FINAL REMEDIAL INVESTIGATION AND RISK ASSESSMENT REPORT

STOEL RIVES, LLP

FORMER PRECISION ENGINEERING, INC. SITE 1231 South Director Street Seattle, Washington V. ID Number NW 1511

Project No. 8006.08.04



July 21, 2008



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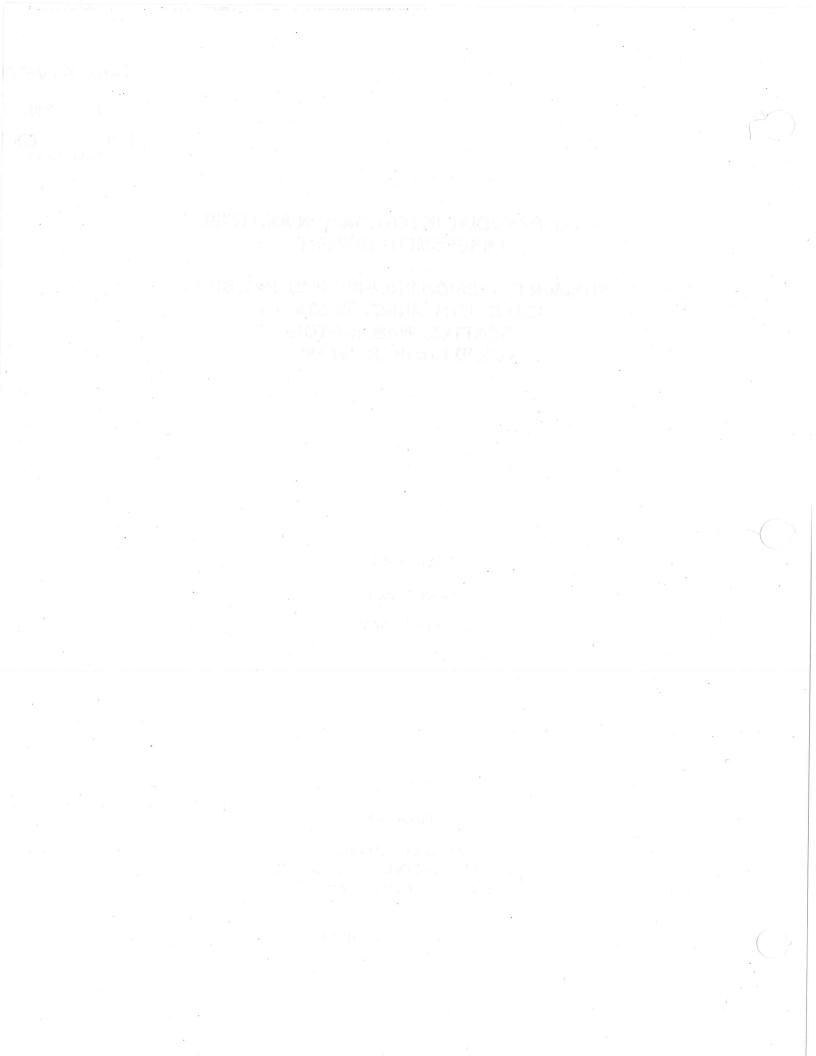
FORMER PRECISION ENGINEERING, INC. SITE 1231 SOUTH DIRECTOR STREET SEATTLE, WASHINGTON VCP ID NUMBER NW 1511

Prepared for Stoel Rives, LLP July 21, 2008

Prepared by

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Project No. 8006.08.04



Final Remedial Investigation and Risk Assessment Report Former Precision Engineering, Inc. Site 1231 South Director Street, Seattle, Washington VCP ID Number NW 1511

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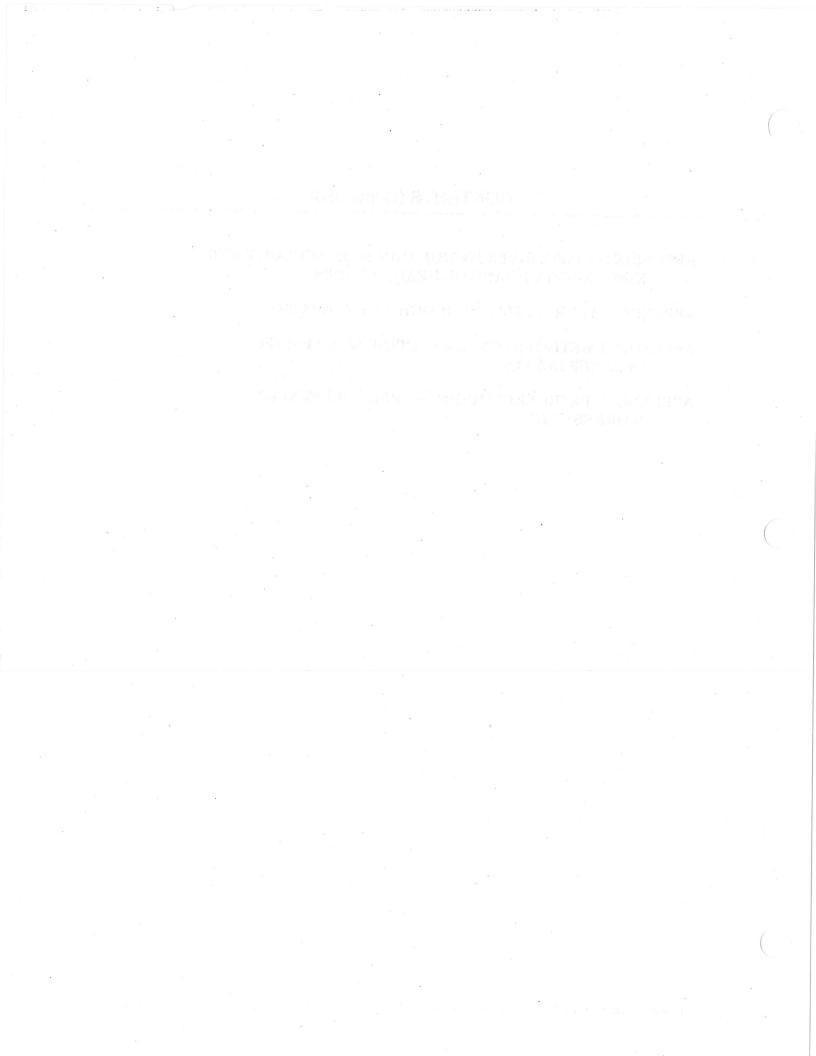
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ACRONYMS AND ABBREVIATIONS

ATL bgs cPAH CSM CUL DCA DCE DEQ DRO Ecology GRO IHS KCBOH Metro MFA mg/kg mg/L ml/min MTCA μg/kg μg/L μg/m ³ ORO	Air Toxics Ltd. below ground surface carcinogenic polycyclic aromatic hydrocarbons conceptual site model cleanup level dichloroethane dichloroethene Oregon Department of Environmental Quality diesel-range organics Washington State Department of Ecology gasoline-range organics indicator hazardous substance King County Board of Health Municipality of Metropolitan Seattle Maul Foster & Alongi, Inc. milligrams per kilogram milligrams per liter milliliters per minute Model Toxics Control Act micrograms per liter micrograms per liter micrograms per liter micrograms per liter
IHS	
	King County Board of Health
Metro	
-	
	polycyclic aromatic hydrocarbon
PAH	publicly owned treatment works
POTW	parts per million by volume
ppmv	Precision Engineering, Inc.
Precision	risk assessment
RA RBC	risk-based concentration
RI	remedial investigation
TCE	trichloroethene
TPH	total petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VCP	Voluntary Cleanup Program
VOC	volatile organic compound
WAC	Washington Administrative Code
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ACRONYMS AND ABBREVIATIONS (Continued)

WBZ

water-bearing zone

1 SUMMARY

1.1 Introduction

Maul Foster & Alongi, Inc. (MFA) has prepared this final remedial investigation (RI) and risk assessment (RA) report for the former Precision Engineering, Inc. (Precision) site at 1231 South Director Street in Seattle, Washington (see Figures 1 and 2). Precision formerly manufactured and repaired large hydraulic cylinders. Repair work included chrome-plating operations.

The RI and RA are being conducted under the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP). The site's VCP identification number is NW 1511. Precision entered the VCP in October 2005, after completing a preliminary soil and groundwater assessment in June 2005. A Supplemental Remedial Investigation (MFA, 2006a) was submitted to Ecology, summarizing investigations completed by MFA between June and December 2005. Based on that report, Ecology issued an opinion letter on March 27, 2006, that concluded that the work completed was not sufficient to meet specific substantive requirements contained in the Washington State Model Toxics Control Act (MTCA) and its implementing regulations, Chapter 70.105D Revised Code of Washington and Chapter 173-340 Washington Administrative Code (WAC), for characterizing the site (Ecology, 2006c). Precision submitted an RI/RA report on July 17, 2006. Ecology has issued a number of comments on the RI/RA report by electronic mail. This final RI/RA report is meant to supersede all previous submittals and to incorporate Ecology's comments.

1.2 Findings

1.2.1 Soil on Former Precision Property

Indicator Hazardous Substances

As discussed in Section 4.1, indicator hazardous substances (IHSs) identified in soil on the former Precision property are:

• Hexavalent and trivalent chromium

- Petroleum hydrocarbons (diesel-range organics [DRO] and oil-range organics [ORO])
- Trichloroethene (TCE)

Nature and Extent

Hexavalent chromium was detected in soil samples collected under the building footprint, with the highest concentrations located beneath the former chrome-shop area. The highest concentrations of trivalent chromium were also found in this area. DRO and ORO were generally detected in and directly outside the southeast quadrant of the building. The highest concentrations of TCE were detected under the building, in the former chrome-shop and grinding-shop areas (see Figure 3). Section 4.1 contains additional information on the nature and extent of IHSs in on-site soil.

Reasonable Maximum Exposure

Exposure scenarios for soil are described in Section 6.4.1. The reasonable maximum exposure for soil is based on industrial workers who may contact IHSs in soil through incidental ingestion of impacted soil, inhalation of vapors or soil particulates, and dermal contact with chemicals in soil in an industrial setting. Also, indoor industrial workers may have indirect exposure to volatile chemicals (TCE) that migrate from vadose zone soil to indoor air.

CULs and Exceedances

Site-specific soil CULs based on direct-contact exposures were developed for each IHS, and a soil CUL based on vapor intrusion into buildings was developed for TCE (see Section 7.1.1).

CUL exceedances are described in detail in Section 7.2.1.1. Hexavalent chromium concentrations were above the direct-contact CUL in a limited area of shallow soil immediately beneath the building slab in the former chrome-plating area. The building prevents workers from having direct contact with hexavalent chromium in soil. No other IHSs were detected in soil on the property at a concentration exceeding a site-specific CUL for the direct-contact pathways.

TCE was detected in soil at a concentration greater than the vapor-intrusion CUL. Indoor-air sampling was performed to better evaluate this potential exposure scenario. Risks associated with potential exposure to IHSs in indoor air are summarized in Section 1.2.4 below.

1.2.2 Soil in Off-Property Drainage Ditch

Indicator Hazardous Substances

For the purpose of the site investigation, Ecology requested that Precision's investigation include the drainage ditch located south of the former Precision property. As described in Section 4.2, IHSs in soil in the drainage ditch south of the former Precision property boundary are:

- Metals (arsenic, cadmium, copper, hexavalent chromium, trivalent chromium, lead)
- Chrysene
- Petroleum hydrocarbons (DRO and ORO)

Nature and Extent

The nature and extent of IHSs in ditch soil are described in detail in Section 4.2. Hexavalent chromium was detected in a soil sample near the stormwater outfall from the west side of the property. All other IHSs were detected in areas of the ditch that receive runoff from multiple sources besides the former Precision property, and Precision is not believed to be the source of these contaminants.

Reasonable Maximum Exposure

The reasonable maximum exposure for the ditch soil is by direct contact in an industrial setting (see Section 6.4).

CULs and Exceedances

Site-specific soil CULs based on direct-contact exposures were developed for each IHS, as described in Section 7.1.1. Exceedances of CULs are discussed in Section 7.2.2. The concentrations of lead and arsenic in some shallow-soil samples collected from the drainage ditch south of the former Precision property were above direct-contact CULs. These samples were in locations that receive runoff from multiple sources: from the former Precision property; from properties east and west of the former Precision property; from 14th Avenue; and from the Highway 99/W Marginal Way S on-ramp. MFA believes that the lead and arsenic in samples from the ditch originated primarily from sources other than the former Precision property. This conclusion is supported by site characterization data from the property. Neither lead nor arsenic was detected above CULs in the sample collected near the discharge pipe from the western part of the former Precision property, or in samples collected just south of the paved area directly in the path of sheet flow from the former Precision property. It should also be noted that lead and arsenic concentrations detected on the north side of the ditch, near the site, were similar in magnitude to concentrations from the south side of the ditch, receiving sheet

flow from a different source, the highway on-ramp. During the ditch investigation, the highest lead and arsenic concentrations were detected directly beneath the neighboring outfall and in the area around its discharge path.

Cleanup Action

Despite evidence of multiple sources of contamination, Ecology indicated that Precision may be at least partially responsible for the exceedances of CULs and did not accept Precision's previous proposal of taking no action in the off-property ditch. Therefore, to address the comments and concerns expressed by Ecology, Precision proposed to excavate all ditch soil containing IHSs at concentrations that exceed CULs. A separate work plan for removal of soil from the ditch (MFA, 2007) was approved by Ecology via electronic mail on August 2, 2007 (Ecology, 2007a).

Ditch excavation work and confirmation sampling were completed on October 24 and 25, 2007 (see Section 8). Approximately 100 cubic yards of soil was removed and properly disposed of off site. After excavation was complete, the entire area of soil disturbance was backfilled and stabilized with hydroseed. A total of 13 confirmation soil samples were collected at the bottom of the excavation and ten soil samples were collected around the perimeter of the excavation. Because two perimeter confirmation samples exceeded CULs, additional sampling was conducted on November 19, 2007, to delineate any potential contamination surrounding the samples. The results of this additional sampling indicated that there is no widespread contamination outside the area excavated.

As a precautionary measure, the two additional small areas mentioned above where chemical concentrations in confirmation samples were above the CULs were excavated on March 27, 2008. Approximately 4 cubic yards of soil was removed and properly disposed of off site. The excavated areas were backfilled with clean soil and stabilized with grass seed. Confirmation soil samples were collected from the bottom of the excavation. One confirmation sample had concentrations of arsenic and lead that exceeded CULs by 8 percent and 2 percent, respectively. Because these concentrations are only slightly above CULs, residual soil impacts are both isolated and small in extent, and over a foot of clean fill material covers the sample location, no additional removal activities were warranted.

