	164.5		mg/kg
08	A08-02-01		0	0.5	Nickel, Total	18.6		mg/kg
08	A08-02-01		0	0.5	Sodium, Total	551	B	mg/kg
08	A08-02-01		0	0.5	Vanadium, Total	43.75		mg/kg
08	A08-02-01		0	0.5	Zinc, Total	34.65		mg/kg
Inorganics								
08	A08-03-01		0	0.5	Aluminum, Total	10300		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
08	A08-03-01		0	0.5	Arsenic, Total	15.4	BN	mg/kg
08	A08-03-01		0	0.5	Barium, Total	48.2		mg/kg
08	A08-03-01		0	0.5	Beryllium, Total	0.45	B	mg/kg
08	A08-03-01		0	0.5	Calcium, Total	3880		mg/kg
08	A08-03-01		0	0.5	Chromium, Total	21		mg/kg
08	A08-03-01		0	0.5	Copper, Total	66.8	*	mg/kg
08	A08-03-01		0	0.5	Iron, Total	31900		mg/kg
08	A08-03-01		0	0.5	Lead, Total	37.8	N	mg/kg
08	A08-03-01		0	0.5	Magnesium, Total	2770		mg/kg
08	A08-03-01		0	0.5	Manganese, Total	228		mg/kg
08	A08-03-01		0	0.5	Mercury, Total	0.33		mg/kg
08	A08-03-01		0	0.5	Nickel, Total	35.6		mg/kg
08	A08-03-01		0	0.5	Potassium, Total	499	B	mg/kg
08	A08-03-01		0	0.5	Vanadium, Total	48.5		mg/kg
08	A08-03-01		0	0.5	Zinc, Total	52.1		mg/kg
Volatiles								
08	A08-03-01		0	0.5	Methylene Chloride	0.001	J	mg/kg
Inorganics								
08	A08-04-01		0	0.5	Aluminum, Total	11000		mg/kg
08	A08-04-01		0	0.5	Arsenic, Total	4.8	NS	mg/kg
08	A08-04-01		0	0.5	Barium, Total	60.1		mg/kg
08	A08-04-01		0	0.5	Beryllium, Total	0.46	B	mg/kg
08	A08-04-01		0	0.5	Calcium, Total	4700		mg/kg
08	A08-04-01		0	0.5	Chromium, Total	17.8		mg/kg
08	A08-04-01		0	0.5	Copper, Total	23.8	*	mg/kg
08	A08-04-01		0	0.5	Iron, Total	15400		mg/kg
08	A08-04-01		0	0.5	Lead, Total	24.9	N	mg/kg
08	A08-04-01		0	0.5	Magnesium, Total	2990		mg/kg
08	A08-04-01		0	0.5	Manganese, Total	189		mg/kg
08	A08-04-01		0	0.5	Mercury, Total	0.13		mg/kg
08	A08-04-01		0	0.5	Nickel, Total	16.7		mg/kg
08	A08-04-01		0	0.5	Potassium, Total	765	B	mg/kg
08	A08-04-01		0	0.5	Sodium, Total	602	B	mg/kg
08	A08-04-01		0	0.5	Vanadium, Total	55.4		mg/kg
08	A08-04-01		0	0.5	Zinc, Total	44.4		mg/kg
Volatiles								
08	A08-04-01		0	0.5	Methylene Chloride	0.001	J	mg/kg
Inorganics								
08	A08-05-01		0	0.5	Aluminum, Total	8250		mg/kg
08	A08-05-01		0	0.5	Arsenic, Total	24.7	N	mg/kg
08	A08-05-01		0	0.5	Barium, Total	42.2		mg/kg
08	A08-05-01		0	0.5	Calcium, Total	3250		mg/kg
08	A08-05-01		0	0.5	Chromium, Total	13.5		mg/kg
08	A08-05-01		0	0.5	Copper, Total	23.3	*	mg/kg
08	A08-05-01		0	0.5	Iron, Total	12900		mg/kg
08	A08-05-01		0	0.5	Lead, Total	41.2	N	mg/kg
08	A08-05-01		0	0.5	Magnesium, Total	2310		mg/kg
08	A08-05-01		0	0.5	Manganese, Total	165		mg/kg
08	A08-05-01		0	0.5	Mercury, Total	0.14		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
08	A08-05-01		0	0.5	Nickel, Total	15.6		mg/kg
08	A08-05-01		0	0.5	Potassium, Total	460	B	mg/kg
08	A08-05-01		0	0.5	Vanadium, Total	46.1		mg/kg
08	A08-05-01		0	0.5	Zinc, Total	93.9		mg/kg
Conventionals								
08	A08-06-01		0	0.5	Total Petroleum Hydrocarbons	338		mg/kg
Inorganics								
08	A08-06-01		0	0.5	Aluminum, Total	7770		mg/kg
08	A08-06-01		0	0.5	Arsenic, Total	2.6	N	mg/kg
08	A08-06-01		0	0.5	Barium, Total	27.3	B	mg/kg
08	A08-06-01		0	0.5	Calcium, Total	3800		mg/kg
08	A08-06-01		0	0.5	Chromium, Total	13.3		mg/kg
08	A08-06-01		0	0.5	Copper, Total	47	*	mg/kg
08	A08-06-01		0	0.5	Iron, Total	14400		mg/kg
08	A08-06-01		0	0.5	Lead, Total	5.2	N	mg/kg
08	A08-06-01		0	0.5	Magnesium, Total	3230		mg/kg
08	A08-06-01		0	0.5	Manganese, Total	188		mg/kg
08	A08-06-01		0	0.5	Mercury, Total	0.28		mg/kg
08	A08-06-01		0	0.5	Nickel, Total	18		mg/kg
08	A08-06-01		0	0.5	Potassium, Total	432	B	mg/kg
08	A08-06-01		0	0.5	Vanadium, Total	46.2		mg/kg
08	A08-06-01		0	0.5	Zinc, Total	32.9		mg/kg
Volatiles								
08	A08-06-01		0	0.5	Methylene Chloride	0.004	J	mg/kg
08	A08-06-01		0	0.5	Toluene	0.001	J	mg/kg
Inorganics								
08	A08-07-01		0	0.5	Aluminum, Total	13600		mg/kg
08	A08-07-01		0	0.5	Arsenic, Total	4.6	N	mg/kg
08	A08-07-01		0	0.5	Barium, Total	45		mg/kg
08	A08-07-01		0	0.5	Beryllium, Total	0.65	B	mg/kg
08	A08-07-01		0	0.5	Calcium, Total	8530		mg/kg
08	A08-07-01		0	0.5	Chromium, Total	21.4		mg/kg
08	A08-07-01		0	0.5	Copper, Total	391	*	mg/kg
08	A08-07-01		0	0.5	Iron, Total	27100		mg/kg
08	A08-07-01		0	0.5	Lead, Total	232	NS	mg/kg
08	A08-07-01		0	0.5	Magnesium, Total	7900		mg/kg
08	A08-07-01		0	0.5	Manganese, Total	373		mg/kg
08	A08-07-01		0	0.5	Mercury, Total	4.3		mg/kg
08	A08-07-01		0	0.5	Nickel, Total	38.9		mg/kg
08	A08-07-01		0	0.5	Potassium, Total	376	B	mg/kg
08	A08-07-01		0	0.5	Vanadium, Total	87.8		mg/kg
08	A08-07-01		0	0.5	Zinc, Total	108		mg/kg
Volatiles								
08	A08-07-01		0	0.5	Methylene Chloride	0.002	J	mg/kg
Inorganics								
09	A09-01-01		0	0.5	Aluminum, Total	10300		mg/kg
09	A09-01-01		0	0.5	Arsenic, Total	2.3		mg/kg
09	A09-01-01		0	0.5	Barium, Total	37.2	B	mg/kg
09	A09-01-01		0	0.5	Calcium, Total	4510		mg/kg

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EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
09	A09-01-01		0	0.5	Chromium, Total	13.3		mg/kg
09	A09-01-01		0	0.5	Cobalt, Total	7.5	B	mg/kg
09	A09-01-01		0	0.5	Iron, Total	16000		mg/kg
09	A09-01-01		0	0.5	Lead, Total	3.2		mg/kg
09	A09-01-01		0	0.5	Magnesium, Total	2700		mg/kg
09	A09-01-01		0	0.5	Manganese, Total	172		mg/kg
09	A09-01-01		0	0.5	Nickel, Total	15.5		mg/kg
09	A09-01-01		0	0.5	Sodium, Total	614	B	mg/kg
09	A09-01-01		0	0.5	Vanadium, Total	51.3		mg/kg
09	A09-01-01		0	0.5	Zinc, Total	30.9		mg/kg
Volatiles								
09	A09-01-01		0	0.5	Methylene Chloride	0.002	J	mg/kg
09	A09-01-01		0	0.5	Toluene	0.025		mg/kg
Inorganics								
09	A09-02-01		0	0.5	Aluminum, Total	8910		mg/kg
09	A09-02-01		0	0.5	Arsenic, Total	11.2	N	mg/kg
09	A09-02-01		0	0.5	Barium, Total	41		mg/kg
09	A09-02-01		0	0.5	Calcium, Total	15200		mg/kg
09	A09-02-01		0	0.5	Chromium, Total	20.6		mg/kg
09	A09-02-01		0	0.5	Copper, Total	1670	*	mg/kg
09	A09-02-01		0	0.5	Iron, Total	21400		mg/kg
09	A09-02-01		0	0.5	Lead, Total	63.9	N	mg/kg
09	A09-02-01		0	0.5	Magnesium, Total	6170		mg/kg
09	A09-02-01		0	0.5	Manganese, Total	413		mg/kg
09	A09-02-01		0	0.5	Mercury, Total	0.23		mg/kg
09	A09-02-01		0	0.5	Nickel, Total	27.6		mg/kg
09	A09-02-01		0	0.5	Potassium, Total	410	B	mg/kg
09	A09-02-01		0	0.5	Vanadium, Total	57.4		mg/kg
09	A09-02-01		0	0.5	Zinc, Total	165		mg/kg
Volatiles								
09	A09-02-01		0	0.5	Methylene Chloride	0.002	J	mg/kg
Inorganics								
09	A09-03-01		0	0.5	Aluminum, Total	10000		mg/kg
09	A09-03-01		0	0.5	Arsenic, Total	2.3		mg/kg
09	A09-03-01		0	0.5	Barium, Total	33.3	B	mg/kg
09	A09-03-01		0	0.5	Calcium, Total	4060		mg/kg
09	A09-03-01		0	0.5	Chromium, Total	11.9		mg/kg
09	A09-03-01		0	0.5	Cobalt, Total	7.2	B	mg/kg
09	A09-03-01		0	0.5	Iron, Total	13400		mg/kg
09	A09-03-01		0	0.5	Lead, Total	2.4		mg/kg
09	A09-03-01		0	0.5	Magnesium, Total	2340		mg/kg
09	A09-03-01		0	0.5	Manganese, Total	139		mg/kg
09	A09-03-01		0	0.5	Nickel, Total	13.7		mg/kg
09	A09-03-01		0	0.5	Sodium, Total	693	B	mg/kg
09	A09-03-01		0	0.5	Vanadium, Total	46		mg/kg
09	A09-03-01		0	0.5	Zinc, Total	39.6		mg/kg
Volatiles								
09	A09-03-01		0	0.5	Acetone	0.012	J	mg/kg
09	A09-03-01		0	0.5	Toluene	0.012		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Inorganics								
09	A09-04-01		0	0.5	Aluminum, Total	13300		mg/kg
09	A09-04-01		0	0.5	Arsenic, Total	6.5	NS	mg/kg
09	A09-04-01		0	0.5	Barium, Total	64.4		mg/kg
09	A09-04-01		0	0.5	Beryllium, Total	0.44	B	mg/kg
09	A09-04-01		0	0.5	Cadmium, Total	1.4		mg/kg
09	A09-04-01		0	0.5	Calcium, Total	14000		mg/kg
09	A09-04-01		0	0.5	Chromium, Total	64.9		mg/kg
09	A09-04-01		0	0.5	Copper, Total	587	*	mg/kg
09	A09-04-01		0	0.5	Iron, Total	29700		mg/kg
09	A09-04-01		0	0.5	Lead, Total	92	N	mg/kg
09	A09-04-01		0	0.5	Magnesium, Total	7090		mg/kg
09	A09-04-01		0	0.5	Manganese, Total	337		mg/kg
09	A09-04-01		0	0.5	Mercury, Total	0.93999		mg/kg
09	A09-04-01		0	0.5	Nickel, Total	37.2		mg/kg
09	A09-04-01		0	0.5	Potassium, Total	672	B	mg/kg
09	A09-04-01		0	0.5	Vanadium, Total	70.9		mg/kg
09	A09-04-01		0	0.5	Zinc, Total	636		mg/kg
Inorganics								
09	A09-05-01		0	0.5	Aluminum, Total	8480		mg/kg
09	A09-05-01		0	0.5	Arsenic, Total	3.3	NS	mg/kg
09	A09-05-01		0	0.5	Barium, Total	28	B	mg/kg
09	A09-05-01		0	0.5	Calcium, Total	4620		mg/kg
09	A09-05-01		0	0.5	Chromium, Total	14.6		mg/kg
09	A09-05-01		0	0.5	Copper, Total	32.2	*	mg/kg
09	A09-05-01		0	0.5	Iron, Total	19700		mg/kg
09	A09-05-01		0	0.5	Lead, Total	12.6	N	mg/kg
09	A09-05-01		0	0.5	Magnesium, Total	3760		mg/kg
09	A09-05-01		0	0.5	Manganese, Total	268		mg/kg
09	A09-05-01		0	0.5	Mercury, Total	0.16		mg/kg
09	A09-05-01		0	0.5	Nickel, Total	20.9		mg/kg
09	A09-05-01		0	0.5	Potassium, Total	438	B	mg/kg
09	A09-05-01		0	0.5	Vanadium, Total	53		mg/kg
09	A09-05-01		0	0.5	Zinc, Total	53.8		mg/kg
Inorganics								
09	A09-06-01		0	0.5	Aluminum, Total	8760		mg/kg
09	A09-06-01		0	0.5	Arsenic, Total	4.1	NS	mg/kg
09	A09-06-01		0	0.5	Barium, Total	40.1		mg/kg
09	A09-06-01		0	0.5	Calcium, Total	4350		mg/kg
09	A09-06-01		0	0.5	Chromium, Total	16.3		mg/kg
09	A09-06-01		0	0.5	Copper, Total	26.6	*	mg/kg
09	A09-06-01		0	0.5	Iron, Total	13600		mg/kg
09	A09-06-01		0	0.5	Lead, Total	14.7	N	mg/kg
09	A09-06-01		0	0.5	Magnesium, Total	3050		mg/kg
09	A09-06-01		0	0.5	Manganese, Total	178		mg/kg
09	A09-06-01		0	0.5	Nickel, Total	18.6		mg/kg
09	A09-06-01		0	0.5	Potassium, Total	561	B	mg/kg
09	A09-06-01		0	0.5	Vanadium, Total	43.7		mg/kg
09	A09-06-01		0	0.5	Zinc, Total	128		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Inorganics								
09	A09-07-01		0	0.5	Aluminum, Total	12500		mg/kg
09	A09-07-01		0	0.5	Arsenic, Total	5	NS	mg/kg
09	A09-07-01		0	0.5	Barium, Total	54.8		mg/kg
09	A09-07-01		0	0.5	Beryllium, Total	0.45	B	mg/kg
09	A09-07-01		0	0.5	Calcium, Total	3680		mg/kg
09	A09-07-01		0	0.5	Chromium, Total	24.5		mg/kg
09	A09-07-01		0	0.5	Copper, Total	22.3	*	mg/kg
09	A09-07-01		0	0.5	Iron, Total	13600		mg/kg
09	A09-07-01		0	0.5	Lead, Total	16	N	mg/kg
09	A09-07-01		0	0.5	Magnesium, Total	3630		mg/kg
09	A09-07-01		0	0.5	Manganese, Total	272		mg/kg
09	A09-07-01		0	0.5	Nickel, Total	26.2		mg/kg
09	A09-07-01		0	0.5	Potassium, Total	545	B	mg/kg
09	A09-07-01		0	0.5	Vanadium, Total	37.2		mg/kg
09	A09-07-01		0	0.5	Zinc, Total	39.9		mg/kg
Conventionals								
09	A09-08-07		17.5	19	Cation Exchange Capacity	7.65		meq/100g
09	A09-08-07		17.5	19	Total Organic Carbon	1280		mg/kg
Inorganics								
10	A10-MS-04		0.5	1	Aluminum, Total	9610		mg/kg
10	A10-MS-04		0.5	1	Arsenic, Total	3.6		mg/kg
10	A10-MS-04		0.5	1	Barium, Total	32.1	B	mg/kg
10	A10-MS-04		0.5	1	Calcium, Total	4780		mg/kg
10	A10-MS-04		0.5	1	Chromium, Total	13.8		mg/kg
10	A10-MS-04		0.5	1	Cobalt, Total	7.2	B	mg/kg
10	A10-MS-04		0.5	1	Copper, Total	114		mg/kg
10	A10-MS-04		0.5	1	Iron, Total	13200		mg/kg
10	A10-MS-04		0.5	1	Lead, Total	4.8		mg/kg
10	A10-MS-04		0.5	1	Magnesium, Total	2010		mg/kg
10	A10-MS-04		0.5	1	Manganese, Total	144		mg/kg
10	A10-MS-04		0.5	1	Mercury, Total	0.12		mg/kg
10	A10-MS-04		0.5	1	Nickel, Total	12		mg/kg
10	A10-MS-04		0.5	1	Sodium, Total	839	B	mg/kg
10	A10-MS-04		0.5	1	Vanadium, Total	52		mg/kg
10	A10-MS-04		0.5	1	Zinc, Total	27.8		mg/kg
Volatiles								
10	A10-MS-04		0.5	1	Toluene	0.023		mg/kg
Inorganics								
10	A10-MS-EB	EB			Calcium, Total	172	B	ug/L
10	A10-MS-EB	EB			Copper, Total	12.9	B	ug/L
10	A10-MS-EB	EB			Iron, Total	25.2	B	ug/L
10	A10-MS-EB	EB			Sodium, Total	539	B	ug/L
Volatiles								
10	A10-MS-EB	EB			Methylene Chloride	0.3	J	ug/L
Inorganics								
10	A10A20101		0.5	1	Aluminum, Total	10800	*	mg/kg
10	A10A20101		0.5	1	Arsenic, Total	2		mg/kg
10	A10A20101		0.5	1	Barium, Total	40.5		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
10	A10A20101		0.5	1	Beryllium, Total	0.53	B	mg/kg
10	A10A20101		0.5	1	Cadmium, Total	0.92		mg/kg
10	A10A20101		0.5	1	Calcium, Total	5260	*	mg/kg
10	A10A20101		0.5	1	Chromium, Total	17.3	N*	mg/kg
10	A10A20101		0.5	1	Cobalt, Total	8.9	B	mg/kg
10	A10A20101		0.5	1	Copper, Total	491	N*	mg/kg
10	A10A20101		0.5	1	Iron, Total	17600	*	mg/kg
10	A10A20101		0.5	1	Lead, Total	13.4		mg/kg
10	A10A20101		0.5	1	Magnesium, Total	3450	*	mg/kg
10	A10A20101		0.5	1	Manganese, Total	160	N*	mg/kg
10	A10A20101		0.5	1	Mercury, Total	0.3		mg/kg
10	A10A20101		0.5	1	Nickel, Total	18.3	*	mg/kg
10	A10A20101		0.5	1	Sodium, Total	635	B	mg/kg
10	A10A20101		0.5	1	Vanadium, Total	53.9	N*	mg/kg
10	A10A20101		0.5	1	Zinc, Total	607	*	mg/kg
Volatiles								
10	A10A20101		0.5	1	Ethylbenzene	0.11		mg/kg
10	A10A20101		0.5	1	Toluene	4.5		mg/kg
10	A10A20101		0.5	1	Xylene (Total)	0.41		mg/kg
Inorganics								
10	A10A20201		0.5	1	Aluminum, Total	10500	*	mg/kg
10	A10A20201		0.5	1	Arsenic, Total	1.9		mg/kg
10	A10A20201		0.5	1	Barium, Total	41.4		mg/kg
10	A10A20201		0.5	1	Calcium, Total	5130	*	mg/kg
10	A10A20201		0.5	1	Chromium, Total	21.6	N*	mg/kg
10	A10A20201		0.5	1	Cobalt, Total	9.4		mg/kg
10	A10A20201		0.5	1	Copper, Total	164	N*	mg/kg
10	A10A20201		0.5	1	Iron, Total	16500	*	mg/kg
10	A10A20201		0.5	1	Lead, Total	8.8		mg/kg
10	A10A20201		0.5	1	Magnesium, Total	4750	*	mg/kg
10	A10A20201		0.5	1	Manganese, Total	187	N*	mg/kg
10	A10A20201		0.5	1	Mercury, Total	0.13		mg/kg
10	A10A20201		0.5	1	Nickel, Total	30.2	*	mg/kg
10	A10A20201		0.5	1	Sodium, Total	453	B	mg/kg
10	A10A20201		0.5	1	Vanadium, Total	40.7	N*	mg/kg
10	A10A20201		0.5	1	Zinc, Total	144	*	mg/kg
Volatiles								
10	A10A20201		0.5	1	Acetone	0.002	J	mg/kg
10	A10A20201		0.5	1	Toluene	0.006		mg/kg
Inorganics								
10	A10A20301		0.5	1	Aluminum, Total	9920	*	mg/kg
10	A10A20301		0.5	1	Arsenic, Total	1.2	B	mg/kg
10	A10A20301		0.5	1	Barium, Total	38		mg/kg
10	A10A20301		0.5	1	Calcium, Total	4430	*	mg/kg
10	A10A20301		0.5	1	Chromium, Total	28.5	N*	mg/kg
10	A10A20301		0.5	1	Cobalt, Total	9.6		mg/kg
10	A10A20301		0.5	1	Copper, Total	162	N*	mg/kg
10	A10A20301		0.5	1	Iron, Total	15600	*	mg/kg
10	A10A20301		0.5	1	Lead, Total	2.7		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
10	A10A20301		0.5	1	Magnesium, Total	5580	*	mg/kg
10	A10A20301		0.5	1	Manganese, Total	207	N*	mg/kg
10	A10A20301		0.5	1	Mercury, Total	0.1		mg/kg
10	A10A20301		0.5	1	Nickel, Total	47.7	*	mg/kg
10	A10A20301		0.5	1	Sodium, Total	263	B	mg/kg
10	A10A20301		0.5	1	Vanadium, Total	36.4	N*	mg/kg
10	A10A20301		0.5	1	Zinc, Total	182	*	mg/kg
Inorganics								
10	A10A20401		0.5	1	Aluminum, Total	10300	*	mg/kg
10	A10A20401		0.5	1	Arsenic, Total	2.6		mg/kg
10	A10A20401		0.5	1	Barium, Total	37.1		mg/kg
10	A10A20401		0.5	1	Beryllium, Total	0.44	B	mg/kg
10	A10A20401		0.5	1	Calcium, Total	5430	*	mg/kg
10	A10A20401		0.5	1	Chromium, Total	25.3	N*	mg/kg
10	A10A20401		0.5	1	Cobalt, Total	9.7		mg/kg
10	A10A20401		0.5	1	Copper, Total	655	N*	mg/kg
10	A10A20401		0.5	1	Iron, Total	17500	*	mg/kg
10	A10A20401		0.5	1	Lead, Total	5.5		mg/kg
10	A10A20401		0.5	1	Magnesium, Total	5900	*	mg/kg
10	A10A20401		0.5	1	Manganese, Total	246	N*	mg/kg
10	A10A20401		0.5	1	Mercury, Total	0.66		mg/kg
10	A10A20401		0.5	1	Nickel, Total	38.3	*	mg/kg
10	A10A20401		0.5	1	Sodium, Total	403	B	mg/kg
10	A10A20401		0.5	1	Vanadium, Total	38.1	N*	mg/kg
10	A10A20401		0.5	1	Zinc, Total	212	*	mg/kg
Volatiles								
10	A10A20401		0.5	1	Acetone	0.004	J	mg/kg
10	A10A20401		0.5	1	Carbon Disulfide	0.002	J	mg/kg
10	A10A20401		0.5	1	Toluene	0.029		mg/kg
10	A10A20401		0.5	1	Xylene (Total)	0.012		mg/kg
Inorganics								
10	A10A60101		1	1.5	Aluminum, Total	6740		mg/kg
10	A10A60101		1	1.5	Arsenic, Total	17.5		mg/kg
10	A10A60101		1	1.5	Barium, Total	31.3	B	mg/kg
10	A10A60101		1	1.5	Cadmium, Total	5		mg/kg
10	A10A60101		1	1.5	Calcium, Total	19500		mg/kg
10	A10A60101		1	1.5	Chromium, Total	15.9		mg/kg
10	A10A60101		1	1.5	Cobalt, Total	10.8		mg/kg
10	A10A60101		1	1.5	Copper, Total	535		mg/kg
10	A10A60101		1	1.5	Iron, Total	15000		mg/kg
10	A10A60101		1	1.5	Lead, Total	37.8		mg/kg
10	A10A60101		1	1.5	Magnesium, Total	2840		mg/kg
10	A10A60101		1	1.5	Manganese, Total	181		mg/kg
10	A10A60101		1	1.5	Mercury, Total	0.46	*	mg/kg
10	A10A60101		1	1.5	Nickel, Total	25		mg/kg
10	A10A60101		1	1.5	Silver, Total	3.2	*	mg/kg
10	A10A60101		1	1.5	Sodium, Total	419	B	mg/kg
10	A10A60101		1	1.5	Vanadium, Total	36.2		mg/kg
10	A10A60101		1	1.5	Zinc, Total	691		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Inorganics								
10	A10A60201		1	1.5	Aluminum, Total	10900		mg/kg
10	A10A60201		1	1.5	Arsenic, Total	4.1		mg/kg
10	A10A60201		1	1.5	Barium, Total	54.3		mg/kg
10	A10A60201		1	1.5	Beryllium, Total	0.48	B	mg/kg
10	A10A60201		1	1.5	Calcium, Total	6470		mg/kg
10	A10A60201		1	1.5	Chromium, Total	21.6		mg/kg
10	A10A60201		1	1.5	Cobalt, Total	10		mg/kg
10	A10A60201		1	1.5	Copper, Total	545		mg/kg
10	A10A60201		1	1.5	Iron, Total	18300		mg/kg
10	A10A60201		1	1.5	Lead, Total	18		mg/kg
10	A10A60201		1	1.5	Magnesium, Total	4840		mg/kg
10	A10A60201		1	1.5	Manganese, Total	238		mg/kg
10	A10A60201		1	1.5	Mercury, Total	4.2	*	mg/kg
10	A10A60201		1	1.5	Nickel, Total	30.3		mg/kg
10	A10A60201		1	1.5	Silver, Total	3	*	mg/kg
10	A10A60201		1	1.5	Sodium, Total	768	B	mg/kg
10	A10A60201		1	1.5	Vanadium, Total	49.4		mg/kg
10	A10A60201		1	1.5	Zinc, Total	95.3		mg/kg
Volatiles								
10	A10A60201		1	1.5	Toluene	0.003	J	mg/kg
10	A10A60201		1	1.5	Trichloroethene	0.007	J	mg/kg
10	A10A60201		1	1.5	Xylene (Total)	0.001	J	mg/kg
Inorganics								
10	A10A60301		1	1.5	Aluminum, Total	10700		mg/kg
10	A10A60301		1	1.5	Arsenic, Total	3.2		mg/kg
10	A10A60301		1	1.5	Barium, Total	41.8		mg/kg
10	A10A60301		1	1.5	Beryllium, Total	0.47	B	mg/kg
10	A10A60301		1	1.5	Calcium, Total	5380		mg/kg
10	A10A60301		1	1.5	Chromium, Total	14		mg/kg
10	A10A60301		1	1.5	Cobalt, Total	8.3	B	mg/kg
10	A10A60301		1	1.5	Copper, Total	61.7		mg/kg
10	A10A60301		1	1.5	Iron, Total	14600		mg/kg
10	A10A60301		1	1.5	Lead, Total	17.3		mg/kg
10	A10A60301		1	1.5	Magnesium, Total	3010		mg/kg
10	A10A60301		1	1.5	Manganese, Total	161		mg/kg
10	A10A60301		1	1.5	Mercury, Total	1	*	mg/kg
10	A10A60301		1	1.5	Nickel, Total	19.7		mg/kg
10	A10A60301		1	1.5	Silver, Total	2.5	*	mg/kg
10	A10A60301		1	1.5	Sodium, Total	674	B	mg/kg
10	A10A60301		1	1.5	Vanadium, Total	47.5		mg/kg
10	A10A60301		1	1.5	Zinc, Total	60.9		mg/kg
Volatiles								
10	A10A60301		1	1.5	2-Butanone	0.003	J	mg/kg
10	A10A60301		1	1.5	Trichloroethene	0.003	J	mg/kg
Inorganics								
10	A10A60401		1	1.5	Aluminum, Total	10700		mg/kg
10	A10A60401		1	1.5	Arsenic, Total	4.3		mg/kg
10	A10A60401		1	1.5	Barium, Total	38.9		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
10	A10A60401		1	1.5	Beryllium, Total	0.47	B	mg/kg
10	A10A60401		1	1.5	Calcium, Total	6160		mg/kg
10	A10A60401		1	1.5	Chromium, Total	13.5		mg/kg
10	A10A60401		1	1.5	Cobalt, Total	9.7		mg/kg
10	A10A60401		1	1.5	Copper, Total	70.5		mg/kg
10	A10A60401		1	1.5	Iron, Total	17400		mg/kg
10	A10A60401		1	1.5	Lead, Total	14.9		mg/kg
10	A10A60401		1	1.5	Magnesium, Total	4080		mg/kg
10	A10A60401		1	1.5	Manganese, Total	215		mg/kg
10	A10A60401		1	1.5	Mercury, Total	1.9	*	mg/kg
10	A10A60401		1	1.5	Nickel, Total	22.1		mg/kg
10	A10A60401		1	1.5	Silver, Total	2.6	*	mg/kg
10	A10A60401		1	1.5	Sodium, Total	765	B	mg/kg
10	A10A60401		1	1.5	Vanadium, Total	52.9		mg/kg
10	A10A60401		1	1.5	Zinc, Total	60.6		mg/kg
Volatiles								
10	A10A60401		1	1.5	Trichloroethene	0.001	J	mg/kg
Inorganics								
10	A10CR0101		1	1.5	Aluminum, Total	8930		mg/kg
10	A10CR0101		1	1.5	Arsenic, Total	5.6		mg/kg
10	A10CR0101		1	1.5	Barium, Total	36.7		mg/kg
10	A10CR0101		1	1.5	Calcium, Total	5820		mg/kg
10	A10CR0101		1	1.5	Chromium, Total	14.5		mg/kg
10	A10CR0101		1	1.5	Cobalt, Total	5.5	B	mg/kg
10	A10CR0101		1	1.5	Copper, Total	314		mg/kg
10	A10CR0101		1	1.5	Iron, Total	11000		mg/kg
10	A10CR0101		1	1.5	Lead, Total	30.9		mg/kg
10	A10CR0101		1	1.5	Magnesium, Total	2430		mg/kg
10	A10CR0101		1	1.5	Manganese, Total	178		mg/kg
10	A10CR0101		1	1.5	Mercury, Total	0.31	*	mg/kg
10	A10CR0101		1	1.5	Nickel, Total	18.7		mg/kg
10	A10CR0101		1	1.5	Silver, Total	2.4	*	mg/kg
10	A10CR0101		1	1.5	Sodium, Total	695	B	mg/kg
10	A10CR0101		1	1.5	Vanadium, Total	29.9		mg/kg
10	A10CR0101		1	1.5	Zinc, Total	115		mg/kg
Inorganics								
10	A10CR0201		1	1.5	Aluminum, Total	9300		mg/kg
10	A10CR0201		1	1.5	Arsenic, Total	4.1		mg/kg
10	A10CR0201		1	1.5	Barium, Total	48.3		mg/kg
10	A10CR0201		1	1.5	Calcium, Total	4790		mg/kg
10	A10CR0201		1	1.5	Chromium, Total	27.4		mg/kg
10	A10CR0201		1	1.5	Cobalt, Total	10		mg/kg
10	A10CR0201		1	1.5	Copper, Total	222		mg/kg
10	A10CR0201		1	1.5	Iron, Total	25200		mg/kg
10	A10CR0201		1	1.5	Lead, Total	56.6		mg/kg
10	A10CR0201		1	1.5	Magnesium, Total	4720		mg/kg
10	A10CR0201		1	1.5	Manganese, Total	274		mg/kg
10	A10CR0201		1	1.5	Mercury, Total	0.22	*	mg/kg
10	A10CR0201		1	1.5	Nickel, Total	48.3		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
10	A10CR0201		1	1.5	Silver, Total	2.6	*	mg/kg
10	A10CR0201		1	1.5	Sodium, Total	390	B	mg/kg
10	A10CR0201		1	1.5	Vanadium, Total	39.7		mg/kg
10	A10CR0201		1	1.5	Zinc, Total	218		mg/kg
Volatiles								
10	A10CR0201		1	1.5	Trichloroethene	0.009	J	mg/kg
Inorganics								
10	A10CR0301		1	1.5	Aluminum, Total	10500		mg/kg
10	A10CR0301		1	1.5	Arsenic, Total	4.9		mg/kg
10	A10CR0301		1	1.5	Barium, Total	53.9		mg/kg
10	A10CR0301		1	1.5	Beryllium, Total	0.39	B	mg/kg
10	A10CR0301		1	1.5	Calcium, Total	30200		mg/kg
10	A10CR0301		1	1.5	Chromium, Total	29.7		mg/kg
10	A10CR0301		1	1.5	Cobalt, Total	8.5		mg/kg
10	A10CR0301		1	1.5	Copper, Total	2580		mg/kg
10	A10CR0301		1	1.5	Iron, Total	17700		mg/kg
10	A10CR0301		1	1.5	Lead, Total	18.3		mg/kg
10	A10CR0301		1	1.5	Magnesium, Total	6370		mg/kg
10	A10CR0301		1	1.5	Manganese, Total	371		mg/kg
10	A10CR0301		1	1.5	Mercury, Total	0.46	*	mg/kg
10	A10CR0301		1	1.5	Nickel, Total	48.4		mg/kg
10	A10CR0301		1	1.5	Silver, Total	3	*	mg/kg
10	A10CR0301		1	1.5	Sodium, Total	791	B	mg/kg
10	A10CR0301		1	1.5	Vanadium, Total	33.9		mg/kg
10	A10CR0301		1	1.5	Zinc, Total	166		mg/kg
Inorganics								
10	A10CR0401		1	1.5	Aluminum, Total	13300		mg/kg
10	A10CR0401		1	1.5	Arsenic, Total	4.8		mg/kg
10	A10CR0401		1	1.5	Barium, Total	59.7		mg/kg
10	A10CR0401		1	1.5	Beryllium, Total	0.45	B	mg/kg
10	A10CR0401		1	1.5	Cadmium, Total	1.6		mg/kg
10	A10CR0401		1	1.5	Calcium, Total	14200		mg/kg
10	A10CR0401		1	1.5	Chromium, Total	18.6		mg/kg
10	A10CR0401		1	1.5	Cobalt, Total	7.7	B	mg/kg
10	A10CR0401		1	1.5	Copper, Total	610		mg/kg
10	A10CR0401		1	1.5	Iron, Total	15000		mg/kg
10	A10CR0401		1	1.5	Lead, Total	13.2		mg/kg
10	A10CR0401		1	1.5	Magnesium, Total	3670		mg/kg
10	A10CR0401		1	1.5	Manganese, Total	235		mg/kg
10	A10CR0401		1	1.5	Mercury, Total	0.64	*	mg/kg
10	A10CR0401		1	1.5	Nickel, Total	26		mg/kg
10	A10CR0401		1	1.5	Silver, Total	3.3	*	mg/kg
10	A10CR0401		1	1.5	Sodium, Total	1280		mg/kg
10	A10CR0401		1	1.5	Vanadium, Total	39.7		mg/kg
10	A10CR0401		1	1.5	Zinc, Total	73.1		mg/kg
Volatiles								
10	A10CR0401		1	1.5	Toluene	0.001	J	mg/kg
Inorganics								
10	A10CS0101		1	1.5	Aluminum, Total	8130		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
10	A10CS0101		1	1.5	Arsenic, Total	2.8		mg/kg
10	A10CS0101		1	1.5	Barium, Total	38.5	B	mg/kg
10	A10CS0101		1	1.5	Calcium, Total	12800		mg/kg
10	A10CS0101		1	1.5	Chromium, Total	10.7		mg/kg
10	A10CS0101		1	1.5	Cobalt, Total	7.1	B	mg/kg
10	A10CS0101		1	1.5	Copper, Total	1410		mg/kg
10	A10CS0101		1	1.5	Iron, Total	11900		mg/kg
10	A10CS0101		1	1.5	Lead, Total	12.2		mg/kg
10	A10CS0101		1	1.5	Magnesium, Total	2940		mg/kg
10	A10CS0101		1	1.5	Manganese, Total	163		mg/kg
10	A10CS0101		1	1.5	Mercury, Total	0.39	*	mg/kg
10	A10CS0101		1	1.5	Nickel, Total	17.4		mg/kg
10	A10CS0101		1	1.5	Potassium, Total	778	B	mg/kg
10	A10CS0101		1	1.5	Silver, Total	2.8	*	mg/kg
10	A10CS0101		1	1.5	Sodium, Total	712	B	mg/kg
10	A10CS0101		1	1.5	Vanadium, Total	33.3		mg/kg
10	A10CS0101		1	1.5	Zinc, Total	77.8		mg/kg
Volatiles								
10	A10CS0101		1	1.5	Carbon Disulfide	0.002	J	mg/kg
10	A10CS0101		1	1.5	Toluene	0.004	J	mg/kg
10	A10CS0101		1	1.5	Xylene (Total)	0.005	J	mg/kg
Inorganics								
10	A10CS0201		1	1.5	Aluminum, Total	10400		mg/kg
10	A10CS0201		1	1.5	Arsenic, Total	7.5		mg/kg
10	A10CS0201		1	1.5	Barium, Total	42.8		mg/kg
10	A10CS0201		1	1.5	Beryllium, Total	0.5	B	mg/kg
10	A10CS0201		1	1.5	Calcium, Total	34400		mg/kg
10	A10CS0201		1	1.5	Chromium, Total	15.6		mg/kg
10	A10CS0201		1	1.5	Cobalt, Total	10.8		mg/kg
10	A10CS0201		1	1.5	Copper, Total	799		mg/kg
10	A10CS0201		1	1.5	Iron, Total	18200		mg/kg
10	A10CS0201		1	1.5	Lead, Total	17.2		mg/kg
10	A10CS0201		1	1.5	Magnesium, Total	4940		mg/kg
10	A10CS0201		1	1.5	Manganese, Total	348		mg/kg
10	A10CS0201		1	1.5	Mercury, Total	1.2	*	mg/kg
10	A10CS0201		1	1.5	Nickel, Total	24.6		mg/kg
10	A10CS0201		1	1.5	Silver, Total	3.5	*	mg/kg
10	A10CS0201		1	1.5	Sodium, Total	1300		mg/kg
10	A10CS0201		1	1.5	Vanadium, Total	48.9		mg/kg
10	A10CS0201		1	1.5	Zinc, Total	121		mg/kg
Volatiles								
10	A10CS0201		1	1.5	Xylene (Total)	0.002	J	mg/kg
Inorganics								
10	A10CS0301		1	1.5	Aluminum, Total	8890		mg/kg
10	A10CS0301		1	1.5	Antimony, Total	21.2		mg/kg
10	A10CS0301		1	1.5	Arsenic, Total	52		mg/kg
10	A10CS0301		1	1.5	Barium, Total	32.6	B	mg/kg
10	A10CS0301		1	1.5	Calcium, Total	6630		mg/kg
10	A10CS0301		1	1.5	Chromium, Total	14.6		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
10	A10CS0301		1	1.5	Cobalt, Total	15.2		mg/kg
10	A10CS0301		1	1.5	Copper, Total	188		mg/kg
10	A10CS0301		1	1.5	Iron, Total	14800		mg/kg
10	A10CS0301		1	1.5	Lead, Total	79.7		mg/kg
10	A10CS0301		1	1.5	Magnesium, Total	3280		mg/kg
10	A10CS0301		1	1.5	Manganese, Total	144		mg/kg
10	A10CS0301		1	1.5	Mercury, Total	0.26	*	mg/kg
10	A10CS0301		1	1.5	Nickel, Total	19.7		mg/kg
10	A10CS0301		1	1.5	Silver, Total	2.4	*	mg/kg
10	A10CS0301		1	1.5	Sodium, Total	690	B	mg/kg
10	A10CS0301		1	1.5	Vanadium, Total	43.4		mg/kg
10	A10CS0301		1	1.5	Zinc, Total	300		mg/kg
Volatiles								
10	A10CS0301		1	1.5	Carbon Disulfide	0.002	J	mg/kg
10	A10CS0301		1	1.5	Toluene	0.007		mg/kg
10	A10CS0301		1	1.5	Xylene (Total)	0.002	J	mg/kg
Inorganics								
10	A10CS0401		1	1.5	Aluminum, Total	9650		mg/kg
10	A10CS0401		1	1.5	Arsenic, Total	5.5		mg/kg
10	A10CS0401		1	1.5	Barium, Total	35.7	B	mg/kg
10	A10CS0401		1	1.5	Beryllium, Total	0.54	B	mg/kg
10	A10CS0401		1	1.5	Calcium, Total	7410		mg/kg
10	A10CS0401		1	1.5	Chromium, Total	15.5		mg/kg
10	A10CS0401		1	1.5	Cobalt, Total	8.7	B	mg/kg
10	A10CS0401		1	1.5	Copper, Total	311		mg/kg
10	A10CS0401		1	1.5	Iron, Total	14600		mg/kg
10	A10CS0401		1	1.5	Lead, Total	15.6		mg/kg
10	A10CS0401		1	1.5	Magnesium, Total	2740		mg/kg
10	A10CS0401		1	1.5	Manganese, Total	167		mg/kg
10	A10CS0401		1	1.5	Mercury, Total	0.21	*	mg/kg
10	A10CS0401		1	1.5	Nickel, Total	19.8		mg/kg
10	A10CS0401		1	1.5	Silver, Total	3.2	*	mg/kg
10	A10CS0401		1	1.5	Sodium, Total	659	B	mg/kg
10	A10CS0401		1	1.5	Vanadium, Total	46.7		mg/kg
10	A10CS0401		1	1.5	Zinc, Total	84.3		mg/kg
Inorganics								
10	A10MS0101		0	0.5	Aluminum, Total	14400		mg/kg
10	A10MS0101		0	0.5	Antimony, Total	4.9		mg/kg
10	A10MS0101		0	0.5	Barium, Total	57.7		mg/kg
10	A10MS0101		0	0.5	Beryllium, Total	0.42	B	mg/kg
10	A10MS0101		0	0.5	Cadmium, Total	2.5		mg/kg
10	A10MS0101		0	0.5	Calcium, Total	7540		mg/kg
10	A10MS0101		0	0.5	Chromium, Total	24.2		mg/kg
10	A10MS0101		0	0.5	Cobalt, Total	10.2		mg/kg
10	A10MS0101		0	0.5	Copper, Total	2540		mg/kg
10	A10MS0101		0	0.5	Iron, Total	20000		mg/kg
10	A10MS0101		0	0.5	Lead, Total	9.9		mg/kg
10	A10MS0101		0	0.5	Magnesium, Total	6330		mg/kg
10	A10MS0101		0	0.5	Manganese, Total	364		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
10	A10MS0101		0	0.5	Mercury, Total	0.15	*	mg/kg
10	A10MS0101		0	0.5	Nickel, Total	38.3		mg/kg
10	A10MS0101		0	0.5	Silver, Total	3.3	*	mg/kg
10	A10MS0101		0	0.5	Sodium, Total	684	B	mg/kg
10	A10MS0101		0	0.5	Vanadium, Total	40.3		mg/kg
10	A10MS0101		0	0.5	Zinc, Total	129		mg/kg
Inorganics								
10	A10MS0201		0.5	1	Aluminum, Total	13300	*	mg/kg
10	A10MS0201		0.5	1	Arsenic, Total	2.5	S	mg/kg
10	A10MS0201		0.5	1	Barium, Total	34.5		mg/kg
10	A10MS0201		0.5	1	Beryllium, Total	0.45	B	mg/kg
10	A10MS0201		0.5	1	Cadmium, Total	1.2		mg/kg
10	A10MS0201		0.5	1	Calcium, Total	13400	*	mg/kg
10	A10MS0201		0.5	1	Chromium, Total	33.3	N*	mg/kg
10	A10MS0201		0.5	1	Cobalt, Total	18.7		mg/kg
10	A10MS0201		0.5	1	Copper, Total	91.5	N*	mg/kg
10	A10MS0201		0.5	1	Iron, Total	34000	*	mg/kg
10	A10MS0201		0.5	1	Lead, Total	36.4		mg/kg
10	A10MS0201		0.5	1	Magnesium, Total	12800	*	mg/kg
10	A10MS0201		0.5	1	Manganese, Total	417	N*	mg/kg
10	A10MS0201		0.5	1	Mercury, Total	0.73		mg/kg
10	A10MS0201		0.5	1	Nickel, Total	53.6	*	mg/kg
10	A10MS0201		0.5	1	Sodium, Total	1630		mg/kg
10	A10MS0201		0.5	1	Vanadium, Total	84.8	N*	mg/kg
10	A10MS0201		0.5	1	Zinc, Total	117	*	mg/kg
Volatiles								
10	A10MS0201		0.5	1	Toluene	0.001	J	mg/kg
Inorganics								
10	A10MS0301		0.5	1	Aluminum, Total	10800		mg/kg
10	A10MS0301		0.5	1	Antimony, Total	18.3		mg/kg
10	A10MS0301		0.5	1	Arsenic, Total	61.4		mg/kg
10	A10MS0301		0.5	1	Barium, Total	42		mg/kg
10	A10MS0301		0.5	1	Beryllium, Total	0.68999	B	mg/kg
10	A10MS0301		0.5	1	Calcium, Total	14100		mg/kg
10	A10MS0301		0.5	1	Chromium, Total	18.6		mg/kg
10	A10MS0301		0.5	1	Cobalt, Total	15.8		mg/kg
10	A10MS0301		0.5	1	Copper, Total	362		mg/kg
10	A10MS0301		0.5	1	Iron, Total	25800		mg/kg
10	A10MS0301		0.5	1	Lead, Total	78.5		mg/kg
10	A10MS0301		0.5	1	Magnesium, Total	6160		mg/kg
10	A10MS0301		0.5	1	Manganese, Total	410		mg/kg
10	A10MS0301		0.5	1	Mercury, Total	0.39	*	mg/kg
10	A10MS0301		0.5	1	Nickel, Total	32.3		mg/kg
10	A10MS0301		0.5	1	Silver, Total	3.1	*	mg/kg
10	A10MS0301		0.5	1	Sodium, Total	1780		mg/kg
10	A10MS0301		0.5	1	Vanadium, Total	57.3		mg/kg
10	A10MS0301		0.5	1	Zinc, Total	210		mg/kg
Volatiles								
10	A10MS0301		0.5	1	Toluene	0.004	J	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
10	A10MS0301		0.5	1	Trichloroethene	0.001	J	mg/kg
Inorganics								
BG	ABG-01-01		1	1.5	Aluminum, Total	8550	*	mg/kg
BG	ABG-01-01		1	1.5	Arsenic, Total	5.1		mg/kg
BG	ABG-01-01		1	1.5	Barium, Total	34.2	B	mg/kg
BG	ABG-01-01		1	1.5	Calcium, Total	4200		mg/kg
BG	ABG-01-01		1	1.5	Chromium, Total	12	*	mg/kg
BG	ABG-01-01		1	1.5	Cobalt, Total	6.2	B	mg/kg
BG	ABG-01-01		1	1.5	Iron, Total	10700	*	mg/kg
BG	ABG-01-01		1	1.5	Lead, Total	2.4	*	mg/kg
BG	ABG-01-01		1	1.5	Magnesium, Total	2090		mg/kg
BG	ABG-01-01		1	1.5	Manganese, Total	161	N*	mg/kg
BG	ABG-01-01		1	1.5	Nickel, Total	12.4		mg/kg
BG	ABG-01-01		1	1.5	Sodium, Total	553	B	mg/kg
BG	ABG-01-01		1	1.5	Vanadium, Total	37.5		mg/kg
BG	ABG-01-01		1	1.5	Zinc, Total	70.8	*	mg/kg
Volatiles								
BG	ABG-01-01		1	1.5	Formaldehyde	0.26		mg/kg
BG	ABG-01-01		1	1.5	Toluene	0.017		mg/kg
Inorganics								
BG	ABG-01-05		7	9	Aluminum, Total	18600	*	mg/kg
BG	ABG-01-05		7	9	Arsenic, Total	7.1		mg/kg
BG	ABG-01-05		7	9	Barium, Total	59.3		mg/kg
BG	ABG-01-05		7	9	Calcium, Total	4060		mg/kg
BG	ABG-01-05		7	9	Chromium, Total	16.1	*	mg/kg
BG	ABG-01-05		7	9	Cobalt, Total	5.9	B	mg/kg
BG	ABG-01-05		7	9	Iron, Total	15300	*	mg/kg
BG	ABG-01-05		7	9	Lead, Total	5	*	mg/kg
BG	ABG-01-05		7	9	Magnesium, Total	2940		mg/kg
BG	ABG-01-05		7	9	Manganese, Total	82.4	N*	mg/kg
BG	ABG-01-05		7	9	Nickel, Total	12.8		mg/kg
BG	ABG-01-05		7	9	Sodium, Total	1230	B	mg/kg
BG	ABG-01-05		7	9	Vanadium, Total	53.2		mg/kg
BG	ABG-01-05		7	9	Zinc, Total	17.4	*	mg/kg
Volatiles								
BG	ABG-01-05		7	9	Formaldehyde	0.3		mg/kg
BG	ABG-01-05		7	9	Toluene	0.016		mg/kg
Inorganics								
BG	ABG-02-01		1	1.5	Aluminum, Total	10800		mg/kg
BG	ABG-02-01		1	1.5	Arsenic, Total	2.8		mg/kg
BG	ABG-02-01		1	1.5	Barium, Total	38.6	B	mg/kg
BG	ABG-02-01		1	1.5	Beryllium, Total	0.53	B	mg/kg
BG	ABG-02-01		1	1.5	Calcium, Total	4380		mg/kg
BG	ABG-02-01		1	1.5	Chromium, Total	15.4		mg/kg
BG	ABG-02-01		1	1.5	Cobalt, Total	8.7	B	mg/kg
BG	ABG-02-01		1	1.5	Iron, Total	16000		mg/kg
BG	ABG-02-01		1	1.5	Lead, Total	3	*	mg/kg
BG	ABG-02-01		1	1.5	Magnesium, Total	2980	*	mg/kg
BG	ABG-02-01		1	1.5	Manganese, Total	172		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
BG	ABG-02-01		1	1.5	Nickel, Total	14.2		mg/kg
BG	ABG-02-01		1	1.5	Sodium, Total	426	B	mg/kg
BG	ABG-02-01		1	1.5	Vanadium, Total	47.4		mg/kg
BG	ABG-02-01		1	1.5	Zinc, Total	41.1		mg/kg
Volatiles								
BG	ABG-02-01		1	1.5	Formaldehyde	0.36		mg/kg
BG	ABG-02-01		1	1.5	Toluene	0.001	J	mg/kg
Inorganics								
BG	ABG-02-05		7	9	Aluminum, Total	20100		mg/kg
BG	ABG-02-05		7	9	Arsenic, Total	9.1		mg/kg
BG	ABG-02-05		7	9	Barium, Total	45.4	B	mg/kg
BG	ABG-02-05		7	9	Calcium, Total	4070		mg/kg
BG	ABG-02-05		7	9	Chromium, Total	18.8		mg/kg
BG	ABG-02-05		7	9	Cobalt, Total	6.2	B	mg/kg
BG	ABG-02-05		7	9	Iron, Total	17500		mg/kg
BG	ABG-02-05		7	9	Lead, Total	4.3	*	mg/kg
BG	ABG-02-05		7	9	Magnesium, Total	2740	*	mg/kg
BG	ABG-02-05		7	9	Manganese, Total	86.4		mg/kg
BG	ABG-02-05		7	9	Nickel, Total	11.4		mg/kg
BG	ABG-02-05		7	9	Sodium, Total	1160	B	mg/kg
BG	ABG-02-05		7	9	Vanadium, Total	54.2		mg/kg
BG	ABG-02-05		7	9	Zinc, Total	17.4		mg/kg
Volatiles								
BG	ABG-02-05		7	9	Formaldehyde	2		mg/kg
BG	ABG-02-05		7	9	Toluene	0.002	J	mg/kg
Inorganics								
BG	ABG-02-EB	EB			Aluminum, Total	43.4	B	ug/L
BG	ABG-02-EB	EB			Calcium, Total	321	B	ug/L
BG	ABG-02-EB	EB			Sodium, Total	656	B	ug/L
Inorganics								
BG	ABG-03-01		0.5	1	Aluminum, Total	8690		mg/kg
BG	ABG-03-01		0.5	1	Arsenic, Total	10.4		mg/kg
BG	ABG-03-01		0.5	1	Barium, Total	52.2		mg/kg
BG	ABG-03-01		0.5	1	Calcium, Total	3440		mg/kg
BG	ABG-03-01		0.5	1	Chromium, Total	19.4		mg/kg
BG	ABG-03-01		0.5	1	Cobalt, Total	6	B	mg/kg
BG	ABG-03-01		0.5	1	Iron, Total	12800		mg/kg
BG	ABG-03-01		0.5	1	Lead, Total	69.6	*	mg/kg
BG	ABG-03-01		0.5	1	Magnesium, Total	2650	*	mg/kg
BG	ABG-03-01		0.5	1	Manganese, Total	176		mg/kg
BG	ABG-03-01		0.5	1	Mercury, Total	0.12		mg/kg
BG	ABG-03-01		0.5	1	Nickel, Total	20		mg/kg
BG	ABG-03-01		0.5	1	Sodium, Total	349	B	mg/kg
BG	ABG-03-01		0.5	1	Vanadium, Total	38.7		mg/kg
BG	ABG-03-01		0.5	1	Zinc, Total	63.2		mg/kg
Semivolatiles								
BG	ABG-03-01		0.5	1	Benzo(B)Fluoranthene	0.053	J	mg/kg
BG	ABG-03-01		0.5	1	Bis(2-Ethylhexyl)Phthalate	0.25	J	mg/kg
BG	ABG-03-01		0.5	1	Chrysene	0.09	J	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
BG	ABG-03-01		0.5	1	Fluoranthene	0.08	J	mg/kg
BG	ABG-03-01		0.5	1	Phenanthrene	0.051	J	mg/kg
BG	ABG-03-01		0.5	1	Pyrene	0.076	J	mg/kg
Volatiles								
BG	ABG-03-01		0.5	1	Formaldehyde	0.4		mg/kg
BG	ABG-03-01		0.5	1	Toluene	0.001	J	mg/kg
Inorganics								
BG	ABG-03-05		7	9	Aluminum, Total	19800		mg/kg
BG	ABG-03-05		7	9	Arsenic, Total	6.2		mg/kg
BG	ABG-03-05		7	9	Barium, Total	59.9		mg/kg
BG	ABG-03-05		7	9	Beryllium, Total	0.52	B	mg/kg
BG	ABG-03-05		7	9	Calcium, Total	4330		mg/kg
BG	ABG-03-05		7	9	Chromium, Total	19.1		mg/kg
BG	ABG-03-05		7	9	Cobalt, Total	6.5	B	mg/kg
BG	ABG-03-05		7	9	Iron, Total	19500		mg/kg
BG	ABG-03-05		7	9	Lead, Total	3.7	*	mg/kg
BG	ABG-03-05		7	9	Magnesium, Total	3260	*	mg/kg
BG	ABG-03-05		7	9	Manganese, Total	107		mg/kg
BG	ABG-03-05		7	9	Nickel, Total	12.7		mg/kg
BG	ABG-03-05		7	9	Sodium, Total	1210	B	mg/kg
BG	ABG-03-05		7	9	Vanadium, Total	56.9		mg/kg
BG	ABG-03-05		7	9	Zinc, Total	17		mg/kg
Semivolatiles								
BG	ABG-03-05		7	9	Bis(2-Ethylhexyl)Phthalate	0.06	J	mg/kg
Volatiles								
BG	ABG-03-05		7	9	Formaldehyde	2.2		mg/kg
BG	ABG-03-05		7	9	Toluene	0.007	J	mg/kg
Inorganics								
BG	ABG-04-01		1	1.5	Aluminum, Total	7250		mg/kg
BG	ABG-04-01		1	1.5	Arsenic, Total	2.6		mg/kg
BG	ABG-04-01		1	1.5	Barium, Total	25.4	B	mg/kg
BG	ABG-04-01		1	1.5	Calcium, Total	2940		mg/kg
BG	ABG-04-01		1	1.5	Chromium, Total	10.3		mg/kg
BG	ABG-04-01		1	1.5	Cobalt, Total	6.6	B	mg/kg
BG	ABG-04-01		1	1.5	Iron, Total	12700		mg/kg
BG	ABG-04-01		1	1.5	Lead, Total	2		mg/kg
BG	ABG-04-01		1	1.5	Manganese, Total	138		mg/kg
BG	ABG-04-01		1	1.5	Nickel, Total	12.4		mg/kg
BG	ABG-04-01		1	1.5	Sodium, Total	329	B	mg/kg
BG	ABG-04-01		1	1.5	Vanadium, Total	35.4		mg/kg
BG	ABG-04-01		1	1.5	Zinc, Total	26.6		mg/kg
Volatiles								
BG	ABG-04-01		1	1.5	Formaldehyde	0.56		mg/kg
BG	ABG-04-01		1	1.5	Toluene	0.002	J	mg/kg
Inorganics								
BG	ABG-04-04		7	9	Aluminum, Total	12600		mg/kg
BG	ABG-04-04		7	9	Arsenic, Total	4.3		mg/kg
BG	ABG-04-04		7	9	Barium, Total	37.8	B	mg/kg
BG	ABG-04-04		7	9	Beryllium, Total	0.55	B	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
BG	ABG-04-04		7	9	Calcium, Total	2610		mg/kg
BG	ABG-04-04		7	9	Chromium, Total	15.1		mg/kg
BG	ABG-04-04		7	9	Cobalt, Total	4.8	B	mg/kg
BG	ABG-04-04		7	9	Iron, Total	13100		mg/kg
BG	ABG-04-04		7	9	Lead, Total	3.2	*	mg/kg
BG	ABG-04-04		7	9	Magnesium, Total	2250	*	mg/kg
BG	ABG-04-04		7	9	Manganese, Total	123		mg/kg
BG	ABG-04-04		7	9	Nickel, Total	9.8	B	mg/kg
BG	ABG-04-04		7	9	Sodium, Total	697	B	mg/kg
BG	ABG-04-04		7	9	Vanadium, Total	45.2		mg/kg
BG	ABG-04-04		7	9	Zinc, Total	12.7		mg/kg
Volatiles								
BG	ABG-04-04		7	9	Formaldehyde	1.7		mg/kg
BG	ABG-04-04		7	9	Toluene	0.006	J	mg/kg
Inorganics								
BG	ABG-05-01		1	1.5	Aluminum, Total	8430		mg/kg
BG	ABG-05-01		1	1.5	Arsenic, Total	2.2		mg/kg
BG	ABG-05-01		1	1.5	Barium, Total	32.2	B	mg/kg
BG	ABG-05-01		1	1.5	Calcium, Total	3340		mg/kg
BG	ABG-05-01		1	1.5	Chromium, Total	12.8		mg/kg
BG	ABG-05-01		1	1.5	Cobalt, Total	7.3	B	mg/kg
BG	ABG-05-01		1	1.5	Iron, Total	12600		mg/kg
BG	ABG-05-01		1	1.5	Lead, Total	2.1	*	mg/kg
BG	ABG-05-01		1	1.5	Magnesium, Total	2660	*	mg/kg
BG	ABG-05-01		1	1.5	Manganese, Total	136		mg/kg
BG	ABG-05-01		1	1.5	Nickel, Total	12		mg/kg
BG	ABG-05-01		1	1.5	Sodium, Total	375	B	mg/kg
BG	ABG-05-01		1	1.5	Vanadium, Total	38.8		mg/kg
BG	ABG-05-01		1	1.5	Zinc, Total	27.8		mg/kg
Volatiles								
BG	ABG-05-01		1	1.5	Formaldehyde	0.47		mg/kg
BG	ABG-05-01		1	1.5	Toluene	0.018		mg/kg
Inorganics								
BG	ABG-05-05		7	9	Aluminum, Total	10000		mg/kg
BG	ABG-05-05		7	9	Arsenic, Total	3.8		mg/kg
BG	ABG-05-05		7	9	Barium, Total	33.5	B	mg/kg
BG	ABG-05-05		7	9	Calcium, Total	1790		mg/kg
BG	ABG-05-05		7	9	Chromium, Total	13.9		mg/kg
BG	ABG-05-05		7	9	Cobalt, Total	4.6	B	mg/kg
BG	ABG-05-05		7	9	Iron, Total	12600		mg/kg
BG	ABG-05-05		7	9	Lead, Total	2.3	*	mg/kg
BG	ABG-05-05		7	9	Manganese, Total	129		mg/kg
BG	ABG-05-05		7	9	Nickel, Total	7.2	B	mg/kg
BG	ABG-05-05		7	9	Sodium, Total	540	B	mg/kg
BG	ABG-05-05		7	9	Vanadium, Total	47.4		mg/kg
BG	ABG-05-05		7	9	Zinc, Total	10.7		mg/kg
Volatiles								
BG	ABG-05-05		7	9	2-Butanone	0.004	J	mg/kg
BG	ABG-05-05		7	9	Formaldehyde	11		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
BG	ABG-05-05		7	9	Toluene	0.011		mg/kg
Inorganics								
BG	ABG-06-01		1	1.5	Aluminum, Total	6735		mg/kg
BG	ABG-06-01		1	1.5	Arsenic, Total	1.85	B	mg/kg
BG	ABG-06-01		1	1.5	Barium, Total	26.2	B	mg/kg
BG	ABG-06-01		1	1.5	Calcium, Total	2925		mg/kg
BG	ABG-06-01		1	1.5	Chromium, Total	11		mg/kg
BG	ABG-06-01		1	1.5	Cobalt, Total	6.75	B	mg/kg
BG	ABG-06-01		1	1.5	Copper, Total	7.3		mg/kg
BG	ABG-06-01		1	1.5	Iron, Total	12550		mg/kg
BG	ABG-06-01		1	1.5	Lead, Total	2.3		mg/kg
BG	ABG-06-01		1	1.5	Magnesium, Total	2435		mg/kg
BG	ABG-06-01		1	1.5	Manganese, Total	138		mg/kg
BG	ABG-06-01		1	1.5	Nickel, Total	11.65		mg/kg
BG	ABG-06-01		1	1.5	Sodium, Total	275.5	B	mg/kg
BG	ABG-06-01		1	1.5	Vanadium, Total	39.65		mg/kg
BG	ABG-06-01		1	1.5	Zinc, Total	25.8		mg/kg
Semivolatiles								
BG	ABG-06-01		1	1.5	Anthracene	0.31	J	mg/kg
BG	ABG-06-01		1	1.5	Benzo(A)Anthracene	0.081	J	mg/kg
BG	ABG-06-01		1	1.5	Benzo(A)Pyrene	0.087	J	mg/kg
BG	ABG-06-01		1	1.5	Benzo(B)Fluoranthene	0.081	J	mg/kg
BG	ABG-06-01		1	1.5	Benzo(GHI)Perylene	0.053	J	mg/kg
BG	ABG-06-01		1	1.5	Benzo(K)Fluoranthene	0.086	J	mg/kg
BG	ABG-06-01		1	1.5	Carbazole	0.053	J	mg/kg
BG	ABG-06-01		1	1.5	Chrysene	0.14	J	mg/kg
BG	ABG-06-01		1	1.5	Fluoranthene	0.35	J	mg/kg
BG	ABG-06-01		1	1.5	Indeno(1,2,3-CD)Pyrene	0.06	J	mg/kg
BG	ABG-06-01		1	1.5	Phenanthrene	0.31	J	mg/kg
BG	ABG-06-01		1	1.5	Pyrene	0.32	J	mg/kg
Volatiles								
BG	ABG-06-01		1	1.5	Acetone	0.011	J	mg/kg
BG	ABG-06-01		1	1.5	Formaldehyde	1.5		mg/kg
BG	ABG-06-01		1	1.5	Toluene	0.006		mg/kg
Inorganics								
BG	ABG-06-05		7	9	Aluminum, Total	18200		mg/kg
BG	ABG-06-05		7	9	Arsenic, Total	9.5		mg/kg
BG	ABG-06-05		7	9	Barium, Total	53.3	B	mg/kg
BG	ABG-06-05		7	9	Calcium, Total	3670		mg/kg
BG	ABG-06-05		7	9	Chromium, Total	17.4		mg/kg
BG	ABG-06-05		7	9	Cobalt, Total	6.9	B	mg/kg
BG	ABG-06-05		7	9	Copper, Total	17.4		mg/kg
BG	ABG-06-05		7	9	Iron, Total	22600		mg/kg
BG	ABG-06-05		7	9	Lead, Total	4		mg/kg
BG	ABG-06-05		7	9	Magnesium, Total	2830		mg/kg
BG	ABG-06-05		7	9	Manganese, Total	176		mg/kg
BG	ABG-06-05		7	9	Nickel, Total	9.8	B	mg/kg
BG	ABG-06-05		7	9	Sodium, Total	1130	B	mg/kg
BG	ABG-06-05		7	9	Vanadium, Total	65.7		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
BG	ABG-06-05		7	9	Zinc, Total	16.3		mg/kg
Volatiles								
BG	ABG-06-05		7	9	Acetone	0.003	J	mg/kg
BG	ABG-06-05		7	9	Formaldehyde	3.9		mg/kg
BG	ABG-06-05		7	9	Toluene	0.005	J	mg/kg
Inorganics								
BG	ABG-07-01		1	1.5	Aluminum, Total	9330		mg/kg
BG	ABG-07-01		1	1.5	Arsenic, Total	2.2		mg/kg
BG	ABG-07-01		1	1.5	Barium, Total	33.7	B	mg/kg
BG	ABG-07-01		1	1.5	Beryllium, Total	0.43	B	mg/kg
BG	ABG-07-01		1	1.5	Calcium, Total	3620		mg/kg
BG	ABG-07-01		1	1.5	Chromium, Total	13.2		mg/kg
BG	ABG-07-01		1	1.5	Cobalt, Total	7.5	B	mg/kg
BG	ABG-07-01		1	1.5	Iron, Total	14100		mg/kg
BG	ABG-07-01		1	1.5	Lead, Total	2.3	*	mg/kg
BG	ABG-07-01		1	1.5	Magnesium, Total	2900	*	mg/kg
BG	ABG-07-01		1	1.5	Manganese, Total	150		mg/kg
BG	ABG-07-01		1	1.5	Nickel, Total	13.6		mg/kg
BG	ABG-07-01		1	1.5	Sodium, Total	421	B	mg/kg
BG	ABG-07-01		1	1.5	Vanadium, Total	43		mg/kg
BG	ABG-07-01		1	1.5	Zinc, Total	30.1		mg/kg
Semivolatiles								
BG	ABG-07-01		1	1.5	Bis(2-Ethylhexyl)Phthalate	1.1		mg/kg
Volatiles								
BG	ABG-07-01		1	1.5	Formaldehyde	0.45		mg/kg
BG	ABG-07-01		1	1.5	Toluene	0.004	J	mg/kg
Inorganics								
BG	ABG-07-05		7	9	Aluminum, Total	15200		mg/kg
BG	ABG-07-05		7	9	Arsenic, Total	5.9		mg/kg
BG	ABG-07-05		7	9	Barium, Total	48.4		mg/kg
BG	ABG-07-05		7	9	Calcium, Total	2550		mg/kg
BG	ABG-07-05		7	9	Chromium, Total	16.9		mg/kg
BG	ABG-07-05		7	9	Cobalt, Total	5.9	B	mg/kg
BG	ABG-07-05		7	9	Iron, Total	22400		mg/kg
BG	ABG-07-05		7	9	Lead, Total	4.3	*	mg/kg
BG	ABG-07-05		7	9	Magnesium, Total	2250	*	mg/kg
BG	ABG-07-05		7	9	Manganese, Total	142		mg/kg
BG	ABG-07-05		7	9	Nickel, Total	9.3	B	mg/kg
BG	ABG-07-05		7	9	Sodium, Total	845	B	mg/kg
BG	ABG-07-05		7	9	Vanadium, Total	59		mg/kg
BG	ABG-07-05		7	9	Zinc, Total	14.1		mg/kg
Volatiles								
BG	ABG-07-05		7	9	2-Butanone	0.018	J	mg/kg
BG	ABG-07-05		7	9	Acetone	0.087		mg/kg
BG	ABG-07-05		7	9	Formaldehyde	15		mg/kg
BG	ABG-07-05		7	9	Toluene	0.006	J	mg/kg
Conventionals								
04	A04-30-01		4	6	Total Recoverable Petroleum Hydrocarbons	81		mg/kg
Volatiles								

FD= Field Duplicate
EB= Equipment Blank

Round 2 Soil Results

Rhone-Poulenc RFI

Round 2

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-30-01		4	6	2-Butanone	0.006	J	mg/kg
04	A04-30-01		4	6	Ethylbenzene	0.009	J	mg/kg
04	A04-30-01		4	6	Toluene	1.9	DJ	mg/kg
04	A04-30-01		4	6	Xylene (Total)	0.019	J	mg/kg
Volatiles								
04	A04-30-02		10	12	Methylene Chloride	0.001	J	mg/kg
04	A04-30-02		10	12	Toluene	0.031		mg/kg
Conventionals								
04	A04-31-01		0	2	Total Recoverable Petroleum Hydrocarbons	380		mg/kg
Volatiles								
04	A04-31-01		0	2	Toluene	0.039		mg/kg
Conventionals								
04	A04-31-02		11	13	Total Recoverable Petroleum Hydrocarbons	43		mg/kg
Volatiles								
04	A04-31-02		11	13	Toluene	0.004	J	mg/kg
Conventionals								
05	A05-10-02		3	5	Total Recoverable Petroleum Hydrocarbons	8200		mg/kg
Volatiles								
05	A05-10-02		3	5	2-Butanone	0.007	J	mg/kg
05	A05-10-02		3	5	Carbon Disulfide	0.007	J	mg/kg
05	A05-10-02		3	5	Ethylbenzene	0.035	J	mg/kg
05	A05-10-02		3	5	Methylene Chloride	0.006	J	mg/kg
05	A05-10-02		3	5	Toluene	29	DJ	mg/kg
05	A05-10-02		3	5	Xylene (Total)	0.14		mg/kg
Volatiles								
05	A05-10-04		7	9	2-Butanone	0.002	J	mg/kg
05	A05-10-04		7	9	Toluene	0.006	J	mg/kg
Volatiles								
05	A05-10-06		11	13	2-Butanone	0.001	J	mg/kg
05	A05-10-06		11	13	Carbon Disulfide	0.0007	J	mg/kg
05	A05-10-06		11	13	Methylene Chloride	0.0009	J	mg/kg
05	A05-10-06		11	13	Toluene	0.028		mg/kg
Volatiles								
05	A05-11-01		0	2	Toluene	0.007	J	mg/kg
Volatiles								
05	A05-11-02		10	12	2-Butanone	0.008	J	mg/kg
05	A05-11-02		10	12	Toluene	0.025		mg/kg
Volatiles								
05	A05-12-01		0	2	Toluene	0.002	J	mg/kg
Volatiles								
05	A05-12-02		10	12	2-Butanone	0.003	J	mg/kg
05	A05-12-02		10	12	Methylene Chloride	0.001	J	mg/kg
Volatiles								
05	A05-12-EB	EB			Chloroform	0.5	J	ug/L
05	A05-12-EB	EB			Toluene	10	J	ug/L
Volatiles								
05	A05-13-01		2	4	2-Butanone	0.003	J	mg/kg
05	A05-13-01		2	4	Methylene Chloride	0.002	J	mg/kg
05	A05-13-01		2	4	Toluene	0.72	DE	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 2

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Volatiles								
05	A05-13-02		6	8	2-Butanone	0.003	J	mg/kg
05	A05-13-02		6	8	Carbon Disulfide	0.001	J	mg/kg
05	A05-13-02		6	8	Toluene	0.021		mg/kg
05	A05-13-02		6	8	Xylene (Total)	0.002	J	mg/kg
Volatiles								
05	A05-14-01		1	3	Methylene Chloride	0.001	J	mg/kg
05	A05-14-01		1	3	Toluene	0.007	J	mg/kg
Volatiles								
05	A05-14-06		11	13	2-Butanone	0.003	J	mg/kg
Inorganics								
06	MS-03-01		0	0.5	Mercury, Total	0.13		mg/kg
Inorganics								
06	MS-04-01		0	0.5	Mercury, Total	0.4763		mg/kg
Inorganics								
06	MS-07-01		0	0.5	Mercury, Total	5.5		mg/kg
Inorganics								
06	MS-07-02		1.5	2	Mercury, Total	6.9712	*	mg/kg
Inorganics								
06	MS-08-02		1.5	2	Mercury, Total	4.8	*	mg/kg
Inorganics								
06	MS-09-01		0	0.5	Mercury, Total	0.58		mg/kg
Inorganics								
06	MS-09-02		1.5	2	Mercury, Total	3.2	*	mg/kg
Inorganics								
06	MS-10-02		1.5	2	Mercury, Total	3.1	*	mg/kg
Inorganics								
06	MS-12-01		0	0.5	Mercury, Total	0.4		mg/kg
Inorganics								
06	MS-13-01		0	0.5	Mercury, Total	0.34		mg/kg
Inorganics								
06	MS-14-01		0	0.5	Mercury, Total	6.1		mg/kg
Inorganics								
06	MS-15-01		0	0.5	Mercury, Total	4.4		mg/kg
Inorganics								
06	MS-16-01		0	0.5	Mercury, Total	7		mg/kg
Inorganics								
06	MS-17-01		0	0.5	Mercury, Total	0.89		mg/kg
Inorganics								
06	MS-18-01		0	0.5	Mercury, Total	0.36		mg/kg
Inorganics								
06	MS-19-01		0	0.5	Mercury, Total	1.8		mg/kg
Inorganics								
06	MS-20-01		0	0.5	Mercury, Total	2.9		mg/kg
Inorganics								
06	MS-22-01		0	0.5	Mercury, Total	1.2		mg/kg
Inorganics								
06	MS-23-01		0	0.5	Mercury, Total	0.27		mg/kg
Inorganics								

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 2

Detected Soil Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
06	MS-24-01		0	0.5	Mercury, Total	11.2		mg/kg
Inorganics								
06	MS-25-01		0	0.5	Mercury, Total	0.16		mg/kg
Inorganics								
06	MS-27-01		0	0.5	Mercury, Total	2		mg/kg
Inorganics								
06	MS-28-01		0	0.5	Mercury, Total	1.3		mg/kg
Inorganics								
06	MS-29-01		0	0.5	Mercury, Total	3.2		mg/kg
Inorganics								
06	MS-30-01		0	0.5	Mercury, Total	6.6		mg/kg
Inorganics								
06	MS-31-01		0	0.5	Mercury, Total	1.5		mg/kg
Inorganics								
06	MS-32-01		0	0.5	Mercury, Total	5		mg/kg
Inorganics								
06	MS-33-01		0	0.5	Mercury, Total	0.53		mg/kg
Inorganics								
06	MS-34-01		0	0.5	Mercury, Total	1.5		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Round 1 Groundwater Results

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
Conventionals							
	EB-01		EB	Total Dissolved Solids	14		mg/L
Inorganics							
	EB-01		EB	Aluminum, Dissolved	48.3	B	ug/L
	EB-01		EB	Aluminum, Total	44.2	B	ug/L
	EB-01		EB	Calcium, Dissolved	292	B	ug/L
	EB-01		EB	Calcium, Total	284	B	ug/L
	EB-01		EB	Iron, Dissolved	51.3	B	ug/L
	EB-01		EB	Iron, Total	43.3	B	ug/L
	EB-01		EB	Selenium, Dissolved	3.9	BW	ug/L
	EB-01		EB	Sodium, Dissolved	549	B	ug/L
	EB-01		EB	Sodium, Total	547	B	ug/L
Volatiles							
	EB-01		EB	Formaldehyde	55		ug/L
Volatiles							
	TB-07		TB	Toluene	3		ug/L
Volatiles							
	TB-10		TB	Toluene	0.3	J	ug/L
Conventionals							
01	09-MWA2	MW-A02		Alkalinity (As CACO3)	492		mg/L
01	09-MWA2	MW-A02		Bicarbonate (From Alkalinity)	492		mg/L
01	09-MWA2	MW-A02		Chloride	14.1	D	mg/L
01	09-MWA2	MW-A02		pH, (field)	6.8		-log+H
01	09-MWA2	MW-A02		Specific Conductance	780		imhos/cn
01	09-MWA2	MW-A02		Sulfate	0.113		mg/L
01	09-MWA2	MW-A02		Temperature	13.9		°C
01	09-MWA2	MW-A02		Total Dissolved Solids	699		mg/L
01	09-MWA2	MW-A02		Total Organic Carbon	27		mg/L
Inorganics							
01	09-MWA2	MW-A02		Aluminum, Dissolved	129	B	ug/L
01	09-MWA2	MW-A02		Aluminum, Total	11900		ug/L
01	09-MWA2	MW-A02		Arsenic, Dissolved	49.9		ug/L
01	09-MWA2	MW-A02		Arsenic, Total	43		ug/L
01	09-MWA2	MW-A02		Barium, Total	71.9	B	ug/L
01	09-MWA2	MW-A02		Calcium, Dissolved	8180		ug/L
01	09-MWA2	MW-A02		Calcium, Total	10200		ug/L
01	09-MWA2	MW-A02		Chromium, Total	17.8		ug/L
01	09-MWA2	MW-A02		Copper, Total	37.5		ug/L
01	09-MWA2	MW-A02		Iron, Dissolved	37400		ug/L
01	09-MWA2	MW-A02		Iron, Total	47800		ug/L
01	09-MWA2	MW-A02		Lead, Total	7.3		ug/L
01	09-MWA2	MW-A02		Magnesium, Dissolved	16400		ug/L
01	09-MWA2	MW-A02		Magnesium, Total	18400		ug/L
01	09-MWA2	MW-A02		Manganese, Dissolved	1390		ug/L
01	09-MWA2	MW-A02		Manganese, Total	1500		ug/L
01	09-MWA2	MW-A02		Nickel, Total	24.9	B	ug/L
01	09-MWA2	MW-A02		Potassium, Dissolved	7250		ug/L
01	09-MWA2	MW-A02		Potassium, Total	8200		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
01	09-MWA2	MW-A02		Sodium, Dissolved	178000		ug/L
01	09-MWA2	MW-A02		Sodium, Total	178000		ug/L
01	09-MWA2	MW-A02		Vanadium, Dissolved	82.3		ug/L
01	09-MWA2	MW-A02		Vanadium, Total	134		ug/L
01	09-MWA2	MW-A02		Zinc, Total	35.7		ug/L
Semivolatiles							
01	09-MWA2	MW-A02		Bis(2-Chloroethyl)Ether	2	J	ug/L
01	09-MWA2	MW-A02		Bis(2-Ethylhexyl)Phthalate	1	J	ug/L
01	09-MWA2	MW-A02		Vanillin	1	J	ug/L
Volatiles							
01	09-MWA2	MW-A02		1,1-Dichloroethane	2		ug/L
01	09-MWA2	MW-A02		Formaldehyde	450		ug/L
Conventionals							
01	10-DM3A	DM-03A		Alkalinity (As CACO3)	192		mg/L
01	10-DM3A	DM-03A		Bicarbonate (From Alkalinity)	192		mg/L
01	10-DM3A	DM-03A		Chloride	2.82		mg/L
01	10-DM3A	DM-03A		pH, (field)	6.32		-log+H
01	10-DM3A	DM-03A		Specific Conductance	282		umhos/cm
01	10-DM3A	DM-03A		Sulfate	10.8	D	mg/L
01	10-DM3A	DM-03A		Sulfide As S	0.80799		mg/L
01	10-DM3A	DM-03A		Temperature	13.1		°C
01	10-DM3A	DM-03A		Total Dissolved Solids	272		mg/L
01	10-DM3A	DM-03A		Total Organic Carbon	6.12		mg/L
Inorganics							
01	10-DM3A	DM-03A		Aluminum, Total	26500		ug/L
01	10-DM3A	DM-03A		Arsenic, Dissolved	4	BW	ug/L
01	10-DM3A	DM-03A		Arsenic, Total	16.8		ug/L
01	10-DM3A	DM-03A		Barium, Total	101	B	ug/L
01	10-DM3A	DM-03A		Calcium, Dissolved	4320	B	ug/L
01	10-DM3A	DM-03A		Calcium, Total	10400		ug/L
01	10-DM3A	DM-03A		Chromium, Total	39.3		ug/L
01	10-DM3A	DM-03A		Cobalt, Total	17.5	B	ug/L
01	10-DM3A	DM-03A		Copper, Total	94.4		ug/L
01	10-DM3A	DM-03A		Iron, Dissolved	1860		ug/L
01	10-DM3A	DM-03A		Iron, Total	36700		ug/L
01	10-DM3A	DM-03A		Lead, Total	31.1		ug/L
01	10-DM3A	DM-03A		Magnesium, Dissolved	6140		ug/L
01	10-DM3A	DM-03A		Magnesium, Total	14400		ug/L
01	10-DM3A	DM-03A		Manganese, Dissolved	246		ug/L
01	10-DM3A	DM-03A		Manganese, Total	694		ug/L
01	10-DM3A	DM-03A		Nickel, Total	64.3		ug/L
01	10-DM3A	DM-03A		Potassium, Dissolved	12200		ug/L
01	10-DM3A	DM-03A		Potassium, Total	14300		ug/L
01	10-DM3A	DM-03A		Sodium, Dissolved	66400		ug/L
01	10-DM3A	DM-03A		Sodium, Total	68300		ug/L
01	10-DM3A	DM-03A		Vanadium, Total	119		ug/L
01	10-DM3A	DM-03A		Zinc, Total	98.8		ug/L
Semivolatiles							

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
01	10-DM3A	DM-03A		Vanillin	1	J	ug/L
Conventionals							
01	11-DM3B	DM-03B		Alkalinity (As CACO3)	444		mg/L
01	11-DM3B	DM-03B		Bicarbonate (From Alkalinity)	444		mg/L
01	11-DM3B	DM-03B		Chloride	241	D	mg/L
01	11-DM3B	DM-03B		pH, (field)	8.59		-log+H
01	11-DM3B	DM-03B		Specific Conductance	1290		mhos/cn
01	11-DM3B	DM-03B		Sulfate	3.44		mg/L
01	11-DM3B	DM-03B		Temperature	10.7		°C
01	11-DM3B	DM-03B		Total Dissolved Solids	965		mg/L
01	11-DM3B	DM-03B		Total Organic Carbon	11.03		mg/L
Inorganics							
01	11-DM3B	DM-03B		Aluminum, Total	413		ug/L
01	11-DM3B	DM-03B		Arsenic, Dissolved	13.9		ug/L
01	11-DM3B	DM-03B		Arsenic, Total	13.2		ug/L
01	11-DM3B	DM-03B		Calcium, Dissolved	5930		ug/L
01	11-DM3B	DM-03B		Calcium, Total	5600		ug/L
01	11-DM3B	DM-03B		Iron, Dissolved	618		ug/L
01	11-DM3B	DM-03B		Iron, Total	1060		ug/L
01	11-DM3B	DM-03B		Lead, Dissolved	2	B	ug/L
01	11-DM3B	DM-03B		Lead, Total	3.6		ug/L
01	11-DM3B	DM-03B		Magnesium, Dissolved	7020		ug/L
01	11-DM3B	DM-03B		Magnesium, Total	7240		ug/L
01	11-DM3B	DM-03B		Manganese, Dissolved	30.4		ug/L
01	11-DM3B	DM-03B		Manganese, Total	33.6		ug/L
01	11-DM3B	DM-03B		Potassium, Dissolved	12600		ug/L
01	11-DM3B	DM-03B		Potassium, Total	13300		ug/L
01	11-DM3B	DM-03B		Sodium, Dissolved	323000		ug/L
01	11-DM3B	DM-03B		Sodium, Total	343000		ug/L
01	11-DM3B	DM-03B		Vanadium, Dissolved	31.1	B	ug/L
01	11-DM3B	DM-03B		Vanadium, Total	33.5	B	ug/L
01	11-DM3B	DM-03B		Zinc, Total	13.8	B	ug/L
Semivolatiles							
01	11-DM3B	DM-03B		Bis(2-Ethylhexyl)Phthalate	2	J	ug/L
Volatiles							
01	11-DM3B	DM-03B		Acetone	370	DJ	ug/L
01	11-DM3B	DM-03B		Toluene	3		ug/L
Conventionals							
01	16-MWA9	MW-A09		Alkalinity (As CACO3)	84		mg/L
01	16-MWA9	MW-A09		Bicarbonate (From Alkalinity)	84		mg/L
01	16-MWA9	MW-A09		Chloride	1.84		mg/L
01	16-MWA9	MW-A09		pH, (field)	7.4		-log+H
01	16-MWA9	MW-A09		Specific Conductance	145		mhos/cn
01	16-MWA9	MW-A09		Sulfate	10.7	D	mg/L
01	16-MWA9	MW-A09		Sulfide As S	1.29		mg/L
01	16-MWA9	MW-A09		Temperature	13.1		°C
01	16-MWA9	MW-A09		Total Dissolved Solids	110		mg/L
01	16-MWA9	MW-A09		Total Organic Carbon	11.2		mg/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
Inorganics							
01	16-MWA9	MW-A09		Aluminum, Total	40700		ug/L
01	16-MWA9	MW-A09		Arsenic, Total	13.6		ug/L
01	16-MWA9	MW-A09		Barium, Total	185	B	ug/L
01	16-MWA9	MW-A09		Calcium, Dissolved	6260		ug/L
01	16-MWA9	MW-A09		Calcium, Total	15600		ug/L
01	16-MWA9	MW-A09		Chromium, Total	41.6		ug/L
01	16-MWA9	MW-A09		Cobalt, Total	20.7	B	ug/L
01	16-MWA9	MW-A09		Copper, Total	119		ug/L
01	16-MWA9	MW-A09		Iron, Dissolved	930		ug/L
01	16-MWA9	MW-A09		Iron, Total	69300		ug/L
01	16-MWA9	MW-A09		Lead, Total	23.8		ug/L
01	16-MWA9	MW-A09		Magnesium, Dissolved	6750		ug/L
01	16-MWA9	MW-A09		Magnesium, Total	14200		ug/L
01	16-MWA9	MW-A09		Manganese, Dissolved	419		ug/L
01	16-MWA9	MW-A09		Manganese, Total	1960		ug/L
01	16-MWA9	MW-A09		Mercury, Total	0.22		ug/L
01	16-MWA9	MW-A09		Nickel, Total	48.7		ug/L
01	16-MWA9	MW-A09		Potassium, Dissolved	5120		ug/L
01	16-MWA9	MW-A09		Potassium, Total	7640		ug/L
01	16-MWA9	MW-A09		Sodium, Dissolved	21700		ug/L
01	16-MWA9	MW-A09		Sodium, Total	24300		ug/L
01	16-MWA9	MW-A09		Vanadium, Total	161		ug/L
01	16-MWA9	MW-A09		Zinc, Total	102		ug/L
Volatiles							
01	16-MWA9	MW-A09		Formaldehyde	290		ug/L
Conventionals							
02	12-MWB6	MW-B06		Alkalinity (As CACO3)	450		mg/L
02	12-MWB6	MW-B06		Bicarbonate (From Alkalinity)	450		mg/L
02	12-MWB6	MW-B06		Chloride	33.2	D	mg/L
02	12-MWB6	MW-B06		Nitrogen, Kjeldahl	6.72		mg/L
02	12-MWB6	MW-B06		pH, (field)	6.79		-log+H
02	12-MWB6	MW-B06		Phosphorus	5.84		mg/L
02	12-MWB6	MW-B06		Specific Conductance	790		umhos/cm
02	12-MWB6	MW-B06		Sulfate	0.715		mg/L
02	12-MWB6	MW-B06		Temperature	14.2		°C
02	12-MWB6	MW-B06		Total Dissolved Solids	653		mg/L
02	12-MWB6	MW-B06		Total Organic Carbon	27.3		mg/L
Inorganics							
02	12-MWB6	MW-B06		Aluminum, Dissolved	476		ug/L
02	12-MWB6	MW-B06		Aluminum, Total	19700		ug/L
02	12-MWB6	MW-B06		Arsenic, Total	5.6	BW	ug/L
02	12-MWB6	MW-B06		Barium, Total	84.7	B	ug/L
02	12-MWB6	MW-B06		Calcium, Dissolved	6770		ug/L
02	12-MWB6	MW-B06		Calcium, Total	12400		ug/L
02	12-MWB6	MW-B06		Chromium, Total	33.3		ug/L
02	12-MWB6	MW-B06		Copper, Total	304		ug/L
02	12-MWB6	MW-B06		Iron, Dissolved	9750		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
02	12-MWB6	MW-B06		Iron, Total	25800		ug/L
02	12-MWB6	MW-B06		Lead, Total	7.8		ug/L
02	12-MWB6	MW-B06		Magnesium, Dissolved	4630	B	ug/L
02	12-MWB6	MW-B06		Magnesium, Total	7790		ug/L
02	12-MWB6	MW-B06		Manganese, Dissolved	274		ug/L
02	12-MWB6	MW-B06		Manganese, Total	431		ug/L
02	12-MWB6	MW-B06		Nickel, Total	26.6	B	ug/L
02	12-MWB6	MW-B06		Potassium, Dissolved	7420		ug/L
02	12-MWB6	MW-B06		Potassium, Total	8800		ug/L
02	12-MWB6	MW-B06		Sodium, Dissolved	191000		ug/L
02	12-MWB6	MW-B06		Sodium, Total	199000		ug/L
02	12-MWB6	MW-B06		Vanadium, Dissolved	42.5	B	ug/L
02	12-MWB6	MW-B06		Vanadium, Total	105		ug/L
02	12-MWB6	MW-B06		Zinc, Total	48.8		ug/L
Pesticides/PCB's							
02	12-MWB6	MW-B06		Endosulfan Sulfate	0.03	J	ug/L
Semivolatiles							
02	12-MWB6	MW-B06		Acenaphthene	6	J	ug/L
02	12-MWB6	MW-B06		Bis(2-Ethylhexyl)Phthalate	2	J	ug/L
02	12-MWB6	MW-B06		Dibenzofuran	2	J	ug/L
02	12-MWB6	MW-B06		Fluorene	2	J	ug/L
02	12-MWB6	MW-B06		Naphthalene	2	J	ug/L
Volatiles							
02	12-MWB6	MW-B06		Formaldehyde	160		ug/L
Conventionals							
02	17-DM4	DM-04		Alkalinity (As CACO3)	475		mg/L
02	17-DM4	DM-04		Bicarbonate (From Alkalinity)	475		mg/L
02	17-DM4	DM-04		Chloride	120	D	mg/L
02	17-DM4	DM-04		Nitrate Nitrogen	0.133		mg/L
02	17-DM4	DM-04		Nitrogen, Kjeldahl	3.5		mg/L
02	17-DM4	DM-04		pH, (field)	7		-log+H
02	17-DM4	DM-04		Phosphorus	2.36		mg/L
02	17-DM4	DM-04		Specific Conductance	910		umhos/cm
02	17-DM4	DM-04		Sulfate	9.49	D	mg/L
02	17-DM4	DM-04		Sulfide As S	1.08		mg/L
02	17-DM4	DM-04		Temperature	12.3		°C
02	17-DM4	DM-04		Total Dissolved Solids	821		mg/L
02	17-DM4	DM-04		Total Organic Carbon	47		mg/L
Inorganics							
02	17-DM4	DM-04		Aluminum, Dissolved	181	B	ug/L
02	17-DM4	DM-04		Aluminum, Total	1800		ug/L
02	17-DM4	DM-04		Arsenic, Total	2.1	B	ug/L
02	17-DM4	DM-04		Barium, Dissolved	25	B	ug/L
02	17-DM4	DM-04		Barium, Total	30.9	B	ug/L
02	17-DM4	DM-04		Calcium, Dissolved	27800		ug/L
02	17-DM4	DM-04		Calcium, Total	25800		ug/L
02	17-DM4	DM-04		Chromium, Dissolved	14.8		ug/L
02	17-DM4	DM-04		Chromium, Total	17.8		ug/L