1.2.3 Groundwater

IHSs

As discussed in Section 4.3, IHSs identified in groundwater are:

- Metals (arsenic, copper, hexavalent chromium, trivalent chromium, and selenium)
- Petroleum hydrocarbons (DRO and ORO)

• Volatile organic compounds (VOCs) (TCE and vinyl chloride)

Nature and Extent

The nature and extent of IHSs in groundwater are described in detail in Section 4.3. Arsenic was ubiquitous in groundwater throughout the site at concentrations that appear to be consistent with naturally occurring background levels, and there is no indication that the former Precision property is a source of the arsenic in groundwater. Copper was present in six of eight monitoring wells throughout the property. Hexavalent chromium was detected in four of the eight monitoring wells. Trivalent chromium was detected in six of the eight monitoring wells. Elevated concentrations of both hexavalent chromium and trivalent chromium were found in groundwater samples collected beneath the building footprint, with highest concentrations in or near the former chrome-plating shop. Selenium was detected in four of the eight monitoring wells. However, because selenium was not detected in soil at the site, it does not appear that Precision is the source of the selenium detected in groundwater.

DRO were detected in five of the eight monitoring wells. ORO were detected in three of the eight monitoring wells. Generally, the highest concentrations of both DRO and ORO occurred in shallow groundwater in the southeast quadrant of the site.

TCE was detected only in samples from under the building footprint. The highest concentrations of TCE were in samples from below and downgradient of the former chrome shop. There was no indication of TCE free product at the site. The presence of TCE is interpreted to be the result of small releases over time that penetrated cracks or seams in the concrete floor, and not the result of a larger release of product that would result in free product in the subsurface. The use of TCE at the site ended in the mid-1980s. Vinyl chloride, a breakdown product of TCE, was detected in one reconnaissance groundwater sample (under the building footprint in the former cylinder shop, which is downgradient of the grinding shop). Vinyl chloride was also detected in one shallow monitoring well southeast of the building. The presence of vinyl chloride in groundwater and the lack of TCE in downgradient wells indicate that degradation of TCE is occurring and that nearly all TCE is degraded by the time groundwater reaches the downgradient property line.

Reasonable Maximum Exposure

Groundwater exposure scenarios are discussed in Section 6.4.2. The reasonable maximum exposure for groundwater at the site includes industrial workers who inhale volatile chemicals that migrate from groundwater. Other groundwater exposure pathways include excavation workers who directly contact groundwater, and potential discharge of groundwater to surface water. Shallow groundwater near the site is not used for potable water or domestic water supply and cannot be used as a potable or domestic water supply source in the foreseeable future.

CUL Development

The development of CULs for groundwater is discussed in Section 7.1.2. CULs protective of industrial workers who may inhale volatile IHSs that migrate from groundwater to indoor air were developed for TCE and vinyl chloride.

Neither CULs nor methods to calculate CULs for potential excavation workers who may directly contact chemicals in groundwater of an excavation are included in MTCA WAC 173-340-700 through WAC 173-340-760. However, Ecology approved the use of Oregon Department of Environmental Quality (DEQ) risk-based concentrations (RBCs) for comparison to site data to evaluate this direct-contact exposure scenario. It should be noted that Occupational Safety and Health Administration standards require dewatering of excavations before workers enter an excavation, and direct contact with groundwater is expected to be minimal.

Because groundwater fate and transport modeling shows that IHSs present at the site will not reach the Duwamish River (see Section 6.3 or Appendix A), groundwater CULs that exceed surface-water CULs can be established consistent with WAC 173-340-720(6)(c)(i)(E). Through fate-and-transport modeling, groundwater CULs with a point of compliance at the eastern property boundary were developed for the protection of surface water.

CUL Exceedances

Exceedances of groundwater CULs are discussed in detail in Section 7.2.3. The concentration of TCE in a reconnaissance groundwater sample from beneath the building exceeded both the groundwater CUL protective of indoor industrial workers who may have indirect exposure to chemicals that migrate from groundwater to indoor air and the RBC protective of excavation workers. Risks associated with potential exposure to IHSs in indoor air are summarized in Section 1.2.4. It appears that groundwater with concentrations of TCE above screening criteria is restricted to a relatively small area beneath the building.

In addition, concentrations of arsenic in groundwater samples from almost all monitoring wells on the site were above the excavation-worker RBC. Arsenic was ubiquitous in groundwater throughout the site at concentrations that appear to be consistent with naturally occurring background levels, and it appears that natural concentrations of arsenic in groundwater are above this RBC. There is no indication that the former Precision property is a source of the arsenic in groundwater.

Concentrations of all modeled IHSs at the eastern property boundary were below the calculated groundwater CULs for the protection of surface water. Hexavalent chromium concentrations that exceeded CULs for the protection of surface water were detected in groundwater samples collected from borings and MW5, located within the building footprint, and from one sample collected from MW1, located upgradient of the building.

Concentrations of hexavalent chromium in wells located near the eastern property line were not detected above their method reporting limits and did not exceed CULs.

1.2.4 Air

Reasonable maximum exposure to potential air contamination at the site is by inhalation by an industrial worker. TCE was detected in soil and groundwater at concentrations above model-derived CULs protective of indoor industrial workers. To better evaluate risks that airborne IHSs may pose to potential industrial workers, samples of sub-slab soil vapor were collected in April 2006, and samples of indoor air were collected in June 2006. TCE was detected in sub-slab soil-gas samples collected beneath the building at concentrations above model-derived preliminary CULs protective of indoor industrial workers for sub-slab soil gas. However, concentrations of TCE measured in indoor air were below the applicable CUL (see Section 7.2.5). TCE was detected in ambient air (outdoor air) at the property, indicating that there may be other sources of TCE near the site that are unrelated to the former Precision facility. These results indicate that the transport models used to estimate soil, groundwater, and sub-slab soil-gas CULs overpredicted concentrations of TCE in indoor air.

The presence of TCE breakdown products (e.g., vinyl chloride) in groundwater downgradient of the source area indicates that TCE is degrading in situ. The TCE release must have occurred before the mid-1980s, when Precision stopped using TCE. TCE concentrations in soil and groundwater are expected to continue to decline over time, due to natural degradation processes. Absent any new TCE releases, current conditions represent the worst-case conditions for the foreseeable future. TCE concentrations in indoor air are currently below MTCA Method C CULs. Based on empirical indoor-air sample results, site-related volatile chemicals do not appear to pose unacceptable risks to future workers.

Ecology has requested that Precision complete additional investigation of the indoor-air pathway. However, Precision has decided that the most cost-effective way to address this pathway is to proceed with the installation of a sub-slab vapor mitigation system to remediate any potential risks associated with the presence of sub-slab TCE concentrations. On February 13, 2008, Precision submitted a separate cleanup action plan to Ecology that described the proposed sub-slab vapor mitigation system (Pioneer, 2008).

1.3 Conclusions and Recommendations

Investigations at the site have fully delineated the extent of IHSs in soil and groundwater on the property. Delineation has included extensive soil and reconnaissance groundwater sampling; at least two rounds of groundwater monitoring in eight monitoring wells; and modeling of the extent of TCE, vinyl chloride, metals, petroleum hydrocarbons, and polycyclic aromatic hydrocarbons (PAHs). No additional investigation of soil or groundwater at the site is recommended. Hexavalent chromium concentrations are above the direct-contact soil CUL for industrial workers in a limited area of shallow soil immediately beneath the building slab in the former chrome-plating area. The building prevents workers from having direct contact with hexavalent chromium in soil, and there is no current unacceptable risk to human health, based on hexavalent chromium in soil. No other IHSs were detected in soil on the former Precision property at a concentration exceeding a site-specific CUL for the direct-contact pathways.

To address the comments and concerns expressed by Ecology, Precision excavated ditch soil containing IHSs at concentrations that exceed CULs. Removal actions were completed on October 24 and 25, 2007, and March 27, 2008, and the area of disturbance was backfilled and stabilized with hydroseed. Based on confirmation sampling, a small area of less than 2 yards of soil remains with concentrations exceeding CULs. Residual soil impacts are both isolated and small in extent, and over a foot of clean fill material covers the sample location; therefore, no additional removal activities are warranted.

No IHSs were detected in downgradient monitoring wells near the eastern property boundary at concentrations that exceeded site-specific CULs, indicating that there is no off-site migration of contaminants at concentrations exceeding CULs. Additionally, fate and transport modeling predicts that no site-related IHSs will reach the Duwamish River at concentrations above method detection limits.

Concentrations of arsenic are ubiquitous in groundwater throughout the site at concentrations above the excavation-worker RBC, but these appear to be consistent with naturally occurring background levels. There is no indication that the former Precision property is a source of the arsenic in groundwater.

Inhalation of volatile chemicals that migrate from groundwater to indoor and outdoor air and direct contact, in the case of excavation workers, are the only potential pathways by which industrial workers at the site may be exposed to chemicals in groundwater. Concentrations of volatile chemicals, including TCE, in groundwater appear to be restricted to a relatively small area beneath the building, and TCE and vinyl chloride in indoor air of the building are below the applicable CULs, indicating that site-related volatile chemicals do not pose unacceptable risks to future workers. Ecology has requested that Precision complete additional investigation of the indoor-air pathway. However, Precision has decided that the most cost-effective way to address this pathway is to proceed with the installation of a sub-slab vapor mitigation system to remediate any potential risks associated with the presence of sub-slab TCE concentrations. On February 13, 2008, Precision submitted a separate cleanup action plan to Ecology that described the proposed sub-slab vapor mitigation system (Pioneer, 2008).

Other than those described above for the indoor air, no additional investigation or remedial measures for soil, groundwater, or indoor air are proposed.

2 BACKGROUND

2.1 Property Location and Description

The former Precision facility is located at 1231 South Director Street in Seattle, Washington (see Figure 1). The approximately 3.5-acre site is in King County, Washington, section 32, township 24 north, range 4 east, Willamette Meridian. The site is approximately 1,800 feet (less than 0.5 mile) west of the Duwamish River. The area surrounding the site is characterized by mixed industrial and residential use. The site is zoned I (Industrial). A single 62,000-square-foot building is located at the site. The east side of the building was constructed in 1968, and the west part was added in 1979. The building is surrounded by an asphalt parking lot (see Figure 2).

Precision operated continuously at the property between 1968 and 2005, ceasing operations on March 1, 2005. Precision specialized in the manufacture and repair of large hydraulic cylinders, large rolls used in the manufacture of paper and metal sheet products, and other equipment. Services included precision grinding and polishing, honing, hard-chrome plating, milling, welding, and a large number of flame- and arc-applied metal coatings. Much of Precision's work involved the use of chromic acid. Approximately 10,000 square feet of the west side of the building was leased to Baszile Metals Service, an aluminum distributorship, between approximately 1985 and 2003. Former operational areas and tanks inside the building are shown on Figure 3.

West of the former Precision property is a business that repairs and sells refrigerators. East of the former Precision property is a towing and limousine service business. According to former Precision personnel, the property to the east was used as a paint shop in the 1970s, and before that it was a fiberglass-boat-manufacturing operation.

2.2 Features of Interest

The features of interest are described in detail below and are shown on Figure 3. The features of interest have been investigated as part of the RI.

2.2.1 Containment Vault Holding Former Plating Tanks 1 and 2

Former Plating Tanks 1 and 2 were installed in an in-ground containment vault in the southeast corner of the plating area in 1968, when the building was constructed (see

Figure 3). The tanks and vaults were removed and then reconstructed during an independent remedial action completed at the site in the early 1990s (MFA, 2005b). The tanks were removed from the site in 2005.

2.2.2 Former Plating Tanks 3, 4, 5, and 6

Former Plating Tanks 3, 4, 5, and 6 included one aboveground tank with a concrete curb around it and three in-ground tanks located in containment vaults (Neely, 2002). Two concrete-lined trenches penetrated the floor on both sides of the former tanks (see Figure 3). The trenches had been filled with concrete by July 1986. The tanks and vaults were removed in the early 1990s during an independent remedial action. The tanks were replaced by a small aboveground tank (Tank 3) and a long, horizontal aboveground tank (Tank 4) (see Figure 3). Tanks 3 and 4 were removed from the site in 2005.

2.2.3 Large Containment Vault Holding Former Plating Tank 7 and Caustic Tanks

The largest containment vault at the site was constructed in 1980 on the west side of the chrome-plating shop as part of the building expansion. The vault is approximately 24 feet long, 8 feet wide, and 16 feet deep. The vault held Plating Tank 7, a sodium hydroxide strip tank, and a sodium bicarbonate strip tank (see Figure 3). Tank 7 measured 9 feet long, 7.5 feet wide, and 16 feet deep. The tanks in the vault were removed from the site in 2005.

2.2.4 Former Floor Trenches and Drains

Until 1985 or 1986, the floor drains and trenches in the chrome-plating shop discharged to the Municipality of Metropolitan Seattle (Metro) publicly owned treatment works (POTW) sanitary sewer system. Precision was permitted by Metro to discharge chrome-plating rinse water from a small rinse tank to the POTW. By July 1986, Precision had sealed or otherwise disconnected the floor drains and trenches from the City sanitary sewer system and rerouted them to the containment vaults.

2.2.5 Hydraulic Cylinder Test Vault

A covered, in-ground hydraulic cylinder test vault measuring approximately 4 feet in diameter and 25 feet deep is located outside the building, approximately 10 feet from the west wall of the building.

2.2.6 Former Temporary Plating Tank Area

Temporary aboveground plating tanks were sometimes used to plate parts in the area north of Plating Tank 7.

2.2.7 Former Scrubber Room and Chromic Acid Evaporator

The former scrubber room contained a chromic acid evaporator, a chromic-acid purification unit, and a large aboveground chromic-acid holding tank. These were removed by November 2006.

2.2.8 Former TCE Tank, Parts Washers, Degreasers, and Other Solvent Usage

Parts were cleaned in the chrome-plating shop both before and after plating, using TCE and other solvents. The use of TCE was discontinued at the site by the mid-1980s. Parts washers were also located in the grinding shop and cylinder shop.

2.2.9 Former Steam-Cleaning Area

A covered outside steam-cleaning area including a sodium hydroxide stripping tank was located at the southeast corner of the building before 1986.

2.2.10 Former Boiler UST

A former underground storage tank (UST) located beneath the floor of the boiler room in the south part of the building was used to fuel a boiler. The tank was abandoned in place and filled with "slurry" in 1992 (Environmental Associates, Inc., 1992). No testing of soil or groundwater was completed during the UST decommissioning.

2.3 Site Definition

Ecology's MTCA regulations (WAC 173-340-200) define a site or facility as:

[A]ny building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, vessel, or aircraft; or any site or area where a hazardous substance, other than a consumer product in consumer use, has been deposited, stored, disposed of, or placed, or otherwise come to be located.

The former Precision site includes areas where contamination is currently present at concentrations above screening level values, which could impact human health or the environment. Ecology (2006b) has defined the site as the extent of contamination caused by:

- DRO and ORO in soil and groundwater
- Chromium and other metals in soil and groundwater
- TCE and its breakdown products in soil, groundwater and air

Ecology requested that Precision's RI include the drainage ditch located south of the former Precision property. Therefore, the site includes the off-property drainage ditch.

2.4 Environmental Setting

The former Precision facility is located at the base of a hill along South Director Street. The site is generally flat except for the northern and western edges of the property, which consist of a steep excavated slope. The property is located in the lowland area of the Duwamish River Estuary. The Duwamish River is approximately 1,800 feet (less than 0.5 mile) east of the site and flows north to Elliot Bay.

2.4.1 Surface Water and Stormwater System

Stormwater from the western portion of the property flows into a catch basin south of the building. The catch basin drains south to a manhole that in turn discharges to a drainage ditch south of the property boundary. Stormwater from the east side of the property flows east and southeast and mixes with stormwater from the property that lies east of the former Precision property. An asphalt curb approximately 2 inches high on the property east of the former Precision property causes localized ponding and sediment accumulation on the pavement southeast of the former Precision building. Stormwater from the property into the drainage ditch south of the property. A 1989 survey by John R. Ewing and Associates shows a catch basin at the property directly east of the former Precision property. The catch basin is shown with an outfall to the ditch (see Figure 2). Both the catch basin and the outfall were observed in the field.

The off-property drainage ditch empties into a 24-inch storm drain and then through a network of pipes until it discharges to the Duwamish River (Sweet-Edwards/EMCON, 1990). The pavement on the Highway 99/W Marginal Way S on-ramp south of the property slopes toward the drainage ditch such that stormwater from the on-ramp drains into the ditch via sheet flow. In addition to receiving runoff from the site and the Highway 99/W Marginal Way S on-ramp, the ditch receives surface-water runoff from properties to the west and east of the former Precision property, and water from a ditch that parallels 14th Avenue.

2.4.2 Geology

The site is underlain by localized fill up to 10 feet thick (observed only in the eastern portion of the site); alluvium comprised of silt and sand (from the surface to a depth of approximately 20 feet, observed only on the eastern portion of the site); dense, gravelly, sandy silt glacial till (observed from surface to approximately 20 feet below ground surface [bgs] in the western part of the site and observed from 20 feet to 30 feet bgs in the eastern part of the site); and alluvium comprising sand and gravel (advanced outwash, observed from 30 feet bgs and below). The geology observed during the site investigations is generally consistent with a cross section prepared by Sweet-Edwards/EMCON, Inc. (Precision, 1993) and provided as Appendix B. The only change from this cross section is that the advanced outwash was observed in MW7 at approximately 29 feet bgs (at a shallower depth than depicted in the cross section). See Appendix C for boring and well logs.

2.4.3 Hydrogeology

Two water-bearing zones (WBZs) are present beneath the site: (1) a confined alluvial WBZ beneath the eastern side of the site that flows easterly toward the Duwamish River (shallow WBZ), and (2) a confined sand and gravel WBZ beneath the low-permeability glacial till (deep WBZ, which is also referred to as the advanced outwash WBZ) (Precision, 1993). East of the facility, the glacial till appears to hydraulically separate the two WBZs (Precision, 1993).

Four monitoring wells (MW1 through MW4) and two piezometers (P1 and P2) were installed at the site in June 1988. The piezometers could not be located during the 2005 and 2006 sampling events, and it is assumed that these were decommissioned. In December 2005, four additional monitoring wells, MW5 through MW8, were installed (see Figure 2). Monitoring wells MW1 and MW7 are completed in the deep WBZ; monitoring wells MW2, MW3, MW5, MW6, and MW8 are installed in the shallow WBZ; and monitoring well MW4 is interpreted to be installed in the glacial till and is most likely representative of the shallow WBZ. Well logs and well-development forms for the monitoring wells are provided in Appendix C.

The first groundwater in the alluvium is encountered between 5 to 8 feet bgs. Saturated conditions are first encountered deeper in the till (between approximately 7 and 14 feet bgs). Depth-to-water measurements were collected at monitoring wells MW1 through MW8 just before the start of the December 2005 and April 2006 groundwater sampling. The depth to groundwater in wells installed in the shallow WBZ is between 3.49 and 6.39 feet bgs (see Table 1). The higher static groundwater elevations in the monitoring wells indicate confined conditions in the alluvium and the till. Figures 4 and 5 show the potentiometric surface for the shallow WBZ in December 2005 and April 2006, respectively. Estimated potentiometric contours show that the shallow WBZ generally flows from west to east. The hydraulic gradient of the shallow WBZ downgradient of the

property was calculated to be 0.003, using site groundwater-elevation data collected from MW6 (located at the property boundary) on April 17, 2006, and an average daily staff gauge elevation for the Duwamish on the same day (USGS, 2007).

In the deep WBZ (confined sand and gravel WBZ), MW1 exhibited flowing artesian conditions and MW7 showed a water level below that of MW1 and the shallow WBZ (see Figures 4 and 5). A deep potentiometric surface map was not created because of insufficient data (only two data points). Based on the available data from MW1 and MW7, it is assumed that MW1 is upgradient of the site and MW7 is downgradient of the site.

A staff gauge was installed in the ditch south of the property and adjacent to the 24-inchdiameter storm-drain line where the surface water in the ditch drains. The elevation of the ditch at the staff gauge is 11.61 feet National Geodetic Vertical Datum of 1929. The staff gauge was dry during both sampling events (December 2005 and April 2006), but in April 2006, there was approximately 0.5 feet of water ponded in the bottom of the ditch below the bottom of the staff gauge. Based on the lack of water in the ditch in December 2005, shallow groundwater does not discharge to the ditch year-round. Shallow groundwater may seasonally discharge to the ditch during periods of higher groundwater elevations (e.g., April 2005), but it is likely that the source of the water observed in the ditch is surface-water runoff. Note that the staff gauge was removed at the same time as the off-property ditch soil removal action.

The site-specific hydrogeology described above is generally consistent with that described for the central Duwamish Valley in the shallow groundwater use designation report prepared by the Duwamish Coalition (Duwamish Coalition, 1998b).

3 DESCRIPTION OF INVESTIGATIONS

Investigations completed before 2005 are summarized in the RI work plan (MFA, 2005b). Investigations completed from June 2005 through January 2007 are described in detail in this section. Investigations completed in June and December 2005 involved collecting soil, reconnaissance groundwater, and groundwater samples from 32 Geoprobe™ borings; surface soil samples from five locations in the ditch just south of the property; and groundwater samples from eight monitoring wells (see Figure 6). On April 18 and 19, 2006, shallow-soil samples were collected from six additional locations in the ditch south of the property, groundwater samples were collected from seven probes inside the building (see Figures 6 and 7). On June 13, 2006, indoor air samples were collected from eight locations inside the building, and one air sample was collected outside the building (see Figure 7). On January 7, 2007, additional samples were collected from 13 locations in the ditch. Laboratory reports and data validation memorandums are included in Appendices D and E, respectively.

3.1 Investigation of Soil on Former Precision Property

In June 2005 and December 2005, soil sampling was completed to assess the nature and extent of contamination at the former Precision property. Thirty-two Geoprobe borings were advanced inside and outside the building on the former Precision property (see Figure 6).

Geoprobe borings were advanced to approximately 15 feet bgs or the top of the water table, whichever was encountered first. Soil samples were submitted for analysis of hexavalent chromium, Priority Pollutant metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc), VOCs, DRO, and ORO.

3.2 Investigation of Soil in Off-Property Ditch

In December 2005, soil samples were collected in the ditch south of the property boundary at the surface (0.5 feet bgs) and at approximately 1.5 feet bgs in five locations (HA1 through HA5) (see Figure 6). In April 2006, additional surface samples were collected from seven locations (HA6 through HA12) at 0.5 feet bgs and 1.0 or 1.5 feet

bgs. The primary purpose of the April 2006 ditch-soil sampling was to delineate the nature and extent of hexavalent chromium in soil that was detected in a sample collected from 0.5 feet bgs at HA2 in December 2005. In January 2007, additional samples were collected from 13 locations (HA13 through HA25) at 0.5 feet bgs and 1.5 feet bgs. The primary purpose of the January 2007 sampling event was to delineate the nature and extent of arsenic and lead that were detected in soil samples collected from 0.5 feet bgs at HA3, HA4, and HA5 in December 2005.

Sampling procedures were generally consistent with the RI work plan (MFA, 2005b). Samples from HA1 through HA5, collected in December 2005, were analyzed for metals, VOCs, PAHs, and petroleum hydrocarbons including gasoline-range organics (GRO), DRO, and ORO. Samples from HA6 through HA11, collected in April 2006, were analyzed for hexavalent chromium to delineate the extent of hexavalent chromium in soil near the location of HA2. One sample collected at HA12 was analyzed for arsenic, cadmium, copper, and lead to delineate the extent of these metals in soil near the location of HA3, HA4, and HA5. Samples from HA13 through HA27 were collected in January 2007. Samples from HA13 through HA16, HA26, and HA27 were placed on hold with the laboratory, pending results from the other locations. Samples from HA17 through HA25 were analyzed for lead and arsenic to delineate the extent of lead and arsenic in soil near locations HA3, HA4, and HA5.

3.3 Investigation of Reconnaissance Groundwater

In June 2005 and December 2005, reconnaissance groundwater samples were collected and analyzed for dissolved total chromium, hexavalent chromium, total petroleum hydrocarbons (TPH), VOCs, PAHs, and/or PCBs by the methods referenced in the Preliminary Assessment Report and the Supplemental RI Work Plan (MFA, 2005a,b). Reconnaissance groundwater samples were collected from borings GP-2, GP-4, GP-5, GP-6, GP-7, GP-8, GP-13, and GP-15 (see Figure 6).

3.4 Investigation of Groundwater

MFA sampled on-site monitoring wells MW1 through MW4 in June 2005, and MW1 through MW8 on December 27, 2005, and April 18, 2006. Sampling procedures were generally consistent with the RI work plan (MFA, 2005b). Samples were analyzed for metals (arsenic, copper, hexavalent chromium, lead, selenium, and trivalent chromium), DRO, ORO, and TCE and its breakdown products (*cis*-1,2-dichloroethene [DCE], *trans*-1,2-DCE, and vinyl chloride).

3.5 Investigation of Sub-Slab Soil Vapor

MFA installed seven sub-slab vapor probes (A1 through A7) on April 17 and 18, 2006, in the eastern portion of the building where soil and groundwater appear to have been impacted by TCE and its degradation products. Sampling procedures and results are discussed in detail in the 2006 Remedial Investigation and Risk Assessment (MFA, 2006b). Two of the seven probes, A3 and A5, were advanced near Geoprobe locations GP11 and GP06, respectively, where elevated concentrations of TCE had been detected in soil and groundwater samples. The remaining probes (A1, A2, A4, A6, and A7) were located outside the area of elevated TCE concentrations (see Figure 7).

MFA installed the sub-slab vapor probes and conducted vapor sampling consistent with procedures in the draft U.S. Environmental Protection Agency (USEPA) guidance titled Standard Operating Procedure for Installation of Sub-Slab Vapor Probes and Sampling Using USEPA Method TO-15 to Support Vapor Intrusion Investigations (USEPA, undated). The probes were installed as shown in Appendix F and as described below:

- A 1.375-inch outer hole was drilled approximately 2 inches into the slab.
- Drilling dust was removed with a vacuum.
- A 0.25-inch inner hole was drilled through the center of the base [or bottom] of the outer hole. The thickness of the concrete slab ranged from approximately 0.5 feet to approximately 0.8 feet. The inner hole was drilled 3 to 4 inches below the slab into the sub-slab material.
- The drilling dust was removed with a vacuum and the vapor probes were inserted into the hole so that the cap on the probe was flush with the top of the slab.
- The outer hole was filled with fast-setting Sakrete® cement (a blend of fine and coarse aggregates and special cements for quick setting) and allowed to dry a minimum of 24 hours before sampling.

Seven sub-slab vapor samples were collected from the sub-slab vapor probes on April 28, 2006. The analytical laboratory, Air Toxics Ltd. (ATL) in Folsom, California, provided a 6-liter, stainless steel sample canister (Summa® canister) and a 1-liter purge canister to accompany each sample. Each sample canister was attached to a purge canister with a T-bar connection. A flow controller was also attached to the T-bar connection to regulate the flow of soil vapor into the sample container. Tubing was connected from the sub-slab vapor sampling point to the flow controller. Photograph 1 in Appendix F shows the sampling layout.

The flow controller was set to collect soil vapor at a volumetric flow rate of approximately 167 milliliters per minute (ml/min). At the location where a field duplicate

sample was collected, A4, an additional T-bar connected the two sets of purge and sample canisters (see Photograph 2 in Appendix F). Before sample collection, the sampling equipment was purged of approximately 56 milliliters (3.5 pore volumes) of air into a purge canister. After purging of all the sample locations, the sub-slab vapor sample was drawn into the canister over a period of 30 minutes. Shaving cream containing isobutane and butane was applied to all connections as a leak check.

During sampling, the vacuum pressure gauge on the flow controllers for samples A3a, A4, A5a, A6, and A7 showed a loss of vacuum faster than 167 ml/min (the flow rate set by ATL). This rapid loss of vacuum indicates that ambient air may have leaked into the sample canister, likely through one of the connections between the flow controller and the canister. Because of this loss of vacuum, two locations, A3 and A5, were resampled (sample IDs A3b and A5b). The loss of vacuum was especially rapid at sampling location A4, possibly because of the increased number of connections required to collect both a primary and a duplicate sample. Because the primary and duplicate samples from sample point A4 are expected to be significantly impacted by ambient air and therefore not representative of conditions below the slab, these samples were not submitted for analysis.

The laboratory set the flow controllers so that the final vacuum on the canisters should be approximately 5 inches of mercury. The laboratory received the canisters at final vacuums ranging from 3.0 to 8.0 inches of mercury for samples A1, A2, A3b, and A5b. The final vacuums for both A6 and A7 were 0.81 inches of mercury. As mentioned above, the loss of vacuum in A6 and A7 is an indication that ambient air may have leaked into the sample canister.

The samples were analyzed for TCE, *cis*-1,2-DCE, *trans*-1,2-DCE, vinyl chloride, isobutene, and butane (the leak-check compound) by USEPA Method TO-15.

3.6 Investigation of Indoor Air

On June 13, 2006, nine indoor air samples were collected from eight locations inside the building, and one ambient air sample (IA7) was collected outside of the south side of the building and upwind of the building. A sample and a duplicate (IA4 and IA8) were collected near Geoprobe location GP06, where elevated concentrations of TCE had been detected in soil and groundwater samples. The remaining sampling locations (IA1, IA2, IA3, IA5, IA6, and IA7) were outside the area of elevated TCE concentrations in soil and groundwater (see Figure 7). A heating, ventilation, and air-conditioning system was not operating at the time of sampling, and all doors and windows were closed for at least 24 hours before sample collection.

ATL provided a 6-liter Summa canister for each sample. A flow controller was attached to each canister, which was preset for an eight-hour collection period. Tubing was connected from the flow controller, with the air intake end of the tubing set at a height of approximately 5 feet above ground surface, using a laboratory-supplied stand. The sample was drawn into the canister over a period of eight hours. The laboratory set the flow controllers so that the final vacuum on the canisters should be approximately 5 inches of mercury. The laboratory received the canisters at final vacuums ranging from 3.5 to 10 inches of mercury.

Temperature and pressure readings were collected at each sample location: when sampling started, four hours later, and at the end of sampling (see Table 2).