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EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
02	17-DM4	DM-04		Copper, Total	11.3	B	ug/L
02	17-DM4	DM-04		Iron, Dissolved	24200		ug/L
02	17-DM4	DM-04		Iron, Total	25300		ug/L
02	17-DM4	DM-04		Lead, Total	2	B	ug/L
02	17-DM4	DM-04		Magnesium, Dissolved	19200		ug/L
02	17-DM4	DM-04		Magnesium, Total	18000		ug/L
02	17-DM4	DM-04		Manganese, Dissolved	814		ug/L
02	17-DM4	DM-04		Manganese, Total	782		ug/L
02	17-DM4	DM-04		Potassium, Dissolved	5330		ug/L
02	17-DM4	DM-04		Potassium, Total	4720	B	ug/L
02	17-DM4	DM-04		Sodium, Dissolved	229000		ug/L
02	17-DM4	DM-04		Sodium, Total	226000		ug/L
02	17-DM4	DM-04		Vanadium, Dissolved	99.4		ug/L
02	17-DM4	DM-04		Vanadium, Total	100		ug/L
02	17-DM4	DM-04		Zinc, Total	22.2		ug/L
Volatiles							
02	17-DM4	DM-04		Formaldehyde	350		ug/L
Conventionals							
02	18-MWB2	MW-B02		Alkalinity (As CACO3)	616		mg/L
02	18-MWB2	MW-B02		Bicarbonate (From Alkalinity)	616		mg/L
02	18-MWB2	MW-B02		Chloride	26.2	D	mg/L
02	18-MWB2	MW-B02		Nitrogen, Kjeldahl	4.76		mg/L
02	18-MWB2	MW-B02		Orthophosphate	0.179		mg/L
02	18-MWB2	MW-B02		pH, (field)	8.3		-log+H
02	18-MWB2	MW-B02		Phosphorus	3.69		mg/L
02	18-MWB2	MW-B02		Specific Conductance	1210		umhos/cn
02	18-MWB2	MW-B02		Sulfate	0.481		mg/L
02	18-MWB2	MW-B02		Temperature	12.9		°C
02	18-MWB2	MW-B02		Total Dissolved Solids	984		mg/L
02	18-MWB2	MW-B02		Total Organic Carbon	85.8		mg/L
Inorganics							
02	18-MWB2	MW-B02		Aluminum, Dissolved	549.5		ug/L
02	18-MWB2	MW-B02		Aluminum, Total	40300		ug/L
02	18-MWB2	MW-B02		Arsenic, Dissolved	4.5	B	ug/L
02	18-MWB2	MW-B02		Arsenic, Total	13.6		ug/L
02	18-MWB2	MW-B02		Barium, Dissolved	59.9	B	ug/L
02	18-MWB2	MW-B02		Barium, Total	253.5		ug/L
02	18-MWB2	MW-B02		Beryllium, Total	2.4	B	ug/L
02	18-MWB2	MW-B02		Calcium, Dissolved	21700		ug/L
02	18-MWB2	MW-B02		Calcium, Total	37350		ug/L
02	18-MWB2	MW-B02		Chromium, Dissolved	29.7		ug/L
02	18-MWB2	MW-B02		Chromium, Total	105.5		ug/L
02	18-MWB2	MW-B02		Cobalt, Total	26.1	B	ug/L
02	18-MWB2	MW-B02		Copper, Dissolved	8.4	B	ug/L
02	18-MWB2	MW-B02		Copper, Total	4290		ug/L
02	18-MWB2	MW-B02		Iron, Dissolved	14800		ug/L
02	18-MWB2	MW-B02		Iron, Total	61000		ug/L
02	18-MWB2	MW-B02		Lead, Total	174.5		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
02	18-MWB2	MW-B02		Magnesium, Dissolved	5865		ug/L
02	18-MWB2	MW-B02		Magnesium, Total	17700		ug/L
02	18-MWB2	MW-B02		Manganese, Dissolved	532		ug/L
02	18-MWB2	MW-B02		Manganese, Total	1010		ug/L
02	18-MWB2	MW-B02		Mercury, Total	4.7		ug/L
02	18-MWB2	MW-B02		Nickel, Total	85.95		ug/L
02	18-MWB2	MW-B02		Potassium, Dissolved	4040	B	ug/L
02	18-MWB2	MW-B02		Potassium, Total	7015		ug/L
02	18-MWB2	MW-B02		Sodium, Dissolved	251500		ug/L
02	18-MWB2	MW-B02		Sodium, Total	263500		ug/L
02	18-MWB2	MW-B02		Vanadium, Dissolved	157		ug/L
02	18-MWB2	MW-B02		Vanadium, Total	267.5		ug/L
02	18-MWB2	MW-B02		Zinc, Dissolved	13.9	B	ug/L
02	18-MWB2	MW-B02		Zinc, Total	1605		ug/L
Semivolatiles							
02	18-MWB2	MW-B02		Chrysene	1	J	ug/L
02	18-MWB2	MW-B02		Fluoranthene	2	J	ug/L
02	18-MWB2	MW-B02		Pyrene	2	J	ug/L
Conventionals							
02	19-DM5	DM-05		Alkalinity (As CACO3)	3110		mg/L
02	19-DM5	DM-05		Bicarbonate (From Alkalinity)	3110		mg/L
02	19-DM5	DM-05		Chloride	55.1	D	mg/L
02	19-DM5	DM-05		Nitrogen, Kjeldahl	35.8		mg/L
02	19-DM5	DM-05		Orthophosphate	5.81	D	mg/L
02	19-DM5	DM-05		pH, (field)	7.1		-log+H
02	19-DM5	DM-05		Phosphorus	22.5		mg/L
02	19-DM5	DM-05		Specific Conductance	3900		umhos/cm
02	19-DM5	DM-05		Sulfate	0.267		mg/L
02	19-DM5	DM-05		Sulfide As S	0.472		mg/L
02	19-DM5	DM-05		Temperature	13.5		°C
02	19-DM5	DM-05		Total Dissolved Solids	5340		mg/L
02	19-DM5	DM-05		Total Organic Carbon	786		mg/L
Inorganics							
02	19-DM5	DM-05		Aluminum, Dissolved	6220		ug/L
02	19-DM5	DM-05		Aluminum, Total	7150		ug/L
02	19-DM5	DM-05		Arsenic, Dissolved	31.6		ug/L
02	19-DM5	DM-05		Arsenic, Total	56.8	S	ug/L
02	19-DM5	DM-05		Barium, Dissolved	337		ug/L
02	19-DM5	DM-05		Barium, Total	334		ug/L
02	19-DM5	DM-05		Beryllium, Dissolved	9.9		ug/L
02	19-DM5	DM-05		Beryllium, Total	9.9		ug/L
02	19-DM5	DM-05		Calcium, Dissolved	65100		ug/L
02	19-DM5	DM-05		Calcium, Total	63400		ug/L
02	19-DM5	DM-05		Chromium, Dissolved	365		ug/L
02	19-DM5	DM-05		Chromium, Total	353		ug/L
02	19-DM5	DM-05		Cobalt, Dissolved	36.8	B	ug/L
02	19-DM5	DM-05		Cobalt, Total	35	B	ug/L
02	19-DM5	DM-05		Copper, Dissolved	49.9		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
02	19-DM5	DM-05		Copper, Total	47.3		ug/L
02	19-DM5	DM-05		Iron, Dissolved	53900		ug/L
02	19-DM5	DM-05		Iron, Total	53500		ug/L
02	19-DM5	DM-05		Lead, Dissolved	2.2	BW	ug/L
02	19-DM5	DM-05		Lead, Total	3.1	W	ug/L
02	19-DM5	DM-05		Magnesium, Dissolved	41100		ug/L
02	19-DM5	DM-05		Magnesium, Total	40400		ug/L
02	19-DM5	DM-05		Manganese, Dissolved	734		ug/L
02	19-DM5	DM-05		Manganese, Total	717		ug/L
02	19-DM5	DM-05		Nickel, Dissolved	43.2		ug/L
02	19-DM5	DM-05		Nickel, Total	40.4		ug/L
02	19-DM5	DM-05		Potassium, Dissolved	10200		ug/L
02	19-DM5	DM-05		Potassium, Total	9840		ug/L
02	19-DM5	DM-05		Silver, Dissolved	23.5		ug/L
02	19-DM5	DM-05		Silver, Total	21.5		ug/L
02	19-DM5	DM-05		Sodium, Dissolved	1410000		ug/L
02	19-DM5	DM-05		Sodium, Total	1410000		ug/L
02	19-DM5	DM-05		Vanadium, Dissolved	1670		ug/L
02	19-DM5	DM-05		Vanadium, Total	1630		ug/L
02	19-DM5	DM-05		Zinc, Dissolved	20		ug/L
02	19-DM5	DM-05		Zinc, Total	18.8	B	ug/L
Semivolatiles							
02	19-DM5	DM-05		Benzo(A)Pyrene	6	J	ug/L
Conventionals							
02	20-MWB20	MW-B05	FD	Alkalinity (As CACO3)	236		mg/L
02	20-MWB20	MW-B05	FD	Bicarbonate (From Alkalinity)	236		mg/L
02	20-MWB20	MW-B05	FD	Chloride	20.2	D	mg/L
02	20-MWB20	MW-B05	FD	Nitrogen, Kjeldahl	1.96		mg/L
02	20-MWB20	MW-B05	FD	Orthophosphate	0.26		mg/L
02	20-MWB20	MW-B05	FD	Phosphorus	2.53		mg/L
02	20-MWB20	MW-B05	FD	Sulfate	2.17		mg/L
02	20-MWB20	MW-B05	FD	Sulfide As S	0.248		mg/L
02	20-MWB20	MW-B05	FD	Total Dissolved Solids	555		mg/L
02	20-MWB20	MW-B05	FD	Total Organic Carbon	31.8		mg/L
Inorganics							
02	20-MWB20	MW-B05	FD	Aluminum, Dissolved	377		ug/L
02	20-MWB20	MW-B05	FD	Aluminum, Total	30300		ug/L
02	20-MWB20	MW-B05	FD	Arsenic, Dissolved	2.9	B	ug/L
02	20-MWB20	MW-B05	FD	Arsenic, Total	12.3	S	ug/L
02	20-MWB20	MW-B05	FD	Barium, Total	91.8	B	ug/L
02	20-MWB20	MW-B05	FD	Calcium, Dissolved	9440		ug/L
02	20-MWB20	MW-B05	FD	Calcium, Total	16500		ug/L
02	20-MWB20	MW-B05	FD	Chromium, Dissolved	11.9		ug/L
02	20-MWB20	MW-B05	FD	Chromium, Total	41.6		ug/L
02	20-MWB20	MW-B05	FD	Cobalt, Total	25.7	B	ug/L
02	20-MWB20	MW-B05	FD	Copper, Total	96.9		ug/L
02	20-MWB20	MW-B05	FD	Iron, Dissolved	4850		ug/L
02	20-MWB20	MW-B05	FD	Iron, Total	37500		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
02	20-MWB20	MW-B05	FD	Lead, Total	15.9		ug/L
02	20-MWB20	MW-B05	FD	Magnesium, Dissolved	7110		ug/L
02	20-MWB20	MW-B05	FD	Magnesium, Total	12000		ug/L
02	20-MWB20	MW-B05	FD	Manganese, Dissolved	146		ug/L
02	20-MWB20	MW-B05	FD	Manganese, Total	338		ug/L
02	20-MWB20	MW-B05	FD	Nickel, Total	40.4		ug/L
02	20-MWB20	MW-B05	FD	Potassium, Dissolved	2760	B	ug/L
02	20-MWB20	MW-B05	FD	Potassium, Total	4590	B	ug/L
02	20-MWB20	MW-B05	FD	Sodium, Dissolved	100000		ug/L
02	20-MWB20	MW-B05	FD	Sodium, Total	102000		ug/L
02	20-MWB20	MW-B05	FD	Vanadium, Dissolved	101		ug/L
02	20-MWB20	MW-B05	FD	Vanadium, Total	207		ug/L
02	20-MWB20	MW-B05	FD	Zinc, Total	59		ug/L
Volatiles							
02	20-MWB20	MW-B05	FD	Benzene	5		ug/L
Conventionals							
02	21-MWB5	MW-B05		Alkalinity (As CACO3)	240		mg/L
02	21-MWB5	MW-B05		Bicarbonate (From Alkalinity)	240		mg/L
02	21-MWB5	MW-B05		Chloride	20.3	D	mg/L
02	21-MWB5	MW-B05		Nitrogen, Kjeldahl	1.82		mg/L
02	21-MWB5	MW-B05		Orthophosphate	0.259		mg/L
02	21-MWB5	MW-B05		pH, (field)	7.6		-log+H
02	21-MWB5	MW-B05		Phosphorus	2.3		mg/L
02	21-MWB5	MW-B05		Specific Conductance	380		umhos/cm
02	21-MWB5	MW-B05		Sulfate	1.5		mg/L
02	21-MWB5	MW-B05		Temperature	13		°C
02	21-MWB5	MW-B05		Total Dissolved Solids	557		mg/L
02	21-MWB5	MW-B05		Total Organic Carbon	31.8		mg/L
Inorganics							
02	21-MWB5	MW-B05		Aluminum, Dissolved	601		ug/L
02	21-MWB5	MW-B05		Aluminum, Total	26700		ug/L
02	21-MWB5	MW-B05		Arsenic, Dissolved	2.6	BW	ug/L
02	21-MWB5	MW-B05		Arsenic, Total	12.6	W	ug/L
02	21-MWB5	MW-B05		Barium, Total	81.5	B	ug/L
02	21-MWB5	MW-B05		Calcium, Dissolved	9400		ug/L
02	21-MWB5	MW-B05		Calcium, Total	15300		ug/L
02	21-MWB5	MW-B05		Chromium, Dissolved	11.9		ug/L
02	21-MWB5	MW-B05		Chromium, Total	44.5		ug/L
02	21-MWB5	MW-B05		Cobalt, Total	24.6	B	ug/L
02	21-MWB5	MW-B05		Copper, Total	96.3		ug/L
02	21-MWB5	MW-B05		Iron, Dissolved	5050		ug/L
02	21-MWB5	MW-B05		Iron, Total	37300		ug/L
02	21-MWB5	MW-B05		Lead, Total	17.4		ug/L
02	21-MWB5	MW-B05		Magnesium, Dissolved	7250		ug/L
02	21-MWB5	MW-B05		Magnesium, Total	11900		ug/L
02	21-MWB5	MW-B05		Manganese, Dissolved	146		ug/L
02	21-MWB5	MW-B05		Manganese, Total	336		ug/L
02	21-MWB5	MW-B05		Nickel, Total	44.4		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
02	21-MWB5	MW-B05		Potassium, Total	4280	B	ug/L
02	21-MWB5	MW-B05		Sodium, Dissolved	101000		ug/L
02	21-MWB5	MW-B05		Sodium, Total	99100		ug/L
02	21-MWB5	MW-B05		Vanadium, Dissolved	103		ug/L
02	21-MWB5	MW-B05		Vanadium, Total	208		ug/L
02	21-MWB5	MW-B05		Zinc, Total	60.5		ug/L
Volatiles							
02	21-MWB5	MW-B05		Benzene	5		ug/L
Conventionals							
02	31-MWB4	MW-B04		Alkalinity (As CACO3)	638		mg/L
02	31-MWB4	MW-B04		Bicarbonate (From Alkalinity)	638		mg/L
02	31-MWB4	MW-B04		Chloride	329	D	mg/L
02	31-MWB4	MW-B04		Nitrate Nitrogen	0.316		mg/L
02	31-MWB4	MW-B04		Nitrogen, Kjeldahl	9.8		mg/L
02	31-MWB4	MW-B04		Orthophosphate	17.8	D	mg/L
02	31-MWB4	MW-B04		pH, (field)	7.9		-log+H
02	31-MWB4	MW-B04		Phosphorus	15.9		mg/L
02	31-MWB4	MW-B04		Specific Conductance	1600		mhos/cn
02	31-MWB4	MW-B04		Sulfate	0.527		mg/L
02	31-MWB4	MW-B04		Sulfide As S	0.248		mg/L
02	31-MWB4	MW-B04		Temperature	11.4		°C
02	31-MWB4	MW-B04		Total Dissolved Solids	1460		mg/L
02	31-MWB4	MW-B04		Total Organic Carbon	21.1		mg/L
Inorganics							
02	31-MWB4	MW-B04		Aluminum, Dissolved	951		ug/L
02	31-MWB4	MW-B04		Aluminum, Total	4740		ug/L
02	31-MWB4	MW-B04		Arsenic, Total	2.4	BW	ug/L
02	31-MWB4	MW-B04		Barium, Dissolved	30.8	B	ug/L
02	31-MWB4	MW-B04		Barium, Total	39.7	B	ug/L
02	31-MWB4	MW-B04		Calcium, Dissolved	6740		ug/L
02	31-MWB4	MW-B04		Calcium, Total	7600		ug/L
02	31-MWB4	MW-B04		Chromium, Dissolved	12.3		ug/L
02	31-MWB4	MW-B04		Chromium, Total	24.5		ug/L
02	31-MWB4	MW-B04		Copper, Dissolved	6.4	B	ug/L
02	31-MWB4	MW-B04		Copper, Total	11.7	B	ug/L
02	31-MWB4	MW-B04		Iron, Dissolved	2040		ug/L
02	31-MWB4	MW-B04		Iron, Total	4480		ug/L
02	31-MWB4	MW-B04		Lead, Total	3.4		ug/L
02	31-MWB4	MW-B04		Magnesium, Dissolved	7340		ug/L
02	31-MWB4	MW-B04		Magnesium, Total	7720		ug/L
02	31-MWB4	MW-B04		Manganese, Dissolved	77.4		ug/L
02	31-MWB4	MW-B04		Manganese, Total	97.9		ug/L
02	31-MWB4	MW-B04		Potassium, Dissolved	16600		ug/L
02	31-MWB4	MW-B04		Potassium, Total	16600		ug/L
02	31-MWB4	MW-B04		Sodium, Dissolved	495000		ug/L
02	31-MWB4	MW-B04		Sodium, Total	498000		ug/L
02	31-MWB4	MW-B04		Vanadium, Dissolved	41.2	B	ug/L
02	31-MWB4	MW-B04		Vanadium, Total	49.2	B	ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
Semivolatiles							
02	31-MWB4	MW-B04		Vanillin	1	J	ug/L
Volatiles							
02	31-MWB4	MW-B04		Formaldehyde	32		ug/L
Conventionals							
03	05-MWC1	MW-C01		Alkalinity (As CACO3)	160		mg/L
03	05-MWC1	MW-C01		Bicarbonate (From Alkalinity)	160		mg/L
03	05-MWC1	MW-C01		Chloride	50.8	D	mg/L
03	05-MWC1	MW-C01		pH, (field)	6.5		-log+H
03	05-MWC1	MW-C01		Specific Conductance	375		umhos/cm
03	05-MWC1	MW-C01		Sulfate	8.37	D	mg/L
03	05-MWC1	MW-C01		Sulfide As S	0.408		mg/L
03	05-MWC1	MW-C01		Temperature	15		°C
03	05-MWC1	MW-C01		Total Dissolved Solids	339		mg/L
03	05-MWC1	MW-C01		Total Organic Carbon	16.9		mg/L
Inorganics							
03	05-MWC1	MW-C01		Aluminum, Dissolved	64.1	B	ug/L
03	05-MWC1	MW-C01		Aluminum, Total	51600		ug/L
03	05-MWC1	MW-C01		Arsenic, Dissolved	13.5		ug/L
03	05-MWC1	MW-C01		Arsenic, Total	22.1	S	ug/L
03	05-MWC1	MW-C01		Barium, Total	136	B	ug/L
03	05-MWC1	MW-C01		Calcium, Dissolved	14700		ug/L
03	05-MWC1	MW-C01		Calcium, Total	31800		ug/L
03	05-MWC1	MW-C01		Chromium, Total	44.5		ug/L
03	05-MWC1	MW-C01		Cobalt, Total	39.8	B	ug/L
03	05-MWC1	MW-C01		Copper, Total	66.9		ug/L
03	05-MWC1	MW-C01		Iron, Dissolved	11100		ug/L
03	05-MWC1	MW-C01		Iron, Total	46700		ug/L
03	05-MWC1	MW-C01		Lead, Total	13.4		ug/L
03	05-MWC1	MW-C01		Magnesium, Dissolved	11600		ug/L
03	05-MWC1	MW-C01		Magnesium, Total	18900		ug/L
03	05-MWC1	MW-C01		Manganese, Dissolved	297		ug/L
03	05-MWC1	MW-C01		Manganese, Total	573		ug/L
03	05-MWC1	MW-C01		Nickel, Total	55		ug/L
03	05-MWC1	MW-C01		Potassium, Dissolved	3190	B	ug/L
03	05-MWC1	MW-C01		Potassium, Total	5850		ug/L
03	05-MWC1	MW-C01		Sodium, Dissolved	71800		ug/L
03	05-MWC1	MW-C01		Sodium, Total	72300		ug/L
03	05-MWC1	MW-C01		Vanadium, Dissolved	22.7	B	ug/L
03	05-MWC1	MW-C01		Vanadium, Total	152		ug/L
03	05-MWC1	MW-C01		Zinc, Total	95.9		ug/L
Semivolatiles							
03	05-MWC1	MW-C01		Bis(2-Ethylhexyl)Phthalate	3	J	ug/L
Conventionals							
04	15-MW12	MW-12		Alkalinity (As CACO3)	606		mg/L
04	15-MW12	MW-12		Bicarbonate (From Alkalinity)	606		mg/L
04	15-MW12	MW-12		Chloride	12.5	D	mg/L
04	15-MW12	MW-12		Nitrogen, Kjeldahl	7.56		mg/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
04	15-MW12	MW-12		pH, (field)	6.7		-log+H
04	15-MW12	MW-12		Phosphorus	2.41		mg/L
04	15-MW12	MW-12		Specific Conductance	1050		mhos/cn
04	15-MW12	MW-12		Sulfate	10.6	D	mg/L
04	15-MW12	MW-12		Sulfide As S	0.90399		mg/L
04	15-MW12	MW-12		Temperature	14.9		°C
04	15-MW12	MW-12		Total Dissolved Solids	1030		mg/L
04	15-MW12	MW-12		Total Organic Carbon	91.2		mg/L
Inorganics							
04	15-MW12	MW-12		Aluminum, Dissolved	377		ug/L
04	15-MW12	MW-12		Aluminum, Total	3060		ug/L
04	15-MW12	MW-12		Arsenic, Dissolved	33.4		ug/L
04	15-MW12	MW-12		Arsenic, Total	24.5	W	ug/L
04	15-MW12	MW-12		Barium, Dissolved	30.9	B	ug/L
04	15-MW12	MW-12		Barium, Total	41.4	B	ug/L
04	15-MW12	MW-12		Calcium, Dissolved	13900		ug/L
04	15-MW12	MW-12		Calcium, Total	12100		ug/L
04	15-MW12	MW-12		Chromium, Total	18.3		ug/L
04	15-MW12	MW-12		Copper, Total	84.1		ug/L
04	15-MW12	MW-12		Iron, Dissolved	63200		ug/L
04	15-MW12	MW-12		Iron, Total	69000		ug/L
04	15-MW12	MW-12		Lead, Dissolved	2.7	B	ug/L
04	15-MW12	MW-12		Lead, Total	7.1	S	ug/L
04	15-MW12	MW-12		Magnesium, Dissolved	9710		ug/L
04	15-MW12	MW-12		Magnesium, Total	9430		ug/L
04	15-MW12	MW-12		Manganese, Dissolved	2330		ug/L
04	15-MW12	MW-12		Manganese, Total	2400		ug/L
04	15-MW12	MW-12		Nickel, Dissolved	32	B	ug/L
04	15-MW12	MW-12		Nickel, Total	37.1	B	ug/L
04	15-MW12	MW-12		Potassium, Dissolved	11500		ug/L
04	15-MW12	MW-12		Potassium, Total	11200		ug/L
04	15-MW12	MW-12		Sodium, Dissolved	231000		ug/L
04	15-MW12	MW-12		Sodium, Total	231000		ug/L
04	15-MW12	MW-12		Vanadium, Dissolved	68.9		ug/L
04	15-MW12	MW-12		Vanadium, Total	93.8		ug/L
04	15-MW12	MW-12		Zinc, Dissolved	15.2	B	ug/L
04	15-MW12	MW-12		Zinc, Total	20.4		ug/L
Pesticides/PCB's							
04	15-MW12	MW-12		4,4'-DDD	0.07	J	ug/L
04	15-MW12	MW-12		BHC-Gamma(Lindane)	0.05	J	ug/L
04	15-MW12	MW-12		Endosulfan I	0.04	J	ug/L
04	15-MW12	MW-12		Endosulfan Sulfate	0.06	J	ug/L
Semivolatiles							
04	15-MW12	MW-12		2-Methylphenol	1100	D	ug/L
04	15-MW12	MW-12		4-Methylphenol	760	D	ug/L
Volatiles							
04	15-MW12	MW-12		Formaldehyde	230		ug/L
04	15-MW12	MW-12		Toluene	84000	D	ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
Conventionals							
04	30-MWH11	MW-H11		Alkalinity (As CACO3)	1460		mg/L
04	30-MWH11	MW-H11		Bicarbonate (From Alkalinity)	1460		mg/L
04	30-MWH11	MW-H11		Chloride	36.9	D	mg/L
04	30-MWH11	MW-H11		Nitrogen, Kjeldahl	16.2		mg/L
04	30-MWH11	MW-H11		pH, (field)	7.19		-log+H
04	30-MWH11	MW-H11		Phosphorus	7.51		mg/L
04	30-MWH11	MW-H11		Specific Conductance	2100		umhos/cn
04	30-MWH11	MW-H11		Sulfate	46	D	mg/L
04	30-MWH11	MW-H11		Sulfide As S	0.808		mg/L
04	30-MWH11	MW-H11		Temperature	14.2		°C
04	30-MWH11	MW-H11		Total Dissolved Solids	2360		mg/L
04	30-MWH11	MW-H11		Total Organic Carbon	319		mg/L
Inorganics							
04	30-MWH11	MW-H11		Aluminum, Dissolved	1410		ug/L
04	30-MWH11	MW-H11		Aluminum, Total	6310		ug/L
04	30-MWH11	MW-H11		Arsenic, Dissolved	43.3	BNS	ug/L
04	30-MWH11	MW-H11		Arsenic, Total	56.4	S	ug/L
04	30-MWH11	MW-H11		Barium, Dissolved	97.5	B	ug/L
04	30-MWH11	MW-H11		Barium, Total	110	B	ug/L
04	30-MWH11	MW-H11		Beryllium, Dissolved	2.5	B	ug/L
04	30-MWH11	MW-H11		Beryllium, Total	3.8	B	ug/L
04	30-MWH11	MW-H11		Calcium, Dissolved	19600		ug/L
04	30-MWH11	MW-H11		Calcium, Total	17300		ug/L
04	30-MWH11	MW-H11		Chromium, Dissolved	95.1		ug/L
04	30-MWH11	MW-H11		Chromium, Total	88.9		ug/L
04	30-MWH11	MW-H11		Cobalt, Dissolved	12.5	B	ug/L
04	30-MWH11	MW-H11		Cobalt, Total	12.6	B	ug/L
04	30-MWH11	MW-H11		Copper, Dissolved	9.5	B	ug/L
04	30-MWH11	MW-H11		Copper, Total	22.7	B	ug/L
04	30-MWH11	MW-H11		Iron, Dissolved	82100		ug/L
04	30-MWH11	MW-H11		Iron, Total	92400		ug/L
04	30-MWH11	MW-H11		Lead, Dissolved	2.6	B	ug/L
04	30-MWH11	MW-H11		Lead, Total	4.2		ug/L
04	30-MWH11	MW-H11		Magnesium, Dissolved	17000		ug/L
04	30-MWH11	MW-H11		Magnesium, Total	16000		ug/L
04	30-MWH11	MW-H11		Manganese, Dissolved	3730		ug/L
04	30-MWH11	MW-H11		Manganese, Total	4050		ug/L
04	30-MWH11	MW-H11		Potassium, Dissolved	15000		ug/L
04	30-MWH11	MW-H11		Potassium, Total	15900		ug/L
04	30-MWH11	MW-H11		Sodium, Dissolved	747000		ug/L
04	30-MWH11	MW-H11		Sodium, Total	753000		ug/L
04	30-MWH11	MW-H11		Vanadium, Dissolved	945		ug/L
04	30-MWH11	MW-H11		Vanadium, Total	901		ug/L
04	30-MWH11	MW-H11		Zinc, Dissolved	10.9	B	ug/L
04	30-MWH11	MW-H11		Zinc, Total	10.4	B	ug/L
Semivolatiles							
04	30-MWH11	MW-H11		2,4-Dimethylphenol	26		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
04	30-MWH11	MW-H11		2-Methylnaphthalene	10	J	ug/L
04	30-MWH11	MW-H11		2-Methylphenol	1900	D	ug/L
04	30-MWH11	MW-H11		4-Methylphenol	1600	D	ug/L
04	30-MWH11	MW-H11		Benzo(A)Pyrene	7	J	ug/L
04	30-MWH11	MW-H11		Bis(2-Ethylhexyl)Phthalate	53	DJ	ug/L
04	30-MWH11	MW-H11		Naphthalene	7	J	ug/L
04	30-MWH11	MW-H11		Phenol	730	D	ug/L
Volatiles							
04	30-MWH11	MW-H11		Acetone	56000	JD	ug/L
04	30-MWH11	MW-H11		Benzene	230		ug/L
04	30-MWH11	MW-H11		Formaldehyde	69		ug/L
04	30-MWH11	MW-H11		Methylene Chloride	57		ug/L
04	30-MWH11	MW-H11		Toluene	600000	D	ug/L
04	30-MWH11	MW-H11		Xylene (Total)	110		ug/L
Conventionals							
04	32-MWH1	MW-H01		Alkalinity (As CACO3)	710		mg/L
04	32-MWH1	MW-H01		Bicarbonate (From Alkalinity)	710		mg/L
04	32-MWH1	MW-H01		Chloride	402	D	mg/L
04	32-MWH1	MW-H01		Nitrate Nitrogen	0.113		mg/L
04	32-MWH1	MW-H01		Nitrogen, Kjeldahl	30.9		mg/L
04	32-MWH1	MW-H01		Orthophosphate	17.3	D	mg/L
04	32-MWH1	MW-H01		pH, (field)	7.3		-log+H
04	32-MWH1	MW-H01		Phosphorus	19.9		mg/L
04	32-MWH1	MW-H01		Specific Conductance	2000		mhos/cm
04	32-MWH1	MW-H01		Sulfate	1.95		mg/L
04	32-MWH1	MW-H01		Sulfide As S	0.424		mg/L
04	32-MWH1	MW-H01		Temperature	12.2		°C
04	32-MWH1	MW-H01		Total Dissolved Solids	1610		mg/L
04	32-MWH1	MW-H01		Total Organic Carbon	32.5		mg/L
Inorganics							
04	32-MWH1	MW-H01		Aluminum, Dissolved	814		ug/L
04	32-MWH1	MW-H01		Aluminum, Total	26800		ug/L
04	32-MWH1	MW-H01		Arsenic, Total	6.1	BW	ug/L
04	32-MWH1	MW-H01		Barium, Dissolved	40.4	B	ug/L
04	32-MWH1	MW-H01		Barium, Total	108	B	ug/L
04	32-MWH1	MW-H01		Calcium, Dissolved	8520		ug/L
04	32-MWH1	MW-H01		Calcium, Total	16800		ug/L
04	32-MWH1	MW-H01		Chromium, Dissolved	21.5		ug/L
04	32-MWH1	MW-H01		Chromium, Total	30.7		ug/L
04	32-MWH1	MW-H01		Cobalt, Total	10.9	B	ug/L
04	32-MWH1	MW-H01		Copper, Dissolved	11	B	ug/L
04	32-MWH1	MW-H01		Copper, Total	39.9		ug/L
04	32-MWH1	MW-H01		Iron, Dissolved	2710		ug/L
04	32-MWH1	MW-H01		Iron, Total	19900		ug/L
04	32-MWH1	MW-H01		Lead, Total	7.4		ug/L
04	32-MWH1	MW-H01		Magnesium, Dissolved	8430		ug/L
04	32-MWH1	MW-H01		Magnesium, Total	11700		ug/L
04	32-MWH1	MW-H01		Manganese, Dissolved	105		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
04	32-MWH1	MW-H01		Manganese, Total	261		ug/L
04	32-MWH1	MW-H01		Potassium, Dissolved	19500		ug/L
04	32-MWH1	MW-H01		Potassium, Total	21400		ug/L
04	32-MWH1	MW-H01		Sodium, Dissolved	572000		ug/L
04	32-MWH1	MW-H01		Sodium, Total	560000		ug/L
04	32-MWH1	MW-H01		Vanadium, Dissolved	52.1		ug/L
04	32-MWH1	MW-H01		Vanadium, Total	96.1		ug/L
04	32-MWH1	MW-H01		Zinc, Dissolved	18	B	ug/L
04	32-MWH1	MW-H01		Zinc, Total	36.6		ug/L
Semivolatiles							
04	32-MWH1	MW-H01		Vanillin	2	J	ug/L
Conventionals							
04	33-MWH10	MW-H10		Alkalinity (As CACO3)	411		mg/L
04	33-MWH10	MW-H10		Bicarbonate (From Alkalinity)	411		mg/L
04	33-MWH10	MW-H10		Chloride	2.79		mg/L
04	33-MWH10	MW-H10		Nitrogen, Kjeldahl	3.64		mg/L
04	33-MWH10	MW-H10		pH, (field)	6.6		-log+H
04	33-MWH10	MW-H10		Phosphorus	22.4		mg/L
04	33-MWH10	MW-H10		Specific Conductance	600		umhos/cm
04	33-MWH10	MW-H10		Sulfate	0.903		mg/L
04	33-MWH10	MW-H10		Temperature	14.4		°C
04	33-MWH10	MW-H10		Total Dissolved Solids	546		mg/L
04	33-MWH10	MW-H10		Total Organic Carbon	21.7		mg/L
Inorganics							
04	33-MWH10	MW-H10		Aluminum, Dissolved	36.7	B	ug/L
04	33-MWH10	MW-H10		Aluminum, Total	4970		ug/L
04	33-MWH10	MW-H10		Arsenic, Dissolved	9.6	BN	ug/L
04	33-MWH10	MW-H10		Arsenic, Total	11.2		ug/L
04	33-MWH10	MW-H10		Barium, Total	38.3	B	ug/L
04	33-MWH10	MW-H10		Calcium, Dissolved	25100		ug/L
04	33-MWH10	MW-H10		Calcium, Total	28700		ug/L
04	33-MWH10	MW-H10		Chromium, Total	12.3		ug/L
04	33-MWH10	MW-H10		Copper, Total	26.3		ug/L
04	33-MWH10	MW-H10		Iron, Dissolved	8990		ug/L
04	33-MWH10	MW-H10		Iron, Total	13600		ug/L
04	33-MWH10	MW-H10		Lead, Total	3.6		ug/L
04	33-MWH10	MW-H10		Magnesium, Dissolved	13500		ug/L
04	33-MWH10	MW-H10		Magnesium, Total	14800		ug/L
04	33-MWH10	MW-H10		Manganese, Dissolved	1030		ug/L
04	33-MWH10	MW-H10		Manganese, Total	1120		ug/L
04	33-MWH10	MW-H10		Potassium, Dissolved	6980		ug/L
04	33-MWH10	MW-H10		Potassium, Total	7180		ug/L
04	33-MWH10	MW-H10		Sodium, Dissolved	131000		ug/L
04	33-MWH10	MW-H10		Sodium, Total	123000		ug/L
04	33-MWH10	MW-H10		Vanadium, Dissolved	12.2	B	ug/L
04	33-MWH10	MW-H10		Vanadium, Total	25.6	B	ug/L
04	33-MWH10	MW-H10		Zinc, Dissolved	11.6	B	ug/L
04	33-MWH10	MW-H10		Zinc, Total	25		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
Semivolatiles							
04	33-MWH10	MW-H10		2-Methylphenol	210	D	ug/L
04	33-MWH10	MW-H10		4-Methylphenol	130	D	ug/L
04	33-MWH10	MW-H10		Bis(2-Ethylhexyl)Phthalate	16		ug/L
04	33-MWH10	MW-H10		Pentachlorophenol	5	J	ug/L
04	33-MWH10	MW-H10		Phenol	4	J	ug/L
Volatiles							
04	33-MWH10	MW-H10		2-Butanone	1300	E	ug/L
04	33-MWH10	MW-H10		Benzene	36	J	ug/L
04	33-MWH10	MW-H10		Formaldehyde	270		ug/L
04	33-MWH10	MW-H10		Toluene	300000	D	ug/L
Conventionals							
05	13-DM2A	DM-02A		Alkalinity (As CACO3)	2180		mg/L
05	13-DM2A	DM-02A		Bicarbonate (From Alkalinity)	2180		mg/L
05	13-DM2A	DM-02A		Chloride	156	D	mg/L
05	13-DM2A	DM-02A		pH, (field)	7.32		-log+H
05	13-DM2A	DM-02A		Specific Conductance	3350		mhos/cm
05	13-DM2A	DM-02A		Sulfate	91.3	D	mg/L
05	13-DM2A	DM-02A		Sulfide As S	0.264		mg/L
05	13-DM2A	DM-02A		Temperature	14.1		°C
05	13-DM2A	DM-02A		Total Dissolved Solids	3760		mg/L
05	13-DM2A	DM-02A		Total Organic Carbon	425		mg/L
Inorganics							
05	13-DM2A	DM-02A		Aluminum, Dissolved	2830		ug/L
05	13-DM2A	DM-02A		Aluminum, Total	3480		ug/L
05	13-DM2A	DM-02A		Arsenic, Dissolved	22.4	S	ug/L
05	13-DM2A	DM-02A		Arsenic, Total	26.1	S	ug/L
05	13-DM2A	DM-02A		Barium, Dissolved	74.2	B	ug/L
05	13-DM2A	DM-02A		Barium, Total	82.5	B	ug/L
05	13-DM2A	DM-02A		Beryllium, Dissolved	5.9		ug/L
05	13-DM2A	DM-02A		Beryllium, Total	5.9		ug/L
05	13-DM2A	DM-02A		Calcium, Dissolved	61300		ug/L
05	13-DM2A	DM-02A		Calcium, Total	60200		ug/L
05	13-DM2A	DM-02A		Chromium, Dissolved	149		ug/L
05	13-DM2A	DM-02A		Chromium, Total	148		ug/L
05	13-DM2A	DM-02A		Cobalt, Dissolved	12.1	B	ug/L
05	13-DM2A	DM-02A		Cobalt, Total	14.2	B	ug/L
05	13-DM2A	DM-02A		Copper, Dissolved	58		ug/L
05	13-DM2A	DM-02A		Copper, Total	226		ug/L
05	13-DM2A	DM-02A		Iron, Dissolved	8050		ug/L
05	13-DM2A	DM-02A		Iron, Total	8570		ug/L
05	13-DM2A	DM-02A		Lead, Dissolved	3.1		ug/L
05	13-DM2A	DM-02A		Magnesium, Dissolved	23200		ug/L
05	13-DM2A	DM-02A		Magnesium, Total	22900		ug/L
05	13-DM2A	DM-02A		Manganese, Dissolved	340		ug/L
05	13-DM2A	DM-02A		Manganese, Total	348		ug/L
05	13-DM2A	DM-02A		Mercury, Total	0.2		ug/L
05	13-DM2A	DM-02A		Potassium, Dissolved	10400		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
05	13-DM2A	DM-02A		Potassium, Total	10300		ug/L
05	13-DM2A	DM-02A		Sodium, Dissolved	1100000		ug/L
05	13-DM2A	DM-02A		Sodium, Total	1080000		ug/L
05	13-DM2A	DM-02A		Vanadium, Dissolved	1300		ug/L
05	13-DM2A	DM-02A		Vanadium, Total	1330		ug/L
05	13-DM2A	DM-02A		Zinc, Dissolved	36		ug/L
05	13-DM2A	DM-02A		Zinc, Total	46.4		ug/L
Semivolatiles							
05	13-DM2A	DM-02A		Benzo(A)Pyrene	1	J	ug/L
05	13-DM2A	DM-02A		Vanillin	5		ug/L
Conventionals							
05	14-DM2B	DM-02B		Alkalinity (As CACO3)	378		mg/L
05	14-DM2B	DM-02B		Bicarbonate (From Alkalinity)	378		mg/L
05	14-DM2B	DM-02B		Chloride	374	D	mg/L
05	14-DM2B	DM-02B		pH, (field)	8.13		-log+H
05	14-DM2B	DM-02B		Specific Conductance	1420		mhos/cm
05	14-DM2B	DM-02B		Sulfate	0.127		mg/L
05	14-DM2B	DM-02B		Temperature	12.2		°C
05	14-DM2B	DM-02B		Total Dissolved Solids	1080		mg/L
05	14-DM2B	DM-02B		Total Organic Carbon	5.84		mg/L
Inorganics							
05	14-DM2B	DM-02B		Aluminum, Total	205		ug/L
05	14-DM2B	DM-02B		Arsenic, Dissolved	16.9		ug/L
05	14-DM2B	DM-02B		Arsenic, Total	15.2		ug/L
05	14-DM2B	DM-02B		Calcium, Dissolved	37200		ug/L
05	14-DM2B	DM-02B		Calcium, Total	36450		ug/L
05	14-DM2B	DM-02B		Iron, Dissolved	277		ug/L
05	14-DM2B	DM-02B		Iron, Total	471		ug/L
05	14-DM2B	DM-02B		Magnesium, Dissolved	8010		ug/L
05	14-DM2B	DM-02B		Magnesium, Total	7620		ug/L
05	14-DM2B	DM-02B		Manganese, Dissolved	67		ug/L
05	14-DM2B	DM-02B		Manganese, Total	68.2		ug/L
05	14-DM2B	DM-02B		Potassium, Dissolved	19550		ug/L
05	14-DM2B	DM-02B		Potassium, Total	19500		ug/L
05	14-DM2B	DM-02B		Sodium, Dissolved	358500		ug/L
05	14-DM2B	DM-02B		Sodium, Total	338000		ug/L
Conventionals							
05	26-MWH6	MW-H06		Alkalinity (As CACO3)	960		mg/L
05	26-MWH6	MW-H06		Bicarbonate (From Alkalinity)	960		mg/L
05	26-MWH6	MW-H06		Chloride	4.59	D	mg/L
05	26-MWH6	MW-H06		pH, (field)	8.24		-log+H
05	26-MWH6	MW-H06		Specific Conductance	1500		mhos/cm
05	26-MWH6	MW-H06		Sulfate	151	D	mg/L
05	26-MWH6	MW-H06		Sulfide As S	0.328		mg/L
05	26-MWH6	MW-H06		Temperature	17.1		°C
05	26-MWH6	MW-H06		Total Dissolved Solids	1590		mg/L
05	26-MWH6	MW-H06		Total Organic Carbon	82.2		mg/L
Inorganics							

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
05	26-MWH6	MW-H06		Aluminum, Dissolved	1640		ug/L
05	26-MWH6	MW-H06		Aluminum, Total	29400		ug/L
05	26-MWH6	MW-H06		Arsenic, Dissolved	9.3	B	ug/L
05	26-MWH6	MW-H06		Arsenic, Total	26.3	S	ug/L
05	26-MWH6	MW-H06		Barium, Dissolved	27.3	B	ug/L
05	26-MWH6	MW-H06		Barium, Total	144	B	ug/L
05	26-MWH6	MW-H06		Calcium, Dissolved	11100		ug/L
05	26-MWH6	MW-H06		Calcium, Total	15000		ug/L
05	26-MWH6	MW-H06		Chromium, Dissolved	35.6		ug/L
05	26-MWH6	MW-H06		Chromium, Total	98		ug/L
05	26-MWH6	MW-H06		Cobalt, Total	15.2	B	ug/L
05	26-MWH6	MW-H06		Copper, Dissolved	20.8	B	ug/L
05	26-MWH6	MW-H06		Copper, Total	179		ug/L
05	26-MWH6	MW-H06		Iron, Dissolved	8560		ug/L
05	26-MWH6	MW-H06		Iron, Total	43400		ug/L
05	26-MWH6	MW-H06		Lead, Total	9		ug/L
05	26-MWH6	MW-H06		Magnesium, Dissolved	3970	B	ug/L
05	26-MWH6	MW-H06		Magnesium, Total	8220		ug/L
05	26-MWH6	MW-H06		Manganese, Dissolved	245		ug/L
05	26-MWH6	MW-H06		Manganese, Total	561		ug/L
05	26-MWH6	MW-H06		Mercury, Total	0.45		ug/L
05	26-MWH6	MW-H06		Nickel, Total	34.6	B	ug/L
05	26-MWH6	MW-H06		Potassium, Dissolved	4180	B	ug/L
05	26-MWH6	MW-H06		Potassium, Total	5940		ug/L
05	26-MWH6	MW-H06		Sodium, Dissolved	519000		ug/L
05	26-MWH6	MW-H06		Sodium, Total	480000		ug/L
05	26-MWH6	MW-H06		Vanadium, Dissolved	62.2		ug/L
05	26-MWH6	MW-H06		Vanadium, Total	132		ug/L
05	26-MWH6	MW-H06		Zinc, Dissolved	19	B	ug/L
05	26-MWH6	MW-H06		Zinc, Total	73		ug/L
Conventionals							
05	27-DM8	DM-08		Alkalinity (As CACO3)	1180		mg/L
05	27-DM8	DM-08		Bicarbonate (From Alkalinity)	1180		mg/L
05	27-DM8	DM-08		Chloride	83.2	D	mg/L
05	27-DM8	DM-08		Nitrate Nitrogen	0.132		mg/L
05	27-DM8	DM-08		Nitrogen, Kjeldahl	12.2		mg/L
05	27-DM8	DM-08		Orthophosphate	0.496		mg/L
05	27-DM8	DM-08		pH, (field)	7.02		-log+H
05	27-DM8	DM-08		Phosphorus	4.86		mg/L
05	27-DM8	DM-08		Specific Conductance	1740		umhos/cm
05	27-DM8	DM-08		Sulfate	12.9	D	mg/L
05	27-DM8	DM-08		Sulfide As S	0.552		mg/L
05	27-DM8	DM-08		Temperature	12.9		°C
05	27-DM8	DM-08		Total Dissolved Solids	2620		mg/L
05	27-DM8	DM-08		Total Organic Carbon	463		mg/L
Inorganics							
05	27-DM8	DM-08		Aluminum, Dissolved	2220		ug/L
05	27-DM8	DM-08		Aluminum, Total	2770		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
05	27-DM8	DM-08		Arsenic, Dissolved	42.9	NS	ug/L
05	27-DM8	DM-08		Arsenic, Total	43.4		ug/L
05	27-DM8	DM-08		Barium, Dissolved	142	B	ug/L
05	27-DM8	DM-08		Barium, Total	133	B	ug/L
05	27-DM8	DM-08		Beryllium, Dissolved	6.2		ug/L
05	27-DM8	DM-08		Beryllium, Total	6.2		ug/L
05	27-DM8	DM-08		Calcium, Dissolved	80400		ug/L
05	27-DM8	DM-08		Calcium, Total	71300		ug/L
05	27-DM8	DM-08		Chromium, Dissolved	153		ug/L
05	27-DM8	DM-08		Chromium, Total	144		ug/L
05	27-DM8	DM-08		Cobalt, Dissolved	23.1	B	ug/L
05	27-DM8	DM-08		Cobalt, Total	20.6	B	ug/L
05	27-DM8	DM-08		Copper, Dissolved	34.8		ug/L
05	27-DM8	DM-08		Copper, Total	43.7		ug/L
05	27-DM8	DM-08		Iron, Dissolved	79400		ug/L
05	27-DM8	DM-08		Iron, Total	80900		ug/L
05	27-DM8	DM-08		Lead, Dissolved	4.7		ug/L
05	27-DM8	DM-08		Lead, Total	4.8		ug/L
05	27-DM8	DM-08		Magnesium, Dissolved	34100		ug/L
05	27-DM8	DM-08		Magnesium, Total	32900		ug/L
05	27-DM8	DM-08		Manganese, Dissolved	6250		ug/L
05	27-DM8	DM-08		Manganese, Total	6280		ug/L
05	27-DM8	DM-08		Potassium, Dissolved	11500		ug/L
05	27-DM8	DM-08		Potassium, Total	11200		ug/L
05	27-DM8	DM-08		Sodium, Dissolved	539000		ug/L
05	27-DM8	DM-08		Sodium, Total	499000		ug/L
05	27-DM8	DM-08		Vanadium, Dissolved	1390		ug/L
05	27-DM8	DM-08		Vanadium, Total	1340		ug/L
Semivolatiles							
05	27-DM8	DM-08		Bis(2-Ethylhexyl)Phthalate	1	J	ug/L
05	27-DM8	DM-08		Phenol	3	J	ug/L
05	27-DM8	DM-08		Vanillin	35		ug/L
Volatiles							
05	27-DM8	DM-08		Formaldehyde	52		ug/L
Conventionals							
06	25-MWH9	MW-H09		Alkalinity (As CACO3)	1110		mg/L
06	25-MWH9	MW-H09		Bicarbonate (From Alkalinity)	1110		mg/L
06	25-MWH9	MW-H09		Chloride	15.9	D	mg/L
06	25-MWH9	MW-H09		Nitrogen, Kjeldahl	5.04		mg/L
06	25-MWH9	MW-H09		Orthophosphate	4.81		mg/L
06	25-MWH9	MW-H09		pH, (field)	7.9		-log+H
06	25-MWH9	MW-H09		Phosphorus	9.5		mg/L
06	25-MWH9	MW-H09		Specific Conductance	1550		umhos/cm
06	25-MWH9	MW-H09		Sulfate	2.94		mg/L
06	25-MWH9	MW-H09		Sulfide As S	0.296		mg/L
06	25-MWH9	MW-H09		Temperature	14.9		°C
06	25-MWH9	MW-H09		Total Dissolved Solids	1690		mg/L
06	25-MWH9	MW-H09		Total Organic Carbon	182		mg/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
Inorganics							
06	25-MWH9	MW-H09		Aluminum, Dissolved	965		ug/L
06	25-MWH9	MW-H09		Aluminum, Total	76000		ug/L
06	25-MWH9	MW-H09		Arsenic, Dissolved	52.4		ug/L
06	25-MWH9	MW-H09		Arsenic, Total	68.9		ug/L
06	25-MWH9	MW-H09		Barium, Dissolved	48.3	B	ug/L
06	25-MWH9	MW-H09		Barium, Total	367		ug/L
06	25-MWH9	MW-H09		Beryllium, Dissolved	2.5	B	ug/L
06	25-MWH9	MW-H09		Beryllium, Total	3.7	B	ug/L
06	25-MWH9	MW-H09		Calcium, Dissolved	21800		ug/L
06	25-MWH9	MW-H09		Calcium, Total	46200		ug/L
06	25-MWH9	MW-H09		Chromium, Dissolved	62.3		ug/L
06	25-MWH9	MW-H09		Chromium, Total	154		ug/L
06	25-MWH9	MW-H09		Cobalt, Total	43.4	B	ug/L
06	25-MWH9	MW-H09		Copper, Dissolved	15.3	B	ug/L
06	25-MWH9	MW-H09		Copper, Total	306		ug/L
06	25-MWH9	MW-H09		Iron, Dissolved	9380		ug/L
06	25-MWH9	MW-H09		Iron, Total	80600		ug/L
06	25-MWH9	MW-H09		Lead, Total	28.8	S	ug/L
06	25-MWH9	MW-H09		Magnesium, Dissolved	6970		ug/L
06	25-MWH9	MW-H09		Magnesium, Total	21700		ug/L
06	25-MWH9	MW-H09		Manganese, Dissolved	497		ug/L
06	25-MWH9	MW-H09		Manganese, Total	1190		ug/L
06	25-MWH9	MW-H09		Mercury, Total	0.87		ug/L
06	25-MWH9	MW-H09		Nickel, Total	74.7		ug/L
06	25-MWH9	MW-H09		Potassium, Total	6260		ug/L
06	25-MWH9	MW-H09		Sodium, Dissolved	501000		ug/L
06	25-MWH9	MW-H09		Sodium, Total	502000		ug/L
06	25-MWH9	MW-H09		Vanadium, Dissolved	469		ug/L
06	25-MWH9	MW-H09		Vanadium, Total	717		ug/L
06	25-MWH9	MW-H09		Zinc, Dissolved	80.7		ug/L
06	25-MWH9	MW-H09		Zinc, Total	194		ug/L
Semivolatiles							
06	25-MWH9	MW-H09		Bis(2-Ethylhexyl)Phthalate	2	J	ug/L
06	25-MWH9	MW-H09		Vanillin	2	J	ug/L
Volatiles							
06	25-MWH9	MW-H09		Formaldehyde	64		ug/L
Conventionals							
06	28-MWG3	MW-G03		Alkalinity (As CACO3)	365		mg/L
06	28-MWG3	MW-G03		Bicarbonate (From Alkalinity)	365		mg/L
06	28-MWG3	MW-G03		Chloride	0.449		mg/L
06	28-MWG3	MW-G03		pH, (field)	8		-log+H
06	28-MWG3	MW-G03		Specific Conductance	550		umhos/cn
06	28-MWG3	MW-G03		Sulfate	0.115		mg/L
06	28-MWG3	MW-G03		Temperature	13.3		°C
06	28-MWG3	MW-G03		Total Dissolved Solids	647		mg/L
06	28-MWG3	MW-G03		Total Organic Carbon	23.4		mg/L
Inorganics							

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
06	28-MWG3	MW-G03		Aluminum, Dissolved	335		ug/L
06	28-MWG3	MW-G03		Aluminum, Total	120000		ug/L
06	28-MWG3	MW-G03		Arsenic, Dissolved	18.3	BNS	ug/L
06	28-MWG3	MW-G03		Arsenic, Total	56.5		ug/L
06	28-MWG3	MW-G03		Barium, Dissolved	22.6	B	ug/L
06	28-MWG3	MW-G03		Barium, Total	443		ug/L
06	28-MWG3	MW-G03		Beryllium, Total	4.3	B	ug/L
06	28-MWG3	MW-G03		Calcium, Dissolved	13000		ug/L
06	28-MWG3	MW-G03		Calcium, Total	53600		ug/L
06	28-MWG3	MW-G03		Chromium, Dissolved	15.3		ug/L
06	28-MWG3	MW-G03		Chromium, Total	135		ug/L
06	28-MWG3	MW-G03		Cobalt, Total	51.2		ug/L
06	28-MWG3	MW-G03		Copper, Dissolved	5.4	B	ug/L
06	28-MWG3	MW-G03		Copper, Total	224		ug/L
06	28-MWG3	MW-G03		Iron, Dissolved	6720		ug/L
06	28-MWG3	MW-G03		Iron, Total	104000		ug/L
06	28-MWG3	MW-G03		Lead, Total	29.7		ug/L
06	28-MWG3	MW-G03		Magnesium, Dissolved	6950		ug/L
06	28-MWG3	MW-G03		Magnesium, Total	29200		ug/L
06	28-MWG3	MW-G03		Manganese, Dissolved	673		ug/L
06	28-MWG3	MW-G03		Manganese, Total	1990		ug/L
06	28-MWG3	MW-G03		Mercury, Total	0.49		ug/L
06	28-MWG3	MW-G03		Nickel, Total	93.7		ug/L
06	28-MWG3	MW-G03		Potassium, Total	11700		ug/L
06	28-MWG3	MW-G03		Sodium, Dissolved	131000		ug/L
06	28-MWG3	MW-G03		Sodium, Total	145000		ug/L
06	28-MWG3	MW-G03		Vanadium, Dissolved	104		ug/L
06	28-MWG3	MW-G03		Vanadium, Total	545		ug/L
06	28-MWG3	MW-G03		Zinc, Total	209		ug/L
Semivolatiles							
06	28-MWG3	MW-G03		Benzo(A)Pyrene	2	J	ug/L
06	28-MWG3	MW-G03		Bis(2-Ethylhexyl)Phthalate	4	J	ug/L
06	28-MWG3	MW-G03		Vanillin	2	J	ug/L
Volatiles							
06	28-MWG3	MW-G03		Formaldehyde	200		ug/L
Conventionals							
06	29-DM7	DM-07		Alkalinity (As CACO3)	500		mg/L
06	29-DM7	DM-07		Bicarbonate (From Alkalinity)	500		mg/L
06	29-DM7	DM-07		Chloride	59	D	mg/L
06	29-DM7	DM-07		Nitrogen, Kjeldahl	4.76		mg/L
06	29-DM7	DM-07		pH, (field)	7		-log+H
06	29-DM7	DM-07		Phosphorus	38.3		mg/L
06	29-DM7	DM-07		Specific Conductance	70		umhos/cm
06	29-DM7	DM-07		Sulfate	7.82	D	mg/L
06	29-DM7	DM-07		Sulfide As S	0.68		mg/L
06	29-DM7	DM-07		Temperature	15		°C
06	29-DM7	DM-07		Total Dissolved Solids	819		mg/L
06	29-DM7	DM-07		Total Organic Carbon	50		mg/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
Inorganics							
06	29-DM7	DM-07		Aluminum, Dissolved	89.75	B	ug/L
06	29-DM7	DM-07		Aluminum, Total	249.5		ug/L
06	29-DM7	DM-07		Arsenic, Dissolved	10.6		ug/L
06	29-DM7	DM-07		Arsenic, Total	17.9		ug/L
06	29-DM7	DM-07		Barium, Dissolved	22.6	B	ug/L
06	29-DM7	DM-07		Barium, Total	61.55	B	ug/L
06	29-DM7	DM-07		Calcium, Dissolved	17550		ug/L
06	29-DM7	DM-07		Calcium, Total	18450		ug/L
06	29-DM7	DM-07		Chromium, Dissolved	13.8		ug/L
06	29-DM7	DM-07		Chromium, Total	12.3		ug/L
06	29-DM7	DM-07		Iron, Dissolved	40300		ug/L
06	29-DM7	DM-07		Iron, Total	48550		ug/L
06	29-DM7	DM-07		Magnesium, Dissolved	11700		ug/L
06	29-DM7	DM-07		Magnesium, Total	12200		ug/L
06	29-DM7	DM-07		Manganese, Dissolved	2895		ug/L
06	29-DM7	DM-07		Manganese, Total	3125		ug/L
06	29-DM7	DM-07		Sodium, Dissolved	194500		ug/L
06	29-DM7	DM-07		Sodium, Total	219000		ug/L
06	29-DM7	DM-07		Vanadium, Dissolved	67.9		ug/L
06	29-DM7	DM-07		Vanadium, Total	79.85		ug/L
Semivolatiles							
06	29-DM7	DM-07		Vanillin	5		ug/L
Volatiles							
06	29-DM7	DM-07		Benzene	2		ug/L
06	29-DM7	DM-07		Formaldehyde	210		ug/L
Conventionals							
07	23-MWG1	MW-G01		Alkalinity (As CACO3)	312		mg/L
07	23-MWG1	MW-G01		Bicarbonate (From Alkalinity)	312		mg/L
07	23-MWG1	MW-G01		Chloride	53.1	D	mg/L
07	23-MWG1	MW-G01		pH, (field)	7.08		-log+H
07	23-MWG1	MW-G01		Specific Conductance	800		umhos/cm
07	23-MWG1	MW-G01		Sulfate	142	D	mg/L
07	23-MWG1	MW-G01		Sulfide As S	0.968		mg/L
07	23-MWG1	MW-G01		Temperature	13.9		°C
07	23-MWG1	MW-G01		Total Dissolved Solids	650		mg/L
07	23-MWG1	MW-G01		Total Organic Carbon	20.37		mg/L
Inorganics							
07	23-MWG1	MW-G01		Aluminum, Dissolved	38.7	B	ug/L
07	23-MWG1	MW-G01		Aluminum, Total	28900		ug/L
07	23-MWG1	MW-G01		Arsenic, Dissolved	5.8	BW	ug/L
07	23-MWG1	MW-G01		Arsenic, Total	40.9		ug/L
07	23-MWG1	MW-G01		Barium, Total	97.5	B	ug/L
07	23-MWG1	MW-G01		Calcium, Dissolved	72100		ug/L
07	23-MWG1	MW-G01		Calcium, Total	78300		ug/L
07	23-MWG1	MW-G01		Chromium, Total	32.7		ug/L
07	23-MWG1	MW-G01		Cobalt, Total	25.6	B	ug/L
07	23-MWG1	MW-G01		Copper, Total	113		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
07	23-MWG1	MW-G01		Iron, Dissolved	43900		ug/L
07	23-MWG1	MW-G01		Iron, Total	79300		ug/L
07	23-MWG1	MW-G01		Lead, Total	34.7	S	ug/L
07	23-MWG1	MW-G01		Magnesium, Dissolved	33100		ug/L
07	23-MWG1	MW-G01		Magnesium, Total	35700		ug/L
07	23-MWG1	MW-G01		Manganese, Dissolved	1010		ug/L
07	23-MWG1	MW-G01		Manganese, Total	1190		ug/L
07	23-MWG1	MW-G01		Nickel, Dissolved	28.6	B	ug/L
07	23-MWG1	MW-G01		Nickel, Total	70.6		ug/L
07	23-MWG1	MW-G01		Potassium, Dissolved	8850		ug/L
07	23-MWG1	MW-G01		Potassium, Total	10800		ug/L
07	23-MWG1	MW-G01		Sodium, Dissolved	95800		ug/L
07	23-MWG1	MW-G01		Sodium, Total	91800		ug/L
07	23-MWG1	MW-G01		Vanadium, Dissolved	23.3	B	ug/L
07	23-MWG1	MW-G01		Vanadium, Total	132		ug/L
07	23-MWG1	MW-G01		Zinc, Dissolved	65.5		ug/L
07	23-MWG1	MW-G01		Zinc, Total	1050		ug/L
Conventionals							
07	24-MWG21	MW-G01	FD	Alkalinity (As CACO3)	334		mg/L
07	24-MWG21	MW-G01	FD	Bicarbonate (From Alkalinity)	334		mg/L
07	24-MWG21	MW-G01	FD	Chloride	51.4	D	mg/L
07	24-MWG21	MW-G01	FD	Sulfate	158	D	mg/L
07	24-MWG21	MW-G01	FD	Sulfide As S	0.536		mg/L
07	24-MWG21	MW-G01	FD	Total Dissolved Solids	668		mg/L
07	24-MWG21	MW-G01	FD	Total Organic Carbon	19.5		mg/L
Inorganics							
07	24-MWG21	MW-G01	FD	Aluminum, Dissolved	36	B	ug/L
07	24-MWG21	MW-G01	FD	Aluminum, Total	12800		ug/L
07	24-MWG21	MW-G01	FD	Arsenic, Dissolved	4.5		ug/L
07	24-MWG21	MW-G01	FD	Arsenic, Total	23.2		ug/L
07	24-MWG21	MW-G01	FD	Barium, Total	52.2	B	ug/L
07	24-MWG21	MW-G01	FD	Calcium, Dissolved	72200		ug/L
07	24-MWG21	MW-G01	FD	Calcium, Total	74500		ug/L
07	24-MWG21	MW-G01	FD	Chromium, Total	23.7		ug/L
07	24-MWG21	MW-G01	FD	Cobalt, Total	16.2	B	ug/L
07	24-MWG21	MW-G01	FD	Copper, Dissolved	6.8	B	ug/L
07	24-MWG21	MW-G01	FD	Copper, Total	72.2		ug/L
07	24-MWG21	MW-G01	FD	Iron, Dissolved	42200		ug/L
07	24-MWG21	MW-G01	FD	Iron, Total	68000		ug/L
07	24-MWG21	MW-G01	FD	Lead, Total	21.2		ug/L
07	24-MWG21	MW-G01	FD	Magnesium, Dissolved	32600		ug/L
07	24-MWG21	MW-G01	FD	Magnesium, Total	34300		ug/L
07	24-MWG21	MW-G01	FD	Manganese, Dissolved	976		ug/L
07	24-MWG21	MW-G01	FD	Manganese, Total	1090		ug/L
07	24-MWG21	MW-G01	FD	Nickel, Dissolved	33.6	B	ug/L
07	24-MWG21	MW-G01	FD	Nickel, Total	58.8		ug/L
07	24-MWG21	MW-G01	FD	Potassium, Dissolved	9110		ug/L
07	24-MWG21	MW-G01	FD	Potassium, Total	9220		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
07	24-MWG21	MW-G01	FD	Sodium, Dissolved	92700		ug/L
07	24-MWG21	MW-G01	FD	Sodium, Total	92000		ug/L
07	24-MWG21	MW-G01	FD	Vanadium, Dissolved	20.9	B	ug/L
07	24-MWG21	MW-G01	FD	Vanadium, Total	87.9		ug/L
07	24-MWG21	MW-G01	FD	Zinc, Dissolved	75.6		ug/L
07	24-MWG21	MW-G01	FD	Zinc, Total	645		ug/L
Conventionals							
08	22-DM6	DM-06		Alkalinity (As CACO3)	184		mg/L
08	22-DM6	DM-06		Bicarbonate (From Alkalinity)	184		mg/L
08	22-DM6	DM-06		Chloride	10.8	D	mg/L
08	22-DM6	DM-06		pH, (field)	7.63		-log+H
08	22-DM6	DM-06		Specific Conductance	310		mhos/cm
08	22-DM6	DM-06		Sulfate	11.2	D	mg/L
08	22-DM6	DM-06		Temperature	25		°C
08	22-DM6	DM-06		Total Dissolved Solids	355		mg/L
08	22-DM6	DM-06		Total Organic Carbon	23.9		mg/L
Inorganics							
08	22-DM6	DM-06		Aluminum, Dissolved	413		ug/L
08	22-DM6	DM-06		Aluminum, Total	2470		ug/L
08	22-DM6	DM-06		Arsenic, Dissolved	20.3		ug/L
08	22-DM6	DM-06		Arsenic, Total	21.7		ug/L
08	22-DM6	DM-06		Calcium, Dissolved	17600		ug/L
08	22-DM6	DM-06		Calcium, Total	20800		ug/L
08	22-DM6	DM-06		Copper, Dissolved	9.6	B	ug/L
08	22-DM6	DM-06		Copper, Total	54.7		ug/L
08	22-DM6	DM-06		Iron, Dissolved	7490		ug/L
08	22-DM6	DM-06		Iron, Total	13700		ug/L
08	22-DM6	DM-06		Magnesium, Dissolved	9130		ug/L
08	22-DM6	DM-06		Magnesium, Total	11500		ug/L
08	22-DM6	DM-06		Manganese, Dissolved	283		ug/L
08	22-DM6	DM-06		Manganese, Total	417		ug/L
08	22-DM6	DM-06		Potassium, Dissolved	3340	B	ug/L
08	22-DM6	DM-06		Potassium, Total	3750	B	ug/L
08	22-DM6	DM-06		Sodium, Dissolved	55900		ug/L
08	22-DM6	DM-06		Sodium, Total	65900		ug/L
08	22-DM6	DM-06		Vanadium, Dissolved	27.6	B	ug/L
08	22-DM6	DM-06		Vanadium, Total	45.1	B	ug/L
08	22-DM6	DM-06		Zinc, Dissolved	10.6	B	ug/L
08	22-DM6	DM-06		Zinc, Total	11.6	B	ug/L
Conventionals							
09	06-MWB1A	MW-B01A		Alkalinity (As CACO3)	352		mg/L
09	06-MWB1A	MW-B01A		Bicarbonate (From Alkalinity)	352		mg/L
09	06-MWB1A	MW-B01A		Chloride	7.95	D	mg/L
09	06-MWB1A	MW-B01A		pH, (field)	6.82		-log+H
09	06-MWB1A	MW-B01A		Specific Conductance	600		mhos/cm
09	06-MWB1A	MW-B01A		Sulfate	68.7	D	mg/L
09	06-MWB1A	MW-B01A		Sulfide As S	0.712		mg/L
09	06-MWB1A	MW-B01A		Temperature	11.6		°C

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
09	06-MWB1A	MW-B01A		Total Dissolved Solids	538		mg/L
09	06-MWB1A	MW-B01A		Total Organic Carbon	14.7		mg/L
Inorganics							
09	06-MWB1A	MW-B01A		Aluminum, Dissolved	98.8	B	ug/L
09	06-MWB1A	MW-B01A		Aluminum, Total	19400		ug/L
09	06-MWB1A	MW-B01A		Arsenic, Total	3.2	BW	ug/L
09	06-MWB1A	MW-B01A		Barium, Total	66.6	B	ug/L
09	06-MWB1A	MW-B01A		Calcium, Dissolved	25500		ug/L
09	06-MWB1A	MW-B01A		Calcium, Total	33000		ug/L
09	06-MWB1A	MW-B01A		Chromium, Total	14.8		ug/L
09	06-MWB1A	MW-B01A		Copper, Total	21.9	B	ug/L
09	06-MWB1A	MW-B01A		Iron, Dissolved	1530		ug/L
09	06-MWB1A	MW-B01A		Iron, Total	13600		ug/L
09	06-MWB1A	MW-B01A		Lead, Total	4.5		ug/L
09	06-MWB1A	MW-B01A		Magnesium, Dissolved	12100		ug/L
09	06-MWB1A	MW-B01A		Magnesium, Total	14200		ug/L
09	06-MWB1A	MW-B01A		Manganese, Dissolved	415		ug/L
09	06-MWB1A	MW-B01A		Manganese, Total	518		ug/L
09	06-MWB1A	MW-B01A		Nickel, Total	20.7	B	ug/L
09	06-MWB1A	MW-B01A		Potassium, Dissolved	7910		ug/L
09	06-MWB1A	MW-B01A		Potassium, Total	9460		ug/L
09	06-MWB1A	MW-B01A		Sodium, Dissolved	140000		ug/L
09	06-MWB1A	MW-B01A		Sodium, Total	137000		ug/L
09	06-MWB1A	MW-B01A		Vanadium, Dissolved	15.4	B	ug/L
09	06-MWB1A	MW-B01A		Vanadium, Total	53.9		ug/L
09	06-MWB1A	MW-B01A		Zinc, Total	28.7		ug/L
Conventionals							
09	07-MWB1B	MW-B01B		Alkalinity (As CACO3)	360		mg/L
09	07-MWB1B	MW-B01B		Bicarbonate (From Alkalinity)	360		mg/L
09	07-MWB1B	MW-B01B		Chloride	70.5	D	mg/L
09	07-MWB1B	MW-B01B		pH, (field)	8.8		-log+H
09	07-MWB1B	MW-B01B		Specific Conductance	680		umhos/cm
09	07-MWB1B	MW-B01B		Sulfide As S	0.296		mg/L
09	07-MWB1B	MW-B01B		Temperature	11.5		°C
09	07-MWB1B	MW-B01B		Total Dissolved Solids	575		mg/L
09	07-MWB1B	MW-B01B		Total Organic Carbon	14.9		mg/L
Inorganics							
09	07-MWB1B	MW-B01B		Aluminum, Dissolved	97.1	B	ug/L
09	07-MWB1B	MW-B01B		Aluminum, Total	328		ug/L
09	07-MWB1B	MW-B01B		Calcium, Dissolved	4450	B	ug/L
09	07-MWB1B	MW-B01B		Calcium, Total	4690	B	ug/L
09	07-MWB1B	MW-B01B		Chromium, Total	11.9		ug/L
09	07-MWB1B	MW-B01B		Copper, Dissolved	19.3	B	ug/L
09	07-MWB1B	MW-B01B		Copper, Total	22.5	B	ug/L
09	07-MWB1B	MW-B01B		Iron, Dissolved	507		ug/L
09	07-MWB1B	MW-B01B		Iron, Total	907		ug/L
09	07-MWB1B	MW-B01B		Lead, Dissolved	8.9		ug/L
09	07-MWB1B	MW-B01B		Lead, Total	24		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
09	07-MWB1B	MW-B01B		Magnesium, Dissolved	2670	B	ug/L
09	07-MWB1B	MW-B01B		Magnesium, Total	2570	B	ug/L
09	07-MWB1B	MW-B01B		Manganese, Dissolved	41.9		ug/L
09	07-MWB1B	MW-B01B		Manganese, Total	51.1		ug/L
09	07-MWB1B	MW-B01B		Potassium, Dissolved	13000		ug/L
09	07-MWB1B	MW-B01B		Potassium, Total	13100		ug/L
09	07-MWB1B	MW-B01B		Sodium, Dissolved	195000		ug/L
09	07-MWB1B	MW-B01B		Sodium, Total	183000		ug/L
09	07-MWB1B	MW-B01B		Vanadium, Dissolved	32.3	B	ug/L
09	07-MWB1B	MW-B01B		Vanadium, Total	29.6	B	ug/L
09	07-MWB1B	MW-B01B		Zinc, Dissolved	12.2	B	ug/L
09	07-MWB1B	MW-B01B		Zinc, Total	19.4	B	ug/L
Semivolatiles							
09	07-MWB1B	MW-B01B		Bis(2-Ethylhexyl)Phthalate	6	J	ug/L
Volatiles							
09	07-MWB1B	MW-B01B		Toluene	1		ug/L
Conventionals							
09	08-MWA4	MW-A04		Alkalinity (As CACO3)	314		mg/L
09	08-MWA4	MW-A04		Bicarbonate (From Alkalinity)	314		mg/L
09	08-MWA4	MW-A04		Chloride	34.3	D	mg/L
09	08-MWA4	MW-A04		pH, (field)	6.49		-log+H
09	08-MWA4	MW-A04		Specific Conductance	620		umhos/cm
09	08-MWA4	MW-A04		Sulfate	14.9	D	mg/L
09	08-MWA4	MW-A04		Temperature	14.8		°C
09	08-MWA4	MW-A04		Total Dissolved Solids	389		mg/L
09	08-MWA4	MW-A04		Total Organic Carbon	7.25		mg/L
Inorganics							
09	08-MWA4	MW-A04		Aluminum, Total	16000		ug/L
09	08-MWA4	MW-A04		Arsenic, Dissolved	2.3	B	ug/L
09	08-MWA4	MW-A04		Arsenic, Total	10.1		ug/L
09	08-MWA4	MW-A04		Barium, Dissolved	20.3	B	ug/L
09	08-MWA4	MW-A04		Barium, Total	83.2	B	ug/L
09	08-MWA4	MW-A04		Calcium, Dissolved	23200		ug/L
09	08-MWA4	MW-A04		Calcium, Total	25200		ug/L
09	08-MWA4	MW-A04		Chromium, Total	17.8		ug/L
09	08-MWA4	MW-A04		Cobalt, Total	12.1	B	ug/L
09	08-MWA4	MW-A04		Copper, Total	50		ug/L
09	08-MWA4	MW-A04		Iron, Dissolved	45200		ug/L
09	08-MWA4	MW-A04		Iron, Total	56000		ug/L
09	08-MWA4	MW-A04		Lead, Total	9.8		ug/L
09	08-MWA4	MW-A04		Magnesium, Dissolved	42400		ug/L
09	08-MWA4	MW-A04		Magnesium, Total	43400		ug/L
09	08-MWA4	MW-A04		Manganese, Dissolved	1660		ug/L
09	08-MWA4	MW-A04		Manganese, Total	1700		ug/L
09	08-MWA4	MW-A04		Nickel, Total	37.2	B	ug/L
09	08-MWA4	MW-A04		Potassium, Dissolved	10700		ug/L
09	08-MWA4	MW-A04		Potassium, Total	12200		ug/L
09	08-MWA4	MW-A04		Sodium, Dissolved	43800		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
09	08-MWA4	MW-A04		Sodium, Total	43000		ug/L
09	08-MWA4	MW-A04		Vanadium, Dissolved	12.8	B	ug/L
09	08-MWA4	MW-A04		Vanadium, Total	107		ug/L
09	08-MWA4	MW-A04		Zinc, Total	46.6		ug/L
Semivolatiles							
09	08-MWA4	MW-A04		Bis(2-Ethylhexyl)Phthalate	2	J	ug/L
Volatiles							
09	08-MWA4	MW-A04		Formaldehyde	73		ug/L
Conventionals							
BG	01-MWE3	MW-E03		Alkalinity (As CACO3)	98		mg/L
BG	01-MWE3	MW-E03		Bicarbonate (From Alkalinity)	98		mg/L
BG	01-MWE3	MW-E03		Chloride	27.7	D	mg/L
BG	01-MWE3	MW-E03		pH, (field)	7.19		-log+H
BG	01-MWE3	MW-E03		Specific Conductance	350		mhos/cm
BG	01-MWE3	MW-E03		Sulfate	43.8	D	mg/L
BG	01-MWE3	MW-E03		Sulfide As S	3.4		mg/L
BG	01-MWE3	MW-E03		Temperature	12.1		°C
BG	01-MWE3	MW-E03		Total Organic Carbon	13.4		mg/L
Inorganics							
BG	01-MWE3	MW-E03		Aluminum, Dissolved	57.5	B	ug/L
BG	01-MWE3	MW-E03		Aluminum, Total	181000		ug/L
BG	01-MWE3	MW-E03		Antimony, Total	69.3	N	ug/L
BG	01-MWE3	MW-E03		Arsenic, Dissolved	2.2	B	ug/L
BG	01-MWE3	MW-E03		Arsenic, Total	131		ug/L
BG	01-MWE3	MW-E03		Barium, Total	475		ug/L
BG	01-MWE3	MW-E03		Beryllium, Total	7.4		ug/L
BG	01-MWE3	MW-E03		Cadmium, Total	8.1	*	ug/L
BG	01-MWE3	MW-E03		Calcium, Dissolved	32100		ug/L
BG	01-MWE3	MW-E03		Calcium, Total	74200		ug/L
BG	01-MWE3	MW-E03		Chromium, Total	240		ug/L
BG	01-MWE3	MW-E03		Cobalt, Total	272		ug/L
BG	01-MWE3	MW-E03		Copper, Total	459		ug/L
BG	01-MWE3	MW-E03		Iron, Dissolved	17700		ug/L
BG	01-MWE3	MW-E03		Iron, Total	409000		ug/L
BG	01-MWE3	MW-E03		Lead, Total	84.7		ug/L
BG	01-MWE3	MW-E03		Magnesium, Dissolved	13600		ug/L
BG	01-MWE3	MW-E03		Magnesium, Total	49700		ug/L
BG	01-MWE3	MW-E03		Manganese, Dissolved	238		ug/L
BG	01-MWE3	MW-E03		Manganese, Total	3140		ug/L
BG	01-MWE3	MW-E03		Mercury, Total	0.5		ug/L
BG	01-MWE3	MW-E03		Nickel, Total	358		ug/L
BG	01-MWE3	MW-E03		Potassium, Dissolved	3310	B	ug/L
BG	01-MWE3	MW-E03		Potassium, Total	13200		ug/L
BG	01-MWE3	MW-E03		Sodium, Dissolved	35100		ug/L
BG	01-MWE3	MW-E03		Sodium, Total	35900		ug/L
BG	01-MWE3	MW-E03		Vanadium, Dissolved	12.7	B	ug/L
BG	01-MWE3	MW-E03		Vanadium, Total	860		ug/L
BG	01-MWE3	MW-E03		Zinc, Total	487		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
Semivolatiles							
BG	01-MWE3	MW-E03		Bis(2-Ethylhexyl)Phthalate	1	J	ug/L
BG	01-MWE3	MW-E03		Vanillin	1	J	ug/L
Volatiles							
BG	01-MWE3	MW-E03		Formaldehyde	47		ug/L
Conventionals							
BG	02-DM1A	DM-01A		Alkalinity (As CACO3)	118		mg/L
BG	02-DM1A	DM-01A		Bicarbonate (From Alkalinity)	118		mg/L
BG	02-DM1A	DM-01A		Chloride	3.55		mg/L
BG	02-DM1A	DM-01A		pH, (field)	7		-log+H
BG	02-DM1A	DM-01A		Specific Conductance	280		mhos/cm
BG	02-DM1A	DM-01A		Sulfate	17.1	D	mg/L
BG	02-DM1A	DM-01A		Sulfide As S	0.28		mg/L
BG	02-DM1A	DM-01A		Temperature	15		°C
BG	02-DM1A	DM-01A		Total Dissolved Solids	118		mg/L
BG	02-DM1A	DM-01A		Total Organic Carbon	14.2		mg/L
Inorganics							
BG	02-DM1A	DM-01A		Aluminum, Total	39800		ug/L
BG	02-DM1A	DM-01A		Arsenic, Dissolved	2	BW	ug/L
BG	02-DM1A	DM-01A		Arsenic, Total	31.6	B	ug/L
BG	02-DM1A	DM-01A		Barium, Total	130	B	ug/L
BG	02-DM1A	DM-01A		Calcium, Dissolved	13100		ug/L
BG	02-DM1A	DM-01A		Calcium, Total	32200		ug/L
BG	02-DM1A	DM-01A		Chromium, Total	39.7		ug/L
BG	02-DM1A	DM-01A		Cobalt, Total	17.1	B	ug/L
BG	02-DM1A	DM-01A		Copper, Total	52.5		ug/L
BG	02-DM1A	DM-01A		Iron, Dissolved	185		ug/L
BG	02-DM1A	DM-01A		Iron, Total	75400		ug/L
BG	02-DM1A	DM-01A		Lead, Total	46.8		ug/L
BG	02-DM1A	DM-01A		Magnesium, Dissolved	6960		ug/L
BG	02-DM1A	DM-01A		Magnesium, Total	19800		ug/L
BG	02-DM1A	DM-01A		Manganese, Dissolved	61.3		ug/L
BG	02-DM1A	DM-01A		Manganese, Total	405		ug/L
BG	02-DM1A	DM-01A		Mercury, Total	0.21		ug/L
BG	02-DM1A	DM-01A		Nickel, Total	67.9		ug/L
BG	02-DM1A	DM-01A		Potassium, Dissolved	6260		ug/L
BG	02-DM1A	DM-01A		Potassium, Total	9230		ug/L
BG	02-DM1A	DM-01A		Sodium, Dissolved	29200		ug/L
BG	02-DM1A	DM-01A		Sodium, Total	36700		ug/L
BG	02-DM1A	DM-01A		Vanadium, Total	224		ug/L
BG	02-DM1A	DM-01A		Zinc, Total	94.8		ug/L
Semivolatiles							
BG	02-DM1A	DM-01A		Bis(2-Ethylhexyl)Phthalate	1	J	ug/L
Volatiles							
BG	02-DM1A	DM-01A		Formaldehyde	37		ug/L
Conventionals							
BG	03-DM1B	DM-01B		Alkalinity (As CACO3)	328		mg/L
BG	03-DM1B	DM-01B		Bicarbonate (From Alkalinity)	316		mg/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
BG	03-DM1B	DM-01B		Carbonate (From Alkalinity)	12		mg/L
BG	03-DM1B	DM-01B		Chloride	71	D	mg/L
BG	03-DM1B	DM-01B		pH, (field)	8.97		-log+H
BG	03-DM1B	DM-01B		Specific Conductance	610		umhos/cm
BG	03-DM1B	DM-01B		Sulfate	0.128		mg/L
BG	03-DM1B	DM-01B		Temperature	12.2		°C
BG	03-DM1B	DM-01B		Total Dissolved Solids	495		mg/L
BG	03-DM1B	DM-01B		Total Organic Carbon	6.54		mg/L
Inorganics							
BG	03-DM1B	DM-01B		Aluminum, Dissolved	108	B	ug/L
BG	03-DM1B	DM-01B		Aluminum, Total	886		ug/L
BG	03-DM1B	DM-01B		Arsenic, Dissolved	21.9	S	ug/L
BG	03-DM1B	DM-01B		Arsenic, Total	22.5	S	ug/L
BG	03-DM1B	DM-01B		Calcium, Dissolved	3360	B	ug/L
BG	03-DM1B	DM-01B		Calcium, Total	3810	B	ug/L
BG	03-DM1B	DM-01B		Iron, Dissolved	544		ug/L
BG	03-DM1B	DM-01B		Iron, Total	1290		ug/L
BG	03-DM1B	DM-01B		Lead, Dissolved	2.3	B	ug/L
BG	03-DM1B	DM-01B		Lead, Total	2.6	B	ug/L
BG	03-DM1B	DM-01B		Magnesium, Dissolved	2430	B	ug/L
BG	03-DM1B	DM-01B		Magnesium, Total	2540	B	ug/L
BG	03-DM1B	DM-01B		Manganese, Dissolved	29.1		ug/L
BG	03-DM1B	DM-01B		Manganese, Total	46.1		ug/L
BG	03-DM1B	DM-01B		Potassium, Dissolved	10100		ug/L
BG	03-DM1B	DM-01B		Potassium, Total	10200		ug/L
BG	03-DM1B	DM-01B		Sodium, Dissolved	173000		ug/L
BG	03-DM1B	DM-01B		Sodium, Total	169000		ug/L
BG	03-DM1B	DM-01B		Vanadium, Dissolved	19.6	B	ug/L
BG	03-DM1B	DM-01B		Vanadium, Total	21.9	B	ug/L
Volatiles							
BG	03-DM1B	DM-01B		Formaldehyde	56		ug/L
Conventionals							
BG	04-DM9	DM-01B	FD	Alkalinity (As CACO3)	313		mg/L
BG	04-DM9	DM-01B	FD	Bicarbonate (From Alkalinity)	301		mg/L
BG	04-DM9	DM-01B	FD	Carbonate (From Alkalinity)	12		mg/L
BG	04-DM9	DM-01B	FD	Chloride	65.8	D	mg/L
BG	04-DM9	DM-01B	FD	Sulfate	0.206		mg/L
BG	04-DM9	DM-01B	FD	Total Dissolved Solids	508		mg/L
BG	04-DM9	DM-01B	FD	Total Organic Carbon	4.63		mg/L
Inorganics							
BG	04-DM9	DM-01B	FD	Aluminum, Total	797		ug/L
BG	04-DM9	DM-01B	FD	Arsenic, Dissolved	25.8	+	ug/L
BG	04-DM9	DM-01B	FD	Arsenic, Total	21.5		ug/L
BG	04-DM9	DM-01B	FD	Calcium, Dissolved	3260	B	ug/L
BG	04-DM9	DM-01B	FD	Calcium, Total	3800	B	ug/L
BG	04-DM9	DM-01B	FD	Iron, Dissolved	488		ug/L
BG	04-DM9	DM-01B	FD	Iron, Total	1250		ug/L
BG	04-DM9	DM-01B	FD	Lead, Dissolved	2.3	B	ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
BG	04-DM9	DM-01B	FD	Lead, Total	2.9	B	ug/L
BG	04-DM9	DM-01B	FD	Magnesium, Dissolved	2290	B	ug/L
BG	04-DM9	DM-01B	FD	Magnesium, Total	2420	B	ug/L
BG	04-DM9	DM-01B	FD	Manganese, Dissolved	28.3		ug/L
BG	04-DM9	DM-01B	FD	Manganese, Total	46.1		ug/L
BG	04-DM9	DM-01B	FD	Potassium, Dissolved	9960		ug/L
BG	04-DM9	DM-01B	FD	Potassium, Total	10300		ug/L
BG	04-DM9	DM-01B	FD	Selenium, Dissolved	3.3	BW	ug/L
BG	04-DM9	DM-01B	FD	Sodium, Dissolved	170000		ug/L
BG	04-DM9	DM-01B	FD	Sodium, Total	169000		ug/L
BG	04-DM9	DM-01B	FD	Vanadium, Dissolved	18	B	ug/L
BG	04-DM9	DM-01B	FD	Vanadium, Total	16.9	B	ug/L
Semivolatiles							
BG	04-DM9	DM-01B	FD	Bis(2-Ethylhexyl)Phthalate	1	J	ug/L
Volatiles							
BG	04-DM9	DM-01B	FD	Formaldehyde	47		ug/L
Conventionals							
01	01-MWA2	MW-A02		Dissolved Oxygen	0.6		mg/L
01	01-MWA2	MW-A02		pH, (field)	7.4		-log+H
01	01-MWA2	MW-A02		Specific Conductance	810		umhos/cm
01	01-MWA2	MW-A02		Temperature	15.2		°C
Semivolatiles							
01	01-MWA2	MW-A02		Bis(2-Chloroethyl)Ether	5	J	ug/L
01	01-MWA2	MW-A02		Di-n-Butyl Phthalate	1	J	ug/L
01	01-MWA2	MW-A02		n-Nitrosodiphenylamine	1	J	ug/L
Semivolatiles							
01	02-MW21	MW-A02	FD	Bis(2-Chloroethyl)Ether	6	J	ug/L
Conventionals							
01	12-MWA9	MW-A09		Dissolved Oxygen	0.8		mg/L
01	12-MWA9	MW-A09		pH, (field)	6.43		-log+H
01	12-MWA9	MW-A09		Specific Conductance	230		umhos/cm
01	12-MWA9	MW-A09		Temperature	16		°C
Conventionals							
02	03-MWB6	MW-B06		Dissolved Oxygen	0.4		mg/L
02	03-MWB6	MW-B06		pH, (field)	7		-log+H
02	03-MWB6	MW-B06		Specific Conductance	580		umhos/cm
02	03-MWB6	MW-B06		Temperature	15.7		°C
Volatiles							
02	03-MWB6	MW-B06		Benzene	0.8		ug/L
Conventionals							
02	11-MW20	MW-20		Dissolved Oxygen	1		mg/L
02	11-MW20	MW-20		pH, (field)	6.4		-log+H
02	11-MW20	MW-20		Specific Conductance	580		umhos/cm
02	11-MW20	MW-20		Temperature	18.9		°C
Volatiles							
02	11-MW20	MW-20		Toluene	2		ug/L
02	11-MW20	MW-20		Xylene (Total)	14		ug/L
Conventionals							

FD= Field Duplicate
EB= Equipment Blank

Round 2 Groundwater Results

Rhone-Poulenc RFI

Round 2

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
02	17-MWB4	MW-B04		Dissolved Oxygen	0.8		mg/L
02	17-MWB4	MW-B04		pH, (field)	7.66		-log+H
02	17-MWB4	MW-B04		Specific Conductance	1760		ımhos/cn
02	17-MWB4	MW-B04		Temperature	15.9		°C
Volatiles							
02	18-MW26	MW-B04	FD	Toluene	0.5		ug/L
Conventionals							
04	05-MW12	MW-12		Dissolved Oxygen	1		mg/L
04	05-MW12	MW-12		pH, (field)	6.5		-log+H
04	05-MW12	MW-12		Specific Conductance	900		ımhos/cn
04	05-MW12	MW-12		Temperature	17.6		°C
04	05-MW12	MW-12		Total Recoverable Petroleum Hydrocarbons	24		mg/L
Semivolatiles							
04	05-MW12	MW-12		2-Methylphenol	74		ug/L
04	05-MW12	MW-12		4-Methylphenol	13	J	ug/L
04	05-MW12	MW-12		Bis(2-Ethylhexyl)Phthalate	32		ug/L
04	05-MW12	MW-12		Di-n-Butyl Phthalate	2	J	ug/L
04	05-MW12	MW-12		Diethyl Phthalate	7	J	ug/L
04	05-MW12	MW-12		Phenol	2	J	ug/L
Volatiles							
04	05-MW12	MW-12		Toluene	4000		ug/L
Conventionals							
04	15-MWH11	MW-H11		Dissolved Oxygen	0.6		mg/L
04	15-MWH11	MW-H11		pH, (field)	6.51		-log+H
04	15-MWH11	MW-H11		Specific Conductance	2500		ımhos/cn
04	15-MWH11	MW-H11		Temperature	17.1		°C
04	15-MWH11	MW-H11		Total Recoverable Petroleum Hydrocarbons	54	J	mg/L
Semivolatiles							
04	15-MWH11	MW-H11		2-Methylphenol	1800		ug/L
04	15-MWH11	MW-H11		4-Methylphenol	1100		ug/L
04	15-MWH11	MW-H11		Phenol	910		ug/L
Volatiles							
04	15-MWH11	MW-H11		Toluene	320000	J	ug/L
Semivolatiles							
04	16-MW25	MW-H11	FD	2-Methylphenol	1800		ug/L
04	16-MW25	MW-H11	FD	4-Methylphenol	1100		ug/L
04	16-MW25	MW-H11	FD	Phenol	880		ug/L
Volatiles							
04	16-MW25	MW-H11	FD	Toluene	360000	J	ug/L
Conventionals							
04	19-MWH10	MW-H10		Dissolved Oxygen	1		mg/L
04	19-MWH10	MW-H10		pH, (field)	6.15		-log+H
04	19-MWH10	MW-H10		Specific Conductance	650		ımhos/cn
04	19-MWH10	MW-H10		Temperature	16.6		°C
04	19-MWH10	MW-H10		Total Recoverable Petroleum Hydrocarbons	28	J	mg/L
Volatiles							
04	19-MWH10	MW-H10		Toluene	240000		ug/L
Conventionals							

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 2

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
04	20-MW14	MW-14		Dissolved Oxygen	0.2		mg/L
04	20-MW14	MW-14		pH, (field)	6.38		-log+H
04	20-MW14	MW-14		Specific Conductance	1380		umhos/cm
04	20-MW14	MW-14		Temperature	17.9		°C
Volatiles							
04	20-MW14	MW-14		Toluene	3400		ug/L
Conventionals							
04	21-MW18	MW-18		Dissolved Oxygen	1.3		mg/L
04	21-MW18	MW-18		pH, (field)	6		-log+H
04	21-MW18	MW-18		Specific Conductance	610		umhos/cm
04	21-MW18	MW-18		Temperature	17.4		°C
04	21-MW18	MW-18		Total Recoverable Petroleum Hydrocarbons	8.1	J	mg/L
Volatiles							
04	21-MW18	MW-18		Toluene	56000		ug/L
Conventionals							
04	22-MW13	MW-13		Dissolved Oxygen	0.2		mg/L
04	22-MW13	MW-13		pH, (field)	7.3		-log+H
04	22-MW13	MW-13		Specific Conductance	2620		umhos/cm
04	22-MW13	MW-13		Temperature	16.4		°C
Volatiles							
04	22-MW13	MW-13		Toluene	630		ug/L
Conventionals							
04	26-MWH1	MW-H01		Dissolved Oxygen	0.1		mg/L
04	26-MWH1	MW-H01		pH, (field)	7.37		-log+H
04	26-MWH1	MW-H01		Specific Conductance	1850		umhos/cm
04	26-MWH1	MW-H01		Temperature	16.2		°C
Volatiles							
04	26-MWH1	MW-H01		Toluene	1200		ug/L
Conventionals							
04	30-MW19	MW-19		Dissolved Oxygen	0.8		mg/L
04	30-MW19	MW-19		pH, (field)	6.42		-log+H
04	30-MW19	MW-19		Specific Conductance	960		umhos/cm
04	30-MW19	MW-19		Temperature	16.9		°C
04	30-MW19	MW-19		Total Recoverable Petroleum Hydrocarbons	3.2		mg/L
Volatiles							
04	30-MW19	MW-19		Toluene	9400		ug/L
Conventionals							
05	06-MW15	MW-15		Dissolved Oxygen	0.8		mg/L
05	06-MW15	MW-15		pH, (field)	7		-log+H
05	06-MW15	MW-15		Specific Conductance	1520		umhos/cm
05	06-MW15	MW-15		Temperature	17.2		°C
05	06-MW15	MW-15		Total Recoverable Petroleum Hydrocarbons	8.9		mg/L
Volatiles							
05	06-MW15	MW-15		Toluene	99000		ug/L
Conventionals							
05	07-MW16	MW-16		Dissolved Oxygen	0.7		mg/L
05	07-MW16	MW-16		pH, (field)	11.2		-log+H
05	07-MW16	MW-16		Specific Conductance	10000		umhos/cm

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 2

Detected Groundwater Results

Area	Sample ID	Station ID	QA/QC	Parameter	Result	Qualifer	Units
05	07-MW16	MW-16		Temperature	17.6		°C
Volatiles							
05	07-MW16	MW-16		Toluene	1100		ug/L
Conventionals							
05	28-MW17	MW-17		Dissolved Oxygen	0.2		mg/L
05	28-MW17	MW-17		pH, (field)	6.82		-log+H
05	28-MW17	MW-17		Specific Conductance	2420		umhos/cm
05	28-MW17	MW-17		Temperature	16.7		°C
05	28-MW17	MW-17		Total Recoverable Petroleum Hydrocarbons	14		mg/L
Volatiles							
05	28-MW17	MW-17		Toluene	120000		ug/L
Conventionals							
06	14-DM7	DM-07		Dissolved Oxygen	0.6		mg/L
06	14-DM7	DM-07		pH, (field)	6.62		-log+H
06	14-DM7	DM-07		Specific Conductance	510		umhos/cm
06	14-DM7	DM-07		Temperature	15.8		°C
Volatiles							
06	14-DM7	DM-07		Benzene	1		ug/L
Conventionals							
BG	08-DM1B	DM-01B		Dissolved Oxygen	1.4		mg/L
BG	08-DM1B	DM-01B		pH, (field)	9.1		-log+H
BG	08-DM1B	DM-01B		Specific Conductance	610		umhos/cm
BG	08-DM1B	DM-01B		Temperature	13.6		°C
Inorganics							
BG	08-DM1B	DM-01B		Vanadium, Total	19	BJ	ug/L
Inorganics							
BG	09-MW23	DM-01B	FD	Vanadium, Total	19.7	BJ	ug/L
Conventionals							
BG	10-MWE3	MW-E03		Dissolved Oxygen	1		mg/L
BG	10-MWE3	MW-E03		pH, (field)	7		-log+H
BG	10-MWE3	MW-E03		Specific Conductance	405		umhos/cm
BG	10-MWE3	MW-E03		Temperature	15.8		°C
Inorganics							
BG	10-MWE3	MW-E03		Antimony, Total	25.45	BJ	ug/L
BG	10-MWE3	MW-E03		Vanadium, Total	13.3411	BJ	ug/L