The samples were analyzed for TCE, *cis*-1,2-DCE, *trans*-1,2-DCE, vinyl chloride, 1,1-DCE, and 1,1-dichloroethane (1,1-DCA) by USEPA Method TO-15. One trip-blank canister was also submitted for analysis.



4 NATURE AND EXTENT

This section describes the nature and extent of IHSs at the site. Laboratory analytical reports for samples collected as part of the RI are included in Appendix D. MFA downloaded all analytical data into the site database and validated all data (see Appendix E).

4.1 Soil on Property

Tables 3 through 8 summarize soil analytical results for metals, VOCs, petroleum hydrocarbons, and PAHs. Sample locations are shown on Figure 6. IHSs in soil, including hexavalent chromium and TCE, were initially identified in the February 22, 2006, RI report (MFA, 2006a) by comparing soil analytical results to MTCA Method C CULs for direct contact (ingestion) and protection of groundwater, except for arsenic, lead, DROs, and OROs, which were compared to the MTCA Method A soil CULs. MTCA rules for cPAHs changed on October 12, 2007, so that cPAHs are now considered as a single hazardous substance when establishing compliance with CULs. Toxicity equivalency factors (TEFs) are used for each constituent, with the sum of the results screened against criteria for benzo(a)pyrene. However the MTCA rule amendment does not change the outcome of the IHS selection and subsequent risk evaluation for soil on property. Subsequent to the 2006 screening, Ecology requested the addition of trivalent chromium, DRO, and ORO as IHSs. IHSs identified in on-site soil are:

- Hexavalent chromium and trivalent chromium
- Petroleum hydrocarbons (DRO and ORO)
- TCE

The nature and extent of IHSs in soil on the property have been adequately characterized, as described below. Based on the work described in the 2006 RI report (MFA, 2006b), Ecology did not request any additional characterization for soil on the property (Ecology, 2006c).

4.1.1 Hexavalent Chromium and Trivalent Chromium

Hexavalent chromium detections ranged from 0.119 milligrams per kilogram (mg/kg) (GP7 at 2.0 feet bgs) to 3,500 mg/kg (GP32 at 1.0 feet bgs) (see Table 3). The highest concentrations of hexavalent chromium are located in the former chrome-shop area.

Hexavalent chromium was not detected in on-site soil samples collected from outside the building.

Trivalent chromium was detected at concentrations ranging from 16.93 mg/kg (GP11 at 6.5 feet bgs) to 3,250 mg/kg (GP32 at 1.0 foot bgs). The highest concentrations of trivalent chromium on site are in the former chrome-shop area inside the building footprint.

4.1.2 Petroleum Hydrocarbons (DRO and ORO)

DRO were detected in soil at concentrations below 200 mg/kg, except for a sample from GP21 at 6.5 feet bgs, which contained DRO at 5,270 mg/kg (see Table 7). ORO were detected in soil at concentrations below 1,500 mg/kg, except for a sample from GP21 at 6.5 feet bgs, which contained ORO at 19,900 mg/kg. Concentrations of DRO and ORO at GP21 increase with depth. The chromatogram for the samples from GP21 showed elution patterns that are characteristic of lube oil. Possible sources of the elevated petroleum hydrocarbons are former operations associated with the machine shop, the former steam-cleaning operations, or the former boiler UST (see Figure 3). However, according to former Precision employees, the former boiler UST contained heating oil, which would not match the elution patterns of lube oil.

4.1.3 TCE

TCE was detected in seven of the 64 on-site soil samples that were analyzed for VOCs at concentrations ranging from 3.43 micrograms per kilogram (μ g/kg) (GP18 at 1.0 feet bgs) to 1,160 μ g/kg (GP6 at 14.5 feet bgs) (see Table 5). All detections were in the former chrome shop and former grinding shop (see Figure 3). Concentrations of TCE in soil at GP6 and GP11 increased with depth. GP6 was completed approximately 10 to 20 feet away from the former TCE tank. It is not known exactly where this tank was situated, but the approximate location is shown on Figure 3, based on descriptions from former Precision employees. Samples collected at a depth of 1 foot bgs from two borings completed near the area of the former TCE tank (GP18 and GP32) did not contain TCE at elevated concentrations. Deeper samples at these locations could not be collected because of drilling refusal.

4.2 Soil in Off-Property Ditch

Tables 3 through 8 summarize soil analytical results for metals, VOCs, petroleum hydrocarbons, and PAHs. Sample locations are shown on Figure 6. As part of the 2006 RI report (MFA, 2006b), IHSs in soil, including arsenic, cadmium, copper, hexavalent chromium, lead, and chrysene were initially identified based on a screening of soil analytical results compared to MTCA Method C CULs for direct contact (ingestion) and protection of groundwater, except for arsenic, lead, DROs, and OROs, which were

compared to the MTCA Method A soil CULs (MFA 2006a). MTCA rules for cPAHs changed on October 12, 2007 so that cPAHs are now considered as a single hazardous substance when establishing compliance with CULs. TEFs are used for each constituent, with the sum of the results screened against criteria for benzo(a)pyrene. The only PAH in soil that was originally considered to be an IHS was chrysene. For the purposes of this evaluation, chrysene continues to be considered an IHS, even though under the new rules it may not be. Subsequent to the 2006 screening, Ecology asked that trivalent chromium, DRO, and ORO also be included as IHSs. IHSs identified in ditch soil are:

- Metals (arsenic, cadmium, copper, hexavalent chromium, trivalent chromium, and lead)
- Petroleum hydrocarbons (DRO and ORO)
- Chrysene

The nature and extent of IHSs in the ditch soil are described below.

4.2.1 Metals

Arsenic

Arsenic was detected in the soil samples from the ditch at concentrations ranging from non-detect (HA20 at 0.5 and 1.5 feet bgs, and HA 18 at 1.5 feet bgs) to 53.9 mg/kg (HA3 at 0.5 feet bgs). The highest concentrations of arsenic were in soil samples at 0.5 feet bgs from HA3, HA4, HA5, and HA22. These samples are from locations that would receive runoff from the former Precision property, from properties east and west of Precision, from 14th Avenue, and from the Highway 99/W Marginal Way S on-ramp. Arsenic was not detected above CULs in the sample collected near the discharge pipe from the western part of the former Precision property, or in samples collected just south of the paved area directly in the path of sheet flow from the former Precision property. It should also be noted that arsenic concentrations detected on the north side of the ditch, receiving flow from the former Precision property, were similar in magnitude to concentrations from the south side of the ditch, receiving sheet flow from the highway on-ramp. In addition, the highest arsenic concentrations were detected directly beneath the neighboring outfall to the west and in the area around its discharge path. Concentrations of arsenic generally decrease with depth in all locations (see Table 4).

Cadmium

Cadmium was detected in six of the 12 ditch-soil samples analyzed for cadmium. Concentrations were below 5 mg/kg, except in one sample with a concentration of 28.7 mg/kg collected from HA4 at a depth of 0.5 feet bgs. HA4 is the lowest point in the ditch.

4-3

Copper

Copper was detected in soil samples from the ditch at concentrations ranging from 16.4 (HA3 at 1.5 feet bgs) to 978 mg/kg (HA4 at 0.5 feet bgs). The highest concentrations of copper were in soil samples at 0.5 feet bgs from HA3, HA4, and HA5, located near the lowest point of the ditch. Concentrations of copper generally decrease with depth (see Table 4).

Hexavalent Chromium and Trivalent Chromium

Hexavalent chromium was detected in shallow surface samples located near the stormwater outfall from the former Precision property. One sample collected directly at the outfall pipe (HA2 at 0.5 feet bgs) contained hexavalent chromium at a concentration of 89 mg/kg. Concentrations in all other samples were below 7 mg/kg (see Table 3).

Trivalent chromium was detected at a maximum concentration of 8,480 mg/kg (HA4 at 0.5 feet bgs), located in the lowest point of the ditch.

Lead

Lead was detected in soil samples at concentrations ranging from non-detect (HA18 at 1.5 feet bgs) to 1,710 mg/kg (HA4 at 0.5 feet bgs). The highest concentrations of lead were in soil samples at 0.5 feet bgs from HA3, HA4, HA5, and HA22, located near the lowest point of the ditch. Concentrations of lead generally decreased with depth (see Table 4).

4.2.2 Petroleum Hydrocarbons (DRO and ORO)

Generally, DRO were detected in the ditch-soil samples at concentrations below 1,500 mg/kg, except in the soil sample from HA4 at 0.5 feet bgs (35,900 mg/kg). ORO were detected in the ditch soil samples at concentrations ranging from 30.1 mg/kg (HA3 at 1.5 feet bgs) to 106,000 mg/kg (HA4 at 0.5 feet bgs). The highest concentrations of petroleum hydrocarbons were in samples from HA4, which is located near the lowest point of the ditch. Concentrations of petroleum hydrocarbons decreased with depth.

4.2.3 Chrysene

Chrysene, a PAH, was detected in seven of the 11 ditch-soil samples analyzed for chrysene. Concentrations of chrysene were below 0.1 mg/kg, except in soil samples from HA4 at 0.5 feet bgs (0.899 mg/kg) and HA5 at 0.5 feet bgs (1.54 mg/kg). HA4 and HA5 are located near the lowest point of the ditch. Based on the lack of elevated chrysene concentrations in HA2 and HA3, it does not appear that Precision is the source of the elevated chrysene concentrations in the ditch.

4.3 Groundwater

Reconnaissance groundwater samples were collected from GP2, GP4 through GP8, GP13, and GP15. Tables 9 through 14 summarize reconnaissance groundwater analytical results for metals, VOCs, petroleum hydrocarbons, PAHs, and PCBs. Groundwater analytical results from monitoring well samples for metals, VOCs, petroleum hydrocarbons, and PAHs are summarized in Tables 15 through 20. Measured field parameters for groundwater samples are provided in Table 21. Sample locations are shown on Figure 6.

As part of the 2006 RI report (MFA, 2006a), IHSs in groundwater were identified by comparing analytical results for reconnaissance groundwater samples and groundwater samples collected from monitoring wells to MTCA Method C groundwater CULs, except for arsenic, DROs, and OROs, which were compared to the MTCA Method A groundwater CULs. Note that MTCA CULs for cPAHs have changed since the 2006 RI report to consider cPAHs as a single hazardous substance when screening. However the MTCA rule amendment (October 12, 2007) does not change the outcome of the IHS selection and subsequent risk evaluation for groundwater. Analytical data from samples collected in April 2006 (after the 2006 RI report) were also compared to screening levels, and no additional IHSs resulted. IHSs identified in groundwater are:

- Metals (arsenic, copper, hexavalent chromium, trivalent chromium, and selenium)
- Petroleum hydrocarbons (DRO and ORO)
- VOCs (TCE and vinyl chloride)

4.3.1 Metals

Arsenic

Reconnaissance groundwater samples were not analyzed for arsenic. Arsenic was detected in groundwater samples collected from monitoring wells at concentrations ranging from 4.59 micrograms per liter (μ g/L) (MW5) to 33 μ g/L (MW1) (see Table 16). The highest concentration was in MW1, which is in the deep WBZ and assumed to be upgradient of the former Precision building. Based on the presence of arsenic at similar concentrations in groundwater throughout the site, there is no indication that the former Precision property is a source of arsenic contamination.

Copper

Reconnaissance groundwater samples were not analyzed for copper. Copper was detected in groundwater samples from six of the eight monitoring wells at concentrations of up to $5.1 \mu g/L$ (MW6 in April 2006) (see Table 16). As with arsenic, copper was found at

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similar concentrations throughout the site and it is therefore difficult to conclude that the former Precision property is a source of copper contamination.

Hexavalent Chromium

Hexavalent chromium was detected in reconnaissance groundwater samples at concentrations of up to 300 milligrams per liter (mg/L) (GP6), with higher concentrations in the former chrome shop (see Table 9). Hexavalent chromium was detected in groundwater samples from MW1 (only in June 2005), MW4 (only in April 2006), MW5, and MW7 (only in December 2005) (see Table 15). MW1 is a deep well and is assumed to be upgradient of the site features of interest. The hexavalent chromium concentration detected in MW1 in June was 0.269 mg/L. The hexavalent chromium concentration detected in MW4, a shallow well south of the building, was 0.023 mg/L. MW5 is a shallow well located in the former chrome shop and had the highest concentrations of hexavalent chromium (450 mg/L in December). The hexavalent chromium concentration detected in MW7, a deep well assumed to be downgradient of the former chrome shop, in December 2005 was 0.00738 mg/L.

Trivalent Chromium

Trivalent chromium was calculated by subtracting the hexavalent chromium results from the chromium results. If hexavalent chromium was not detected, then the chromium value was assumed to be trivalent chromium. The only reconnaissance groundwater samples in which chromium was detected were in the former chrome shop, except for GP8, which is located within the building footprint and downgradient of the chrome shop. The maximum calculated concentration of trivalent chromium was in the groundwater sample from GP8 (61 mg/L; see Table 9).

The calculated trivalent chromium concentrations from monitoring wells ranged from 0.00215 mg/L (MW3 in December 2005) to 47 mg/L (MW5 in December 2005) (see Table 15).

Selenium

Reconnaissance groundwater samples were not analyzed for selenium. Selenium was detected in groundwater samples collected from MW2, MW6, MW7, and MW8, with the highest concentration (19 mg/L) in MW6 (see Table 16). Because selenium was not detected in soil at the site, it does not appear that Precision is the source of the detected concentrations of selenium in the groundwater.

4.3.2 Petroleum Hydrocarbons

The reconnaissance groundwater samples from GP2 and GP4 through GP8 were analyzed for petroleum hydrocarbons, using NWTPH-HCID, with detections quantified for GRO, DRO, and ORO using NWTPH-Gx and NWTPH-Dx (see Tables 11 and 12). The

maximum concentrations of DRO (0.814 mg/L) were from a sample collected at GP8, located near the former boiler UST. ORO were not detected in the quantification analyses.

Samples from monitoring wells were analyzed for DRO and ORO. DRO were detected in shallow monitoring wells MW2, MW3, MW5, MW6, and MW8 at concentrations of up to 2.64 mg/L (MW6 in December 2005) (Table 19). DRO were not detected in deep monitoring wells or in shallow monitoring well MW4. ORO were detected in shallow monitoring wells MW2, MW6, and MW8 at concentrations of up to 1.32 mg/L (MW6 in December 2005). ORO were not detected in deep monitoring wells or in MW3, MW4, or MW5. Generally, the highest concentrations of DRO and ORO occurred in shallow groundwater in the southeast quadrant of the site.

4.3.3 VOCs

TCE

TCE was detected in three reconnaissance groundwater samples (see Table 10): GP6 (1,130 μ g/L), GP8 (16.8 μ g/L), and GP13 (0.220 μ g/L). The highest concentrations were in samples from below and downgradient of the former chrome shop. TCE was detected in only one monitoring well (MW5) at concentrations of up to 22.1 μ g/L (see Table 17). The maximum concentration of TCE in groundwater (1,130 μ g/L in a reconnaissance groundwater sample from GP6) was approximately 0.1 percent of the TCE solubility limit of 1,100,000 μ g/L, and there is no indication of TCE free product at the site.

Vinyl Chloride

Vinyl chloride, a breakdown product of TCE, was detected in only one reconnaissance groundwater sample, from GP13 at 16.5 μ g/L (see Table 10). This vinyl chloride detection occurred within the footprint of the building in the former cylinder shop and downgradient of TCE detections in soil at GP11. Vinyl chloride was detected in only one monitoring well (MW8), at concentrations of up to 0.80 μ g/L (see Table 17).

The presence of vinyl chloride in groundwater indicates that biodegradation of TCE is occurring. The lack of TCE in groundwater at monitoring wells near the downgradient property line indicates that TCE concentrations significantly attenuate through biodegradation and other processes by the time groundwater reaches the downgradient property line.

4.4 Investigation of Soil Vapor

Sub-slab soil-vapor samples were collected from probes A1 through A7 (see Figure 7). Table 22 summarizes results for TCE and its breakdown products (*cis*-1,2-DCE, *trans*-1,2-DCE, vinyl chloride), as well as leak-check compounds (isobutane and butane).

4.4.1 Evaluation of Soil Vapor Data Quality

The leak-check compound isobutane was detected in five of the six soil-vapor samples analyzed, and butane was detected in four of the samples. Detected concentrations of butane were lower than concentrations of isobutene. Isobutane results collected from probes A1, A2, and A3 were flagged "E" by the laboratory, indicating that the concentrations were above the instrument calibration range. Concentrations of isobutane for A1, A2, and A3 were 2.4 J parts per million by volume (ppmv), 2.3 J ppmv, and 1.1 J ppmv, respectively. The E-flagged values were flagged "J" by MFA, indicating that they are considered estimates (see Appendix E). Washington does not currently have a leakcheck compound criterion, but some other states do. The leak-check compound reporting limit criterion used by the California Environmental Protection Agency (CA EPA et al., 2003) is 10 µg/L (approximately 4 ppmv for isobutane). This criterion applies to the reporting limit. Action is not triggered just because the compound is detected above this concentration. The New Jersey Department of Environmental Protection Vapor Intrusion Guidance indicates that resampling is required only when detection of a leak-test compound in excess of 1,000 µg/L (approximately 400 ppmv isobutane) is confirmed (NJDEP, 2005). The Missouri Department of Natural Resources suggests action if a leakcheck compound is detected above 100 µg/L (40 ppmv isobutane) (MDNR, 2005). Based on the detected concentrations of isobutene in A1, A2, and A3, and the leak-check criteria described above, some leakage of ambient air into the sampling canisters may have occurred, but the estimated concentrations of the leak-test compound do not compromise the data.

Isobutane results for samples collected from probes A6 and A7 were flagged "S" by the laboratory, indicating a saturated peak. The concentrations of isobutane in these samples were far above the calibration range. The saturated peaks likely indicate that substantial leakage of ambient air into the sampling canisters occurred; therefore, A6 and A7 sub-slab sample results are not used in the nature-and-extent delineation and the risk evaluation.

Isobutane and butane were not detected in the sample collected from probe A5; the analytical results are considered usable.

4.4.2 Soil Vapor Analytical Results

TCE was detected in sub-slab vapor samples A3 and A5 at concentrations of 6,100 and 37,000 micrograms per cubic meter (μ g/m³), respectively (see Table 22). *Cis*-1,2-DCE was detected in samples A3 and A5 at concentrations of 470 and 1,700 μ g/m³, respectively. *Trans*-1,2-DCE was not detected in any samples. Vinyl chloride was detected in a sample from A5 at a concentration of 420 μ g/m³. A3 is located in the former grinding shop and A5 is located in the former chrome-plating shop. Detections of TCE and its breakdown products in soil vapor match the distribution of TCE in soil and groundwater, indicating good correlation.

4.5 Investigation of Indoor Air

Indoor-air samples were collected from stations IA1 through IA8. Table 23 summarizes results for TCE and its breakdown products (*cis*-1,2-DCE, *trans*-1,2-DCE, vinyl chloride, 1,1,-DCE, and 1,1-DCA). TCE was detected in all eight samples, ranging in concentrations from 0.046 μ g/m³ to 0.2 μ g/m³. No TCE breakdown products were detected in any of the samples. The lowest TCE concentration was detected in the sample collected outside and south of the building (IA7). The concentrations of TCE in the samples collected inside the building were similar to each other. TCE concentrations collected above the source area (IA4 and field duplicate IA8) are 0.14 and 0.15 μ g/m³, while the air sample with the highest TCE concentration (0.20 μ g/m³) was collected north of the source area.



5 LAND AND BENEFICIAL WATER USE DETERMINATION

In the late 1990s, the Duwamish Coalition completed a study on the Duwamish Industrial Area Hydrogeologic Pathways Project. The Duwamish Coalition team produced three Duwamish Industrial Area technical memoranda: *Development of a Three-Dimensional*, *Numerical Groundwater Flow Model for the Duwamish River Basin; Duwamish Basin Groundwater Pathways Conceptual Model Report*; and *Shallow Groundwater Use Designation* (Duwamish Coalition, 1997, 1998a,b). The Duwamish Coalition study concluded that shallow groundwater in the Duwamish industrial area is nonpotable and that the highest beneficial use of shallow groundwater was discharge to the Duwamish *River. MFA*, on behalf of Precision, completed a Beneficial Land and Water Use Determination at the request of Ecology that confirms that the conclusions reached by the Duwamish Coalition are also true for the former Precision property (see Appendix G). The former Precision property is located in the Duwamish industrial area and was included in the Duwamish Coalition study area. The conclusions of the beneficial land and water use report are summarized below.

5.1 Land Use

- Historically, the site has been used for industrial purposes. The site is currently zoned for industrial uses, and MFA understands that it will continue to be used for industrial purposes in the future.
- The only sensitive environment in the region of study that could possibly be affected by IHSs from the site is the Duwamish River.

5.2 Surface-Water Use

- The Duwamish River is located approximately 1,800 feet east of the site.
- No surface-water rights were identified in the region of study.
- Current surface-water beneficial uses include resident fish and aquatic life, wildlife habitat, fishing, boating, water-contact recreation, aesthetic quality, and commercial navigation and transportation.
- It is not reasonably anticipated that surface-water uses will change in the future.

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5.3 Groundwater Use

- The shallow groundwater gradient on site and in the region of study is toward the Duwamish River.
- The Duwamish River provides a hydrologic divide between shallow groundwater at the site and shallow groundwater east of the Duwamish River.
- No groundwater rights were identified in the region of study.
- Current groundwater beneficial uses include engineering (dewatering), and surface-water recharge.
- The highest beneficial use of shallow groundwater in the Duwamish Valley is discharge to surface water.
- Deeper groundwater below the site is not currently used for and cannot be used in the foreseeable future for beneficial purposes.
- The area of the site and region of study are supplied with potable water by the City of Seattle municipal water supply; this is expected to continue in the future.

Ecology has indicated concern that a zone of contaminated groundwater associated with the Precision site may exist downgrade of the former Precision property approaching the Duwamish River (hereinafter "zone of concern"). There are numerous individual lots, both residential and commercial/industrial, located in the zone of concern between the former Precision property and the Duwamish River. Some of these properties are in the City of Seattle and some are in unincorporated King County (see Figure 8). All of the lots in the zone of concern are currently connected to a public water supply.

As mentioned previously, groundwater in the zone of concern will not be used for drinking in the foreseeable future. Stoel Rives, LLP has investigated local restrictions on the use of groundwater for drinking that have been put in place by Ecology and the King County Board of Health (KCBOH) (see Appendix H). The KCBOH code prohibits any proposed well drilling in the zone of concern, based on the Code's (1) public-service-connection requirements; (2) source quality requirements on drinking water; and (3) physical location restrictions on the placement of wells (see Appendix H for code references).

The public-service connection requires that properties undertaking new development connect to a public water supply when the land is within an existing public-water-supply system, the system meets applicable water-quality standards, and the system is willing and able to provide service in a timely and reasonable manner. Since all of the properties in the zone of concern are already connected to public water and the quality of that water is not subject to dispute, the future development in the zone of concern would be required

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to connect to public water rather than install a drinking-water well. In addition, the KCBOH places a limitation on the sources of drinking water, stating that it shall be obtained from the highest-quality source feasible. Seattle city water is certainly a higherquality source than groundwater from a historically industrial area.

The KCBOH also had restrictions on the physical placement of drinking-water wells, including minimum setbacks of 100 feet from houses and garages, public roads, sewers, chemical-storage sites, surface waters, railroad tracks, power utility or gas lines, and USTs. Stoel Rives reviewed aerial photography of the area and concluded that no property has a 200-foot-diameter area free of roads and buildings sufficient to provide the sanitary control area required to protect the well site. Factor in underground tanks, sewer lines, power and gas lines, and other possible sources of contamination, and it will be impossible to legally locate a drinking-water well in the zone of concern.



6 CONCEPTUAL SITE MODEL

The conceptual site model (CSM) describes potential chemical sources, release mechanisms, environmental transport processes, exposure routes, and receptors. The primary purpose of the CSM is to describe pathways by which human and ecological receptors could be exposed to site-related chemicals. A complete exposure pathway consists of four necessary elements: (1) a source and mechanism of chemical release to the environment, (2) an environmental transport medium for a released chemical, (3) a point of potential contact with the impacted medium (referred to as the exposure point), and (4) an exposure route (e.g., soil ingestion) at the exposure point.

The human-health CSM is shown in Figure 9. Elements of potentially complete exposure scenarios are further discussed in Table 24. Processes that structure the fate and transport of IHSs in the environment, as well as potential exposure scenarios and reasonable maximum exposures, are discussed below.

6.1 Primary Sources

Of the features of interest described in Section 2.2, the following former features are considered to be potential sources for IHSs detected in soil and groundwater samples:

- Containment vaults holding former Plating Tanks 1 and 2
- Former Plating Tanks 3, 4, 5, and 6
- Former floor trenches and drains
- Former TCE tank, parts washers, degreasers, and other solvent usage
- Former steam-cleaning area
- Former boiler UST near the boiler room

Figure 3 shows the locations where these former features once stood. The primary processes by which chemicals may have been released to the environment are likely to include accidental spills of process chemicals or waste and releases from the former chromic-acid tanks, the former TCE tank, and the former UST.

6.2 Fate-and-Transport Processes

The primary mechanisms likely to influence the fate and transport of chemicals in environmental media at the site include leaching of chemicals from soil to groundwater,

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advection and dispersion in groundwater, sorption to the soil matrix, and natural biodegradation processes. The relative importance of these processes will vary, depending on the chemical and physical properties of a released contaminant. The properties of soil and the dynamics of groundwater flow also shape contaminant fate and transport.

Almost the entire former Precision property is paved or covered with a building (see Figure 2). In the few areas of the property not covered with an impermeable surface, precipitation that falls on the surface may percolate through the vadose zone, and it is possible that chemicals with relatively high solubility may leach from soil to pore water. In addition, when the water table rises and interacts with chemicals sorbed to soil, some may partition into groundwater. Once in groundwater, dissolved contaminants may be transported by diffusion and advection horizontally away from the original source. Dispersion, retardation, and biodegradation may act to reduce dissolved concentrations of chemicals in groundwater downgradient of the source area.

Volatile contaminants that are either adsorbed to soil or dissolved in groundwater may volatilize to soil pore spaces. Chemical vapors in pore spaces may eventually migrate through the soil matrix and enter outdoor air. Once the chemicals reach outdoor air, mixing with ambient air is expected to reduce airborne concentrations rapidly and substantially. If buildings are located over soil or groundwater that has been contaminated with volatile chemicals, it is possible that vapors may eventually enter indoor air by penetrating cracks in a building floor or foundation.

6.3 Groundwater Fate-and-Transport Modeling

The Duwamish River is located approximately 1,800 feet downgradient of the former Precision property. Fate-and-transport modeling was completed to demonstrate that siterelated IHSs in groundwater would not reach the river. Fate-and-transport modeling was then used to derive site-specific CULs for groundwater that are protective of surface water. The same model parameters were used for both of the modeling exercises. The modeling was performed using the USEPA's BIOCHLOR model (USEPA, 2002). A detailed description of the model, the model inputs, and assumptions is included in Appendix A. Conservative modeling assumptions include the following:

- The models were run using a conservative hydraulic conductivity value (0.005 centimeters per second). The assumed K value is five times the Duwamish Coalition estimate (i.e., overestimates groundwater velocity and consequently potential contaminant migration).
- Because of the high propensity of PAHs to adhere to soil (e.g., high partitioning coefficients), extremely high retardation factors were calculated for the PAHs. The high retardation factors caused the model to break down and produce unrealistic results. In order to make the model function correctly, a retardation

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factor of 10 was used for all PAHs. This is a conservative assumption (i.e., it will result in migration being overestimated) because it is orders of magnitude lower than the actual calculated retardation factors (see Appendix A). Therefore, the CULs developed using the lower retardation factors are much lower than CULs that would have been calculated had the model been able to use the higher retardation factors.

- CULs for TCE and vinyl chloride were modeled using degradation rates two times slower than values provided in literature, to account for the possibility that degradation rates can slow at lower concentrations. Note that performing the modeling with no degradation for TCE and vinyl chloride would not be representative of site conditions, as the mere presence of vinyl chloride suggests that degradation is occurring.
- It was conservatively assumed that the contaminant source is constant and nondegrading. Mass loading to the system is in fact finite due to TCE use at the property ending and the UST decommissioning and soil excavation conducted in the 1980's, the outside steam-cleaning area was relocated before 1986, that the boiler UST was abandoned in place and filled with a slurry in 1992, that chrome-plating operations ceased in 2005, and maximum concentrations in several cases were located an additional 50 to 130 feet west of the eastern property edge. Given that, it is unlikely that there is a significant ongoing source of IHSs to groundwater.
- The model projected contaminant migration over an assumed 35-year time frame. Given that the primary sources of the contamination are no longer present, it is unlikely that impacts will continue for this length of time.

None of the modeled constituents were predicted to reach the river at concentrations that were at or above method detection limits. The development of CULs based on fate and transport modeling is discussed in Section 7.1.2.3.

6.4 Exposure Scenarios and Reasonable Maximum Exposures

Precision performed industrial operations at the property between 1968 and 2005. As discussed in the Land and Beneficial Water Use Determination (Appendix G), the property is currently zoned for industrial use and will continue to be used for industrial purposes in the future. The site is located in the Duwamish Valley, which is a heavy-industry area south of downtown Seattle that includes approximately 5,000 acres of land designated for industrial activity. The Duwamish industrial area has been used for industrial purposes for many years, and plans for the area include maintaining the predominance of industrial use in the area (Duwamish Coalition, 1998b).

No sensitive subpopulations such as those associated with eldercare facilities, child-care facilities, or schools are located downgradient of the site (see Appendix G). No residences are located on the site, and it is unlikely that the area will be developed to support residences in the foreseeable future. Because the ditch extends off site, it is possible that nonindustrial workers (e.g., residents) could enter the ditch, as there is a residential area located north of the site. However, given that the ditch is located adjacent to a busy roadway and there is no safe and easy route for residents to access the area, an industrial-worker-exposure scenario is appropriate for the ditch.