FD= Field Duplicate
EB= Equipment Blank

HydroPunch Results

Rhone-Poulenc RFI

Round 1

Detected Hydropunch Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Conventionals								
01	A01-26-W1		13.4	15	Total Organic Carbon	48.5		mg/L
01	A01-26-W1		13.4	15	Total Petroleum Hydrocarbons	1.18		mg/L
Volatiles								
01	A01-26-W1		13.4	15	Toluene	7		ug/L
Conventionals								
04	A04-01-W1		22	22	Total Petroleum Hydrocarbons	20.7		mg/L
Volatiles								
04	A04-01-W1		22	22	Benzene	1		ug/L
04	A04-01-W1		22	22	Ethylbenzene	4.7		ug/L
04	A04-01-W1		22	22	Toluene	17000		ug/L
04	A04-01-W1		22	22	Xylene (Total)	6.6		ug/L
Conventionals								
04	A04-02-W1		13	15	Total Organic Carbon	19.7		mg/L
04	A04-02-W1		13	15	Total Petroleum Hydrocarbons	112		mg/L
Volatiles								
04	A04-02-W1		13	15	Toluene	510000		ug/L
Conventionals								
04	A04-03-W1		12.5	15	Total Organic Carbon	89		mg/L
04	A04-03-W1		12.5	15	Total Petroleum Hydrocarbons	49.3		mg/L
Volatiles								
04	A04-03-W1		12.5	15	Benzene	62		ug/L
04	A04-03-W1		12.5	15	Ethylbenzene	74		ug/L
04	A04-03-W1		12.5	15	Toluene	270000		ug/L
04	A04-03-W1		12.5	15	Xylene (Total)	110		ug/L
Conventionals								
04	A04-04-W1		13.7	15	Total Organic Carbon	336		mg/L
04	A04-04-W1		13.7	15	Total Petroleum Hydrocarbons	34.6		mg/L
Volatiles								
04	A04-04-W1		13.7	15	Toluene	450000		ug/L
Conventionals								
04	A04-05-W1		22	22	Total Organic Carbon	20.6		mg/L
04	A04-05-W1		22	22	Total Petroleum Hydrocarbons	28.5		mg/L
Volatiles								
04	A04-05-W1		22	22	Toluene	1600		ug/L
Conventionals								
04	A04-06-W1		12.5	15	Total Organic Carbon	42.6		mg/L
04	A04-06-W1		12.5	15	Total Petroleum Hydrocarbons	129		mg/L
Volatiles								
04	A04-06-W1		12.5	15	Toluene	7900		ug/L
04	A04-06-W1		12.5	15	Xylene (Total)	41		ug/L
Conventionals								
04	A04-06-W2		30	30	Total Petroleum Hydrocarbons	6.04		mg/L
Volatiles								
04	A04-06-W2		30	30	Toluene	52		ug/L
04	A04-06-W2		30	30	Xylene (Total)	1.2		ug/L
Conventionals								
04	A04-06-W3		35	35	Total Organic Carbon	12.2		mg/L
04	A04-06-W3		35	35	Total Petroleum Hydrocarbons	13.1		mg/L

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Rhone-Poulenc RFI

Round 1

Detected Hydropunch Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Volatiles								
04	A04-06-W3		35	35	Toluene	91		ug/L
04	A04-06-W3		35	35	Xylene (Total)	0.9		ug/L
Conventionals								
04	A04-06-W5		54	54	Total Organic Carbon	9.07		mg/L
Volatiles								
04	A04-06-W5		54	54	Toluene	4.5		ug/L
Conventionals								
04	A04-07-W1		12.6	15	Total Organic Carbon	225		mg/L
04	A04-07-W1		12.6	15	Total Petroleum Hydrocarbons	169		mg/L
Volatiles								
04	A04-07-W1		12.6	15	Toluene	230000		ug/L
Conventionals								
04	A04-08-W1		22	22	Total Petroleum Hydrocarbons	24.6		mg/L
Volatiles								
04	A04-08-W1		22	22	Ethylbenzene	5.6		ug/L
04	A04-08-W1		22	22	Toluene	890		ug/L
04	A04-08-W1		22	22	Xylene (Total)	11		ug/L
Conventionals								
04	A04-09-W1		13.3	15	Total Organic Carbon	41		mg/L
Volatiles								
04	A04-09-W1		13.3	15	Xylene (Total)	6.7		ug/L
Conventionals								
04	A04-10-W1		13	15	Total Organic Carbon	19.5		mg/L
04	A04-10-W1		13	15	Total Petroleum Hydrocarbons	516		mg/L
Volatiles								
04	A04-10-W1		13	15	Toluene	46000		ug/L
Conventionals								
04	A04-10-W2		25	25	Total Organic Carbon	17.3		mg/L
04	A04-10-W2		25	25	Total Petroleum Hydrocarbons	10.1		mg/L
Volatiles								
04	A04-10-W2		25	25	Benzene	15		ug/L
04	A04-10-W2		25	25	Toluene	83		ug/L
04	A04-10-W2		25	25	Xylene (Total)	6.6		ug/L
Conventionals								
04	A04-11-W1		13.2	15	Total Organic Carbon	23.5		mg/L
04	A04-11-W1		13.2	15	Total Petroleum Hydrocarbons	63.8		mg/L
Volatiles								
04	A04-11-W1		13.2	15	Benzene	5.8		ug/L
04	A04-11-W1		13.2	15	Xylene (Total)	25		ug/L
Conventionals								
04	A04-12-W1		12.4	14	Total Organic Carbon	8.52		mg/L
04	A04-12-W1		12.4	14	Total Petroleum Hydrocarbons	12		mg/L
Volatiles								
04	A04-12-W1		12.4	14	Xylene (Total)	2.3		ug/L
Conventionals								
04	A04-13-W1		11	15	Total Organic Carbon	19.6		mg/L
Volatiles								
04	A04-13-W1		11	15	Benzene	1.8		ug/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Hydropunch Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-13-W1		11	15	Xylene (Total)	9.4		ug/L
Volatiles								
04	A04-13-W2		31	31	Toluene	5.2		ug/L
Conventionals								
04	A04-14-W1		13.1	15	Total Organic Carbon	26.6		mg/L
04	A04-14-W1		13.1	15	Total Petroleum Hydrocarbons	16.9		mg/L
Volatiles								
04	A04-14-W1		13.1	15	Toluene	470000		ug/L
Volatiles								
04	A04-14-W2		30	30	Benzene	1.5		ug/L
04	A04-14-W2		30	30	Toluene	34		ug/L
Conventionals								
04	A04-14-W3		45	45	Total Organic Carbon	11.7		mg/L
04	A04-14-W3		45	45	Total Petroleum Hydrocarbons	1.13		mg/L
Volatiles								
04	A04-14-W3		45	45	Toluene	110		ug/L
Conventionals								
04	A04-14-W4		60	60	Total Organic Carbon	6.35		mg/L
Volatiles								
04	A04-14-W4		60	60	Toluene	120		ug/L
Conventionals								
04	A04-15-W1		12.5	15	Total Organic Carbon	14.8		mg/L
Volatiles								
04	A04-15-W1		12.5	15	Toluene	3.3		ug/L
Conventionals								
04	A04-16-W1		14.5	15	Total Organic Carbon	55.4		mg/L
Volatiles								
04	A04-16-W1		14.5	15	Benzene	6.1		ug/L
04	A04-16-W1		14.5	15	Ethylbenzene	3.6		ug/L
04	A04-16-W1		14.5	15	Toluene	24000		ug/L
04	A04-16-W1		14.5	15	Xylene (Total)	15		ug/L
Conventionals								
04	A04-17-W1		12.8	16	Total Organic Carbon	82.8		mg/L
Volatiles								
04	A04-17-W1		12.8	16	Toluene	4.1		ug/L
Conventionals								
04	A04-18-W1		12.7	15	Total Organic Carbon	5.86		mg/L
Volatiles								
04	A04-18-W1		12.7	15	Toluene	2.2		ug/L
Conventionals								
04	A04-21-W1		13.2	15	Total Organic Carbon	10.5		mg/L
Conventionals								
04	A04-23-W1		12.7	15	Total Organic Carbon	38.8		mg/L
04	A04-23-W1		12.7	15	Total Petroleum Hydrocarbons	23.5		mg/L
Volatiles								
04	A04-23-W1		12.7	15	Toluene	480000		ug/L
Conventionals								
04	A04-23-W2		31	31	Total Petroleum Hydrocarbons	7.72		mg/L
Volatiles								

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Hydropunch Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
04	A04-23-W2		31	31	Ethylbenzene	0.6		ug/L
04	A04-23-W2		31	31	Toluene	4000		ug/L
04	A04-23-W2		31	31	Xylene (Total)	1.1		ug/L
Conventionals								
04	A04-23-W3		47	47	Total Organic Carbon	5.96		mg/L
04	A04-23-W3		47	47	Total Petroleum Hydrocarbons	5.53		mg/L
Volatiles								
04	A04-23-W3		47	47	Toluene	260		ug/L
Volatiles								
04	A04-23-W4		64	64	Toluene	960		ug/L
Conventionals								
04	A04-27-W1		3.3	7	Total Organic Carbon	4.59		mg/L
Volatiles								
04	A04-27-W1		3.3	7	Toluene	0.6		ug/L
Conventionals								
04	A04-28-W1		3.2	4.5	Total Organic Carbon	5.19		mg/L
04	A04-28-W1		3.2	4.5	Total Petroleum Hydrocarbons	1.57		mg/L
Volatiles								
04	A04-28-W1		3.2	4.5	Toluene	17000		ug/L
Conventionals								
04	A04-29-W1		6	8	Total Organic Carbon	5.02		mg/L
04	A04-29-W1		6	8	Total Petroleum Hydrocarbons	5.47		mg/L
Volatiles								
04	A04-29-W1		6	8	Toluene	1.4		ug/L
Conventionals								
05	A05-19-W1		13.3	15	Total Organic Carbon	3800		mg/L
Volatiles								
05	A05-19-W1		13.3	15	Toluene	7700		ug/L
Conventionals								
05	A05-20-W1		13.4	15	Total Organic Carbon	124		mg/L
Volatiles								
05	A05-20-W1		13.4	15	Toluene	0.8		ug/L
Conventionals								
05	A05-22-W1		22	22	Total Organic Carbon	81.6		mg/L
05	A05-22-W1		22	22	Total Petroleum Hydrocarbons	1.87		mg/L
Volatiles								
05	A05-22-W1		22	22	Toluene	57		ug/L
Conventionals								
05	A05-24-W2		22	23	Total Organic Carbon	179		mg/L
05	A05-24-W2		22	23	Total Petroleum Hydrocarbons	1.86		mg/L
Volatiles								
05	A05-24-W2		22	23	Toluene	26000		ug/L
Conventionals								
05	A05-24-W3		45	45	Total Organic Carbon	188		mg/L
05	A05-24-W3		45	45	Total Petroleum Hydrocarbons	3.06		mg/L
Volatiles								
05	A05-24-W3		45	45	Toluene	59000		ug/L
Conventionals								
05	A05-24-W4		62	62	Total Organic Carbon	295		mg/L

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Hydropunch Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Volatiles								
05	A05-24-W4		62	62	Toluene	94000		ug/L
Conventionals								
05	A05-25-W1		12.9	15	Total Organic Carbon	40.9		mg/L
Volatiles								
05	A05-25-W1		12.9	15	Toluene	25		ug/L

FD= Field Duplicate
EB= Equipment Blank

Round 1 Sediment Results

Rhone-Poulenc RFI

Round 1

Detected Sediment Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Inorganics								
11	A11-01-01		0	0.5	Aluminum, Total	7810		mg/kg
11	A11-01-01		0	0.5	Arsenic, Total	2.8		mg/kg
11	A11-01-01		0	0.5	Barium, Total	17	B	mg/kg
11	A11-01-01		0	0.5	Calcium, Total	3210		mg/kg
11	A11-01-01		0	0.5	Chromium, Total	12.5	*	mg/kg
11	A11-01-01		0	0.5	Cobalt, Total	6.7	B	mg/kg
11	A11-01-01		0	0.5	Copper, Total	13.2		mg/kg
11	A11-01-01		0	0.5	Iron, Total	13700		mg/kg
11	A11-01-01		0	0.5	Lead, Total	5.2	N*	mg/kg
11	A11-01-01		0	0.5	Magnesium, Total	2980		mg/kg
11	A11-01-01		0	0.5	Manganese, Total	217		mg/kg
11	A11-01-01		0	0.5	Nickel, Total	11.2		mg/kg
11	A11-01-01		0	0.5	Sodium, Total	1610		mg/kg
11	A11-01-01		0	0.5	Vanadium, Total	44.7		mg/kg
11	A11-01-01		0	0.5	Zinc, Total	32.4	*	mg/kg
Pesticides/PCB's								
11	A11-01-01		0	0.5	4,4'-DDD	0.0044	J	mg/kg
11	A11-01-01		0	0.5	BHC-Delta	0.003	J	mg/kg
11	A11-01-01		0	0.5	Endosulfan Sulfate	0.0012	JP	mg/kg
11	A11-01-01		0	0.5	Gamma-Chlordane	0.00095	JP	mg/kg
Semivolatiles								
11	A11-01-01		0	0.5	Benzo(GHI)Perylene	0.045	J	mg/kg
11	A11-01-01		0	0.5	Bis(2-Ethylhexyl)Phthalate	0.045	J	mg/kg
11	A11-01-01		0	0.5	Fluoranthene	0.055	J	mg/kg
11	A11-01-01		0	0.5	Pyrene	0.071	J	mg/kg
Inorganics								
11	A11-02-01		0	0.5	Aluminum, Total	6995		mg/kg
11	A11-02-01		0	0.5	Arsenic, Total	3.8		mg/kg
11	A11-02-01		0	0.5	Barium, Total	17.45	B	mg/kg
11	A11-02-01		0	0.5	Beryllium, Total	0.3725	B	mg/kg
11	A11-02-01		0	0.5	Calcium, Total	3155		mg/kg
11	A11-02-01		0	0.5	Chromium, Total	13.55		mg/kg
11	A11-02-01		0	0.5	Cobalt, Total	6.2	B	mg/kg
11	A11-02-01		0	0.5	Copper, Total	14.25		mg/kg
11	A11-02-01		0	0.5	Iron, Total	15300		mg/kg
11	A11-02-01		0	0.5	Lead, Total	8		mg/kg
11	A11-02-01		0	0.5	Magnesium, Total	2610		mg/kg
11	A11-02-01		0	0.5	Manganese, Total	139.5		mg/kg
11	A11-02-01		0	0.5	Nickel, Total	10.05		mg/kg
11	A11-02-01		0	0.5	Sodium, Total	1285		mg/kg
11	A11-02-01		0	0.5	Vanadium, Total	41.75		mg/kg
11	A11-02-01		0	0.5	Zinc, Total	37.5		mg/kg
Pesticides/PCB's								
11	A11-02-01		0	0.5	BHC-Delta	0.0029	J	mg/kg
11	A11-02-01		0	0.5	Endosulfan Sulfate	0.0012	JP	mg/kg
11	A11-02-01		0	0.5	Endrin Aldehyde	0.0021	JP	mg/kg
11	A11-02-01		0	0.5	Gamma-Chlordane	0.00099	JP	mg/kg
Semivolatiles								

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Sediment Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
11	A11-02-01		0	0.5	Bis(2-Ethylhexyl)Phthalate	0.071	J	mg/kg
11	A11-02-01		0	0.5	Fluoranthene	0.058	J	mg/kg
11	A11-02-01		0	0.5	Pyrene	0.055	J	mg/kg
Inorganics								
11	A11-03-01		0	0.5	Aluminum, Total	11600		mg/kg
11	A11-03-01		0	0.5	Arsenic, Total	4.6		mg/kg
11	A11-03-01		0	0.5	Barium, Total	29.2	B	mg/kg
11	A11-03-01		0	0.5	Calcium, Total	3730		mg/kg
11	A11-03-01		0	0.5	Chromium, Total	17.8	*	mg/kg
11	A11-03-01		0	0.5	Cobalt, Total	8.2	B	mg/kg
11	A11-03-01		0	0.5	Copper, Total	23.7		mg/kg
11	A11-03-01		0	0.5	Iron, Total	16200		mg/kg
11	A11-03-01		0	0.5	Lead, Total	11.7	N*	mg/kg
11	A11-03-01		0	0.5	Magnesium, Total	3650		mg/kg
11	A11-03-01		0	0.5	Manganese, Total	191		mg/kg
11	A11-03-01		0	0.5	Mercury, Total	0.09		mg/kg
11	A11-03-01		0	0.5	Nickel, Total	15.1		mg/kg
11	A11-03-01		0	0.5	Sodium, Total	1810		mg/kg
11	A11-03-01		0	0.5	Vanadium, Total	46.6		mg/kg
11	A11-03-01		0	0.5	Zinc, Total	56.7	*	mg/kg
Pesticides/PCB's								
11	A11-03-01		0	0.5	4,4'-DDD	0.018	J	mg/kg
11	A11-03-01		0	0.5	4,4'-DDE	0.007	J	mg/kg
11	A11-03-01		0	0.5	4,4'-DDT	0.014	PJ	mg/kg
11	A11-03-01		0	0.5	Endosulfan II	0.0016	JP	mg/kg
11	A11-03-01		0	0.5	Endosulfan Sulfate	0.0064		mg/kg
11	A11-03-01		0	0.5	Endrin Aldehyde	0.0034	P	mg/kg
11	A11-03-01		0	0.5	Endrin Ketone	0.0028	JP	mg/kg
11	A11-03-01		0	0.5	Gamma-Chlordane	0.001	JP	mg/kg
Semivolatiles								
11	A11-03-01		0	0.5	Benzo(A)Anthracene	0.18	J	mg/kg
11	A11-03-01		0	0.5	Benzo(A)Pyrene	0.14	J	mg/kg
11	A11-03-01		0	0.5	Benzo(B)Fluoranthene	0.22	J	mg/kg
11	A11-03-01		0	0.5	Benzo(GHI)Perylene	0.059	J	mg/kg
11	A11-03-01		0	0.5	Benzo(K)Fluoranthene	0.15	J	mg/kg
11	A11-03-01		0	0.5	Bis(2-Ethylhexyl)Phthalate	0.17	J	mg/kg
11	A11-03-01		0	0.5	Chrysene	0.25	J	mg/kg
11	A11-03-01		0	0.5	Fluoranthene	0.47	J	mg/kg
11	A11-03-01		0	0.5	Indeno(1,2,3-CD)Pyrene	0.076	J	mg/kg
11	A11-03-01		0	0.5	Phenanthrene	0.083	J	mg/kg
11	A11-03-01		0	0.5	Pyrene	0.46	J	mg/kg
Inorganics								
11	A11-04-01		0	0.5	Aluminum, Total	22600		mg/kg
11	A11-04-01		0	0.5	Arsenic, Total	7.9	S	mg/kg
11	A11-04-01		0	0.5	Barium, Total	54.7		mg/kg
11	A11-04-01		0	0.5	Beryllium, Total	0.64	B	mg/kg
11	A11-04-01		0	0.5	Calcium, Total	5060		mg/kg
11	A11-04-01		0	0.5	Chromium, Total	24.4	*	mg/kg
11	A11-04-01		0	0.5	Cobalt, Total	13.9		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Sediment Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
11	A11-04-01		0	0.5	Copper, Total	36.4		mg/kg
11	A11-04-01		0	0.5	Iron, Total	24500		mg/kg
11	A11-04-01		0	0.5	Lead, Total	14.2	N*	mg/kg
11	A11-04-01		0	0.5	Magnesium, Total	6450		mg/kg
11	A11-04-01		0	0.5	Manganese, Total	243		mg/kg
11	A11-04-01		0	0.5	Nickel, Total	22.5		mg/kg
11	A11-04-01		0	0.5	Sodium, Total	3770		mg/kg
11	A11-04-01		0	0.5	Vanadium, Total	71.2		mg/kg
11	A11-04-01		0	0.5	Zinc, Total	71	*	mg/kg
Pesticides/PCB's								
11	A11-04-01		0	0.5	4,4'-DDD	0.0073	PJ	mg/kg
11	A11-04-01		0	0.5	4,4'-DDE	0.0065	J	mg/kg
11	A11-04-01		0	0.5	4,4'-DDT	0.0049	PJ	mg/kg
11	A11-04-01		0	0.5	Endosulfan II	0.0021	JP	mg/kg
11	A11-04-01		0	0.5	Endosulfan Sulfate	0.0022	JP	mg/kg
11	A11-04-01		0	0.5	Endrin Aldehyde	0.0041	P	mg/kg
11	A11-04-01		0	0.5	Endrin Ketone	0.0042	P	mg/kg
11	A11-04-01		0	0.5	Gamma-Chlordane	0.0013	JP	mg/kg
Semivolatiles								
11	A11-04-01		0	0.5	Benzo(A)Anthracene	0.15	J	mg/kg
11	A11-04-01		0	0.5	Benzo(A)Pyrene	0.11	J	mg/kg
11	A11-04-01		0	0.5	Benzo(B)Fluoranthene	0.24	J	mg/kg
11	A11-04-01		0	0.5	Benzo(K)Fluoranthene	0.19	J	mg/kg
11	A11-04-01		0	0.5	Bis(2-Ethylhexyl)Phthalate	0.11	J	mg/kg
11	A11-04-01		0	0.5	Chrysene	0.38	J	mg/kg
11	A11-04-01		0	0.5	Fluoranthene	1.2		mg/kg
11	A11-04-01		0	0.5	Indeno(1,2,3-CD)Pyrene	0.062	J	mg/kg
11	A11-04-01		0	0.5	Phenanthrene	0.47	J	mg/kg
11	A11-04-01		0	0.5	Pyrene	0.89		mg/kg
Inorganics								
11	A11-05-01		0	0.5	Aluminum, Total	14100		mg/kg
11	A11-05-01		0	0.5	Arsenic, Total	6.4	S	mg/kg
11	A11-05-01		0	0.5	Barium, Total	32.8	B	mg/kg
11	A11-05-01		0	0.5	Calcium, Total	4320		mg/kg
11	A11-05-01		0	0.5	Chromium, Total	18.5	*	mg/kg
11	A11-05-01		0	0.5	Cobalt, Total	8.7	B	mg/kg
11	A11-05-01		0	0.5	Copper, Total	31.1		mg/kg
11	A11-05-01		0	0.5	Iron, Total	17500		mg/kg
11	A11-05-01		0	0.5	Lead, Total	18.6	N*	mg/kg
11	A11-05-01		0	0.5	Magnesium, Total	4100		mg/kg
11	A11-05-01		0	0.5	Manganese, Total	176		mg/kg
11	A11-05-01		0	0.5	Nickel, Total	15.2		mg/kg
11	A11-05-01		0	0.5	Sodium, Total	2450		mg/kg
11	A11-05-01		0	0.5	Vanadium, Total	50		mg/kg
11	A11-05-01		0	0.5	Zinc, Total	80.9	*	mg/kg
Pesticides/PCB's								
11	A11-05-01		0	0.5	4,4'-DDD	0.028	J	mg/kg
11	A11-05-01		0	0.5	4,4'-DDE	0.0084	J	mg/kg
11	A11-05-01		0	0.5	4,4'-DDT	0.022	PJ	mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Sediment Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
11	A11-05-01		0	0.5	Aroclor-1254	0.1	P	mg/kg
11	A11-05-01		0	0.5	Endosulfan I	0.0013	JP	mg/kg
11	A11-05-01		0	0.5	Endosulfan II	0.0015	JP	mg/kg
11	A11-05-01		0	0.5	Endosulfan Sulfate	0.0094		mg/kg
11	A11-05-01		0	0.5	Endrin Aldehyde	0.0051	P	mg/kg
11	A11-05-01		0	0.5	Endrin Ketone	0.0038	P	mg/kg
11	A11-05-01		0	0.5	Gamma-Chlordane	0.0011	JP	mg/kg
11	A11-05-01		0	0.5	Methoxychlor	0.0093	JP	mg/kg
Semivolatiles								
11	A11-05-01		0	0.5	Benzo(A)Anthracene	0.22	J	mg/kg
11	A11-05-01		0	0.5	Benzo(A)Pyrene	0.16	J	mg/kg
11	A11-05-01		0	0.5	Benzo(B)Fluoranthene	0.22	J	mg/kg
11	A11-05-01		0	0.5	Benzo(GHI)Perylene	0.077	J	mg/kg
11	A11-05-01		0	0.5	Benzo(K)Fluoranthene	0.25	J	mg/kg
11	A11-05-01		0	0.5	Bis(2-Ethylhexyl)Phthalate	0.2	J	mg/kg
11	A11-05-01		0	0.5	Chrysene	0.41	J	mg/kg
11	A11-05-01		0	0.5	Fluoranthene	0.61		mg/kg
11	A11-05-01		0	0.5	Indeno(1,2,3-CD)Pyrene	0.11	J	mg/kg
11	A11-05-01		0	0.5	Phenanthrene	0.1	J	mg/kg
11	A11-05-01		0	0.5	Pyrene	0.45	J	mg/kg
Inorganics								
11	A11-06-01		0	0.5	Aluminum, Total	20500		mg/kg
11	A11-06-01		0	0.5	Arsenic, Total	9.9	+	mg/kg
11	A11-06-01		0	0.5	Barium, Total	56.1	B	mg/kg
11	A11-06-01		0	0.5	Beryllium, Total	0.81	B	mg/kg
11	A11-06-01		0	0.5	Calcium, Total	5700		mg/kg
11	A11-06-01		0	0.5	Chromium, Total	25	*	mg/kg
11	A11-06-01		0	0.5	Cobalt, Total	12.3	B	mg/kg
11	A11-06-01		0	0.5	Copper, Total	38.4		mg/kg
11	A11-06-01		0	0.5	Iron, Total	25400		mg/kg
11	A11-06-01		0	0.5	Lead, Total	20.8	N*	mg/kg
11	A11-06-01		0	0.5	Magnesium, Total	6170		mg/kg
11	A11-06-01		0	0.5	Manganese, Total	320		mg/kg
11	A11-06-01		0	0.5	Nickel, Total	23.4		mg/kg
11	A11-06-01		0	0.5	Sodium, Total	3940		mg/kg
11	A11-06-01		0	0.5	Vanadium, Total	65.1		mg/kg
11	A11-06-01		0	0.5	Zinc, Total	92.5	*	mg/kg
Pesticides/PCB's								
11	A11-06-01		0	0.5	4,4'-DDD	0.02	J	mg/kg
11	A11-06-01		0	0.5	4,4'-DDE	0.0064	PJ	mg/kg
11	A11-06-01		0	0.5	4,4'-DDT	0.026	PJ	mg/kg
11	A11-06-01		0	0.5	BHC-Delta	0.011	PJ	mg/kg
11	A11-06-01		0	0.5	Endosulfan II	0.0028	JP	mg/kg
11	A11-06-01		0	0.5	Endosulfan Sulfate	0.0028	JP	mg/kg
11	A11-06-01		0	0.5	Endrin Aldehyde	0.0047	P	mg/kg
11	A11-06-01		0	0.5	Endrin Ketone	0.0051	P	mg/kg
11	A11-06-01		0	0.5	Gamma-Chlordane	0.0044	P	mg/kg
11	A11-06-01		0	0.5	Methoxychlor	0.012	JP	mg/kg
Semivolatiles								

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Sediment Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
11	A11-06-01		0	0.5	Benzo(A)Anthracene	0.15	J	mg/kg
11	A11-06-01		0	0.5	Benzo(A)Pyrene	0.17	J	mg/kg
11	A11-06-01		0	0.5	Benzo(B)Fluoranthene	0.2	J	mg/kg
11	A11-06-01		0	0.5	Benzo(GHI)Perylene	0.091	J	mg/kg
11	A11-06-01		0	0.5	Benzo(K)Fluoranthene	0.21	J	mg/kg
11	A11-06-01		0	0.5	Bis(2-Ethylhexyl)Phthalate	0.3	J	mg/kg
11	A11-06-01		0	0.5	Chrysene	0.24	J	mg/kg
11	A11-06-01		0	0.5	Fluoranthene	0.44	J	mg/kg
11	A11-06-01		0	0.5	Indeno(1,2,3-CD)Pyrene	0.12	J	mg/kg
11	A11-06-01		0	0.5	Phenanthrene	0.14	J	mg/kg
11	A11-06-01		0	0.5	Pyrene	0.39	J	mg/kg
Inorganics								
11	A11-07-01		0	0.5	Aluminum, Total	11500		mg/kg
11	A11-07-01		0	0.5	Arsenic, Total	5.8	S	mg/kg
11	A11-07-01		0	0.5	Barium, Total	24.5	B	mg/kg
11	A11-07-01		0	0.5	Beryllium, Total	0.51	B	mg/kg
11	A11-07-01		0	0.5	Calcium, Total	3840		mg/kg
11	A11-07-01		0	0.5	Chromium, Total	17.6	*	mg/kg
11	A11-07-01		0	0.5	Cobalt, Total	8.5	B	mg/kg
11	A11-07-01		0	0.5	Copper, Total	57.4		mg/kg
11	A11-07-01		0	0.5	Iron, Total	15900		mg/kg
11	A11-07-01		0	0.5	Lead, Total	19	N*	mg/kg
11	A11-07-01		0	0.5	Magnesium, Total	3560		mg/kg
11	A11-07-01		0	0.5	Manganese, Total	135		mg/kg
11	A11-07-01		0	0.5	Nickel, Total	13.8		mg/kg
11	A11-07-01		0	0.5	Sodium, Total	2030		mg/kg
11	A11-07-01		0	0.5	Vanadium, Total	48.4		mg/kg
11	A11-07-01		0	0.5	Zinc, Total	85.4	*	mg/kg
Pesticides/PCB's								
11	A11-07-01		0	0.5	4,4'-DDD	0.042	J	mg/kg
11	A11-07-01		0	0.5	4,4'-DDE	0.01	J	mg/kg
11	A11-07-01		0	0.5	4,4'-DDT	0.021	PJ	mg/kg
11	A11-07-01		0	0.5	BHC-Delta	0.0066	PJ	mg/kg
11	A11-07-01		0	0.5	Endosulfan I	0.0013	JP	mg/kg
11	A11-07-01		0	0.5	Endosulfan II	0.0013	JP	mg/kg
11	A11-07-01		0	0.5	Endosulfan Sulfate	0.0044	P	mg/kg
11	A11-07-01		0	0.5	Endrin Aldehyde	0.0036	P	mg/kg
11	A11-07-01		0	0.5	Endrin Ketone	0.002	JP	mg/kg
11	A11-07-01		0	0.5	Gamma-Chlordane	0.0011	JP	mg/kg
11	A11-07-01		0	0.5	Methoxychlor	0.0015	JP	mg/kg
Semivolatiles								
11	A11-07-01		0	0.5	Benzo(A)Anthracene	0.17	J	mg/kg
11	A11-07-01		0	0.5	Benzo(A)Pyrene	0.15	J	mg/kg
11	A11-07-01		0	0.5	Benzo(B)Fluoranthene	0.21	J	mg/kg
11	A11-07-01		0	0.5	Benzo(GHI)Perylene	0.072	J	mg/kg
11	A11-07-01		0	0.5	Benzo(K)Fluoranthene	0.17	J	mg/kg
11	A11-07-01		0	0.5	Bis(2-Ethylhexyl)Phthalate	0.2	J	mg/kg
11	A11-07-01		0	0.5	Chrysene	0.22	J	mg/kg
11	A11-07-01		0	0.5	Fluoranthene	0.54		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 1

Detected Sediment Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
11	A11-07-01		0	0.5	Indeno(1,2,3-CD)Pyrene	0.085	J	mg/kg
11	A11-07-01		0	0.5	Phenanthrene	0.082	J	mg/kg
11	A11-07-01		0	0.5	Pyrene	0.49	J	mg/kg
Inorganics								
11	A11-08-01	FD	0	0.5	Aluminum, Total	11300		mg/kg
11	A11-08-01	FD	0	0.5	Arsenic, Total	6.8	S	mg/kg
11	A11-08-01	FD	0	0.5	Barium, Total	31.1	B	mg/kg
11	A11-08-01	FD	0	0.5	Beryllium, Total	0.58	B	mg/kg
11	A11-08-01	FD	0	0.5	Calcium, Total	3700		mg/kg
11	A11-08-01	FD	0	0.5	Chromium, Total	16.5	*	mg/kg
11	A11-08-01	FD	0	0.5	Cobalt, Total	9.2	B	mg/kg
11	A11-08-01	FD	0	0.5	Copper, Total	25.8		mg/kg
11	A11-08-01	FD	0	0.5	Iron, Total	16500		mg/kg
11	A11-08-01	FD	0	0.5	Lead, Total	47.5	N*	mg/kg
11	A11-08-01	FD	0	0.5	Magnesium, Total	3890		mg/kg
11	A11-08-01	FD	0	0.5	Manganese, Total	193		mg/kg
11	A11-08-01	FD	0	0.5	Nickel, Total	15.6		mg/kg
11	A11-08-01	FD	0	0.5	Sodium, Total	1970		mg/kg
11	A11-08-01	FD	0	0.5	Vanadium, Total	49		mg/kg
11	A11-08-01	FD	0	0.5	Zinc, Total	93.6	*	mg/kg
Pesticides/PCB's								
11	A11-08-01	FD	0	0.5	4,4'-DDD	0.018	PJ	mg/kg
11	A11-08-01	FD	0	0.5	4,4'-DDE	0.0081	PJ	mg/kg
11	A11-08-01	FD	0	0.5	4,4'-DDT	0.011	PJ	mg/kg
11	A11-08-01	FD	0	0.5	Aroclor-1254	0.2	P	mg/kg
11	A11-08-01	FD	0	0.5	BHC-Delta	0.0067	PJ	mg/kg
11	A11-08-01	FD	0	0.5	Endosulfan I	0.002	P	mg/kg
11	A11-08-01	FD	0	0.5	Endosulfan II	0.0041	P	mg/kg
11	A11-08-01	FD	0	0.5	Endosulfan Sulfate	0.0058		mg/kg
11	A11-08-01	FD	0	0.5	Endrin Aldehyde	0.0058	P	mg/kg
11	A11-08-01	FD	0	0.5	Endrin Ketone	0.0028	JP	mg/kg
11	A11-08-01	FD	0	0.5	Gamma-Chlordane	0.0058	P	mg/kg
Semivolatiles								
11	A11-08-01	FD	0	0.5	Benzo(A)Anthracene	0.21	J	mg/kg
11	A11-08-01	FD	0	0.5	Benzo(A)Pyrene	0.15	J	mg/kg
11	A11-08-01	FD	0	0.5	Benzo(B)Fluoranthene	0.23	J	mg/kg
11	A11-08-01	FD	0	0.5	Benzo(K)Fluoranthene	0.21	J	mg/kg
11	A11-08-01	FD	0	0.5	Bis(2-Ethylhexyl)Phthalate	0.17	J	mg/kg
11	A11-08-01	FD	0	0.5	Chrysene	0.32	J	mg/kg
11	A11-08-01	FD	0	0.5	Fluoranthene	0.56		mg/kg
11	A11-08-01	FD	0	0.5	Indeno(1,2,3-CD)Pyrene	0.077	J	mg/kg
11	A11-08-01	FD	0	0.5	Phenanthrene	0.13	J	mg/kg
11	A11-08-01	FD	0	0.5	Pyrene	0.44	J	mg/kg
Inorganics								
11	A11-EB	EB			Aluminum, Total	26.4	B	ug/L
11	A11-EB	EB			Calcium, Total	262	B	ug/L
11	A11-EB	EB			Sodium, Total	699	B	ug/L
Conventionals								
11	A11-01-02		0	0.08	Ammonia	2.83		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Round 2 Sediment Results

Rhone-Poulenc RFI

Round 2

Detected Sediment Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
11	A11-01-02		0	0.08	pH, (lab)	6.69		-log+H
11	A11-01-02		0	0.08	Preserved Total Solids	0.7647		%
11	A11-01-02		0	0.08	Total Organic Carbon	0.0185		%
11	A11-01-02		0	0.08	Total Solids	0.7439		%
11	A11-01-02		0	0.08	Total Volatile Solids	13000		mg/kg
Semivolatiles								
11	A11-01-02		0	0.08	Bis(2-Ethylhexyl)Phthalate	0.029		mg/kg
11	A11-01-02		0	0.08	Chrysene	0.016		mg/kg
11	A11-01-02		0	0.08	Fluoranthene	0.042		mg/kg
11	A11-01-02		0	0.08	Phenanthrene	0.018		mg/kg
11	A11-01-02		0	0.08	Phenol	0.057		mg/kg
11	A11-01-02		0	0.08	Pyrene	0.037		mg/kg
Conventionals								
11	A11-02-02		0	0.08	Ammonia	1.97		mg/kg
11	A11-02-02		0	0.08	pH, (lab)	7.86		-log+H
11	A11-02-02		0	0.08	Preserved Total Solids	0.763		%
11	A11-02-02		0	0.08	Total Organic Carbon	0.0202		%
11	A11-02-02		0	0.08	Total Solids	0.7571		%
11	A11-02-02		0	0.08	Total Volatile Solids	12100		mg/kg
Pesticides/PCB's								
11	A11-02-02		0	0.08	Aldrin	0.00071	YJ	mg/kg
11	A11-02-02		0	0.08	Aroclor-1254	0.024	J	mg/kg
11	A11-02-02		0	0.08	Dieldrin	0.0017	YJ	mg/kg
11	A11-02-02		0	0.08	Gamma-Chlordane	0.0012	YJ	mg/kg
Semivolatiles								
11	A11-02-02		0	0.08	4-Methylphenol	0.019		mg/kg
11	A11-02-02		0	0.08	Anthracene	0.026		mg/kg
11	A11-02-02		0	0.08	Benzo(A)Anthracene	0.13		mg/kg
11	A11-02-02		0	0.08	Benzo(A)Pyrene	0.094		mg/kg
11	A11-02-02		0	0.08	Benzo(B)Fluoranthene	0.13		mg/kg
11	A11-02-02		0	0.08	Benzo(GHI)Perylene	0.031		mg/kg
11	A11-02-02		0	0.08	Benzo(K)Fluoranthene	0.13		mg/kg
11	A11-02-02		0	0.08	Bis(2-Ethylhexyl)Phthalate	0.079		mg/kg
11	A11-02-02		0	0.08	Chrysene	0.2		mg/kg
11	A11-02-02		0	0.08	Di-n-Butyl Phthalate	0.013		mg/kg
11	A11-02-02		0	0.08	Dibenzo(A,H)Anthracene	0.02		mg/kg
11	A11-02-02		0	0.08	Fluoranthene	0.3		mg/kg
11	A11-02-02		0	0.08	Fluorene	0.015		mg/kg
11	A11-02-02		0	0.08	Indeno(1,2,3-CD)Pyrene	0.043		mg/kg
11	A11-02-02		0	0.08	Phenanthrene	0.1		mg/kg
11	A11-02-02		0	0.08	Pyrene	0.22		mg/kg
Conventionals								
11	A11-03-02		0	0.08	Ammonia	1.62		mg/kg
11	A11-03-02		0	0.08	pH, (lab)	7.68		-log+H
11	A11-03-02		0	0.08	Preserved Total Solids	0.739		%
11	A11-03-02		0	0.08	Sulfide As S	9.59		mg/kg
11	A11-03-02		0	0.08	Total Organic Carbon	0.0184		%
11	A11-03-02		0	0.08	Total Solids	0.7444		%
11	A11-03-02		0	0.08	Total Volatile Solids	12200		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 2

Detected Sediment Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
Pesticides/PCB's								
11	A11-03-02		0	0.08	4,4'-DDD	0.0053	J	mg/kg
11	A11-03-02		0	0.08	4,4'-DDE	0.002	YJ	mg/kg
11	A11-03-02		0	0.08	4,4'-DDT	0.0037	J	mg/kg
11	A11-03-02		0	0.08	Aroclor-1254	0.032	J	mg/kg
11	A11-03-02		0	0.08	Gamma-Chlordane	0.00088	YJ	mg/kg
Semivolatiles								
11	A11-03-02		0	0.08	4-Methylphenol	0.016		mg/kg
11	A11-03-02		0	0.08	Anthracene	0.018		mg/kg
11	A11-03-02		0	0.08	Benzo(A)Anthracene	0.095		mg/kg
11	A11-03-02		0	0.08	Benzo(A)Pyrene	0.059		mg/kg
11	A11-03-02		0	0.08	Benzo(B)Fluoranthene	0.12		mg/kg
11	A11-03-02		0	0.08	Benzo(GHI)Perylene	0.019		mg/kg
11	A11-03-02		0	0.08	Benzo(K)Fluoranthene	0.11		mg/kg
11	A11-03-02		0	0.08	Bis(2-Ethylhexyl)Phthalate	0.071		mg/kg
11	A11-03-02		0	0.08	Chrysene	0.18		mg/kg
11	A11-03-02		0	0.08	Fluoranthene	0.23		mg/kg
11	A11-03-02		0	0.08	Indeno(1,2,3-CD)Pyrene	0.027		mg/kg
11	A11-03-02		0	0.08	Phenanthrene	0.029		mg/kg
11	A11-03-02		0	0.08	Pyrene	0.19		mg/kg
Conventionals								
11	A11-04-02		0	0.08	Ammonia	15.3		mg/kg
11	A11-04-02		0	0.08	pH, (lab)	7.14		-log+H
11	A11-04-02		0	0.08	Preserved Total Solids	0.6022		%
11	A11-04-02		0	0.08	Sulfide As S	57.4		mg/kg
11	A11-04-02		0	0.08	Total Organic Carbon	0.0261		%
11	A11-04-02		0	0.08	Total Solids	0.6025		%
11	A11-04-02		0	0.08	Total Volatile Solids	32900		mg/kg
Pesticides/PCB's								
11	A11-04-02		0	0.08	4,4'-DDD	0.0043	J	mg/kg
11	A11-04-02		0	0.08	4,4'-DDE	0.0046	YJ	mg/kg
11	A11-04-02		0	0.08	4,4'-DDT	0.0032	YJ	mg/kg
11	A11-04-02		0	0.08	Aldrin	0.0023	YJ	mg/kg
11	A11-04-02		0	0.08	Aroclor-1254	0.21	J	mg/kg
11	A11-04-02		0	0.08	Aroclor-1260	0.041	YJ	mg/kg
11	A11-04-02		0	0.08	Dieldrin	0.0033	YJ	mg/kg
11	A11-04-02		0	0.08	Gamma-Chlordane	0.0043	YJ	mg/kg
Semivolatiles								
11	A11-04-02		0	0.08	2-Methylnaphthalene	0.017		mg/kg
11	A11-04-02		0	0.08	Benzo(A)Anthracene	0.02		mg/kg
11	A11-04-02		0	0.08	Benzo(A)Pyrene	0.018		mg/kg
11	A11-04-02		0	0.08	Benzo(B)Fluoranthene	0.022		mg/kg
11	A11-04-02		0	0.08	Benzo(K)Fluoranthene	0.031		mg/kg
11	A11-04-02		0	0.08	Bis(2-Ethylhexyl)Phthalate	0.71		mg/kg
11	A11-04-02		0	0.08	Chrysene	0.031		mg/kg
11	A11-04-02		0	0.08	Fluoranthene	0.077		mg/kg
11	A11-04-02		0	0.08	Phenanthrene	0.039		mg/kg
11	A11-04-02		0	0.08	Pyrene	0.061		mg/kg
Conventionals								

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 2

Detected Sediment Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
11	A11-05-02		0	0.08	Ammonia	4.87		mg/kg
11	A11-05-02		0	0.08	pH, (lab)	7.33		-log+H
11	A11-05-02		0	0.08	Preserved Total Solids	0.5956		%
11	A11-05-02		0	0.08	Sulfide As S	51.4		mg/kg
11	A11-05-02		0	0.08	Total Organic Carbon	0.0178		%
11	A11-05-02		0	0.08	Total Solids	0.6177		%
11	A11-05-02		0	0.08	Total Volatile Solids	22600		mg/kg
Inorganics								
11	A11-05-02		0	0.08	Arsenic, Total	6.5		mg/kg
11	A11-05-02		0	0.08	Cadmium, Total	0.4		mg/kg
11	A11-05-02		0	0.08	Chromium, Total	23.1		mg/kg
11	A11-05-02		0	0.08	Copper, Total	32		mg/kg
11	A11-05-02		0	0.08	Lead, Total	26		mg/kg
11	A11-05-02		0	0.08	Mercury, Total	0.081		mg/kg
11	A11-05-02		0	0.08	Nickel, Total	15		mg/kg
11	A11-05-02		0	0.08	Silver, Total	0.19		mg/kg
11	A11-05-02		0	0.08	Zinc, Total	82		mg/kg
Pesticides/PCB's								
11	A11-05-02		0	0.08	4,4'-DDD	0.048		mg/kg
11	A11-05-02		0	0.08	4,4'-DDE	0.0093	J	mg/kg
11	A11-05-02		0	0.08	4,4'-DDT	0.082		mg/kg
11	A11-05-02		0	0.08	Aldrin	0.0012	YJ	mg/kg
11	A11-05-02		0	0.08	Aroclor-1254	0.058	J	mg/kg
11	A11-05-02		0	0.08	Aroclor-1260	0.029	J	mg/kg
11	A11-05-02		0	0.08	Dieldrin	0.0026	YJ	mg/kg
11	A11-05-02		0	0.08	Gamma-Chlordane	0.002	YJ	mg/kg
Semivolatiles								
11	A11-05-02		0	0.08	Benzo(A)Anthracene	0.061		mg/kg
11	A11-05-02		0	0.08	Benzo(A)Pyrene	0.053		mg/kg
11	A11-05-02		0	0.08	Benzo(B)Fluoranthene	0.083		mg/kg
11	A11-05-02		0	0.08	Benzo(GHI)Perylene	0.017		mg/kg
11	A11-05-02		0	0.08	Benzo(K)Fluoranthene	0.092		mg/kg
11	A11-05-02		0	0.08	Bis(2-Ethylhexyl)Phthalate	0.065		mg/kg
11	A11-05-02		0	0.08	Chrysene	0.11		mg/kg
11	A11-05-02		0	0.08	Fluoranthene	0.22		mg/kg
11	A11-05-02		0	0.08	Indeno(1,2,3-CD)Pyrene	0.024		mg/kg
11	A11-05-02		0	0.08	Phenanthrene	0.056		mg/kg
11	A11-05-02		0	0.08	Pyrene	0.18		mg/kg
Conventionals								
11	A11-06-02		0	0.08	Ammonia	14.1		mg/kg
11	A11-06-02		0	0.08	pH, (lab)	7.62		-log+H
11	A11-06-02		0	0.08	Preserved Total Solids	0.5102		%
11	A11-06-02		0	0.08	Sulfide As S	136		mg/kg
11	A11-06-02		0	0.08	Total Organic Carbon	0.0241		%
11	A11-06-02		0	0.08	Total Solids	0.5184		%
11	A11-06-02		0	0.08	Total Volatile Solids	26400		mg/kg
Pesticides/PCB's								
11	A11-06-02		0	0.08	4,4'-DDD	0.0047		mg/kg
11	A11-06-02		0	0.08	4,4'-DDT	0.006		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 2

Detected Sediment Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
11	A11-06-02		0	0.08	Aroclor-1254	0.033		mg/kg
11	A11-06-02		0	0.08	Gamma-Chlordane	0.0011	Y	mg/kg
Semivolatiles								
11	A11-06-02		0	0.08	Anthracene	0.025		mg/kg
11	A11-06-02		0	0.08	Benzo(A)Anthracene	0.15		mg/kg
11	A11-06-02		0	0.08	Benzo(A)Pyrene	0.11		mg/kg
11	A11-06-02		0	0.08	Benzo(B)Fluoranthene	0.24		mg/kg
11	A11-06-02		0	0.08	Benzo(GHI)Perylene	0.039		mg/kg
11	A11-06-02		0	0.08	Benzo(K)Fluoranthene	0.17		mg/kg
11	A11-06-02		0	0.08	Benzyl Butyl Phthalate	0.023		mg/kg
11	A11-06-02		0	0.08	Bis(2-Ethylhexyl)Phthalate	0.23		mg/kg
11	A11-06-02		0	0.08	Chrysene	0.23		mg/kg
11	A11-06-02		0	0.08	Dibenzo(A,H)Anthracene	0.026		mg/kg
11	A11-06-02		0	0.08	Fluoranthene	0.36		mg/kg
11	A11-06-02		0	0.08	Indeno(1,2,3-CD)Pyrene	0.056		mg/kg
11	A11-06-02		0	0.08	Phenanthrene	0.1		mg/kg
11	A11-06-02		0	0.08	Phenol	0.13		mg/kg
11	A11-06-02		0	0.08	Pyrene	0.31		mg/kg
Conventionals								
11	A11-07-02		0	0.08	Ammonia	6.34		mg/kg
11	A11-07-02		0	0.08	pH, (lab)	7.6		-log+H
11	A11-07-02		0	0.08	Preserved Total Solids	0.5546		%
11	A11-07-02		0	0.08	Sulfide As S	26.4		mg/kg
11	A11-07-02		0	0.08	Total Organic Carbon	0.0229		%
11	A11-07-02		0	0.08	Total Solids	0.6053		%
11	A11-07-02		0	0.08	Total Volatile Solids	21300		mg/kg
Pesticides/PCB's								
11	A11-07-02		0	0.08	4,4'-DDD	0.16		mg/kg
11	A11-07-02		0	0.08	4,4'-DDE	0.045		mg/kg
11	A11-07-02		0	0.08	4,4'-DDT	0.18		mg/kg
11	A11-07-02		0	0.08	Aldrin	0.0011	Y	mg/kg
11	A11-07-02		0	0.08	Alpha-Chlordane	0.0013	Y	mg/kg
11	A11-07-02		0	0.08	Aroclor-1254	0.08		mg/kg
11	A11-07-02		0	0.08	Aroclor-1260	0.05		mg/kg
11	A11-07-02		0	0.08	Dieldrin	0.0022	Y	mg/kg
11	A11-07-02		0	0.08	Gamma-Chlordane	0.0022	Y	mg/kg
Semivolatiles								
11	A11-07-02		0	0.08	4-Methylphenol	0.022		mg/kg
11	A11-07-02		0	0.08	Benzo(A)Anthracene	0.11		mg/kg
11	A11-07-02		0	0.08	Benzo(A)Pyrene	0.1		mg/kg
11	A11-07-02		0	0.08	Benzo(B)Fluoranthene	0.19		mg/kg
11	A11-07-02		0	0.08	Benzo(GHI)Perylene	0.04		mg/kg
11	A11-07-02		0	0.08	Benzo(K)Fluoranthene	0.21		mg/kg
11	A11-07-02		0	0.08	Benzyl Butyl Phthalate	0.019		mg/kg
11	A11-07-02		0	0.08	Bis(2-Ethylhexyl)Phthalate	0.18		mg/kg
11	A11-07-02		0	0.08	Chrysene	0.22		mg/kg
11	A11-07-02		0	0.08	Di-n-Octyl Phthalate	0.14		mg/kg
11	A11-07-02		0	0.08	Dibenzo(A,H)Anthracene	0.025		mg/kg
11	A11-07-02		0	0.08	Dimethyl Phthalate	0.019		mg/kg

FD= Field Duplicate
EB= Equipment Blank

Rhone-Poulenc RFI

Round 2

Detected Sediment Results

Area	Sample ID	QA/QC	Sample Interval (feet bgs) Top	Bottom	Parameter	Result	Qualifer	Units
11	A11-07-02		0	0.08	Fluoranthene	0.37		mg/kg
11	A11-07-02		0	0.08	Indeno(1,2,3-CD)Pyrene	0.053		mg/kg
11	A11-07-02		0	0.08	Phenanthrene	0.092		mg/kg
11	A11-07-02		0	0.08	Phenol	0.074		mg/kg
11	A11-07-02		0	0.08	Pyrene	0.27		mg/kg
Conventionals								
11	A11-10-02	FD	0	0.08	Ammonia	4.32		mg/kg
11	A11-10-02	FD	0	0.08	pH, (lab)	7.71		-log+H
11	A11-10-02	FD	0	0.08	Preserved Total Solids	0.5986		%
11	A11-10-02	FD	0	0.08	Sulfide As S	38.6		mg/kg
11	A11-10-02	FD	0	0.08	Total Organic Carbon	0.0157		%
11	A11-10-02	FD	0	0.08	Total Solids	0.61		%
11	A11-10-02	FD	0	0.08	Total Volatile Solids	24300		mg/kg
Inorganics								
11	A11-10-02	FD	0	0.08	Arsenic, Total	7.1		mg/kg
11	A11-10-02	FD	0	0.08	Cadmium, Total	0.38		mg/kg
11	A11-10-02	FD	0	0.08	Chromium, Total	21.6		mg/kg
11	A11-10-02	FD	0	0.08	Copper, Total	32.3		mg/kg
11	A11-10-02	FD	0	0.08	Lead, Total	23		mg/kg
11	A11-10-02	FD	0	0.08	Mercury, Total	0.079		mg/kg
11	A11-10-02	FD	0	0.08	Nickel, Total	16		mg/kg
11	A11-10-02	FD	0	0.08	Silver, Total	0.19		mg/kg
11	A11-10-02	FD	0	0.08	Zinc, Total	81.9		mg/kg
Pesticides/PCB's								
11	A11-10-02	FD	0	0.08	4,4'-DDD	0.058		mg/kg
11	A11-10-02	FD	0	0.08	4,4'-DDE	0.012		mg/kg
11	A11-10-02	FD	0	0.08	4,4'-DDT	0.074		mg/kg
11	A11-10-02	FD	0	0.08	Aldrin	0.0012	Y	mg/kg
11	A11-10-02	FD	0	0.08	Aroclor-1254	0.065		mg/kg
11	A11-10-02	FD	0	0.08	Aroclor-1260	0.065		mg/kg
11	A11-10-02	FD	0	0.08	Dieldrin	0.0028	Y	mg/kg
11	A11-10-02	FD	0	0.08	Gamma-Chlordane	0.0019	Y	mg/kg
Semivolatiles								
11	A11-10-02	FD	0	0.08	4-Methylphenol	0.018		mg/kg
11	A11-10-02	FD	0	0.08	Anthracene	0.018		mg/kg
11	A11-10-02	FD	0	0.08	Benzo(A)Anthracene	0.12		mg/kg
11	A11-10-02	FD	0	0.08	Benzo(A)Pyrene	0.096		mg/kg
11	A11-10-02	FD	0	0.08	Benzo(B)Fluoranthene	0.18		mg/kg
11	A11-10-02	FD	0	0.08	Benzo(GHI)Perylene	0.032		mg/kg
11	A11-10-02	FD	0	0.08	Benzo(K)Fluoranthene	0.16		mg/kg
11	A11-10-02	FD	0	0.08	Bis(2-Ethylhexyl)Phthalate	0.097		mg/kg
11	A11-10-02	FD	0	0.08	Chrysene	0.17		mg/kg
11	A11-10-02	FD	0	0.08	Di-n-Octyl Phthalate	0.027		mg/kg
11	A11-10-02	FD	0	0.08	Dibenzo(A,H)Anthracene	0.018		mg/kg
11	A11-10-02	FD	0	0.08	Fluoranthene	0.38		mg/kg
11	A11-10-02	FD	0	0.08	Indeno(1,2,3-CD)Pyrene	0.041		mg/kg
11	A11-10-02	FD	0	0.08	Phenanthrene	0.072		mg/kg
11	A11-10-02	FD	0	0.08	Pyrene	0.3		mg/kg

FD= Field Duplicate
EB= Equipment Blank

APPENDIX E

RFI Soil and HydroPunch Boring Logs

Legend for Soil Boring Logs:

SSXX	Split spoon
SLXX	Sleeves
SHXX	Shelby tube

Note: Sample numbers are shown for those intervals where a sample was collected for laboratory analysis.

Legend for HydroPunch Data:

bgs	Below ground surface
U	Not detected above the detection limit. Detection limit may vary due to dilution
E	Exceeded linear range of instrument
NA	Not analyzed due to limited sample recovery

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A01-26 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/25/94 FINISH 3/25/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)
	1.0				Overburden grass roots and construction/demolition debris.	
	3.0		1.8	NA	POORLY GRADED SAND, (SP), brown, moist, loose, medium to fine sand, no odor or sheen.	
	5.0		1.7	NA	POORLY GRADED SAND WITH SILT, (SP-SM), brown, moist, medium to fine sand, silt more toward bottom, no odor or sheen.	
5.0	7.0		2.0	NA	POORLY GRADED SAND WITH SILT, (SP-SM), as above to 5.6'; then SILT WITH SAND, (ML), dark gray, fine to very fine sand, low plasticity, no odor or sheen.	
	9.0		1.0	NA	POORLY GRADED SAND, (SP), dark gray, moist, medium sand, no odor or sheen.	
10.0	11.0		2.0	NA	POORLY GRADED SAND, (SP), as above, except medium to fine sand.	
					END SOIL BORING AT 11.0 FEET	

ORGANIC VAPOR METER (ppm): 0 | 1 | 10 | 100 | 1000 | 10000

Groundwater HydroPunch Data				
		Sample Interval (bgs)		
Area	Sample No.	Top (feet)	Bottom (feet)	Toluene (ug/l)
01	A01-26-W1	13.4	15	7

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-01 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/23/94 FINISH 3/23/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0	SS01		NA	SILTY SAND, (SM), gray, moist, fine to medium grained sand, rootlets, no odor or sheen.	
	3.0		1.9	NA	POORLY GRADED SAND WITH SILT, (SP-SM), gray-brown, moist, loose, medium and fine grained sand, no odor or sheen.	
	5.0		2.0	NA	POORLY GRADED SAND, (SP), gray-brown, moist, loose, medium grained, no odor or sheen.	
5.0	7.0		1.8	NA	POORLY GRADED SAND, (SP), as above to 5.6 ft.; then SILTY SAND, (SM), gray, wet, fine sand and nonplastic silt with two organic (rootlet) zones.	
	9.0	SS05	1.7	NA	SILTY SAND, (SM), dark gray, moist, nonplastic, fine sand, abundant rootlets.	
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-02 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/25/94 FINISH 3/25/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Construction debris.	
	3.0	SS01	1.6	NA	POORLY GRADED SAND, (SP), gray-brown, moist, loose, medium to fine grained sand, trace of silt, no odor or sheen.	
	5.0		1.5	NA	TOP 12": SILTY SAND, (SM), rusty, wet, silty fine sand. BOTTOM 6": POORLY GRADED SAND WITH SILT, (SP-SM), gray, wet (saturated), medium grained sand, no odor or sheen.	
5.0	7.0		0.9	NA	SILTY SAND, (SM), dark gray, wet, fine and medium grained sand top 6 inches, then silty sand with organics.	
	9.0	SS05	0.7	NA	SILTY SAND, (SM), dark gray, moist, very fine sand, some organics, no odor or sheen.	
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-03 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" DIA AUGER

WATER LEVELS _____ START 3/18/94 FINISH 3/18/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Asphalt and base material.	
	3.0	SS01	2.0	NA	POORLY GRADED SAND, (SP), gray, moist, loose, medium to fine grained sand, no odor or sheen.	●
	5.0		2.0	NA	POORLY GRADED SAND, (SP), as above except very moist.	●
5.0	7.0		2.0	NA	TOP 12": POORLY GRADED SAND, (SP), as above. BOTTOM 12": POORLY GRADED SAND WITH SILT, (SP-SM), gray, wet, fine grained sand, interbedded with very dark gray sandy organic silt, wet, no odor or sheen.	●
	9.0	SS05	2.0	NA	TOP 8": POORLY GRADED SAND WITH SILT, (SP-SM), as above BOTTOM 1.2': SANDY ORGANIC SILT, (OL), brown-gray, moist, very fine sand grading to gray sandy silt with some organics (rootlets), no odor or sheen.	●
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-04 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/23/94 FINISH 3/23/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Asphalt and base material (large crushed rock).	
	3.0	SS01	1.6	NA	POORLY GRADED SAND, (SP), gray, moist, loose, medium to fine grained sand, no odor or sheen.	
	5.0		1.8	NA	POORLY GRADED SAND, (SP), gray, moist, loose, medium to fine grained, trace of silt, no odor or sheen.	
5.0	7.0		2.0	NA	TOP 7": POORLY GRADED SAND, (SP), dark gray to black, wet, loose. BOTTOM 1.4": SILTY SAND, (SM), dark gray, wet, silt and silty sand interbeds, no odor or sheen.	
	9.0	SS05	1.6	NA	TOP 6": SILTY SAND, (SM), dark gray, wet, silt and silty sand interbeds. BOTTOM 1.5": SILTLY SAND, (SM), brown, moist, very fine sand, nonplastic silt, with organics (rootlets).	
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-05 SHEET 1 OF 3

SOIL BORING LOG

PROJECT RHONE POULENC RFI LOCATION TUKWILA, WA

ELEVATION DRILLING CONTRACTOR TACOMA PUMP & DRILL, D. SULLIVAN AND J. KEILEY

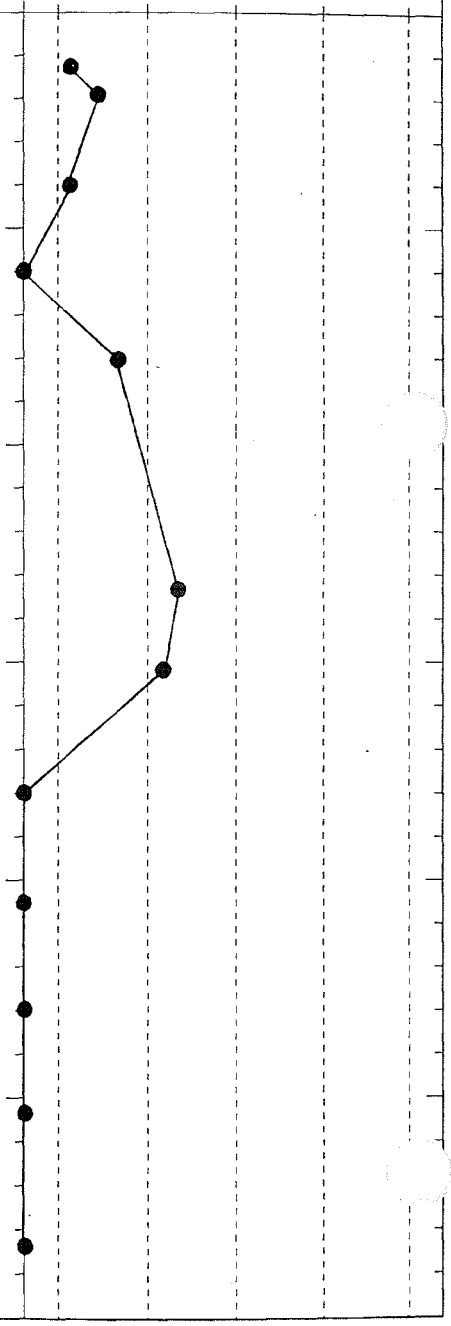
DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS START 3/29/94 & 4/15/94 FINISH 4/18/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)
	1.0				Asphalt and some base material
	3.0	SS01 SS02	1.5	NA	POORLY GRADED SAND, (SP), dark gray, moist, loose, medium to fine grained sand, trace thin silt interbeds, faint petroleum odor, occasional wood debris.
	5.0		1.8	NA	POORLY GRADED SAND, (SP), dark gray, wet, loose, medium to fine grained, trace silt, glossy appearance from 3.7 to 3.9 ft., no odor.
5.0	7.0	SL06	2.0	NA	POORLY GRADED SAND, (SP), dark gray, wet, loose, medium to fine grained, trace of silt, no odor.
	9.0	SS05	1.8	NA	POORLY GRADED SAND, (SP), dark gray, wet, loose, medium to fine grained grading to fine grained with organics (rootlets), towards bottom, trace of silt, no odor or sheen.
10.0	11.0	SH07			
	12.5				NOTE: 2"X18" split spoon from here down.
	14.0	SS08	1.5	NA	SILT, (ML), black, wet, soft to 12.8 ft., then medium brown gray with black mottling and organics to 13.4 ft., then gray with black mottling, firm, faint odor like solvent.
15.0	15.0				
	16.5		1.5	NA	SILT, (ML), brown, moist, firm, with organics, trace of clay, non-plastic.
	17.5				
	19.0		1.5	NA	SILT WITH SAND, (ML), brown-gray, moist, firm, non-plastic, interbedded layers of fine sand in silt, organics.
20.0	20.0				
	21.5		1.5	NA	SILT WITH SAND, (ML), as above to 20.9 ft., grading to POORLY GRADED SAND, (SP), gray, moist, loose, medium to fine grained, clean sand.
	22.5				
	24.0		1.2	NA	POORLY GRADED SAND, (SP), gray, wet, loose, medium to fine grained, clean sand.
25.0	25.0				
	26.5		1.0	NA	POORLY GRADED SAND, (SP), as above.
	27.5				POORLY GRADED SAND, (SP), as above.
	29.0		1.5	NA	POORLY GRADED SAND, (SP) as above.

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-05 SHEET 2 OF 3

SOIL BORING LOG

PROJECT RHONE POULENC RFI LOCATION TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILL, D. SULLIVAN AND J. KEILEY

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/29/94 & 4/15/94 FINISH 4/18/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	SOIL HEADSPACE READINGS (ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm))
	31.5		1.2	NA	POORLY GRADED SAND, (SP), gray, wet, loose, mostly fine with same medium grained sand, clean.	
	32.5					
	34.0		1.4	NA	POORLY GRADED SAND, (SP), as above.	
35.0	40.0				The presents of heaving sand inside auger is suspected.	
40.0	41.5		1.5	NA	POORLY GRADED SAND, (SP), dark gray, wet, loose, medium to fine sand to 40.6 ft.; then SILT, (ML), brown gray, wet, soft, to 40.9 ft.; then POORLY GRADED SAND, (SP), dark gray, wet, loose, fine grading to medium grain sand.	
	42.5					
	44.0		1.5	NA	POORLY GRADED SAND, (SP), dark gray, medium and fine grained grading to POORLY GRADED SAND WITH SILT, (SP-SM), by 43.7 ft. fine grained sand.	
	45.0					
45.0	46.5		1.5	NA	SILTY SAND, (SM), gray, wet, loose, medium to fine grained sand.	
50.0	50.0					
	51.5		.5	NA	SILTY SAND, (SM), gray, moist, interbedded silty, fine sand and sandy silts, non-plastic.	
	52.5					
	54.0		1.5	NA	SILTY SAND, (SM), gray, moist, loose, medium fine sand with occasional silt clast.	
	55.0					
55.0	56.5		1.5	NA	SILTY SAND, (SM), as above to 55.8 ft.; then SILT WITH SAND, (ML), gray, moist, firm, low plasticity, grades siltier towards bottom.	
	57.5					
	59.0		1.5	NA	SILTY SAND, (SM), gray, moist, loose, medium to fine grained sand.	
	60.0					

SOIL HEADSPACE READINGS: 0 | 1 | 10 | 100 | 1000 | 10000

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-05 SHEET 3 OF 3

SOIL BORING LOG

PROJECT RHONE POULENC RFI LOCATION TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILL, D. SULLIVAN AND J. KEILEY

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/29/94 & 4/15/94 FINISH 4/18/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	60.0–61.5		1.5	NA	POORLY GRADED SAND WITH SILT, (SP-SM), gray, moist, loose, medium and fine grained sand.	
	62.5–64.0		0.3	NA	SILT, (ML), gray, moist, firm, with minor fine sand.	
65.0	65.0–66.5		1.5	NA	SILTY SAND, (SM), gray, moist, medium and fine grained sand to 66.1 ft.; then ELASTIC SILT, (MH), gray, moist, soft, very plastic.	
	67.5–69.0		1.5	NA	ELASTIC SILT, (MH), gray-occasional tan with black mottling, moist, soft, plastic, some clay.	
70.0	71.0–73.0	SH09	2.0	NA		
					END SOIL BORING AT 73.0 FEET	
75.0						
80.0						
85.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-06 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/31/94 FINISH 3/31/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Concrete and base material.	
		SS01	2.0	NA	POORLY GRADED SAND, (SP), brown, wet, loose, mostly medium, some fine grained sand, trace thin silt to 1.9 ft., then changes to dark gray, mostly fine, some medium grained sand, no odor or sheen.	
	3.0					
			2.0	NA	POORLY GRADED SAND, (SP), dark gray, wet, loose, interbedded medium and fine grained, trace of silt, no odor or sheen.	
	5.0					
5.0			2.0	NA	POORLY GRADED SAND, (SP), dark gray, wet, loose, fine grained, trace of silt, no odor or sheen.	
	7.0					
		SS05	2.0	NA	POORLY GRADED SAND, (SP), as above to 7.9 ft.; then SILTY SAND, (SM), very dark gray, wet, loose very fine sand, no odor, dots of sheen noted on top of sand in top of split spoon after water drained out.	
	9.0					
					END SOIL BORING AT 9.0 FEET	
10.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-07 SHEET 1 OF 1

SOIL BORING LOG

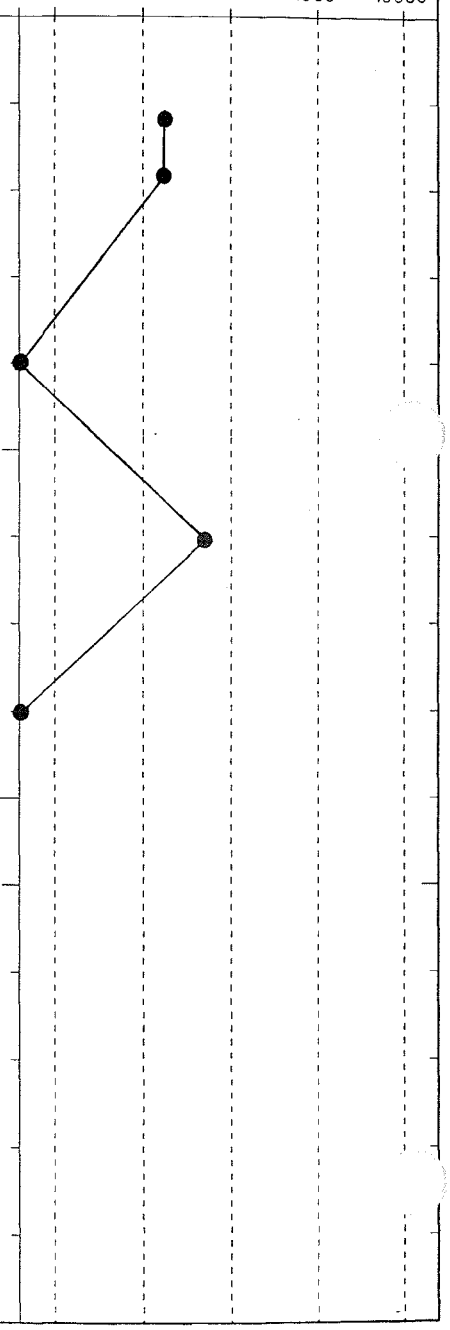
PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, D. SUTTON

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/28/94 FINISH 3/28/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL (FT)	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)
	1.0				Asphalt and subbase material.	
	3.0	SS01 SS02	1.6	NA	POORLY GRADED SAND WITH GRAVEL, (SP) dark gray, moist, with interbeds of SILT, (ML), dark gray, moist, firm, no odor or sheen.	
	5.0		2.0	NA	POORLY GRADED SAND, (SP), gray, moist, loose, fine to medium grained.	
5.0	7.0	SS04	1.6	NA	POORLY GRADED SAND, (SP), as above grading to fine to very fine ORGANIC SILT, (OL), with trace of clay at 6.5 ft.	
	9.0		1.7	NA	POORLY GRADED SAND, (SP), gray, wet, loose, medium to fine grained to 7.5 ft. then SILT, (ML), brown, wet, firm, low plasticity, no odor or sheen.	
10.0					END SOIL BORING AT 9.0 FEET	



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-08 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

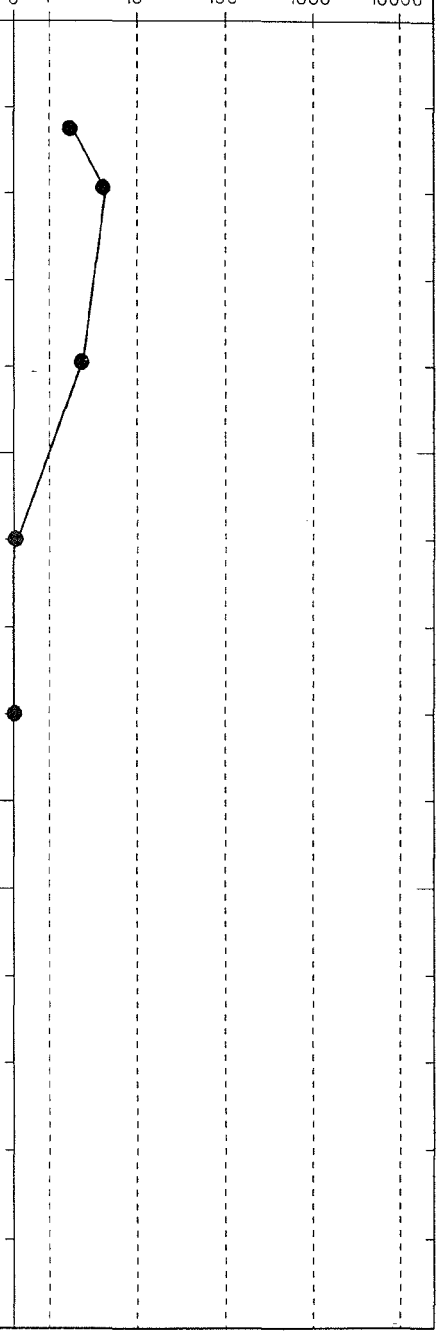
ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/31/94 FINISH 3/31/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)
	1.0				Asphalt and subbase material.
	3.0	SS01 SS02	1.0	NA	POORLY GRADED SAND WITH SILT AND GRAVEL, (SP-SM), brown, moist, medium to fine grained sand, slag-like material, up to 2" minus. Trace of silt.
	5.0	SS03	2.0	NA	POORLY GRADED SAND, (SP), brown, moist, medium to fine grained to 4.7 ft. grading to gray with trace of silt, no odor or sheen.
5.0	7.0		2.0	NA	POORLY GRADED SAND, (SP), gray, moist, fine to very fine grained to 5.5 ft. changing to interbeds of organics and SILTY SAND, (SM) and SILT WITH SAND, (ML), gray to very dark gray, very moist to wet, no odor or sheen bottom 8.6 inches.
	9.0		2.0	NA	SANDY ORGANIC SOIL, (OL-OH), brown with black mottling, moist, occasional thin interbeds of POORLY GRADED SAND, (SP), fine to medium grained, no odor or sheen.
10.0					END SOIL BORING AT 9.0 FEET

SOIL HEADSPACE READINGS



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-09 SHEET 1 OF 1

SOIL BORING LOG

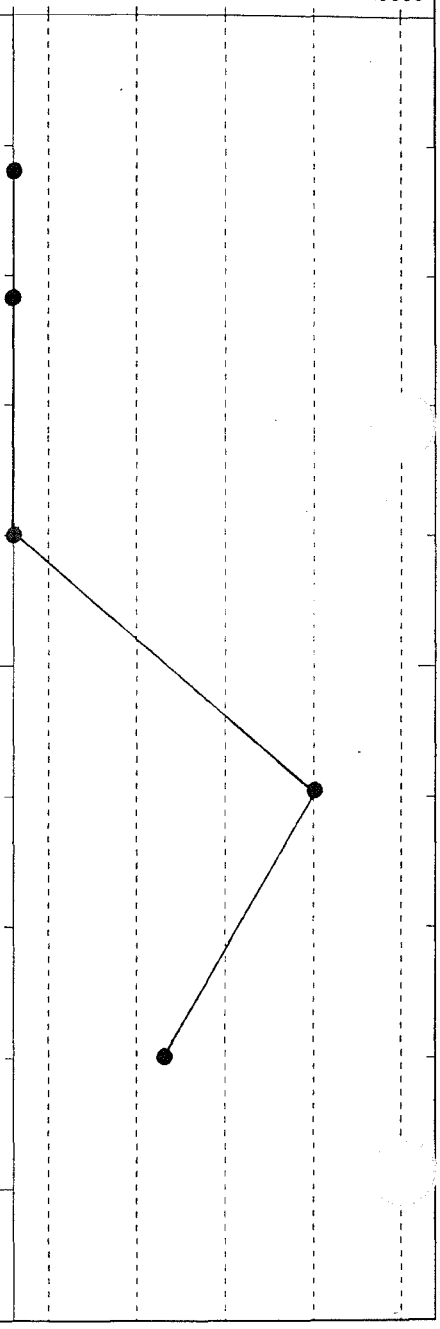
PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, D. SULLIVAN

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/29/94 FINISH 3/29/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)
	1.0				Asphalt and subbase material. (Dark brown, well graded sand/gravel)	
	3.0	SS01	1.6	NA	POORLY GRADED SAND, (SP), gray, moist, loose, medium and fine grained, no odor or sheen.	
	5.0		1.5	NA	POORLY GRADED SAND, (SP), dark gray, moist, medium and fine grained, no odor or sheen.	
5.0	7.0	SS04	2.0	NA	POORLY GRADED SAND, (SP), dark gray, moist, loose, fine grained to 5.7 ft.; then SANDY SILT, (ML), with organics, odor like airplane glue, especially bottom portion.	
	9.0	SS05	2.0	NA	SANDY SILT, (ML), brown, moist, with organics, faint solvent odor.	
					END SOIL BORING AT 9.0 FEET	



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-10 SHEET 1 OF 1

SOIL BORING LOG

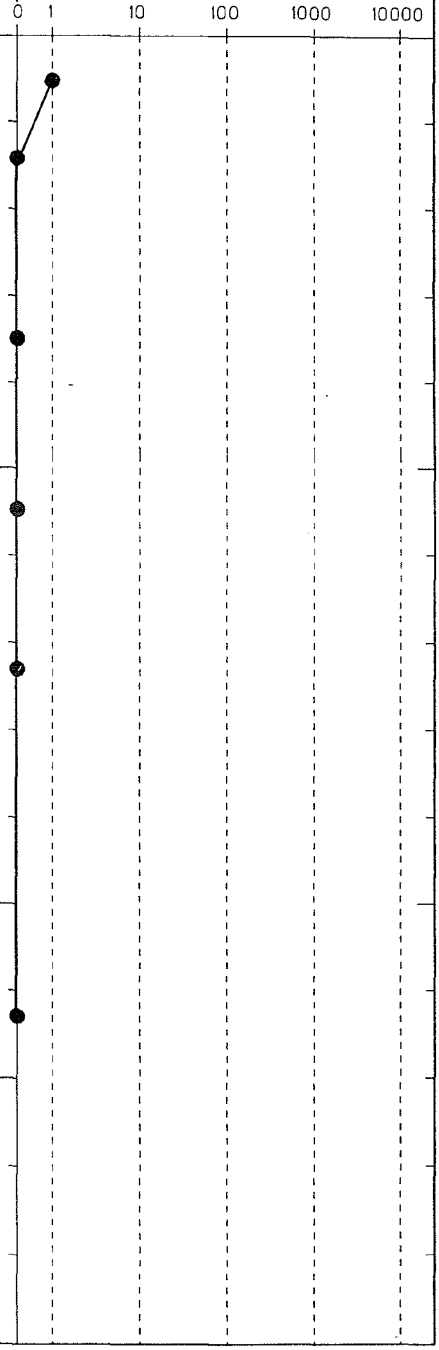
PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, D. SULLIVAN

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/29/94 FINISH 3/29/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)
	0.5					
	2.5	SS01	2.0	NA	SILTY SAND, (SM), brown changing to gray at 1.0 ft., moist, loose, no odor or sheen.	
	4.5		2.0	NA	POORLY GRADED SAND WITH SILT, (SP-SM), dark gray, moist, loose, occasional gray silt clast, no odor or sheen.	
5.0	6.5		1.8	NA	POORLY GRADED SAND, (SP), dark gray, wet, loose, medium to fine grained to 6.1 ft.; then SILTY SAND, (SM), dark gray sand with organics, no odor or sheen.	
	8.5		2.0	NA	ORGANIC SILT WITH SAND, (OL) interbedded with SANDY SILT, (ML), dark gray to dark brown, wet in upper portion.	
10.0	10.5		---	NA	SILT WITH SAND, (ML), gray-brown, moist, soft, fine.	
	12.0	SS07	1.5	NA	POORLY GRADED SAND, (SP), dark gray, moist, loose, medium to fine sand, grained, contact with silt above at 10.6 ft., no odor or sheen.	
					END SOIL BORING AT 12.0 FEET	



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-11 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, D. SULLIVAN

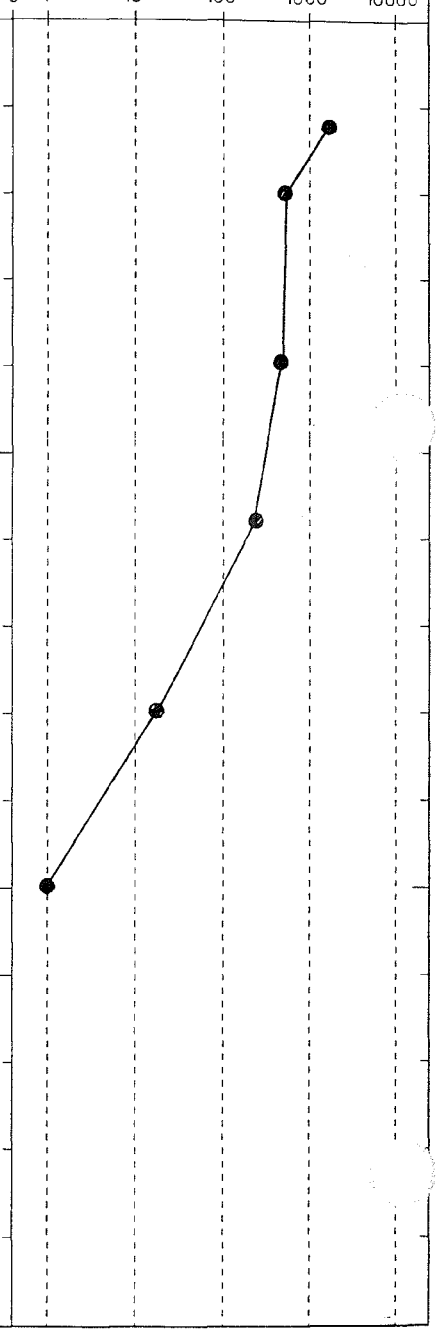
DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/29/94 FINISH 3/29/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
	1.0				Asphalt and subbase material.
	3.0	SS01 SS02	2.0	NA	POORLY GRADED SAND, (SP), brown-gray, moist, loose, medium to fine grained, stained to dark gray with oily appearance below 1.5 ft., trace silt, strong solvent-like odor.
	5.0	SS03	2.0	NA	POORLY GRADED SAND, (SP), gray stained almost to black, wet, loose, medium to fine grained, oily appearance, trace silt, strong odor.
5.0	7.0		2.0	NA	SILTY SAND, (SM) gray stained to almost black, wet, loose at top, firming to bottom, medium to fine grained sand grading to fine SANDY ORGANIC SILT, (OH) in the shoe with oily, solvent odor.
	9.0		2.0	NA	SILTY SAND, (SM), interbedded, dark gray, moist, fine, with organics, wet in top sands, moist below 7.7 ft., gray silt in shoe.
10.0	11.0		2.0	NA	SANDY SILT, (ML), medium gray, moist, firm, with organics, no odor or sheen.
					END SOIL BORING AT 11.0 FEET

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-12 SHEET 1 OF 1

SOIL BORING LOG

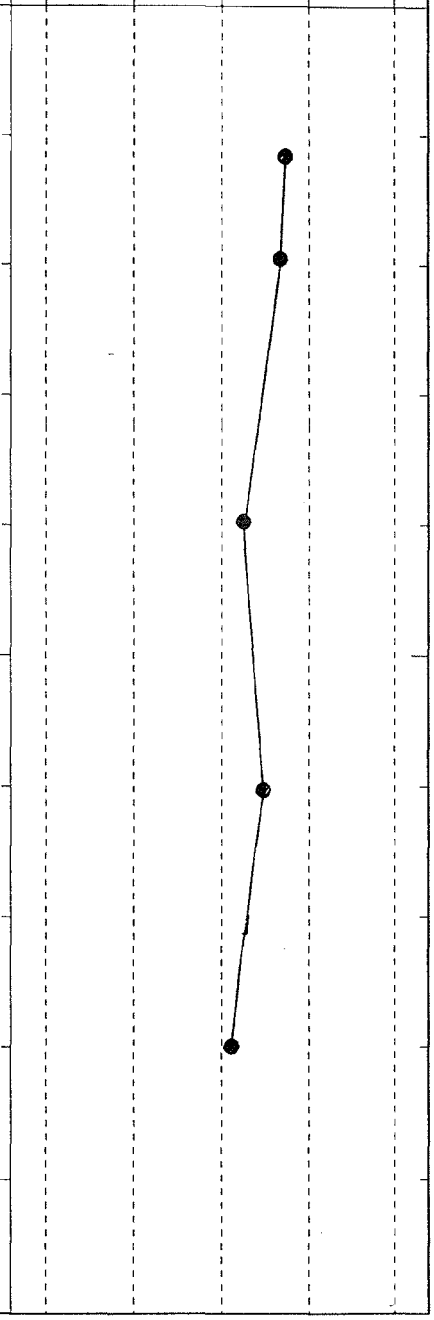
PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/30/94 FINISH 3/30/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)
	1.0				6-inches concrete and subbase (large crushed gravel).	
	3.0	SS01 SS02	1.5	NA	SILTY SAND, (SM), stained very dark gray to black, wet, loose, medium to fine grained sand, oily appearance, strong solvent odor.	
	5.0		2.0	NA	SILTY SAND, (SM), very dark gray, wet, loose, medium to fine grained sand, strong solvent odor.	
5.0	7.0	SS04	2.0	NA	SILTY SAND, (SM), very dark gray, wet, medium to fine grading to fine grained sand to 6.2 ft., then SANDY SILT, (ML), black, with organics, grading to silt.	
	9.0		1.1	NA	SILT, (ML), brown, moist, firm, with organics to 7.6 ft.; then SANDY SILT, (ML), gray-brown, with organics.	
					END SOIL BORING AT 9.0 FEET	



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-13 SHEET 1 OF 1

SOIL BORING LOG

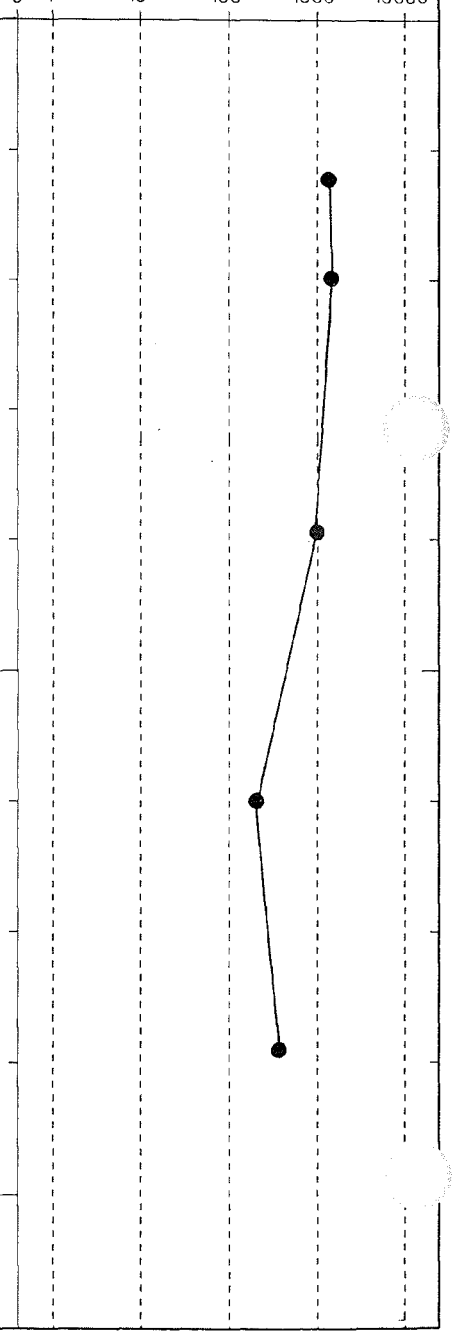
PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/30/94 FINISH 3/30/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)
	1.0				4-inches concrete and subbase.	
	3.0	SS01	2.0	NA	SILTY SAND, (SM), gray to dark gray, moist, loose, medium to fine grained sand, siltier lower half, strong airplane glue-like odor, sheen found when placed in water.	
	5.0	SS03	2.0	NA	SILTY SAND, (SM), dark gray, wet, fine to medium grained sand, occasional silt clast and trace wood debris, very strong odor.	
5.0	7.0		2.0	NA	SILTY SAND, (SM), as above to 5.7 ft.; then SILT, (ML), black mottling, moist, organics, odor not as strong as at 3-ft. level.	
	9.0	SS05	1.5	NA	SANDY SILT, (ML), dark gray, moist, firm, organics, odor as above.	
					END SOIL BORING AT 9.0 FEET	



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A02-14 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/30/94 FINISH 3/30/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
					Asphalt and subbase.	
	1.0					
		SS01 SS02	1.5	NA	POORLY GRADED SAND WITH GRAVEL, (SP), brown, moist, grades to fine sand, large to small pebbles, trace silt, no odor or sheen.	
	3.0					
			1.5	NA	POORLY GRADED SAND WITH GRAVEL, (SP), as above to 3.8 ft. then POORLY GRADED SAND, (SP), black, moist, fine, no odor or sheen.	
	5.0					
5.0			2.0	NA	POORLY GRADED SAND, (SP), black to gray, wet, fine grained to 5.9 ft.; then SILT, (ML), gray and black layers with organics, occasional sandy silt layer.	
	7.0					
		SS05	1.7	NA	SILT, (ML), as above to 7.6 ft. grading to SANDY SILT, (ML), brown-gray, moist, to 8.4 ft. grading to SILT, (ML), tan with gray mottling, moist, soft, no odor or sheen.	
	9.0					
					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-01 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

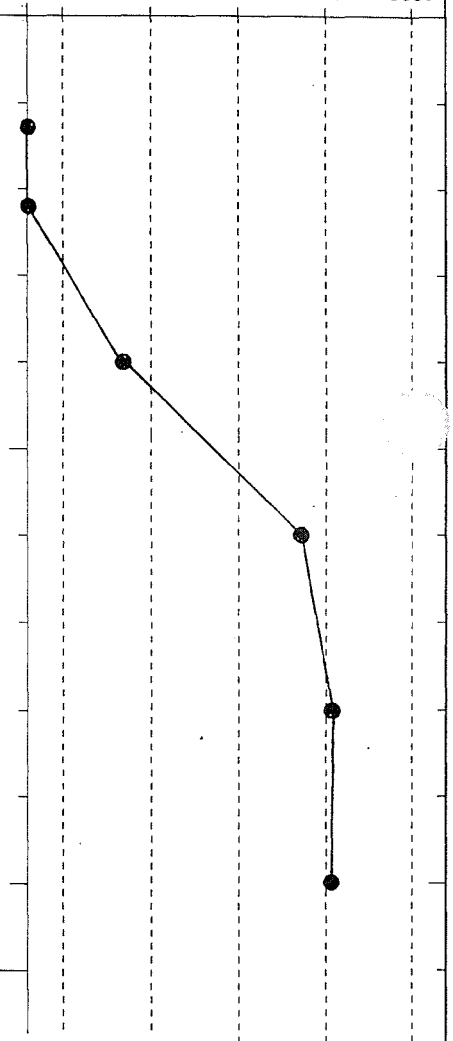
DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/14/94 FINISH 3/14/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
	1.0				Asphalt and subbase.
	3.0	SS01	2.0	NA	POORLY GRADED SAND, (SP), dark gray, moist, loose, medium to fine sand with trace silt interbedded at 1.5 ft.
5.0	5.0		2.0	NA	POORLY GRADED SAND, (SP), dark gray, moist, medium to fine sand grading at 3.8 ft. to POORLY GRADED SAND WITH SILT, (SP-SM), dark gray, wet, fine sand, no odor or sheen.
	7.0		1.5	NA	SILTY SAND, (SM), gray, wet, fine grained sand with thin layers of gravel from 6.0 ft. to 6.5 ft., glossy look, strong odor like airplane glue, no sheen.
	9.0	SS05	1.8	NA	SILTY SAND, (SM), grading to SILT WITH SAND, (ML), gray, wet, fine sand with strong airplane glue-like odor, no sheen, changes at 8.5 ft. to POORLY GRADED SAND, (SP), gray-brown, moist, medium to fine grained.
10.0	11.0	SS06	2.0	NA	SILTY SAND, (SM), off-gray layer to 9.2 ft. change to POORLY GRADED SAND, (SP), dark gray, iron stained, moist, medium to fine grained, clean, strong odor like airplane glue and sewer gas.
					END SOIL BORING AT 11.0 FEET

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



Groundwater HydroPunch Data				
		Sample Interval (bgs)		
Area	Sample No.	Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-01-W1	22	22	17,000