Based on the information above, industrial workers are the type of human receptors with the greatest potential to be exposed to site-related chemicals in soil or groundwater.

As explained in more detail below, there are no significant ecological exposure pathways associated with the site.

6.4.1 Human Health Exposure Scenarios for Soil

The site is almost entirely covered by a building and asphalt, and the steep slopes on the north and west property boundaries are covered in concrete. These structures prevent workers from directly contacting IHSs in underlying soil. However, for the purposes of the risk evaluation, it is assumed that these exposure barriers may be removed in the future and that industrial workers could have direct contact with soil. Direct-contact exposure routes for workers include incidental soil ingestion, inhalation of vapors or particulates, and dermal contact.

Volatile chemicals have been detected in soil samples collected beneath the building, and it is assumed that indoor industrial workers could have indirect exposures to chemicals that migrate from vadose-zone soil to indoor air. An indirect exposure pathway involves intermedia transfer of a chemical before exposure. The vadose zone is the layer of unsaturated soil that lies above the water table. Depending on location and season, the depth of the vadose zone may range from approximately 4 feet bgs to 14 feet bgs (see Section 2.4.3).

In summary, the following potential soil-exposure scenarios are evaluated as reasonable maximum exposures in the RA:

- Future on-site industrial workers who incidentally ingest, inhale, and have dermal contact with site-related chemicals in soil (less than 15 feet bgs). For the purposes of the risk evaluation, it is assumed that future workers could be exposed to soil beneath the building if the building were removed at some point in the future.
- Indoor industrial workers who inhale volatile chemicals that migrate from vadosezone soil to indoor air through cracks in the building foundation.

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As agreed to by Ecology, soil CULs based on leaching to groundwater are not needed to protect human health and the environment. Empirical groundwater data will be used to evaluate and manage potential risks associated with exposure to groundwater.

It should be noted that there are other potential scenarios by which people may be exposed to chemicals in soil, but these other exposure scenarios are expected to be less significant than the exposure scenarios listed above. For example, it is possible that occasional site visitors could have indirect exposure to volatile chemicals that migrate from soil to indoor or outdoor air, but relative to on-site industrial workers, visitor exposures are expected to be small.

6.4.2 Terrestrial Ecological Evaluation for Soil

A simplified terrestrial ecological evaluation was performed for the site, consistent with the MTCA cleanup regulations under WAC 173-340-7492. A table illustrating the evaluation is included in Appendix I. The site is completely covered by the building and asphalt, and the steep slopes on the north and west property boundaries are covered in concrete. The site does not provide important wildlife habitats. It is surrounded by Highway 99/W Marginal Way S to the south; industrial and commercial properties to the southwest, south, and east; and residential properties to the north and northwest. The ditch along the south side of the property is less than 60 feet across and does not provide good-quality habitat. Vegetation in the ditch includes a few trees, grasses, and Himalayan blackberry.

To be conservative for the purposes of this terrestrial ecological evaluation, the ditch within 500 feet of the site, along Highway 99/W Marginal Way S and 14th Avenue, was considered an area of contiguous undeveloped land. The ditch area comprises approximately 1.53 acres. The habitat quality of the ditch is classified as low, and the area is not likely to attract wildlife because of the high levels of human disturbance in the area and the poor quality of the habitat. Soil at the site does not have the contaminants listed in Question 5 of the simplified terrestrial ecological evaluation (see Appendix I). The resulting scores of the simplified terrestrial ecological evaluation show that the ecological evaluation may be ended and that terrestrial ecological receptors are not appropriate endpoints for soil.

6.4.3 Human Health and Ecological Exposure Scenarios for Groundwater

As explained above in Section 5.3, the facility and the surrounding area are supplied with potable water by the City of Seattle municipal water supply. There are no public water-supply systems or drinking-water wells within a 1-mile radius of the site (see Appendix G). Groundwater beneath and near the site is not currently used as a source of drinking water and is unlikely to be used as a source of drinking water in the foreseeable future (see Appendix G). As a result, human receptors such as industrial workers are unlikely to contact or ingest impacted groundwater.

It is assumed that on-site workers could inhale volatile chemicals that migrate from groundwater to indoor or outdoor air. Airborne concentrations of volatile chemicals that migrate from groundwater to indoor air of a building are expected to be higher than concentrations in outdoor air because of less complete mixing when chemicals enter indoor air relative to mixing in outdoor air. Therefore, the reasonable maximum groundwater exposure scenario is indoor workers who inhale volatile chemicals that have migrated from groundwater and penetrated a building.

During reconnaissance drilling, the depth to shallow groundwater was encountered between 5 to 8 feet bgs. However, the depth to static groundwater level in wells installed in the shallow WBZ is between 3.49 and 6.39 feet bgs (see Table 1). The higher static groundwater elevations in the monitoring wells indicate confined conditions in the alluvium and the till. It is assumed that an excavation worker could directly contact shallow groundwater if an excavation were extended below the water table. It should be noted that the Occupational Safety and Health Administration rules require that excavations be dewatered before worker entry, and it is unlikely that workers will have substantial direct contact with chemicals in groundwater. However, Ecology has requested that this exposure scenario be included in the development of CULs.

As mentioned in Section 6.3, fate and transport modeling indicates that site-related IHSs in groundwater will not migrate to sediment or surface water of the Duwamish River (see Appendix A). Therefore, human receptors will not have significant exposure to site-related chemicals that migrate from groundwater to surface water. Similarly, benthic and aquatic ecological receptors in sediment or surface water of the river will not have significant exposure to site-related chemicals that migrate from groundwater to surface water. Similarly, benthic and aquatic ecological receptors in sediment or surface water of the river will not have significant exposure to site-related chemicals that migrate in groundwater. However, Ecology has requested that this exposure scenario be considered in the development of site CULs.

In summary, the following potential groundwater exposure scenarios are evaluated as reasonable maximum exposures in the RA:

- Industrial workers who inhale volatile chemicals that migrate from groundwater
- Excavation workers who directly contact groundwater
- Potential discharge of groundwater to surface water

7 RISK ASSESSMENT AND SITE-SPECIFIC CLEANUP LEVELS

The RA evaluates potential risks that site-related chemicals may pose to human health and the environment by comparing chemical concentrations in environmental media with relevant CULs.

7.1 Cleanup Levels

Site-specific CULs were estimated using standard MTCA and USEPA RA methods (USEPA, 1989, 1996, 2001, 2004b). The methods used to estimate site-specific soil, groundwater, and soil-gas CULs are detailed in Appendix J. Method C CULs were used for soil, and Method B CULs were used for groundwater. The CULs represent soil and groundwater concentrations that are not expected to result in unacceptable risks to potential human receptors with long-term exposure to impacted soil or groundwater. The Method C acceptable risk level for industrial workers exposed to carcinogens in soil is a lifetime excess cancer risk of one in one hundred thousand (10⁻⁵). The Method B acceptable risk level for workers with direct or indirect (e.g., vapor intrusion) exposure to carcinogens in groundwater is a lifetime excess cancer risk of one in one in one million (10⁻⁶). The acceptable risk level for exposure to noncarcinogens is a hazard index of less than or equal to one for both Method B and Method C (WAC 173-340-720 and WAC 173-340-745). If a chemical is present in environmental media at a concentration below the risk-based CUL, it is inferred that exposure to the chemical will not result in unacceptable health risks. CULs for soil, groundwater, soil gas, and indoor air are briefly described below.

7.1.1 Soil CULs

Modified MTCA Method C CULs protective of industrial workers were used for soil. Method C was selected for soil because the former Precision property meets WAC (173-340-745) requirements for an industrial property for the following reasons:

- The site is zoned industrial.
- People do not live on the property.
- Public access to the property is limited.
- Food is not grown or raised on the property.
- Operations on the property were characterized by use and storage of chemicals.
- The surface of the property is covered by a building or asphalt.
- There are no other facilities on the property.

Ecology has agreed that industrial cleanup standards apply to the site (Ecology, 2006b).

Site-specific soil CULs were developed for each of the following soil exposure scenarios:

- Future on-site industrial workers who incidentally ingest, inhale, and have dermal contact with site-related chemicals in soil (less than 15 feet bgs). Some of the IHSs such as hexavalent chromium and TCE are located primarily beneath the building. For the purposes of the RA, it is assumed that the building could be removed in the future and that workers could have long-term exposure to IHSs in the soil now beneath the building.
- Indoor industrial workers who inhale volatile chemicals that migrate from soil in the vadose zone to indoor air through cracks in the building foundation. The only soil IHS considered to be a volatile chemical is TCE.

As agreed to by Ecology, soil CULs based on leaching to groundwater are not needed to protect human health and the environment. Instead, empirical groundwater data will be used to evaluate and manage potential risks associated with exposure to groundwater.

The development of soil CULs is described briefly below and in detail in Appendix J. Development of soil CULs is summarized in Tables J-4 and J-5.

7.1.1.1 Outdoor Industrial Worker CUL—Direct Contact with Soil

Equations 745-4 and 745-5 in WAC 173-340-745 were slightly modified to estimate industrial soil CULs based on direct-contact exposure routes (see Appendix J). The most significant modification was the addition of an exposure route to account for inhalation of airborne chemicals originating from soil. This modification was made to comply with WAC 173-340-745(5)(c)(iv), which requires an evaluation of inhalation exposures when a site-specific CUL is significantly greater than a leaching-to-groundwater CUL for the protection of drinking water. Groundwater at the site has been classified as nonpotable, and site-specific CULs are significantly different from the CUL for the protection of drinking water. The direct-contact soil CULs protective of industrial workers are shown in Tables 25, 26, 27, and 28.

Equations 745-4 and 745-5 in WAC 173-340-745 were not used to calculate industrial soil CULs for arsenic and lead. Instead, the industrial soil CULs for arsenic and lead were set at the MTCA Method A soil CULs for industrial properties. The Method A industrial soil CUL was used for arsenic because the calculated CUL for arsenic was below natural background concentrations. The Method A value accounts for natural background levels of arsenic in soil. The Method A industrial soil CUL was used for lead because no reference dose was available to calculate a CUL for lead. The USEPA uses a unique method to evaluate risks associated with exposure to lead, in part because the toxicokinetics of lead is relatively well understood.

Note that MTCA rules were amended in October 2007 so that total cPAHs would be considered a single hazardous substance when establishing compliance with CULs. Revised direct contact soil cleanup levels for total cPAHs were not calculated. The only PAH in soil that was considered to be an IHS prior to October 2007 was chrysene. Chrysene was screened for risk using the CUL established prior to October 2007.

7.1.1.2 Indoor Industrial Worker CUL—Indirect Exposure to Volatile Chemicals in Soil

The primary route by which an indoor worker could be exposed to chemicals in soil is through inhalation of volatile chemicals that migrate from soil and penetrate buildings. The only soil IHS considered to be a volatile chemical is TCE. A soil CUL for TCE that is protective of indoor workers was estimated using a USEPA model that simulates how volatile chemicals migrate from soil into indoor air (see Appendix J). The soil CUL protective of indoor industrial workers who may have indirect exposure to TCE in indoor air is 41.5 μ g/kg (Table 27).

It should be noted that vapor intrusion into a building is a complex process, and the USEPA models used to estimate soil CULs make a number of simplifying assumptions (USEPA, 2004a). Instead of using soil-sample results to infer potential risks associated with exposure to vapors in the building, more appropriate indoor-air sample results are available for this purpose.

7.1.2 Groundwater CULs

Because groundwater at the site is not used as a drinking-water source and is unlikely to be used as a source of drinking water in the foreseeable future, this exposure scenario is incomplete. Therefore, site-specific Method B CULs (WAC 173-340-720(6)(c)) have been calculated as part of this RA, based on the following exposure scenarios, which are more appropriate for the site:

- Industrial workers who inhale volatile chemicals that migrate from groundwater
- Excavation workers who directly contact groundwater
- Potential discharge of groundwater to surface water

The development of groundwater CULs is described briefly below and in detail in Appendix J. CULs for groundwater IHSs are shown in Tables 29 through 33.

7.1.2.1 Indoor Industrial Worker CULs—Indirect Exposure to Volatile Chemicals in Groundwater

Site-specific groundwater CULs protective of indoor workers were developed for TCE and vinyl chloride, the two IHSs that are considered volatile chemicals. These CULs protective of indoor workers will also be protective of outdoor workers.

The method for estimating risk-based CULs for groundwater protective of indoor workers is very similar to the methods discussed above for volatiles in soil (Appendix J). The only difference is that a transfer factor simulating migration of a chemical in groundwater (not soil) to indoor air is used to estimate the groundwater CUL. The groundwater CULs for TCE and vinyl chloride are 10.8 μ g/L and 71.5 μ g/L, respectively (Table 31).

As mentioned above, a number of factors structure vapor migration from groundwater into a building, and the USEPA models used to simulate this process include a number of assumptions. Empirical indoor-air sample results are more appropriate for evaluating risks associated with exposure to volatile chemicals in indoor air than comparisons of groundwater sample results with model-derived CULs.

7.1.2.2 Excavation Worker CUL—Direct Contact with Groundwater

Neither CULs nor methods to calculate CULs for potential excavation workers who may directly contact chemicals in groundwater are included in MTCA WAC 173-340-700 through WAC 173-340-760. However, the DEQ has developed RBCs for this potential exposure scenario. The DEQ RBCs are calculated using conservative exposure assumptions and acceptable risk levels that are identical to those used for MTCA Method B groundwater CULs. Although excavation workers are expected to have short-term exposure durations (e.g., acute or subchronic), the DEQ's RBCs are calculated using chronic toxicity data and therefore overestimate potential risks. The DEQ assumes that excavation workers inhale volatile chemicals that migrate from groundwater to air in an excavation, and that workers have dermal contact with chemicals in groundwater. Equations and assumptions used to calculate the RBCs are described in Appendix B of the September 2003 DEQ *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (DEQ, 2003). These DEQ RBCs were used as groundwater CULs protective of potential excavation workers (see Table 29).

No DEQ RBC is available for ORO. The DEQ RBC for DRO has been set at the solubility limit because maximum dissolved concentrations of DRO are not expected to pose unacceptable risks to excavation workers (DEQ, 2003). Concentrations of ORO are lower than concentrations of DRO, ORO is expected to be less soluble than DRO, and dissolved ORO is not expected to pose unacceptable risk to potential excavation workers. No free-phase petroleum product has been observed on groundwater at the site.

7.1.2.3 CULs Protective of Surface Water

Groundwater CULs at the property boundary that would be protective of surface water of the Duwamish River have been developed for all of the groundwater IHSs through the fate and transport modeling described in Section 6.3. Because fate and transport modeling shows that IHSs present at the site will not reach the Duwamish River, groundwater CULs that exceed surface-water CULs can be established consistent with WAC 173-340-720(6)(c)(i)(E). Appendix A provides the modeling output for the development of CULs. Groundwater CULs applicable at the eastern property boundary were developed by setting the target concentration at the point where groundwater discharges to the Duwamish River equal to surface-water screening levels, and accounting for attenuation that occurs between the property boundary and the Duwamish River. The most conservative Ecology or USEPA surface-water criteria (see Appendix A) were used as target concentrations. The CULs are provided in Tables 29 through 33.

It will likely be appropriate to establish the downgradient monitoring wells near the eastern property boundary, as a conditional point of compliance for the CULs for protection of surface water. In order for Ecology to approve this conditional point of compliance, Precision must demonstrate that it is not practicable to meet the CUL throughout the site within a reasonable restoration timeframe (see WAC 173-340-720(8)(c)).

7.1.3 Soil-Gas Preliminary CULs

Sub-slab soil-gas preliminary CULs were developed for TCE and vinyl chloride, a breakdown product of TCE. Both of these VOCs were detected in sub-slab soil-gas samples. These

preliminary CULs were estimated by applying an attenuation factor to the MTCA Method C air CUL for each chemical. The attenuation factor was calculated using a USEPA model that simulates migration of vapors across a slab and into a building (Appendix J). The sub-slab soil-gas preliminary CULs for TCE and vinyl chloride are 8,150 μ g/m³ and 103,000 μ g/m³, respectively (Table 34).

7.1.4 Indoor-Air CULs

To aid interpretation of indoor-air sample results (Table 35), airborne chemical concentrations were compared to MTCA Method C air CULs (Ecology, 2006a).

7.2 Risk Results

Potential risks that IHSs in soil, groundwater, soil gas, and indoor air may pose to human health are evaluated below by comparing detected concentrations in these media with site-specific CULs. Tables 7-1, 7-2, and 7-3 and Figures 7-1 and 7-2, immediately following this page, show CUL exceedances. These exceedances are described in the sections below.

7-5

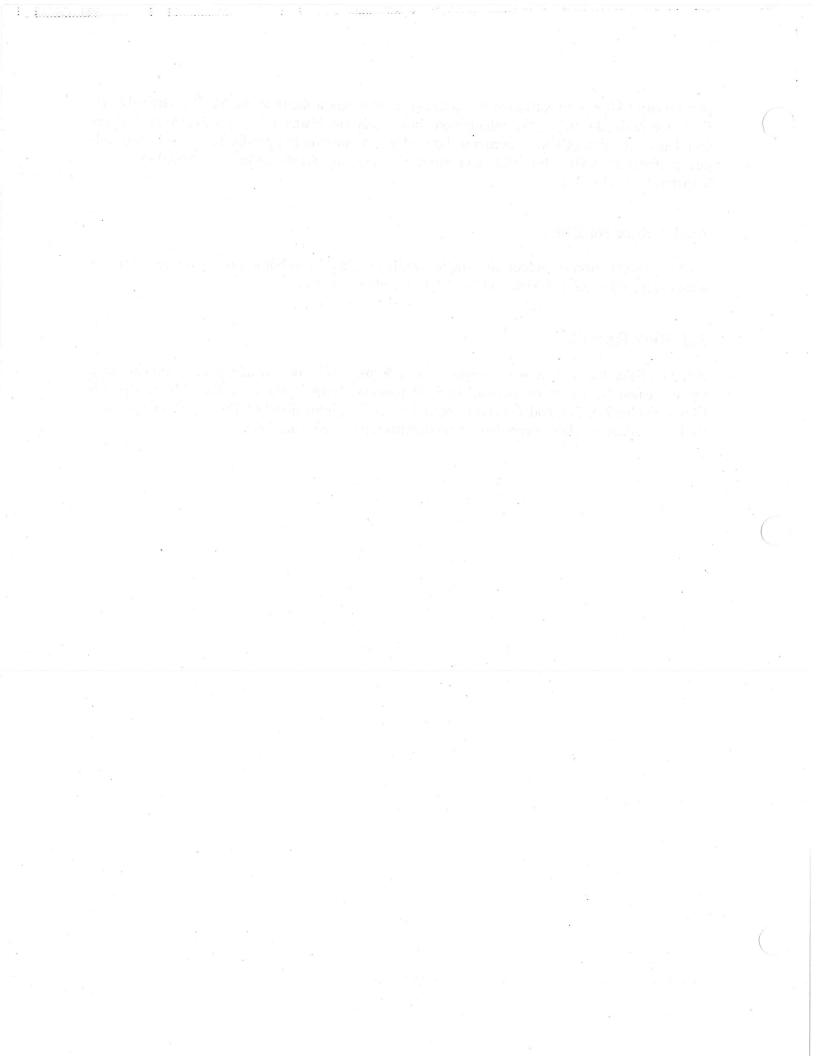


Table 7-1 IHS Exceedances in Soil Precision Engineering, Inc. Seattle, Washington

Location	Sample ID	Date	Depth (ft. bgs)	Soil Chromium (Hexavalent) (mg/kg)	Arsenic (mg/kg)	Lead (mg/kg)	Trichloro- ethene (µg/kg)
MTCA Method A CUI s fc	MTCA Method A CULs for Unrestricted Land Use					NR	30
MTCA Method B CULs for Ingestion only				240	0.67	NR	2,500
				11,000	88	NR	330,000
MTCA Method C CULs for Ingestion Only				775	20 ^a	1000 ^a	6,780
Site-Specific CUL for Industrial Workers—Direct Contact				NV	NV	NV	42
CUL for Vapor Intrusion						L	
Preliminary Cleanup Le		0/40/0005	14.5				1,160
GP6	GP6-S-14.5	6/16/2005					87.2
GP11	GP11-S-2.0	6/17/2005	2	-			281
	GP11-S-6.5	6/17/2005	6.5		,		
GP18	GP18-S-1.0	12/13/2005	1	2,300 J			
GP32	GP32-S-1.0	12/14/2005	1	3,500 J			
Off-Site Hand-Auger Sa	mpling					-	
HA3	HA3-0.5	12/15/2005	0.5		53.9		
HA4	HA4-0.5	12/15/2005	0.5	·	44.3	1,710	
HA5	HA5-0.5	12/15/2005	0.5		35.9	1,440	
HA22	HA22-S-0.5	1/10/2007	0.5	/	53.5		
NOTES:			5				
Bold indicates concentratio		or more of the re	levant CULs		s		

CUL = cleanup level.

ft. bgs = feet below ground surface.

IHS = indicator hazardous substance.

J = estimated concentration.

mg/kg = milligrams per kilogram.

MTCA = Washington State Department of Ecology's Model Toxics Control Act.

µg/kg = micrograms per kilogram.

NR = MTCA reported the CUL as not researched.

NV = no value.

^aMTCA Method A—Industrial Use.

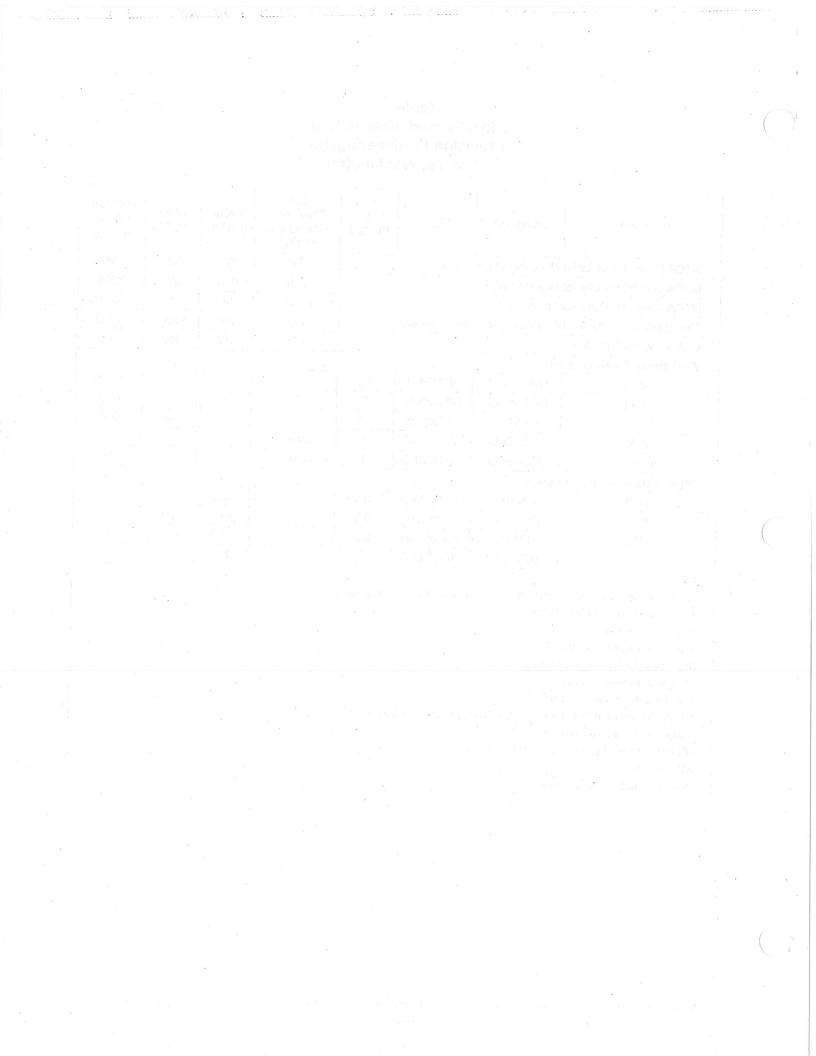


Table 7-2 IHS Exceedances in Sub-Slab Vapor (μg/m³) Precision Engineering, Inc. Seattle, Washington

Location	Date	Trichloroethene
PCUL for Vapor Intrusio	8150	
A5	04/18/2006	37,000
NOTES: Bold indicates concentration relevant CULs. IHS = indicator hazardous a µg/m ³ = micrograms per cu PCUL = preliminary cleanu	substance. bic meter.	one or more of the

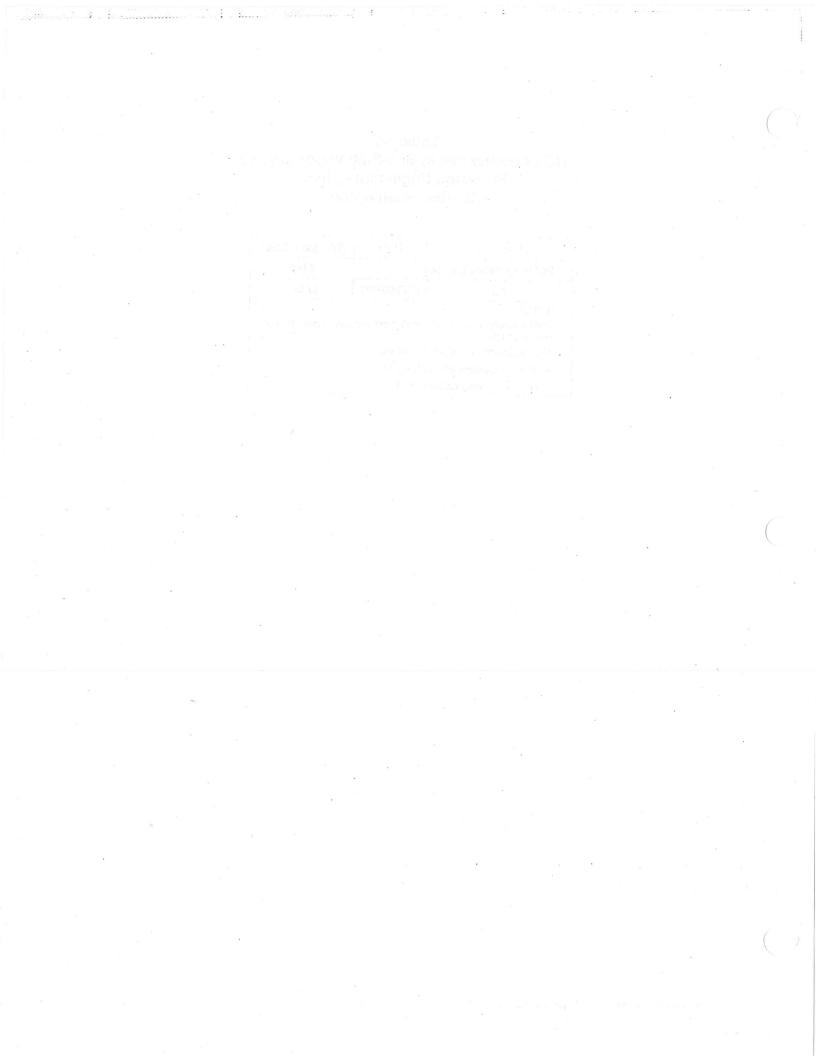
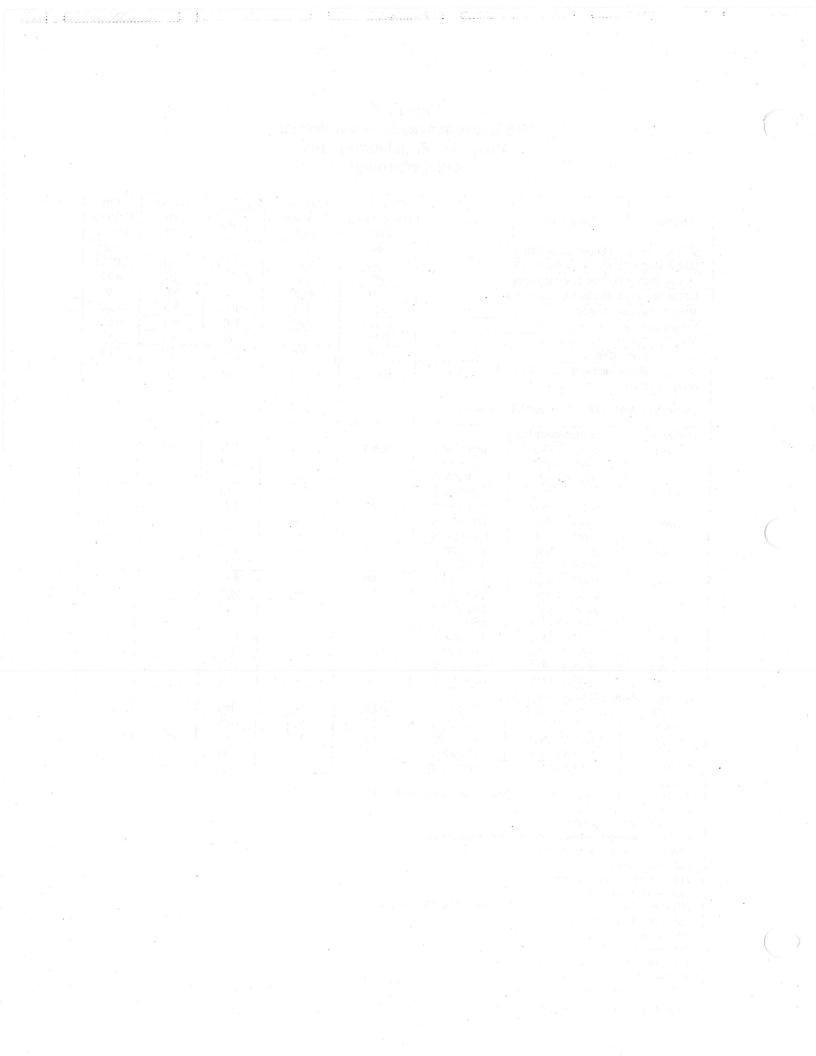
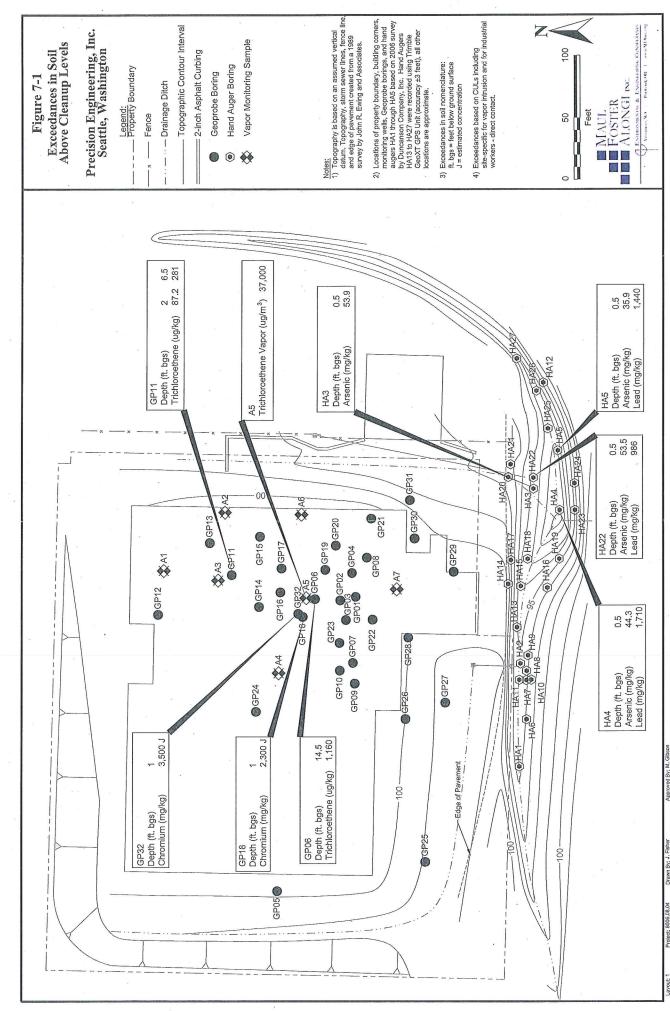