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-02 SHEET 1 OF 1

SOIL BORING LOG

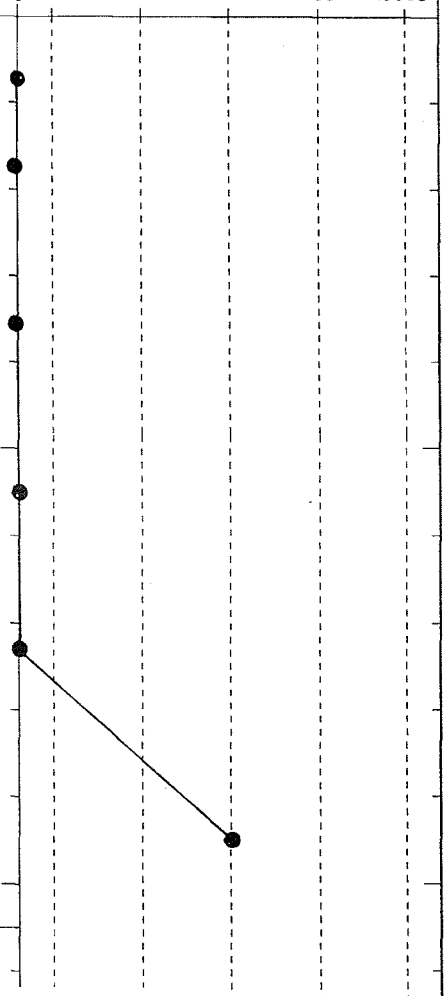
PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/14/94 FINISH 3/14/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)
	.5				Asphalt.	
	2.5	SS01	1.8	NA	POORLY GRADED SAND, (SP), Gray, moist, medium to fine grained with occasional silt interbeds, no odor or sheen.	
	4.5		1.7	NA	POORLY GRADED SAND, (SP), gray, moist, medium to fine grained grading to SILTY SAND, (SM), interbeds at 3.5 ft., no odor or sheen.	
5.0	6.5		1.0	NA	SILTY SAND, (SM), gray, moist, loose, fine grained, no odor or sheen.	
	8.5		1.0	NA	SILTY SAND, (SM), as above.	
10.0	10.5	SS06	1.8	NA	SILTY SAND, (SM), gray, wet, no odor or sheen except sample in shoe with faint toluene-like odor.	
					END SOIL BORING AT 10.5 FEET	



Groundwater HydroPunch Data				
		Sample Interval (bgs)		
Area	Sample No.	Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-02-W1	13	15	510,000

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-03 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

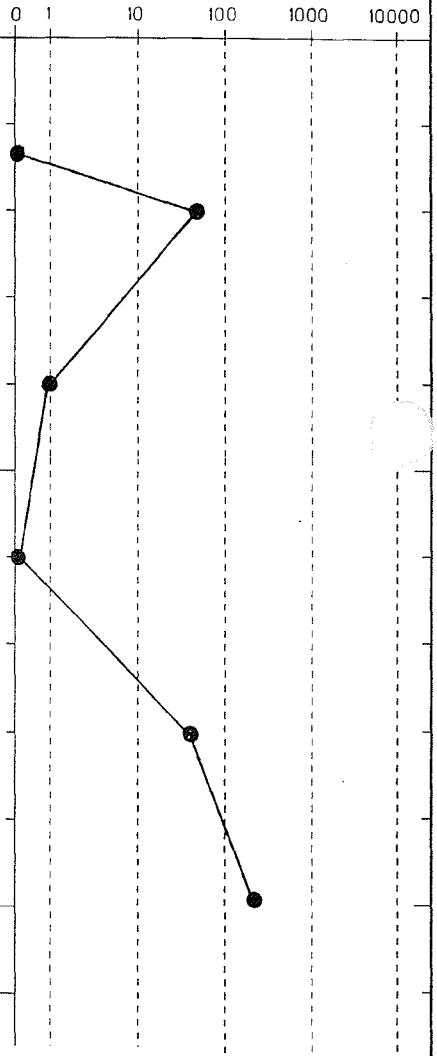
DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 2/25/94 FINISH 2/25/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
	1.0				Asphalt and subbase material
	3.0	SS02	1.8	NA	POORLY GRADED SAND, (SP), brown, moist, loose, medium to fine grained, solvent-like odor. At 2.7 ft. changing to fine, gray sand, trace silt.
5.0	5.0		2.0	NA	SILTY SAND, (SM), black, moist, loose, silt and occasional pebble interbeds to 4.6 ft. then; SANDY SILT, (ML), brown, firm, low plasticity, with organics.
	7.0		1.9	NA	SILT, (ML), brown, moist, firm, low plasticity, with organics to 5.4 ft. then SILTY SAND, (SM), gray, moist, sand interbeds, mostly fine, occasional rootlets.
	9.0		1.5	NA	SILTY SAND, (SM), as above with black mottling to 8.0 ft. then; POORLY GRADED SAND, (SP), dark gray, moist, loose, fine.
10.0	11.0	SS06	1.8	NA	POORLY GRADED SAND, (SP), dark gray, moist, loose, fine grained to 9.4 ft. changing to very dark gray, medium to fine grained, airplane glue-like odor.
					END SOIL BORING AT 11.0 FEET

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



Groundwater HydroPunch Data				
		Sample Interval (bgs)		
Area	Sample No.	Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-03-W1	12.5	15	270,000

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-04 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

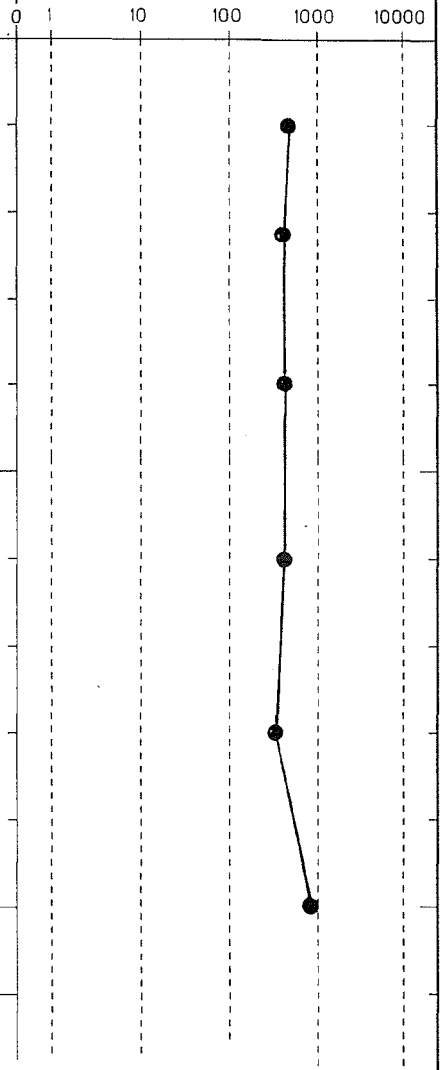
DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/11/94 FINISH 3/11/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)
	1.0				Asphalt and subcourse material.
	3.0	SS01	1.3	NA	SILTY SAND, (SM), dark gray to black, moist, medium to fine grained sand, sheen, airplane glue-like odor.
	5.0	SS03	1.8	NA	SILTY SAND, (SM), as above to 4.4 ft. then root zone, SILT, (ML), dark brown to black, moist, firm, odor, no sheen, abundant organics.
5.0	7.0		2.0	NA	SANDY SILT, (ML), gray, moist, firm, changing to SILTY SAND, (SM), at 6.0 ft., strong odor, no sheen, fine rootlets.
	9.0		2.0	NA	SILTY SAND, (SM), gray, moist loose, contact at 8.7 ft. with POORLY GRADED SAND, (SP), gray, moist, loose, fine grained sand.
10.0	11.0	SS06	2.0	NA	POORLY GRADED SAND, (SP), dark gray, moist, loose, medium to fine grained sand, odor present, no sheen.
					END SOIL BORING AT 11.0 FEET

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-04-W1	13.7	15	450,000

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-05 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

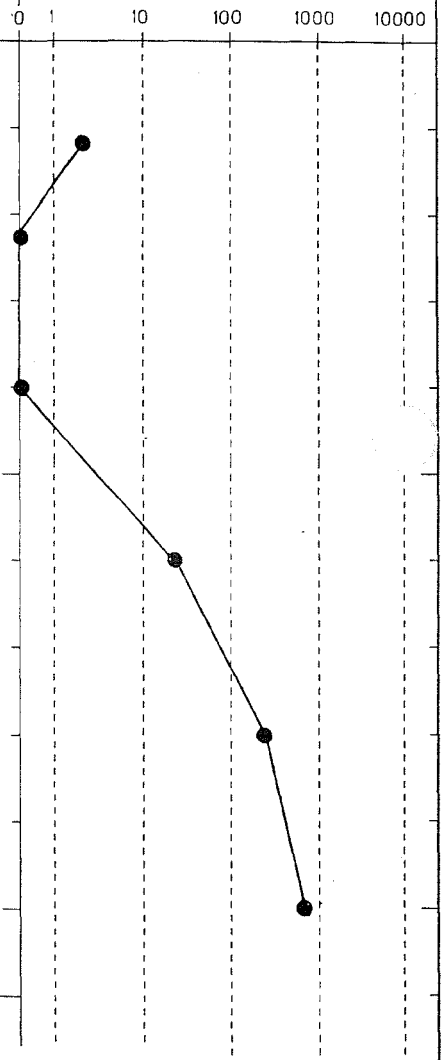
DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/15/94 FINISH 3/16/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
	1.0				Asphalt and subbase course.
	3.0	SS01	1.7	NA	POORLY GRADED SAND, (SP), dark gray to black, moist, medium to fine sand, clean, no odor, no sheen.
5.0	5.0		1.4	NA	SILTY SAND, (SM), very dark gray to black, moist, with interbedded silt and silt clasts, organics lower section, no odor or sheen.
	7.0		1.5	NA	SILTY SAND, (SM), very dark gray to black, wet, to SILT WITH SAND, (ML), very dark gray to black, silt interval from 6-6.5', soft and plastic, some organics, no odor or sheen.
	9.0	SS05	2.0	NA	SILTY SAND, (SM), very dark gray to black, wet, fine sand, to 8.8', then SILT, (ML) dark gray, wet, plastic, faint odor like airplane glue.
10.0	11.0	SS06	1.5	NA	SILT, (ML), very dark gray, moist, plastic, to 9.4'; then POORLY GRADED SAND, (SP), gray, fine sand to 10.3'; then SILT, (ML), gray-green to 10.5'; then SILTY SAND, (SM), gray, medium to fine sand; strong odor like airplane glue in bottom sand, no sheen except from top silt, below 9.4' much drier than formation above.
					END SOIL BORING AT 11.0 FEET

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-05-W1	22	22	1,600

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
NPE35051.A6	A04-06	SHEET 1 OF 4

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

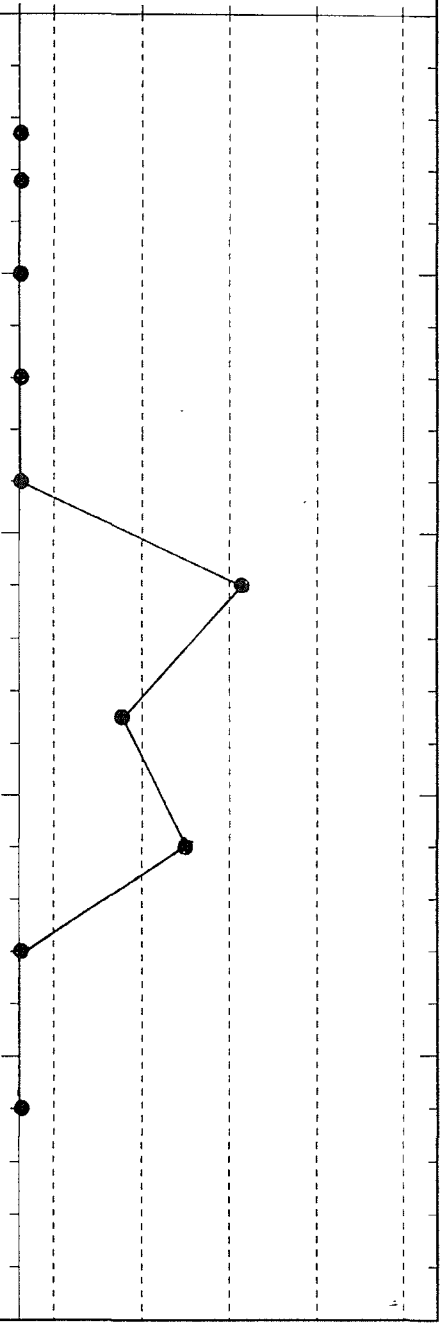
DRILLING METHOD AND EQUIPMENT B-56 and B-61, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 2/28/94 FINISH 3/04/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
	2.0				Asphalt and subbase course.
	4.0	SS01	2.0	NA	POORLY GRADED SAND WITH SILT, (SP-SM), dark gray, wet, loose, fine to medium sand, occasional silt, no odor or sheen.
5.0	6.0		1.5	NA	POORLY GRADED SAND WITH SILT, (SP-SM), interbeds grading to SILTY SAND, (SM), gray, wet, loose, fine to medium sand, organics at 5.5', no odor or sheen.
	8.0		1.7	NA	SILTY SAND, (SM), gray-brown, moist, loose, no odor or sheen.
	10.0		2.0	NA	SILTY SAND, (SM), grading to SANDY SILT, (ML), brown-gray to gray, moist, low plasticity silt below 9.5'; sand, gray, fine to medium, loose, no odor or sheen.
10.0	12.0	SS06	1.6	NA	SANDY SILT, (ML), as above to 11.0', then POORLY GRADED SAND, (SP), black, moist, loose, medium grained.
	15.0				
15.0	17.0		2.0	NA	SILTY SAND, (SM), dark gray, wet, medium to fine sand, occasional thin SILT, (ML) interbed; bottom 7" POORLY GRADED SAND, (SP), dark gray, wet, loose, medium sand, no sheen or odor.
	19.0	SS07	2.0	NA	POORLY GRADED SAND, (SP), dark gray, trace red, wet, loose, medium to fine sand, no sheen or odor.
	20.0				
20.0	22.0		1.5	NA	POORLY GRADED SAND, (SP), dark gray, trace red, wet, medium to fine grained, loose, no sheen or odor.
	22.5				No sample
	24.5		0.0	NA	
	25.0				

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-06 SHEET 2 OF 4

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56 and B-61, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 2/28/94 FINISH 3/04/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	SOIL HEADSPACE READINGS (ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm))
	25.0–27.0		0.0	NA	No sample	
	27.5–29.5		0.0	NA	No sample	
30.0	31.0–33.0		0.0	NA	No sample	
35.0	35.0–37.0		0.0	NA	No sample	
	37.5–39.0		1.5	NA	NOTE: CHANGE TO 2"X18" SPLIT SPOON FROM HERE DOWN. POORLY GRADED SAND, (SP), dark gray, wet, loose, fine to medium sand, SILT, (ML), layer 0.1" thick bottom of shoe, gray-brown, firm, rounded pebbles (5/8" minus) in thin layer on top of silt.	●
40.0						
45.0	45.0–46.5		1.5	NA	POORLY GRADED SAND, (SP), dark gray, wet, loose, fine to medium sand; to 45.5 feet then, SILTY SAND, (SM), dark gray, wet, fine sand with gray-brown SILT, (ML), interbeds, no odor or sheen.	●

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-06 SHEET 3 OF 4

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56 and B-61, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 2/28/94 FINISH 3/04/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	51.5					
	53.0		1.5	NA	POORLY GRADED SAND, (SP), dark gray, wet, fine sand, grading to SILTY SAND, (SM), dark gray, wet, fine sand.	
55.0	56.5					
	58.0		1.5	NA	SILTY SAND, (SM), dark gray, wet, grading to SANDY SILT, (ML), toward bottom, no odor or sheen.	
	59.0					
60.0	60.5		1.5	NA	SANDY SILT, (ML), dark gray, wet, fine, soft, occasional shell fragments, no odor or sheen.	
	61.5					
	63.0		1.5	NA	SANDY SILT, (ML), dark gray, wet, fine, soft, occasional shell fragments, no odor or sheen.	
65.0	67.0					
	68.5		1.5	NA	SILT, (ML), medium gray, some tan and black mottling, moist, firm, plastic, no odor or sheen.	
	70.0					
70.0	73.0	SH08	2.5	NA	SILT, (ML), medium gray, some tan and black mottling, moist, firm, plastic, no odor or sheen.	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-06 SHEET 4 OF 4

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56 and B-61, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 2/28/94 FINISH 3/04/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL (FT)	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	78.5					
	80.0		1.5	NA	SILTY SAND, (SM), green-gray, wet, loose, fine to medium grained, abundant shell fragments.	
80.0					END SOIL BORING AT 80.0 FEET	
85.0						
90.0						
95.0						

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-06-W1	12.5	15	7,900
04	A04-06-W2	30	30	52
04	A04-06-W3	35	35	91
04	A04-06-W4	50.5	50.5	1 U
04	A04-06-W5	54	54	5

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-07 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

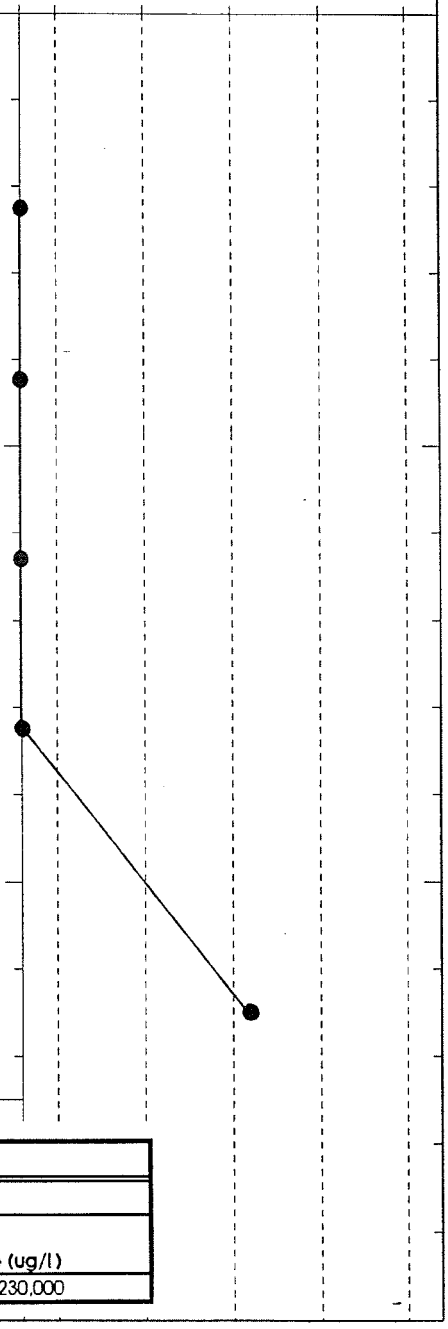
ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-61, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/04/94 FINISH 3/07/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
	1.5				Asphalt and subbase material.
	3.5	SS01	2.0	NA	POORLY GRADED SAND, (SP), dark gray with red grains, moist, medium to fine sand, occasional gray silt clast, no odor or sheen.
5.0	5.5		2.0	NA	POORLY GRADED SAND (SP) as above to 4.2', then SILTY SAND, (SM), dark gray, moist, fine sand, root zone at 5.3'.
	7.5		2.0	NA	POORLY GRADED SAND, (SP), dark gray, moist, medium to fine, with occational silty matrix to 6.5'; then SILTY SAND, (SM), gray-brown, moist, fine sand, with rootlets, areas of saturation in sand.
	9.5	SS05	2.0	NA	SILTY SAND, (SM), dark gray, moist, fine sand.
10.0	10.5				
	12.5	SS06	1.8	NA	POORLY GRADED SAND, (SP), dark gray, moist, medium to fine sand, no odor or sheen.
					END SOIL BORING AT 12.5 FEET

SOIL HEADSPACE READINGS — ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-07-W1	12.6	15	230,000

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-08 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

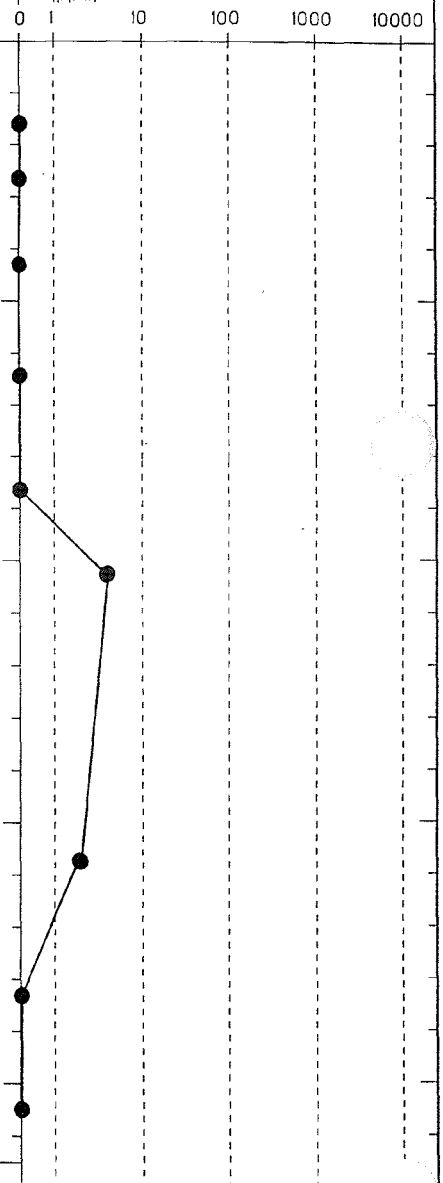
ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/07/94 FINISH 3/08/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
	1.5				Subcourse sand and gravel.
	3.5	SS01	1.5	NA	POORLY GRADED SAND, (SP), brown, changes to gray at 2.0', moist, medium to fine, grain sand, minor brown silt clasts, no odor or sheen.
5.0	5.5		2.0	NA	POORLY GRADED SAND, (SP), as above to 3.8'; 3.8-4.2' SILTY SAND, (SM), gray; 4.2-4.4' SILT, (ML), gray-brown with root zone at bottom; 4.4-5.5' SILTY SAND, (SM), brown, fine, with rootlets.
	7.5		2.0	NA	SILTY SAND, (SM), gray-brown, moist, fine, with rootlets.
	9.5	SS05	1.8	NA	SILTY SAND, (SM), as above, to 9.0'; then SANDY SILT, (ML), moist.
10.0	11.0		1.3	NA	SANDY SILT, (ML), as above, to 10.5 ft.; then POORLY GRADED SAND, (SP), dark gray, moist, medium to fine sand, odor in sand, sand mixed with water shows faint sheen.
15.0	15.0			NA	
	16.5		1.5	NA	POORLY GRADED SAND, (SP), dark gray, wet, loose, medium to fine sand, slight odor like airplane glue.
	17.5				
	19.0		1.3	NA	POORLY GRADED SAND, (SP), as above, except no odor or sheen.
20.0	20.0				
	21.5		1.3	NA	POORLY GRADED SAND, (SP), as above
					END SOIL BORING AT 21.5 FEET

SOIL HEADSPACE READINGS — ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-08-W1	22	22	890

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-09 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INE., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/11/94 FINISH 3/11/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	0.5					
	2.5	SS01	2.0	NA	WELL GRADED SAND WITH GRAVEL, (SW), 0-1.0'subbase material; 1.0-2.5' POORLY GRADED SAND, (SP), brown to rust, moist, loose, medium to fine grained sand, with thin silt intervals, no odor or sheen.	
	4.5		2.0	NA	POORLY GRADED SAND, (SP), as above, except very moist bottom 0.5' no odor or sheen.	
5.0	6.5		2.0	NA	POORLY GRADED SAND, (SP), as above to 5.2'; then color changes to gray, very moist to wet to 5.5'; then SILTY SAND, (SM), brown, moist, fine grain sand, with organics (roots), no odor or sheen	
	8.5	SS05	2.0	NA	SILT WITH SAND, (ML), brown, moist, firm, fine to very fine grained sand, no odor or sheen.	
10.0	10.5		2.0	NA	POORLY GRADED SAND, (SP) gray, moist, loose, medium to fine sand, clean, no odor or sheen.	
					END SOIL BORING AT 10.5 FEET	

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-09-W1	13.3	15	1 U

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-10 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/10/94 FINISH 3/10/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO (ppm) 0 1 10 100 1000 10000
	1.0				Asphalt and subbase material.	
	3.0	SS01	2.0	NA	POORLY GRADED SAND, (SP), gray, moist, fine to medium grained sand, clean, no odor or sheen.	
	5.0		2.0	NA	POORLY GRADED SAND, (SP), gray, moist, fine to medium grained sand, clean, no odor or sheen.	
5.0	7.0		2.0	NA	SILTY SAND, (SM), wet, mostly fine grained sand, to 6.4'; then SILT, (ML), gray- black material changing to gray-brown, firm, low plasticity, abundant organics, root zone at contact with sand, no odor or sheen.	
	9.0	SS05	2.0	NA	SILTY SAND, (SM), brown to gray, moist, very fine sand, occasional medium sand interbed (thin); at 8.5' SILT, (ML), gray, very moist, soft, organics (rootlets) throughout, no odor or sheen.	
10.0	11.0		2.0	NA	SILTY SAND, (SM), gray, very moist, soft to 10.8'; then, POORLY GRADED SAND, (SP), dark gray, medium to fine grained sand, no odor or sheen.	
					END SOIL BORING AT 11.0 FEET	

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-10-W1	13	15	46,000
04	A04-10-W2	25	25	83

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-11 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/10/94 FINISH 3/10/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	0.5				Construction gravel and sand overburden.	
	2.5	SS01	1.0	NA	SILTY SAND, (SM), brown to rusty, moist, medium to fine grained sand, no odor or sheen.	
	4.5		2.0	NA	SILTY SAND, (SM), brown, moist, medium and fine grained sand interbeds, some silt, no odor or sheen.	●
5.0	6.5		1.4	NA	SILTY SAND, (SM), as above to 5.5; then, POORLY GRADED SAND, (SP), gray, medium to fine grained sand with SILT, (ML), interbeds, no odor or sheen.	●
	8.5	SS04	2.0	NA	SILTY SAND, (SM), gray, moist, fine grained sand, with silt interbeds, organics throughout, no odor or sheen.	●
10.0	10.5		2.0	NA	SILTY SAND, (SM), as above to 9.5; then, SILT, (MH), green-gray, soft, plastic with occasional organics, no odor or sheen.	●
					END SOIL BORING AT 10.5 FEET	

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-11-W1	13.2	15	1 U

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-12 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/09/94 FINISH 3/09/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	0.5				Demolition debris.	
	2.5	SS01	1.5	NA	SILTY SAND, (SM), gray to brown, moist, medium to fine grained sand, loose, with brown, SILT, (ML), interbeds.	
	4.5		1.8	NA	POORLY GRADED SAND, (SP), brown to rust, moist, loose, medium to fine grained sand, color changes to gray at 4.2', no odor or sheen.	
5.0	6.5		2.0	NA	POORLY GRADED SAND, (SP), as above to 5.5'; then, SILT, (ML), gray, firm, plastic, with organic material, saturated sand above silt, no odor or sheen.	
	8.5	SS05	1.2	NA	SILTY SAND, (SM), gray, moist, very fine grained sand, with rootlets, no odor or sheen.	
10.0	10.5		1.6	NA	SILTY SAND, (SM), as above to 9.0'; then, SANDY SILT, (ML), gray, moist, plastic, to 10.0'; then, SILTY SAND, (SM), gray, moist, organics throughout, no odor or sheen; noted medium to fine grained sand on very end of plug in shoe.	
					END SOIL BORING AT 10.5 FEET	

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-12-W1	12.4	14	1 U

CH2M HILL

PROJECT NUMBER NPE35051.A6	BORING NUMBER A04-13 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/08/94 FINISH 3/09/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO (ppm) 0 1 10 100 1000 10000
	1.5				Asphalt and subbase.	
	3.5	SS01	1.6	NA NA	POORLY GRADED SAND WITH SILT, (SP-SM), brown, moist, loose, medium to fine sand.	
5.0	5.5		1.9	NA	POORLY GRADED SAND WITH SILT, (SP-SM) As above to 3.8'; then SILTY SAND, (SM), dark gray, wet, perched, medium grading to fine sand, with silt interbeds, some organics, root zone in shoe, perched.	
	7.5	SS04	1.6	NA	POORLY GRADED SAND, (SP), dark gray, wet, medium grading to fine sand, to 6.8'; then, SILTY SAND, (SM), gray-brown, moist, very fine sand, with rootlets.	
	9.5	SS05	1.5	NA	SILTY SAND, (SM), gray-brown, moist, silty very fine sand grading to very fine sand silt, with rootlets to 9.2'; then, POORLY GRADED SAND, (SP), dark gray, moist, medium to fine sand.	
10.0	11.0		1.7	NA	POORLY GRADED SAND, (SP), dark gray, moist, medium to fine, with occasional silt interbed.	
15.0	15.0					
	16.5		1.0	NA	As above, except wet, fine, some silt, loose.	
	17.5					
	19.0		1.0	NA	As above, except trace silt, loose.	
	20.0					
20.0	21.5		1.0	NA	As above	
	22.5					
	24.0		2.0	NA	As above, except wet, medium to fine, clean, loose.	
	25.0					
25.0	26.5		2.0	NA	As above	
	27.5					
	29.0		2.0	NA	As above	
					END SOIL BORING AT 29.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-14 SHEET 1 OF 3

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE AND R. CARMEL

DRILLING METHOD AND EQUIPMENT B-56 and B-61, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/15/94 & 4/11/94 FINISH 3/15/94 & 4/11/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Asphalt and subbase material.	
	3.0		2.0	NA	POORLY GRADED SAND WITH SILT, (SP-SM), gray, moist, medium to fine sand to 2.0'; then SILTY SAND, (SM), and SANDY SILT, (ML), with silt interbeds, brown to gray-brown, moist, firm, no odor or sheen.	
	5.0	SS01	2.0	NA	POORLY GRADED SAND, (SP), gray, moist, loose, medium to fine sand, no odor or sheen.	
5.0	7.0	SL02	2.0	NA	SILTY SAND, (SM), gray, moist, loose, medium to fine sand, and silty fine gray sand interbeds, no odor or sheen.	
	9.0		2.0	NA	SILT SAND, (SM), as above, to 7.0' then, SANDY SILT, (ML), gray, moist, no odor or sheen.	
10.0	11.0		2.0	NA	POORLY GRADED SAND, (SP), gray, moist, loose, medium to fine sand, clean, no odor or sheen.	
	12.5				NOTE: Change to 2"x18" split spoon from here down.	
	14.0		1.5	NA	POORLY GRADED SAND, (SP), gray, wet, mostly fine sand, trace thin silt interbed.	
15.0	15.0					
	16.5		1.5	NA	POORLY GRADED SAND, (SP), gray, wet, loose, medium grading to fine sand.	
	17.5					
	19.0		1.5	NA	POORLY GRADED SAND, (SP), gray, wet, loose, medium to fine sand, clean.	
20.0	20.0					
	21.5		1.5	NA	POORLY GRADED SAND, (SP) As above	
	22.5					
	24.0		1.5	NA	POORLY GRADED SAND, (SP) As above	
25.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-14 SHEET 2 OF 3

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE AND R. CARMEL

DRILLING METHOD AND EQUIPMENT B-56 and B-61, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/15/94 & 4/11/94 FINISH 3/15/94 & 4/11/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	32.5					
	34.0		1.5	NA	WELL GRADED SAND, (SW), gray, wet, loose, coarse to fine sand, clean.	
	35.0					
35.0	36.5		1.5	NA	WELL GRADED SAND, (SW), as above, except few gravel, rounded, mostly 1/4-1/2".	
	37.5					
	39.0		1.5	NA	WELL GRADED SAND, (SW), as above to 38.5" then change to POORLY GRADED SAND, (SP), gray, wet, loose, medium to fine sand, clean.	
40.0						
45.0						
	47.5					
	49.0		1.5	NA	SILTY SAND, (SM), gray, wet, medium grading to fine sand, with silt in fine sand.	
	50.0					
50.0	51.5		1.5	NA	SILTY SAND, (SM), gray, wet, loose, fine sand.	
	52.5					
	54.0		1.3	NA	SILTY SAND, (SM), gray, wet, loose, fine to very fine sand.	
55.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-14 SHEET 3 OF 3

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE AND R. CARMEL

DRILLING METHOD AND EQUIPMENT B-56 and B-61, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/15/94 & 4/11/94 FINISH 3/15/94 & 4/11/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	62.5					
	64.0		1.5	NA	SILTY SAND, (SM), gray, wet, nonplastic, very fine sand.	
	65.0					
65.0	66.5		1.0	NA	SILT, (ML), gray, wet, soft, high plasticity, black mottling, some random pebbles, rounded, 1/2" minus.	
	67.5					
	69.0		0.8	NA	SILT, (ML), gray and tan, with black mottling, wet, soft, with pebbles.	
	70.0					
70.0	71.5		1.1	NA	SILT, (ML), gray and tan, with black mottling, moist, high plasticity.	
	73.0		1.5	NA	SILTY SAND, (SM), gray, moist, coarse sand and fine gravel, subrounded to subangular, 1/4" minus to 72.3'; then SILT, (ML), gray with black mottling, soft.	
	74.5		0.3	NA	SILT, (ML), gray with black mottling, wet, very soft.	
75.0	76.0		1.5	NA	SILT, (ML), dark gray, moist, as above to 75'; then, SILTY SAND, (SM) green-gray, fine sand with shell fragments.	
					END SOIL BORING AT 76.0 FEET	
80.0						
85.0						

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-14-W1	11	15	470,000
04	A04-14-W2	30	30	34
04	A04-14-W3	45	45	110
04	A04-14-W4	60	60	120

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-15 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/16/94 FINISH 3/16/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.5				Non-Native materials, construction gravels, and railroad ballast rock; note surface is dark colored and appears to be oil stained.	
	3.5		2.0	NA	POORLY GRADED SAND, (SP), gray, moist, loose, medium to fine sand; brown and gray SILT, (ML), interbeds in finer grained sand top half, no odor or sheen.	●
5.0	5.5		1.9	NA	POORLY GRADED SAND, (SP), As above to 5.0'; then SILTY SAND, (SM), gray to very dark gray, moist, nonplastic, wood chunks, no odor or sheen.	●
	7.5		2.0	NA	SILTY SAND, (SM), brown, moist, loose, fine sand, with organics, grading to SANDY SILT, (ML), gray, moist, firm, nonplastic, no odor or sheen.	●
	9.5		1.9	NA	SILTY SAND, (SM), gray, wet, trace organics, no odor or sheen.	●
10.0	11.0		1.9	NA	SILTY SAND, (SM), gray, wet, grading to SANDY SILT, (ML) gray, wet, firm, fine sand, no odor or sheen.	●
					END SOIL BORING AT 11.0 FEET	

Groundwater HydroPunch Data				
		Sample Interval (bgs)		
Area	Sample No.	Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-15-W1	12.5	15	3

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-16 SHEET 1 OF 1

SOIL BORING LOG

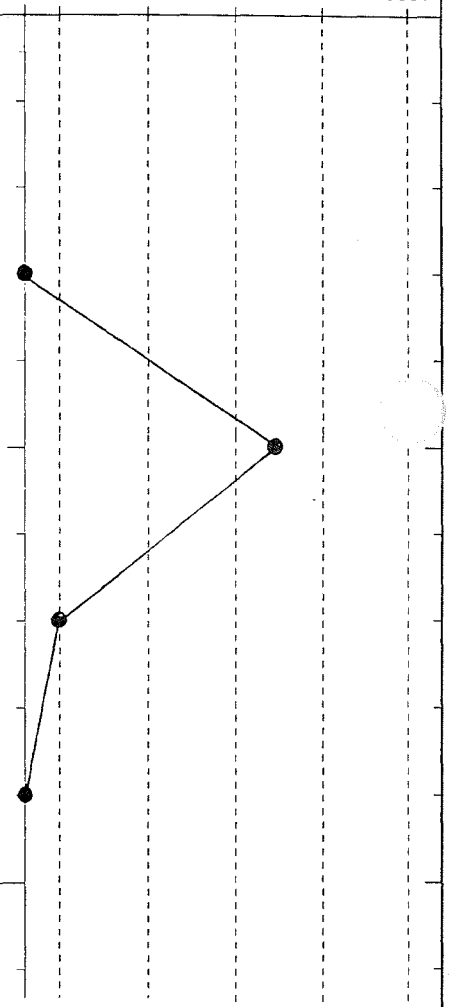
PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/16/94 FINISH 3/16/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)
	2.0				Concrete slab and fill material.	
	4.0		1.8	NA	POORLY GRADED SAND, (SP), brown-gray to dark gray and rust-brown in layered appearance, moist, fine sand, loose, no odor or sheen.	
5.0	6.0		2.0	NA	POORLY GRADED SAND, (SP), as above, except gray, moist, loose, fine sand, occasional band (thin) with silt matrix, odor like airplane glue.	
	8.0		2.0	NA	POORLY GRADED SAND, (SP), as above to 6.8'; then SANDY SILT, (ML), brown, moist, firm, organic, sandier toward bottom, darker brown on top, no odor or sheen.	
	10.0		2.0	NA	SILTY SAND, (SM), gray, moist, grading to green-gray SILT, (ML), by 9.3', no odor or sheen.	
10.0					END SOIL BORING AT 10.0 FEET	



Groundwater HydroPunch Data				
		Sample Interval (bgs)		
Area	Sample No.	Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-16-W1	14.5	15	24,000

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-17 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/18/94 FINISH 3/18/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0					
	3.0		1.7	NA	POORLY GRADED SAND WITH GRAVEL, (SP), brown, moist, loose, medium to fine sand, few rounded pebbles, no odor or sheen.	
	5.0		1.8	NA	SILTY SAND, (SM), brown, moist, loose, medium and fine sand, trace small pebbles and silt clasts.	
5.0	7.0		1.7	NA	POORLY GRADED SAND, (SP), brown, moist, loose, fine to very fine sand, in layers, no odor.	
	9.0		2.0	NA	POORLY GRADED SAND, (SP), as above grading to POORLY GRADED SAND WITH SILT, (SP-SM)	
10.0	11.0		2.0	NA	POORLY GRADED SAND, (SP) brown, moist, loose, fine sand, no odor.	
					END SOIL BORING AT 11.0 FEET	

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-17-W1	12.8	16	4

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-18 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER/

WATER LEVELS _____ START 3/18/94 FINISH 3/18/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Asphalt and base material.	
	3.0		1.5	NA	SILTY SAND, (SM), gray-brown, moist, interbedded fine and medium sand and SILT, (ML), no odor or sheen.	
	5.0		1.6	NA	POORLY GRADED SAND, (SP), gray-brown, moist, interbedded fine and medium sand, no odor or sheen.	
5.0	7.0		1.7	NA	SILTY SAND, (SM), orange-brown, moist, loose, medium grading to fine sand, no odors, silty bottom 5".	
	9.0		1.9	NA	POORLY GRADED SAND, (SP), brown, moist, loose fine sand to 8.1', then gray, moist, medium sand, no odor or sheen.	
10.0	11.0		2.0	NA	POORLY GRADED SAND, (SP), gray, moist, loose, with iron oxide bands of staining.	
					END SOIL BORING AT 11.0 FEET	

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-18-W1	12.7	15	2

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-21 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/21/94 FINISH 3/21/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Asphalt and sand from demolition activity.	
	3.0		2.0	NA	POORLY GRADED GRAVEL WITH SILT, (GP-GM), brown, moist, gravel with fine sand (crushed rock with silty sand matrix), no odor or sheen. (Fill)	
	5.0		2.0	NA	POORLY GRADED GRAVEL WITH SILT, (GP-GM), (Fill) as above.	
5.0	7.0		2.0	NA	POORLY GRADED SAND, (SP), brown, moist, loose, fine sand, some medium sand, trace gravel, no odor or sheen.	
	9.0		2.0	NA	SILTY SAND WITH GRAVEL, (SM) brown, moist, fine sand, some medium sand, little silt, no odor or sheen.	
10.0	11.0		1.5	NA	SILTY SAND WITH GRAVEL, (SM) as above, except mostly medium sand, some fine sand.	
					END SOIL BORING AT 11.0 FEET	

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-21-W1	13.2	15	1 U

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-23 SHEET 1 OF 3

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE AND R. CARMEL

DRILLING METHOD AND EQUIPMENT B-56, B-61 AND ACKER S-68, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/22/94 & 4/6/94 FINISH 3/22/94 & 4/8/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Subbase material.	
	3.0	SS01	2.0	NA	SILTY SAND, (SM), gray-brown, moist, medium, some fine sand, layering visible, no odor or sheen.	●
	5.0	SS02	1.3	NA	POORLY GRADED SAND, (SP), brown, moist, medium to fine sand to 3.9'; wood chunk with gray fine sand below, no odor or sheen.	●
5.0	7.0	SS03	1.7	NA	SILTY SAND, (SM), brown, moist, medium to fine sand to 5.2'; then SILT WITH SAND, (ML), gray, fine sand, to 6.0'; then, SILT, (ML), brown, plastic, organic, abundant rootlets.	●
	9.0	SS04	1.8	NA	SILTY SAND, (SM), gray-brown, moist, loose, plastic, grading to silty fine sand, no odor or sheen.	●
10.0	11.0		1.6	NA	POORLY GRADED SAND, (SP), very dark gray, moist, medium sand to 10.7'; then, SILT, (ML), gray, moist, firm, slight solvent odor, no sheen.	●
15.0	15.0					
	16.5	SS05	1.5	NA	POORLY GRADED SAND, (SP), gray, wet, loose, medium to fine sand.	
20.0						
25.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-23 SHEET 2 OF 3

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE AND R. CARMEL

DRILLING METHOD AND EQUIPMENT B-56, B-61 AND ACKER S-68, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/22/94 & 4/6/94 FINISH 3/22/94 & 4/8/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	35.0					
35.0	36.5	SS06	0.7	NA	POORLY GRADED SAND, (SP), dark gray, wet, loose, clean, medium sand.	
	40.0					
40.0	41.5		0.8	NA	SILTY SAND, (SM), dark gray, wet, loose, fine sand, nonplastic silt.	
45.0						
	50.0					
50.0	51.5		1.1	NA	SILTY SAND, (SM), as above.	
	52.5					
	54.0		1.0	NA	SILTY SAND, (SM), as above.	
	55.0					
55.0	56.5		1.5	NA	SILTY SAND, (SM), SANDY SILT, (ML), dark gray, wet, soft, trace rounded pebbles up to 1-1/4" minus.	
	57.5					
	59.0		1.0	NA	SILTY SAND, (SM), as above, except very loose.	
	60.0					

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-23 SHEET 3 OF 3

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE AND R. CARMEL

DRILLING METHOD AND EQUIPMENT B-56, B-61 AND ACKER S-68, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/22/94 & 4/6/94 FINISH 3/22/94 & 4/8/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	60.0 – 61.5		1.5	NA	Interbedded SILTY SAND, (SM) and SANDY SILT, (ML), dark gray, soft, fine to very fine sand, layers visible, occasione small pebbles, rounded up to 1/2" minus.	
65.0	65.0 – 66.5		0.4	NA	SANDY SILT, (ML), dark gray, wet, soft, plastic, very fine sand.	
	67.5 – 69.0			NA	SILT, (ML), medium gray with dark gray mottling, firm, very plastic.	
70.0	70.0 – 71.5	SL07	1.5	NA	CLAY, (CL), gray and tan with gray and black mottling, wet, firm.	
					END SOIL BORING AT 71.5 FEET	
75.0						
80.0						
85.0						

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-23-W1	12.7	15	480,000
04	A04-23-W2	31	31	4,000
04	A04-23-W3	47	47	260
04	A04-23-W4	64	64	960

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-27 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-61, DROVE HYDROPUNCH FROM GROUND SURFACE

WATER LEVELS _____ START 4/01/94 FINISH 4/04/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL (FT)	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
5.0						
10.0						

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-27-W1	3.3	7	1

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-28 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-61, DROVE HYDROPUNCH FROM GROUND SURFACE

WATER LEVELS _____ START 4/01/94 FINISH 4/04/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL (FT)	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
5.0						
10.0						

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-28-W1	3.2	4.5	17,000

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A04-29 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-61, DROVE HYDROPUNCH FROM GROUND SURFACE

WATER LEVELS _____ START 4/01/94 FINISH 4/04/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL (FT)	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
5.0						
10.0						

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
04	A04-29-W1	6	8	1

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A5	A04-30 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI, ROUND 2 SOIL BORINGS LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

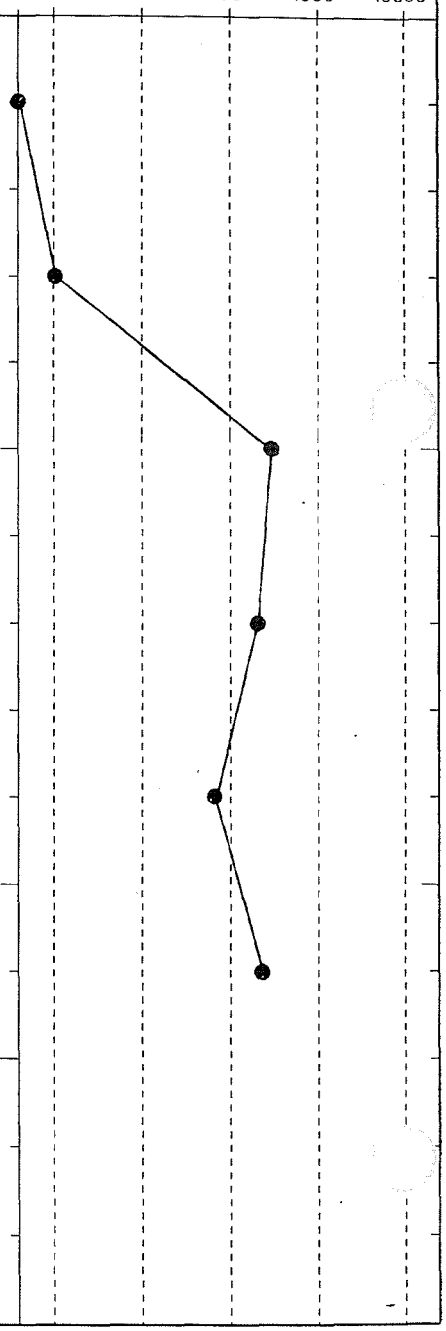
DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.25" ID AUGER, 140lb HAMMER

WATER LEVELS _____ START 8/24/94 FINISH 8/24/94 LOGGER D.KUNKEL

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
	2.0	SS01	1.0	NA	WELL GRADED GRAVEL, (GW), all fill material, compacted.
	4.0	SS02	2.0	NA	POORLY GRADED SAND, (SP), gray, moist, medium-dense, fine to medium sand with trace of nonplastic silt.
5.0	6.0		1.9	NA	POORLY GRADED SAND, (SP), as above, toluene-like odor.
	8.0		1.8	NA	SILT, (ML), brown, moist, firm, nonplastic, old root zone, toluene-like odor.
	10.0		1.6	NA	SILT, (ML), as above to 9'; then POORLY GRADED SAND, (SP), gray, moist, medium-dense, fine to medium sand with nonplastic silt.
10.0	12.0		1.7	NA	WELL GRADED SAND, (SW), brown, moist to wet, medium-dense, fine to coarse sand, trace of silt.
					END SOIL BORING AT 12.0 FEET

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A5	A04-31 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI, ROUND 2 SOIL BORINGS LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

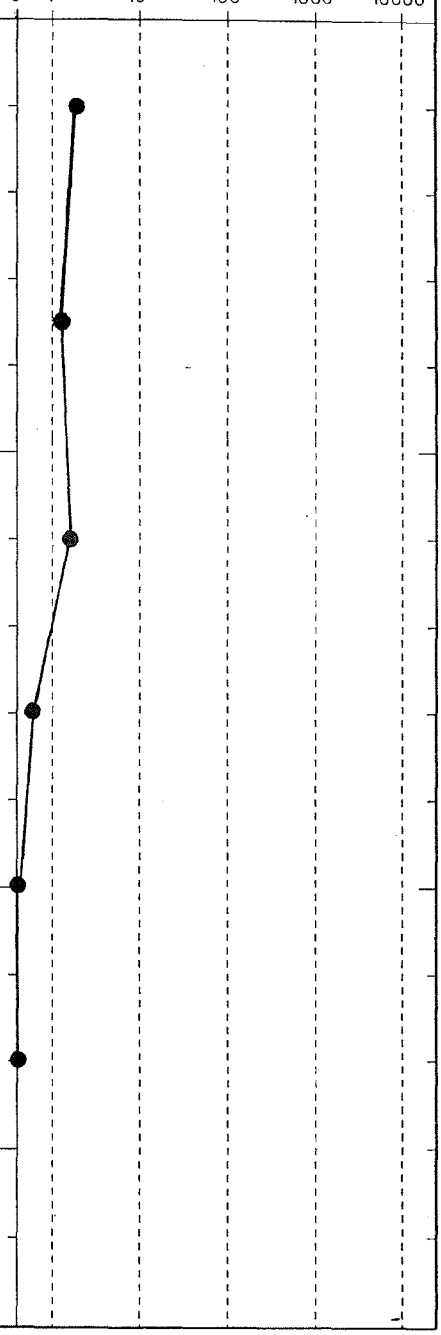
DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.25" ID AUGER, 140lb HAMMER

WATER LEVELS _____ START 8/24/94 FINISH 8/24/94 LOGGER D.KUNKEL

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
		SS01	1.0	NA	Asphalt to 4"; then POORLY GRADED SAND, (SP), gray-brown to gray, dry to moist, medium-dense, fine to medium sand to 18"; gravel fill in upper 6".
	2.0				
	2.5				
		SS02	1.8	NA	POORLY GRADED SAND WITH SILT, (SP-SM), gray to gray-brown, moist, medium-dense, fine to medium sand with nonplastic silt.
	4.5				
	5.0				
5.0			1.8	NA	POORLY GRADED SAND WITH SILT, (SP-SM), as above, except wet above a thin silty layer.
	7.0				
			2.0	NA	POORLY GRADED SAND WITH SILT, (SP-SM), as above, except bottom of sample is POORLY GRADED SAND, (SP).
	9.0				
10.0			2.0	NA	POORLY GRADED SAND, (SP), gray, moist, medium-dense, fine to medium.
	11.0				
			2.0	NA	POORLY GRADED SAND, (SP), as above, except wet.
	13.0				
					END SOIL BORING AT 13.0 FEET

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A5	A05-10 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI, ROUND 2 SOIL BORINGS LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING

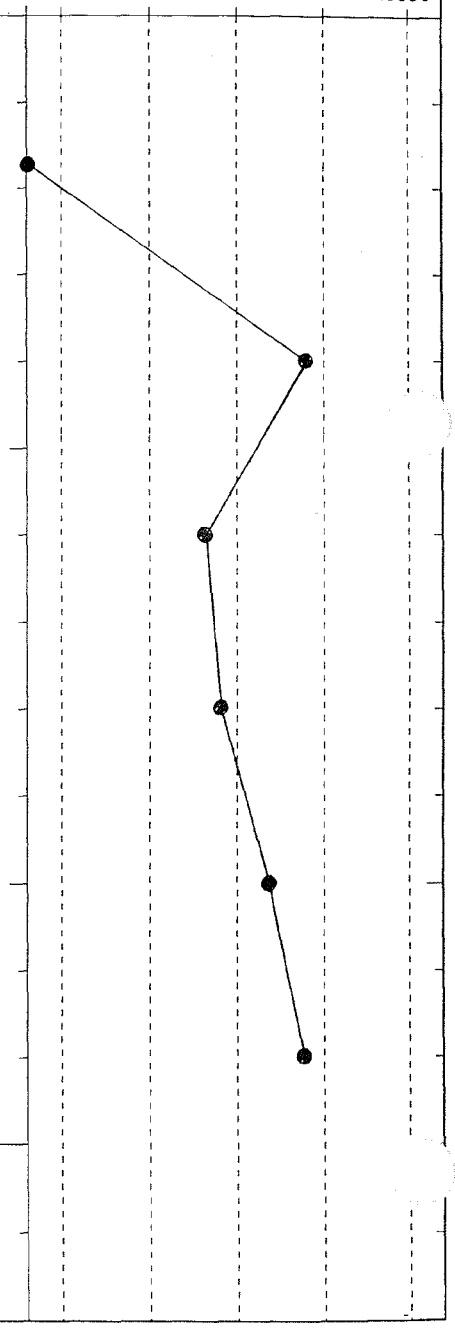
DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.25" ID AUGER, 140lb HAMMER

WATER LEVELS _____ START 8/25/94 FINISH 8/25/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)
	1.0				
	3.0		1.3	NA	SILTY GRAVEL WITH SAND, (GM), brown, moist to wet, medium-dense, gravel rounded 1" minus (50%), sand medium.
	5.0	SS02	1.5	NA	SILTY GRAVEL WITH SAND, (GM), as above, except black stained, wet, no odor or sheen, to 4'; then POORLY GRADED SAND, (SP), black stained, wet, medium-dense, sand medium to fine, trace silt, no odor or sheen.
5.0	7.0		1.4	NA	POORLY GRADED SAND, (SP), as above, except interbedded medium to fine sands, no odor or sheen.
	9.0	SS04	1.7	NA	POORLY GRADED SAND, (SP), as above.
10.0	11.0		1.9	NA	POORLY GRADED SAND, (SP), gray, moist, medium-dense, medium to fine sand, trace nonplastic silt, to 10.0'; then SILTY SAND, (SM), gray with black mottling, moist, medium-dense, fine to very fine sand, nonplastic silt.
	13.0	SS06	1.8	NA	POORLY GRADED SAND, (SP), gray, moist, medium-dense, fine to medium sand, trace of silt, slight odor like airplane glue.
					END SOIL BORING AT 13.0 FEET

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A5	A05-11 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI, ROUND 2 SOIL BORINGS LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING

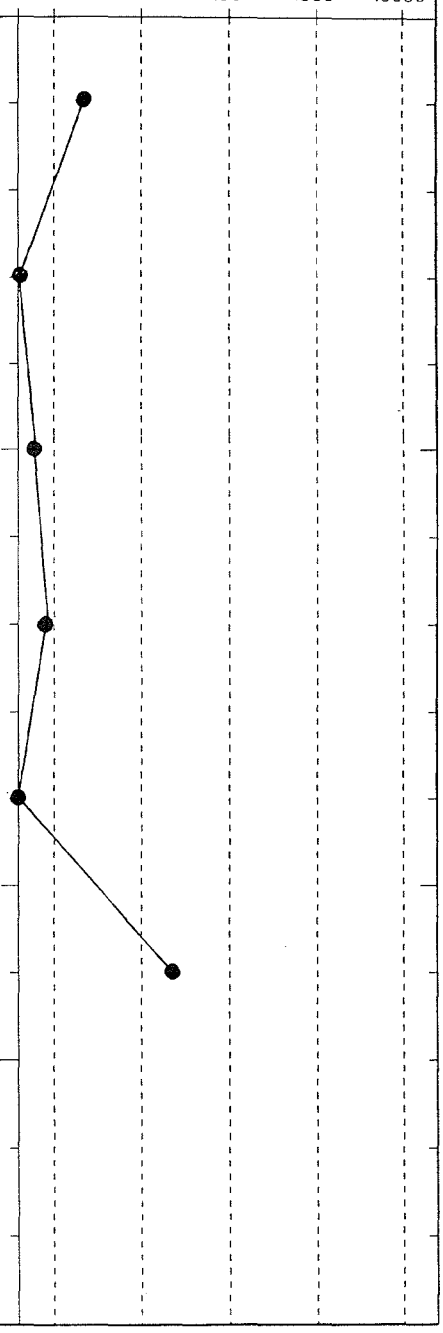
DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.25" ID AUGER, 140lb HAMMER

WATER LEVELS _____ START 8/24/94 FINISH 8/24/94 LOGGER D.KUNKEL

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)
		SS01	1.8	NA	POORLY GRADED SAND, (SP), brown with rust-brown mottling, dry to moist, medium-dense, up to 5% nonplastic silt, fine to medium sand.
	2.0				
		SS02	1.2	NA	SILT, (ML), brown, moist, very stiff, nonplastic brown silt with sand, fine to medium.
	4.0				
5.0			1.7	NA	POORLY GRADED SAND, (SP), gray, moist, medium-dense, fine to medium sand, trace of nonplastic silt.
	6.0				
			1.8	NA	POORLY GRADED SAND, (SP), as above.
	8.0				
			1.6	NA	POORLY GRADED SAND, (SP), gray, moist, medium-dense, very fine to fine sand, nonplastic silt content up to 5%.
10.0	10.0				
			1.6	NA	POORLY GRADED SAND, (SP), as above, except moist to wet.
	12.0				
					END SOIL BORING AT 12.0 FEET

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A5	A05-12 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI, ROUND 2 SOIL BORINGS LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.25" ID AUGER, 140lb HAMMER

WATER LEVELS _____ START 8/24/94 FINISH 8/24/94 LOGGER D.KUNKEL

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	2.0	SS01	1.8	NA	WELL GRADED SAND, (SW), brown to rust brown, moist, medium-dense, fine to coarse sand, trace of silt.	
	4.0	SS02	1.5	NA	WELL GRADED SAND, (SW), as above to 3.5'; then SILT, (ML), brown, moist, stiff, nonplastic silt.	
5.0	6.0		1.2	NA	SILT, (ML), as above to 4.5'; then POORLY GRADED SAND, (SP), gray, moist, medium-dense, fine to medium sand, trace of nonplastic silt.	
	8.0		1.4	NA	POORLY GRADED SAND, (SP), as above.	
10.0	10.0		1.2	NA	POORLY GRADED SAND, (SP), as above to 9.0'; then, SILT, (ML), gray-brown, moist, very stiff, dilatent silt, plastic, trace of very fine sand.	
	12.0		1.5	NA	SILT, (ML), as above to 11.5'; then POORLY GRADED SAND, (SP), gray, moist, medium-dense, fine to medium, trace of silt.	
					END SOIL BORING AT 12.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A5	A05-13 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI, ROUND 2 SOIL BORINGS LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING

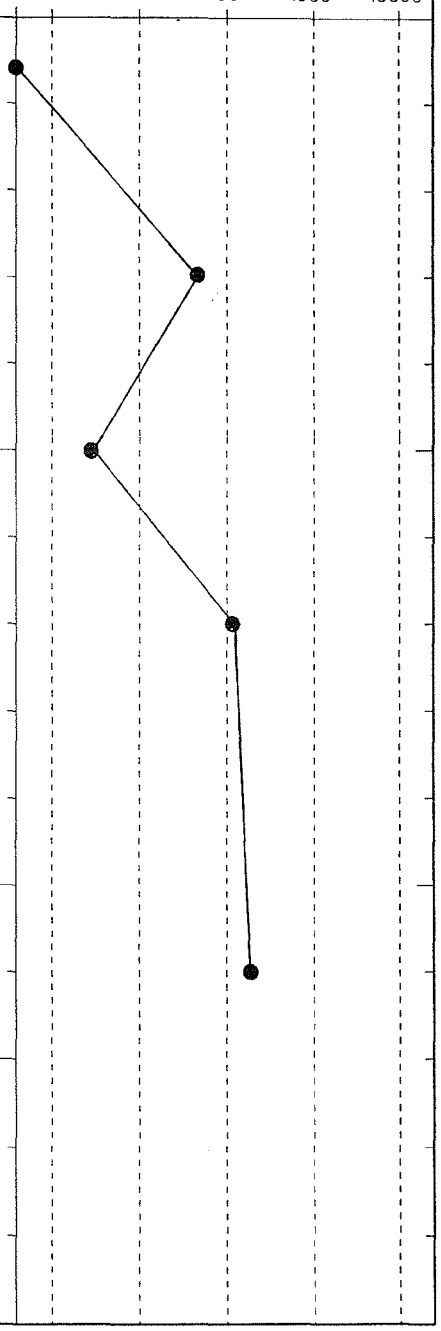
DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.25" ID AUGER, 140lb HAMMER

WATER LEVELS _____ START 8/24/94 FINISH 8/24/94 LOGGER D.KUNKEL

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)
	2.0	SS01	1.9	NA	POORLY GRADED SAND, (SP), brown to gray, moist, loose, fine to medium sand, first 1' brown, last 0.9' gray to dark gray, stained, no odor.
	4.0	SS02	1.0	NA	SILT WITH SAND, (ML), gray, moist to wet, firm, nonplastic silt with very fine sand, no odor.
5.0	6.0		1.2	NA	POORLY GRADED SAND WITH SILT, (SP-SM), gray, moist, medium-dense, fine sand with nonplastic silt, no odor.
	8.0		1.9	NA	SILT WITH SAND, (ML), gray, moist to wet, stiff, nonplastic silt with very fine to fine sand.
10.0	10.0		0.0	NA	NO SAMPLE
	12.0		1.2	NA	POORLY GRADED SAND, (SP), gray, wet, medium-dense, medium sand, trace of nonplastic silt, toluene-like odor.
					END SOIL BORING AT 12.0 FEET

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A5	A05-14 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI, ROUND 2 SOIL BORINGS LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.25" ID AUGER, 140lb HAMMER

WATER LEVELS _____ START 8/25/94 FINISH 8/25/94 LOGGER G. VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				POORLY GRADED SAND, (SP), tan, medium, (fill).	
	3.0	SS01	2.0	NA	POORLY GRADED SAND, (SP), brown to rust-brown and gray, moist, medium-dense, medium to fine sand, trace silt.	
	5.0		2.0	NA	POORLY GRADED SAND, (SP), gray, moist, medium-dense, occasional silt, clast, brown, nonplastic.	
5.0	7.0		1.9	NA	POORLY GRADED SAND, (SP), as above, except fine to medium sand, trace nonplastic silt.	
	9.0		1.8	NA	POORLY GRADED SAND, (SP), rust-brown, moist, medium-dense, fine to medium sand, to 7.8'; then POORLY GRADED SAND, (SP), gray, moist, medium-dense, fine sand, trace of nonplastic silt.	
10.0	11.0		1.8	NA	SILTY SAND, (SM), gray, moist, medium-dense, sand fine to very fine, silt nonplastic.	
	13.0	SS06	1.6	NA	SILTY SAND, (SM), as above, except interbedded fine to very fine sand.	
					END SOIL BORING AT 13.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A05-19 SHEET 1 OF 1

SOIL BORING LOG

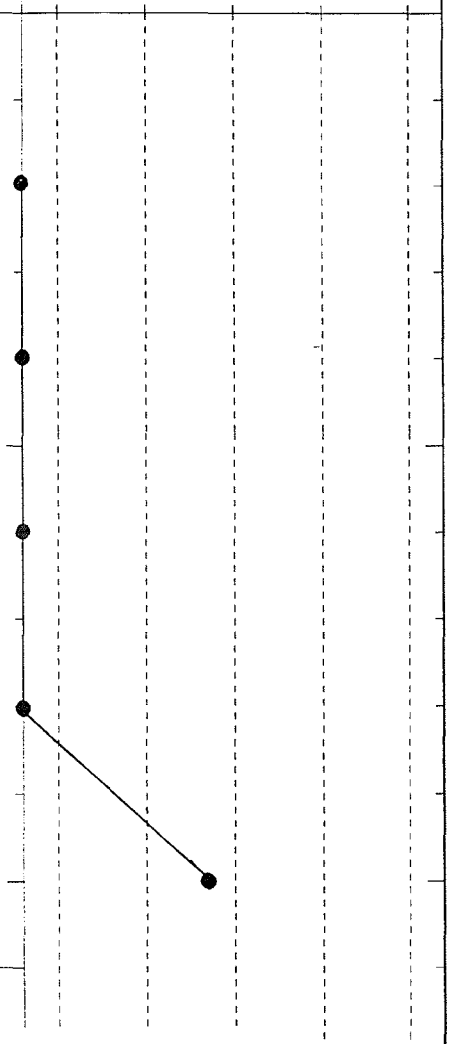
PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/18/94 FINISH 3/18/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)
	1.0				Asphalt and subbase.	
	3.0		1.5	NA	POORLY GRADED SAND, (SP), light gray, moist, medium sand, trace silt to 2.5'; then dark gray, fine sand, no odor or sheen.	
	5.0		1.6	NA	POORLY GRADED SAND WITH SILT, (SP-SM), very dark gray, moist, loose, medium and fine sand in layers, no odor or sheen.	
5.0	7.0		2.0	NA	SILTY SAND, (SM), gray, moist, loose, fine and very fine sand interbedded, no odor or sheen.	
	9.0		2.0	NA	SILTY SAND, (SM), brown-gray, moist, loose, fine and very fine sand interbedded, no odor or sheen.	
10.0	11.0		2.0	NA	SILTY SAND, (SM), dark brown-gray, moist, loose, fine and very fine sand interbedded, no odor or sheen.	
					END SOIL BORING AT 11.0 FEET	



Groundwater HydroPunch Data				
		Sample Interval (bgs)		
Area	Sample No.	Top (feet)	Bottom (feet)	Toluene (ug/l)
05	A05-19-W1	13.3	15	7,700

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A05-20 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/21/94 FINISH 3/21/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Asphalt (2") and sand pad for tank.	
	3.0		2.0	NA	POORLY GRADED SAND, (SP), brown, moist, medium to fine sand, occasional thin SILTY SAND, (SM), layer, 0.1' thick pea gravel layer at 1.5', no odor or sheen.	
	5.0		2.0	NA	POORLY GRADED SAND WITH SILT, (SP-SM), brown, grading to gray, moist, fine sand, 1/4" organic layer at 4', no odor or sheen.	
5.0	7.0		2.0	NA	POORLY GRADED SAND, (SP), gray-brown, moist, fine sand, trace silt, no odor or sheen.	
	9.0		2.0	NA	POORLY GRADED SAND, (SP), gray-brown, moist, fine sand, trace silt, no odor or sheen.	
10.0	11.0		2.0	NA	POORLY GRADED SAND, (SP), mottled gray-brown, wet, fine sand, siltier with depth, no odor or sheen.	
					END SOIL BORING AT 11.0 FEET	

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
05	A05-20-W1	13.4	15	120 E

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A05-22 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/22/94 FINISH 3/22/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Concrete and subbase sand and gravel.	
	3.0		1.7	NA	POORLY GRADED SAND, (SP), brown, moist, loose, medium to fine sand, no odor or sheen.	
	5.0		2.0	NA	POORLY GRADED SAND, (SP), as above.	
5.0	7.0		1.3	NA	POORLY GRADED SAND, (SP), brown, wet bottom 1/3, medium to fine sand with occasional pebbles, no odor or sheen.	
	9.0		1.3	NA	POORLY GRADED SAND WITH SILT, (SP-SM) brown, wet, medium sand, to 7.8'; then gray, fine sand, some medium sand, occasional silt clast, no odor or sheen.	
10.0	11.0		1.5	NA	SILTY SAND WITH GRAVEL, (SM) gray, wet, medium to fine sand, some silt, occasional pebbles, no odor or sheen.	
					END SOIL BORING AT 11.0 FEET	

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
05	A05-22-W1	22	22	57

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A05-24 SHEET 1 OF 3

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

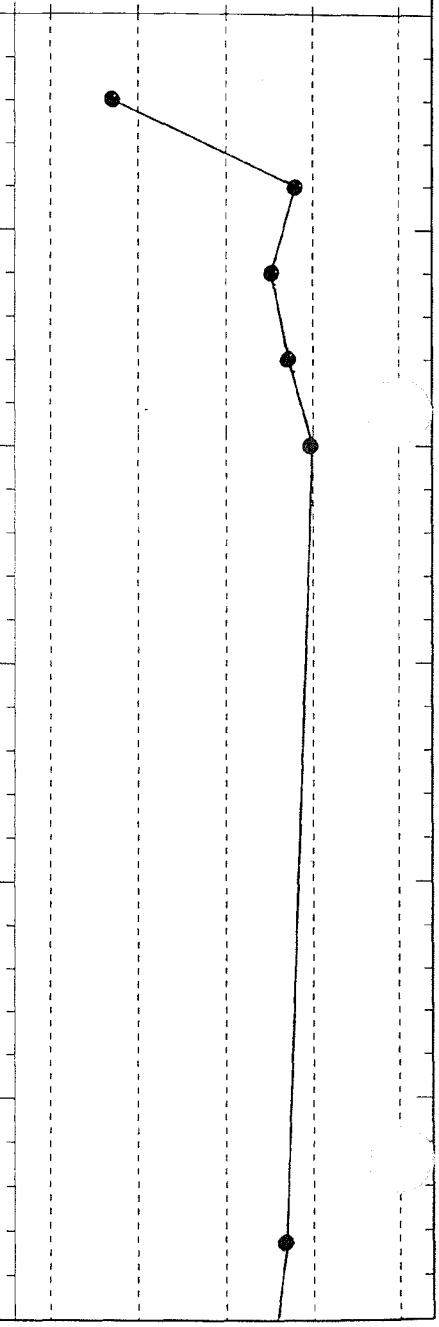
DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/25/94 & 4/13/94 FINISH 3/25/94 & 4/13/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
	1.0				Concrete and subbase material.
	3.0		1.2	NA	POORLY GRADED SAND, (SP), dark gray, wet, loose, fine to medium sand, trace round pebbles.
5.0	5.0		1.5	NA	POORLY GRADED SAND, (SP), as above to 3.5'; then SILT WITH SAND, (ML), gray to black, wet, very fine sand, organic silt, odor like airplane glue, no sheen.
	7.0		0.6	NA	SILTY SAND, (SM), dark gray, wet, loose, very fine sand, odor as above, no sheen.
	9.0		1.2	NA	SILTY SAND, (SM), dark gray, wet, loose, very fine sand, some silt, odor as above.
10.0	11.0		1.5	NA	SILTY SAND, (SM), as above, except fine to very fine sand, strong odor.
15.0					
20.0	22.0				
	24.0	SS01	2.0	NA	POORLY GRADED SAND, (SP), gray, wet, loose, clean, medium to fine sand, slight solvent like odor.
25.0	26.0	SS02	2.0	NA	POORLY GRADED SAND, (SP), as above.
	27.5				NOTE: Change to 2"x18" split spoon.
	29.0		1.5	NA	POORLY GRADED SAND, (SP), gray, wet, loose, medium to fine sand, faint solvent like odor.
	30.0				

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A05-24 SHEET 2 OF 3

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

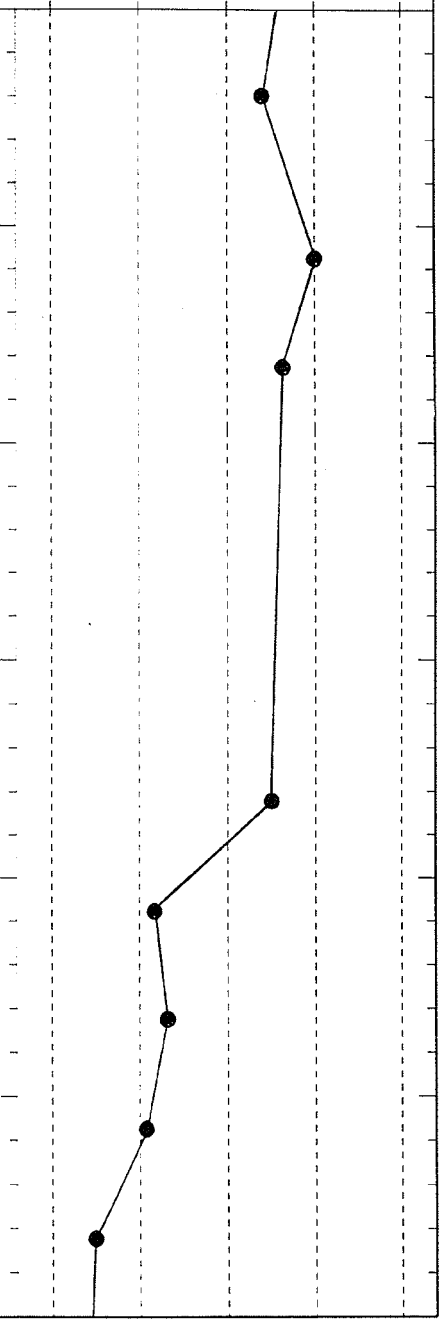
DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/25/94 & 4/13/94 FINISH 3/25/94 & 4/13/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
	30.0–31.5		1.5	NA	POORLY GRADED SAND, (SP) as above.
	31.5–32.5		1.5	NA	
	32.5–35.0				POORLY GRADED SAND, (SP), gray, wet, loose, clean, medium sand.
35.0	35.0–36.5		1.5	NA	POORLY GRADED SAND, (SP), gray, wet, loose, clean, medium sand, some fine, trace rounded pebbles.
	36.5–37.5				
	37.5–39.0		1.5	NA	POORLY GRADED SAND, (SP), gray, wet, loose, medium to fine sand, trace of silt.
40.0	39.0–47.5				
45.0					
	47.5–49.0		1.0	NA	SILTY SAND, (SM), gray, wet, loose, fine to medium sand.
	49.0–50.0				
50.0	50.0–51.5		1.5	NA	SILTY SAND, (SM), as above to 50.4', then SILT, (ML), gray, wet, firm.
	51.5–52.5				
	52.5–54.0		1.0	NA	SILT WITH SAND, (ML), gray, wet, firm, fine sand.
	54.0–55.0				
55.0	55.0–56.5		1.5	NA	SILTY SAND, (SM), gray, wet, fine sand, grading to SANDY SILT, (ML), gray.
	56.5–57.5				
	57.5–59.0		1.5	NA	SANDY SILT, (ML), gray, moist, nonplastic, fine to very fine sand.

SOIL HEADSPACE READINGS

ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm)



CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A05-24 SHEET 3 OF 3

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/25/94 & 4/13/94 FINISH 3/25/94 & 4/13/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
65.0	65.0					
	67.0		1.5	NA	SILT (ML), dark gray, moist, soft, plastic.	
	69.0	SS03	2.0	NA	SILT (ML), gray, moist, firm, plastic, some clay, tan with black mottling shoe end.	
70.0					END SOIL BORING AT 69.0 FEET	
75.0						
80.0						
85.0						

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
05	A05-24-W2	22	23	26,000
05	A05-24-W3	45	45	59,000
05	A05-24-W4	62	62	94,000

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A05-25 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/23/94 FINISH 3/23/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Asphalt and sand from demolition.	
	3.0		2.0	NA	POORLY GRADED SAND, (SP), brown, moist, loose, medium to fine sand, to 2.0'; then SILTY SAND, (SM), brown with black mottling, very fine sand, to 2.9'; then POORLY GRADED SAND, (SP), brown, medium to fine sand, no odor or sheen.	
	5.0		2.0	NA	POORLY GRADED SAND, (SP), brown, moist, medium and fine sand in layers, trace of silt, no odor or sheen.	
5.0	7.0		2.0	NA	POORLY GRADED SAND, (SP) as above.	
	9.0		2.0	NA	POORLY GRADED SAND, (SP), as above.	
10.0	11.0		1.7	NA	POORLY GRADED SAND WITH SILT, (SP-SM) gray, moist, medium sand with fine silty layer, in middle with black mottling, no odor or sheen.	
					END SOIL BORING AT 11.0 FEET	

Groundwater HydroPunch Data

Area	Sample No.	Sample Interval (bgs) Top (feet)	Bottom (feet)	Toluene (ug/l)
05	A05-25-W1	12.9	15	25

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A07-02 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 2/23/94 FINISH 2/23/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.5	SS01		NA	Railroad ballast rock.	
	3.5		1.6	NA	POORLY GRADED SAND WITH SILT, (SP-SM), brown, moist, loose, fine to medium grained sand, occasional silt matrix stringer, occasional wood chunks.	
5.0	5.5		1.7	NA	POORLY GRADED SAND WITH SILT, (SP-SM), brown, moist, loose, medium grained sand, clean, occasional silt in matrix, wood chunks in shoe.	
	7.5		1.5	NA	SILTY SAND, (SM), brown, iron stained, moist, loose, medium to fine grained sand, occasional brown silt stringer and clasts, occasional organics towards bottom, wood chunks.	
	9.0	SS05	1.0	NA	SILTY SAND, (SM), as above.	
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A07-03 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 2/23/94 FINISH 2/23/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
					Railroad ballast rock.	
	2.0					
		SS01	1.3	NA	SILTY SAND, (SM), brown changing, to dark gray at 2.4 ft., moist, thin to 1 inch thick interbedded sand with trace of clay, dark gray-black organic material, natural organic odor.	●
	4.0					
			1.4	NA	SILTY SAND, (SM), gray, moist, trace of clay, occasional rootlets, no odor or sheen.	●
5.0						
	6.0					
			1.2	NA	SILTY SAND, (SM), as above.	●
	8.0					
		SS05	1.0	NA	SILTY SAND, (SM), as above.	●
	9.0					
					END SOIL BORING AT 9.0 FEET	
10.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A07-04 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 2/22/94 FINISH 2/22/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	2.0			NA	Asphalt-sand-railroad ballast material (crushed rocks).	
	4.0			NA	No recovery, soupy sample. Dark gray, wet, medium grained sand left on split spoon barrel, some silty, gray.	
5.0	6.0			NA	No recovery, rocks in shoe with medium dark gray sand.	
	8.0		1.5	NA	POORLY GRADED SAND, (SP), dark gray to medium gray, moist, loose, medium grading to fine grained sand.	
	9.0	SS02	1.5	NA	TOP 1": SILTY SAND, (SM), medium gray, moist, loose, trace of clay. MIDDLE 4": SANDY SILT, (ML), to SILT, (ML), medium brown, moist, firm. BOTTOM 2": SILTY SAND, (SM), dark gray, moist, medium grained sand with trace of clay.	
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A07-05 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 2/23/94 FINISH 2/23/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	2.0				Railroad ballast rock.	
	4.0	SS01	1.1	NA	TOP 6": WELL GRADED SAND WITH GRAVEL, (SW), to WELL GRADED GRAVEL WITH SAND, (GW), stained black, wet. MIDDLE 9": Weak concrete or cement with black 1/4" diagonal band throughout. BOTTOM 9": POORLY GRADED SAND, (SP), dark gray, moist, medium grained with some fine grained sand, (Fill).	
5.0	6.0		1.0	NA	TOP 7": POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM), dark gray, moist with black moist silty sand matrix. BOTTOM 3": SILTY SAND, (SM), moist, fine to medium grained, with occasional gravel, large rock jammed in tip, (Fill).	
	8.0		2.0	NA	TOP 20": POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM), moist, 1" minus with occasional 2" dia. gravel, medium to fine grained sand. BOTTOM 4": SILTY SAND, (SM), green, moist, (Fill).	
	9.0	SS05	0.7	NA	SILTY GRAVEL WITH SAND, (GM), green to black silty sand with mottling and iron staining, moist, 2" minus gravel, (Fill).	
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A07-06 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 2/24/94 FINISH 2/24/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	0.5				Asphalt and subbase.	
	1.5	SS01	0.8	NA	SILTY SAND WITH GRAVEL, (SM), brown, moist, loose, well graded sand with trace of clay.	
	3.5		2.0	NA	SILTY SAND, (SM), brown, moist, loose, fine sand with occasional gravel.	
5.0	5.5		2.0	NA	SANDY SILT, (ML), gray-brown, wet, trace of clay, more plasticity at contact; then POORLY GRADED SAND WITH SILT, (SP-SM), gray, wet, loose, fine sand at 4.9 ft.	
	7.5		2.0	NA	POORLY GRADED SAND WITH SILT, (SP-SM), gray-brown, wet, medium-dense, fine sand.	
	9.0	SS05	2.0	NA	POORLY GRADED SAND WITH SILT, (SP-SM), as above.	
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A07-07 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 2/24/94 FINISH 2/24/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	2.0	SS01	1.7	NA	SILTY SAND WITH GRAVEL, (SM), brown, moist, loose, medium to fine grained sand, trace of clay, occasional organic material.	
	4.0		1.4	NA	SILTY SAND, (SM), brown, moist, loose, medium to fine grained sand.	
5.0	6.0		1.4	NA	SILTY SAND, (SM), brown, moist, loose, medium to fine grained sand, brown silt interbeds up to 1" thick, occasional rootlets and wood fibers.	
	8.0	SS05	1.5	NA	POORLY GRADED SAND, (SP), brown with iron staining, moist, medium to fine grained, occasional silt clast.	
	9.0		1.0	NA	POORLY GRADED SAND, (SP), as above except for copper and brass objects.	
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A07-08 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 2/23/94 FINISH 2/23/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6" -6" -6" -6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.5				Railroad ballast.	
	3.5	SS01	2.0	NA	TOP 1.5': POORLY GRADED SAND WITH SILT, (SP-SM), brown with iron staining throughout, moist, fine sand. BOTTOM 6": Sand changes to medium grained delineated with thin, firm, gray-black silt layer, no odor or sheen.	
5.0	5.5		1.7	NA	POORLY GRADED SAND WITH SILT, (SP-SM), brown with iron staining, moist, loose, medium to very fine grained sand changing to black at 4.4 ft., no odor or sheen.	
	7.5		1.7	NA	SILTY SAND, (SM), dark gray, wet, loose, medium to very fine grained sand, no odor or sheen.	
	9.0	SS05	1.1	NA	TOP 1': SILTY SAND, (SM), as above. BOTTOM 5": SILTY CLAY, (CL-ML), dark gray, wet, soft, plastic, no odor or sheen.	
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A09-08 SHEET 1 OF 2

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR R & R DRILLING/TACOMA PUMP & DRILLING, R. CARMEL

DRILLING METHOD AND EQUIPMENT B-61, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 4/06/94 FINISH 4/06/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	2.5					
	4.0		0.5	NA	POORLY GRADED SAND, (SP), brown, moist, loose, medium to fine trace silt.	
	5.0					
5.0	6.5		1.5	NA	POORLY GRADED SAND WITH SILT, (SP-SM), gray, moist, losse, fine, no odor or sheen.	
	7.5					
	9.0		1.3	NA	POORLY GRADED SAND, (SP), as above to 8.0'; then WELL GRADED SAND, (SW), gray, moist loose, medium to fine, occasional course.	
	10.0					
10.0	11.5		1.5	NA	WELL GRADED SAND, (SW), as above to 11.1' changing to SILTLY SAND, (ML), brown, moist, soft, no odor or sheen.	
	12.5					
	13.0		1.5	NA	POORLY GRADED SAND WITH SILT, (SP-SM), grading to SILT WITH SAND, (ML), moist, medium and fine, orgaincs, medium plasticity.	
	15.0					

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	A09-08 SHEET 2 OF 2

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR R & R DRILLING/TACOMA PUMP & DRILLING, R. CARMEL

DRILLING METHOD AND EQUIPMENT B-61, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 4/06/94 FINISH 4/06/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 1 10 100 1000 10000
	15.0 – 16.5		1.5	NA	SILT, (ML), as above to 16.0' then, SAND, (SP), dark, grade, fine, some medium, loose.	
	16.5 – 17.5					
	17.5 – 19.0	SS07	1.5	NA	SILTY SAND, (SM), gray, fine and medium, soft, occasional silt clasts.	
	19.0 – 20.0					
20.0	20.0 – 23.0	SH08	2.5	NA		
	23.0				END SOIL BORING AT 23.0 FEET	
25.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	ABG-01 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/31/94 FINISH 3/31/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL (FT)	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
					Overburden and roots.	
	1.0					
		SS01	1.8	NA	SANDY SILT, (ML) interbedded with SILTY SAND, (SM), brown, moist, loose, trace of clay, organics, and large wood chunks, no odor or sheen.	
	3.0					
			2.0	NA	SANDY SILT, (ML) interbedded with SILTY SAND, (SM), brown, changing to tan with depth to moist, trace of clay and organics, no odor or sheen.	
	5.0					
5.0			2.0	NA	ORGANIC SILT, (OL), light tan with iron oxide mottling/staining, moist, firm, trace of clay, no odor or sheen.	
	7.0					
		SS05	2.0	NA	ORGANIC SILT, (OL) as above.	
	9.0					
					END SOIL BORING AT 9.0 FEET	
10.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	ABG-02 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/23/94 FINISH 3/23/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Overburden and roots.	
	3.0	SS01	1.6	NA	POORLY GRADED SAND, (SP), brown, moist, loose, medium and fine grained sand to 1.8 ft; then SILTY SAND, (SM), brown, moist, loose, medium to fine grained sand with organics, thin organic layer with rounded gravel at contact, no odor or sheen.	●
5.0	5.0		2.0	NA	SANDY SILT, (ML) to SILTY SAND, (SM), brown to tan with rust and black mottling, moist, medium dense, no odor or sheen.	●
	7.0		1.0	NA	ORGANIC SILT, (OH), tan with rust mottling, moist, soft, trace of clay, no odor or sheen.	●
	9.0	SS05	2.0	NA	ELASTIC SILT, (MH), tan with rust mottling, moist, firm, trace of clay, no odor or sheen.	●
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	ABG-03 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/23/94 FINISH 3/23/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0	SS01	0		TOP 6": Grass and roots from berry vines. BOTTOM 6": GRAVELLY SILT WITH SAND, (ML), brown, moist, organics, no odor or sheen.	
	3.0		2.0	NA	SILTY SAND, (SM), brown, moist, loose, fine to medium grained sand, silty on top with rootlets at very top, no odor or sheen.	
	5.0		1.9	NA	SILTY SAND, (SM), as above grading to fine to very fine grained sand, trace of organics (roots), no odor or sheen.	
5.0	7.0		1.4	NA	SILT, (ML), brown to tan, moist, firm, with rust mottling and plant debris, no odor or sheen.	
	9.0	SS05	1.4	NA	ELASTIC SILT, (MH), tan with rust mottling, moist changing to wet in bottom 6", firm, medium plasticity, trace of clay, no odor or sheen.	
					END SOIL BORING AT 9.0 FEET	
10.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	ABG-04 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/23/94 FINISH 3/23/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0	SS01	0		Over burden and pea gravel.	
	3.0		1.7	NA	POORLY GRADED SAND, (SP), gray, moist, loose, medium and fine grained sand, no odor or sheen.	
	5.0		2.0	NA	SILTY SAND, (SM), brown, wet, fine grain sand, changing at 4.5 ft.; to SANDY SILT, (ML), gray, wet, no odor or sheen.	
5.0	7.0	SS04	2.0	NA	SILTY SANDY, (ML), as above changing at 5.8 ft. to SILT, (ML), tan with rust mottling, moist, plastic, no odor or sheen.	
	9.0		2.0	NA	ELASTIC SILT, (MH), tan with rust mottling, moist, plastic, no odor or sheen.	
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	ABG-05 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/23/94 FINISH 3/23/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL (FT)	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Asphalt and subbase material.	
	3.0	SS01	2.0	NA	POORLY GRADED SAND (SP), brown, moist, loose, medium and fine grained sand, trace of silt, no odor or sheen.	
	5.0		2.0	NA	TOP 6": POORLY GRADED SAND, (SP), brown changing to gray, slightly moist, medium to fine. BOTTOM 1.5": SILT, (ML), gray, slightly moist, firm, trace clay.	
5.0	7.0		2.0	NA	SILT, (ML), gray with dark brown mottling, slightly moist, stiff, with organics.	
	9.0	SS05	1.5	NA	ELASTIC SILT WITH SAND, (MH), gray with black mottling, moist, stiff, fine grained sand, trace of organics.	
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	ABG-06 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/17/94 FINISH 3/17/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Asphalt and subbase material.	
	3.0	SS01	2.0	NA	POORLY GRADED SAND, (SP), tan-brown, moist, medium and fine grained sand, trace of silt, no odor or sheen.	●
	5.0		2.0	NA	TOP 5": POORLY GRADED SAND, (SP), as above. BOTTOM 1.5': SANDY SILT, (ML), black with brown-black mottling, moist, firm, visable layering, no odor or sheen.	●
5.0	7.0		1.5	NA	SANDY SILT, (ML); then SILT, (ML), tan, moist, firm, low plasticity, with abundant rusty casts throughout, trace of clay.	●
	9.0	SS05	1.5	NA	ELASTIC SILT, (MH), tan to gray, moist, medium plasticity, with abundant iron oxide mottling and casts.	●
10.0					END SOIL BORING AT 9.0 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
NPE35051.A6	ABG-07 SHEET 1 OF 1

SOIL BORING LOG

PROJECT RHONE-POULENC RFI LOCATION RHONE-POULENC INC., TUKWILA, WA

ELEVATION _____ DRILLING CONTRACTOR TACOMA PUMP & DRILLING, B. DIETSCHE

DRILLING METHOD AND EQUIPMENT B-56, HSA WITH 4.5" ID AUGER

WATER LEVELS _____ START 3/22/94 FINISH 3/22/94 LOGGER G.VEDERA

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SOIL HEADSPACE READINGS: ORGANIC VAPOR METER CALIBRATED TO TOLUENE (ppm) 0 1 10 100 1000 10000
	1.0				Overburden	
	3.0	SS01	1.8	NA	POORLY GRADED SAND WITH SILT, (SP-SM), brown, very moist, medium to fine sand interbedded with silt.	●
	5.0		1.8	NA	TOP 1.3': POORLY GRADED SAND, (SP), gray, wet, medium-dense, medium and fine grained sand, trace of silt. BOTTOM 7": ORGANIC SILT, (OL), black to dark gray and brown, wet, root zone, no odor or sheen.	●
5.0	7.0		1.9	NA	SILT, (ML), gray to brown-gray, moist, firm, with organics, trace of clay, no odor or sheen.	●
	9.0	SS05	2.0	NA	SILT, (ML), green-gray, moist, firm, with organics, trace of clay, no odor or sheen.	●
10.0					END SOIL BORING AT 9.0 FEET	

Dames & Moore's Monitoring Well Logs

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
Coarse Grained Soils (More than 50% of material is LARGER than No. 200 sieve size.)	Gravel and Gravelly Soils (More than 50% of coarse fraction RETAINED on No. 4 sieve.)	Clean Gravels (Little or no fines)		GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
				GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines.
		Gravels with Fines (Appreciable amount of fines)		GM	Silty gravels, gravel-sand-silt mixtures.
				GC	Clayey gravels, gravel-sand-clay mixtures.
	Sand and Sandy Soils (More than 50% of coarse fraction PASSING No. 4 sieve.)	Clean Sand (Little or no fines)		SW	Well-graded sands, gravelly sands, little or no fines.
				SP	Poorly-graded sands, gravelly sands, little or no fines.
		Sands with Fines (Appreciable amount of fines)		SM	Silty sands, sand-silt mixtures.
				SC	Clayey sands, sand-clay mixtures.
Fine Grained Soils (More than 50% of material is SMALLER than No. 200 sieve size.)	Silts and Clays Liquid Limit LESS than 50			ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
				OL	Organic silt and organic silty clays of low plasticity.
	Silts and Clays Liquid Limit GREATER than 50			MH	Inorganic silts, micaceous or diatomaceous fine sand or silty soils.
				CH	Inorganic clays of high plasticity, fat clays.
				OH	Organic clays of medium to high plasticity, organic silts.
Highly Organic Soils				PT	Peat, humus, swamp soils with high organic contents.

Note: Dual symbols are used to indicate borderline soil classifications.

Boring Log Key:

36 BLOWS REQUIRED TO DRIVE STANDARD SPLIT SPOON SAMPLERS 18 INCHES WITH A HAMMER WEIGHT OF 340 LBS. AND A STROKE OF 24 INCHES.

17 ■ INCICATES DEPTH AT WHICH FULL RECOVERY OF SAMPLE WAS EXTRACTED.

15 ☒ INCICATES DEPTH AT WHICH PARTIAL RECOVERY OF SAMPLE WAS EXTRACTED.

☐ INDICATES AT WHICH SAMPLING WAS ATTEMPTED WITH NO RECOVERY OF SAMPLE

Unified Soil Classification System

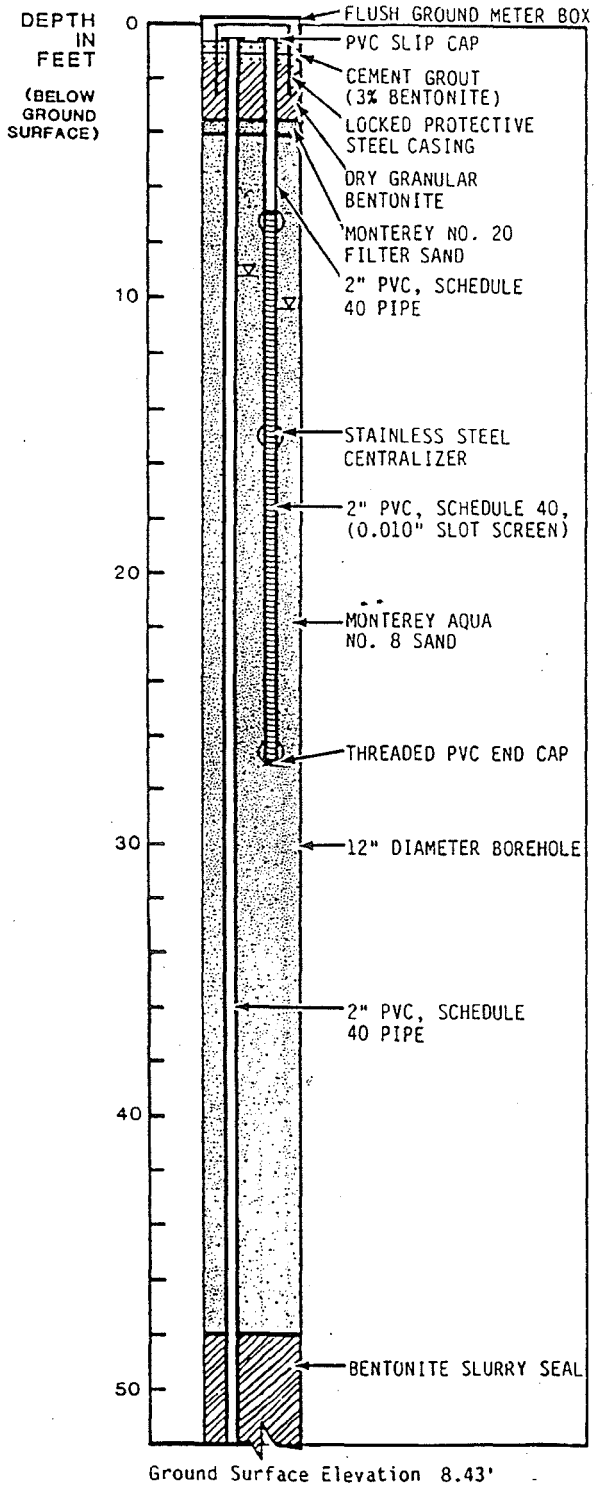
Dames & Moore

Job No. 15088-001

Figure A-1

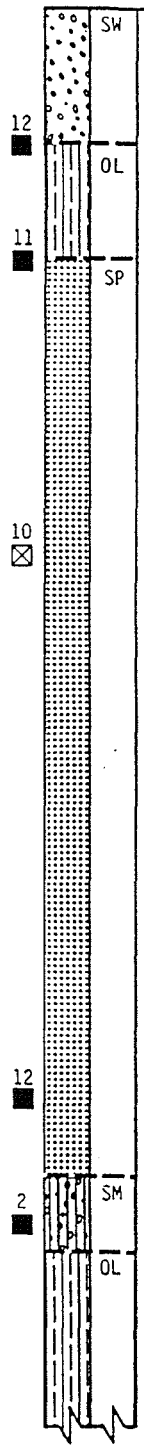
Sheet 1 of 3

WELLS DM-1A (Shallow) DM-1B (Deep)



Ground Surface Elevation 8.43'
DM-1A PVC Elevation 7.84'
DM-1B PVC Elevation 8.00'
Wells Installed 7/9/86
Wells Developed 7/9, 7/14-15/86

GEOLOGIC LOG



DESCRIPTION

SAND AND GRAVEL:
Sample collected by shovel (fill?)

SILT:
gray, clayey, slightly sandy, with occasional black organics

at 10' twigs and wood fragments on drill bit

SAND:
reddish-black, medium grained, slightly silty with some organics

SAND:
reddish-black, fine to medium grained, saturated and loose

at 22' drill cuttings show increasing silt

at 29' drill cuttings show same lithology as above

soil sample missed at 30' because steel casing sank while bailing the hole

SAND:
reddish-black, fine grained, very slightly silty, saturated and loose

at 36' drill cuttings show same lithology as above

at 38' drill cuttings show, dark brown, fine grained, silty and with wood fragments

SAND:
dark brown to black, very fine grained with abundant organics

at 43' drill cuttings show increasing silt

SILT:
dark brown, very fine grained, silty; and, dark gray, sandy

at 49' drill cuttings show, dark gray, slightly sandy

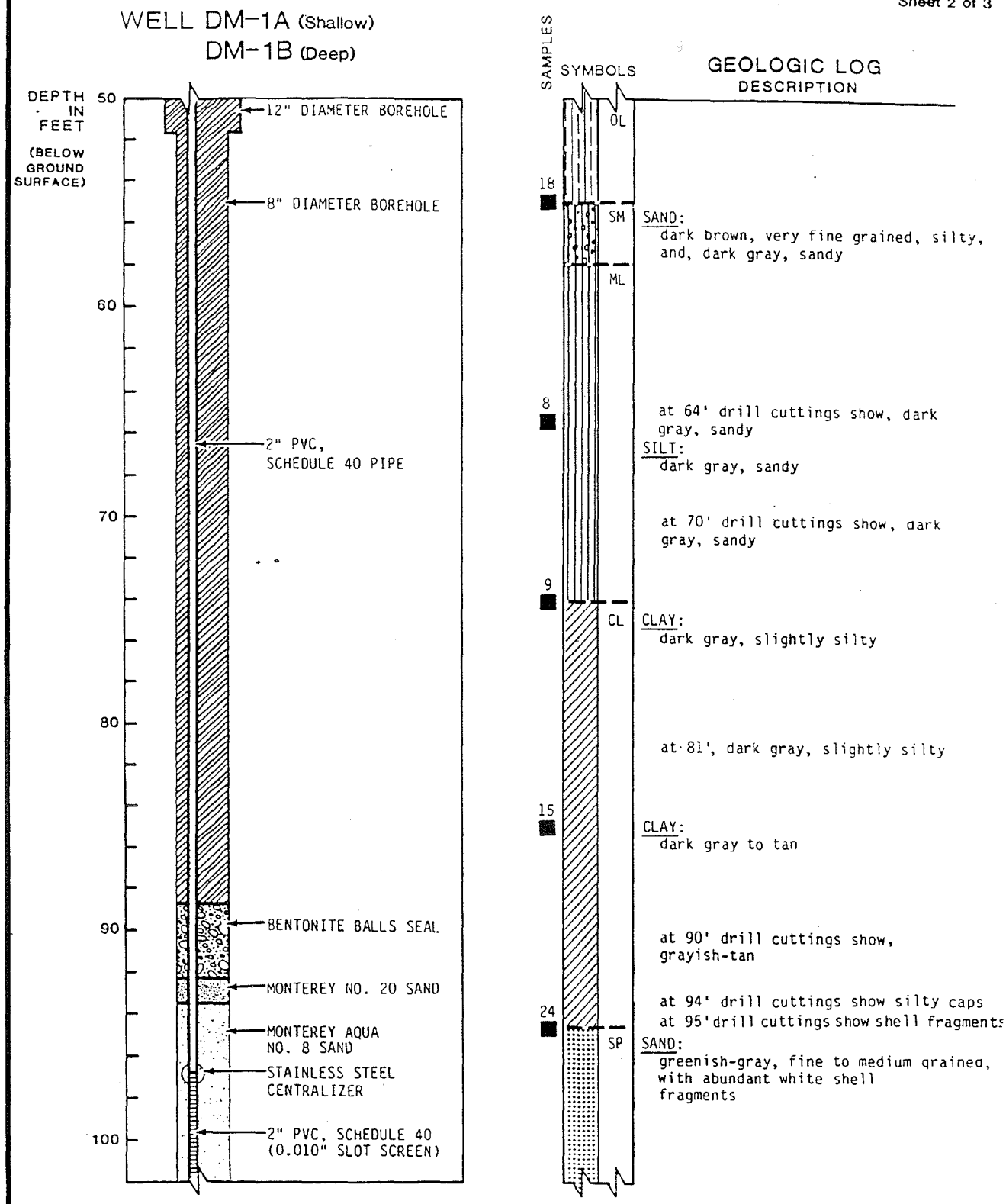
NOTE: Water levels measured 8/12/86 from 0820 to 0850 hours.
See Figure A-1 for Key to Geologic Log Symbols
Elevations in Feet above Mean Sea Level

Log of Boring and Well Construction Details

Dames & Moore

Job. No. 15088-001

Figure A-2



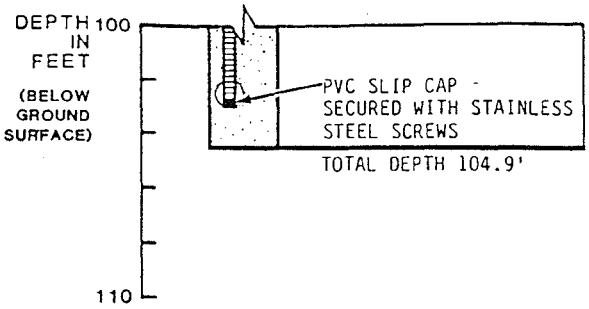
Log of Boring and Well Construction Details

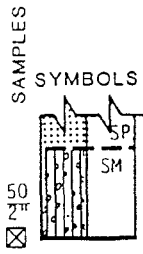
Dames & Moore

Job. No. 15088-001

Figure A-2

WELL DM-1A (Shallow)
DM-1B (Deep)





GEOLOGIC LOG

DESCRIPTION

at 101' drill cuttings show: light gray, fine to medium grained, silty, with gravel, fine to medium grained, subangular

SAND:

tan, fine to medium grained, silty and gravelly

Boring terminated at 105'

Log of Boring and Well Construction Details

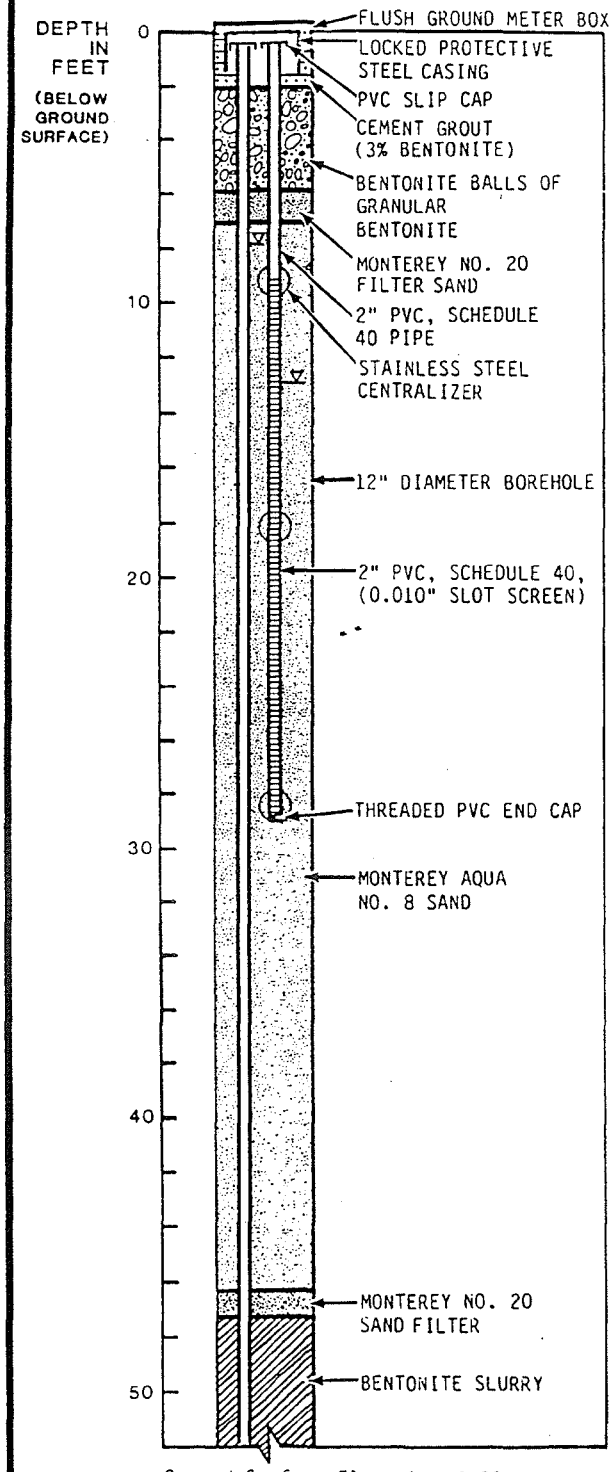
Dames & Moore

Job. No. 15088-001

Figure A-2

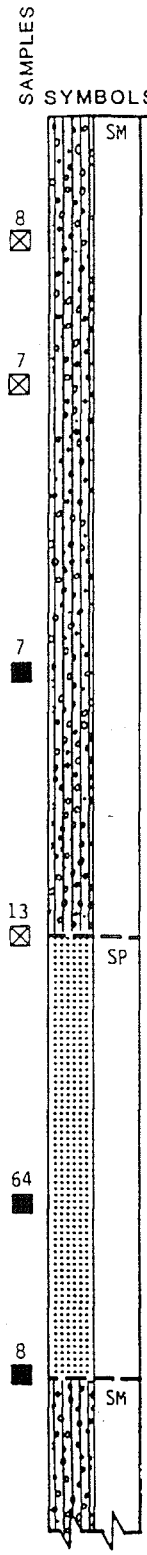
Sheet 1 of 2

WELLS DM-2A (Shallow)
DM-2B (Deep)



Ground Surface Elevation 8.29'
DM-2A PVC Elevation 7.93'
DM-2B PVC Elevation 8.08'
Wells Installed 7/17/86
Wells Developed 7/17/86

GEOLOGIC LOG



DESCRIPTION

SAND: dark brown, silty. Sample collected by shovel (fill?)

SAND: fine grained, silty

SAND: medium grained, silty

SAND: fine to medium grained, silty and clayey, saturated

SAND: black, medium to coarse grained

SAND: black, medium to very coarse grained

at 45' drill cuttings show gravels and cobbles

SAND: very fine grained, very silty

NOTE:
Water level measured 8/12/86 from 0820 to 0850 hours
See Figure A-1 for Key to Geologic Log Symbols
Elevations in Feet Above Mean Sea Level

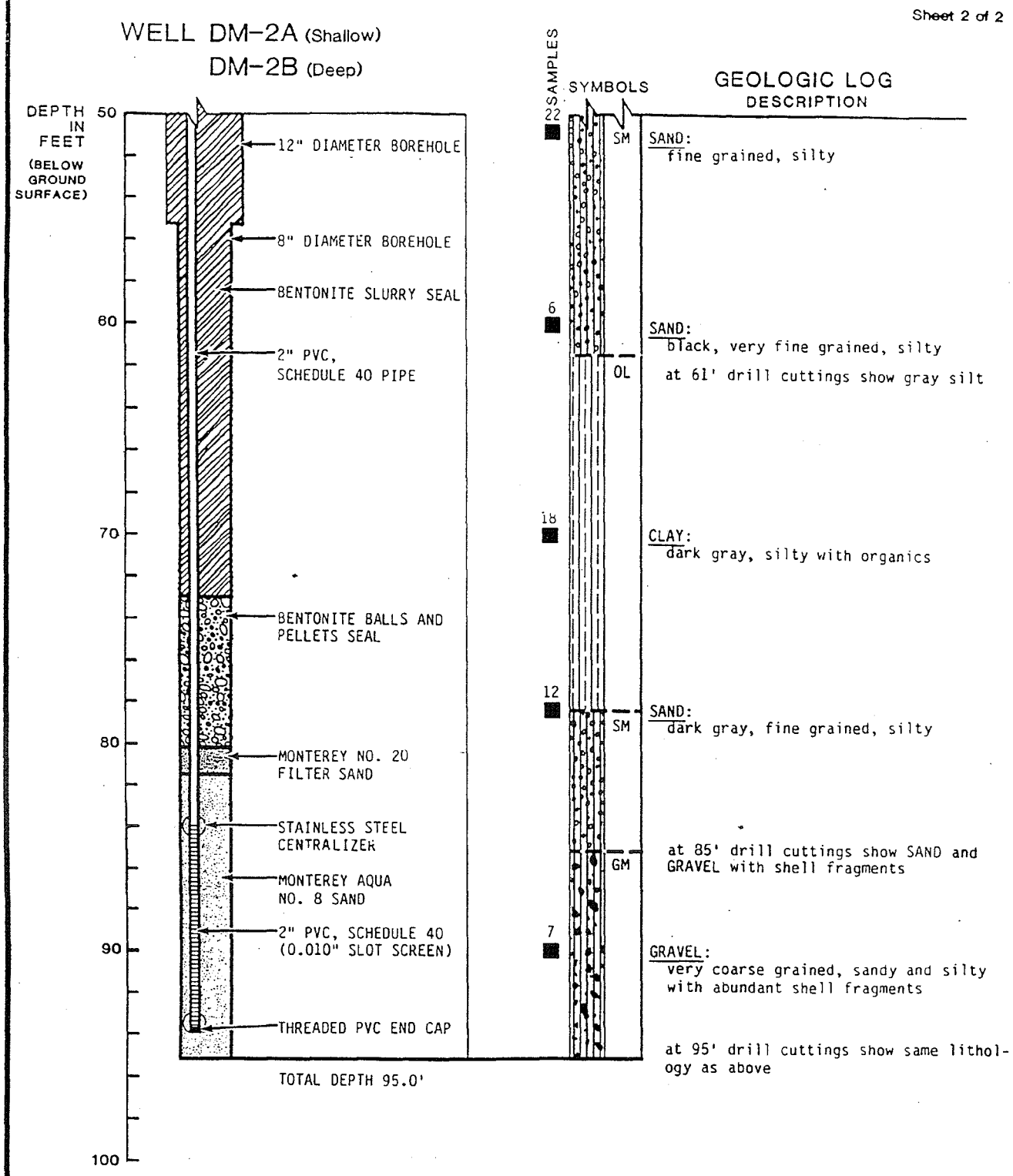
Log of Boring and Well Construction Details

Dames & Moore

Job. No. 15088-001

Figure A-3

Sheet 2 of 2



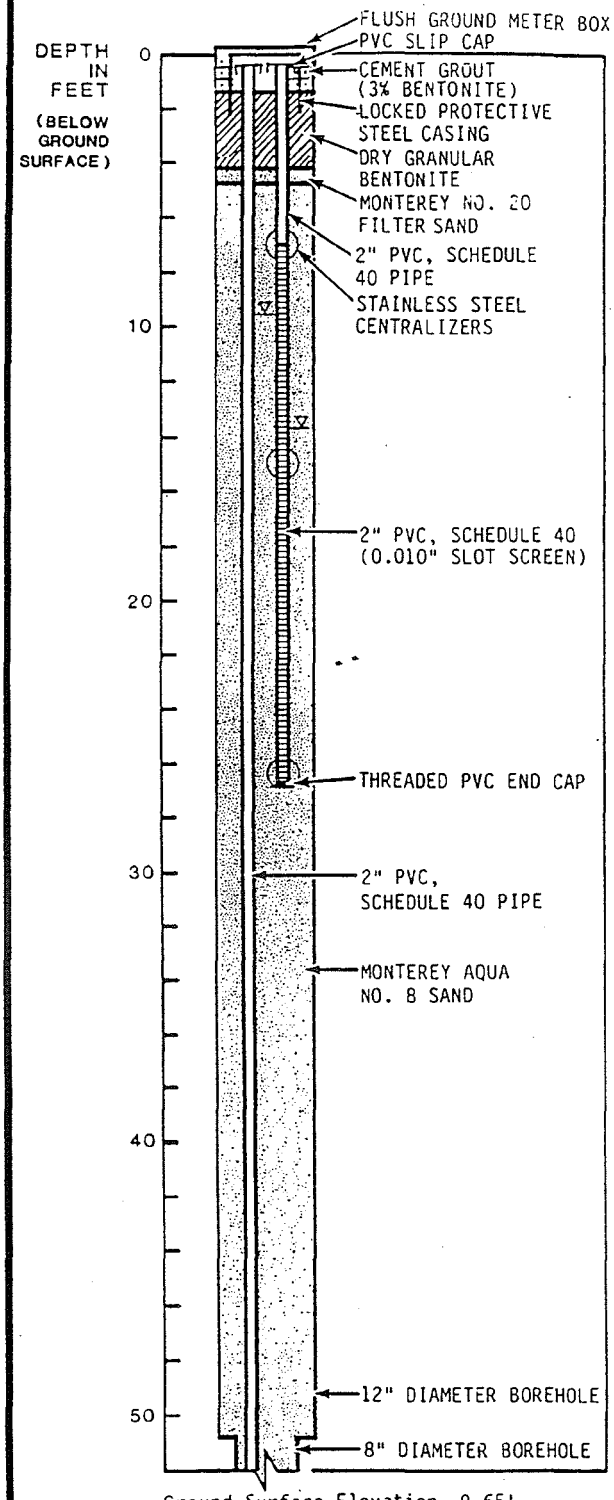
Log of Boring and Well Construction Details

Dames & Moore

Job. No. 15088-001

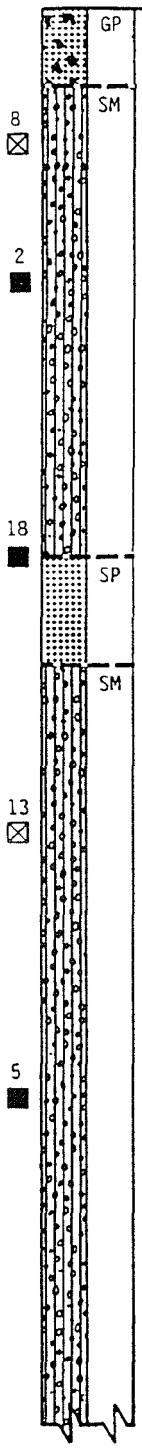
Figure A-3

WELLS DM-3A (Shallow)
DM-3B (Deep)



Ground Surface Elevation 8.65'
DM-3A PVC Elevation 8.42'
DM-3B PVC Elevation 8.51'
Wells Installed 7/13/86
Wells Developed 7/13, 7/15/86

GEOLOGIC LOG



DESCRIPTION

SAND: dark brown, fine grained, gravelly and with fragments of red brick. Sample collected by shovel (fill?)

SAND: black, very fine to fine grained, silty

SAND: black, very fine grained, very silty

at 18' drill cuttings show, black, very fine grained, very silty

SAND: black, fine to medium grained

at 25' drill cuttings show, black, fine to medium grained, silty

at 29' drill cuttings show, black, medium grained, silty

SAND: dark gray, fine grained, silty

at 37' drill cuttings show, black, fine grained, silty

SAND: dark gray, fine to medium grained, very silty

at 45' drill cuttings show, dark gray, fine grained, very silty

NOTE: Water levels measured 8/12/86 from 0820 to 0850 hours.
See Figure A-1 for Key to Geologic Log Symbols
Elevations in Feet above Mean Sea Level

Log of Boring and Well Construction Details

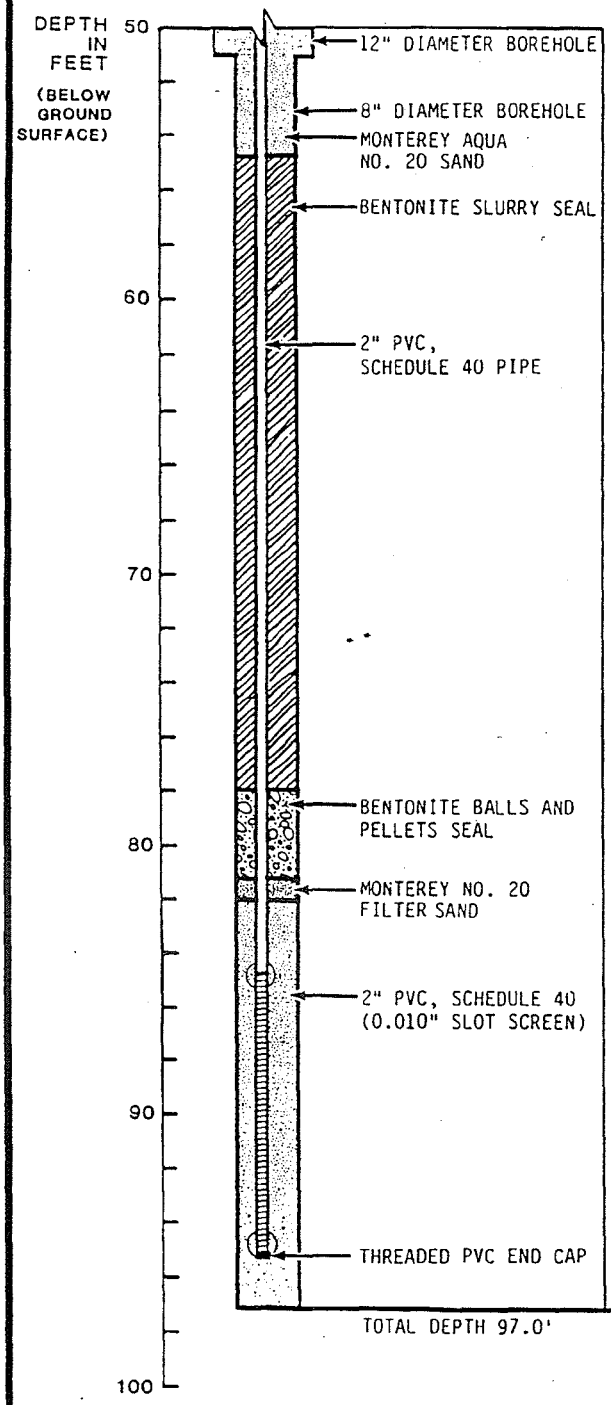
Dames & Moore

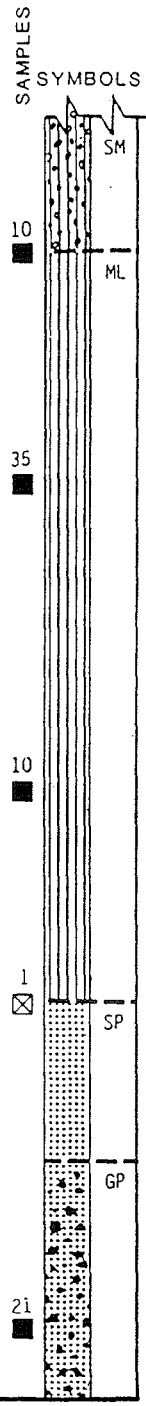
Job. No. 15088-001

Figure A-4

Sheet 2 of 2

WELL DM-3A (Shallow)
DM-3B (Deep)





GEOLOGIC LOG
DESCRIPTION

SILT:
dark gray, slightly sandy

at 58' drill cuttings show same lithology as above

at 63' drill cuttings show same lithology as above

CLAY:
dark gray to tan, slightly silty

at 71' drill cuttings show CLAY, dark gray, silty with wood fragments

CLAY:
dark gray, slightly silty

at 83' drill cuttings show SAND, coarse grained shell fragments

SAND:
dark gray, fine to medium grained, slightly silty with shell fragments

at 89' drill cuttings show SAND, dark gray, medium to coarse grained, slightl silty and GRAVEL, coarse to very coarse grained, rounded with abundant shell fragments

SAND:
dark gray, fine to medium grained, silt with abundant shell fragments and occas ional wood fragments

Boring terminated at 97'

Elevations in Feet Above Mean Sea Level

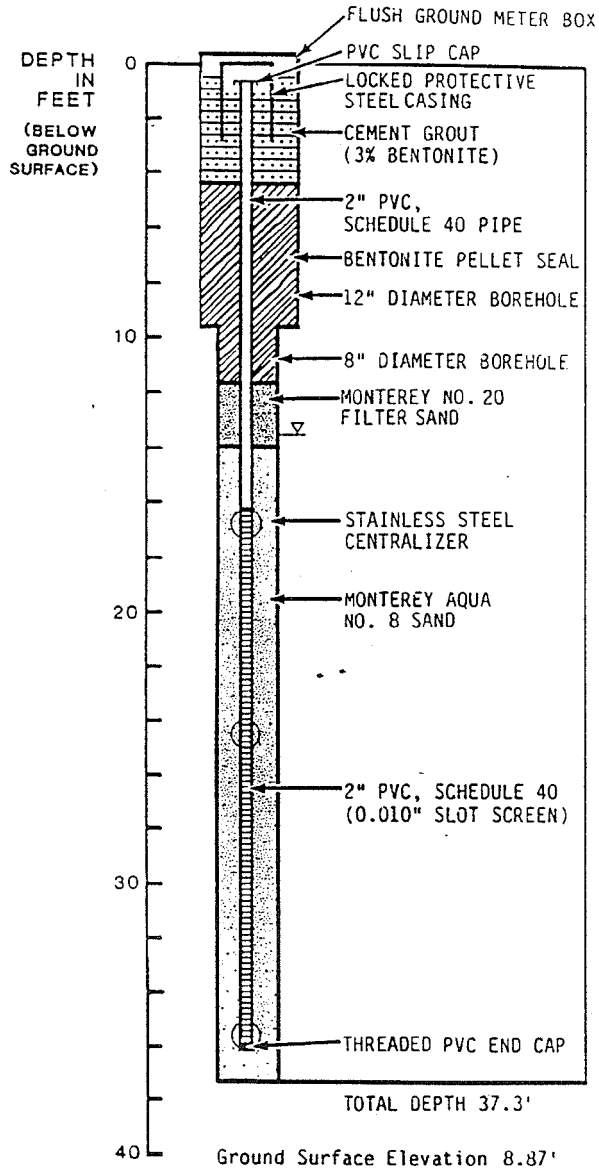
Log of Boring and Well Construction Details

Dames & Moore

Job. No. 15088-001

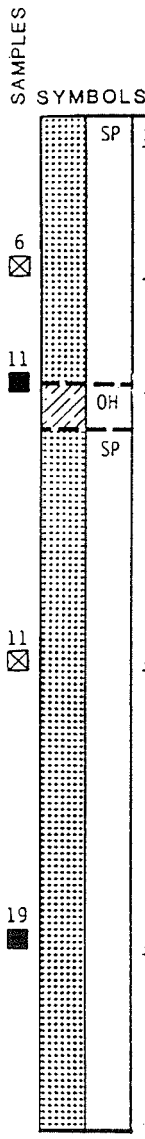
Figure A-4

WELL DM-4



Ground Surface Elevation 8.87'
Top of PVC Elevation 8.32'
Well Installed 7/10/86
Well Developed 7/10/86

GEOLOGIC LOG



DESCRIPTION

SAND: black, fine grained. Sample collected by shovel (fill?)

SAND: black, fine grained

CLAY: gray, saturated with black oily liquid at 11' drill cuttings show, fine grained

SAND: black, fine grained

SAND: black, medium to coarse grained

at 34', black, coarse grained, gravelly

Boring terminated at 37.3'

NOTE: Water level measured 8/12/86 from 0820 to 0850 hours

See Figure A-1 for Key to Geologic Log Symbols

Elevations in Feet Above Mean Sea Level

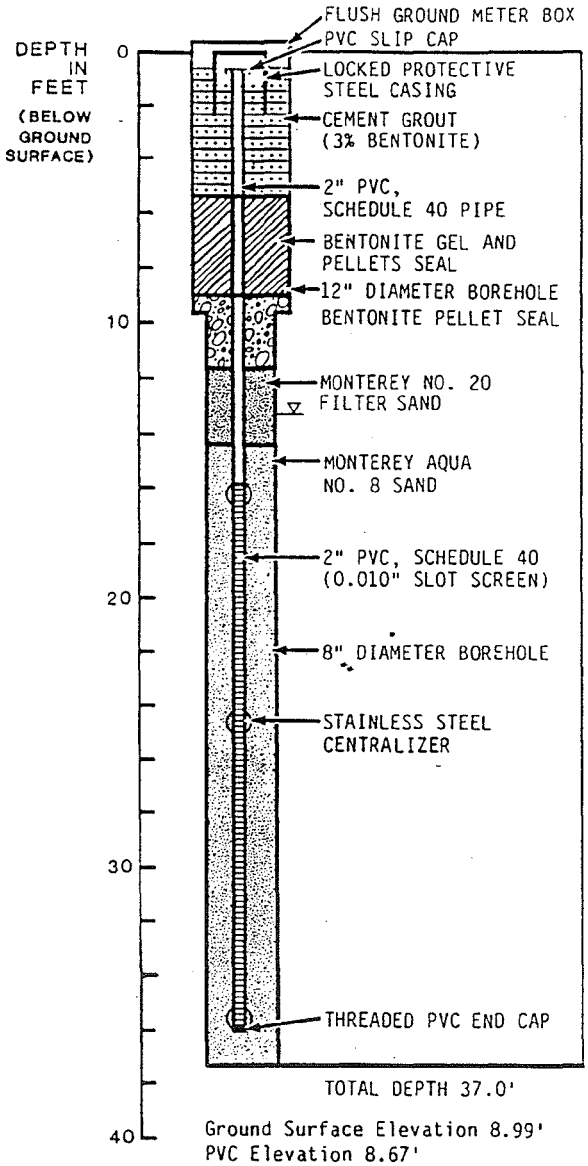
Log of Boring and Well Construction Details

Dames & Moore

Job. No. 15088-001

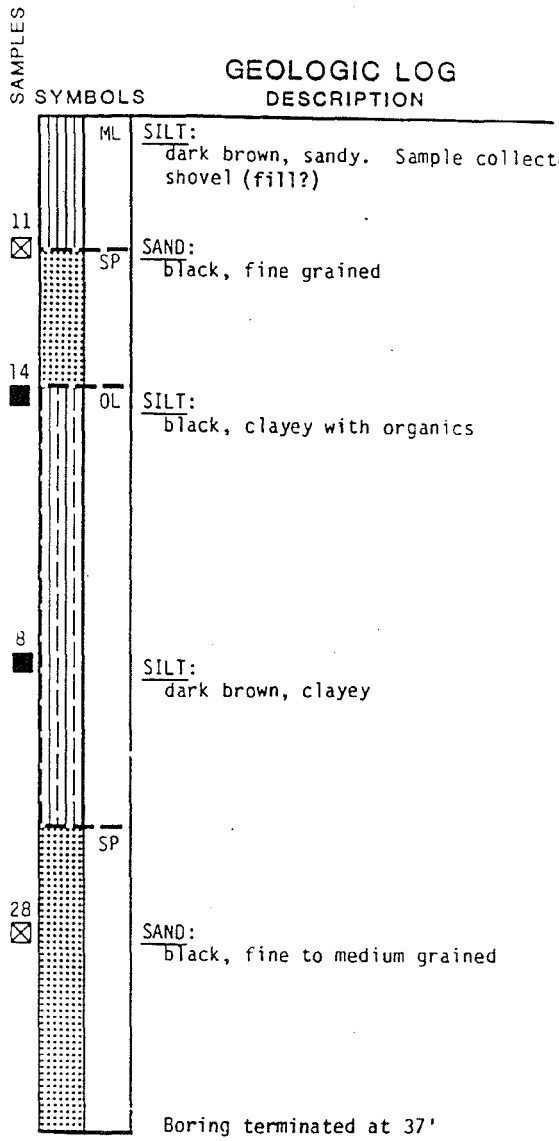
Figure A-5

WELL DM-5



Ground Surface Elevation 8.99'
PVC Elevation 8.67'
Well Installed 7/12/86
Well Developed 7/12/86

GEOLOGIC LOG



NOTE: Water level measurement 8/12/86 from 0820 to 0850 hours

See Figure A-1 for Key to Geologic Log Symbols

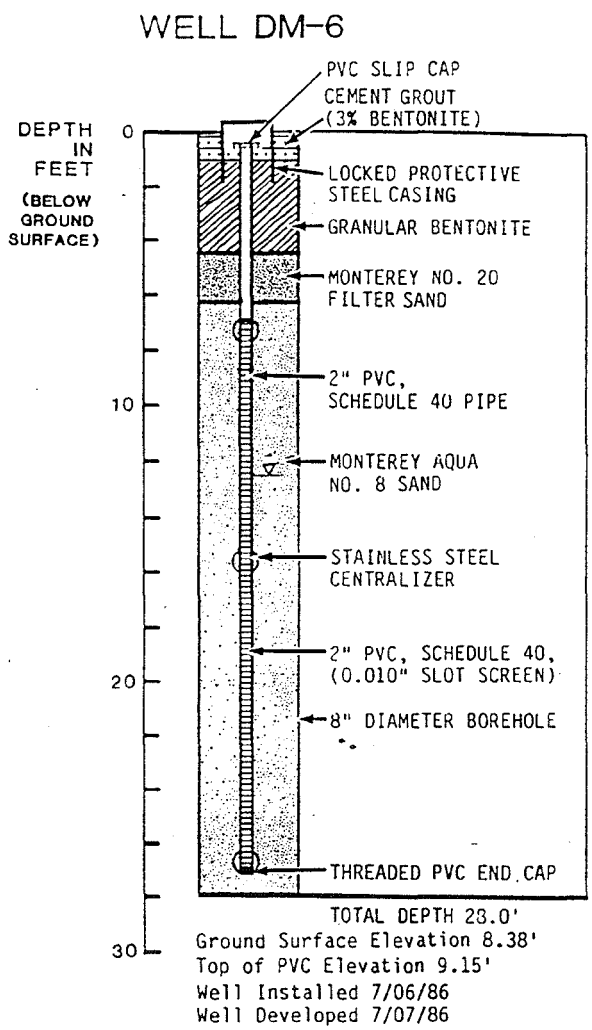
Elevations in Feet Above Mean Sea Level

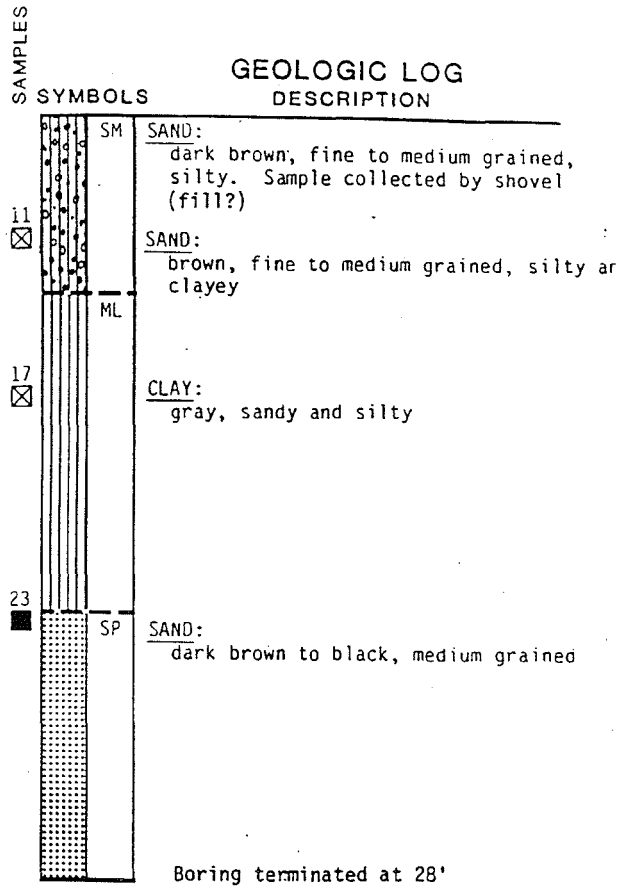
Log of Boring and Well Construction Details

Dames & Moore

Job. No. 15088-001

Figure A-6





NOTE: Water level measured 8/12/86 from 0820 to 0850 hours

See Figure A-1 for Key to Geologic Log Symbols

Elevations in Feet Above Mean Sea Level

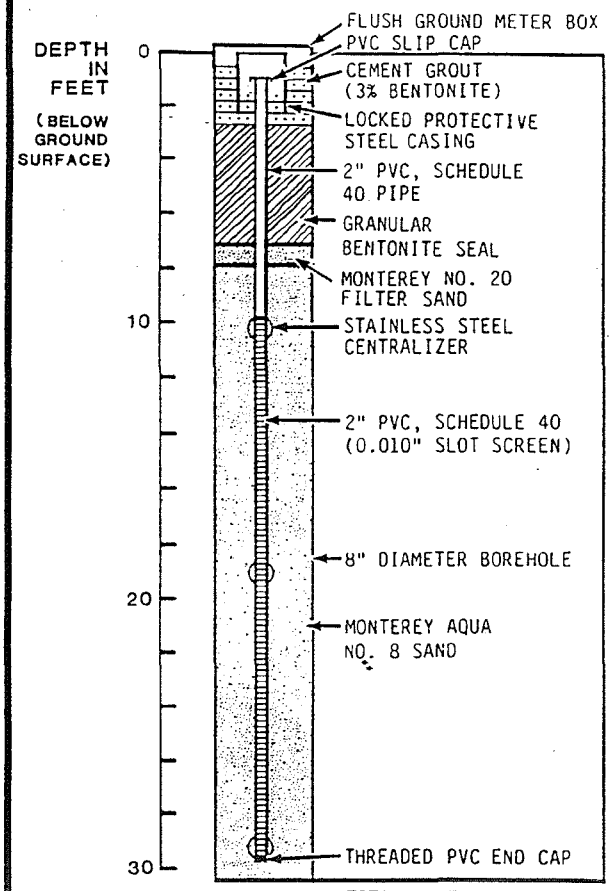
Log of Boring and Well Construction Details

Dames & Moore

Job. No. 15088-001

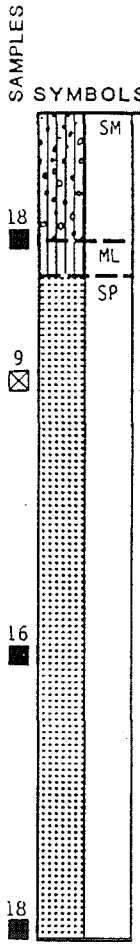
Figure A-7

WELL DM-7



Ground Surface Elevation 8.95'
PVC Elevation 8.76'
Well Installed 7/08/86
Well Developed 7/08/86

GEOLOGIC LOG



DESCRIPTION

SAND: dark brown, silty. Sample collected shovel (fill?)

SILT: dark brown, sandy and clayey

SAND: black, fine grained

SAND: dark brown to black, fine grained, saturated

SAND: black, medium grained

SAND: black, medium to coarse grained

Boring terminated at 30.8'

NOTE: Water level measured 8/12/86 from 0820 to 0850 hours

See Figure A-1 for Key to Geologic Log Symbols

Elevations in Feet Above Mean Sea Level

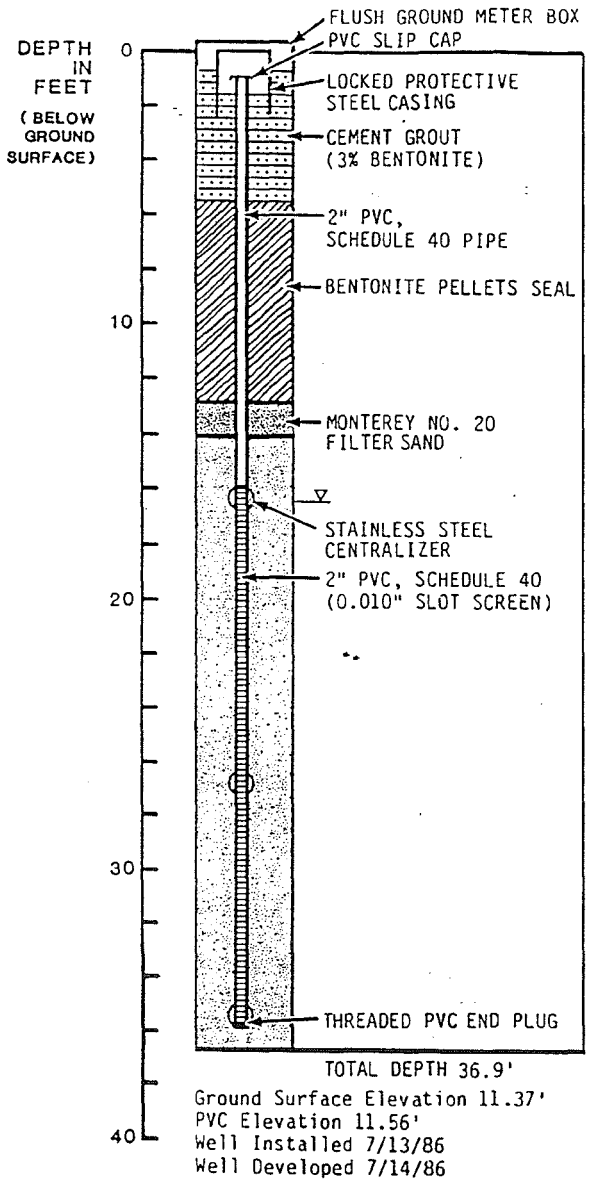
Log of Boring and Well Construction Details

Dames & Moore

Job. No. 15088-001

Figure A-8

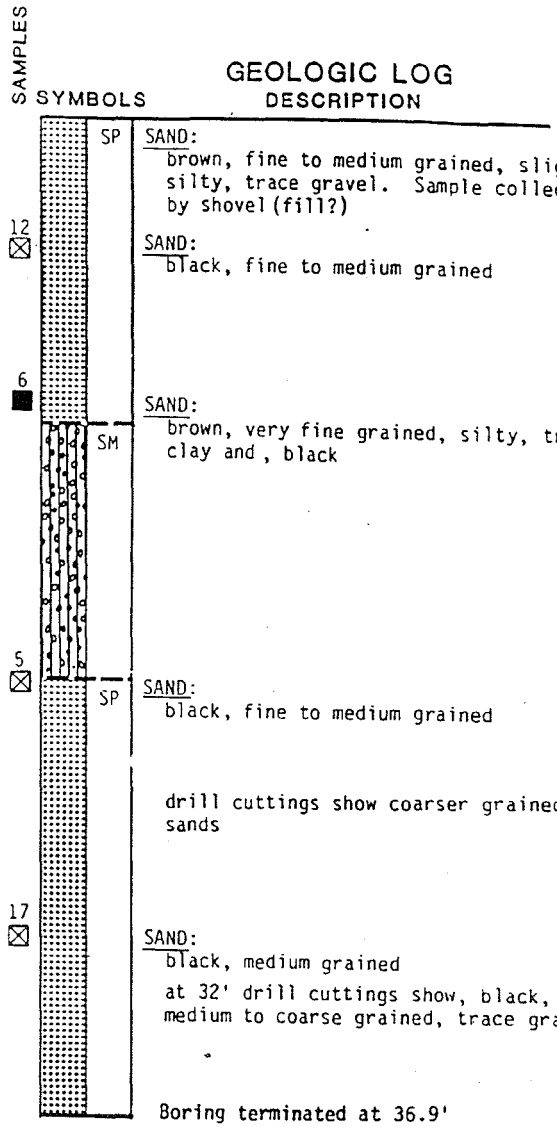
WELL DM-8



TOTAL DEPTH 36.9'

Ground Surface Elevation 11.37'
PVC Elevation 11.56'
Well Installed 7/13/86
Well Developed 7/14/86

GEOLOGIC LOG



SAND:
brown, fine to medium grained, slightly silty, trace gravel. Sample collected by shovel (fill?)

SAND:
black, fine to medium grained

SAND:
brown, very fine grained, silty, trace clay and , black

SAND:
black, fine to medium grained

drill cuttings show coarser grained sands

SAND:
black, medium grained
at 32' drill cuttings show, black, medium to coarse grained, trace gravel

Boring terminated at 36.9'

NOTE: Water level measured 8/12/86 from 0820 to 0850 hours

See Figure A-1for Key to Geologic Log Symbols

Elevations in Feet Above Mean Sea Level

Log of Boring and Well Construction Details

Dames & Moore

Job. No. 15088-001

Figure A-9

Landau Associates' Monitoring Well Logs

KEY

Sample Interval

Portion of Sample Saved for Archive or Analysis: ("g" = geotechnical; "e" = environmental) → g/e

102 ← Blows Required to Drive Sampler 1 Foot

a1 ← Sampler and Hammer Information:
- a = 2.42-in. I.D. Split Spoon Sampler
- b = 2.0-in. O.D. Split Spoon Sampler (spt)
- c = Shelby Tube Sampler
- 1 = Driven with 300-lb. Hammer Falling 30 Inches
- 2 = Driven with 140-lb. Hammer Falling 30 Inches
- 3 = Pushed

Sample Recovery (Symbol indicates percentage recovered, not location of recovery)

Indicates Sample Attempt with No Recovery

Approximate Water Elevation at Low Tide 7/25/91

SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GRAPHIC SYMBOL	LETTER SYMBOL (1)	TYPICAL DESCRIPTIONS (2)(3)
COARSE-GRAINED SOIL (More than 50% of material is larger than #200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on #4 sieve)	CLEAN GRAVEL (Little or no fines)		GW	Well-graded gravel; gravel/sand mixture(s); little or no fines
				GP	Poorly-graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		GM	Silty gravel; gravel/sand/silt mixture(s)
				GC	Clayey gravel; gravel/sand/silt mixture(s)
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through #4 sieve)	CLEAN SAND (Little or no fines)		SW	Well-graded sand; gravelly sand; little or no fines
				SP	Poorly-graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		SM	Silty sand; sand/silt mixture(s)
				SC	Clayey sand; sand/clay mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than #200 sieve size)	SILT AND CLAY (Liquid Limit less than 50)			ML	Inorganic silt and very fine sand; rock flour; silty- or clayey-fine sand or clayey silt with slight plasticity
				CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
				OL	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY (Liquid Limit greater than 50)			MH	Inorganic silt; micaceous or diatomaceous fine sand or silty soil
				CH	Inorganic clay of high plasticity; fat clay
				OH	Organic clay of medium to high plasticity; organic silt
HIGHLY ORGANIC SOIL				PT	Peat; humus; swamp soil with high organic content

Notes:
1. Dual letter symbols (i.e., SM-SP) for a sand or gravel indicate a soil with an estimated 5-15% fines. Multiple letter symbols (i.e., ML/CL) indicates borderline or multiple soil classifications. Only the first letter symbol's respective pattern is shown on logs.
2. Soil descriptions shown on logs use the terminology and general approach for the *Visual-Manual Procedure, Description and Identification of Soils*, as outlined in ASTM D 2488.
3. Soil descriptions (which are based on estimated values) are as follows: Primary Soil Type(s) - i.e., "GRAVEL", "SAND", "SILT", "CLAY", etc.
   Secondary Soil Type(s) (>15%) - i.e., "gravelly", "sandy", "clayey", etc.
   Modifier(s) (>5% and ≤15%) - i.e., "with gravel", "with sand", "with clay", etc.
   Minor Component(s) (≤5%) - i.e., "trace gravel", "trace sand", "trace clay", etc.

25-63.40 Boeing/Project V/Site Assessment Report 9/91

Key to Borings and Soil Classification System | Figure C-1

Well MW-A4

Soil Profile

Surface Elevation = 15.2 Feet, NGVD

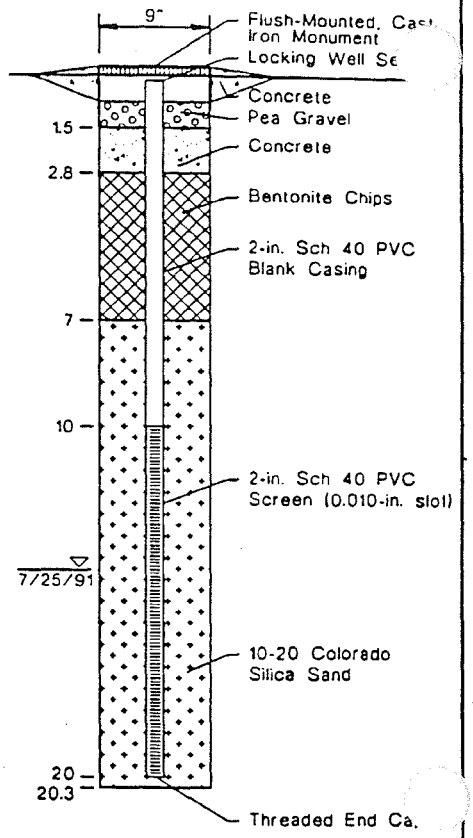
Depth (feet)	Soil Profile	Description
0	SM	Brown fine SAND with silt (very loose, moist)
	ML	Very dark grey SILT with sand (medium stiff, moist)
5	SP	Dark to very dark grey with trace brown fine to medium SAND, trace silt and coarse sand, (loose, moist)
10	ML	Dark brownish grey SILT, trace fine to medium sand, (medium stiff, moist)
15	SP	Very dark grey fine to medium SAND, 1/2" lense of grey brown silt at 21', (loose, wet)
20		

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40

7 a2; 17 a2; 12 a2; 10 a2; 21 a2; 17 a2

Boring Completed 7/3/91
Total Depth = 21.5 ft.

Construction Diagram



Well Completed 7/3/91
Elevation at Top of PVC Casing = 14.99 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

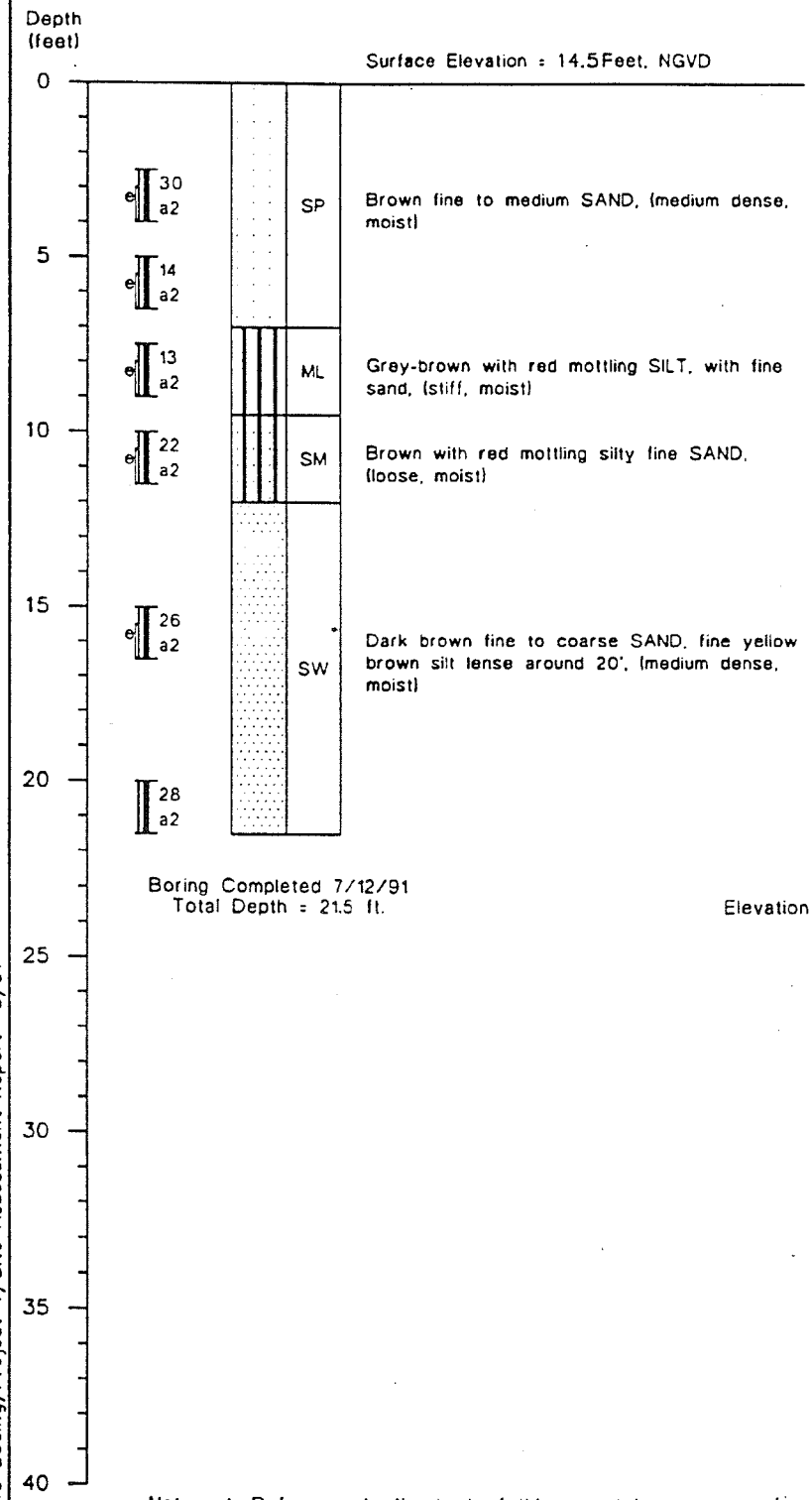
2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-A4 | Figure C-4

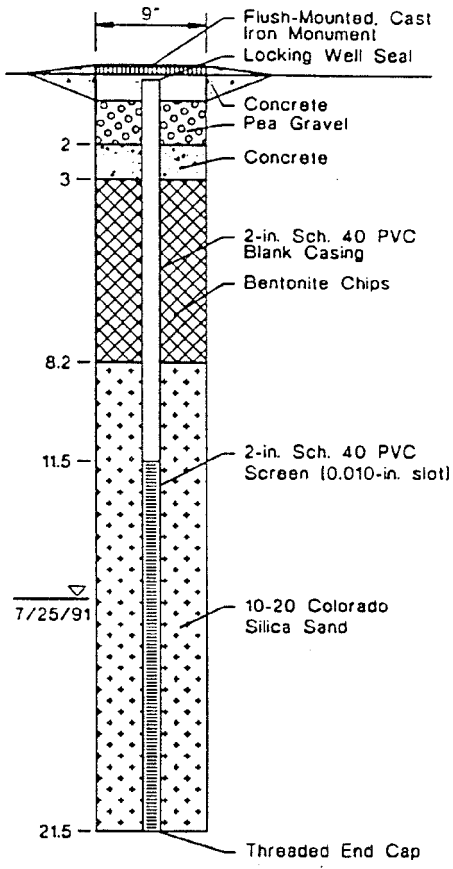
Well MW-A9

Soil Profile



Boring Completed 7/12/91
Total Depth = 21.5 ft.

Construction Diagram



Well Completed 7/12/91
Elevation at Top of PVC Casing = 14.25 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

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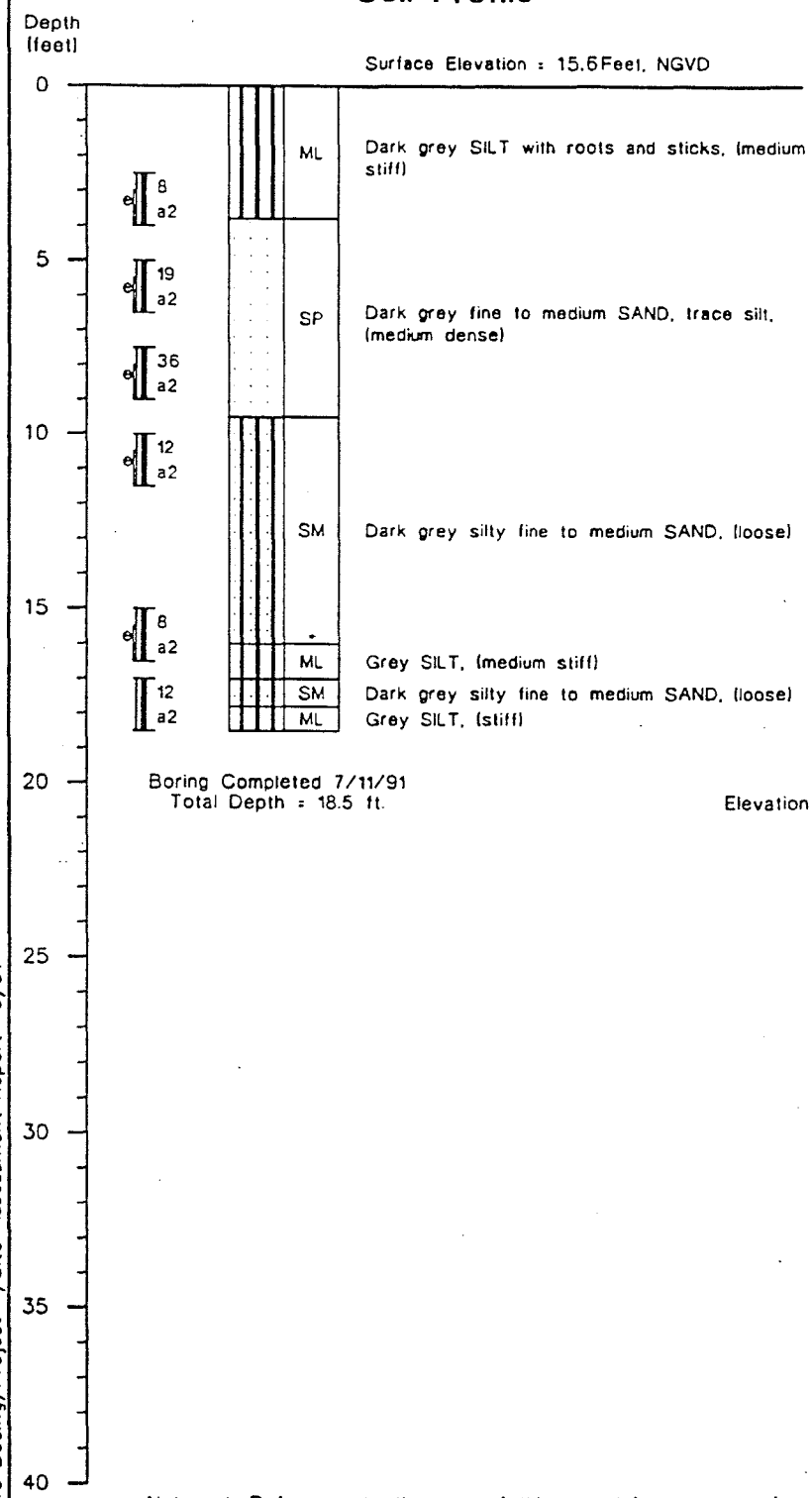
Log of Monitoring Well MW-A9 | Figure C-9

Well MW-B1A

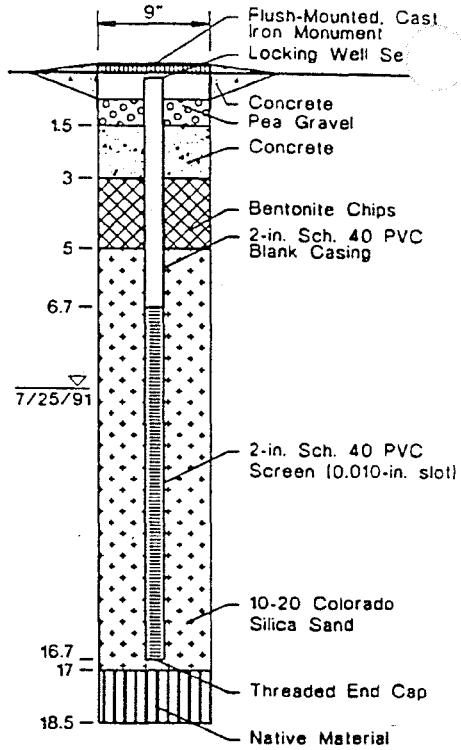
Soil Profile

Surface Elevation = 15.6 Feet, NGVD



Boring Completed 7/11/91
Total Depth = 18.5 ft.

Construction Diagram



Well Completed 7/11/91
Elevation at Top of PVC Casing = 15.15 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

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Log of Monitoring Well MW-B1A | Figure C-10

Well MW-B1B

Soil Profile

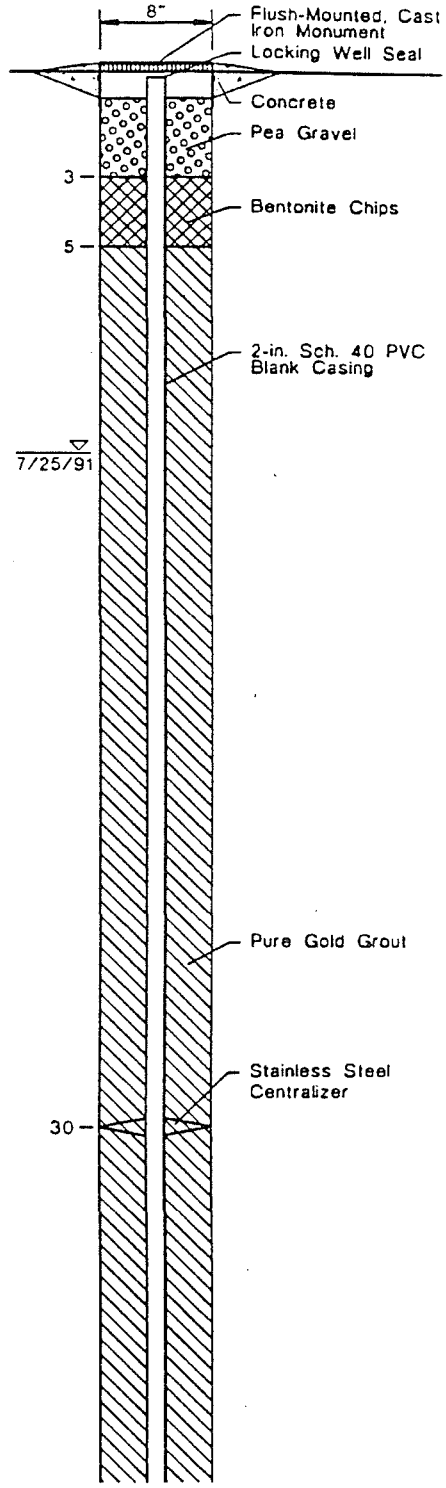
Surface Elevation = 15.1Feet, NGVD

Depth (feet)		
0	ML	Dark grey SILT with roots and sticks, (medium stiff)
5	SP	Dark grey fine to medium SAND, trace silt, (medium dense)
10	SM	Dark grey silty fine to medium SAND, (medium dense)
15	ML	Grey SILT, (medium stiff)
	SM	Dark grey silty fine to medium SAND, (medium dense)
20	ML	Grey SILT, (stiff)
25	SM	Grey fine silty SAND with clay and organics
30	SP	Dark grey fine SAND, trace silt and organics, (medium dense, moist to wet)
35		
40		

42
a1

(Continued on next page)

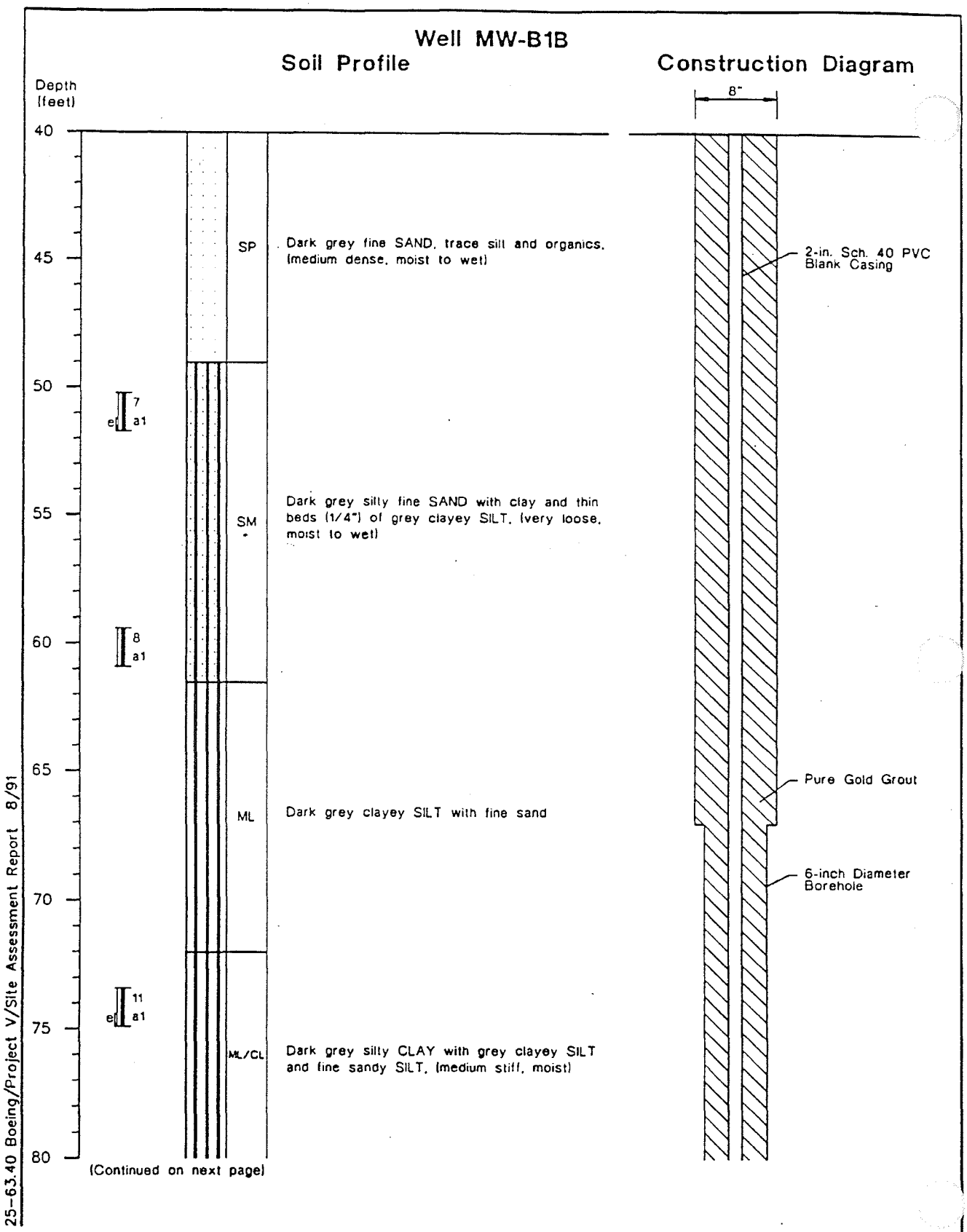
Construction Diagram



25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-B1B

Figure C-11 (1 of 3)

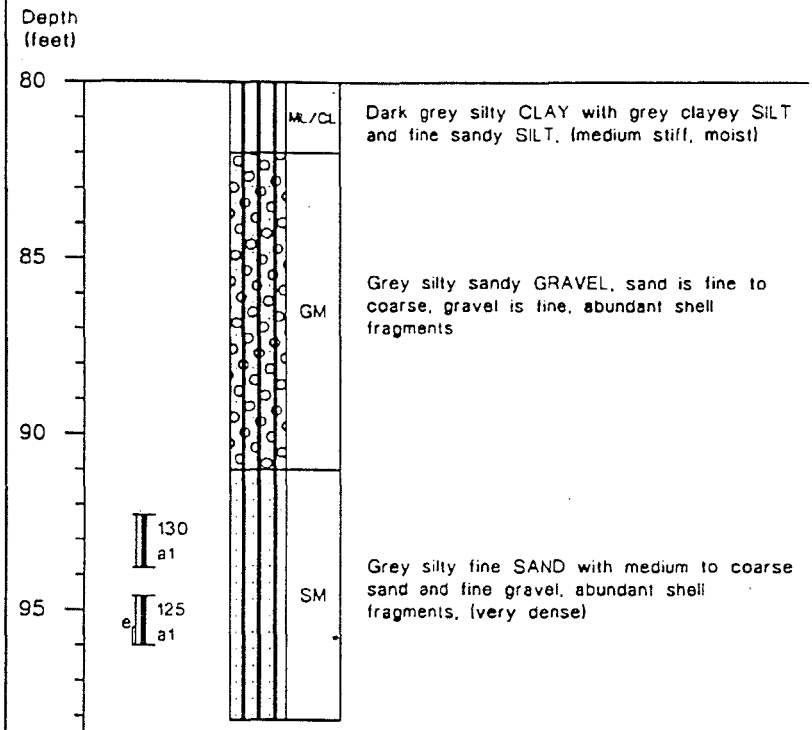


Log of Monitoring Well MW-B1B

Figure C-11 (2 of 3)

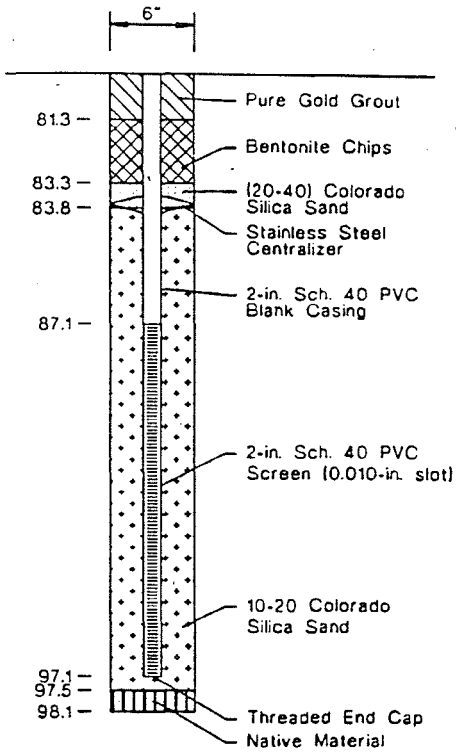
Well MW-B1B

Soil Profile



Boring Completed 7/17/91
Total Depth = 98.1 ft.

Construction Diagram



Well Completed 7/19/91
Elevation at Top of PVC Casing = 14.75 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-B1B

Figure C-11 (3 of 3)

Well MW-B2

Soil Profile

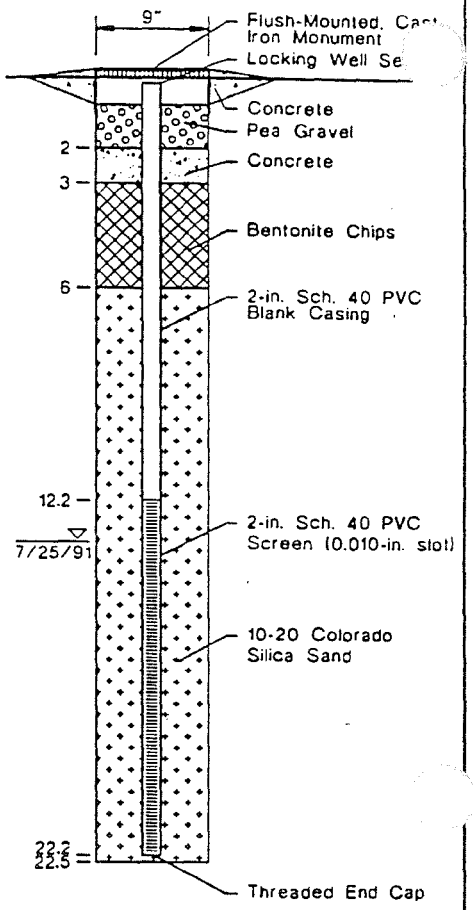
Depth (feet)

Surface Elevation = 14.1Feet, NGVD

Depth (feet)	Soil Profile	Symbol	Description
0			Concrete Pavement
		ML	Dark grey-green SILT, (stiff)
	24 a2		
5	19 a2	SM	Dark grey silty fine SAND, (loose)
	11 a2	ML	Grey to black SILT with roots, (medium stiff)
10	3 a2	SM/ML	Grey silty fine SAND to fine sandy SILT, (very loose/soft)
15	19 a2	ML	Brown SILT,with roots and grass, (stiff)
20	43 a2	SM	Dark grey silty fine SAND, (medium dense)
25			
30			
35			
40			

Boring Completed 7/11/91
Total Depth = 21.5 ft.

Construction Diagram



Well Completed 7/11/91
Elevation at Top of PVC Casing = 13.88 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-B2 | Figure C-12

Well MW-B4

Soil Profile

Depth (feet)

Surface Elevation = 14.3 Feet, NGVD

Asphalt Pavement

SP — Dark grey fine to medium SAND, (medium dense, moist)

ML — Brownish grey SILT, with sand and root fibers, (medium stiff, moist)

Dark grey fine SAND, occassional silt lenses to 1/2" thick, (loose, moist to wet)

SP — 20.0-43.0 Dark grey fine SAND, trace fine to coarse sand, gravel to 1" and wood debris, (dense, wet)

e 26 a2; e 13 a2; e 9 a2; e 21 a2; e 12 a2; e 9 a2; e 54 a2; e 49 a2

(Continued on next page)

Construction Diagram

9"

Flush-Mounted, Cast Iron Monument

Locking Well Seal

Concrete

Pea Gravel

Concrete

Bentonite Chips

2-in. Sch. 40 PVC Blank Casing

7/25/91

Pure Gold Grout

(20-40) Colorado Sand

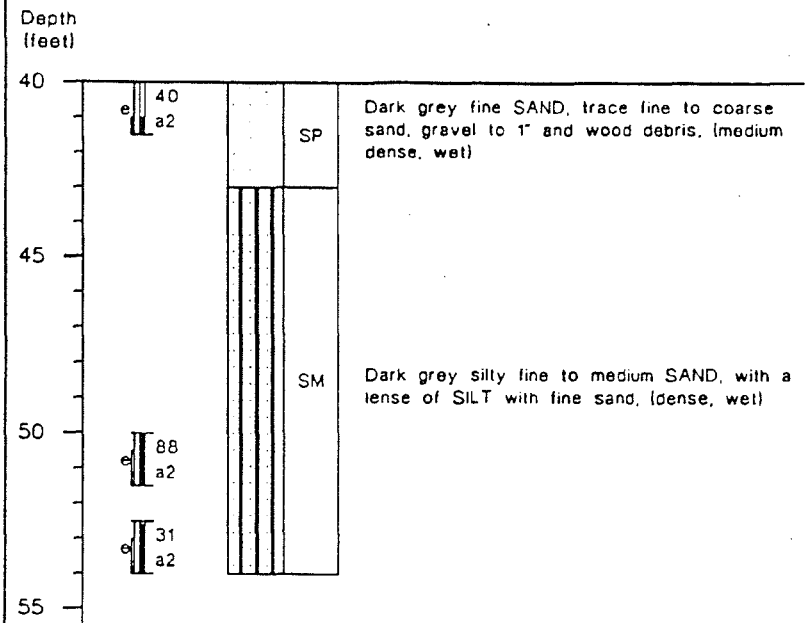
25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-B4

Figure C-14 (1 of 2)

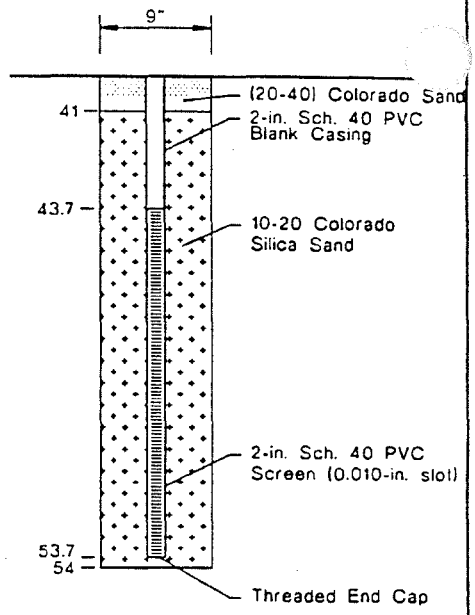
Well MW-B4

Soil Profile



Boring Completed 7/10/91
Total Depth = 54.0 ft.

Construction Diagram



Well Completed 7/10/91
Elevation at Top of PVC Casing = 13.81 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-B4

Figure C-14 (2 of 2)

Well MW-B5

Soil Profile

Depth (feet)

Surface Elevation = 14.1Feet, NGVD

Concrete Pavement

SP — Dark grey fine to medium SAND, (loose)

ML — Dark grey with black mottling, clayey SILT, (stiff to very stiff)

SP — Very dark grey fine to medium SAND, (medium dense)

e 16 a2; e 9 a2; e 7 a2; e 18 a2; e 25 a2; e 27 a2

Boring Completed 7/11/91
Total Depth = 21.5 ft.

Construction Diagram

9"

Flush-Mounted, Cast Iron Monument

Locking Well Seal

Concrete

Pea Gravel

2.5

3

Concrete

2-in. Sch. 40 PVC Blank Casing

Bentonite Chips

7/25/91

15

16

Bentonite Pellets

17.7

2-in. Sch. 40 PVC Screen (0.010-in. slot)

10-20 Colorado Silica Sand

22.7

23

Threaded End Cap

Well Completed 7/11/91
Elevation at Top of PVC Casing = 13.85 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-B5 | Figure C-15

Well MW-B6

Soil Profile

Depth (feet)

0, 5, 10, 15, 20, 25, 30, 35, 40

Surface Elevation = 14.1Feet, NGVD

Gravel

Brown fine to medium SAND and Brown with red mottling fine to medium SAND with silt (medium dense, moist)

SP/SM

Grey, black and olive brown layered SILT with organic debris, trace fine sand at 11', (stiff, wet), reducing odor

ML

Dark grey to black fine to medium SAND, (medium dense, wet)

SP

e 47 a2

e 18 a2

e 16 a2

e 10 a2

e 49 a2

e 54 a2

Boring Completed 7/12/91
Total Depth = 24.0 ft.

Construction Diagram

9"

Flush-Mounted, Cast Iron Monument

Locking Well Seal

Concrete

Pea Gravel

Concrete

2

3

2-in. Sch. 40 PVC Blank Casing

Bentonite Chips

9.5

13

7/25/91

2-in. Sch. 40 PVC Screen (0.010-in. slot)

10-20 Colorado Silica Sand

23

24

Native Material

Threaded End Cap

Well Completed 7/12/91
Elevation at Top of PVC Casing = 13.82 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-B6 | Figure C-16

Well MW-C1

Soil Profile

Depth (feet)

Surface Elevation = 14.9 Feet, NGVD

0 — Asphalt Pavement

SP — Brown fine to medium SAND, trace silt, (medium dense, moist to wet)

e 35 a2

5

e 14 a2

ML — Dark grey and black SILT with organic debris, trace fine sand, (stiff, moist to wet)

e 23 a2

SP — Dark grey fine to medium SAND, trace silt, (medium dense, moist)

10

e 24 a2

SM/ML — Grey silty fine SAND and grey SILT with fine sand, (medium dense/medium stiff, moist to wet)

15

e 52 a2

SW — Dark grey fine to coarse SAND with occassional grey clay ripups, (dense, wet)

20

e 90/11" a2

25

30

35

40

Boring Completed 7/15/91
Total Depth = 23.0 ft

Construction Diagram

9"

Flush-Mounted, Cast Iron Monument

Locking Well Seal

Concrete

Pea Gravel

1.5

Concrete

3

2-in. Sch. 40 PVC Blank Casing

Bentonite Chips

10

7/25/91
13

10-20 Colorado Silica Sand

2-in. Sch. 40 PVC Screen (0.010-in. slot)

23

Threaded End Cap

Well Completed 7/15/91
Elevation at Top of PVC Casing = 14.71 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-C1 | Figure C-26

Well MW-E3

Soil Profile

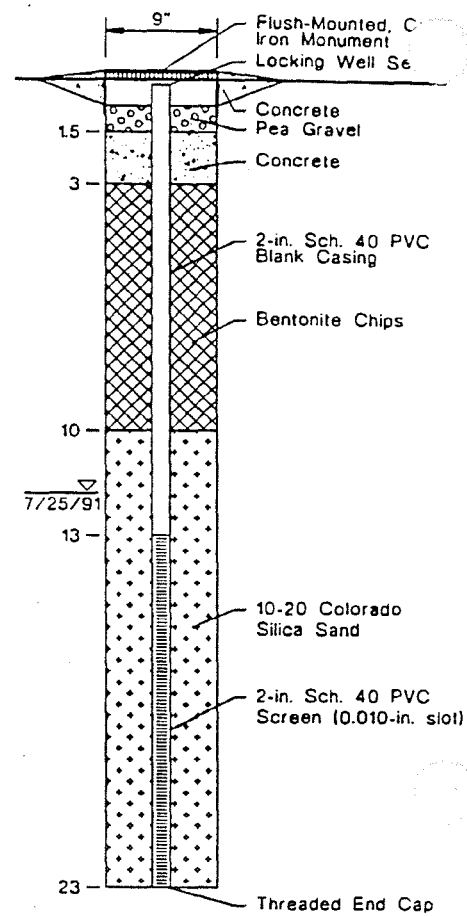
Surface Elevation = 14.6 Feet, NGVD

Depth (feet)	Soil Profile	Description
0	SP/SM	Brown fine SAND and brown silty fine SAND, (loose, moist)
5	ML/CL	Yellow brown SILT to CLAY, trace fine sand, (very soft, moist)
	CL	Yellow brown and grey brown CLAY with silt, trace fine sand and roots, (medium stiff, moist)
10	ML	Grey brown SILT with fine sand and "crusty" red mottling which leaves voids in matrix, (medium stiff, moist to wet)
15	SP	Dark grey fine to medium SAND, trace coarse sand, (medium dense, wet)
20		
25		
30		
35		
40		

e 10 a2; e 1 a2; e 11 a2; e 9 a2; e 43 a2; e 56 a2

Boring Completed 7/15/91
Total Depth = 23.0 ft.

Construction Diagram



Well Completed 7/15/91
Elevation at Top of PVC Casing = 14.56 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-E3 | Figure C-33

Well MW-G1

Soil Profile

Surface Elevation = 13.3 Feet, NGVD

Depth (feet)

0, 5, 10, 15, 20, 25, 30, 35, 40

e 35 a2
e 34 a2
e 27 a2
e 30 a2
e 11 a2
e 50/6" a2

SP — Brown fine to medium SAND, trace coarse sand, fine gravel, occassional 1/2" lense of silt or silty sand, (medium dense, moist)

ML — Black SILT, trace fine sand with decayed wood debris, (very hard, wet)

Boring Completed 7/8/91
Total Depth = 21.0 ft.

Construction Diagram

9"

Flush-Mounted, Cast Iron Monument
Locking Well Seal
Concrete
Pea Gravel
Concrete
Bentonite Chips
2-in. Sch. 40 PVC Blank Casing
2-in. Sch. 40 PVC Screen (0.010-in. slot)
10-20 Colorado Silica Sand
Threaded End Cap
Native Material

1.5
2.5
7
10
7/25/91
20
20.3
21

Well Completed 7/8/91
Elevation at Top of PVC Casing = 13.04 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-G1 | Figure C-36

Well MW-G3

Soil Profile

Surface Elevation = 13.8 Feet, NGVD

Depth (feet): 0, 5, 10, 15, 20, 25, 30, 35, 40

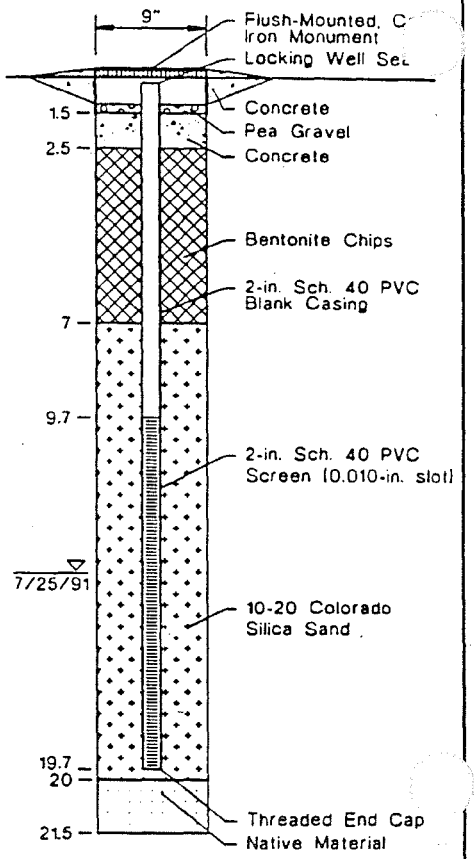
e 14 a2
5 a2
e 14 a2
e 2 a2
e 51 a2
e 50 a2

SP/SM — Very dark grey fine SAND and silty fine SAND, occassional 1/2" silt lenses, (very loose to loose becoming dense at 15', moist to wet)

SP — Very dark grey fine to medium SAND with a 2" lense of silty fine SAND, (medium dense, wet)

Boring Completed 7/8/91
Total Depth = 21.5 ft.

Construction Diagram



Well Completed 7/8/91
Elevation at Top of PVC Casing = 13.64 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

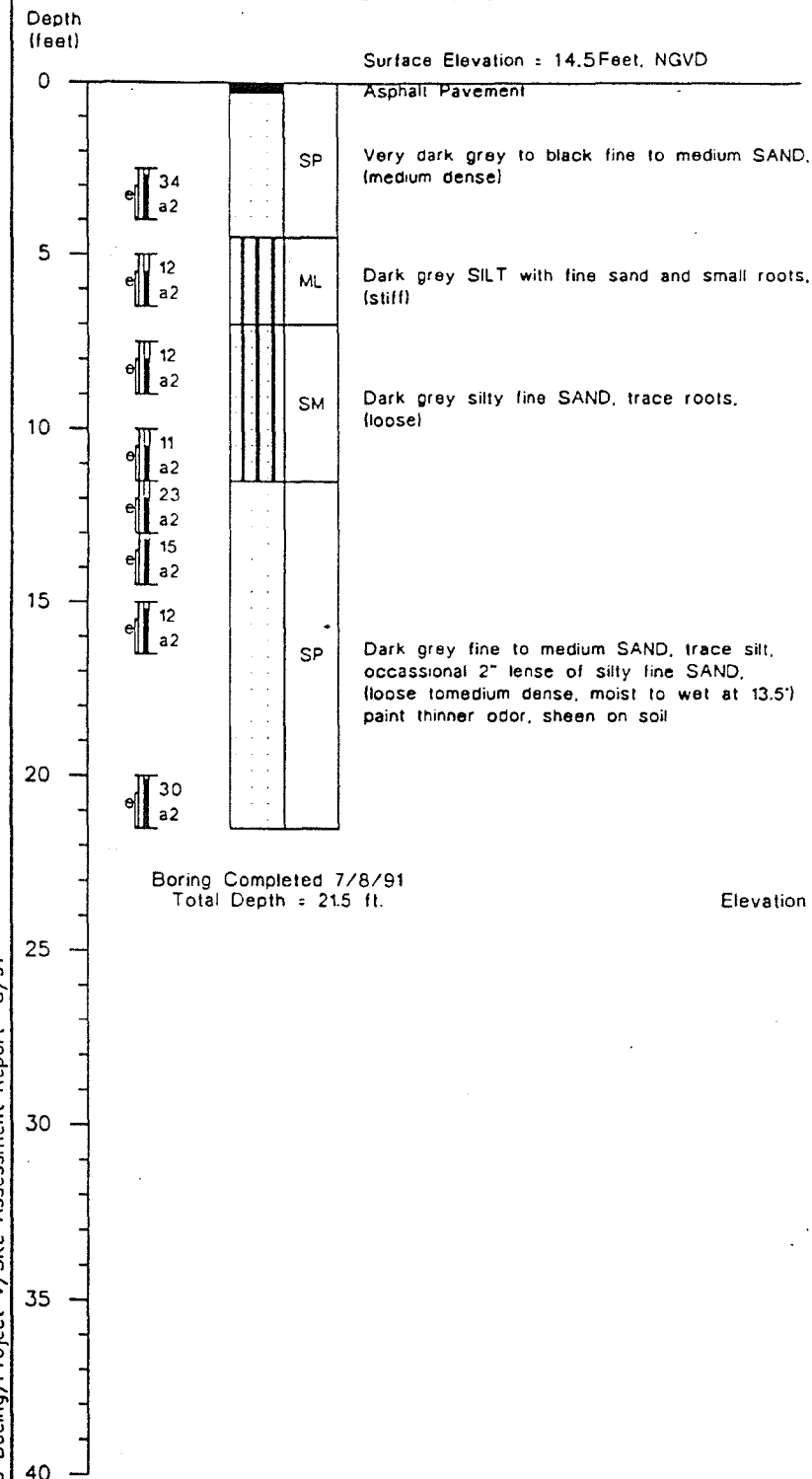
2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-G3 | Figure C-38

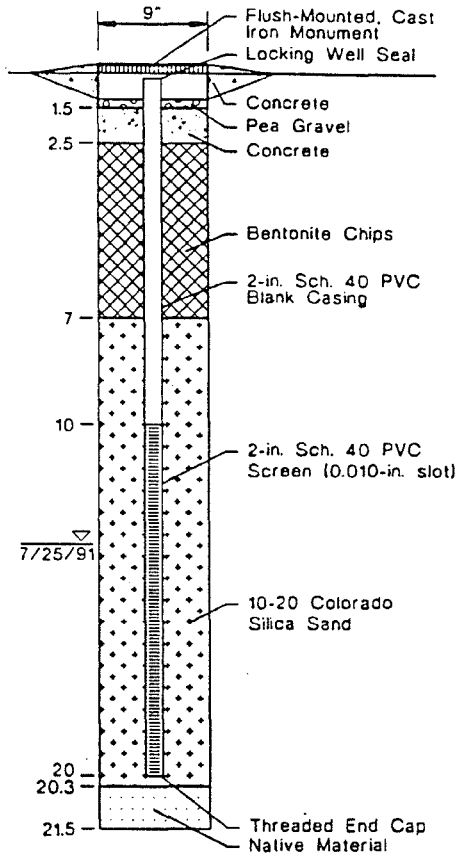
Well MW-G5

Soil Profile



Boring Completed 7/8/91
Total Depth = 21.5 ft.

Construction Diagram



Well Completed 7/9/91
Elevation at Top of PVC Casing = 14.29 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-G5 | Figure C-40

Well MW-H1

Soil Profile

Depth (feet)

Surface Elevation = 13.9 Feet, NGVD

0 — Asphalt Pavement

Dark brown fine SAND, trace black, brown and red fine SAND with occassional brown and red fine sandy SILT (loose, moist to wet), solvent-like odor and slight sheen

10' to 38'
Black fine to medium SAND, (medium dense to dense, wet) solvent-like odor and sheen

SP

Black fine to medium SAND, alternating with layers of black to dark grey silty fine SAND (dense, wet), no odor

SP/SM

40

(Continued on next page)

Depth	Sample	Blows
3	a2	9
5	a2	8
8	a2	12
10	a2	24
13	a2	24
15	a2	31
20	a2	39
30	a2	25
32	a2	50/6"
35	a2	50/6"

Construction Diagram

9"

Flush-Mounted, Cast Iron Monument
Locking Well Sea

Concrete
Pea Gravel
Concrete
Bentonite Chips
2-in. Sch. 40 PVC Blank Casing
Pure Gold Grout
20-40 Colorado Silica Sand

1
3
4
7
7/25/91
39
40

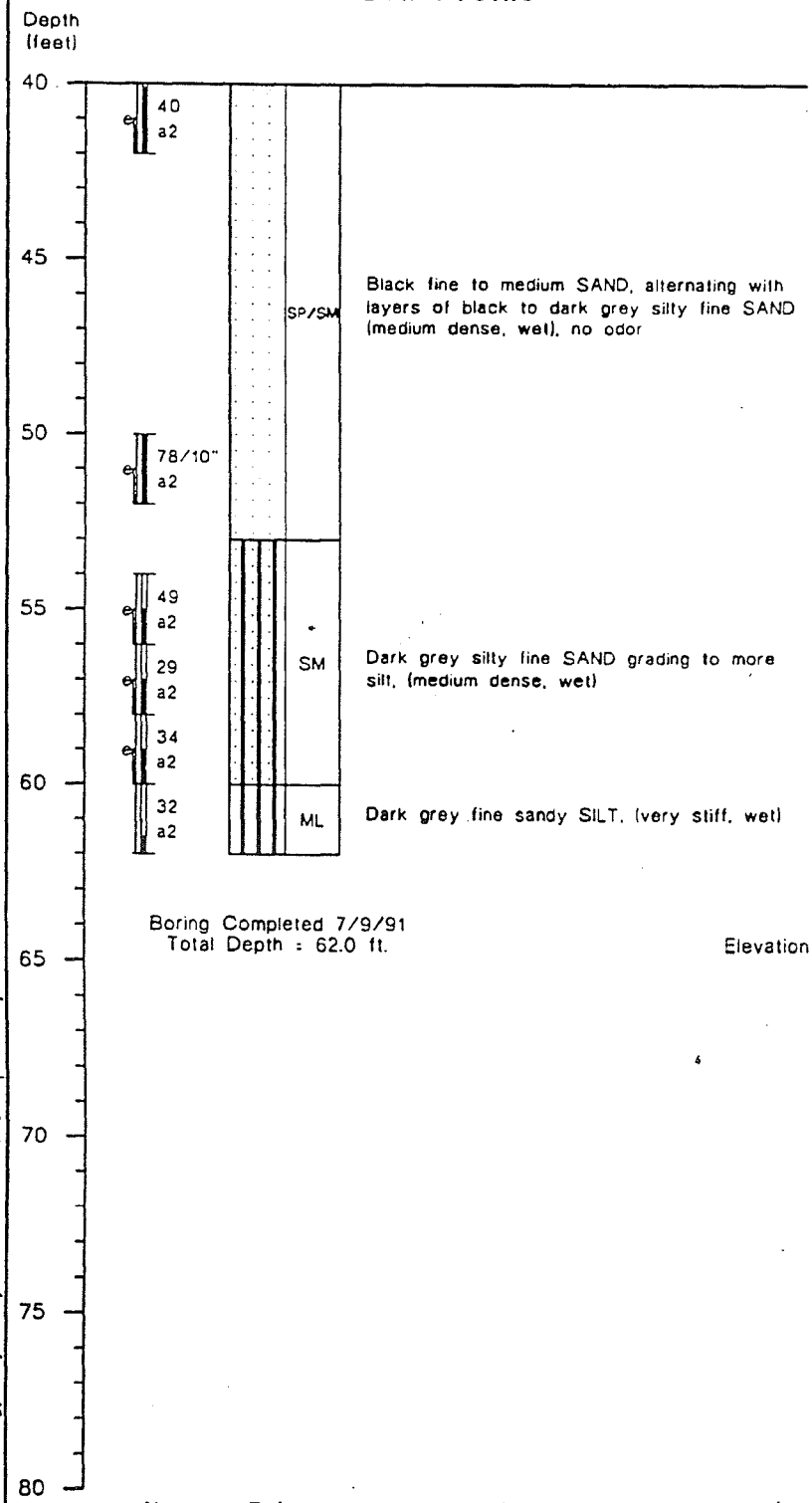
25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-H1

Figure C-46 (1 of 2)

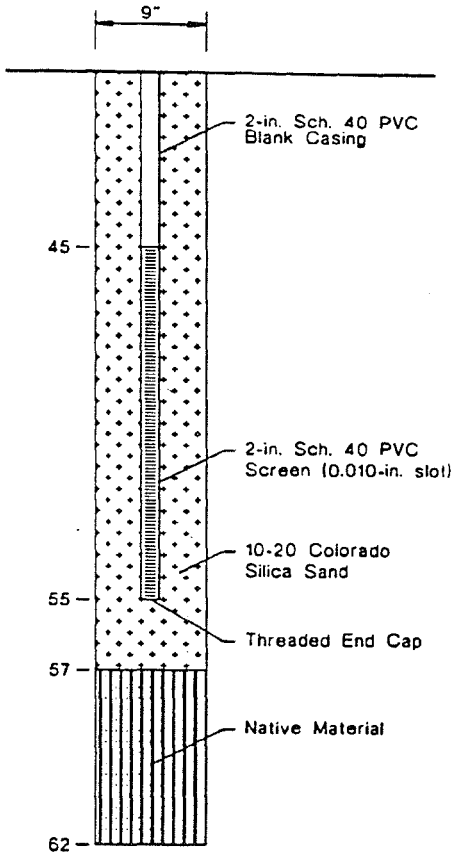
Well MW-H1

Soil Profile



Boring Completed 7/9/91
Total Depth : 62.0 ft.

Construction Diagram



Well Completed 7/9/91
Elevation at Top of PVC Casing : 13.39 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-H1

Figure C-46 (2 of 2)

Well MW-H6

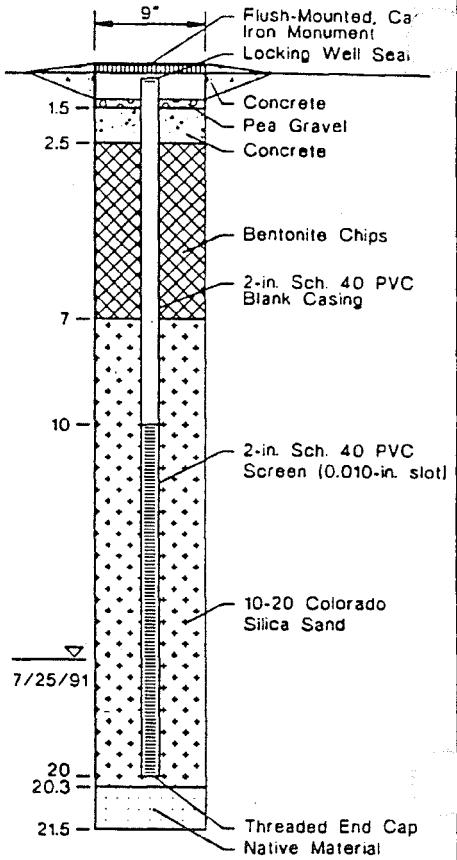
Soil Profile

Surface Elevation = 14.3 Feet, NGVD

Depth (feet)	Samples	Unit	Description
0			Concrete Pavement
	e 8, a1	SP	Brown fine to medium SAND, (loose, moist)
5	e 3, a1		
	e 3, a1	SM	Brown silty fine SAND and brown fine to medium SAND, (very loose, moist)
10	e 2, a1	SP	Brown fine SAND (very loose, moist)
	e 1, a1	SM	Grey brown with red mottling silty fine SAND, (very loose, moist to wet)
15	e 22, a2	SP	Very dark grey to black fine SAND, (medium dense, wet)
20	e 15, a2	SP/SM	Very dark grey to black fine SAND grading to silty fine SAND, (loose, wet)

Boring Completed 7/10/91
Total Depth = 21.5 ft.

Construction Diagram



Well Completed 7/10/91
Elevation at Top of PVC Casing = 13.94 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

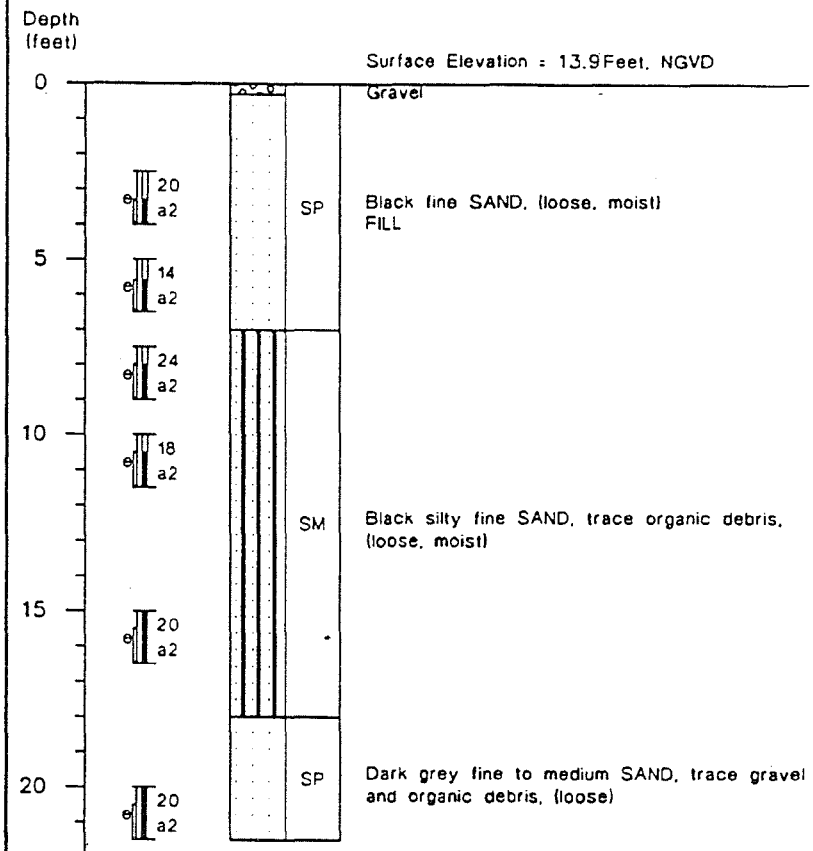
2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-H6 | Figure C-51

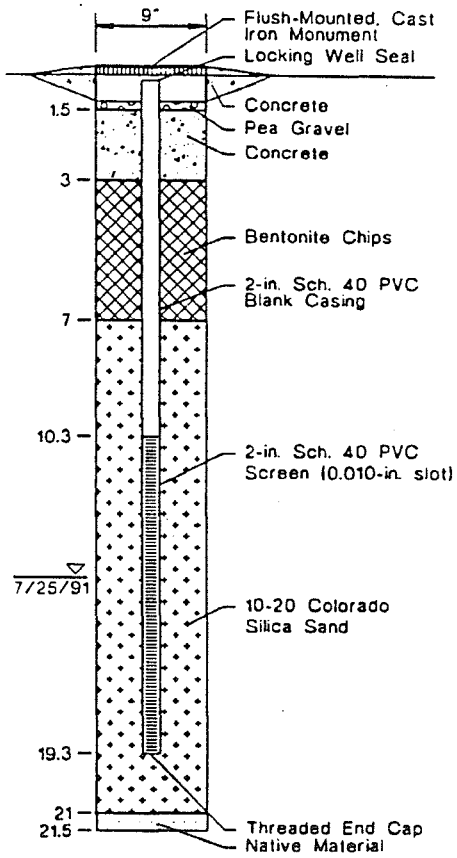
Well MW-H9

Soil Profile



Boring Completed 7/8/91
Total Depth = 21.5 ft.

Construction Diagram



Well Completed 7/8/91
Elevation at Top of PVC Casing = 13.50 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

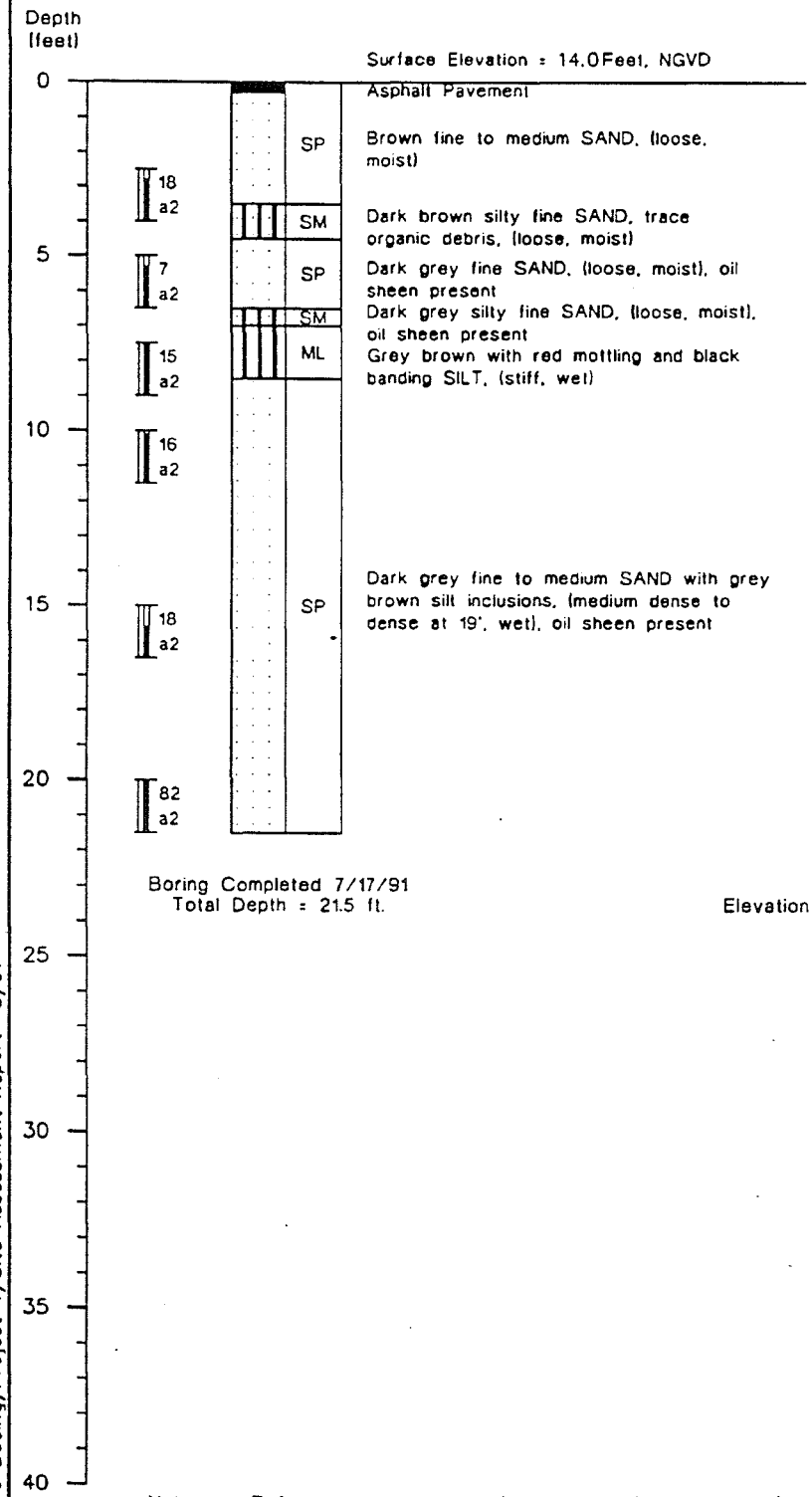
Log of Monitoring Well MW-H9 | Figure C-54

Well MW-H10

Soil Profile

Depth (feet)

Surface Elevation = 14.0 Feet, NGVD



Asphalt Pavement

Brown fine to medium SAND, (loose, moist)

Dark brown silty fine SAND, trace organic debris, (loose, moist)

Dark grey fine SAND, (loose, moist), oil sheen present

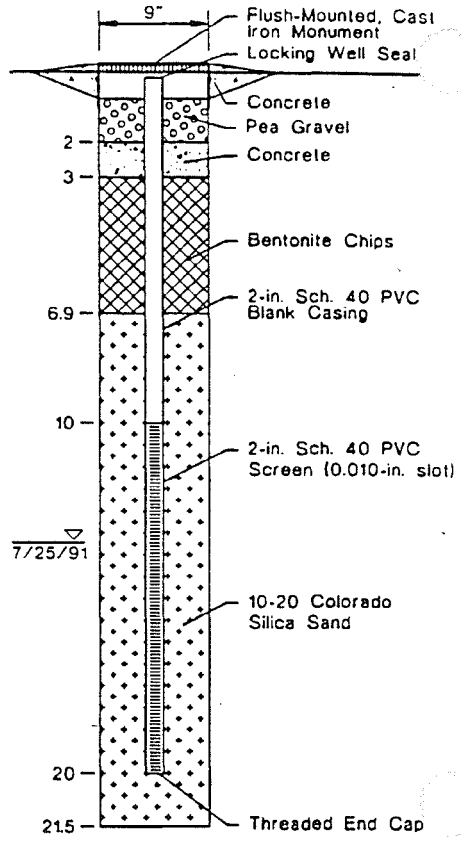
Dark grey silty fine SAND, (loose, moist), oil sheen present

Grey brown with red mottling and black banding SILT, (stiff, wet)

Dark grey fine to medium SAND with grey brown silt inclusions, (medium dense to dense at 19', wet), oil sheen present

Boring Completed 7/17/91
Total Depth = 21.5 ft.

Construction Diagram



Well Completed 7/17/91
Elevation at Top of PVC Casing = 13.73 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

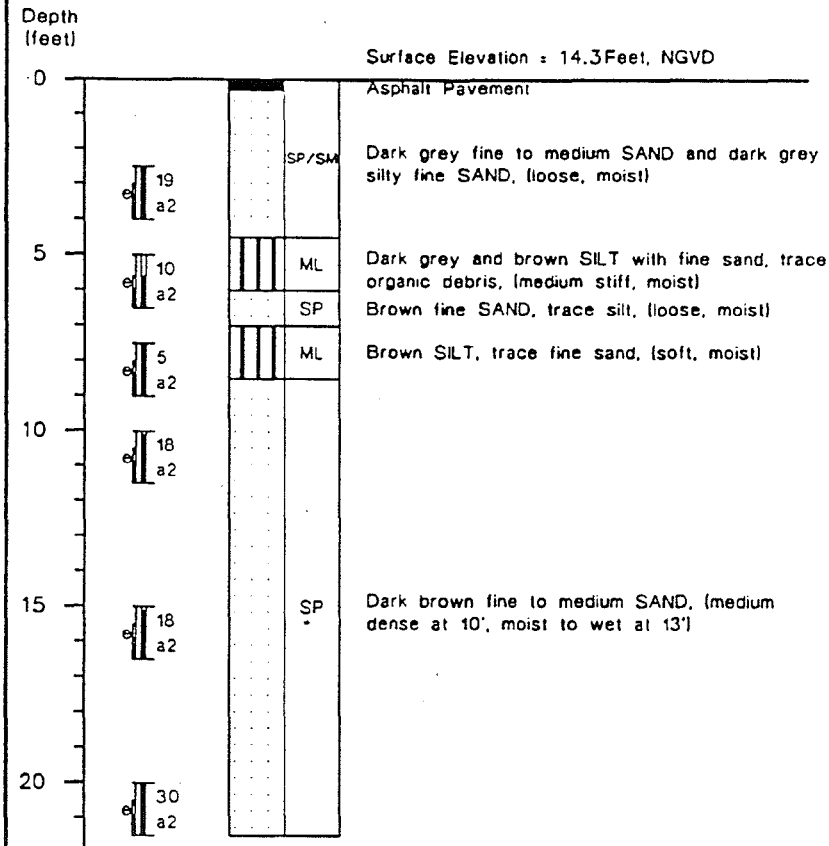
2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-H10 | Figure C-55

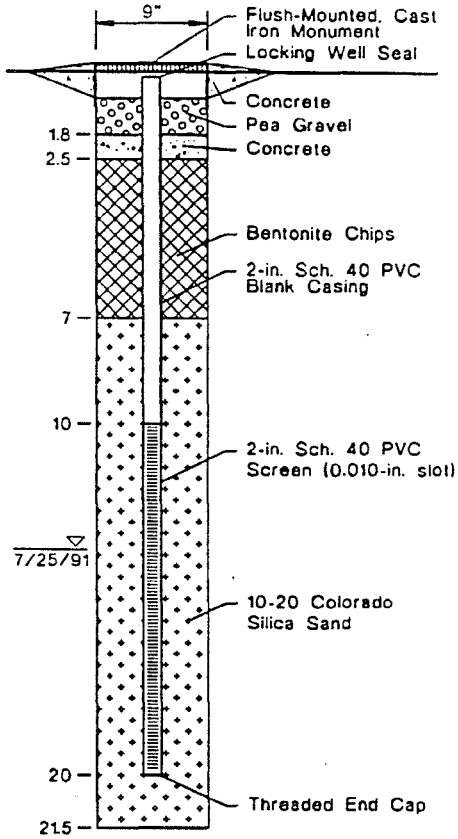
Well MW-H11

Soil Profile



Boring Completed 7/17/91
Total Depth = 21.5 ft.

Construction Diagram



Well Completed 7/17/91
Elevation at Top of PVC Casing = 14.11 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91.

Log of Monitoring Well MW-H11 | Figure C-56

Well MW-A2

Soil Profile

Depth (feet)

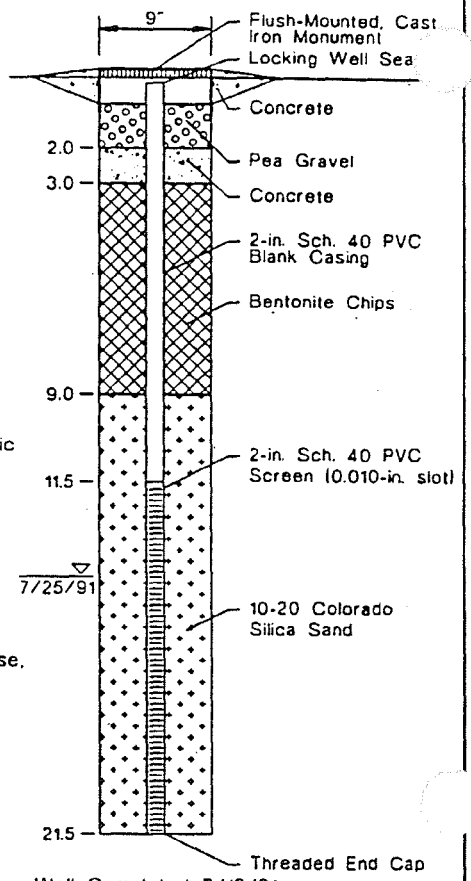
Surface Elevation = 14.6 Feet, NGVD

Depth (feet)	Soil Profile	Description
0		Gravel
	ML	Black SILT with organic debris and sand (medium stiff, moist)
5	SP	Dark grey fine to medium SAND, trace silt, 6" grey silt lense, (loose, moist)
	ML	Dark grey SILT with organic debris, (medium stiff, moist)
10	SM	Dark grey silty SAND with occassional organic debris (loose, moist)
15	SP	Dark grey fine SAND, trace silt (medium dense, wet)
20		
25		
30		
35		
40		

e 7 a2; e 18 a2; e 10 a2; e 16 a2; e 22 a2; 29 a2

Boring Completed 7/12/91
Total Depth = 21.5 ft.

Construction Diagram



Well Completed 7/12/91
Elevation at Top of PVC Casing = 14.44 ft. NGVD

Notes: 1. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.

2. Refer to "Key and Soil Classification System" figure for explanation of graphics and symbols.

25-63.40 Boeing/Project V/Site Assessment Report 8/91

Log of Monitoring Well MW-A2 | Figure C-57

CH2M HILL's Monitoring Well Logs

CH2M HILL

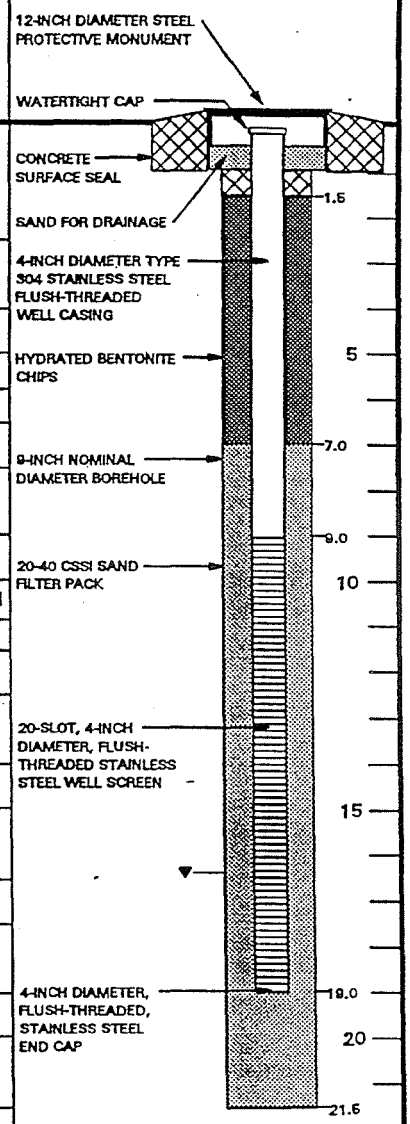
MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

PROJECT NUMBER	WELL NUMBER	SHEET 1 OF 1
SEA35051.A3	MW-12	

PROJECT: RHONE POULENC, INC.
LOCATION: EAST MARGINAL WAY, TUKWILA, WA
ELEVATION (TOP OF WELL CASING):
SURFACE ELEVATION:
WATER LEVEL ELEVATION: 16.2 FT. BELOW TOP OF CASING 8/26/93
START DATE: JULY 21, 1993
DRILLING CONTRACTOR: TACOMA PUMP AND DRILLING, INC.
FINISH DATE: JULY 21, 1993
DRILLING METHOD: HOLLOW-STEM-AUGER, MOBILE DRILL B-61
HYDROGEOLOGIST: D. KUNKEL

DEPTH (Ft)	INTERVAL	BLOWCOUNT AND RECOVERY	GEOLOGIC LOG & FIELD OBSERVATIONS	USCS DESIGNATION
	2.5-4.0	10-9-9 1.3	POORLY-GRADED SAND (SP): Black to dark grey medium sand, moist, medium dense, fill material	SP
5	5.0-6.5	10-7-8 1.5	POORLY-GRADED SAND WITH GRAVEL (SP): Grey-brown from 5.0 to 5.2 ft. bgs, wet, medium dense POORLY-GRADED SAND (SP): Dark grey from 5.2 to 5.8 ft. bgs, wet, medium dense	SP
			SILT WITH SAND (ML): Dark grey from 5.8 to 6.5 ft. bgs, moist, medium dense, some wood debris and rootlets	ML
	7.5-9.0	6-6-8 1.5	SILTY SAND (SM): Grey brown fine to medium sand, moist, medium dense, interbedded with grey-brown silt layers approximately 3 inches thick, layers are indistinct	SM
10	10.0-11.5	9-6-6 1.5	POORLY-GRADED SAND WITH SILT (SP-SM): Mottled brown-dark grey from 10 to 10.8, moist, medium dense	SP-SM
			CLAY (CL): Brown, moist to wet, from 10.8 to 11.5, plastic, stiff	CL
	12.5-14.0	10-7-6 1.4	POORLY-GRADED SAND (SP): Dark grey medium sand, wet, medium dense, toluene odor	SP
15	15.0-16.5	12-9-7 1.5	POORLY-GRADED SAND (SP): Dark grey medium sand, wet, medium dense, toluene odor	SP
	17.5-19.0	10-9-10 1.5	POORLY-GRADED SAND (SP): Dark grey medium sand, wet, medium dense, some 1-inch diameter rounded gravel, toluene odor	SP
20	20.0-21.5	10-9-12 1.5	POORLY-GRADED SAND (SP): Dark grey medium sand, wet, medium dense, some 1-inch diameter rounded gravel, toluene odor	SP

WELL CONSTRUCTION



CH2M HILL

MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

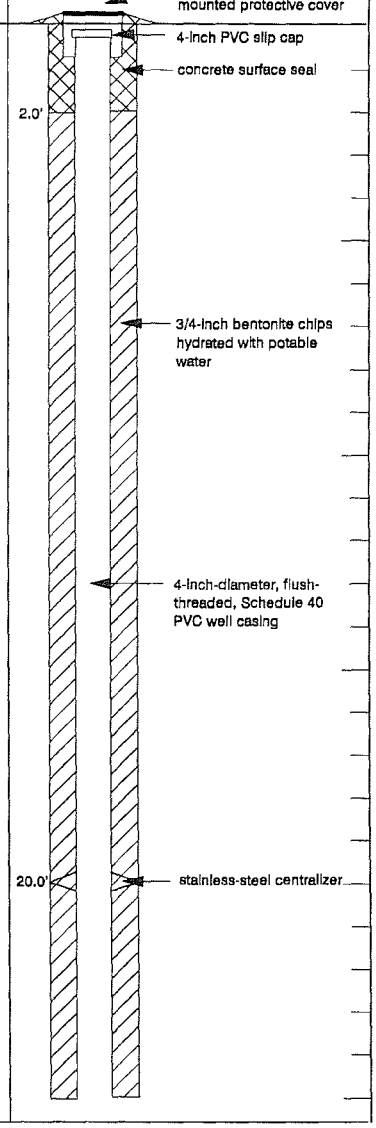
PROJECT NUMBER	WELL NUMBER	SHEET 1 OF 3
NPE35051.A5	MW-13	

PROJECT RHONE-POULENC MONITORING WELLS
ELEVATION (TOP OF WELL CASING) 13.76 FT. (NGVD)
WATER-LEVEL ELEVATION
DRILLING CONTRACTOR TACOMA PUMP AND DRILLING
DRILLING METHOD HOLLOW-STEM AUGER, MOBILE DRILL B-61, 6.5" ID AUGERS

LOCATION RHONE-POULENC INC., TUKWILA, WA
SURFACE ELEVATION 14.3 FT. (NGVD)
START DATE AUGUST 11, 1994
FINISH DATE AUGUST 11, 1994
HYDROGEOLOGIST D. KUNKEL

DEPTH (FT.)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT.)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)
					0-5 IN. ASPHALT 5 IN.-5 FT. POORLY GRADED SAND WITH GRAVEL (SP) gray, moist, fine to medium sand, gravel is subangular to subrounded, trace of red sand grains
5	X	1 SHELBY	2.4	PUSHED SAMPLER	5-7.5 FT. POORLY GRADED SAND (SP) gray, moist, fine to medium sand, no blowcounts for density determination, trace of red sand grains, strong hydrocarbon odor
10	X	2 S.S.	1.1	7-4-4 N=8	10-11.5 FT. POORLY GRADED SAND (SP) gray, moist, loose, fine to medium sand, trace of non-plastic silt, silt is barely moist, trace of red sand grains, hydrocarbon odor
15	X	3 SHELBY	0.0	PUSHED SAMPLER	NO RECOVERY
20	X	4 S.S.	1.5	7-10-10 N=20	20-21.5 FT. POORLY GRADED SAND (SP) gray, wet, medium-dense, fine to medium sand, trace of red sand grains, slight hydrocarbon odor
25					

WELL CONSTRUCTION



CH2M HILL

MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

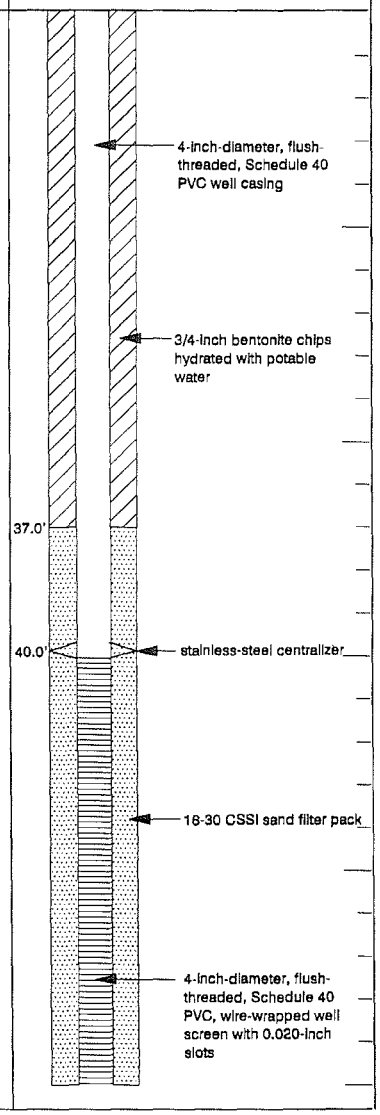
PROJECT NUMBER	WELL NUMBER	SHEET 2 OF 3
NPE35051.A5	MW-13	

PROJECT RHONE-POULENC MONITORING WELLS
ELEVATION (TOP OF WELL CASING) 13.76 FT. (NGVD)
WATER-LEVEL ELEVATION
DRILLING CONTRACTOR TACOMA PUMP AND DRILLING
DRILLING METHOD HOLLOW-STEM AUGER, MOBILE DRILL B-61, 6.5" ID AUGERS

LOCATION RHONE-POULENC INC., TUKWILA, WA
SURFACE ELEVATION 14.3 FT. (NGVD)
START DATE AUGUST 11, 1994
FINISH DATE AUGUST 11, 1994
HYDROGEOLOGIST D. KUNKEL

DEPTH (FT.)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT.)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)
25	X	5 S.S.	1.0	12-4-14 N=18	25-26.5 FT. POORLY GRADED SAND (SP) gray, wet, medium-dense, fine to medium sand, trace of red sand grains, some wood debris in drive head of sampler, slight hydrocarbon odor
30	X	6 S.S.	1.0	2-2-6 N=8	30-31.5 FT. POORLY GRADED SAND (SP) gray, wet, loose, fine to medium sand, no silt, trace of wood fragments and red sand grains
35	X	7 S.S.	1.0	4-4-25 N=29	35-36.5 FT. POORLY GRADED SAND (SP) gray, wet, dense, fine to medium sand with trace of coarse sand, some small subrounded gravel up to 0.25 inch in diameter, trace of red sand grains
40	X	8 S.S.	1.2	10-12-16 N=28	40-40.5 FT. WELL GRADED SAND (SW) gray, wet, medium-dense, fine to coarse sand, occasional small subrounded pebbles 40.5-41.5 FT. POORLY GRADED SAND WITH SILT (SP-SM) gray to gray-brown, wet, medium-dense, very fine to fine sand with non-plastic silt, trace of red sand grains
45	X	9 S.S.	1.0	2-4-5 N=9	45-46.5 FT. WELL GRADED SAND (SW) gray, wet, loose, fine to coarse sand, occasional small pebbles up to 0.25 inch in diameter
50					

WELL CONSTRUCTION



CH2M HILL

MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

PROJECT NUMBER	WELL NUMBER	SHEET 3 OF 3
NPE35051.A5	MW-13	

PROJECT RHONE-POULENC MONITORING WELLS
ELEVATION (TOP OF WELL CASING) 13.76 FT. (NGVD)
WATER-LEVEL ELEVATION
DRILLING CONTRACTOR TACOMA PUMP AND DRILLING
DRILLING METHOD HOLLOW-STEM AUGER, MOBILE DRILL B-61, 6.5" ID AUGERS

LOCATION RHONE-POULENC INC., TUKWILA, WA
SURFACE ELEVATION 14.3 FT. (NGVD)
START DATE AUGUST 11, 1994
FINISH DATE AUGUST 11, 1994
HYDROGEOLOGIST D. KUNKEL

DEPTH (FT.)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT.)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	WELL CONSTRUCTION
50	X	10 S.S.	1.4	6-8-12 N=20	50-51 FT. POORLY GRADED SAND (SP) gray, wet, medium-dense, fine to medium sand	50.0' stainless-steel centralizer; 4-inch-diameter, flush-threaded, Schedule 40 PVC sump
					51-51.5 FT. POORLY GRADED SAND WITH SILT (SP-SM) gray, wet, medium-dense, very fine to fine sand with non-plastic silt	52.0' 4-inch PVC slip cap attached with stainless-steel screw
	X	11 S.S.	1.3	4-4-5 N=9	52-52.5 FT. POORLY GRADED SAND WITH SILT (SP-SM) same as above	
					52.5-53.5 FT. SILT (ML) gray, wet, stiff, slightly plastic silt with very fine sand	
55					TOTAL DEPTH 53.5 FEET BELOW GROUND SURFACE	
60						
65						
70						
75						

CH2M HILL

MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

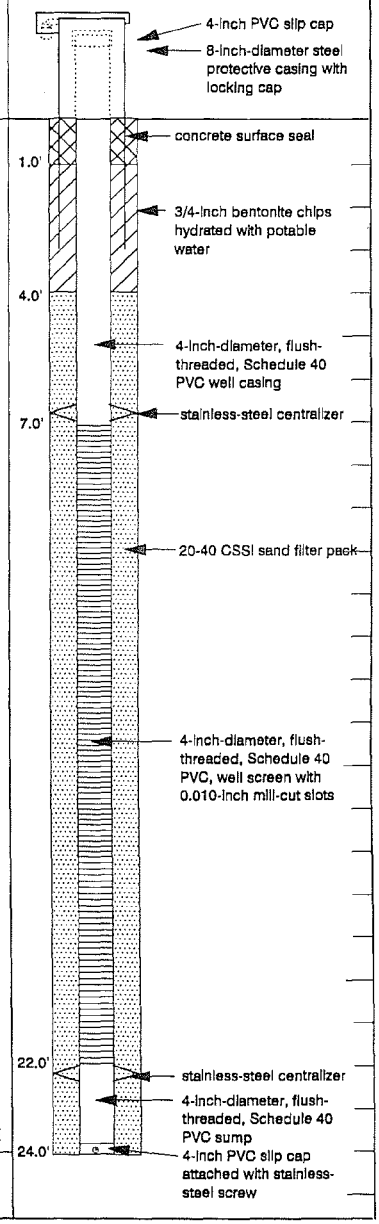
PROJECT NUMBER	WELL NUMBER	SHEET 1 OF 1
NPE35051.A5	MW-14	

PROJECT RHONE-POULENC MONITORING WELLS
ELEVATION (TOP OF WELL CASING) 16.37 FT. (NGVD)
WATER-LEVEL ELEVATION
DRILLING CONTRACTOR TACOMA PUMP AND DRILLING
DRILLING METHOD HOLLOW-STEM AUGER, MOBILE DRILL B-61, 6.5" ID AUGERS

LOCATION RHONE-POULENC INC., TUKWILA, WA
SURFACE ELEVATION 15.1 FT. (NGVD)
START DATE AUGUST 5, 1994
FINISH DATE AUGUST 5, 1994
HYDROGEOLOGIST D. KUNKEL

DEPTH (FT.)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT.)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)
0					0-8 IN. CONCRETE
5	X	1 S.S.	0.2	6-6-4 N=10	5-6.5 FT. POORLY GRADED SAND (SP) gray, moist, loose, fine to medium sand, trace of red sand grains, trace of non-plastic silt
					9 FT. SILT (ML) gray-brown, wet, some roots, old soil horizon
10	X	2 S.S.	1.3	5-4-5 N=9	10-11.5 FT. POORLY GRADED SAND (SP) gray, moist, loose, fine to medium sand, trace of red sand grains, trace of non-plastic silt
15	X	3 S.S.	1.5	5-6-8 N=14	15-16.5 FT. POORLY GRADED SAND (SP) gray, wet, medium-dense, medium sand, trace of red sand grains, trace of non-plastic silt
20	X	4 S.S.	1.5	5-15-10 N=25	20-21.5 FT. POORLY GRADED SAND WITH GRAVEL (SP) gray, wet, medium-dense, fine to medium sand, 15 to 18% subrounded gravel 1/2 to 1 inch in diameter, trace of red sand
					TOTAL DEPTH 24 FEET BELOW GROUND SURFACE
25					

WELL CONSTRUCTION



CH2M HILL

MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

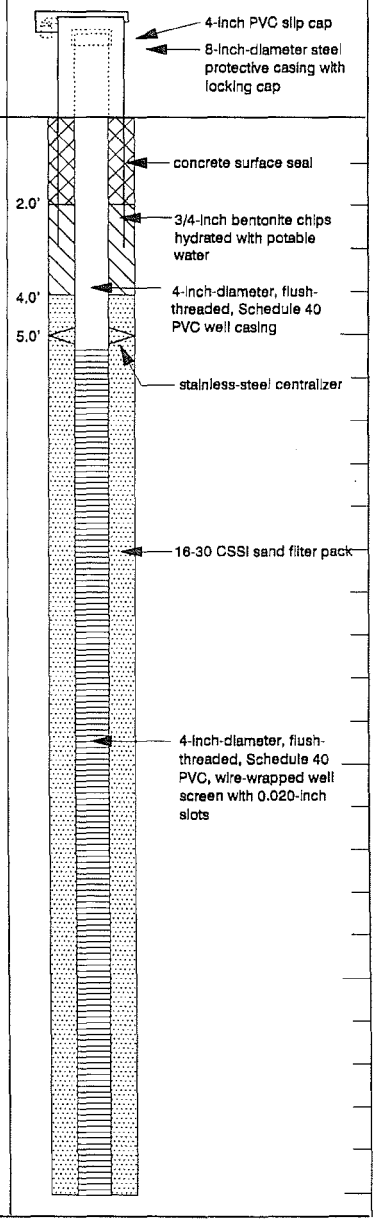
PROJECT NUMBER	WELL NUMBER	SHEET 1 OF 2
NPE35051.A5	MW-15	

PROJECT RHONE-POULENC MONITORING WELLS
ELEVATION (TOP OF WELL CASING) 15.59 FT. (NGVD)
WATER-LEVEL ELEVATION
DRILLING CONTRACTOR TACOMA PUMP AND DRILLING
DRILLING METHOD HOLLOW-STEM AUGER, MOBILE DRILL B-61, 6.5" ID AUGERS

LOCATION RHONE-POULENC INC., TUKWILA, WA
SURFACE ELEVATION 14.3 FT. (NGVD)
START DATE AUGUST 8, 1994
FINISH DATE AUGUST 9, 1994
HYDROGEOLOGIST D. KUNKEL

DEPTH (FT.)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT.)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
0					0-4 IN. CONCRETE
5	X	1 S.S.	1.5	1-2-2 N=4	5-5.5 FT. SILT (ML) gray-brown, moist, soft, slightly plastic silt, old soil horizon, root zone 5.5-6.5 FT. POORLY GRADED SAND (SP) gray, moist, loose, fine sand, up to 5 percent non-plastic silt, trace of red sand grains
10	X	2 S.S.	1.5	3-5-7 N=12	10-11 FT. POORLY GRADED SAND (SP) gray, moist, medium-dense, fine to medium sand, trace of non-plastic silt, trace of red sand grains 11-11.5 FT. SILT (ML) gray-brown, wet, non-plastic silt, no roots
15	X	3 S.S.	1.4	5-6-10 N=16	15-16.5 FT. POORLY GRADED SAND (SP) gray, wet, medium-dense, fine to medium sand, trace of red sand grains
20	X	4 S.S.	1.5	3-7-12 N=19	20-21.5 FT. POORLY GRADED SAND (SP) gray, wet, medium-dense, fine to medium sand, trace of red sand grains
25					

WELL CONSTRUCTION



CH2M HILL

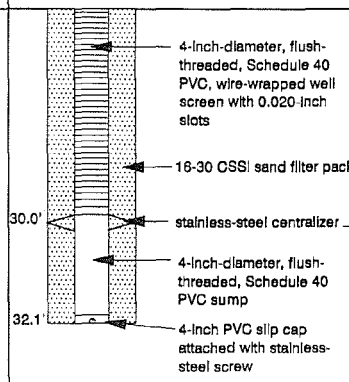
MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

PROJECT NUMBER	WELL NUMBER	SHEET 2 OF 2
NPE35051.A5	MW-15	

PROJECT RHONE-POULENC MONITORING WELLS
LOCATION RHONE-POULENC INC., TUKWILA, WA
ELEVATION (TOP OF WELL CASING) 15.59 FT. (NGVD)
SURFACE ELEVATION 14.3 FT. (NGVD)
WATER-LEVEL ELEVATION
START DATE AUGUST 8, 1994
DRILLING CONTRACTOR TACOMA PUMP AND DRILLING
FINISH DATE AUGUST 9, 1994
DRILLING METHOD HOLLOW-STEM AUGER, MOBILE DRILL B-61, 6.5" ID AUGERS
HYDROGEOLOGIST D. KUNKEL

DEPTH (FT.)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT.)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)
25	X	5 S.S.	0.2	hammer cable broke	25-26.5 FT. wood debris in sampler, no soil returns
30	X	6 S.S.	1.5	3-20/5" N=	30-31.5 FT. POORLY GRADED SAND (SP) gray, wet, medium-dense, fine to medium sand, trace of non-plastic silt
					TOTAL DEPTH 34 FEET BELOW GROUND SURFACE
35					
40					
45					
50					

WELL CONSTRUCTION



CH2M HILL

MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

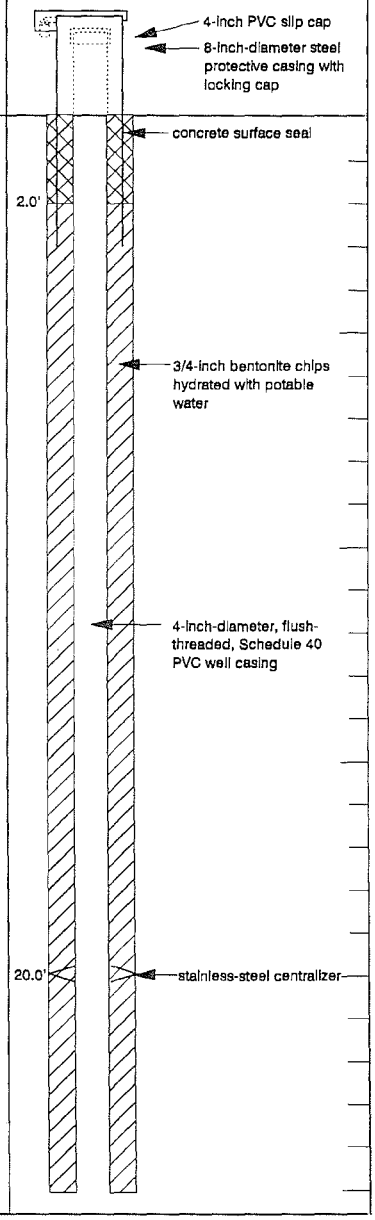
PROJECT NUMBER	WELL NUMBER	SHEET 1 OF 3
NPE35051.A5	MW-16	

PROJECT RHONE-POULENC MONITORING WELLS
ELEVATION (TOP OF WELL CASING) 15.72 FT. (NGVD)
WATER-LEVEL ELEVATION
DRILLING CONTRACTOR TACOMA PUMP AND DRILLING
DRILLING METHOD HOLLOW-STEM AUGER, MOBILE DRILL B-61, 6.5" ID AUGERS

LOCATION RHONE-POULENC INC., TUKWILA, WA
SURFACE ELEVATION 14.3 FT. (NGVD)
START DATE AUGUST 9, 1994
FINISH DATE AUGUST 10, 1994
HYDROGEOLOGIST D. KUNKEL

DEPTH (FT.)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT.)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
					0-4 IN. CONCRETE 4 IN.-5 FT. POORLY GRADED SAND WITH GRAVEL (SP) gray, moist, fine to medium sand, gravel is subangular to subrounded, trace of red sand grains
5	X	1 S.S.	1.2	2-2-2 N=4	5-6.0 FT. SILT (ML) gray-brown, moist to wet, soft, non-plastic silt with roots and some sand, old soil horizon 6-6.5 FT. SILTY SAND (SM) gray-brown, moist, very loose, fine to medium sand, trace of red sand grains
10	X	2 S.S.	1.1	9-10-8 N=18	10-11.5 FT. POORLY GRADED SAND (SP) gray-brown to gray, moist, medium-dense, fine to medium sand, up to 5% non-plastic brown silt, trace of red sand grains
15	X	3 S.S.	0.9	6-6-5 N=11	15-16.5 FT. POORLY GRADED SAND (SP) gray-brown to gray, wet, medium-dense, fine to medium sand, trace of silt, trace of red sand grains
20	X	4 S.S.	1.3	3-6-9 N=15	20-21.5 FT. POORLY GRADED SAND (SP) same as above
25					

WELL CONSTRUCTION



CH2M HILL

MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

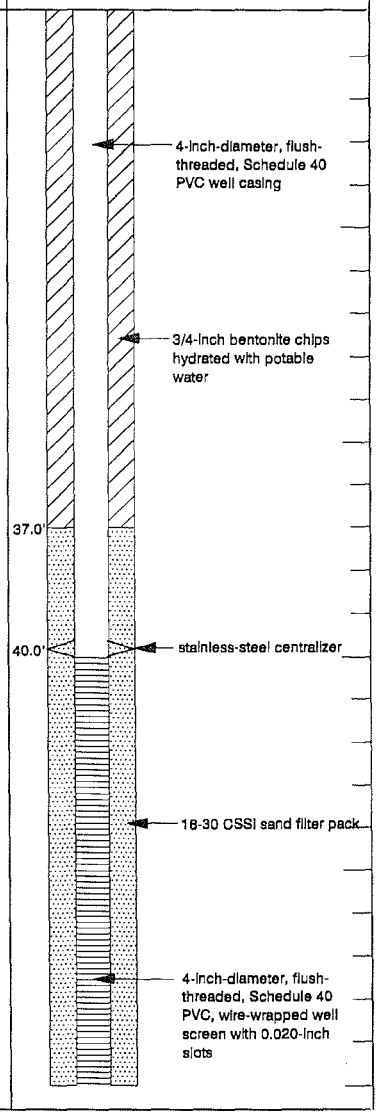
PROJECT NUMBER	WELL NUMBER	SHEET 2 OF 3
NPE35051.A5	MW-16	

PROJECT RHONE-POULENC MONITORING WELLS
ELEVATION (TOP OF WELL CASING) 15.72 FT. (NGVD)
WATER-LEVEL ELEVATION
DRILLING CONTRACTOR TACOMA PUMP AND DRILLING
DRILLING METHOD HOLLOW-STEM AUGER, MOBILE DRILL B-61, 6.5" ID AUGERS

LOCATION RHONE-POULENC INC., TUKWILA, WA
SURFACE ELEVATION 14.3 FT. (NGVD)
START DATE AUGUST 9, 1994
FINISH DATE AUGUST 10, 1994
HYDROGEOLOGIST D. KUNKEL

DEPTH (FT.)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT.)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
25	X	5 S.S.	1.5	4-6-13 N=19	25-26.5 FT. POORLY GRADED SAND (SP) same as above
30	X	6 S.S.	0.9	1-1-2 N=3	30-31.5 FT. POORLY GRADED SAND (SP) same as above, loose due to heaving conditions
35	X	7 S.S.	1.5	3-10-12 N=22	35-36.5 FT. POORLY GRADED SAND (SP) same as above, medium-dense
40	X	8 S.S.	1.4	2-2-12 N=14	40-41.5 FT. POORLY GRADED SAND (SP) same as above
45	X	9 S.S.	1.5	4-2-3 N=5	45-45.5 FT. POORLY GRADED SAND (SP) same as above 45.5-46.5 FT. FAT CLAY (CH) gray-brown, wet, firm, plastic clay with silt, dilatent
	X	10 S.S.	1.2	3-8-6 N=14	47-48.5 FT. POORLY GRADED SAND (SP) gray, wet, medium-dense, fine to medium sand, trace of red sand grains
50					

WELL CONSTRUCTION



CH2M HILL

MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

PROJECT NUMBER	WELL NUMBER	SHEET 3 OF 3
NPE35051.A5	MW-16	

PROJECT RHONE-POULENC MONITORING WELLS
LOCATION RHONE-POULENC INC., TUKWILA, WA
ELEVATION (TOP OF WELL CASING) 15.72 FT. (NGVD)
SURFACE ELEVATION 14.3 FT. (NGVD)
WATER-LEVEL ELEVATION
START DATE AUGUST 9, 1994
DRILLING CONTRACTOR TACOMA PUMP AND DRILLING
FINISH DATE AUGUST 10, 1994
DRILLING METHOD HOLLOW-STEM AUGER, MOBILE DRILL B-61, 6.5" ID AUGERS
HYDROGEOLOGIST D. KUNKEL

DEPTH (FT.)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT.)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	WELL CONSTRUCTION
50	X	11 S.S.	1.2	7-7-6 N=13	50-50.5 FT. POORLY GRADED SAND (SP) same as above	50.0' stainless-steel centralizer
					50.5-60.5 FT. SILT (ML) gray, wet, stiff, slightly plastic silt, dilatent	4-inch-diameter, flush-threaded, Schedule 40 PVC sump
	X	12 S.S.	1.5	6-8-5 N=13	52.5-54 FT. SILT (ML) gray, wet, stiff, fine sand, slightly plastic silt, dilatent, interbeds of sandy silt	53.0' 4-inch PVC slip cap attached with stainless-steel screw
					TOTAL DEPTH 54 FEET BELOW GROUND SURFACE	
55						
60						
65						
70						
75						

CH2M HILL

MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

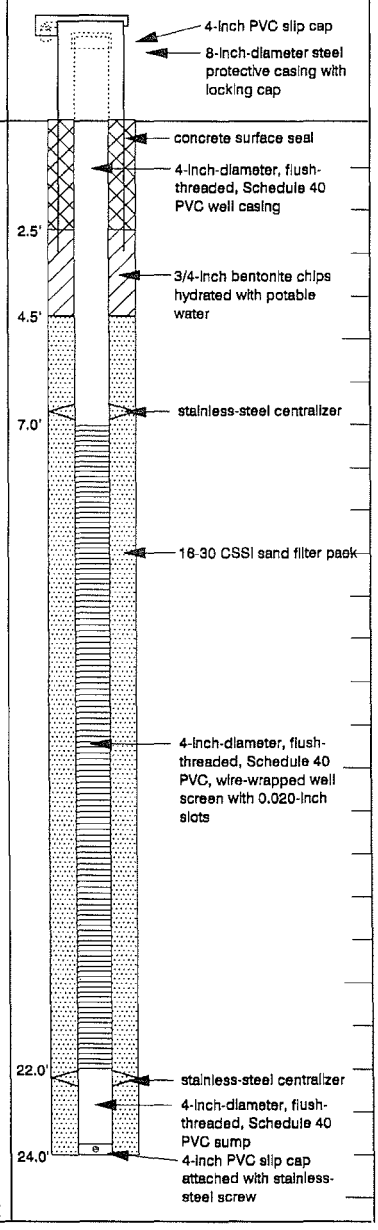
PROJECT NUMBER	WELL NUMBER	SHEET 1 OF 1
NPE35051.A5	MW-17	

PROJECT: RHONE-POULENC MONITORING WELLS
ELEVATION (TOP OF WELL CASING): 16.11 FT. (NGVD)
WATER-LEVEL ELEVATION:
DRILLING CONTRACTOR: TACOMA PUMP AND DRILLING
DRILLING METHOD: HOLLOW-STEM AUGER, MOBILE DRILL B-61, 6.5" ID AUGERS

LOCATION: RHONE-POULENC INC., TUKWILA, WA
SURFACE ELEVATION: 15.1 FT. (NGVD)
START DATE: AUGUST 10, 1994
FINISH DATE: AUGUST 10, 1994
HYDROGEOLOGIST: D. KUNKEL

DEPTH (FT.)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT.)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
0					0-2 IN. ASPHALT
5	X	1 S.S.	1.5	1-1-2 N=3	5-6.5 FT. POORLY GRADED SAND (SP) gray, moist, very loose, fine to medium sand with some thin silty interbeds, trace of red sand grains
10	X	2 S.S.	1.5	2-3-2 N=5	10-10.5 FT. POORLY GRADED SAND (SP) same as above 10.5-11.5 FT. SILT WITH SAND (ML) gray to gray-brown, wet, firm, slightly plastic silt with fine sand
15	X	3 S.S.	1.5	3-4-6 N=10	15-16.5 FT. POORLY GRADED SAND (SP) gray, wet, loose, fine to medium sand, trace of non-plastic silt, trace of red sand grains
20	X	4 SHELBY	0.0	PUSHED SAMPLER	20-22.5 FT. NO RECOVERY
25	X	5 S.S.	1.0	2-6-8 N=14	24-25.5 FT. POORLY GRADED SAND (SP) dark gray, wet, medium-dense, fine to medium sand, trace of non-plastic silt TOTAL DEPTH 25.5 FEET BELOW GROUND SURFACE

WELL CONSTRUCTION



CH2M HILL

MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

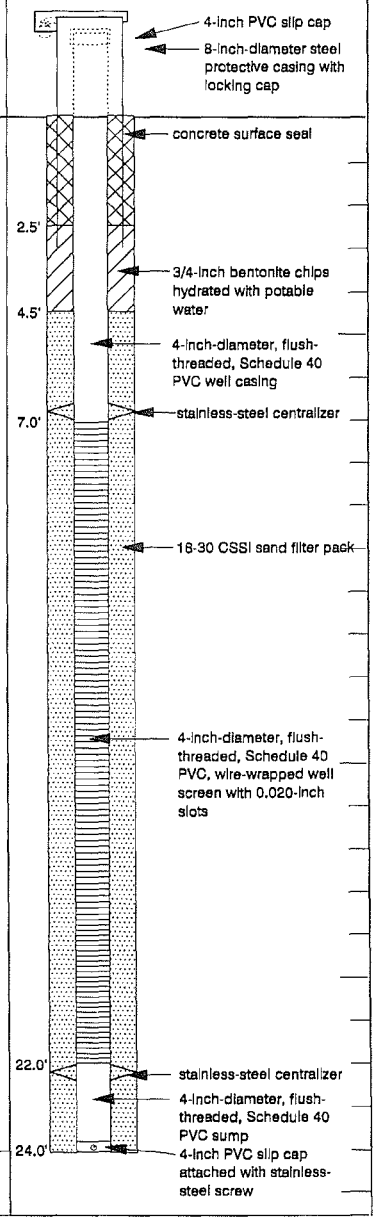
PROJECT NUMBER	WELL NUMBER	SHEET 1 OF 1
NPE35051.A5	MW-18	

PROJECT RHONE-POULENC MONITORING WELLS
ELEVATION (TOP OF WELL CASING) 15.30 FT. (NGVD)
WATER-LEVEL ELEVATION
DRILLING CONTRACTOR TACOMA PUMP AND DRILLING
DRILLING METHOD HOLLOW-STEM AUGER, MOBILE DRILL B-61, 6.5" ID AUGERS

LOCATION RHONE-POULENC INC., TUKWILA, WA
SURFACE ELEVATION 14.2 FT. (NGVD)
START DATE AUGUST 8, 1994
FINISH DATE AUGUST 8, 1994
HYDROGEOLOGIST D. KUNKEL

DEPTH (FT.)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT.)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
0					0-5 IN. ASPHALT 5 IN.-5 FT. POORLY GRADED SAND (SP) brown to gray, dry to moist, loose, fine to medium sand, up to 5% non-plastic silt, trace of red sand grains
5	X	1 S.S.	1.4	2-1-2 N=3	5-6.5 FT. POORLY GRADED SAND (SP) gray, moist, very loose, fine to medium sand, thin silty sand layer at 6 ft., silty sand layer is gray, moist, sand has up to 5% non-plastic silt
10	X	2 S.S.	1.4	7-5-7 N=12	10-11.5 FT. POORLY GRADED SAND (SP) gray, moist, medium-dense, fine to medium sand, trace of non-plastic silt, trace of red sand grains
15	X	3 S.S.	1.5	2-4-7 N=11	15-16.5 FT. POORLY GRADED SAND (SP) gray, wet, medium-dense, fine to medium sand, trace of non-plastic silt, trace of red sand grains, strong hydrocarbon odor
20	X	4 S.S.	1.5	2-8-17 N=25	20-21.5 FT. POORLY GRADED SAND (SP) gray, wet, medium-dense, fine to medium sand, trace of non-plastic silt, trace of red sand grains, slight hydrocarbon odor TOTAL DEPTH 24 FEET BELOW GROUND SURFACE
25					

WELL CONSTRUCTION



CH2M HILL

MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

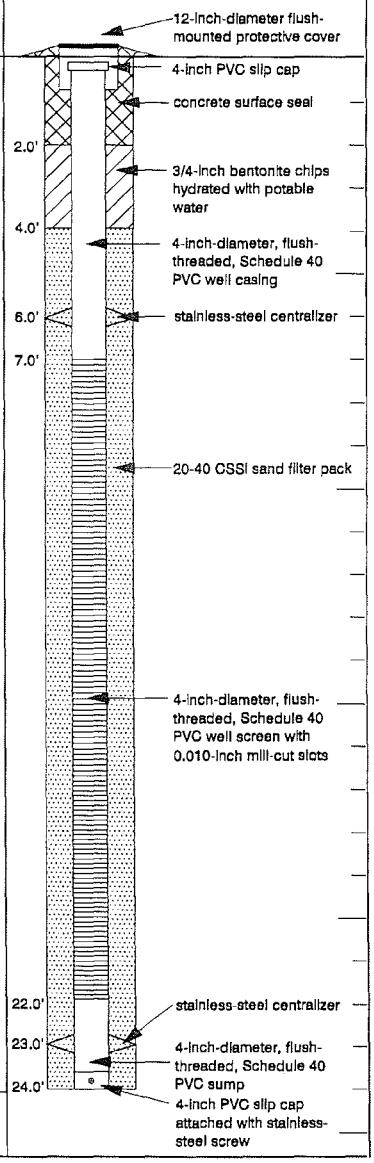
PROJECT NUMBER	WELL NUMBER	SHEET 1 OF 1
NPE35051.A5	MW-19	

PROJECT RHONE-POULENC MONITORING WELLS
ELEVATION (TOP OF WELL CASING) 13.59 FT. (NGVD)
WATER-LEVEL ELEVATION
DRILLING CONTRACTOR TACOMA PUMP AND DRILLING
DRILLING METHOD HOLLOW-STEM AUGER, MOBILE DRILL B-61, 6.5" ID AUGERS

LOCATION RHONE-POULENC INC., TUKWILA, WA
SURFACE ELEVATION 14.3 FT. (NGVD)
START DATE AUGUST 3, 1994
FINISH DATE AUGUST 4, 1994
HYDROGEOLOGIST D. KUNKEL

DEPTH (FT.)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT.)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)
0					0-1 FT. RAILROAD BALLAST 1-5 FT. POORLY GRADED SAND (SP) brown to gray, dry to moist, loose, fine to medium sand, up to 5% non-plastic silt, trace of red sand grains
5	X	1 S.S.	0.9	4-4-4 N=8	5-6.5 FT. SILTY SAND (SM) gray to gray-brown, moist, loose, fine sand with brown non-plastic silt, some railroad ballast in top portion of sampler
10	X	2 S.S.	0.4	8-12-5 N=17	10-11.5 FT. POORLY GRADED SAND (SP) gray, moist to almost wet, medium-dense, fine to medium sand, approximately 5 to 10% non-plastic silt, occasional silt stringers, slight hydrocarbon odor
15	X	3 S.S.	1.5	1-2-2 N=4	15-16.5 FT. POORLY GRADED SAND (SP) gray, wet, very loose, fine to medium sand, approximately 5 to 10% non-plastic silt, hydrocarbon odor, sheen on water
20	X	4 S.S.	1.5	5-15-20 N=35	20-21.5 FT. POORLY GRADED SAND (SP) gray, wet, dense, fine to medium sand, trace of non-plastic silt, no sheen or odor noted TOTAL DEPTH 24 FEET BELOW GROUND SURFACE
25					

WELL CONSTRUCTION



CH2M HILL

MONITORING WELL GEOLOGIC & CONSTRUCTION LOG

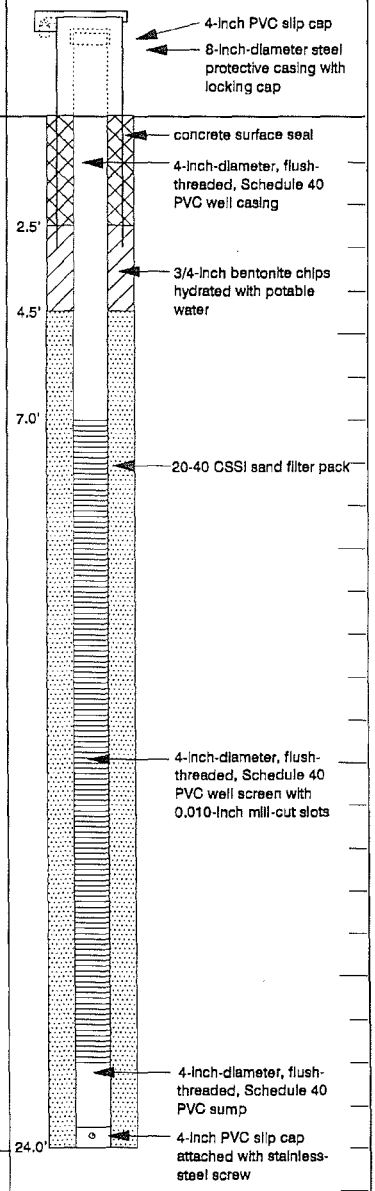
PROJECT NUMBER	WELL NUMBER	SHEET 1 OF 1
NPE35051.A5	MW-20	

PROJECT RHONE-POULENC MONITORING WELLS
ELEVATION (TOP OF WELL CASING) 15.69 FT. (NGVD)
WATER-LEVEL ELEVATION
DRILLING CONTRACTOR TACOMA PUMP AND DRILLING
DRILLING METHOD HOLLOW-STEM AUGER, MOBILE DRILL B-61, 6.5" ID AUGERS

LOCATION RHONE-POULENC INC., TUKWILA, WA
SURFACE ELEVATION 14.3 FT. (NGVD)
START DATE AUGUST 3, 1994
FINISH DATE AUGUST 3, 1994
HYDROGEOLOGIST D. KUNKEL

DEPTH (FT.)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT.)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY
0					0-0.5 FT. POORLY GRADED GRAVEL (GP) gray-brown, dry, loose, fill material, gravel is subangular to angular, up to 2 inches in diameter 0.5-5 FT. POORLY GRADED SAND (SP) brown, moist, loose, fine to medium sand, trace of non-plastic brown silt
5	X	1 S.S.	0.9	1-1-3 N=4	5-5.5 FT. POORLY GRADED SAND (SP) same as above but wet 5.5-6.5 FT. SILT (ML) gray, wet, soft, becomes moist at approximately 6 ft., silt is slightly plastic, some fine sand in the silt
10	X	2 S.S.	1.4	5-10-10 N=20	10-11.5 FT. POORLY GRADED SAND (SP) gray, moist, medium-dense, fine to medium sand, trace of non-plastic silt, trace of red sand grains
15	X	3 S.S.	1.5	3-5-7 N=12	15-16.5 FT. POORLY GRADED SAND (SP) same as above but wet
20	X	4 S.S.	1.5	5-6-20 N=26	20-21.5 FT. POORLY GRADED SAND (SP) same as above TOTAL DEPTH 24 FEET BELOW GROUND SURFACE
25					

WELL CONSTRUCTION



APPENDIX G

RFI Survey Data

Survey Data
Rhone-Poulenc RFI

Type of Boring or Sample Location	Boring, Well, or Station No.	Investigation Area	Horizontal Control (1)		Vertical Control (2)		
			Northing	Easting	Top of Well Casing Elev	Ground Surface Elev	Top of Protective Casing Elev
Air Sample	A04-AM-01	AREA-04	4,631.3	20,468.3			
Air Sample	A08-AM-01	AREA-08	4,638.5	21,034.2			
HydroPunch Boring	A01-26	AREA-01	4,707.1	20,364.5		14.5	
HydroPunch Boring	A04-01	AREA-04	4,569.4	20,563.9		13.9	
HydroPunch Boring	A04-02	AREA-04	4,581.9	20,589.6		14.1	
HydroPunch Boring	A04-03	AREA-04	4,627.4	20,463.1		14.3	
HydroPunch Boring	A04-04	AREA-04	4,627.4	20,509.5		14.1	
HydroPunch Boring	A04-05	AREA-04	4,627.4	20,557.7		14.3	
HydroPunch Boring	A04-06	AREA-04	4,628.7	20,593.0		14.4	
HydroPunch Boring	A04-07	AREA-04	4,627.2	20,652.5		14.5	
HydroPunch Boring	A04-08	AREA-04	4,625.0	20,706.2		14.1	
HydroPunch Boring	A04-09	AREA-04	4,682.7	20,512.6		14.3	
HydroPunch Boring	A04-10	AREA-04	4,682.6	20,562.3		14.3	
HydroPunch Boring	A04-11	AREA-04	4,683.2	20,593.4		14.4	
HydroPunch Boring	A04-12	AREA-04	4,678.9	20,648.2		14.2	
HydroPunch Boring	A04-13	AREA-04	4,681.7	20,701.8		13.9	
HydroPunch Boring	A04-14	AREA-04	4,522.8	20,559.2		13.9	
HydroPunch Boring	A04-15	AREA-04	4,625.1	20,754.4		14.0	
HydroPunch Boring	A04-16	AREA-04	4,626.1	20,414.8		15.1	
HydroPunch Boring	A04-17	AREA-04	4,518.9	20,589.1		14.8	
HydroPunch Boring	A04-18	AREA-04	4,469.1	20,556.2		14.3	
HydroPunch Boring	A04-21	AREA-04	4,503.0	20,656.2		14.9	
HydroPunch Boring	A04-23	AREA-04	4,682.2	20,416.7		14.4	
HydroPunch Boring	A04-27	AREA-04	4,680.7	20,665.2		13.9	
HydroPunch Boring	A04-28	AREA-04	4,626.5	20,518.4		14.0	
HydroPunch Boring	A04-29	AREA-04	4,569.5	20,567.4		13.8	
HydroPunch Boring	A05-19	AREA-05	4,471.8	20,463.8		14.8	
HydroPunch Boring	A05-20	AREA-05	4,523.8	20,412.1		15.2	
HydroPunch Boring	A05-22	AREA-05	4,625.4	20,368.2		14.8	
HydroPunch Boring	A05-24	AREA-05	4,561.7	20,479.9		14.3	
HydroPunch Boring	A05-25	AREA-05	4,412.5	20,416.0		15.0	
Monitoring Well	DM-01A	AREA-BG	4,776.4	21,565.0	13.15	14.0	14.1
Monitoring Well	DM-01B	AREA-BG	4,776.4	21,565.0	13.55	14.0	14.1
Monitoring Well	DM-02A	AREA-05	4,373.2	20,373.7	15.95	14.0	16.4

Monsanto Company 104(e) Response

Monsanto 2A001825

Survey Data
Rhone-Poulenc RFI

Type of Boring or Sample Location	Boring, Well, or Station No.	Investigation Area	Horizontal Control (1)		Vertical Control (2)		
			Northing	Easting	Top of Well Casing Elev	Ground Surface Elev	Top of Protective Casing Elev
Monitoring Well	DM-02B	AREA-05	4,373.2	20,373.7	16.15	14.0	16.4
Monitoring Well	DM-03A	AREA-01	4,972.7	20,291.9	14.00	14.3	14.6
Monitoring Well	DM-03B	AREA-01	4,972.7	20,291.9	14.10	14.3	14.6
Monitoring Well	DM-04	AREA-02	4,868.8	20,591.3	14.17	14.4	14.8
Monitoring Well	DM-05	AREA-02	4,785.9	20,758.8	16.17	14.5	16.7
Monitoring Well	DM-06	AREA-08	4,596.6	21,045.7	14.72	14.1	15.1
Monitoring Well	DM-07	AREA-06	4,477.4	20,613.8	13.95	14.3	14.7
Monitoring Well	DM-08	AREA-05	4,558.1	20,301.6	16.92	17.2	17.2
Monitoring Well	MW-12	AREA-04	4,627.4	20,603.5	13.75	14.5	14.6
Monitoring Well	MW-13	AREA-04	4,636.1	20,473.2	13.76	14.3	14.3
Monitoring Well	MW-14	AREA-04	4,629.1	20,405.0	16.37	15.1	17.1
Monitoring Well	MW-15	AREA-05	4,558.8	20,476.8	15.59	14.3	16.3
Monitoring Well	MW-16	AREA-05	4,553.0	20,480.3	15.72	14.3	16.2
Monitoring Well	MW-17	AREA-05	4,510.6	20,436.2	16.11	15.1	17.0
Monitoring Well	MW-18	AREA-04	4,517.5	20,547.0	15.30	14.2	16.2
Monitoring Well	MW-19	AREA-04	4,624.7	20,695.7	13.59	14.3	14.4
Monitoring Well	MW-20	AREA-02	4,682.4	20,543.0	15.69	14.3	16.4
Monitoring Well	MW-A02	AREA-01	4,970.8	20,368.0	14.44	14.7	14.9
Monitoring Well	MW-A04	AREA-09	4,989.6	20,583.4	14.99	15.3	15.2
Monitoring Well	MW-A09	AREA-01	4,755.2	20,299.6	15.24	15.0	15.4
Monitoring Well	MW-B01A	AREA-09	4,962.0	20,787.7	15.17	15.6	15.6
Monitoring Well	MW-B01B	AREA-09	4,968.8	20,769.5	14.77	15.1	15.1
Monitoring Well	MW-B02	AREA-02	4,855.0	20,754.4	15.65	14.1	16.3
Monitoring Well	MW-B04	AREA-02	4,770.9	20,621.8	16.35	14.6	16.7
Monitoring Well	MW-B05	AREA-02	4,712.5	20,883.4	13.86	14.1	14.1
Monitoring Well	MW-B06	AREA-02	4,703.4	20,721.7	13.82	14.2	14.2
Monitoring Well	MW-C01	AREA-03	4,931.3	21,052.0	14.75	15.0	15.0
Monitoring Well	MW-E03	AREA-BG	4,589.8	21,756.2	14.57	14.8	14.9
Monitoring Well	MW-G01	AREA-07	4,507.7	20,861.4	13.04	13.4	13.4
Monitoring Well	MW-G03	AREA-06	4,567.3	20,811.9	13.63	13.8	14.0
Monitoring Well	MW-H01	AREA-04	4,570.2	20,559.1	14.26	13.9	14.6
Monitoring Well	MW-H06	AREA-05	4,339.8	20,432.1	16.20	14.3	16.5
Monitoring Well	MW-H09	AREA-06	4,397.1	20,573.7	13.51	13.7	14.1
Monitoring Well	MW-H10	AREA-04	4,581.5	20,558.8	13.71	14.0	14.6

Monsanto Company 104(e) Response

Monsanto 2A001826

Survey Data
Rhone-Poulenc RFI

Type of Boring or Sample Location	Boring, Well, or Station No.	Investigation Area	Horizontal Control (1)		Vertical Control (2)		
			Northing	Easting	Top of Well Casing Elev	Ground Surface Elev	Top of Protective Casing Elev
Monitoring Well	MW-H11	AREA-04	4,640.3	20,473.5	14.12	14.4	14.4
Sediment Sample	A11-01	AREA-11	4,213.4	20,328.9		-7.1	
Sediment Sample	A11-02	AREA-11	4,275.4	20,242.6		-1.7	
Sediment Sample	A11-03	AREA-11	4,360.5	20,721.3		-0.6	
Sediment Sample	A11-04	AREA-11	4,469.3	20,159.0		-3.6	
Sediment Sample	A11-05	AREA-11	4,574.0	20,199.6		-1.7	
Sediment Sample	A11-06	AREA-11	4,810.6	20,109.7		-2.7	
Sediment Sample	A11-07	AREA-11	4,940.8	20,089.1		-2.1	
Soil Sample	A01-01	AREA-01	4,716.5	20,294.4		14.6	
Soil Sample	A01-02	AREA-01	4,858.3	20,271.4		14.6	
Soil Sample	A01-03	AREA-01	4,795.3	20,360.2		14.9	
Soil Sample	A01-04	AREA-01	4,998.3	20,236.6		13.6	
Soil Sample	A01-05	AREA-01	4,941.9	20,328.2		14.4	
Soil Sample	A01-06	AREA-01	4,878.9	20,414.3		14.8	
Soil Sample	A01-07	AREA-01	4,954.8	20,493.0		15.2	
Soil Sample	A02-01	AREA-02	4,717.2	20,544.3		14.8	
Soil Sample	A02-02	AREA-02	4,684.3	20,655.7		14.2	
Soil Sample	A02-03	AREA-02	4,652.5	20,789.3		13.9	
Soil Sample	A02-04	AREA-02	4,836.3	20,558.8		14.3	
Soil Sample	A02-05	AREA-02	4,798.1	20,695.2		14.1	
Soil Sample	A02-06	AREA-02	4,778.9	20,828.1		14.2	
Soil Sample	A02-07	AREA-02	4,916.1	20,734.1		14.9	
Soil Sample	A02-08	AREA-02	4,795.6	20,558.1		14.1	
Soil Sample	A02-09	AREA-02	4,758.9	20,617.5		14.7	
Soil Sample	A02-10	AREA-02	4,741.4	20,672.4		14.4	
Soil Sample	A02-11	AREA-02	4,805.8	20,629.3		14.3	
Soil Sample	A02-12	AREA-02	4,857.5	20,724.0		14.1	
Soil Sample	A02-13	AREA-02	4,872.8	20,669.9		14.3	
Soil Sample	A02-14	AREA-02	4,879.2	20,607.7		14.7	
Soil Sample	A03-01	AREA-03	4,657.4	20,954.1		14.2	
Soil Sample	A03-02	AREA-03	4,786.5	20,939.5		14.6	
Soil Sample	A03-03	AREA-03	4,679.1	21,052.3		14.1	
Soil Sample	A03-04	AREA-03	4,864.0	20,990.5		15.2	
Soil Sample	A03-05	AREA-03	4,815.1	21,056.7		14.8	

Monsanto Company 104(e) Response

Monsanto 2A001827

Survey Data
Rhone-Poulenc RFI

Type of Boring or Sample Location	Boring, Well, or Station No.	Investigation Area	Horizontal Control (1)		Vertical Control (2)		
			Northing	Easting	Top of Well Casing Elev	Ground Surface Elev	Top of Protective Casing Elev
Soil Sample	A03-06	AREA-03	4,933.4	21,032.6		14.9	
Soil Sample	A03-07	AREA-03	4,823.7	21,181.0		13.7	
Soil Sample	A03-08	AREA-03	4,786.5	20,939.5		14.6	
Soil Sample	A03-09	AREA-03	4,864.0	20,990.5		15.2	
Soil Sample	A04-01	AREA-04	4,569.4	20,563.9		13.9	
Soil Sample	A04-02	AREA-04	4,581.9	20,589.6		14.1	
Soil Sample	A04-03	AREA-04	4,627.4	20,463.1		14.3	
Soil Sample	A04-04	AREA-04	4,627.4	20,509.5		14.1	
Soil Sample	A04-05	AREA-04	4,627.4	20,557.7		14.3	
Soil Sample	A04-06	AREA-04	4,628.7	20,593.0		14.4	
Soil Sample	A04-07	AREA-04	4,627.2	20,652.5		14.5	
Soil Sample	A04-08	AREA-04	4,625.0	20,706.2		14.1	
Soil Sample	A04-09	AREA-04	4,682.7	20,512.6		14.3	
Soil Sample	A04-10	AREA-04	4,682.6	20,562.3		14.3	
Soil Sample	A04-11	AREA-04	4,683.2	20,593.4		14.4	
Soil Sample	A04-12	AREA-04	4,678.9	20,648.2		14.2	
Soil Sample	A04-13	AREA-04	4,681.7	20,701.8		13.9	
Soil Sample	A04-14	AREA-04	4,522.8	20,559.2		13.9	
Soil Sample	A04-23	AREA-04	4,682.2	20,416.7		14.4	
Soil Sample	A04-30	AREA-04	4,630.7	20,412.0		14.9	
Soil Sample	A04-31	AREA-04	4,510.5	20,546.8		14.2	
Soil Sample	A05-01	AREA-05	4,341.0	20,429.9		14.3	
Soil Sample	A05-02	AREA-05	4,523.0	20,278.8		12.3	
Soil Sample	A05-03	AREA-05	4,477.3	20,376.4		14.4	
Soil Sample	A05-04	AREA-05	4,437.3	20,470.8		14.7	
Soil Sample	A05-05	AREA-05	4,636.8	20,234.2		12.3	
Soil Sample	A05-06	AREA-05	4,609.1	20,325.3		14.6	
Soil Sample	A05-07	AREA-05	4,574.2	20,422.0		15.4	
Soil Sample	A05-10	AREA-05	4,482.2	20,471.1		14.4	
Soil Sample	A05-11	AREA-05	4,516.0	20,437.0		15.0	
Soil Sample	A05-12	AREA-05	4,545.4	20,428.2		14.9	
Soil Sample	A05-13	AREA-05	4,555.3	20,468.0		14.2	
Soil Sample	A05-14	AREA-05	4,529.1	20,383.0		14.8	
Soil Sample	A05-24	AREA-05	4,561.7	20,479.9		14.3	

Monsanto Company 104(e) Response

Monsanto 2A001828

Survey Data
Rhone-Poulenc RFI

Type of Boring or Sample Location	Boring, Well, or Station No.	Investigation Area	Horizontal Control (1)		Vertical Control (2)		
			Northing	Easting	Top of Well Casing Elev	Ground Surface Elev	Top of Protective Casing Elev
Soil Sample	A06-01	AREA-06	4,412.1	20,574.2		14.1	
Soil Sample	A06-02	AREA-06	4,537.2	20,558.9		14.0	
Soil Sample	A06-03	AREA-06	4,490.2	20,627.0		14.6	
Soil Sample	A06-04	AREA-06	4,559.2	20,671.1		18.3	
Soil Sample	A06-05	AREA-06	4,506.6	20,731.0		14.7	
Soil Sample	A06-06	AREA-06	4,599.5	20,773.4		14.1	
Soil Sample	A06-07	AREA-06	4,619.6	20,853.3		14.3	
Soil Sample	A07-02	AREA-07	4,311.3	20,489.2		13.4	
Soil Sample	A07-03	AREA-07	4,368.2	20,600.4		13.2	
Soil Sample	A07-04	AREA-07	4,421.4	20,650.2		13.8	
Soil Sample	A07-05	AREA-07	4,471.5	20,757.8		13.2	
Soil Sample	A07-06	AREA-07	4,545.1	20,791.4		13.8	
Soil Sample	A07-07	AREA-07	4,510.3	20,866.2		13.3	
Soil Sample	A07-08	AREA-07	4,299.6	20,442.0		13.3	
Soil Sample	A08-01	AREA-08	4,593.8	20,984.0		14.4	
Soil Sample	A08-02	AREA-08	4,640.2	21,028.4		14.3	
Soil Sample	A08-03	AREA-08	4,596.4	21,069.5		14.5	
Soil Sample	A08-04	AREA-08	4,641.7	21,108.2		14.9	
Soil Sample	A08-05	AREA-08	4,602.5	21,151.9		13.9	
Soil Sample	A08-06	AREA-08	4,684.5	21,149.7		14.3	
Soil Sample	A08-07	AREA-08	4,648.2	21,193.5		15.2	
Soil Sample	A09-01	AREA-09	4,930.3	20,545.9		15.3	
Soil Sample	A09-02	AREA-09	4,986.2	20,596.4		15.4	
Soil Sample	A09-03	AREA-09	4,937.3	20,627.8		15.1	
Soil Sample	A09-04	AREA-09	4,945.4	20,723.0		14.9	
Soil Sample	A09-05	AREA-09	4,987.6	20,906.4		15.6	
Soil Sample	A09-06	AREA-09	4,998.6	20,995.5		15.2	
Soil Sample	A09-07	AREA-09	4,957.1	21,055.1		15.6	
Soil Sample	A09-08	AREA-09	4,965.4	20,653.6		15.5	
Soil Sample	A10-MS	AREA-10	4,418.5	20,556.5		14.2	
Soil Sample	A10A201	AREA-10	4,804.7	20,677.2		13.8	
Soil Sample	A10A202	AREA-10	4,806.6	20,668.6		14.0	
Soil Sample	A10A203	AREA-10	4,821.5	20,671.5		14.1	
Soil Sample	A10A204	AREA-10	4,818.8	20,678.6		13.9	

Monsanto Company 104(e) Response

Monsanto 2A001829

Survey Data
Rhone-Poulenc RFI

Type of Boring or Sample Location	Boring, Well, or Station No.	Investigation Area	Horizontal Control (1)		Vertical Control (2)		
			Northing	Easting	Top of Well Casing Elev	Ground Surface Elev	Top of Protective Casing Elev
Soil Sample	A10A601	AREA-10	4,588.2	20,820.6		14.2	
Soil Sample	A10A602	AREA-10	4,592.4	20,814.2		14.2	
Soil Sample	A10A603	AREA-10	4,610.5	20,815.0		14.2	
Soil Sample	A10A604	AREA-10	4,612.6	20,824.8		14.4	
Soil Sample	A10CR01	AREA-10	4,532.6	20,907.1		13.3	
Soil Sample	A10CR02	AREA-10	4,525.9	20,862.6		13.9	
Soil Sample	A10CR03	AREA-10	4,560.2	20,884.4		13.9	
Soil Sample	A10CR04	AREA-10	4,567.7	20,935.3		14.8	
Soil Sample	A10CS01	AREA-10	4,587.6	20,799.7		14.1	
Soil Sample	A10CS02	AREA-10	4,588.1	20,782.8		14.2	
Soil Sample	A10CS03	AREA-10	4,607.1	20,786.0		14.2	
Soil Sample	A10CS04	AREA-10	4,604.5	20,799.7		13.9	
Soil Sample	A10MS01	AREA-10	4,388.4	20,554.2		14.3	
Soil Sample	A10MS02	AREA-10	4,386.6	20,534.1		14.7	
Soil Sample	A10MS03	AREA-10	4,420.2	20,538.3		14.4	
Soil Sample	ABG-01	AREA-BG	4,582.6	21,620.5		13.8	
Soil Sample	ABG-02	AREA-BG	4,680.7	21,720.7		13.7	
Soil Sample	ABG-03	AREA-BG	4,636.5	21,368.4		14.6	
Soil Sample	ABG-04	AREA-BG	4,735.8	21,514.7		14.2	
Soil Sample	ABG-05	AREA-BG	4,816.9	21,632.3		14.0	
Soil Sample	ABG-06	AREA-BG	4,777.8	21,272.0		14.8	
Soil Sample	ABG-07	AREA-BG	4,887.2	21,417.0		13.5	
Soil Sample	MS-01	AREA-06	4,514.8	20,621.4		15.3	
Soil Sample	MS-02	AREA-06	4,505.2	20,638.5		15.1	
Soil Sample	MS-03	AREA-06	4,495.3	20,656.1		14.4	
Soil Sample	MS-04	AREA-06	4,485.1	20,673.2		13.5	
Soil Sample	MS-05	AREA-06	4,512.7	20,597.7		15.0	
Soil Sample	MS-06	AREA-06	4,500.3	20,616.5		14.9	
Soil Sample	MS-07	AREA-06	4,492.1	20,627.5		14.8	
Soil Sample	MS-08	AREA-06	4,491.1	20,630.9		14.8	
Soil Sample	MS-09	AREA-06	4,487.6	20,626.3		14.6	
Soil Sample	MS-10	AREA-06	4,486.1	20,629.2		14.5	
Soil Sample	MS-11	AREA-06	4,478.5	20,643.8		14.0	
Soil Sample	MS-12	AREA-06	4,466.2	20,659.3		13.9	

Monsanto Company 104(e) Response

Monsanto 2A001830

Survey Data
Rhone-Poulenc RFI

Type of Boring or Sample Location	Boring, Well, or Station No.	Investigation Area	Horizontal Control (1)		Vertical Control (2)		
			Northing	Easting	Top of Well Casing Elev	Ground Surface Elev	Top of Protective Casing Elev
Soil Sample	MS-13	AREA-06	4,496.1	20,582.6		14.2	
Soil Sample	MS-14	AREA-06	4,484.2	20,598.6		14.5	
Soil Sample	MS-15	AREA-06	4,472.9	20,615.0		14.2	
Soil Sample	MS-16	AREA-06	4,461.5	20,631.6		14.2	
Soil Sample	MS-17	AREA-06	4,479.4	20,572.9		13.9	
Soil Sample	MS-18	AREA-06	4,467.6	20,588.1		13.9	
Soil Sample	MS-19	AREA-06	4,455.9	20,604.4		14.2	
Soil Sample	MS-20	AREA-06	4,445.8	20,619.5		14.2	
Soil Sample	MS-21	AREA-06	4,455.9	20,556.1		13.9	
Soil Sample	MS-22	AREA-06	4,448.1	20,575.1		13.8	
Soil Sample	MS-23	AREA-06	4,439.8	20,592.9		14.2	
Soil Sample	MS-24	AREA-06	4,431.1	20,611.3		14.0	
Soil Sample	MS-25	AREA-06	4,440.1	20,545.9		13.8	
Soil Sample	MS-26	AREA-06	4,431.6	20,563.9		14.0	
Soil Sample	MS-27	AREA-06	4,423.0	20,581.9		13.8	
Soil Sample	MS-28	AREA-06	4,415.6	20,600.0		13.2	
Soil Sample	MS-29	AREA-06	4,413.2	20,573.3		13.9	
Soil Sample	MS-30	AREA-06	4,411.5	20,576.6		13.6	
Soil Sample	MS-31	AREA-06	4,410.5	20,571.7		13.6	
Soil Sample	MS-32	AREA-06	4,408.8	20,574.9		13.4	
Soil Sample	MS-33	AREA-06	4,405.9	20,571.2		13.3	
Soil Sample	MS-34	AREA-06	4,400.1	20,588.5		13.8	

(1) Horizontal control is referenced to a site-specific survey datum.

(2) Referenced to the National Geodetic Vertical Datum of 1929 (NGVD 1929).

Monsanto Company 104(e) Response

Monsanto 2A001831

APPENDIX H

Results of Physical Property Tests for Soil

ETC/Northwest

Level CWetMisc

DATA PACKAGE

Inorganic Sample Results and QC Summary Forms

Miscellaneous Wet Chemistry

1. SAMPLE RESULTS AND QC SUMMARY
   - Results - Inorganic Analysis Data Sheets
   - Preparation Blank Results
   - Spike Sample Recovery [Spike Sample Duplicate (if applicable)]
   - Duplicates
   - Laboratory Control Sample [Laboratory Control Sample Duplicate (if applicable)]

Analytical Results - Conventional Parameters
ETC/NORTHWEST

Client ID: A04-06-07
Description: NA
ETC/Gulf South ID: QGX-001
Matrix: Soil
Wet/Dry Basis: Dry

Collected: 03/01/94
Received: 03/01/94
Prepared: see below
Analyzed: see below
Percent Moisture: 22

Parameter	Method	Units	Sample	Blank	Detection Limit	Date Prepared	Date Analyzed
CEC	SW 9081	meq/100g	4.12	ND	0.50	03/24/94	03/25/94

ND-Not Detected at or above the detection limit stated.

QA/QC SUMMARY

CONVENTIONAL PARAMETERS

PARAMETER	Matrix/Blank Spike Level	Digestate Blank Det'n Limits	Units	Blank Conc.	Spike Recovery (%) Matrix	Blank	Replicate Precision RPD	QC Batch #
CEC	NA	0.50	meq/100g	ND	NA	NA	19.7	7300

Joblin... 810578

DATA SUMMARY REPORT

DATE: 03/11/94

PAGE: 1

Company: ETC - NORTHWEST

Sample Point ID: A04-06-07
ETC Sample Number: MF3612
Sample Date: 940301
Facility Code: ETCREDMR-P

Parameters	Units	
CONVENTIONALS (AR55)		
Moisture	%	22.0
CONVENTIONALS (SR55)		
Total Organic Carbon	mg/kg	310

4003

Monsanto Company 104(e) Response

MA , 1994.

TABLE 1: QUANTITATIVE RESULTS DATA

CONVENTIONALS (SR55)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Joblink
MF3612	ETC - NORTHWEST	ETCREDMR-P S	A04-06-07	940301	810578

Compound	Results				Prep Date	Analysis Date	
	Sample Concen. mg/kg	Report DL mg/kg	Blank Concen. mg/kg	Batch #			
Total Organic Carbon	318	12.8	ND	QRZ10357		940311	
Total Organic Carbon	310	12.8	ND	QRZ10357		940311	

- Total Organic Carbon: Result reported on a dry-weight basis.

4004

Monsanto Company 104(e) Response

TABLE 1: QUALITY ASSURANCE DATA

CONVENTIONALS (SR55)

M[illegible], 1994

Chain of Custody Data Required for ETC Data Management Summary Reports

See Below

ETC Batch No.

Compound	QC Blank and Spiked Data			QC Matrix Spike			QC Duplicate			
	Blank Concen. mg/kg	Concen. Added mg/kg	% Recov	Unspiked Sample mg/kg	Concen. Added mg/kg	% Recov	First mg/kg	Second mg/kg	RPD	Batch #
Total Organic Carbon	ND	2000	97	242	722	101	970	939	3	QRZ10357

4005

HWA
HONG WEST
& ASSOCIATES, INC.

Geotechnical Engineering
Hydrogeology
Geoenvironmental Services
Testing & Inspection

LABORATORY TESTING RESULT SUMMARY

Rhone-Poulenc Project, Client P.O. No. 50553
HWA project # 94024
March 23, 1994

Prepared for

ETC Northwest, Inc.
6645 185th Ave. NE., Suite 100
Redmond, Washington, 98052

Attention: Mr. Jaime Bruton

The samples were submitted by Ms. Sally Gough of ETC Northwest, Inc., on 3-5 and 3-7-94. The testing was conducted in accordance with the Clients request and the following specifications. The test results are summarized on the accompanying data table and grain size data sheets.

Grain Size Analysis: The grain size distribution of specified soil samples were determined in accordance with **ASTM D 422 - Hydrometer method**. The data is presented on the distribution curves which are attached.

Bulk Density/Dry Unit Weight: The bulk density/dry unit weight of a specified soil sample was determined in accordance with **ASTM D 2937.** The data is presented in Table 1

Soil Specific Gravity: The specific gravity of a specified soil sample was determined in accordance with ASTM D 854. The data is presented in Table 1.

Hydraulic Conductivity of Soil: The hydraulic conductivity of one relatively undisturbed soil sample was determined in accordance with **ASTM D 5084.** The sample was extruded and trimmed prior to mounting within a triaxial pressure chamber. Saturation was induced by subjecting the material to a flow gradient of 27.7 generated by back pressure of 3 psi for several days. Testing was conducted until inflow was equal to outflow. Subsequent determinations of B coefficient through pore pressure measurements (per ASTM D 4767, par. 8.2.4) confirmed that the degree of saturation for the sample tested was above 95%.

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Lynnwood, WA 98036-5904
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Fax. 206-775-7506

March 23, 1994
HWA Project No. 94024-1

This testing program was conducted in general accordance with the above mentioned procedures. HWA has no specific knowledge with regard to the field sampling procedures, the lateral variability of geologic materials on site or the possible quantities of material these samples represent. No warranty, expressed or implied is made.

Thank you for this opportunity to serve you. Should you have any questions regarding these results please do not hesitate to inquire.

Respectfully Submitted,

HONG WEST & ASSOCIATES, INC.

Steven E. Greene
Soil Laboratory Manager

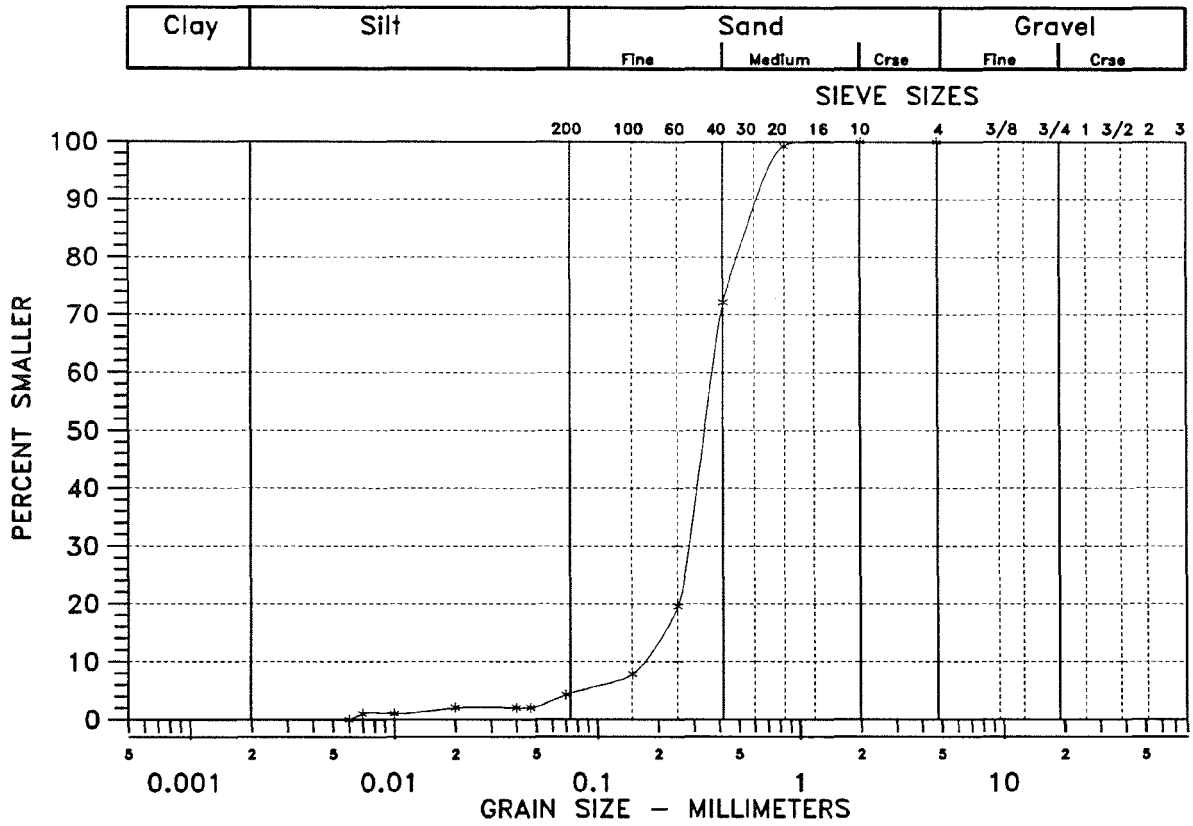
Rhone-Poulenc Project
HWA Project No. 94024
Laboratory Testing Summary
Table 1

Sample No.	Classification USC	Bulk Density pcf	Total Porosity n(%)	Permeability cm/sec.
A04-06-07 5252-03	SP	N/A	N/A	N/A
A04-06-08 5261-01	OH	Wet Density= 113.7 pcf. Moisture Content= 41.9% Dry Density= 80.1 pcf	n= 51.9% sp. gr.= 2.67	K= 7.7 x 10^{-8}

HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc
Location: King County, Washington
Project Number: 94024
Date Tested: 3-21-94
Remarks: Dark gray, poorly graded SAND (SP)

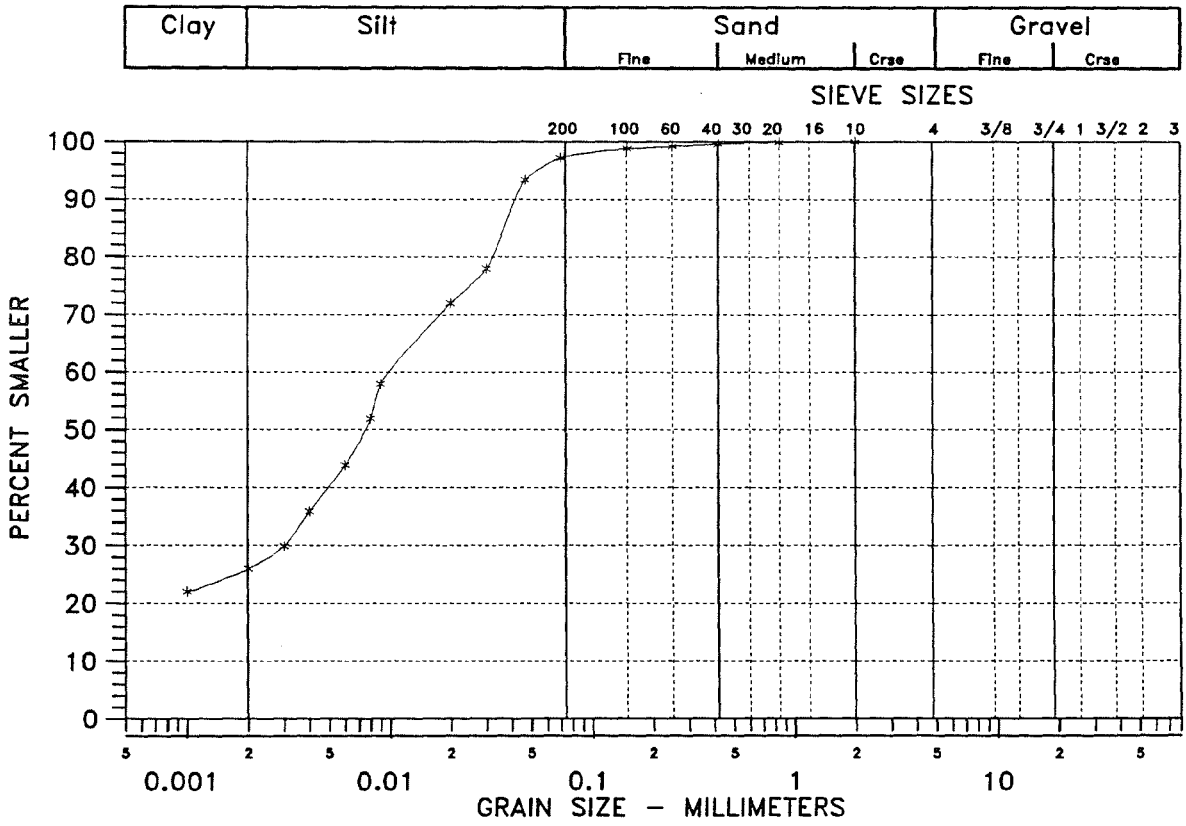
Test Hole Number: 5252-03
Sample Number: A04-06-07
Depth: 17.0'-19.0'
Sample Description:
Gravel: 0.0
Sand: 95.7
Silt: 4.3
Clay: 0.0



HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc
Location: King County, Washington
Project Number: 94024
Date Tested: 3-21-94
Remarks: Dark gray, organic CLAY (OH)

Test Hole Number: 5261-01
Sample Number: A04-06-08
Depth: 70.0'-72.5'
Sample Description:
Gravel: 0.0
Sand: 2.8
Silt: 71.2
Clay: 26.0



ETC/Northwest

Level CWetMisc

DATA PACKAGE

Inorganic Sample Results and QC Summary Forms

Miscellaneous Wet Chemistry

1. SAMPLE RESULTS AND QC SUMMARY
   - Results - Inorganic Analysis Data Sheets
   - Preparation Blank Results
   - Spike Sample Recovery [Spike Sample Duplicate (if applicable)]
   - Duplicates
   - Laboratory Control Sample [Laboratory Control Sample Duplicate (if applicable)]

Analytical Results - Conventional Parameters
ETC/NORTHWEST

Client ID: A05-24-01
Description: NA
ETC/Gulf South ID: RDI-001
Matrix: Soil
Wet/Dry Basis: Dry

Collected: 04/13/94
Received: 04/14/94
Prepared: see below
Analyzed: see below
Percent Moisture: 19

Parameter	Method	Units	Sample	Blank	Detection Limit	Date Prepared	Date Analyzed
Cation Exchange Capacity	SW9080	meq/100g	6.84	ND	0.5	04/27/94	04/28/94

ND-Not Detected at or above the detection limit stated.

QA/QC SUMMARY

CONVENTIONAL PARAMETERS

PARAMETER	Matrix/Blank Spike Level	Digestate Blank Det'n Limits	Units	Blank Conc.	Spike Recovery (%) Matrix	Blank	Replicate Precision RPD	QC Batch #
Cation Exchange Capacity	NA/NA	0.5	meq/100g	ND	NA	NA	15.2	8084

4002

Rev. #1 05/10/94

Analytical Results - Conventional Parameters
ETC/NORTHWEST

Client ID: A02-05-06
Description: NA
ETC/Gulf South ID: RDQ-001
Matrix: Soil
Wet/Dry Basis: Dry

Collected: 04/15/94
Received: 04/18/94
Prepared: see below
Analyzed: see below
Percent Moisture: 19

Parameter	Method	Units	Sample	Blank	Detection Limit	Date Prepared	Date Analyzed
Cation Exchange Capacity	SW9080	meq/100g	8.51	ND	0.5	04/27/94	04/28/94

ND-Not Detected at or above the detection limit stated.

601

4004

QA/QC SUMMARY

CONVENTIONAL PARAMETERS

PARAMETER	Matrix/Blank Spike Level	Digestate Blank Det'n Limits	Units	Blank Conc.	Spike Recovery (%) Matrix	Blank	Replicate Precision RPD	QC Batch #
Cation Exchange Capacity	NA/NA	0.5	meq/100g	ND	NA	NA	15.2	8084

TABLE 1: QUANTITA[illegible]E RESULTS DATA

CONVENTIONALS (SR55)

[illegible] 4, 1994

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	*Company*	*Facility*	*Sample Point*	*Date*	*Joblink*
MF5343	ETC - NORTHWEST	ETCREDMR-P	S A05-24-01	940413	810876

Compound		*Results* Sample Concen.	Report DL	Blank Concen.	Batch #	Prep Date	Analysis Date
Moisture	%	18.1	1.00	N/A	QRZ10601		940428
Total Organic Carbon	mg/kg	385	91.8	ND	QRZ10612		940427
Total Organic Carbon	mg/kg	446	84.2	ND	QRZ10612		940427

Total Organic Carbon: This result was reported on a dry-weight basis.

4006

TABLE 1: QUANTITAT E RESULTS DATA

CONVENTIONALS (SR55)

Chain of Custody Data Required for ETC Data Management Summary Reports					
MF5344	ETC - NORTHWEST	ETCREDMR-P S A05-05-06	940415	810876
ETC Sample No.	*Company*	*Facility Sample Point*	*Date*	*Joblink*

Compound		Results						
		Sample Concen.	Report DL	Blank Concen.	Batch #	Prep Date	Analysis Date	
Moisture	%	21.8	1.00	N/A	QRZ10601		940428	
Total Organic Carbon	mg/kg	637	110	ND	QRZ10612		940427	
Total Organic Carbon	mg/kg	743	99.1	ND	QRZ10612		940427	

Total Organic Carbon: This result was reported on a dry-weight basis.

4007

TABLE 1: QUALI .SSURANCE DATA

CONVENTIONALS (SR55)

4, 1994

Chain of Custody Data Required for ETC Data Management Summary Reports

See Below

ETC Batch No.

Compound		QC Blank and Spiked Data			QC Matrix Spike			QC Duplicate			
		Blank Concen.	Concen. Added	% Recov	Unspiked Sample	Concen. Added	% Recov	First	Second	RPD	Batch #
Moisture	%	-	-	-	-	-	-	6.49	6.38	2	QRZ10601
Total Organic Carbon	mg/kg	ND	2000	98	498	2840	97	498	581	15	QRZ10612

4008

Monsanto Company 104(e) Response

HWA
HONG WEST
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Geotechnical Engineering
Hydrogeology
Geoenvironmental Services
Testing & Inspection

LABORATORY TESTING RESULT SUMMARY

Rhone-Poulenc Project, Client P.O. No. 50553
HWA Project # 94024, Report No. 4
May 9th, 1994

Prepared for

ETC Northwest, Inc.
6645 185th Ave. NE., Suite 100
Redmond, Washington, 98052

Attention: Mr. David Wunderlich

The samples were submitted by Mr. Jim Fiscus of ETC Northwest, Inc., on 4-18-94. The testing was conducted in accordance with the Clients request and the following specifications. The test results are summarized on the accompanying data table and grain size data sheets.

Grain Size Analysis: The grain size distributions of the specified soil samples were determined in accordance with **ASTM D 422 - Hydrometer method.** The data is presented on the distribution curve which is attached.

Bulk Density/Dry Unit Weight: The bulk density/dry unit weights of the specified soil samples were determined in accordance with **ASTM D 2937.** The data is presented in Table 1.

Soil Specific Gravity: The specific gravity of the specified soil samples were determined in accordance with ASTM D 854. The data is presented in Table 1.

Hydraulic Conductivity of Soil: The hydraulic conductivities of three relatively undisturbed soil samples were determined in accordance with **ASTM D 5084.** Samples were extruded and trimmed prior to mounting within a triaxial pressure chamber. Saturation was induced by subjecting the material to a flow gradient of 27.7 generated by back pressure of 3 psi for several days. Testing was conducted until inflow was equal to outflow. Subsequent determinations of B coefficient through pore pressure measurements (per ASTM D 4767, par. 8.2.4) confirmed that the degree of saturation for the sample tested was above 95%.

This testing program was conducted in general accordance with the above mentioned procedures. HWA has no specific knowledge with regard to the field sampling

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May 9, 1994
HWA Project No. 94024-4

procedures, the lateral variability of geologic materials on site or the possible quantities of material these samples represent. No warranty, expressed or implied is made.

Thank you for this opportunity to serve you. Should you have any questions regarding these results please do not hesitate to inquire.

Respectfully Submitted,

HONG WEST & ASSOCIATES, INC.

Steven E. Greene
Soil Laboratory Manager

Rhone-Poulenc Project
HWA Project No. 94024, Report No. 4
May 9, 1994
Laboratory Testing Summary
TABLE 1

Sample No.	Classification USC	Bulk Density pcf	Total Porosity n(%)	Permeability cm/sec.
A05-24-01 5371-01	SP	N/A	N/A	N/A
A05-24-02 5371-02	SM	Wet density= 122.8 pcf Moisture Content= 23.9% Dry Density= 99.2 pcf	n = 40.7% sp. gr. = 2.68	N/A
A05-24-03 5371-03	CL-ML	Wet density= 112.4 pcf Moisture Content= 39.5% Dry Density= 80.7 pcf	n= 51.1% sp. gr. = 2.64	k= 5.8 x 10^{-8}
A02-05-06 5377-01	SP-SM	Wet density= 123.1 pcf Moisture Content= 21.7% Dry Density= 101.2 pcf	n= 39.0% sp. gr. = 2.66	N/A
A02-05-07 5377-02	SM	Wet density= 117.7 pcf Moisture Content= 34.0% Dry Density= 87.8 pcf	n= 46.3 % sp. gr. = 2.62	k= 4.8 x 10^{-7}
A02-05-09 5377-03	CL-ML	Wet density= 111.6 pcf Moisture Content= 48.3% Dry Density= 75.3 pcf	n= 54.5% sp. gr. = 2.65	k=2.7 x 10^{-8}

Note: Grain size distribution curves are attached.

HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc

Project Number: 94024

Date Tested: 5-02-94

Remarks: Dark gray, poorly graded SAND (SP)

Test Hole Number: A05-24-01

Sample Number: 5371-01

Depth: 22.0'-24.0'

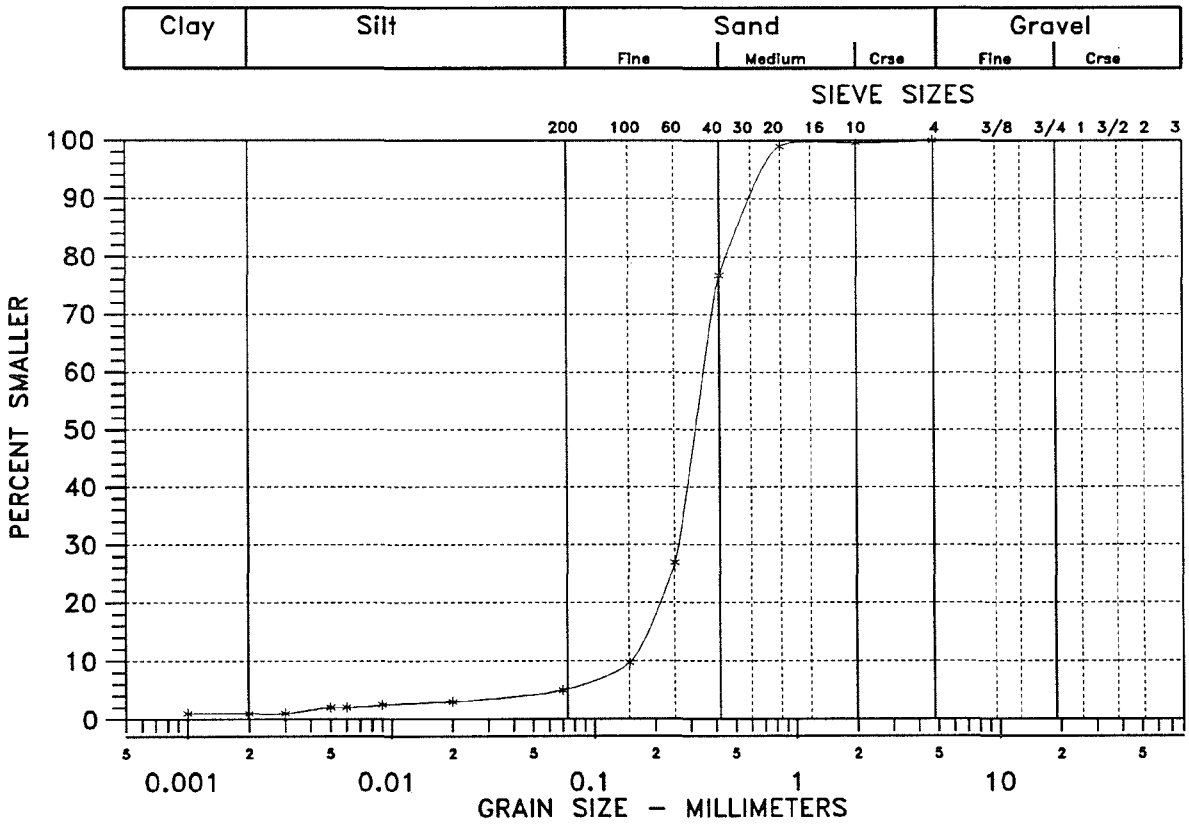
Sample Description:

Gravel: 0.0

Sand: 95.1

Silt: 3.9

Clay: 1.0



HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc

Project Number: 94024

Date Tested: 5-02-94

Remarks: Dark gray, silty CLAY (CL-ML)

Test Hole Number: A05-24-03

Sample Number: 5371-03

Depth: 67.0'-69.0'

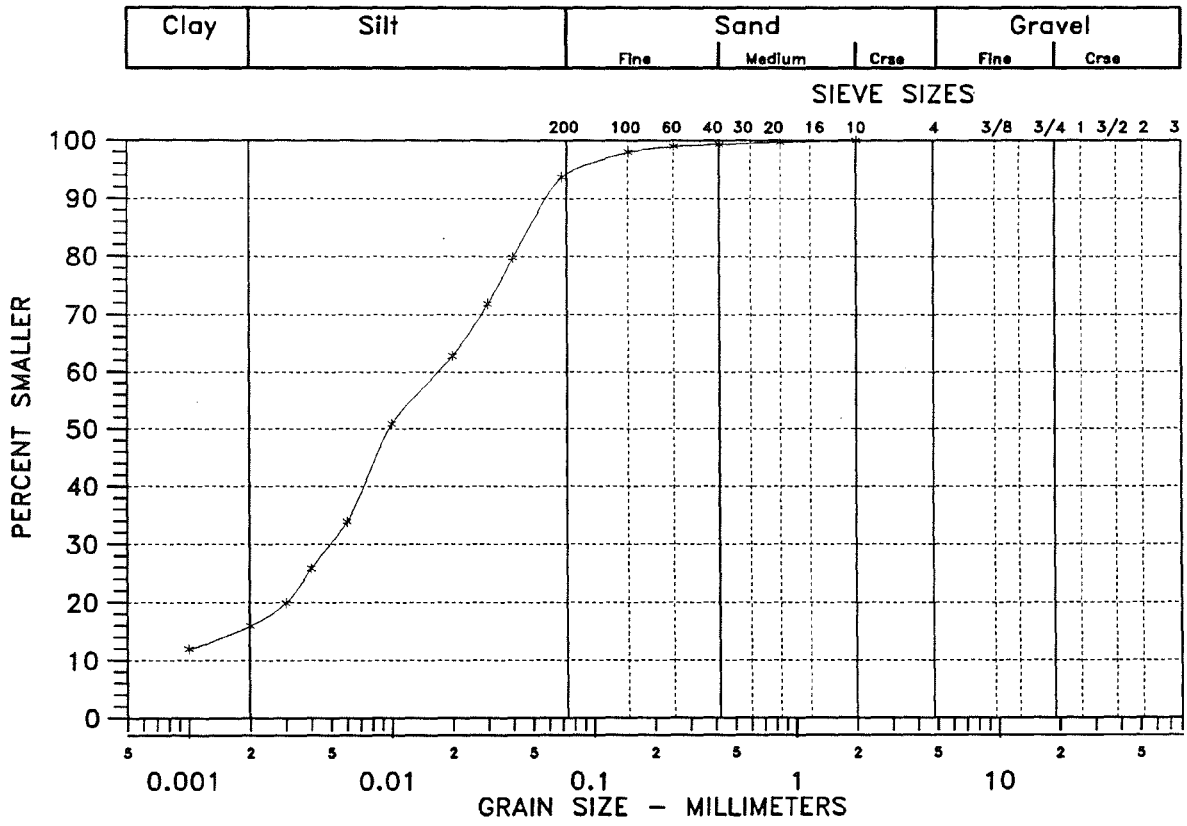
Sample Description:

Gravel: 0.0

Sand: 6.3

Silt: 77.7

Clay: 16.0



HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc

Project Number: 94024

Date Tested: 5-02-94

Remarks: Dark gray, poorly graded SAND with silt and gravel (SP-SM)

Test Hole Number: A02-05-06

Sample Number: 5377-01

Depth: 5.0'-7.0'

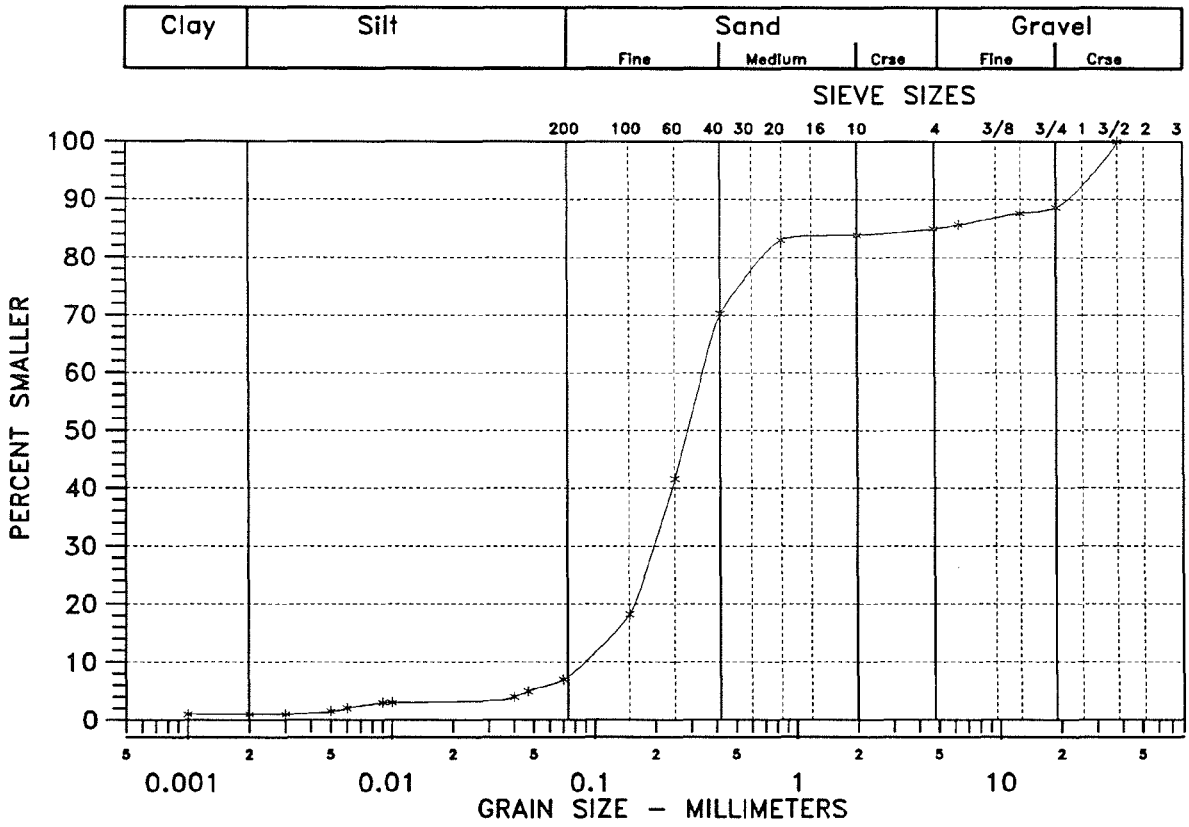
Sample Description:

Gravel: 15.0

Sand: 78.0

Silt: 6.0

Clay: 1.0



HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc

Project Number: 94024

Date Tested: 5-02-94

Remarks: Dark gray, silty SAND (SM)

Test Hole Number: A02-05-07

Sample Number: 5377-02

Depth: 9.0'-11.0'

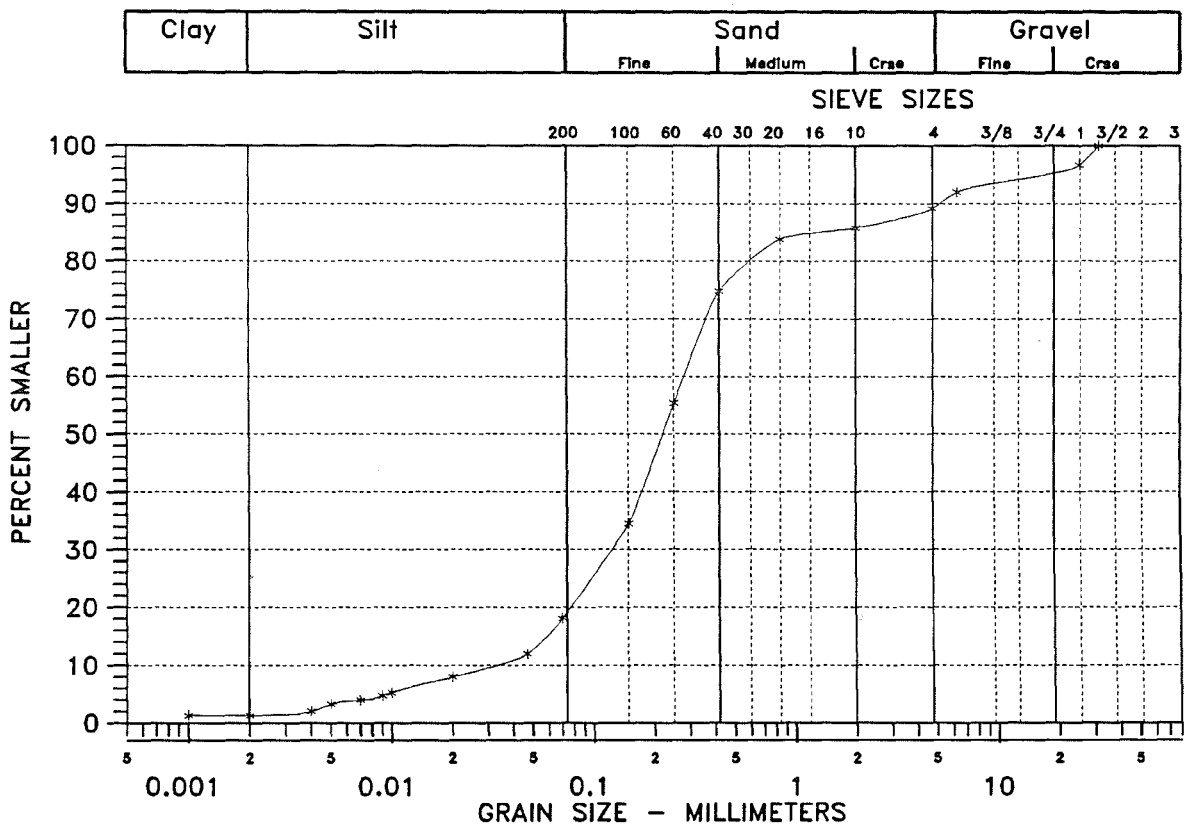
Sample Description:

Gravel: 10.8

Sand: 71.1

Silt: 16.8

Clay: 1.3



HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc

Project Number: 94024

Date Tested: 5-02-94

Remarks: Dark gray, silty CLAY (CL-ML)

Test Hole Number: A02-05-09

Sample Number: 5377-04

Depth: 71.0'-73.0'

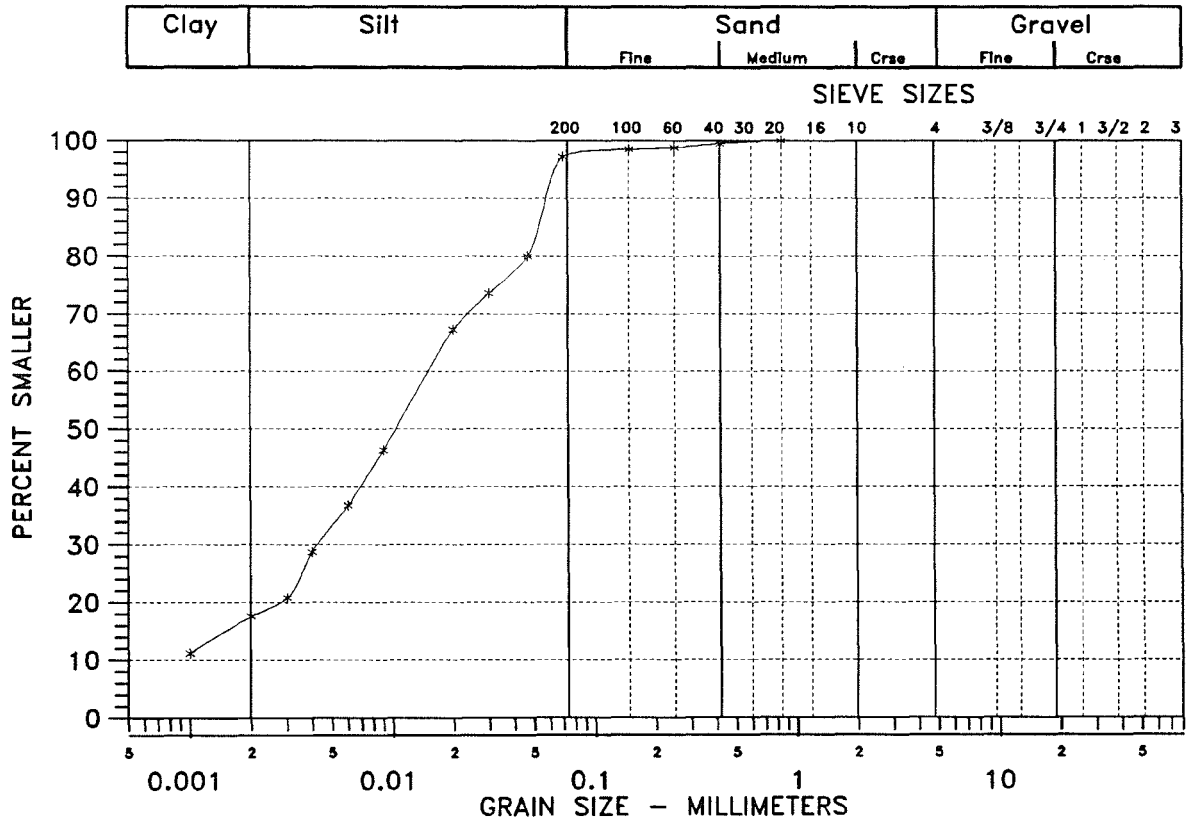
Sample Description:

Gravel: 0.0

Sand: 2.8

Silt: 79.6

Clay: 17.6



RUSH

ETC/Northwest

Level CWetMisc

DATA PACKAGE

Inorganic Sample Results and QC Summary Forms

Miscellaneous Wet Chemistry

1. SAMPLE RESULTS AND QC SUMMARY
   - Results - Inorganic Analysis Data Sheets
   - Preparation Blank Results
   - Spike Sample Recovery [Spike Sample Duplicate (if applicable)]
   - Duplicates
   - Laboratory Control Sample [Laboratory Control Sample Duplicate (if applicable)]

TABLE 1: QUANTITAT... RESULTS DATA

CONVENTIONALS (SR55)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Joblink
MF5178	ETC - NORTHWEST	ETCREDMR-P S	A04-23-01	940406	810840

Compound		Results: Sample Concen.	Report DL	Blank Concen.	Batch #	Prep Date	Analysis Date	
Moisture	%	9.82	1.00	N/A	QRZ10590		940416	
Total Organic Carbon	mg/kg	864	143	ND	QRZ10612		940427	
Total Organic Carbon	mg/kg	883	102	ND	QRZ10612		940427	

1009

A 9, 1994

TABLE 1: QUANTITATIV RESULTS DATA

CONVENTIONALS (SR55)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Joblink
MF5179	ETC - NORTHWEST	ETCREDMR-P	S A04-23-05	940406	810840

Compound		Results: Sample Concen.	Report DL	Blank Concen.	Batch #	Prep Date	Analysis Date	
Moisture	%	23.4	1.00	N/A	QRZ10590		940416	
Total Organic Carbon	mg/kg	449	93.5	ND	QRZ10612		940427	
Total Organic Carbon	mg/kg	505	98.0	ND	QRZ10612		940427	

6002

TABLE 1: QUANTITATIVE RESULTS DATA

CONVENTIONALS (SR55)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Joblink
MF5271	ETC - NORTHWEST	ETCREDMR-P S	A09-08-07	940406	810840

Compound		Results: Sample Concen.	Report DL	Blank Concen.	Batch #	Prep Date	Analysis Date
Moisture	%	8.71	1.00	N/A	QRZ10680		940505
Total Organic Carbon	mg/kg	1280	75.6	ND	QRZ10612		940427
Total Organic Carbon	mg/kg	1290	90.5	ND	QRZ10612		940427

6003

TABLE 1: QUANTITATIVE RESULTS DATA

CONVENTIONALS (SR55)

Mar. 9, 1994

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Joblink
MF5272	ETC - NORTHWEST	ETCREDMR-P	S A04-14-01	940411	810840

Compound		Results: Sample Concen.	Report DL	Blank Concen.	Batch #	Prep Date	Analysis Date
Moisture	%	10.4	1.00	N/A	QRZ10680		940505
Total Organic Carbon	mg/kg	1150	71.1	ND	QRZ10612		940427
Total Organic Carbon	mg/kg	1190	106	ND	QRZ10612		940427

6004

Monsanto Company 104(e) Response

9, 1994

TABLE 1: QUALITY ..SURANCE DATA

CONVENTIONALS (SR55)

Chain of Custody Data Required for ETC Data Management Summary Reports

See Below

ETC Batch No.

Compound		QC Blank and Spiked Data			QC Matrix Spike			QC Duplicate			
		Blank Concen.	Concen. Added	% Recov	Unspiked Sample	Concen. Added	% Recov	First	Second	RPD	Batch #
Moisture	%	-	-	-	-	-	-	8.71	9.14	5	QRZ10680
Total Organic Carbon	mg/kg	ND	2000	98	498	2840	97	498	581	15	QRZ10612
Total Organic Carbon	mg/kg	ND	2000	98	498	2840	97	498	581	15	QRZ10612

6005

Monsanto Company 104(e) Response

Analytical Results - Conventional Parameters
ETC/NORTHWEST

Client ID: A04-23-01
Description: NA
ETC/Gulf South ID: RAO-001
Matrix: Soil
Wet/Dry Basis: Dry

Collected: 04/06/94
Received: 04/13/94
Prepared: see below
Analyzed: see below
Percent Moisture: 11

Parameter	Method	Units	Sample	Blank	Detection Limit	Date Prepared	Date Analyzed
Cation Exchange Capacity	SW9080	meq/100g	11300	ND	NA	04/19/94	04/19/94

Client ID: A04-23-05
Description: NA
ETC/Gulf South ID: RAO-002
Matrix: Soil
Wet/Dry Basis: Dry

Collected: 04/06/94
Received: 04/13/94
Prepared: see below
Analyzed: see below
Percent Moisture: 26

Parameter	Method	Units	Sample	Blank	Detection Limit	Date Prepared	Date Analyzed
Cation Exchange Capacity	SW9080	meq/100g	4400	ND	NA	04/19/94	04/19/94

ND-Not Detected at or above the detection limit stated.

QA/QC SUMMARY

CONVENTIONAL PARAMETERS

PARAMETER	Matrix/Blank Spike Level	Digestate Blank Det'n Limits	Units	Blank Conc.	Spike Recovery (%) Matrix	Blank	Replicate Precision RPD	QC Batch #
Cation Exchange Capacity	NA/NA	NA	meq/100g	ND	NA	NA	1.6	7910

6007

Analytical Results - Conventional Parameters
ETC/NORTHWEST

Client ID: A09-08-07
Description: NA
ETC/Gulf South ID: RDH-001
Matrix: Soil
Wet/Dry Basis: Dry

Collected: 04/06/94
Received: 04/06/94
Prepared: see below
Analyzed: see below
Percent Moisture: 21

Parameter	Method	Units	Sample	Blank	Detection Limit	Date Prepared	Date Analyzed
Cation Exchange Capacity	SW9080	meq/100g	7.65	ND	0.5	04/27/94	04/28/94

Client ID: A04-14-01
Description: NA
ETC/Gulf South ID: RDH-002
Matrix: Soil
Wet/Dry Basis: Dry

Collected: 04/11/94
Received: 04/12/94
Prepared: see below
Analyzed: see below
Percent Moisture: 11

Parameter	Method	Units	Sample	Blank	Detection Limit	Date Prepared	Date Analyzed
Cation Exchange Capacity	SW9080	meq/100g	8.60	ND	0.5	04/27/94	04/28/94

ND-Not Detected at or above the detection limit stated.

QA/QC SUMMARY

CONVENTIONAL PARAMETERS

PARAMETER	Matrix/Blank Spike Level	Digestate Blank Det'n Limits	Units	Blank Conc.	Spike Recovery (%) Matrix	Blank	Replicate Precision RPD	QC Batch #
Cation Exchange Capacity	NA/NA	0.5	meq/100g	ND	NA	NA	15.2	8084

6009

HWA
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& ASSOCIATES, INC.

Geotechnical Engineering
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Geoenvironmental Services
Testing & Inspection

LABORATORY TESTING RESULT SUMMARY

Rhone-Poulenc Project, Client P.O. No. 50553
HWA project # 94024, Report No. 2
April 14, 1994

Prepared for

ETC Northwest, Inc.
6645 185th Ave. NE., Suite 100
Redmond, Washington, 98052

Attention: Ms. Sally Gough

The samples were submitted by Ms. Sally Gough of ETC Northwest, Inc., on 4-7-94. The testing was conducted in accordance with the Clients request and the following specifications. The test results are summarized on the accompanying data table and grain size data sheets.

Grain Size Analysis: The grain size distribution of the specified soil sample was determined in accordance with **ASTM D 422 - Hydrometer method**. The data is presented on the distribution curve which is attached.

Bulk Density/Dry Unit Weight: The bulk density/dry unit weight of a specified soil sample was determined in accordance with **ASTM D 2937.** The data is presented in Table 1

Soil Specific Gravity: The specific gravity of a specified soil sample was determined in accordance with ASTM D 854. The data is presented in Table 1.

This testing program was conducted in general accordance with the above mentioned procedures. HWA has no specific knowledge with regard to the field sampling procedures, the lateral variability of geologic materials on site or the possible quantities of material these samples represent. No warranty, expressed or implied is made.

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Fax. 206-775-7506

April 14, 1994
HWA Project No. 94024-2

Thank you for this opportunity to serve you. Should you have any questions regarding these results please do not hesitate to inquire.

Respectfully Submitted,

HONG WEST & ASSOCIATES, INC.

Steven E. Greene
Soil Laboratory Manager

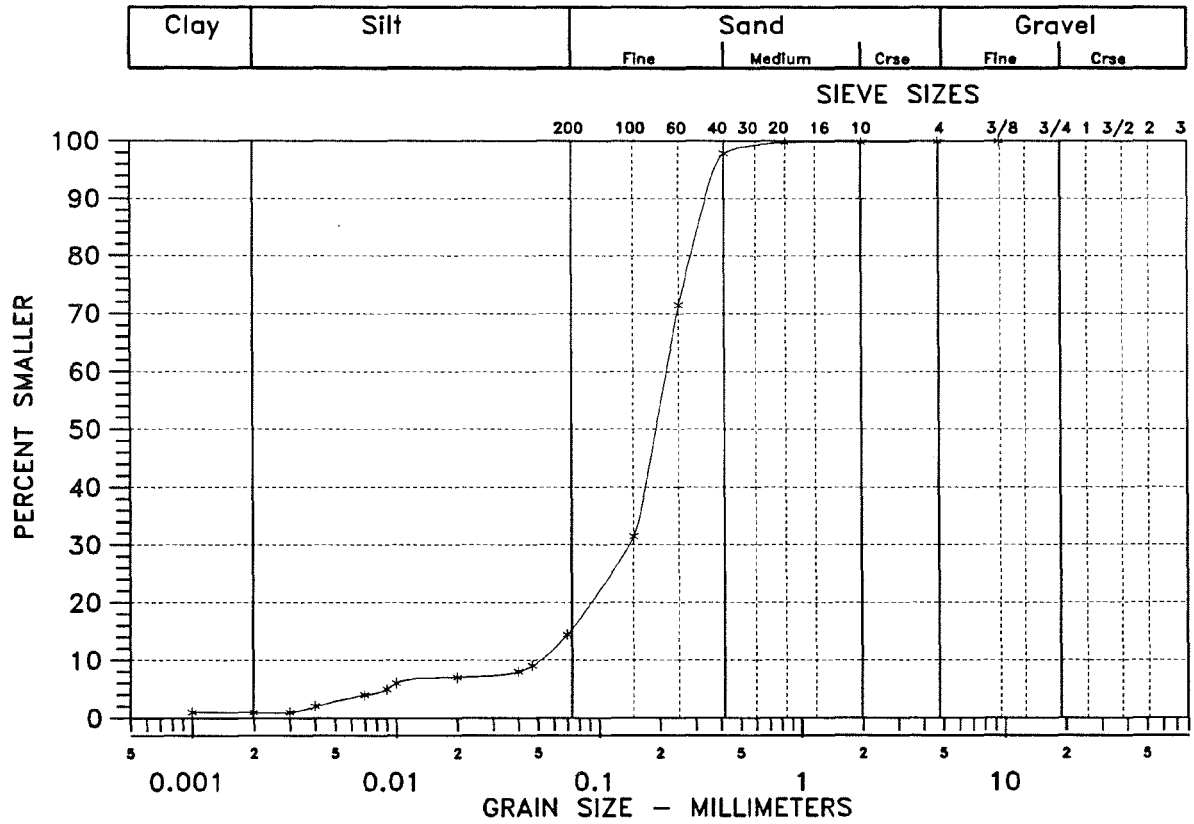
Rhone-Poulenc Project
HWA Project No. 94024, Report No. 2
April 14, 1994
Laboratory Testing Summary
Table 1

Sample No.	Classification USC	Bulk Density pcf	Total Porosity n(%)	Permeability cm/sec.
A09-08-07 5348-01	SM	N/A	N/A	N/A
A09-08-08 5348-02	SM	Wet Density= 128.6 pcf. Moisture Content= 27.2% Dry Density= 101.1 pcf	n= 39.1% sp. gr.= 2.66	N/A

HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc
Client: ETC Northwest
Project Number: 94024
Date Tested: 4/8/94
Remarks: Very dark gray, silty SAND (SM)

Test Hole Number: 5348-01
Sample Number: A09-08-07
Depth: 17.5'-19.0'
Sample Description:
Gravel: 0.0
Sand: 84.6
Silt: 14.4
Clay: 1.0



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LABORATORY TESTING RESULT SUMMARY

Rhone-Poulenc Project, Client P.O. No. 50553
HWA Project # 94024, Report No. 3
May 4th, 1994

Prepared for

ETC Northwest, Inc.
6645 185th Ave. NE., Suite 100
Redmond, Washington, 98052

Attention: Ms. Sally Gough

The samples were submitted by Mr. Jim Fiscus of ETC Northwest, Inc., on 4-14-94. The testing was conducted in accordance with the Clients request and the following specifications. The test results are summarized on the accompanying data table and grain size data sheets.

Grain Size Analysis: The grain size distributions of the specified soil samples were determined in accordance with **ASTM D 422 - Hydrometer method.** The data is presented on the distribution curve which is attached.

Bulk Density/Dry Unit Weight: The bulk density/dry unit weights of the specified soil samples were determined in accordance with **ASTM D 2937.** The data is presented in Table 1.

Soil Specific Gravity: The specific gravity of the specified soil samples were determined in accordance with ASTM D 854. The data is presented in Table 1.

Hydraulic Conductivity of Soil: The hydraulic conductivities of two relatively undisturbed soil samples were determined in accordance with **ASTM D 5084.** Samples were extruded and trimmed prior to mounting within a triaxial pressure chamber. Saturation was induced by subjecting the material to a flow gradient of 27.7 generated by back pressure of 3 psi for several days. Testing was conducted until inflow was equal to outflow. Subsequent determinations of B coefficient through pore pressure measurements (per ASTM D 4767, par. 8.2.4) confirmed that the degree of saturation for the sample tested was above 95%.

This testing program was conducted in general accordance with the above mentioned procedures. HWA has no specific knowledge with regard to the field sampling

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May 4, 1994
HWA Project No. 94024-3

procedures, the lateral variability of geologic materials on site or the possible quantities of material these samples represent. No warranty, expressed or implied is made.

Thank you for this opportunity to serve you. Should you have any questions regarding these results please do not hesitate to inquire.

Respectfully Submitted,

HONG WEST & ASSOCIATES, INC.

Steven E. Greene
Soil Laboratory Manager

Rhone-Poulenc Project
HWA Project No. 94024, Report No. 3
May 4, 1994
Laboratory Testing Summary
TABLE 1

Sample No.	Classification USC	Bulk Density pcf	Total Porosity n(%)	Permeability cm/sec.
A04-23-01 5357-01	SP-SM	N/A	N/A	N/A
A04-23-02 5357-02	SP-SM	Wet density= 122.4 pcf Moisture Content= 23.4% Dry Density= 99.2 pcf	n = 41.3% sp. gr.= 2.71	N/A
A04-23-03 5357-03	ML	N/A	N/A	N/A
A04-23-04 5357-04	SP-SM	Wet density= 135.8 pcf Moisture Content= 31.2% Dry Density= 103.5 pcf	n= 37.1% sp. gr.= 2.64	k= 1.0×10^{-5}
A04-23-05 5357-05	SP-SM	N/A	N/A	N/A
A04-23-06 5357-06	SM	Wet density= 136.0 pcf Moisture Content= 22.6% Dry Density= 110.9 pcf	n= 33.2% sp. gr.= 2.66	N/A
A04-23-07 5357-07	CL	Wet density= 134.6 pcf Moisture Content= 22.4% Dry Density= 110.0 pcf	n= 32.2% sp. gr.= 2.60	k= 8.8×10^{-8}

Rhone-Poulenc Project
HWA Project No. 94024, Report No. 3
May 4, 1994
Laboratory Testing Summary
TABLE 1 (continued)

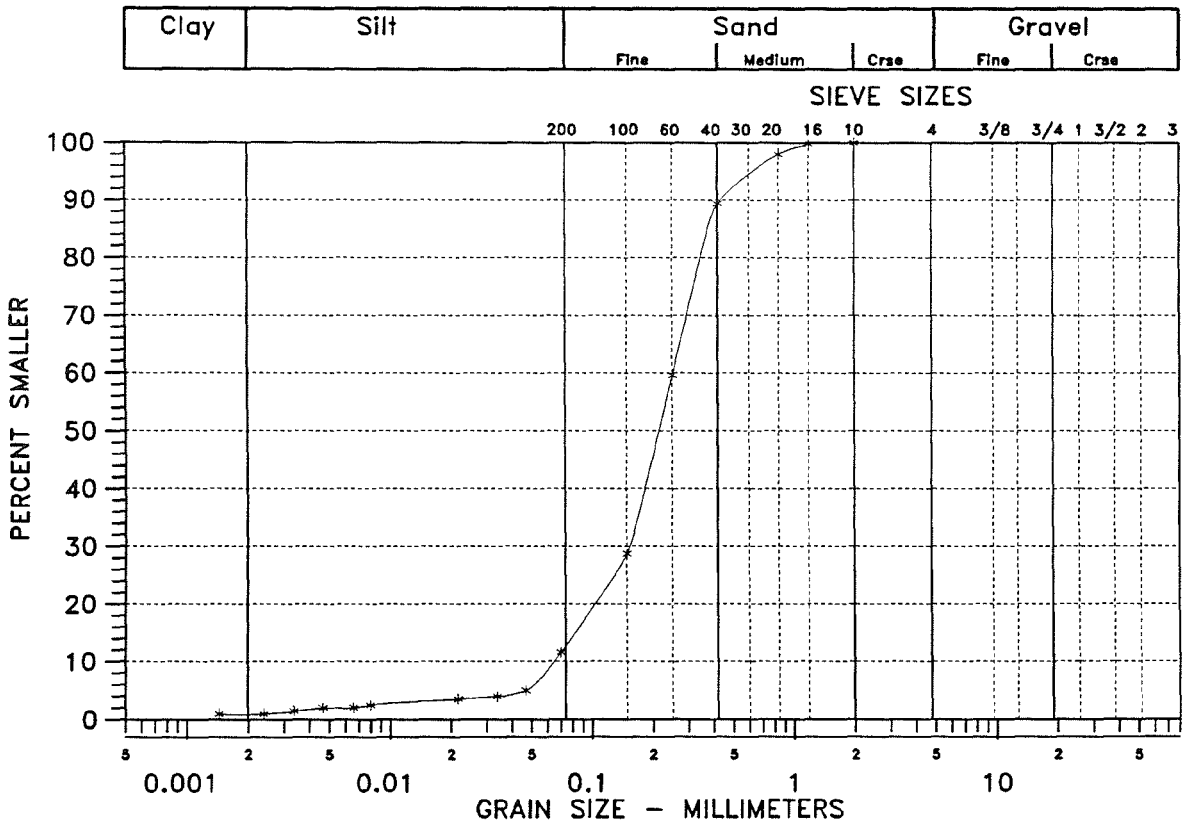
Sample No.	Classification USC	Bulk Density pcf	Total Porosity n(%)	Permeability cm/sec.
A04-14-01 5364-01	SM	N/A	N/A	N/A
A04-14-02 5364-02	SP-SM	Wet density= 116.8 pcf Moisture Content= 21.0% Dry density= 96.5 pcf	n= 41.6% sp. gr.= 2.65	N/A

Note: Grain size data curves are attached.

HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc
King County, Washington
Project Number: 94024
Date Tested: 4/22/94
Remarks: Olive brown, poorly graded SAND with silt (SP-SM)

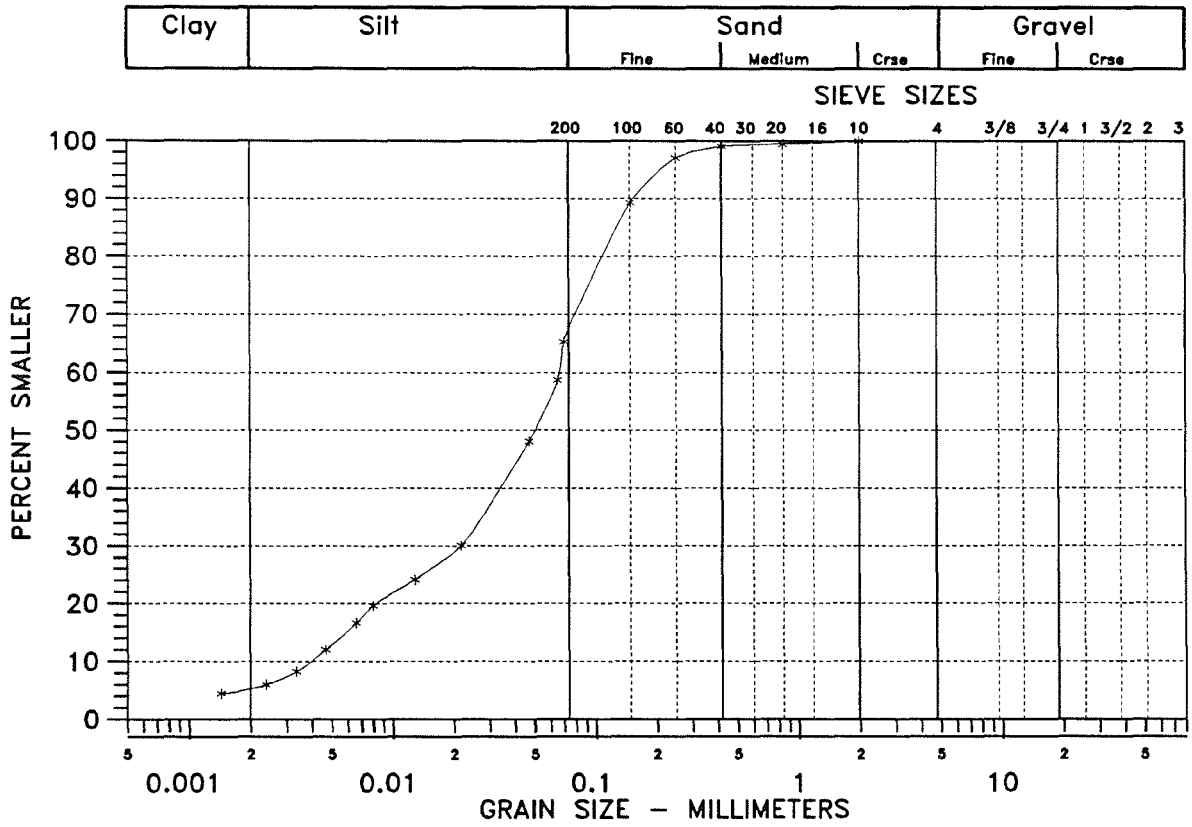
Test Hole Number: A04-23-01
Sample Number: 5357-01
Depth: 1.0'-3.0'
Sample Description:
Gravel: 0.0
Sand: 88.4
Silt: 10.6
Clay: 1.0



HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc
King County, Washington
Project Number: 94024
Date Tested: 4/22/94
Remarks: Very dark grayish brown, sandy SILT (ML)

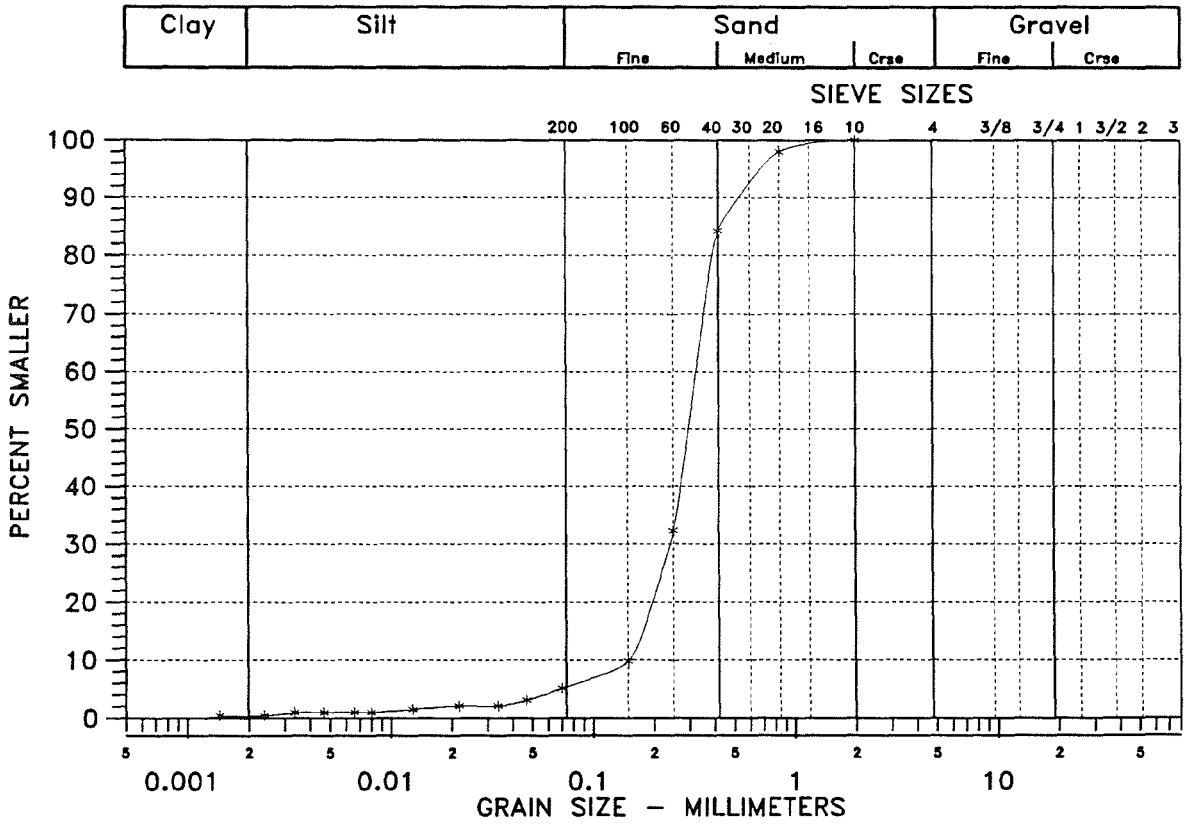
Test Hole Number: A04-23-03
Sample Number: 5357-03
Depth: 5.0'-7.0'
Sample Description:
Gravel: 0.0
Sand: 34.7
Silt: 59.3
Clay: 6.0



HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc
King County, Washington
Project Number: 94024
Date Tested: 4/22/94
Remarks: Very dark brown, poorly graded SAND with silt (SP-SM)

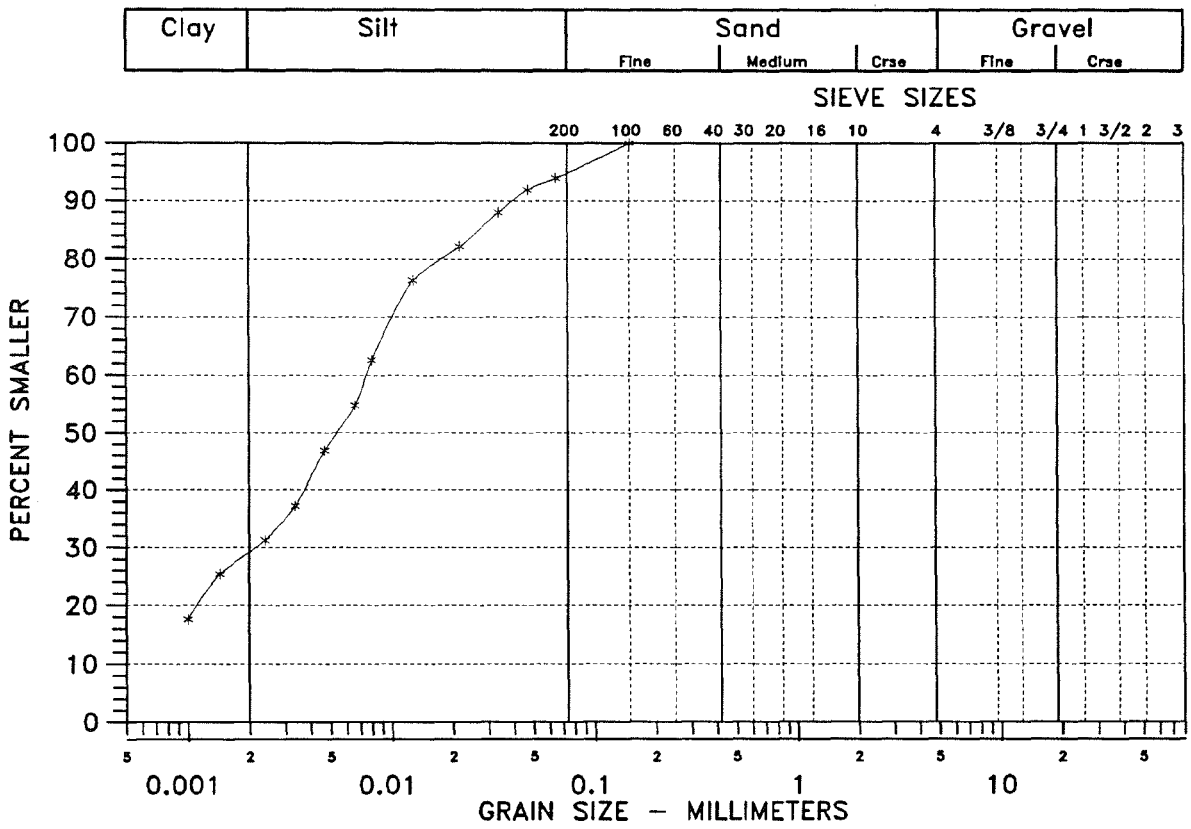
Test Hole Number: A04-23-05
Sample Number: 5357-05
Depth: 15.0'-16.5'
Sample Description:
Gravel: 0.0
Sand: 94.9
Silt: 4.6
Clay: 0.5



HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc
King County, Washington
Project Number: 94024
Date Tested: 4/22/94
Remarks: Grayish brown, lean CLAY (CL)

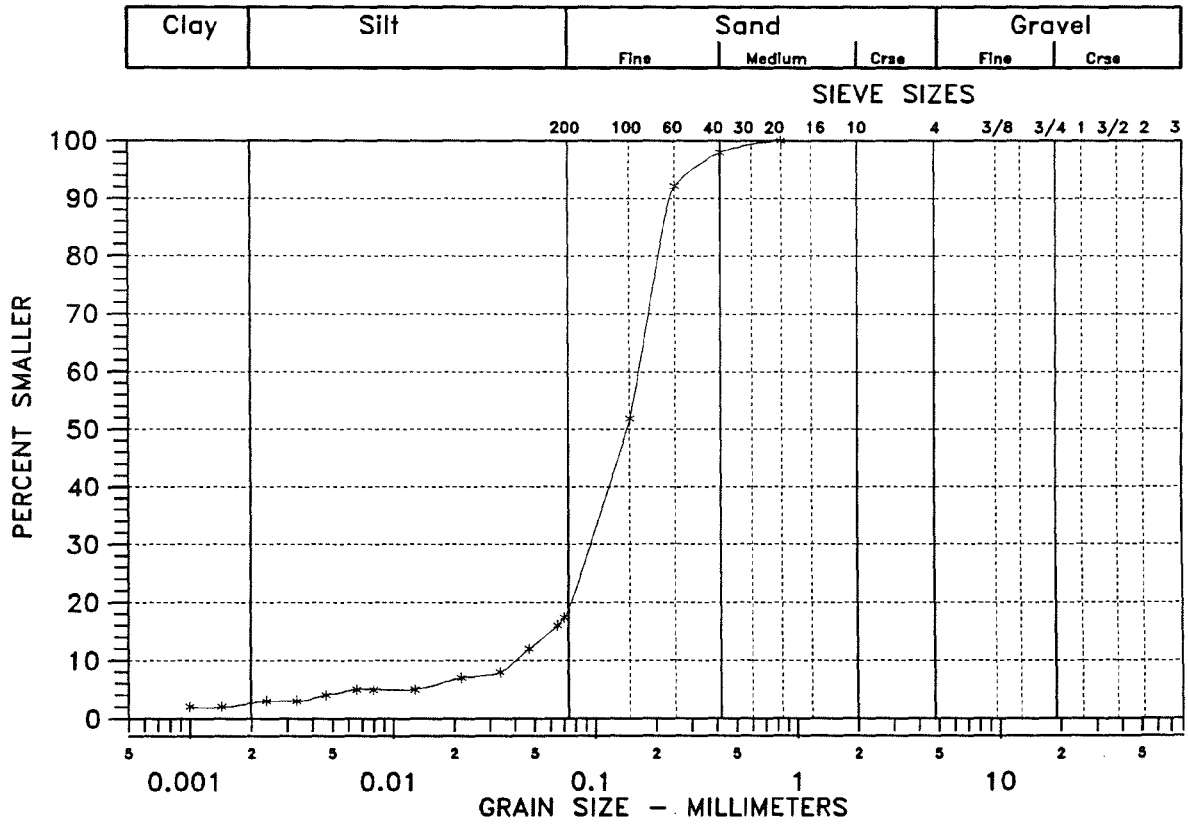
Test Hole Number: A04-23-07
Sample Number: 5357-07
Depth: 70.0'-71.5'
Sample Description:
Gravel: 0.0
Sand: 0.4
Silt: 74.5
Clay: 25.1



HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc
King County, Washington
Project Number: 94024
Date Tested: 4/22/94
Remarks: Dark olive gray, silty SAND (SM)

Test Hole Number: A04-14-01
Sample Number: 5364-01
Depth: 3.0'-4.5'
Sample Description:
Gravel: 0.0
Sand: 82.6
Silt: 15.4
Clay: 2.0



HONG WEST
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Geotechnical Engineering
Hydrogeology
Geoenvironmental Services
Testing & Inspection

LABORATORY TESTING RESULT SUMMARY

Rhone-Poulenc Project
HWA Project # 94024, Report No.5
September 12th, 1994

Prepared for

CH2M Hill, Inc.
777 108th Ave NE
Bellevue, Washington, 98009

Attention: Ms. Patt O'Flaherty

The samples were submitted by Mr. Dave Lacher of CH2M Hill, Inc., on 8-4-94. The testing was conducted in accordance with the Clients request and the following specifications. The test results are summarized on the accompanying data table and grain size data sheet.

Grain Size Analysis: The grain size distribution of the specified soil sample was determined in accordance with **ASTM D 422**. The data are presented on the distribution curve which is attached.

Total Organic Carbon: The total organic carbon content of the specified soil sample was determined in accordance with **ASTM D 4129-82.** The data are presented in Table 1 below.

Cation Exchange Capacity: The cation exchange capacity of the specified soil sample was determined in accoradnce with **EPA Method 9081.** The results are presented in Table 1.

This testing program was conducted in general accordance with the above mentioned procedures. HWA has no specific knowledge with regard to the field sampling procedures, the lateral variability of geologic materials on site or the possible quantities of material these samples represent. No warranty, expressed or implied is made.

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Lynnwood, WA 98036-5904
Tel. 206-774-0106
Fax. 206-775-7506

Thank you for this opportunity to serve you. Should you have any questions regarding these results please do not hesitate to inquire.

Respectfully Submitted,

HONG WEST & ASSOCIATES, INC.

Steven E. Greene
Soil Laboratory Manager

Rhone-Poulenc Project
HWA Project No. 94024, Report No. 5
September 12, 1994
Laboratory Testing Summary
TABLE 1

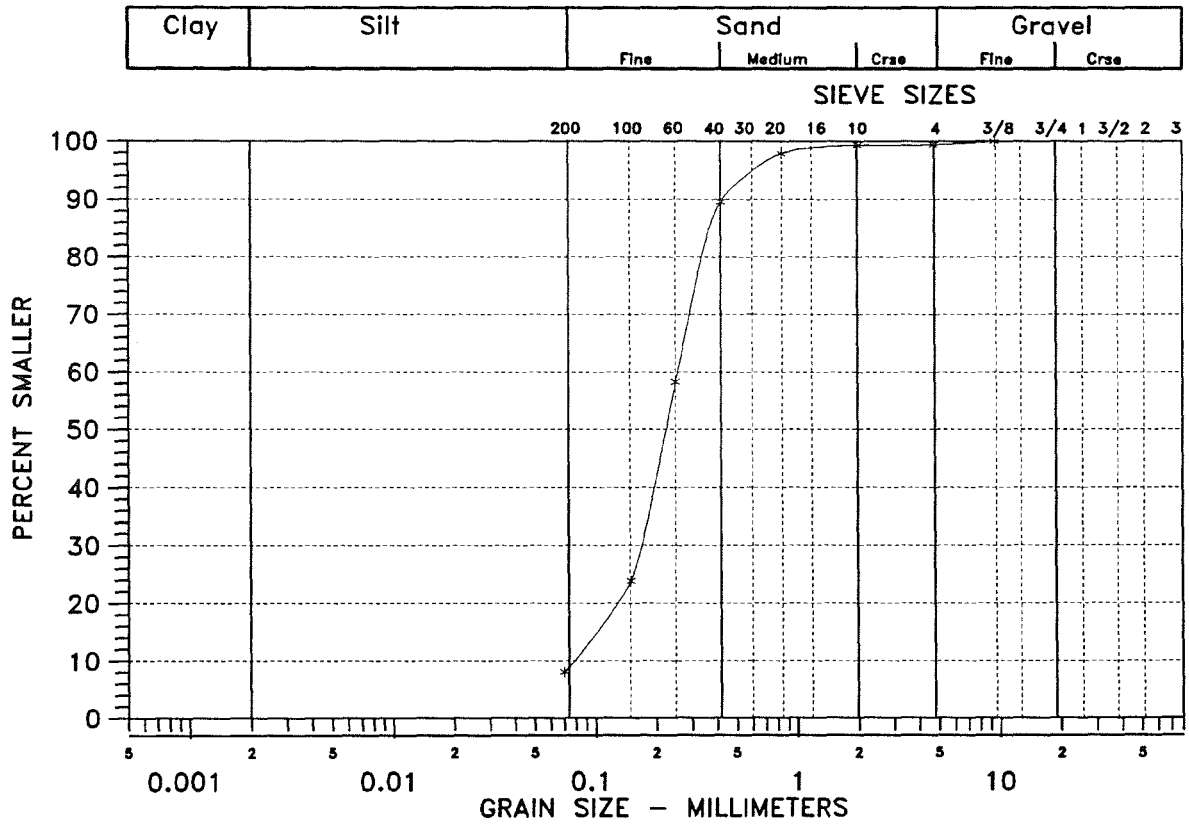
Sample No.	Classification	Total Organic Carbon (%)	Cation Exchange Capacity (meq/100 gm)
MW20-01	SP-SM*	N/A	N/A
MW20-02	---	0.11	5

*Note: The grain size distribution curve is attached.

HONG WEST & ASSOCIATES, INC.
GRAIN SIZE DISTRIBUTION

Project: Rhone-Poulenc
King County, Washington
Project Number: 94024
Date Tested: 8/29/94
Remarks: Very dark brown, poorly graded Sand with silt (SP-SM)

Test Hole Number: Grab sample
Sample Number: MW20-01
Depth: 10.0'-11.5', 15.0'-16.5'
Sample Description:
Gravel: 0.6
Sand: 91.3
Fines: 8.1



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LABORATORY TESTING RESULT SUMMARY

Rhone-Poulenc Project
HWA Project # 94024, Report No.6
September 12th, 1994

Prepared for

CH2M Hill, Inc.
777 108th Ave NE
Bellevue, Washington 98009

Attention: Ms. Patt O'Flaherty

The samples were submitted by Mr. Joey Diaz of CH2M Hill, Inc., on 8-11-94. The testing was conducted in accordance with the Clients request and the following specifications. The test results are summarized on the accompanying data table.

Moisture Content: The moisture contents of two specified soil samples were determined in accordance with **ASTM D 2216.** The results are presented in Table 1.

Bulk Density/Wet Unit Weight: The bulk density/dry unit weights of the specified soil samples were determined in accordance with **ASTM D 2937.** The data are presented in Table 1.

Soil Specific Gravity: The specific gravity of the specified soil samples were determined in accordance with ASTM D 854. The data are presented in Table 1.

Falling Head Permeability of Soil: The permeabilities of two relatively undisturbed soil samples were determined in accordance with the method outlined in **Section 5, Appendix VII of the U.S. Army Corps of Engineers Laboratory Manual EM 1110-2-1906.** Samples were tested without removing them from their sampling tubes. In this way disturbance of the granular soil was minimzed Testing was conducted until inflow was equal to outflow.

This testing program was conducted in general accordance with the above mentioned procedures. HWA has no specific knowledge with regard to the field sampling procedures, the lateral variability of geologic materials on site or the possible quantities of material these samples represent. No warranty, expressed or implied is made.

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Thank you for this opportunity to serve you. Should you have any questions regarding these results please do not hesitate to inquire.

Respectfully Submitted,

HONG WEST & ASSOCIATES, INC.

Steven E. Greene
Soil Laboratory Manager

Rhone-Poulenc Project
HWA Project No. 94024, Report No. 6
September 12, 1994
Laboratory Testing Summary
TABLE 1

Sample No.	Classification	Bulk Density, Moisture and Soil Specific Gravity	Permeability (cm/sec.)
BH-13	SM	Wet weight = 105.0 pcf @ 20.5% Moisture Content sp. gr. = 2.75	$K = 9.2 \times 10^{-5}$
BH-20	SP-SM	Wet weight = 124.0 pcf @ 28.0% Moisture Content sp. gr. = 2.83	$K = 2.4 \times 10^{-3}$

APPENDIX I

Comparison of Toluene in Groundwater for Samples Collected with Waterra Pumps and Bailers

Appendix I
Comparison of Toluene in Groundwater for Samples Collected with Waterra Pumps and Bailers

Groundwater sampling during Round 1 of the RFI was performed following the sampling protocols described in the approved RFI Workplan, with minor modifications (see Appendix C of this report for a list of these modifications). Stainless-steel bailers were used to purge and sample all monitoring wells during Round 1 with the exception of wells DM-7, H1, and B4. These three wells have PVC well casings that are out of alignment such that a bailer will not pass to the water surface. Therefore, these wells could not be purged and sampled with bailers as originally planned. Instead, dedicated Waterra sampling pumps[1] were used to purge and sample groundwater at these three wells during Round 1 of the RFI. The Waterra pump was selected for the following reasons:

- The Waterra pump is flexible and could easily pass through the out-of-alignment portion of the well casings.
- CH2M HILL field personnel are familiar with the installation and operation of the Waterra pump.
- The Waterra pump is capable of purge rates of approximately one to two gallons per minute (gpm), making it time-efficient to use.
- The Waterra pump can be operated manually, without the need for a generator or external power source.
- Samples obtained using Waterra pumps are typically less turbid than those obtained with bailers.
- The Waterra pump is a positive-displacement pump that is routinely used for the collection of groundwater samples analyzed for volatile organic compounds. Research has shown that the relative recovery of volatiles using Waterra pumps is comparable with other commonly used sampling devices such as bailers and bladder pumps.

Because the use of the Waterra pump was successful during Round 1, CH2M HILL decided to use dedicated Waterra pumps in all wells during the Round 2 groundwater sampling. Otherwise, the sampling protocols used during Round 2 were the same as those used during Round 1 with the exceptions described in Appendix C of this report. Shortly before the

[1]The Waterra pump is a positive-displacement, inertial pump consisting of a foot valve attached to the bottom of a length of tubing that is installed in the well (manufactured by Waterra, 77 Mowat Avenue, Suite 101, Toronto, Ontario M6K3E3, Canada).

Round 2 groundwater sampling effort was completed, RPI became aware that Waterra pumps were being used for sample collection rather than the stainless-steel bailers used during Round 1. RPI requested that additional samples be collected using bailers to allow comparison of volatiles data collected with Waterra pumps with data collected with bailers.

At the time RPI became aware of the use of the Waterra pumps, only four wells remained to be sampled in Round 2: H1, MW-13, MW-17, and MW-19. RPI requested that CH2M HILL collect two sets of samples from these wells for BTEX analyses (benzene, toluene, ethylbenzene, and xylene by EPA Method 8020)—one set using the Waterra pumps and the other set using bailers. In addition, a bailer sample was collected from well MW-18 because this well had been purged and sampled within the preceding 24 hours.

The toluene concentrations in samples collected using both the Waterra pump and the bailer sample collection methods are reported in Table I-1. The toluene results from the two methods varied, with relative percent deviations (RPDs) ranging from 9 to 123 percent. However, neither method yielded toluene results that were consistently high or low. It should be noted that benzene, ethylbenzene, and xylene were not detected in either the Waterra pump or the bailer samples from any of the five wells sampled.

Some general and site-specific factors should be considered when the toluene results from the two sampling methods are compared:

- Field and laboratory variability occurs in even the most ideal sampling and analytical settings and is likely responsible for some of the differences in the reported concentrations.

- Groundwater sampling personnel noted a chemical reaction between the groundwater sampled and the hydrochloric acid used as a preservative in the 40-milliliter sample vials. This reaction is believed to be caused by relatively high bicarbonate concentrations in groundwater in the vicinity of the toluene plume (see Section 4.3.8 in Volume I of this RFI Report). When poured into the sample vials, the samples effervesced and volatiles may have been lost in the process. Further, obtaining a sample with zero headspace in the vial was virtually impossible because of the effervescing.

- The bailer sample was collected from well MW-18 one day after the original Waterra sample was collected. Well MW-18 was not re-purged prior to collection of the bailer sample. The delay in collecting the bailer sample, and the fact that the well was not re-purged, may account for some of the variability in the sample results from this well.

Although there is variability in the toluene results from samples collected with Waterra pumps versus bailers, the differences are not significant in terms of identifying the general magnitude and extent of the toluene plume. Figure 4-48 in Volume II of the RFI Report depicts the lateral extent of the toluene plume based on the Round 2 data (using the results

Table I-1
Groundwater Results for Samples Collected With Waterra Pumps and Bailers

Monitoring Well	Compound	Waterra Pump (µg/l)	Bailer (µg/l)	RPD
MW-13	Benzene	12 U	2 U	NC
MW-13	Toluene	630	150	123
MW-13	Ethylbenzene	12 U	2 U	NC
MW-13	Total xylene	12 U	2 U	NC
H1	Benzene	50 U	50 U	NC
H1	Toluene	1,200	2,600	-74
H1	Ethylbenzene	50 U	50 U	NC
H1	Total xylene	50 U	50 U	NC
MW-17	Benzene	2,500 U	2,500 U	NC
MW-17	Toluene	120,000	110,000	9
MW-17	Ethylbenzene	2,500 U	2,500 U	NC
MW-17	Total xylene	2,500 U	2,500 U	NC
MW-18	Benzene	2,500 U	2,500 U	NC
MW-18	Toluene	56,000	190,000	-109
MW-18	Ethylbenzene	2,500 U	2,500 U	NC
MW-18	Total xylene	2,500 U	2,500 U	NC
MW-19	Benzene	250 U	1,000 U	NC
MW-19	Toluene	9,400	28,000	-99
MW-19	Ethylbenzene	250 U	1,000 U	NC
MW-19	Total xylene	250 U	1,000 U	NC

RPD = Relative percent deviation.
U = Nondetection.
NC = Not calculable.

sea1002A429.wp5

of samples obtained with the Waterra pumps). The configuration of these contours would change only slightly at wells MW-18 and MW-19 if the bailer data were used in place of the Waterra data. The configuration of the vertical extent of the toluene plume as shown in Figure 4-50 would change slightly at well MW-18 if the bailer data were used in place of the Waterra data.

In summary, dedicated Waterra pumps were used in all wells sampled during Round 2 of the RFI. The toluene results from samples collected with the Waterra pumps have been used as the data of record for the purposes of the RFI in order to maximize the consistency and well-to-well comparability of the Round 2 results.

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APPENDIX J

Data Review of Arsenic and PAH Occurrences in the Vicinity of RPI's Marginal Way Facility

Appendix J
Data Review of Arsenic and PAH Occurrences in the Vicinity of RPI's Marginal Way Facility

J.1 Introduction

This appendix summarizes the data obtained during a review of available reports concerning arsenic and polynuclear aromatic hydrocarbon (PAH) compounds in soil, groundwater, and sediments in the vicinity of Rhône-Poulenc's Marginal Way Facility (the RPI Facility) in Tukwila, Washington. The intent of the review is to document whether these chemicals occur at sites near the RPI Facility and, if so, in what concentrations.

Arsenic and PAH compounds have been detected throughout the RPI Facility. However, these two materials were never used at the site for processing or manufacturing. Reasonable evidence suggests that these materials are not specific to the RPI Facility, but instead are distributed over a wider region in Western Washington.

Arsenic occurs naturally in the parent rock of the alluvial soils and would, therefore, be expected in the soils underlying the RPI Facility, both in the native undisturbed soils and in the hydraulic fill at the ground surface. Also, airborne arsenic trioxide is known to have reached this area from the ASARCO smelter in Tacoma. In all probability, the PAH compounds present are attributable to coal shipping, coal-fired boilers, and natural weathering of coal-bearing formations in the region.

Consequently, we believe that both arsenic and PAH compounds are present at the RPI Facility as area background contamination, and as such are widely distributed in the region. To support this belief we have included information about known and suspected sources of these materials in the region.

This appendix supplements the discussion in Appendix C of the approved RCRA Facility Investigation (RFI) Workplan for the RPI Facility (December 1993), and fulfills the literature review subtask proposed in Section 4.2.1 of that RFI Workplan.

J.2 Approach to the Data Review

Various sources of information were accessed in order to see if analytical data were available on arsenic and PAH compounds in soil, groundwater, and sediments in the region and to find out more about historic land use in the region. The following sources were investigated:

- **U.S. Environmental Protection Agency.** RCRA and CERCLA files at the office of U.S. EPA Region 10 were examined, and many studies were found that contained analytical data for soil and groundwater. Hazardous waste generator notification files were also examined.

- **Washington State Department of Ecology.** At Ecology's regional office, files containing studies and analytical data were reviewed. The files represented: (1) companies listed in a Model Toxics Control Act (MTCA) report as having known or potential arsenic and/or PAH contamination; and (2) companies chosen solely because of their proximity to the RPI Facility. Some of the files examined contained useful historical information as well as reports by other agencies, such as the National Oceanic and Atmospheric Administration (NOAA) and the King County Department of Metropolitan Services.

- **King County Department of Metropolitan Services.** This agency's library provided useful information on the analysis of sediment samples from the Duwamish Waterway.

- **Puget Sound Air Pollution Control Agency.** PSAPCA's files containing information on raw materials, processes, air emissions, violations, incidents, and citizen complaints for sites in the area were reviewed.

- **Libraries.** The following local libraries were searched for historical information concerning land use in the vicinity of the RPI Facility: Renton Public Library, the Tukwila Branch of the King County Library System, and the West Seattle Branch of the Seattle Public Library.

- **Interviews.** Individuals from Ecology and the King County Department of Metropolitan Services provided information on levels and possible sources of known contamination, and suggested other sources of information to investigate. A longtime PSAPCA inspector provided information concerning past and present industrial activity in the area. Past employees at the RPI Facility were interviewed about past practices, processes, and raw materials at the site.

- **Plant Files.** Reports and other documents on file were reviewed to find out more about past plant operations; use of products, wastes, and raw materials; and past activities.

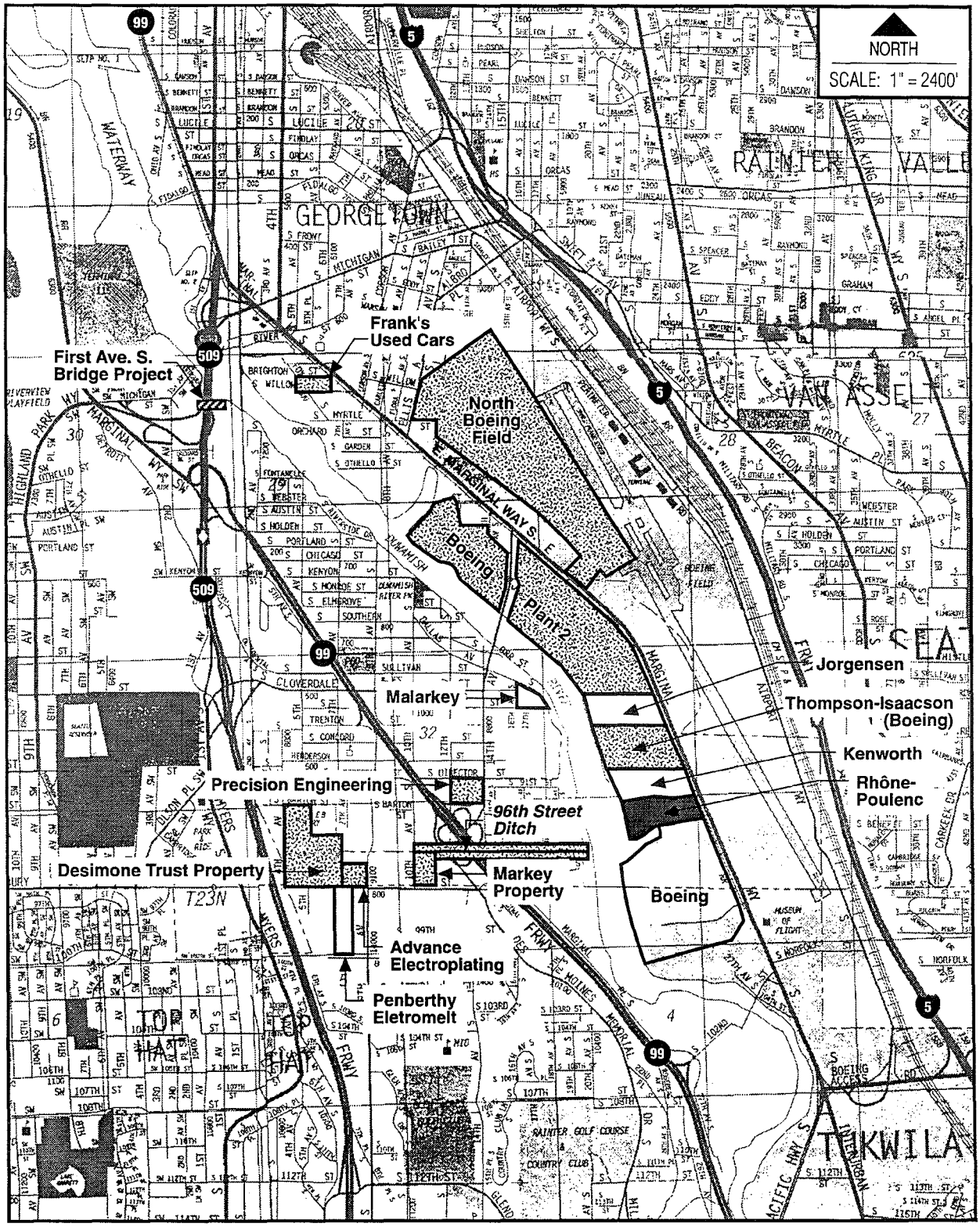
J.3 Arsenic

J.3.1 Analytical Findings

See Figures J-1 and J-2 for the locations of the sites discussed in the following subsections.

Soil

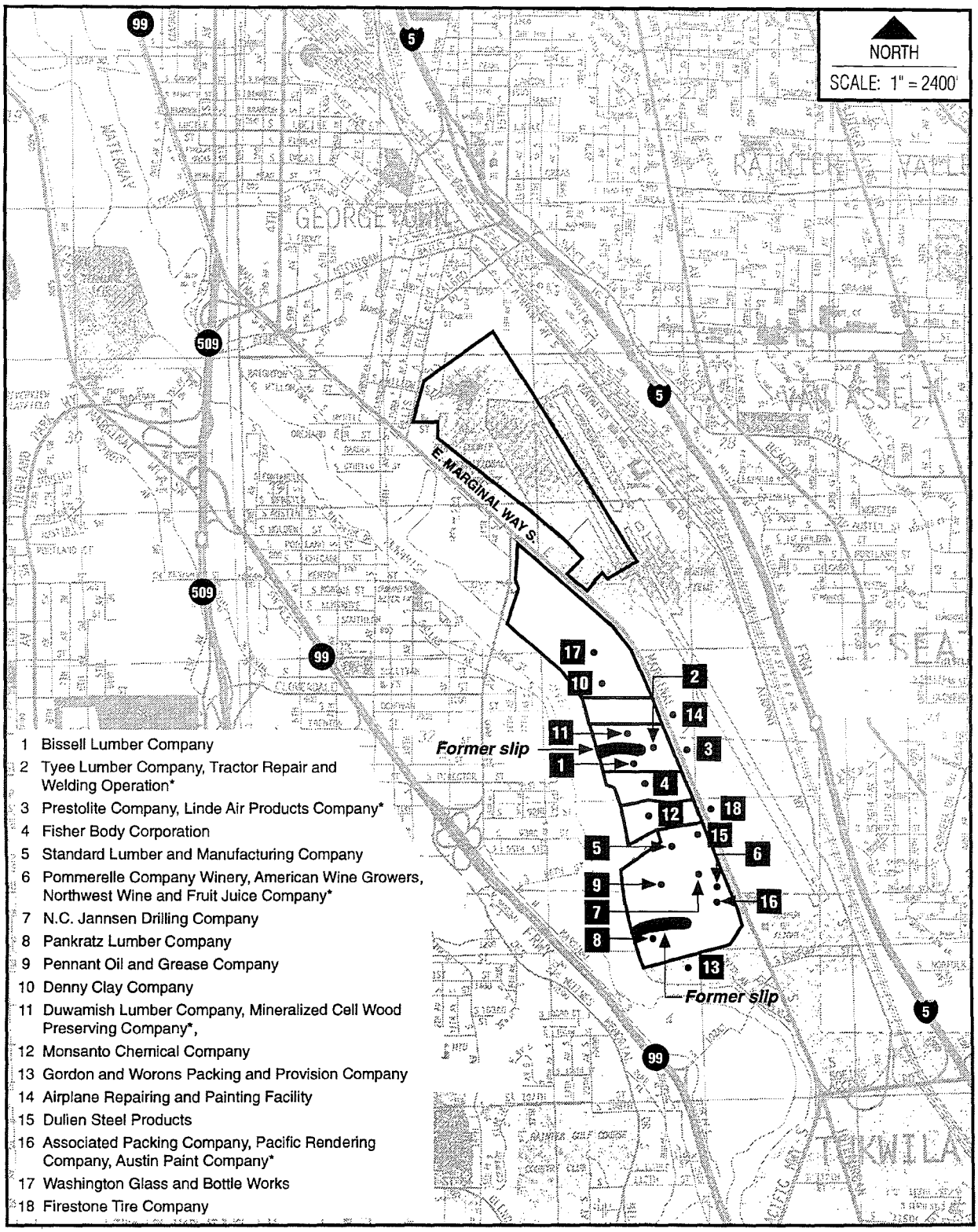
A review of the Landau database for the RPI Facility (Ref. 1) indicates that arsenic was detected in soil at the site in approximately 10 percent of the samples analyzed; where detected, concentrations ranged from 5 to 11 mg/kg. During RPI's RCRA Facility Investigation, arsenic was detected in 154 of the 156 soil samples collected. The mean concentration was 4.8 mg/kg



Arsenic Not Analyzed For

Arsenic Analyzed For and Detected

Figure J-1
Sites Where Arsenic Has Been Detected in Vicinity of Rhône-Poulenc Facility



Note:
** Asterisks indicate different occupants of the site during different time periods.*

Figure J-2
Past Ownership of Property in Vicinity of Rhône-Poulenc Facility

and the range was 0.5 mg/kg to 61.4 mg/kg (Ref. 2). Only one sample on the site exceeded the MTCA Method C cleanup level for arsenic of 57.1 mg/kg. This sample was from Area A10 and had a concentration of 61.4 mg/kg. This single value is not characteristic of Area A10, with its average arsenic concentration of 9.5 mg/kg. In examining data for many sites in the region it appears that soil contamination by arsenic is quite widespread and that the concentrations are as high as, or higher than, concentrations detected at the RPI Facility.

Table J-1 is a compilation of arsenic data from groundwater and soil studies in the region. Data summaries for various sites follow.

a. **The Boeing Company, North Boeing Field.** At this site, approximately one mile north of the RPI Facility, arsenic was detected in 9 out of 10 samples with a maximum of 196 mg/kg (Ref. 3).

b. **The Boeing Company, Plant 2.** This property is located along East Marginal Way, 0.5 miles north of the RPI Facility. North of 16th Avenue an underground storage tank investigation, in which 66 soil samples were taken at depths of 1 to 14 feet, yielded a mean of 3.2 mg/kg and a range of 1.1 to 28 mg/kg of arsenic (Ref. 4).

   At the southwest boundary of Plant 2, just to the north of Jorgensen Forge Company, arsenic was found in 7 out of 37 samples (detection limit: 5 to 8 mg/kg) at depths extending to 11 feet. The mean concentration found was 7.7 mg/kg and the range was 6 to 76 mg/kg. One sample from 11 feet contained 23 mg/kg. Arsenic was detected consistently throughout the site (Ref. 5).

   At the southeast boundary of Plant 2, arsenic was found in 20 out of 20 samples and was spread over depths ranging from 4 to 11 feet. The mean was 2.7 mg/kg and the range was 0.9 to 5.1 mg/kg (Ref. 6). In a separate study at the same location, arsenic was found in 38 out of 40 samples, with a mean of 2.1 mg/kg and a range of 0.8 to 5.3 mg/kg (Ref. 7).

c. **The Boeing Company, Thompson-Isaacson site.** This property is located 0.2 miles north of the RPI Facility. It has been examined for arsenic contamination and recently underwent a Department of Ecology-negotiated cleanup under the Model Toxics Control Act (WAC 173-340). Samples were taken along different cross-sections of the property and at three different depth ranges. Arsenic was found in all 165 soil samples, with values ranging from 1 to 4120 mg/kg. Samples taken from 0 to 5 feet averaged 132 mg/kg; from 5 to 11 feet, 303 mg/kg; and from 11 to 15 feet, 48 mg/kg. It appears that the sampling cross-sections were chosen to determine the relationship between the filled areas, where a former slip of the Duwamish Waterway was located, and arsenic soil levels. This fill is 20 feet deep in places. From the data, there is no apparent relationship between arsenic concentrations and whether the soil is present as fill for the former slip or not (Ref. 8).

d. **First Avenue South Bridge.** A study conducted on both sides of the Duwamish River detected arsenic in all 16 soil samples. Values ranged from 2 to 24 mg/kg. Samples at a depth of 10 feet averaged 7 mg/kg arsenic (Ref. 9).

Table J-1
Arsenic Concentrations at
Rhône-Poulenc Facility and Surrounding Sites

Site/Nature of Business	Location	Data Source	ARSENIC					
			Groundwater			Soil		
			Concentration Range of Detected Values (µg/l)	Mean (µg/l)	Frequency	Concentration Range of Detected Values (mg/kg)	Mean (mg/kg)	Frequency
Rhône-Poulenc Inc.	9229 East Marginal Way S.	1	1 - 72	23.6	27/32 samples	5 - 11	3.03	23/252
		2	2.1 - 131	27.2	29/30 samples	0.5 - 61.4	4.8	154/156
Advance Electroplating	9585 8th Ave. S.	3	46	--	1/1 sample	10.8 - 25	16.05	4/4
Boeing Company, North Boeing Field	Ellis Ave. & E. Marginal Way	4	170	--	4/5 sites	196 (maximum)	--	9/10
Boeing Company, Plant 2	7755 E. Marginal Way S.	5	1 - 53	7.3	13/18 samples	N/A	N/A	N/A
		6	1 - 34	10.1	12/13 samples	1.1 - 28	3.2	66/66
		7	6 - 39	--	3/37 samples (filtered)	0.8 - 5.3	2.1	38/40
		8	2 - 43	15	14/67 samples	6 - 76	7.7	7/37
		9	N/A	N/A	N/A	0.9 - 5.1	2.7	20/20
		10	1 - 12.8	11.5 (detections only)	4/6 samples	N/A	N/A	N/A
Boeing Company, Thompson-Isaacson	8541 E. Marginal Way S.	11	10 - 15000	1500	13/13 Wells	2 - 2840 mg/kg from 0-5 feet. 1 - 4120mg/kg from 5 to 11 feet. 1 - 511 mg/kg from 11 to 15 feet.	132 303 48	More than 165 samples collected and detected
Desimone Trust Property - farm (no history of arsenic use)	S. 96th St. between 8th Ave. S. and 5th Ave. S.	12	2U	2U	0/5 samples	1.9 - 6.8	3.8	8/8
First Avenue South Bridge Project	First Ave. S. and Duwamish River	13	8 - 50	---	6/6 samples	2 - 24	--	16/16
Frank's Used Cars - transmission repair shop, automobile wrecking yard	6305 E. Marginal Way S.	14	5U	5U	0/1 sample	12 - 17	14	3/3
Markey Property (no history of arsenic use)	Parcel 4 S. 96th St./10 Ave. S.	15	5 - 7	5.9	3/4 samples	150 - 210	180	4/4
Precision Engineers	1231 S. Director	16	N/A	N/A	N/A	31 - 78 µg/l (78 µg/l is equiv. to approx. 10.9 mg/kg total arsenic)	36 (based on detects)	Sediment; EP Tox.; 3/11
S. 96th Street Ditch	S. 96th and Duwamish River	17	N/A	N/A	N/A	0.5U mg/l (EP Tox.)	0.5U mg/l (EP Tox.)	0/4 EP Tox.

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Table J
Arsenic Concentrations at
Rhône-Poulenc Facility and Surrounding Sites

N/A = not applicable or not analyzed.
U = Compound not detected at given detection limits.

The means in this table were calculated by the writers of this report. Unless otherwise noted:
1. Where arsenic was not detected, used one-half of detection limit in calculating mean.
2. Where arsenic was not detected and detection limit unknown, used zero in calculating mean.
3. Where arsenic was detected at a low level and concentration was estimated by original contractor, this estimated value was used in calculating mean.

Data Sources

1. *Site Assessment, Rhône-Poulenc Facility, Tukwila, WA.* Landau Associates, 1991.
2. RCRA Facility Investigation, Rhône-Poulenc Facility, Tukwila, Washington. CH2M HILL, 1994 Data.
3. *Final Site Hazard Assessment Summary Report for Advance Electroplating, Seattle, Washington.* Parametrix & SAIC, July 1991.
4. North Boeing Field Subsurface Investigation Database. CH2M HILL, January 1992.
5. *Phase II Subsurface Environmental Assessment, Boeing North Duwamish Campus, Bldgs. 2-10 and 2-15, Seattle, WA.* Roy F. Weston, December 1992.
6. *Initial Evaluation, Boeing Plant 2 Buildings 2-10 and 2-15, Seattle, WA.* Roy F. Weston, May 1992.
7. *Soil and Groundwater Investigation, Boeing Plant 2*, Vol. I of II. Landau Associates, December 1992.
8. *Data Summary Report, Soil and Groundwater Site Characterization, Boeing Plant II, Tukwila, WA*, Vol. 1. GeoEngineers, January 27, 1993.
9. *Boeing Plant 2 Southeast (Cisterns) Preliminary Assessment.* Landau Associates, May 8, 1992
10. *Soil and Groundwater Data Summary, Building 2-91, Boeing Plant 2 Facility, Tukwila, WA.* Landau Associates, March 18, 1993
11. *Building 14-09, Thompson-Isaacson Site Investigation.* Landau Associates, May 4, 1988.
12. *Environmental Site Assessment, Desimone Trust Property, South Park, Seattle, Washington.* Hart Crowser, December 18, 1991.
13. *Interim Report Summary of Chemical Analyses for EIS Report, Preliminary Hazardous Waste Assessment, SR99 First Avenue South Bridge Project.* Dames & Moore for Washington State Department of Transportation, August 20, 1992
14. *Preliminary Environmental Study, Frank and Ruth Lenci Trust.* Environmental Associates, January 8, 1993.
15. *Environmental Site Assessment, Cement Kiln Dust Landfill, Markey Machinery Property.* GeoEngineers, August 16, 1989.
16. *Sediment Sampling, Precision Engineering, Inc. Seattle, Washington.* Sweet-Edwards/EMCON, February 26, 1990.
17. *Investigation of the South 96th Street Drainage Ditch.* Washington State Department of Ecology and Environment, August 24, 1987.

e. **Additional sites** fairly close to the RPI Facility were identified from Ecology's *MTCA Affected Media and Contaminant Report* (Ref. 10). These included the following locations where arsenic was found as a soil contaminant: Advance Electroplating (16.05 mg/kg mean, 10.8 to 25 mg/kg range); Desimone Trust Property, a farm with no history of arsenic use (3.8 mg/kg mean, 1.9 to 6.8 mg/kg range); Frank's Used Cars (14 mg/kg mean, 12 to 17 mg/kg range); and the Markey property, which has no history of arsenic use (180 mg/kg mean, 150 to 210 mg/kg range) (Refs. 11, 12, 13, and 14, respectively). EP Toxicity studies for the South 96th Street Ditch (which drains into the Duwamish River and has served as a discharge point for as many as 150 businesses) did not detect any arsenic at the 0.5 mg/l level (Ref. 15).

Figure J-3 is a graph comparing arsenic concentrations in soil at the RPI Facility with concentrations at other sites.

Groundwater

A review of the Landau database (Ref. 1) indicates that arsenic was detected in 27 out of 32 groundwater samples at the RPI Facility. Where detected, the concentrations ranged from 1 to 72 µg/l. The mean of all data was 23.6 µg/l. During RPI's RCRA Facility Investigation, arsenic was detected in 29 of the 30 groundwater monitoring wells. The concentrations detected ranged from 2.1 to 131 µg/l, and the mean was 27.1 µg/l (Ref. 2). Arsenic concentration levels in five wells exceeded the Maximum Contaminant Level of 50 µg/l; these values were 57, 56, 69, 57, and 131 µg/l. The 131 µg/l value was in a Background Area well located just inside the extreme southeast boundary of the Facility, at the farthest point of the site from where site-related manufacturing activities took place. Data for other sites in the region follow.

a. **The Boeing Company, North Boeing Field.** Arsenic was detected in 4 out of 5 samples with a maximum value of 170 µg/l (Ref. 3).

b. **The Boeing Company, Plant 2.** Just north of 16th Avenue South, arsenic was found in 13 out of 18 "shallow" and "intermediate-depth" wells and averaged 7.3 µg/l, with a range of 1 to 53 µg/l. The higher values were all in the shallow wells (Ref. 16). In another study at this location, arsenic was found in 12 out of 13 groundwater samples, with a mean of 10.1 µg/l and a range of 1 to 34 µg/l (Ref. 4).

   At the southwest boundary of Plant 2, arsenic was found in 14 of 67 groundwater samples with a mean of 15 µg/l and a range of 2 to 43 µg/l (Ref. 5). Also in this portion of the site, arsenic was found in 4 out of 6 samples with a mean for the 4 detections of 11.5 µg/l and a range of 1 to 12.8 µg/l (Ref. 17).

   At the southeast boundary of Plant 2, arsenic was found in 3 of 37 filtered samples. The range was 6 to 39 µg/l (Ref. 7).

c. **The Boeing Company, Thompson-Isaacson site.** Arsenic was found in 13 out of 13 shallow wells and averaged 1,500 µg/l with a range of 10 to 15,000 µg/l (Ref. 8).

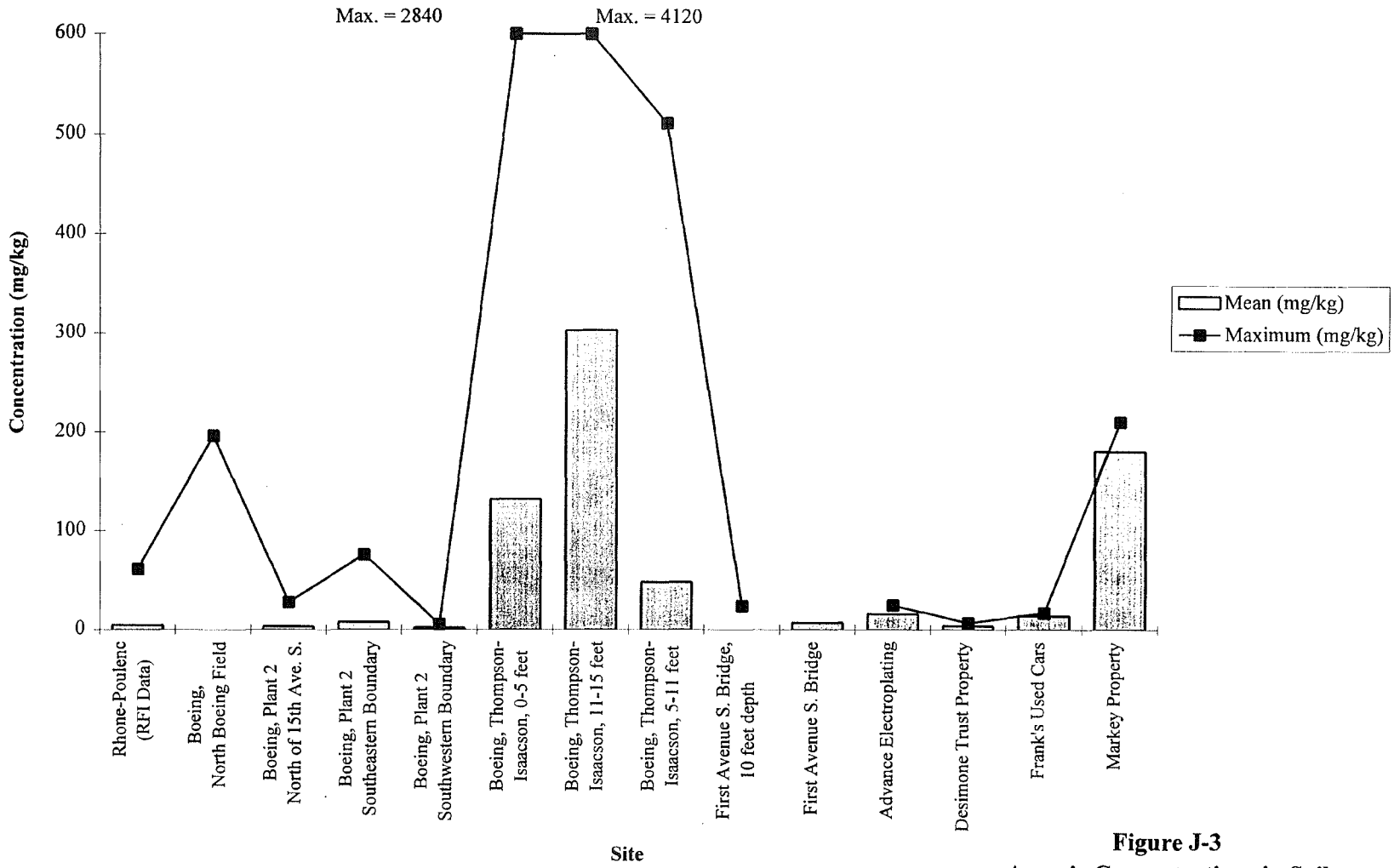

Figure J-3
Arsenic Concentrations in Soil

d. **First Avenue South Bridge.** A groundwater study in this location reported arsenic in 6 out of 16 samples with a range of 8 to 50 µg/l (Ref. 9).

e. **Additional nearby sites** where groundwater sampling was conducted were identified in the MTCA Report (Ref. 10). Those sites where arsenic was detected were Advance Electroplating (46 µg/l) and the Markey property (5 to 7 µg/l) (Refs. 11 and 14, respectively). This latter site has no history of arsenic use.

Figure J-4 graphically compares arsenic concentrations in groundwater at the RPI Facility with concentrations at other sites.

Sediments

A review of the Landau database (Ref. 1) indicates that arsenic was detected in 15 out of 16 sediment samples collected from the Duwamish Waterway adjacent to the RPI Facility. Where detected, the concentrations ranged from 7,000 µg/kg to 18,000 µg/kg. The mean of all data was 11,781 µg/kg. During RPI's RCRA Facility Investigation, arsenic was detected in all eight samples with a concentration range of 2,800 to 9,900 µg/kg. The mean was 5,963 µg/kg (Ref. 2). All detected arsenic concentrations are below the Washington State Marine Sediment Management Standards. Data on other sites in the region follow.

a. Sediment samples were taken at Precision Engineering, Inc. A mean EP Toxicity value of 36 µg/l and a range of 31 to 78 µg/l were found (Ref. 18). If one uses a calculation devised by The Boeing Company for arsenic in soils (Ecology internal memorandum of April 28, 1989, Ref. 19, and Ref. 20), 78 µg/l is equivalent to 10,920 µg/kg total arsenic. Portions of Reference 20 (*Final Report Thompson-Isaacson Site Soil Excavation Work Plan*, prepared for The Boeing Company by Landau Associates in 1989) are included at the end of this Appendix.

b. One study cited in a NOAA technical memo (Ref. 21) reported values for Duwamish Waterway sediments of between 84,000 and 640,000 µg/kg. This same study, by Crecelius et al., stated that values from 3,000 to 15,000 µg/kg were considered to represent "background levels" for Puget Sound (Ref. 22).

c. A study prepared for the King County Department of Metropolitan Services in 1982 reported a maximum arsenic concentration of 650,000 µg/kg in Duwamish Estuary sediments (Ref. 23). These results were disputed by another study in the same year, which found sediments to range from 9,700 to 82,000 µg/kg (Ref. 24).

J.3.2 General Land Use: Possible Sources

In addition to the ASARCO smelter in Tacoma, which was built in 1889 and is a known source of arsenic in the Puget Sound region, the literature search indicated other possible sources in the general area. One report in Ecology's files (Ref. 25) indicated that in 1945 the Mineralized Cell Wood Preserving Company was located at the south portion of the Thompson-Isaacson site. This company treated logs using arsenic-containing solutions. Storage tanks of these solutions were washed twice a day. The rinsate from this operation was then directed onto the ground.

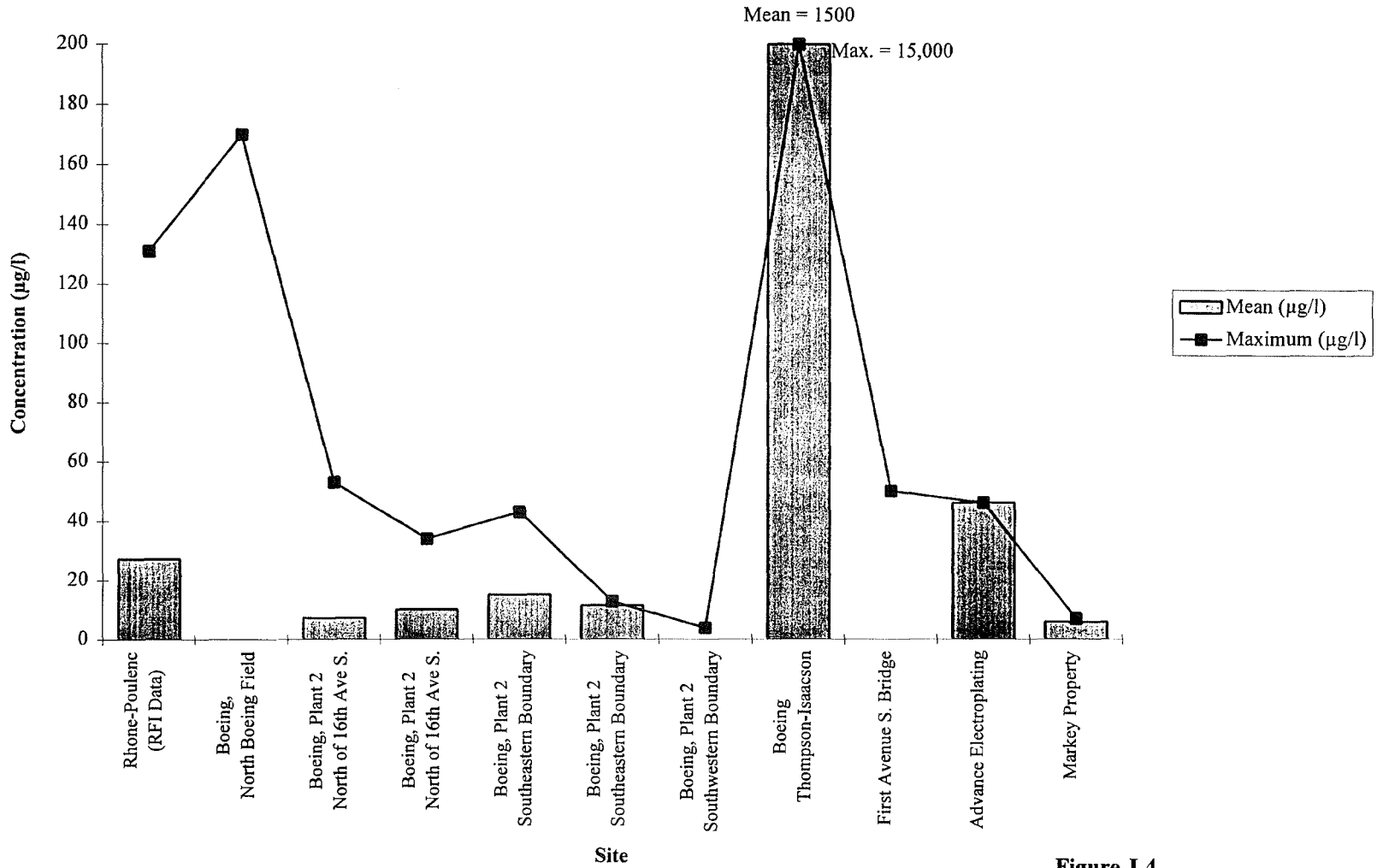

Figure J-4
Arsenic Concentrations in Groundwater

The Wyckoff Company, a wood-preserving company which has been in the area for many years, is located approximately 6 miles north of the RPI Facility. As recently as 1985, a part of its process involved generating and storing copper arsenate sludge (Ref. 26). Ash Grove Cement Company (formerly Lone Star), approximately 5 miles north, stored 25,000 tons a year of ASARCO slag onsite (uncovered) prior to 1985 (Ref. 26). Shipyards in the area reportedly used abrasive waste from copper smelters for sandblasting the hulls of ships. As late as the 1980s, sandblasting of ships and barges occurred in Slip No. 6.

As has already been discussed in Appendix C of the RFI Workplan for the RPI Facility, arsenic occurs naturally in native alluvial sediments and hydraulic fill from Elliott Bay and the Duwamish Waterway. Alluvial sediments are over 100 feet deep at the site, and the hydraulic fill ranges from about 3 to 8 feet deep. A history of Tukwila (Ref. 27) reports that coal mined in the early 1900s from a mine south of the RPI Facility had to be separated from naturally occurring arsenic disulfide prior to marketing.

J.3.3 Discussion

This data review has provided additional information indicating that arsenic occurs in soil, groundwater, and sediments in the immediate vicinity of the RPI Facility. At the nearest property for which data were known to be available (the Thompson-Isaacson site), arsenic was detected in soil and groundwater above the levels found in past studies at the RPI Facility and was distributed over depths of 0 to 15 feet. In the cleanup negotiated by The Boeing Company with Ecology for the Thompson-Isaacson site, the soil arsenic cleanup level was established based on exceedances of EP Toxicity limits of 5.0 ppm. Total soil arsenic data were available for comparison with EP Toxicity results. Since no soil with an arsenic concentration less than 700 ppm was found to fail the EP Toxicity Test, the cleanup level was set at 700 ppm (4/28/89 Ecology internal memorandum, Ref. 19 and Ref. 20). (Portions of Reference 20 are included at the end of this Appendix.) By comparison, during RPI's RCRA Facility Investigation the maximum detected arsenic level was 61.4 ppm and the mean was 4.8 mg/kg. The sample with the maximum arsenic concentration was the only soil sample on the site which exceeded the MTCA Method C cleanup level. The area in which this sample occurred had a mean arsenic concentration of 9.5 mg/kg, and this one high value was clearly not characteristic of the area. Five groundwater samples exceeded the Maximum Contaminant Level for arsenic; these were all close in value to this standard, with one exception. This one sampling location was at the southeast property line, the farthest possible point on the site from where site-related manufacturing activities took place. No sediment samples exceeded the Marine Sediment Management Standards.

Nearly all the investigated sites reported arsenic in soil and groundwater in concentrations comparable to or greater than those found at the RPI Facility. Except for the Thompson-Isaacson site, the agency files examined did not address cleanup levels at particular sites. The ASARCO smelter is a suspected source of arsenic in the area, as are other smaller local industries; however, the wide distribution of arsenic in soil, groundwater, and sediments points to the major source as native alluvial sediments and hydraulic fill. At least two published studies of the origins and distribution of arsenic in Puget Sound support the view that arsenic is distributed regionally rather

than being uniquely associated with the RPI Facility. The first of these studies, published in 1975 (Ref. 22), presented two significant results:

- Sand throughout lower Puget Sound that was not contaminated with arsenic from the ASARCO Tacoma smelter showed arsenic concentrations ranging between 2.9 and 7.5 mg/kg (eight samples).

- Suspended matter from rivers entering Puget Sound from the Skagit to the Duwamish contained arsenic at concentrations ranging from 15 to 74 mg/kg (19 samples). This is consistent with the five samples from the Duwamish falling between 15 and 40 mg/kg.

These two results show that detection of arsenic in soil at the RPI Facility is to be expected because of the widespread presence of arsenic in sediments and sands throughout Puget Sound; detection does not require Facility activities to be a source. In addition, a recent report issued by the Toxics Cleanup Program of the Department of Ecology (Ref. 28) summarized the results of a study to define a range of values representing the natural background concentrations of 12 metals in surficial soils throughout Washington State. For arsenic in the Puget Sound Basin, at 24 to 36 inches below the surface, the maximum concentration was 17.17 mg/kg, the 90th percentile was 7.30 mg/kg, and the mean was 3.96 mg/kg. Further, the arsenic content of river sediments (organic, sandy, and inorganic) transported into Puget Sound by the Duwamish River is about an order of magnitude higher than the arsenic content of soil at the Facility.

The most supportable conclusion is that arsenic occurs naturally in the native alluvial sediments and hydraulic fill that underlie the RPI Facility.

J.4 PAH Compounds

J.4.1 Analytical Findings

See Figures J-1 and J-2 for the locations of the specific sites mentioned in the following subsections.

Soil

Based on the Landau study in 1991 (Ref. 1), four high-molecular-weight PAH compounds (HPAH), containing four or more condensed benzene rings were found in soil samples at the RPI Facility at levels exceeding at least one regulatory criterion (MTCA Method B). These HPAHs are benzo(a)pyrene (detected in 4 percent of the samples; mean 0.046 mg/kg; range 0.13 to 0.6 mg/kg); benz(a)anthracene (detected in 4 percent of the samples; mean 0.046 mg/kg; range 0.051 to 0.64 mg/kg); benzo(k)flouranthene (detected in 2 percent of the samples; mean 0.049 mg/kg; range 0.19 to 1 mg/kg); and chrysene (detected in 5 percent of the samples; mean 0.049 mg/kg; range 0.05 to 0.71 mg/kg). Four other HPAH compounds were found ranging from 1.8 mg/kg to 0.036 mg/kg. These were found in 10, 2, 2, and 0.4 percent of the samples, respectively (see Table J-2).

Table J-2
PAH Concentrations at
Rhône-Poulenc Facility and Surrounding Sites

Site/Nature of Business	Location	Data Source	Polynuclear Aromatic Hydrocarbons							
			Groundwater				Soil			
			Compound	Conc. Range of Detected Values (µg/l)	Mean (µg/l)	Frequency	Compound	Conc. Range of Detected Values (mg/kg)	Mean (mg/kg)	Frequency
Rhône-Poulenc Inc.	9229 East Marginal Way S.	1*	Benzo(a)pyrene	0.013-0.17	0.023	5/32	Benzo(a)pyrene	0.13-0.6	0.046	4/250
			Benz(a)anthracene	0.021-0.085	0.020	3/31	Benz(a)anthracene	0.051-0.64	0.046	9/252
			Benzo(k)fluoranthene	0.074-0.092	0.027	3/32	Benzo(k)fluoranthene	0.19-1	0.049	5/248
			Chrysene	0.02-0.14	0.028	9/32	Chrysene	0.05-0.71	0.049	12/250
			Indeno(1,2,3-c,d)pyrene	0.069-0.21	0.032	3/32	Indeno(1,2,3-c,d)pyrene	0.13-0.55	0.045	4/253
			Dibenz(a,h)anthracene	0.048	0.017	1/32	Dibenz(a,h)anthracene	0.078	0.039	1/253
			Benzo(b)fluoranthene	0.04-0.098	0.023	3/24	Benzo(b)fluoranthene	N/A	N/A	N/A
		2	Benzo(a)pyrene	1-7	5.3	4/30	Benzo(a)pyrene	0.044-0.650	0.55	6/84
			Chrysene	1	5.4	1/30	Benz(a)anthracene	0.040-0.460	0.55	6/84
			Pyrene	2	5.4	1/30	Benzo(k)fluoranthene	0.055-0.590	0.55	5/84
			Fluoranthene	2	5.4	1/30	Chrysene	0.043-0.840	0.55	9/84
			Naphthalene	2-7	5.4	2/30	Indeno(1,2,3-c,d)pyrene	0.058-0.440	0.56	4/84
							Benzo(b)fluoranthene	0.053-0.720	0.51	5/84
							Pyrene	0.049-1.500	0.58	14/84
							Benzo(g,h,i)perylene	0.053-0.410	0.33	2/84
							Anthracene	0.074-0.260	0.63	4/84
							Fluoranthene	0.039-1.100	0.58	12/84
							2-Methylnapththalene	0.046-0.100	0.62	7/84
							Naphthalene	0.051-0.290	0.63	6/84
							Phenanthrene	0.039-1.400	0.50	18/84
Boeing Company North Boeing Field	Ellis Ave. and E. Marginal Way S.	3	Naphthalene	0.5		1/8	Benzo(a)pyrene	0.099-0.77	---	2/11
			Pyrene	0.5		1/8	Benzo(b)fluoranthene	0.25		1/11
			Fluoranthene	0.5		1/8	Benzo(k)fluoranthene	0.25		1/11
			4-Methyl-phenanthrene	0.5		1/8	Chrysene	0.11		1/11
							Benz(a)anthracene	0.092		1/11
							Fluoranthene	0.21		1/11
							Pyrene	0.15		1/11
							Phenanthrene	0.13		1/11
Boeing Company Plant 2	7755 E. Marginal Way S.	4	N/A	N/A	N/A	N/A	Phenanthrene	0.022-0.041	0.030	4/12
							Fluoranthene	0.020-0.063	0.040	6/12
							Pyrene	0.022-72	12.0	6/12
							Benz(a)anthracene	0.035-0.035	0.035	2/12
							Chrysene	0.042-0.044	0.043	2/12
							Benzo(b)fluoranthene	0.038	0.038	1/12
							Benzo(k)fluoranthene	0.038	0.038	1/12
							Benzo(a)pyrene	0.048	0.048	1/12
							Indeno(1,2,3-cd)pyrene	0.039	0.039	1/12
							Benzo(g,h,i)perylene	0.042	0.042	1/12
		5	Naphthalene	0.6-23	3.6	4/17	Naphthalene	0.011-0.031	0.011	3/27
			2-Methylnaphthalene	0.7-5	1.0	3/17	2-Methylnaphthalene	0.057	0.012	1/27
			Fluorene	17-17	2.4	2/17	Phenanthrene	0.015-0.023	0.011	5/27
			Phenanthrene	5.4-5.6	1.1	2/17	Fluoranthene	0.014-0.027	0.012	5/27
			Anthracene	2.5-2.6	0.74	2/17	Pyrene	0.014-0.026	0.012	5/27
			Fluoranthene	2.5-2.5	0.74	2/17	Benz(a)anthracene	0.0077	0.097	1/27
			Pyrene	1.3-1.3	0.59	2/17	Chrysene	0.0079-0.0083	0.010	2/27
							Benzo(b)fluoranthene	0.0012	0.097	1/27
							Benzo(k)fluoranthene	0.0012	0.097	1/27

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Site/Nature of Business	Location	Data Source	Polynuclear Aromatic Hydrocarbons							
			Groundwater				Soil			
			Compound	Conc. Range of Detected Values (µg/l)	Mean (µg/l)	Frequency	Compound	Conc. Range of Detected Values (mg/kg)	Mean (mg/kg)	Frequency
Boeing Company Plant 2 (continued)	7755 E. Marginal Way S.	6	N/A	N/A	N/A	N/A	Fluoranthene	0.068	0.040	1/13
							Pyrene	0.057	0.052	1/41
							Phenanthrene	0.100	0.094	1/14
							Chrysene	0.028	0.016	1/41
							Naphthalene	0.260-0.570	0.115	2/9
							2-Methylnaphthalene	0.081-1.600	0.221	3/9
		7	Naphthalene	3	1.0	1/5	Naphthalene	0.022-0.21	0.067	2/5
							2-Methylnaphthalene	0.015	0.058	1/5
							Phenanthrene	0.120-0.15	0.075	2/5
		8	Naphthalene	1.3-19	3.8	5/13	N/A	N/A	N/A	N/A
Malarkey Asphalt Plant	8700 Dallas Ave. S.	9	Naphthalene	0.060-0.110	0.034	2/5	Pyrene	0.084-0.17	0.066	4/7
			2-Methylnaphthalene	0.030	0.006	1/5	Fluoranthene	0.098-0.15	0.035	2/7
							Naphthalene	0.250-3.30	0.507	2/7
							2-Methylnaphthalene	0.240-130	18.6	2/7
							Phenanthrene	0.110-4.7	0.710	3/7
							Chrysene	0.100-4.3	0.629	2/7
							Benz(a)anthracene	0.11	0.016	1/7
S. 96th Street Ditch	S. 96th St. and Duwamish River	10	N/A	N/A	N/A	N/A	Benzo(a)pyrene	880	---	1/1
							Chrysene	52		1/1
							Benz(a)anthracene	21		1/1
							Indeno(1,2,3-cd)pyrene	5.0		1/1
							Pyrene	27		1/1

N/A = not applicable or not analyzed.
N/D = not detected.

*PAH Compounds at the Rhône-Poulenc Facility that did not exceed MTCA Method B cleanup standards were not listed.

The means in this table were calculated by the writers of this report. Unless otherwise noted:
1. Where PAH was not detected, used one-half of detection limit in calculating mean.
2. Where PAH was not detected and detection limit unknown, used zero in calculating mean.
3. Where PAH was detected at a low level and concentration was estimated by original contractor, this estimated value was used •in calculating mean.

Data Sources
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In addition, eight low-molecular-weight PAH compounds (LPAHs), containing three or fewer condensed benzene rings, were detected. These ranged from 2.7 mg/kg to 0.027 mg/kg. As shown in Table J-3, the concentrations and frequency of detections do not appear to be a function of soil depth.

RPI's RCRA Facility Investigation detected nine HPAHs and four LPAHs in soil at the site. All values were below their respective MTCA Method C cleanup levels. See Table J-2 for a summary of these data.

Table J-2 is a compilation of PAH data from groundwater and soil studies in the region. Data summaries follow for sites in the vicinity of the RPI Facility.

a. **The Boeing Company, North Boeing Field.** The presence of six HPAHs was reported and these occurred in 9 to 18 percent of the samples, with a range in concentration of 0.092 to 0.77 mg/kg. Two LPAH compounds were found in 9 percent of the samples and had values of 0.21 mg/kg and 0.13 mg/kg. Three of the HPAHs were the same compounds that exceeded a regulatory criterion at the RPI Facility. The maximum values of these compounds (0.77, 0.11, and 0.092 mg/kg) were similar to those found at the RPI Facility; however, the frequency of occurrence (18, 9, and 9 percent of samples, respectively) was higher at Boeing (Ref. 3).

b. **The Boeing Company, Plant 2.** A study was completed for the portion of this site that is north of 16th Avenue South. Eight HPAHs and two LPAHs were detected in the site soils. The HPAHs occurred in 8 to 50 percent of the samples and had a maximum value of 72 mg/kg in a sample taken at the 1- to 4-foot interval near a waste oil sump. Four of these HPAHs (benzo(a)pyrene, benz(a)anthracene, benzo(k)flouranthene, and chrysene) were the same compounds that exceeded a regulatory criterion at the RPI Facility. The values for these four that were common to both sites had a range of 0.035 to 0.048 mg/kg at the Boeing facility, and all occurred in samples from the vicinity of the waste oil sump (Ref. 4).

   At the southwest boundary of Plant 2, three LPAH compounds were detected. They occurred in 40, 20, and 40 percent of the samples and had a range in values of 0.015 to 0.21 mg/kg (Ref. 17).

   At the southeast boundary, five HPAH compounds were detected and had a range in values of 0.0012 to 0.026 mg/kg (Ref. 7). In another study, two HPAHs were both found in 2 percent of the samples, with values of 0.028 and 0.057 mg/kg. Four LPAH compounds were detected and had a range of 0.068 to 1.6 mg/kg. Seven additional HPAH compounds and one LPAH were tested for, but not detected (Ref. 6).

c. **Eight sites** within the general vicinity of the RPI Facility were identified in Ecology's "MTCA Affected Media and Contaminant Report" as having PAH contamination (Ref. 10). Whether the contamination was in soil or groundwater was not always discernible from the report. The sites addressed in the report were: Boeing Plant 2 (discussed previously), Great Western Chemical (south of First Avenue South Bridge), Northwest Cooperage Company, Inc. (south of Great Western), Malarkey Asphalt Company,

Table J-3
PAH Soil Concentrations at Various Depths at Rhône-Poulenc Facility [1]

Compound [2]	Depth (ft)	Number of Detections	Number of Samples	Frequency of Detections	Minimum of Detections (mg/kg)	Maximum of Detections (mg/kg)	Mean of All [3] (mg/kg)
Benz(a)anthracene	2.5	3	54	0.056	0.099	0.34	0.05
Benz(a)anthracene	5	1	51	0.020	0.065	0.065	0.04
Benz(a)anthracene	7.5	4	54	0.074	0.051	0.49	0.05
Benz(a)anthracene	10	1	27	0.037	0.64	0.64	0.06
Benzo(a)pyrene	2.5	1	53	0.019	0.43	0.43	0.05
Benzo(a)pyrene	7.5	2	53	0.038	0.13	0.6	0.05
Benzo(a)pyrene	10	1	28	0.036	0.58	0.58	0.06
Benzo(k)fluoranthene	2.5	2	52	0.038	0.1895	0.57	0.05
Benzo(k)fluoranthene	7.5	2	53	0.038	0.2	1	0.06
Benzo(k)fluoranthene	10	1	27	0.037	0.6	0.6	0.06
Chrysene	2.5	3	53	0.057	0.13	0.49	0.05
Chrysene	5	2	49	0.041	0.063	0.078	0.04
Chrysene	7.5	4	54	0.074	0.058	0.7	0.06
Chrysene	10	2	28	0.071	0.056	0.71	0.06
Chrysene	15	1	16	0.063	0.05	0.05	0.04
Dibenz(a,h)anthracene	2.5	1	54	0.019	0.078	0.078	0.04
Indeno(1,2,3-cd)pyrene	2.5	1	54	0.019	0.36	0.36	0.05
Indeno(1,2,3-cd)pyrene	7.5	2	54	0.037	0.13	0.55	0.05
Indeno(1,2,3-cd)pyrene	10	1	28	0.036	0.49	0.49	0.05

[1] Data Source: *Site Assessment, Rhône-Poulenc Facility, Tukwila, WA*. Landau Associates, 1991.

[2] All carcinogenic PAHs that had at least one detection in soil onsite.

[3] Mean calculated assuming nondetections at 0.5 of their reported detection limits.

Penberthy Electromelt (thermal treatment of hazardous waste), Seattle Commercial Finishing (north of First Avenue South Bridge), South Park Landfill, and the South 96th Street Ditch (a ditch that drains into the Duwamish River and has served as a discharge point for as many as 150 businesses). The analytical data presented in the report for these sites are limited.

Malarkey Asphalt Company, across the river from the RPI Facility, is a manufacturer of asphalt and roofing tar. In a study conducted at this site, HPAHs were found in 4 out of 7 samples. The range of concentrations for these was 0.084 to 4.3 mg/kg. Two of these compounds exceeded a regulatory criterion at the RPI Facility (Ref. 29).

Very high concentrations of five HPAHs were found in one sample taken at the South 96th Street Ditch. Three of these compounds, with concentrations of 880, 52, and 21 mg/kg, and were found at the RPI Facility at maximum levels of 0.6, 0.71, and 0.64 mg/kg, respectively (Ref. 15).

Groundwater

According to the Landau database for the RPI Facility (Ref. 1), seven HPAH compounds were found in groundwater at concentrations exceeding at least one regulatory criterion (MTCA Method B). These were found in an average of 13 percent of the samples and the means ranged from 0.017 µg/l to 0.032 µg/l. The values ranged from 0.013 to 0.21 µg/l. RPI's RCRA Facility Investigation detected three HPAHs in groundwater at the site (Ref. 2). These were benzo(a)pyrene, chrysene, and pyrene. Only benzo(a)pyrene was detected at levels above its Maximum Contaminant Level of 0.2 µg/l. This compound was found in 13 percent of the samples and ranged in concentration from 1 µg/l to 7 µg/l. Data on other sites in the area follow.

a. **The Boeing Company, North Boeing Field.** Four PAH compounds (one HPAH and three LPAHs) were found in 1 sample out of 8 at this site, all at concentrations of 0.5 µg/l (Ref. 3).

b. **The Boeing Company, Plant 2.** In the southwest portion of the site, one LPAH compound was found in 1 sample out of 5. The concentration of this sample was 3 µg/l (Ref. 17).

   In the southeast portion of the site, seven PAH compounds (one HPAH and six LPAHs) were found in 2 out of 17 samples (Ref. 7). Pyrene, an HPAH compound, was found in 12 percent of the samples, at concentrations of 1.3 µg/l. The LPAHs ranged from 0.6 to 23 µg/l and had a mean value of 1.6 µg/l. In another study at this same location, one LPAH was found in 5 out of 13 samples, with a range in values of 1.3 to 19 µg/l (Ref. 30).

c. **Malarkey Asphalt Plant.** Two LPAHs were found: naphthalene in 2 out of 5 samples, with values of 0.060 µg/l and 0.110 µg/l; and 2-methylnaphthalene in 1 out of 2 samples, with a value of 0.030 µg/l (Ref. 29).

Sediments

The Landau study conducted at the RPI Facility (Ref. 1) found no levels of PAH compounds that exceeded any regulatory criteria in sediments. Eight HPAHs (maximum concentration 910 µg/kg, minimum 12 µg/kg) and six LPAHs (maximum concentration 930 µg/kg, minimum 9 µg/kg) were detected. These compounds were found in an average of 66 percent of the samples.

RPI's RCRA Facility Investigation also found no levels of PAH compounds that exceeded the Washington State Marine Sediment Management Standards (Ref. 2). In Round 1, nine HPAHs (maximum concentration 890 µg/kg, minimum 16 µg/kg) and five LPAHs (maximum concentration 1,200 µg/kg, minimum 15 µg/kg) were detected. These compounds were found in 63 percent of the samples. In Round 2 (in the top 1 inch of sediment), the HPAHs ranged in concentration from 13 µg/kg to 400 µg/kg and the LPAHs from 13 µg/kg to 100 µg/kg.

a. PAH compounds have been found in high concentrations in sediments of Elliot Bay, with levels varying from 150 µg/kg to 63,000 µg/kg. NOAA reports that concentrations of the HPAHs benzo(a)pyrene and benz(a)anthracene range from 6 to 4,000 µg/kg and from 10 to 8,400 µg/kg, respectively (Ref. 16). In comparison, sediment samples at the RPI Facility ranged from 12 to 340 µg/kg for benzo(a)pyrene (mean of 110 µg/kg) and 14 to 510 µg/kg for benz(a)anthracene (mean of 138 µg/kg).

b. One study addressing pollutants in Puget Sound found that LPAHs in urban bays were detected in 601 samples out of 612, with a median concentration of 780 µg/kg and a maximum of 630,000 µg/kg. HPAHs were detected in 614 out of 617 samples, with a median of 2,800 µg/kg and a maximum of 3,200,000 µg/kg (Ref. 31).

c. In a data review prepared for the Elliott Bay/Duwamish Restoration Program, it was reported that PAH compounds in sediment samples collected near Slip No. 6 ranged from 500 µg/kg to 15,000 µg/kg (Ref. 32).

d. In an Elliott Bay Action Program study prepared for U.S. EPA in 1988, contaminant sources of the Duwamish Waterway were evaluated. The King County Storm Drain Outfall in Slip No. 6 was one of the locations sampled.

   This drain serves areas to the east of the RPI Facility. Sediment samples collected in 1985, as part of this study, contained eight HPAHs ranging in concentration from 3,300 µg/kg to 16,000 µg/kg (dry weight). Another portion of the same study reported 18,000 µg/kg of total LPAHs and 72,400 µg/kg of total HPAHs in sediments collected from this King County Storm Drain (Ref. 33).

e. Sediment samples were taken in the Duwamish Waterway approximately 0.5 miles upstream from the RPI Facility, near a combined sewer overflow and storm drain outfall site. This study was conducted by King County Department of Metropolitan Services for the Elliott Bay-Duwamish Restoration Program Panel. A 1990 sampling resulted in 44,000 µg/kg total LPAHs (range of individual LPAHs: 900 to 29,000 µg/kg) and 180,000 µg/kg total HPAHs (range: 26,000 to 37,000 µg/kg). A 1992 sampling resulted

in 22,000 and 25,000 μg/kg total LPAHs (range: 900 to 12,000 μg/kg) and 170,000 and 86,000 μg/kg total HPAHs (range: 2,300 to 42,000 μg/kg) (Ref. 34).

The sites where PAH compounds have been detected are shown in Figure J-5.

J.4.2 General Land Use: Possible Sources

Local Industries

The area along the Duwamish River has been an industrial center for at least 90 years. The companies shown in Figure J-2 existed in the past and are no longer in business. They were located and identified from Sanborn Fire Insurance Maps for the years 1904 to 1946 (Ref. 35). Five of these were lumber mills, all within a mile of the RPI site. All burned sawdust in incinerators and boilers; emissions from wood burning are known sources of PAHs. Contributing to this was wood burning in homes, a common source of heat in past years. Many accidental fires occurred in the area, especially in the early years. For example, a racetrack with a large grandstand was located near the site of the present RPI Facility, and burned in 1917 (Ref. 27). Two businesses located just south of the present RPI Facility, Standard Lumber and Manufacturing Company and Associated Packing Company, burned between 1929 and 1946 (Ref. 35).

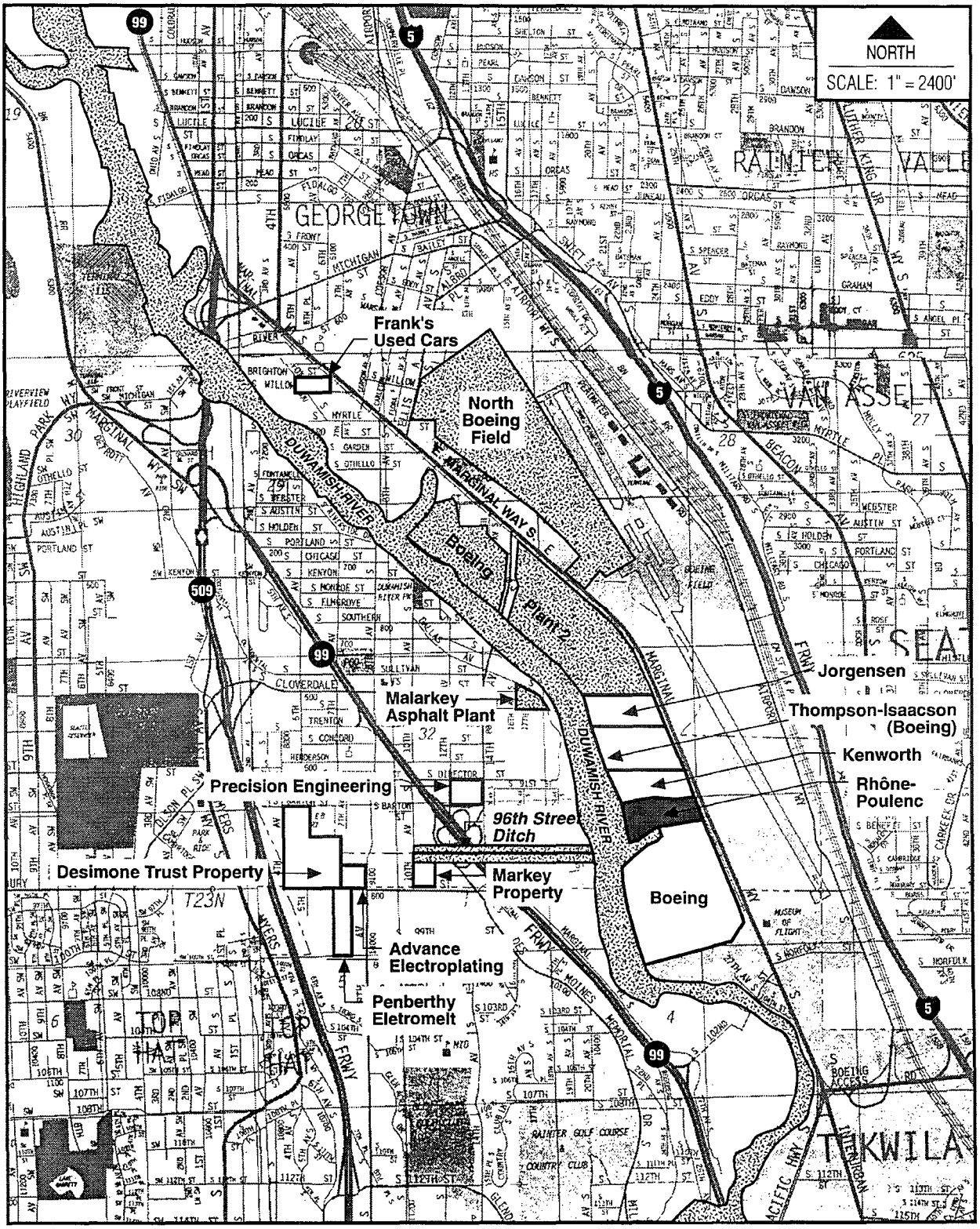
The Firestone Tire retreading plant was located across East Marginal Way from the RPI Facility for 10 to 15 years. This operation often emitted a dark smoke. Carbon black, which can account for about one third of the weight of tire treads, is a known source of PAHs. The retreading process involves heating the rubber to high temperatures and could be a possible source of PAHs at the nearby RPI Facility.

Malarkey Asphalt Company is located across the Duwamish River from the RPI Facility. According to a 1985 report (Ref. 26), this company had an unlined wastewater disposal pond on the bank of the river, which occasionally overflowed into the river. Asphalt and roofing tar, which the company manufactures, are known sources of PAH compounds. The Mineralized Cell Wood Preserving Company, which was located 0.2 miles north of the Facility in 1945, could very likely have treated wood with creosote as well as with arsenic.

A report prepared for U.S. EPA Region 10 discusses potential PAH sources in the King County Storm Drain Basin, which discharges into Slip No. 6. This report cites possible historical contamination from a petroleum distributor that operated in the Basin in the 1940s, and an aircraft manufacturing site that is on USEPA's CERCLIS (Ref. 33).

Coal and Other Sources

There is a long history of coal mining and coal use in this area (Ref. 36). Coal was mined as early as the mid-1800s in areas to the south and east of the present RPI Facility. As mentioned earlier, a coal mine was even located in Tukwila (Ref. 27). For many years coal was shipped down the Duwamish River, and the overturning of these barges was not uncommon. As early



PAHs Not Analyzed For

PAHs Analyzed For and Detected

Figure J-5
Sites Where PAH Compounds Have Been Detected in Vicinity of Rhône-Poulenc Facility

as 1875, coal was being shipped by rail through the Duwamish Valley to Seattle (Ref. 37). Figure J-6 depicts the transportation routes of coal from a major mining area through the Duwamish River Valley to Puget Sound. It is not surprising that the sediments in the region contain PAH compounds, considering that the site of the RPI Facility was filled with dredge material from the river. Moreover, this site was regularly inundated with floodwaters (Ref. 27) when it was on an oxbow of the Duwamish River, before the Waterway was constructed.

Coal was used to heat homes, fuel trains and ships, run industrial boilers, generate steam for municipalities, and provide heat for the many foundries in the region. The Duwamish River Valley has been a major thoroughfare for railroad traffic ever since railroads first came to this part of western Washington. All of the railroads burned coal in their early years of operation. Jorgensen, Isaacson, and Olympic (in Georgetown) foundries all pre-date World War II and, in all probability, burned coal for many years.

Steam plants in the area date from the early 1900s. Two Seattle steam plants were on Ecology's 1990 list of MTCA sites for the confirmed presence of PAH compounds. The former steam plant site in Georgetown may be similarly contaminated. A coal gasification plant was located where Union Station is now. Some of the coal-fired steam plants also generated electricity.

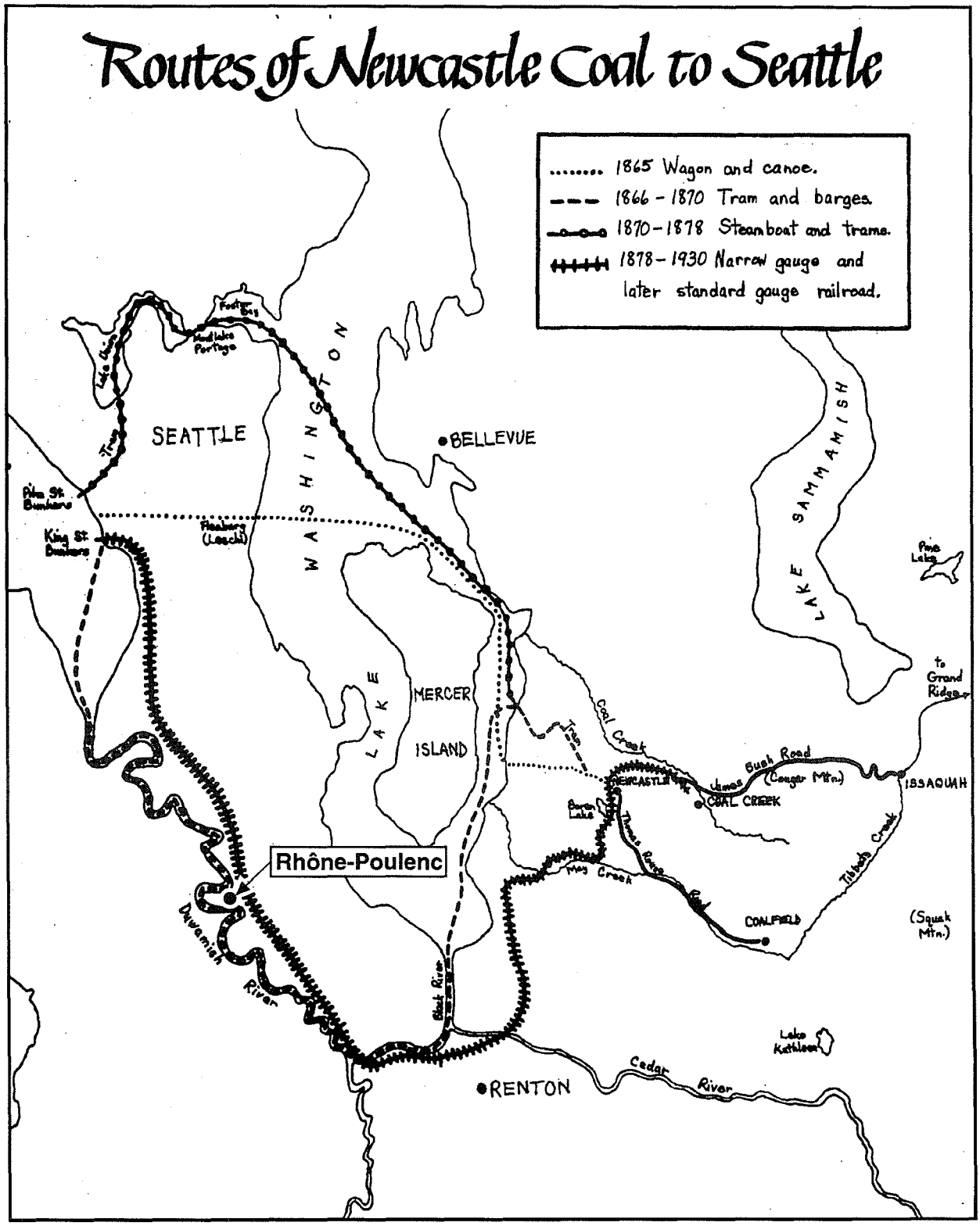
In 1904 the Denny Clay Company, at the southeastern end of the present Boeing Plant 2, reportedly had a coal burner and numerous kilns, which most likely burned coal also. This is just one documented example of the many companies in the area that burned coal (Ref. 35).

Many industries in the region have burned fuel oil in their boilers in the past. Most still do, when natural gas is not available. Fuel oil is a known source of LPAHs. PSAPCA files contain many notices of violations relating to the emission of black smoke when neighboring plants fired up their boilers using fuel oil. Three companies close to the RPI Facility had PSAPCA violations for smoke and soot emissions from waste burners, melting furnaces, and burning of old building materials, including roofing tar and roofing paper. PSAPCA reported that Boeing Plant 2 emitted 93,478 pounds of naphthalene, a LPAH, in 1990. (This information was reported to PSAPCA in Boeing's annual Air Contaminant Emission Inventory.)

Diesel exhaust is a source of PAHs, and East Marginal Way gets much truck traffic. Creosote from bridge and dock pilings and from telephone poles are contributors of PAH compounds to soil and sediments. According to Ecology's Supervisor of the Urban Bay Action Teams, the life of a piling is considered to be forty years. By the end of this time period, the 20 to 30 pounds of creosote associated with each piling has leached to the environment.

J.4.3 Discussion

Analytical data for concentrations of PAH compounds in soil and groundwater in the region are very limited, even for those sites on Ecology's MTCA sites listing. In the studies that do exist, it is often not clear how many of the PAHs were analyzed for; for those that were, the detection limits were often high. It is therefore difficult to make a good comparison between PAHs found at the RPI Facility and other sites in the area. In all cases, at each site where they were analyzed for, some PAH compounds were found.



Copied with permission from Richard K. McDonald, author of "The Coals of Newcastle, a Hundred Years of Hidden History."

Figure J-6
Routes of Coal Shipping

Based upon the available information, we believe that these compounds occur with greater frequency at surrounding sites and generally are comparable in concentration to those at the RPI Facility. The RCRA Facility Investigation found no PAHs in soil at levels above the MTCA Method C cleanup levels. In groundwater, only benzo(a)pyrene was above its Maximum Contaminant Level criterion. The low solubility of this compound in water suggests that its detection is the result of suspended solids in the samples. No exceedences of the Marine Sediment Management Standards were observed for samples where PAHs were detected. Table J-3 clearly shows that the concentrations of five HPAH compounds in soil at the RPI Facility have no relationship to depth, but are evenly distributed vertically throughout the site. This widespread distribution substantiates the conclusion that the presence of PAHs is attributable to natural and anthropogenic conditions in the region and not to activities specifically related to the RPI Facility. All investigations into the types of operations which occurred in the past indicate that PAHs were not related to RPI Facility activities. The asphalt used in paving and the treated telephone poles could not account for the widespread distribution (laterally and vertically) of these compounds.

It is evident from the data review that significant concentrations of PAHs exist in sediments of the Duwamish Waterway and Elliott Bay. The concentration of PAHs detected immediately off-shore of the RPI Facility are not unusually high relative to concentrations present elsewhere in the Duwamish River and Elliott Bay. Very high concentrations of PAHs have been found in sediments near the outfalls of storm drains (unrelated to RPI) in Slip No. 6 and upstream of the RPI Facility. The high concentrations in these locations suggest offsite PAH sources.

Much information was found concerning the occurrence of coal deposits and the shipping and use of coal in the region. Accordingly, it was not surprising to find PAHs widely distributed, both laterally and vertically, throughout the soils at the RPI Facility and in the Duwamish River/Elliott Bay region.

J.5 Summary and Conclusions

Based on the data review, there is strong evidence indicating that arsenic is a regionally occurring component of soil, groundwater, and sediments in the vicinity of the RPI Facility, throughout the Duwamish watershed, and in all drainages northward. The report of Crecelius et al. (Ref. 22) indicates that sand throughout lower Puget Sound, not contaminated with arsenic from the ASARCO smelter in Tacoma, contained arsenic concentrations comparable to those in soil samples at the RPI Facility. In addition, a recent Department of Ecology Toxics Cleanup Program report (Ref. 28) supports the finding that arsenic concentrations at the Facility are comparable to background concentrations. Furthermore, suspended matter from rivers entering Puget Sound from the Duwamish River northward contained arsenic at concentrations on an order of magnitude higher than in soil at the RPI Facility.

Nearly all the site data found in agency files and examined during the data review indicated arsenic concentrations in soil and groundwater at least as high as those at the RPI Facility. A

reasonable interpretation of the findings is that arsenic is naturally occurring in the vicinity of the RPI Facility in the native alluvial sediments and the overlying hydraulic fill.

Considering the low solubilities, poor transport properties, and widespread horizontal and vertical distribution of PAHs across the RPI Facility (Table J-3) and the fact that past activities at the Facility did not involve PAH-containing or PAH-generating materials, it is likely that the PAH compounds found are mainly attributable to the natural weathering of regional coal-bearing formations, the use of coal in area-wide industrial activities over the years, and coal shipping (Figure J-6). As indicated in Table J-2, in all the sites for which files have been reviewed, PAHs have been detected where they have been analyzed for. That PAH compounds are widely distributed in the vicinity of the RPI Facility is shown in Figure J-5.

PAH data for soils in the area are scarce, but the available data show that regional concentrations are comparable to those reported for the RPI Facility. Groundwater PAH concentrations at other sites are generally higher than at the RPI Facility. Sediment data show that most sediments in the Duwamish Waterway and Elliott Bay have much higher PAH concentrations than sediments immediately adjacent to the RPI Facility.

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Final Report

THOMPSON - ISAACSON SITE SOIL EXCAVATION WORK PLAN

Prepared for

The Boeing Company

Prepared by

Landau Associates, Inc.

March 21, 1989

1.0 INTRODUCTION

This report presents the details of a remedial action program to be conducted on a portion of the former Isaacson Steel Company site, north of the Boeing Advanced Systems (BAS) Developmental Center on East Marginal Way South in south Seattle, Washington (Figures 1-1 and 1-2). Although the remedial action will be conducted on a portion of the former Isaacson properties, hereafter the site will be referred to as the Thompson-Isaacson site to maintain consistency with previous documents and studies. The remedial action program includes the removal of soil containing elevated concentrations of arsenic at two locations onsite as identified by the Washington Department of Ecology (WDOE) in a letter dated May 10, 1988 (Appendix A) and shown on Figure 1-3. This report contains the elements outlined by the WDOE (1989) for a site technical work plan, including a discussion of the selection and implementation of remedial actions, proposed cleanup levels, and ground water monitoring.

Puget Power Electron Forebay Pond Site (WA): This site has residual soil arsenic as a result of wood treating operations conducted onsite for materials used in the construction and maintenance of a wooden flume that is part of the Electron hydropower project. A risk assessment was prepared (Lappenbusch) for potential site exposures, which are limited due to the site's remote location. The risk assessment proposed that ingested arsenic was not a carcinogen. The risk assessment was not reviewed or accepted by WDOE. No decisions have been reached yet on selection of a soil cleanup level for this site.

Other sites (e.g., Wasser Winters, General Metals, other log sort yards in and near Commencement Bay) are expected to be developing soil arsenic cleanup levels and remediation plans in the near future.

7.5 Summary and Proposed Soil Arsenic Cleanup Level

Precedents for soil arsenic cleanup levels at other sites have ranged as low as 100 ppm for residential sites where long-term exposures and exposures to children were reasonably foreseeable. However, at the industrial sites for which information on soil arsenic cleanup levels was available - Portac, U.S. Gypsum, and Isaacson - cleanup levels based on failures of the EP Toxicity test for designating dangerous wastes were uniformly chosen. For the Thompson-Isaacson site, where both total arsenic and EP Toxicity arsenic data are available and can be compared, there were no failures of the EP Toxicity test at soil arsenic concentrations of 700 ppm or less.

The screening-level review of potential environmental risks focused on the Duwamish Waterway. Based on available data, existing conditions do not pose any significant environmental risks to the Duwamish Waterway.

The human health risk assessment identified critical exposure scenarios for potential exposure to onsite workers during and after planned construction activities. Long-term soil exposures will be precluded by the completion of the buildings and pavement over the entire site surface. The soil arsenic concentrations equivalent to various levels of risk, given the exposure models used and the parameter assumptions made, were calculated. Based on the calculated lifetime risks from background soil arsenic concentrations, the industrial nature of the site, the small size of potentially exposed populations, and other factors, an acceptable risk at least as high as 10^{-5} is deemed appropriate for this site. The resulting calculated soil cleanup level of 713 ppm arsenic represents the 10^{-5} risk of skin cancer occurrence; this is equivalent to a 10^{-6} or less risk of skin cancer mortality.

The proposed soil arsenic cleanup level of 700 ppm is based on the human health risk screening-level evaluations and is consistent with precedents at other industrial sites. Additional EP Toxicity test data collected during remedial activities will confirm that the soils remaining at the two soil remediation areas meet the EP Toxicity test criteria.

APPENDIX K

Supporting Information for Fate and Transport Analyses

Appendix K
Supporting Information for Fate and Transport Analyses

As described in Section 4.8 in Volume I of this report, fate and transport analyses were conducted for selected constituents of concern detected in groundwater at the Facility. The initial analyses consisted of calculations of constituent migration rates and predictions of constituent concentrations in the Upper Aquifer at the boundary with the Duwamish Waterway. Predictions of toluene concentrations in the Upper Aquifer were then made using Bioplume II modeling. The purpose of this appendix is to provide a more detailed explanation of the technical aspects of the constituent transport analyses, including the governing assumptions and input parameters.

K.1 Migration Rates of Constituents in Groundwater

An evaluation of potential constituent migration in groundwater was conducted for two volatile organic compounds, two semivolatile organic compounds, and two inorganic constituents.

Technical Approach

Estimates of migration rates are based on two physical processes: the rate at which groundwater moves in the subsurface, and the tendency for a constituent to sorb to soil particles in the aquifer. Constituents that do not naturally sorb to solids in the aquifer will move at a rate comparable to that of the prevailing groundwater flow velocity. Chemical species that do sorb to the aquifer solids are "retarded" in their movement, and migrate at a rate that is slower than the effective groundwater velocity. A "retardation coefficient" (R) is often used to denote the velocity of groundwater relative to that of a specific constituent in the groundwater. The retardation coefficient is commonly calculated using the following equation:

$$R = V_{GW}/V_C \qquad \text{[EQUATION K-1]}$$

where:

R	=	retardation coefficient
V_{GW}	=	groundwater velocity (length/time [L/T])
V_C	=	contaminant velocity (L/T)

The groundwater velocity (V_{GW}) is calculated based on hydrogeologic parameters measured at the site:

$$V_{GW} = Ki/n \qquad \text{[EQUATION K-2]}$$

where:

K	=	hydraulic conductivity of the aquifer material (L/T)
i	=	hydraulic gradient averaged over the area for which migration rates are calculated (L/L)
n	=	effective porosity of the aquifer material

Migration rates were estimated for the Upper Aquifer at the Facility. The estimated hydraulic conductivity for the aquifer is based on the geometric average of conductivities (6 ft/day) determined from slug tests (see Section 4.1.2). Porosity values reported for the Upper Aquifer (see Section 4.1.1 and Table 4-3) were averaged (the average porosity is 0.4). An average hydraulic gradient of 0.002 (ft/ft) was used, which is consistent with the prevailing gradient over the eastern portion of the site as calculated from the average of 27 days of groundwater elevation measurements (see Figure 4-20 and the discussion in Section 4.8.1).

The retardation factor, R, is calculated considering a constituent's ability to sorb to the soil matrix. For organic compounds, the sorption coefficient is based on the fraction of organic carbon in the soil matrix:

$$R = 1 + (pb * K_d/n) \qquad \text{[EQUATION K-3]}$$

where:

pb	=	bulk mass density of the aquifer material (mass/volume[M/V])
K_d	=	chemical-specific sorption coefficient (V/M)
n	=	porosity

$$K_d = k_{oc} * f_{oc} \qquad \text{[EQUATION K-4]}$$

where:

K_{oc}	=	organic carbon partition coefficient (V/M)
f_{oc}	=	fraction of organic carbon in the aquifer

The bulk mass density and fraction of organic carbon were averaged for the laboratory tests conducted on samples of Upper Aquifer material (Tables 4-1 and 4-3). K_{oc} values were taken from the literature.

Once the sorption coefficient and retardation factor were determined, the transport velocity for each constituent was calculated using Equation K-1.

K-2 Screening-Level Estimates of Constituent Concentrations in Groundwater

Two types of analyses were used to estimate constituent concentrations in groundwater in the Upper Aquifer at the Facility. First, an analytical model was used to assess transport of six representative groundwater constituents selected for evaluation. This model is considered a screening tool because it is conservative (i.e., the model ignores a number of physical, chemical, and biological processes that will reduce the concentrations of constituents as they move along their transport path). This screening-level analysis was conducted to estimate constituent "exit" concentrations in groundwater at the boundary between the Upper Aquifer and the Duwamish Waterway. Constituents that were found to exceed surface water action levels as a result of this screening-level analysis were studied further using more sophisticated modeling techniques.

Technical Approach

An analytical model was used to predict the maximum concentration of a constituent considering one-dimensional steady flow and two-dimensional dispersion. The model is formulated as a boundary value problem that approximates the spreading of a constituent plume in both the vertical and horizonal directions perpendicular to the prevailing flow path. The equations do not consider chemical reactions and longitudinal dispersion; therefore, they provide a conservative estimate of whether or not minimum performance standards will be achieved at a specified location. It is also assumed that a constant constituent source is present, adding more conservatism to the analysis.

The constant source of contaminated parcel is assumed to be present at the boundary of the waste (or the plume) and to be moving at a steady one-dimensional velocity (the estimated groundwater velocity). The thickness of the aquifer that is affected by the parcel is assumed to be 12 feet (or the upper 25 percent of the aquifer) for all constituents and areas assessed, with the exception of toluene. For toluene, the thickness of the aquifer assumed to be contaminated by a representative maximum concentration is 25 feet (one-half of the assumed thickness of the aquifer).

Domenico and Palciauskus (1982) derived a series of equations for calculating contaminant concentrations in groundwater downgradient from a source. The equations are based on mass-balance concepts and steady-state solutions to the convection-dispersion equation in three dimensions. In deriving the solutions it is assumed that:

1. The aquifer is homogeneous and isotropic.

2. Groundwater flow is steady, uniform and one-dimensional (to the west).

3. There is no contaminant degradation or production.

4. There is no dilution by recharge.

5. Plume spreading caused by dispersion is unlimited in the lateral direction. Dispersion in the vertical direction occurs to the extent allowed by the aquifer boundaries.

6. The thickness of the aquifer that is assumed to be affected by the source remains constant.

The following equation can be used to estimate a concentration at any distance, x, downgradient from a source:

$$C(x,y,z)_{GW} = \frac{C(0,0,0)_{GW}}{4}\left[erf\frac{z+Z}{2\sqrt{\frac{D_t X}{V_{GW}}}} - erf\frac{z-Z}{2\sqrt{\frac{D_t X}{V_{GW}}}}\right] \left[erf\frac{y+\frac{Y}{2}}{2\sqrt{\frac{D_t X}{V_{GW}}}} - erf\frac{y-\frac{Y}{2}}{2\sqrt{\frac{D_t X}{V_{GW}}}}\right] \quad \text{[EQUATION K-5]}$$

where:

C_{GW}	= Constituent concentration in groundwater, M/V (mass/volume)
x,y,z	= longitudinal, lateral, and vertical distances from the source, L
D_t	= transverse dispersion coefficient for the groundwater zone ($D_t = V_{GW} \times \propto$), L^2/T
$\propto$	= dispersivity, L
erf	= error function
V_{GW}	= KI/n = groundwater pore water velocity, L/T
Y	= length of the contaminated source area or plume
Z	= constituent penetration depth

The maximum concentration at any location x downgradient from the source will occur along the centerline of the plume (i.e., y=0) and at the water table (i.e., z=0). Equation K-5 can be simplified to obtain a maximum concentration at any distance x at y=0, downgradient of the source:

$$C(x)_{GW} = C(0)_{GW}\left[erf\frac{Z}{2\sqrt{\frac{D_t X}{V_{GW}}}} erf\frac{Y}{4\sqrt{\frac{D_t X}{V_{GW}}}}\right] \quad \text{[EQUATION K-6]}$$

It is important to note that the only mechanism acting to reduce concentrations with distance in Equation K-6 is transverse dispersion. Dilution by recharge, contaminant degradation, and attenuation by longitudinal dispersion are not considered.

Input Parameters

The input parameters used by the screening model included:

- The assumed width of the constituent plume (perpendicular to the flow of groundwater) and depth (or thickness) of the plume. These dimensions varied for each constituent modeled, depending on the RFI groundwater quality data and the spacing of monitoring wells.

- The distance from the downgradient edge of the plume to the Duwamish Waterway (assumed to be the middle of the intertidal zone). This varied for each constituent modeled depending on the location of the assumed plume relative to the Duwamish Waterway. It should also be noted that the actual distance from the assumed plume edge to the Duwamish Waterway was increased by a factor of 1.4. This factor was calculated using site-specific hydraulic gradient data and accounts for the additional distance a particle would travel because of oscillating groundwater flow induced by the tide in the Waterway.

- The average constituent concentration at the source of the plume. The average constituent concentration was either (1) the actual concentration measured where there was only one detection in a particular area of the site, or (2) a reasonable average for the assumed plume area where more than one detection occurred. For the purposes of the model, it was assumed that a constant, non-decaying contaminant source was present. This is a conservative assumption in that all Facility operations were halted several years ago. It should also be noted that dissolved concentration data were used for the two metals evaluated.

- Groundwater flow velocity as calculated from hydraulic conductivity, hydraulic gradient, and porosity.

- Dispersivity (dispersion coefficient divided by groundwater velocity).

Assumptions

The general assumptions used in the analysis were:

- Groundwater flow is east-northeast to west-southwest, discharging into the Duwamish Waterway.

- The depth to the groundwater table is 12 feet and the thickness of the Upper Aquifer is 50 feet.
- The porosity of the Upper Aquifer is 0.40.
- The transverse dispersivity for the Upper Aquifer ranges between 1 and 10 feet.
- The groundwater velocity is 0.03 ft/day, based on the hydraulic conductivity calculated from slug test results and the average hydraulic gradient (0.002 ft/ft) measured at the Facility.
- Hardness-dependent surface water quality criteria were calculated using a groundwater hardness of 210 mg/l for the DM-2A and DM-8 vicinity and 110 mg/l for the DM-5 vicinity. This value is based on actual calcium and magnesium groundwater concentrations measured at the Facility.

K.3 Bioplume II Modeling of Toluene Concentrations

The conservative screening-level analysis indicated that toluene in groundwater could potentially exceed surface water action levels at the point of discharge to the Duwamish Waterway. As a result, a numerical flow and transport model was applied to the site to further refine estimates of toluene concentrations over time in Upper Aquifer groundwater. Bioplume II, an adaptation of the well-known USGS Methods of Characteristics (MOC) transport model, was used to provide a more sophisticated simulation of chemical transport. Bioplume II was developed by the Robert S. Kerr Environmental Research Laboratory to provide U.S. EPA with a computer model that could be used to screen hazardous waste sites and to determine whether natural biological processes could potentially contain the spread of a constituent plume or remediate the source of contamination. It is therefore highly applicable to the objectives of this analysis.

Bioplume II is a two-dimensional steady-state groundwater flow and transient chemical transport model. It is capable of simulating a number of constituent attenuation processes as listed below:

- Two-dimensional convective transport
- Two-dimensional hydrodynamic dispersion
- Constituent sources (e.g., a constant source of toluene from the Unsaturated Zone)
- Aerobic biodegradation (Bioplume II simulates biodegradation and reaeration as first-order decay processes)

- Anaerobic biodegradation
- Retardation of chemical movement via adsorption

Modeling Assumptions

Vertical Distribution. It is important to note that this model ignores the vertical distribution of the plume and assumes that a constant concentration occurs over the depth of the Upper Aquifer. Since the majority of the toluene contamination has been observed within the upper 10 to 15 feet of the aquifer and the aquifer has an average thickness of 50 feet, this approach is conservative in that it assumes the maximum toluene concentration extends to the bottom of the aquifer (50 feet in depth).

Source Contamination. Based on the current understanding of site conditions, there is some potential for additional toluene to enter the groundwater in areas where the soils are highly contaminated. In order to assess the possibility that additional toluene may be released from soils to the groundwater in the vicinity of the plume, the model was run considering two scenarios:

1. Instantaneous source: The existing constituent plume is assumed to represent the maximum mass of contamination. There are no additional sources of contamination over time.

2. Constant source: The existing constituent plume is used to represent current conditions, and highly contaminated soils indicate the location where a constant source of contamination can enter groundwater over time. For this model, the constant source was represented by injection wells at four nodes.

Input Parameters

Grid. The maximum grid size (20 x 20 nodes) was selected to optimize the spatial resolution. The area represented by the grid was designed to incorporate the potential discharge points at the Duwamish Waterway and Slip No. 6 as well as the plume, with a sufficient buffer of uncontaminated nodes to allow dispersion. Each cell within the grid represents an area of 35 feet by 35 feet. Figure K-1 shows the grid as it relates to the Facility and the toluene plume as depicted in the model.

Aquifer Parameters. The following aquifer parameters were input to the model:

- Aquifer thickness = 50 feet
- Transmissivity = 3.5×10^{-3} ft^2/sec (based on aquifer thickness of 50 ft. and hydraulic conductivity of 6 ft/day)
- Bulk density of soil = 1.6 g/cc (100 lb/ft^3) [Table 4-1]
- Porosity = 0.40 [Table 4-1]
- Gradient = 0.002 ft/ft

As discussed in Section 4.8.1, an average gradient of 0.002 (ft/ft) was applied to the model. Constant heads were assigned to selected cells in the grid to represent the current understanding of the site hydraulics (i.e., a radial flow pattern at low tide toward the Duwamish Waterway and Slip No. 6). The heads in the remaining cells were calculated by the model. The resulting heads in each grid cell are shown in Figure K-2.

Chemical Data

Instantaneous Source. Water quality data from the RFI Round 2 sampling event was used to map the occurrence of toluene in groundwater at the Facility. Figure K-3 shows the assumed concentrations in the plume for the instantaneous source scenario. The initial distribution of toluene concentrations in the model closely approximate actual conditions based on the Round 1 and Round 2 groundwater quality data (see Figure 4-45).

Constant Source. The extent of the constant source of toluene was based on soil data indicating concentrations of toluene in the Unsaturated Zone. As depicted in Figure 4-45, the area where toluene concentrations in soil exceeded 1,000 mg/kg (approximately 4,000 ft^2) was used to represent the area where soil could potentially act as a constant source of toluene to groundwater. For this model, the constant source was represented by using injection wells at four nodes as shown in Figure K-4 (equivalent to an area of approximately 4,900 ft^2). The contaminant was introduced at a rate calculated by mass balance techniques.

Dissolved Oxygen Concentrations. Based on field measurements in background wells at the site, an average value of 1 mg/l dissolved oxygen was applied to the model as the initial condition. Dissolved oxygen was introduced at the constant head nodes at a concentration of 1 mg/l to represent upgradient recharge of water that had not been depleted of oxygen by aerobic biodegradation.

Chemical-Specific Sorption Coefficients. A sorption coefficient (K_d) of 0.07505 ml/g was used for toluene, based on literature values.

Biological Degradation Rates

Bioplume II allows the simulation of two types of biological degradation: aerobic and anaerobic. Aerobic degradation is assumed to be instantaneous, and to proceed until all oxygen has been consumed. This is a reasonable assumption, since aerobic degradation rates in the field are nearly always controlled by the availability of oxygen in groundwater at the source. The model assumes that the ratio of oxygen to the organic constituent is 3 to 1. This is also an appropriate assumption for aerobic degradation of toluene.

Anaerobic degradation is assumed to follow first-order kinetics, where the degradation rate is directly proportional to the concentration of the organic constituent that is present. The model requires the user to input the first-order degradation rate constant. Rate constants

for biological degradation are extremely dependent on local site conditions; therefore, the selection of an anaerobic rate constant for the Bioplume II model included the following steps:

- Step 1: Analysis of the physical and chemical characteristics of the groundwater to determine the likelihood that anaerobic degradation is taking place, and the types of organisms that may be present
- Step 2: Review of recent literature to obtain degradation rates observed under similar field conditions
- Step 3: Calculation of toluene attenuation rates using the concentration distribution observed during Round 2 groundwater sampling

Step 1: Analysis of Groundwater Characteristics. Characterization of the groundwater at the RPI Facility indicates that the subsurface environment is highly reducing. Concentrations of dissolved oxygen are below 1.5 mg/l at all monitoring locations, and the dark color of the groundwater (i.e., "black liquid") at many locations suggests the presence of organic matter (such as tannins and lignins) and/or sulfides. These conditions indicate a low redox state in the groundwater in which anaerobic degradation is favored.

The degradation rate is also dependent on the types of organisms that may be active at the site. Review of concentrations of nitrate and sulfate in wells upgradient and downgradient of the toluene plume do not indicate activity by nitrate or sulfate reducing organisms. Other organisms which may be responsible for anaerobic degradation of toluene include methanogens. If methanogenic degradation is taking place, methane will be produced. Health- and safety-related air monitoring measurements conducted at monitoring well heads during the RFI fieldwork suggest that methane might be present. These air quality measurements were often conducted using both a combustible gas indicator (CGI) and a photoionization detector (PID). The CGI will respond to all explosive organic vapors (at detectable concentrations), including methane. In contrast, the PID only detects organics with certain ionization potentials; methane is not among these and therefore is not detected by a PID. Comparison of CGI and PID data collected at open well heads for wells B4 and DM-5 suggests the presence of methane in the well casing.

Step 2: Literature Survey. A literature survey was conducted to obtain field degradation rates for toluene under anaerobic conditions. The results indicate that toluene is one of the most rapidly degraded organic compounds under anaerobic conditions. Reported rates for anaerobic toluene degradation are comparable to aerobic toluene degradation rates. First-order rate constants that were reported for methanogenic degradation of toluene include rates from 0.04 to 0.19 per day (B. H. Wilson et al., 1994, and J. T. Wilson et al., 1994).

Step 3: Calculated Degradation Rate. An overall degradation rate for toluene at the Facility was calculated using the concentration distribution measured in the Upper Aquifer during Round 2 sampling (shown in Figure 4-50). If first-order kinetics are assumed, the rate constant may be calculated from the equation:

$$\ln (c_1/c_2) = -k * t \qquad \text{[EQUATION K-7]}$$

where:

c_1 = toluene concentration at location 1 (M/V)
c_2 = toluene concentration at location 2 (M/V)
k = first-order rate constant (unit less)
t = travel time from location 1 to location 2 (T)

The degradation rate for toluene was calculated based on the horizontal concentration gradient for toluene as indicated by the Round 2 groundwater quality data. Figure 4-50 shows concentration contours for toluene. The concentration at the southwest edge of the plume declines from 100,000 to 100 μg/l over a distance of 40 feet. Assuming an average groundwater velocity of 11 feet per year, the travel time for groundwater over the 40-foot distance is approximately 3.6 years.

The resulting rate constant calculated from Equation K-7 is 0.005 per day. The Bioplume model requires a rate constant specifically for anaerobic degradation. Because the rate constant calculated from Equation J-7 represents total attenuation caused by all factors, including aerobic degradation, dispersion, and anaerobic degradation, the rate constant was decreased by an order of magnitude. The resulting rate constant applied to the Bioplume II modeling for anaerobic degradation is 0.0005 per day. This value is two to three orders of magnitude lower than the previously referenced literature values and is, therefore, considered very conservative.

K.4 References

Domenico, P. A., and V. V. Palciauskas. "Alternative Boundaries in Solid Waste Management." *Groundwater*, Vol. 20, No. 3, 1982, pp. 303-311.

Wilson, Barbara H., et al. "Traverse City: Geochemistry and Intrinsic Bioremediation of BTX Compounds." *Proceedings from Symposium on Intrinsic Bioremediation of Ground Water*, EPA/540/R-94/515, August 1994.

Wilson, John T., et al. "Intrinsic Bioremediation of JP-4 Jet Fuel", *Proceedings from Symposium on Intrinsic Bioremediation of Ground Water*, EPA/540/R-94/515, August 1994.

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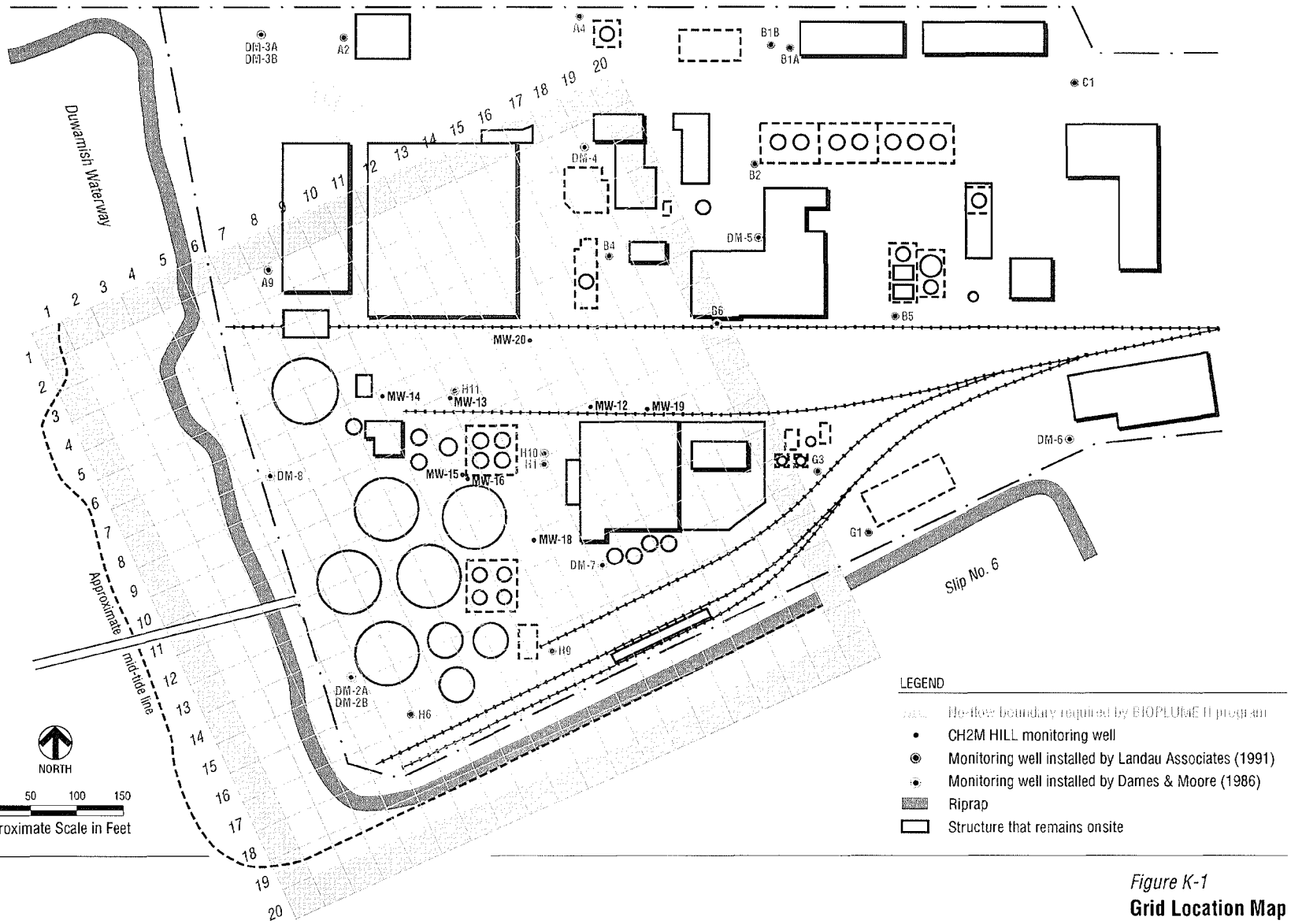


Figure K-1
Grid Location Map

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1																				
2		**0.00**	**0.08**	**0.16**	**0.25**	**0.33**	**0.41**	**0.49**	**0.57**	**0.65**	**0.74**	**0.82**	**0.90**	**0.98**	**1.06**	**1.15**	**1.23**	**1.32**	**1.40**	
3		**0.00**	0.08	0.16	0.25	**0.33**	0.40	0.48	0.56	**0.65**	0.72	0.80	0.89	**0.98**	1.04	1.11	1.18	1.25	**1.32**	
4		**0.00**	0.08	0.16	0.24	**0.33**	0.39	0.47	0.55	**0.65**	0.70	0.77	0.86	**0.98**	1.02	1.07	1.12	1.18	**1.23**	
5		**0.00**	0.08	0.16	0.24	**0.33**	0.37	0.44	0.52	0.59	**0.65**	0.72	0.81	0.90	**0.98**	1.02	1.07	1.11	**1.15**	
6		**0.00**	0.07	0.15	0.22	0.29	**0.33**	0.41	0.48	0.55	0.61	**0.65**	0.75	0.83	0.90	**0.98**	1.02	1.04	**1.06**	
7		**0.00**	0.07	0.14	0.20	0.27	**0.33**	0.39	0.45	0.52	0.58	**0.65**	0.70	0.77	0.83	0.90	**0.98**	**0.98**	**0.98**	
8		**0.00**	0.06	0.13	0.19	0.26	**0.33**	0.37	0.42	0.48	0.54	0.60	**0.65**	0.70	0.75	0.80	0.86	0.88	**0.90**	
9		**0.00**	0.06	0.12	0.18	0.24	0.29	**0.33**	0.39	0.44	0.49	0.54	0.59	**0.65**	**0.65**	0.72	0.77	0.80	**0.82**	
10		**0.00**	0.05	0.11	0.16	0.21	0.27	**0.33**	0.36	0.41	0.45	0.49	0.54	0.58	0.61	**0.65**	0.70	0.72	**0.74**	
11		**0.00**	0.05	0.10	0.14	0.19	0.24	0.29	**0.33**	0.37	0.41	0.44	0.48	0.51	0.55	0.59	**0.65**	**0.65**	**0.65**	
12		**0.00**	0.04	0.08	0.13	0.17	0.21	0.25	0.29	**0.33**	0.36	0.39	0.42	0.45	0.48	0.51	0.55	0.56	**0.57**	
13		**0.00**	0.04	0.07	0.11	0.14	0.18	0.21	0.25	0.29	**0.33**	**0.33**	0.37	0.39	0.41	0.44	0.46	0.48	**0.49**	
14		**0.00**	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.24	0.27	0.29	**0.33**	**0.33**	**0.33**	0.37	0.39	0.40	**0.41**	
15		**0.00**	0.02	0.05	0.07	0.10	0.12	0.14	0.17	0.19	0.21	0.23	0.25	0.27	0.29	**0.33**	**0.33**	**0.33**	**0.33**	
16		**0.00**	0.02	0.04	0.05	0.07	0.09	0.11	0.12	0.14	0.16	0.17	0.19	0.20	0.22	0.24	0.24	0.25	**0.25**	
17		**0.00**	0.01	0.02	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.16	**0.16**	
18		**0.00**	0.01	0.01	0.02	0.02	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.08	**0.08**	
19		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
20																				

LEGEND:

No-flow boundary required by Bioplume II program

0.00 Hydraulic head assigned to cell

0.00 Hydraulic head calculated by Bioplume II program

Figure K-2
Head Map

Figure K-3a
Toluene concentration: (Initial conditions)

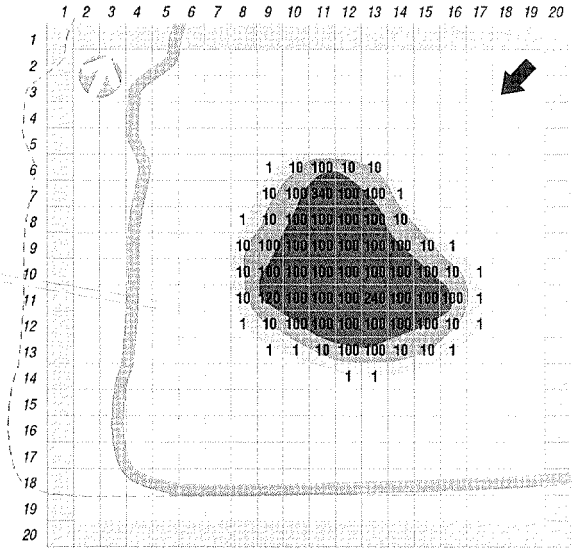


Figure K-3b
Toluene concentrations: Instantaneous source (10 years)

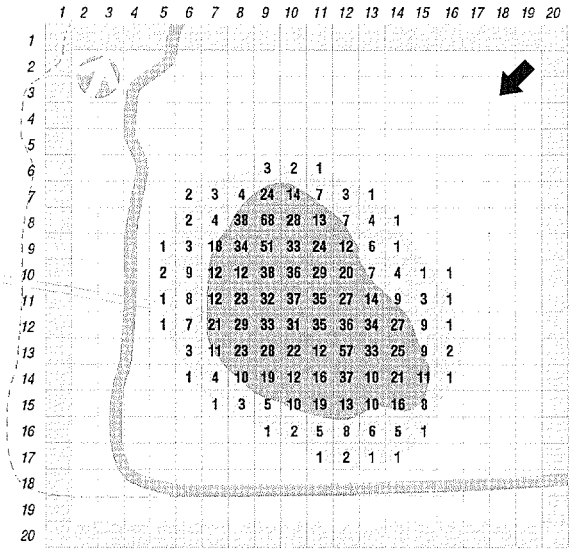


Figure K-3c
Toluene concentrations: Instantaneous source (25 years)

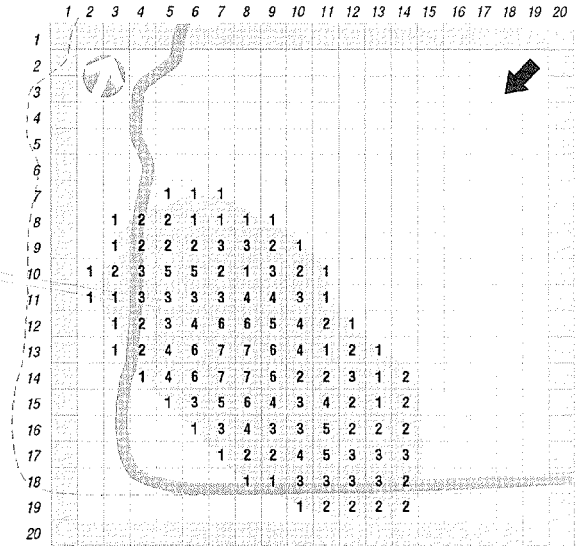
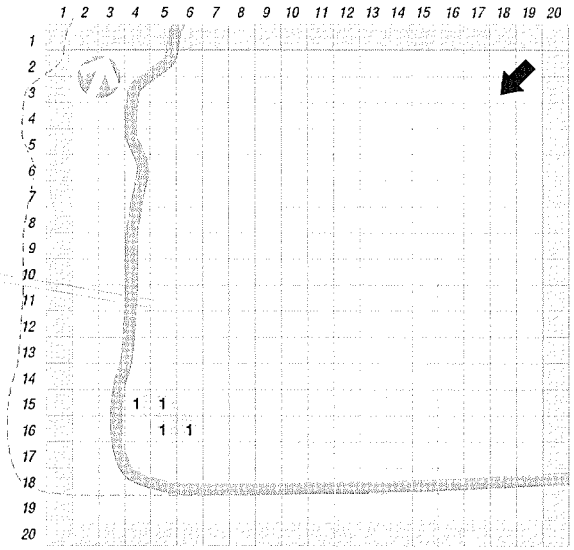


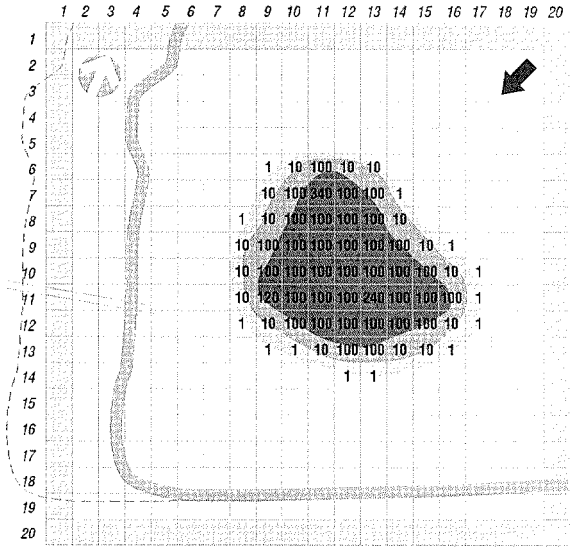
Figure K-3d
Toluene concentrations: Instantaneous source (50 years)



LEGEND:
- Toluene concentration ≥ 1 (mg/l)
- Toluene concentration ≥ 10 (mg/l)
- Toluene concentration ≥ 100 (mg/l)
- No-flow boundary required by Bioplume II program
- Approximate edge of riprap
- Approximate location of mid-tide line
- Assumed groundwater flow direction

Figure K-3
Bioplume II Results for Instantaneous-Source Scenario

Figure K-4a
Toluene concentration: (Initial conditions)



Figuer K-4b
Toluene concentrations: Constant source (10 years)

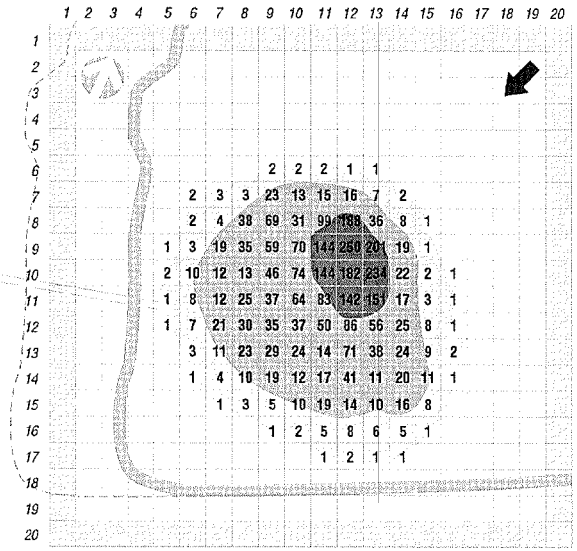


Figure K-4c
Toluene concentrations: Constant source (50 years)

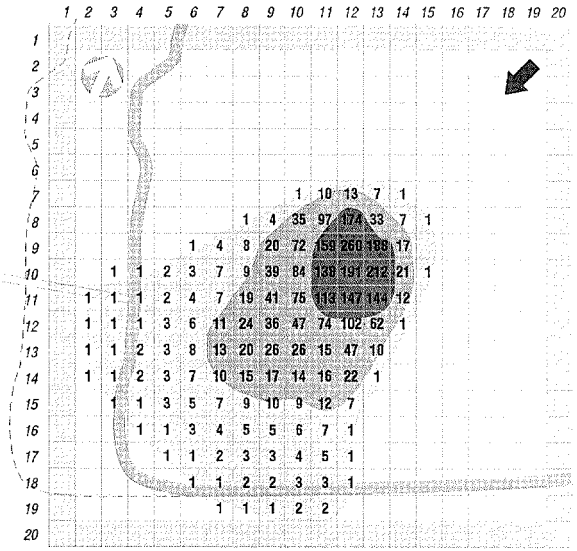
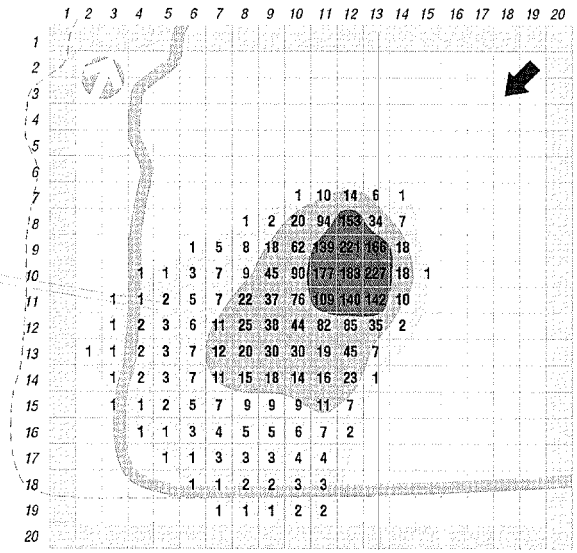


Figure K-4d
Toluene concentrations: Constant source (100 years)



LEGEND:
- Toluene concentration ≥ 1 (mg/l)
- Toluene concentration ≥ 10 (mg/l)
- Toluene concentration ≥ 100 (mg/l)
- No-flow boundary required by Bioplume II program
- Approximate edge of riprap
- Approximate location of mid-tide line
- Assumed groundwater flow direction
- 212 Constant source cell

Figure K-4
Bioplume II Results for Constant-Source Scenario