Table 7-3 IHS Exceedances in Groundwater Precision Engineering, Inc. Seattle, Washington

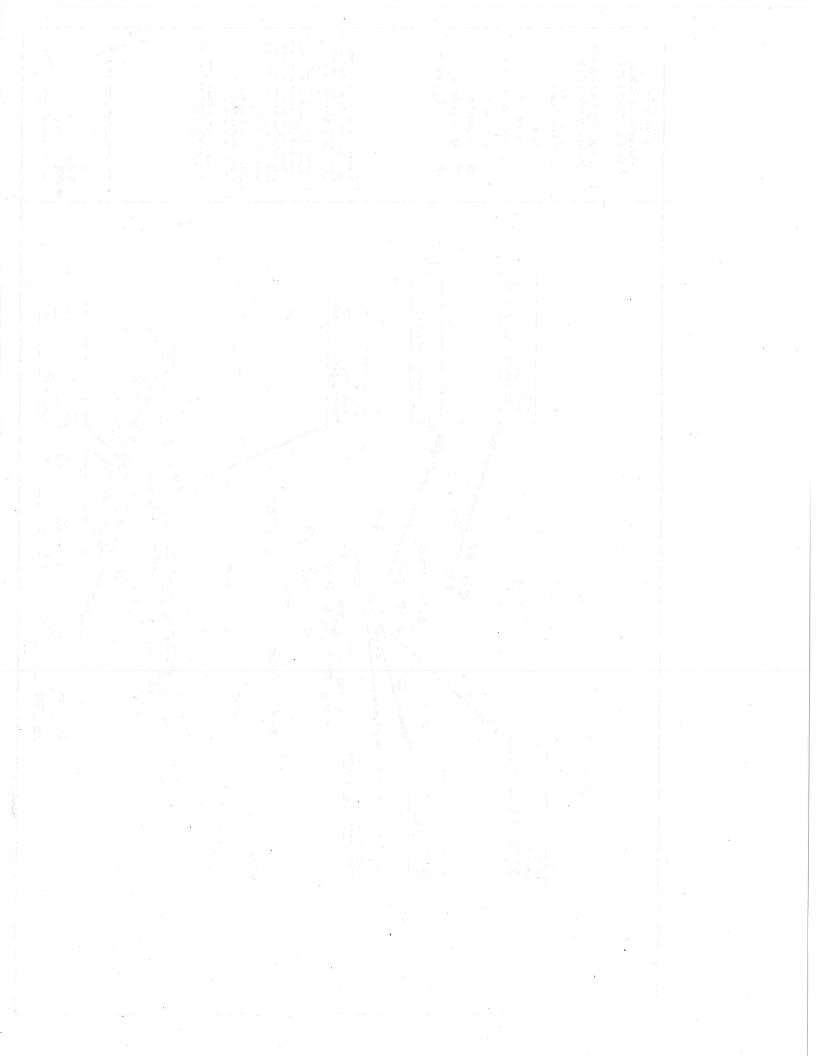
Location	Sample ID	N	Chromium	Chromium	Arsenic	Trichloro-	Vinyl
		Date	(Hexavalent)	(Trivalent)	(µg/L)	ethene	Chlorid
		2	(mg/L)	(mg/L)		(µg/L)	(µg/L)
MTCA Method A Groundwater CULs			NV	NR	5	5	0.2
MTCA Method B Groundwater CULs			0.048	NR	0.0583	0.109	0.0292
MTCA Method C Groundwater CULs			88	NR	0.0583	1.1	0.29
MTCA Method C Surface Water CULs			1.22	800 ^a	2.46	37	92
AWQC—Human Health			NR	NR	0.018	2.5	0.025
Preliminary Cleanup Level			0.015	180	360	NR	NR
AWQC—Aquatic Life—Chronic			0.01	57	190	NR	NR
CUL for Vapor Intrusion			NV	NV	NV	309	71.5
	Groundwater CUL for the	Protection of				000	
Surface Water			0.085	950,000	0.06	600	4
Excavation Worker Direct Contact Groundwater CUL		>Max	190	5.8	130	1100	
Monitoring W	/ell Groundwater Data						
MW1	MW1-W-35.0	6/16/2005	0.269	NC	NA	NA	
	MW1-122705	12/27/2005			32.3		
	MW1-041806	04/18/2006		n and a support of the second s	33		
MW2	MW2-122805	12/28/2005			5.63		
141444	MW2-041906	04/19/2006	••••		3.8		
MW3	MW3-122905	12/29/2005			15.3		
101003	MW3-041706	04/17/2006			13		
MW4	MW4-122705	12/27/2005			15.1		
10100-	MW4-041806	04/18/2006			15		
MW5	MW5-122805	12/28/2005	450	·	4.59		
CVVIVI	MW5-041906	04/19/2006	350	NC	4.9		
MAR	MW6-122905	12/29/2005			11.9	·	
MW6	MW6-041906	04/19/2006	• • • • • • • • • • • • • • •	interes e construire	24	• (* * * *) **** * * **** *	
MW7	MW7-122805	12/28/2005			6.62		
	MW7-041806	04/18/2006			7.1		
MW8	MW8-122805	12/28/2005			6.41		
IVIVVO	MW8-041806	04/18/2006			4.8		
Decempoioor	ince Groundwater Dat						1
	GP2-W-17-RECON	6/9/2005	32.38		NA		1
GP2	GP2-W-17-RECON GP4-W-8.0	6/16/2005	31	236	NA		
GP4		6/16/2005	43	300	NA	1130	
GP6 GP8	GP6-W-18.0 GP8-W-10.0	6/16/2005	61	294	NA		
	GP13-W-8.0	12/14/2005					16.5
GP-13 NOTES:			1				
	concentrations that exceed		CIEVAIILOULS.	<u>.</u>	.)		
= not detected >Max = greater	d at or above CULs.		$1 = \frac{1}{2} + $	1 - 100 - 10 - 10 - 10 - 10 - 10 - 10 -	+	1	in the state
ARAR = applied	able or relevant and approp	riate requirement					
$\Delta W = applica$	ent water quality criteria.		in the second	4	4	1	1
CUL = cleanup				and the second second second second	1		
	hazardous substance.	an a	1				
mg/L = milligrar	ns per liter.						1
MTCA = Washi	ngton State Department of	Ecology's Model To:	xics Control Act.				
µg/L = microgra							
NA = not availal			Comment and the second second				-
NC = not calcula	ated.						
NR = MTCA rep	ported the CUL as not resea	arched.			den a parente ser		
NV = no value.					مەرىيىسىدىمەر بىلەر		a Ale commune
^a Industrial prelir	ninary remediation goal.					11- APR	1
	ives LLP\Report\04_Final F	in the second		1	1		-

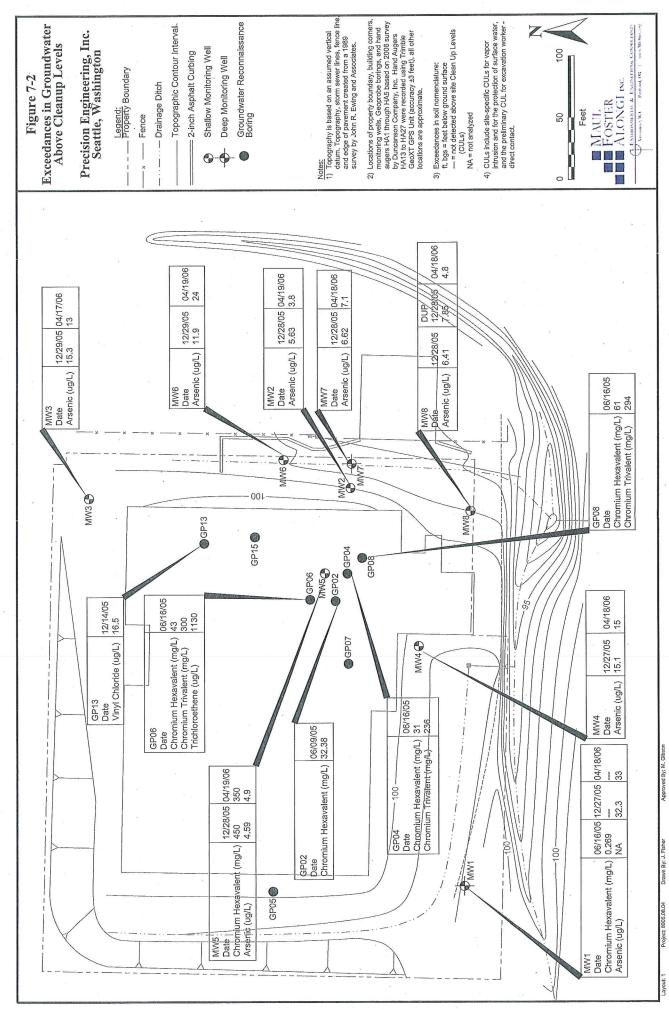
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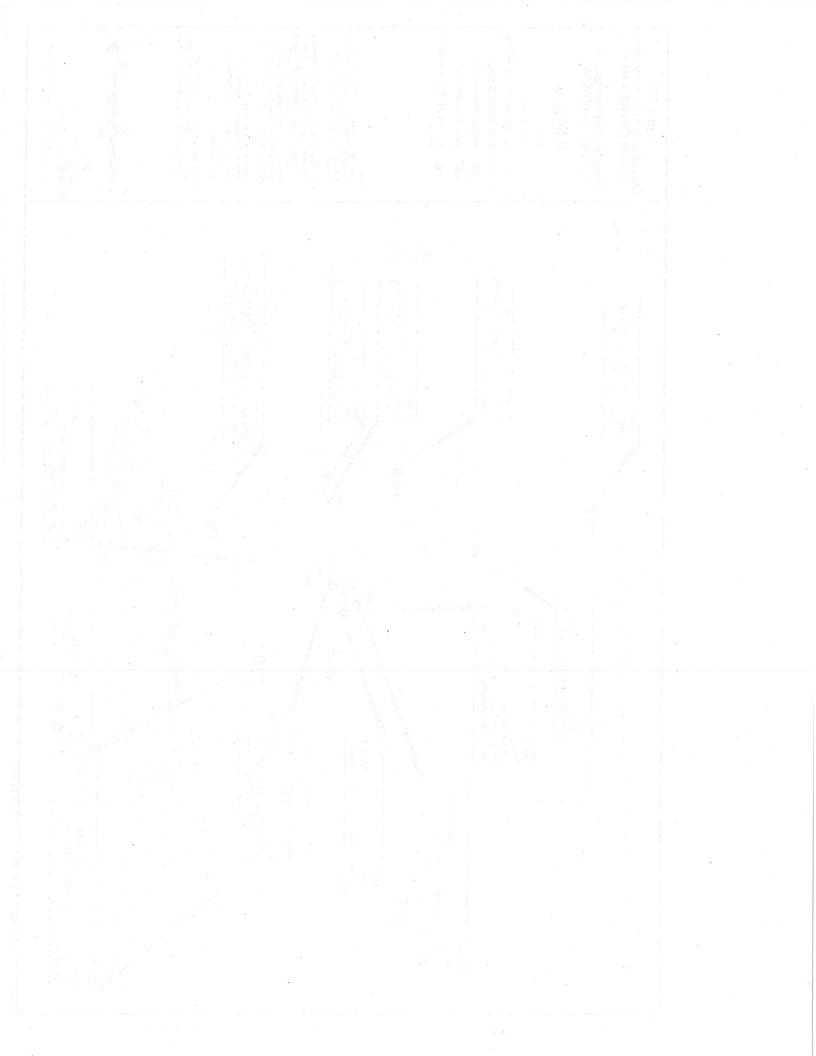


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7.2.1 Soil on Former Precision Property

Only two IHSs were detected in soil on the former Precision property at a concentration greater than a site-specific soil CUL: hexavalent chromium and TCE. The spatial extent of CUL exceedances for these IHS is discussed below. Because no CULs were developed for DRO and ORO, a risk evaluation of petroleum hydrocarbons is also discussed below. See Tables 25 through 28 for soil screening results. Note that Table 28 includes all seven cPAHs (even though chrysene was the only original IHS) along with a total cPAH value calculated by applying TEFs.

7.2.1.1 Hexavalent Chromium

Two soil samples collected beneath the building (GP18 and GP36) had concentrations of hexavalent chromium above the direct-contact CUL of 775 mg/kg for industrial workers. The concentration at GP18 was 2,300 mg/kg, and the concentration at GP32 was 3,500 mg/kg (Table 25). Both of the samples with hexavalent chromium concentrations above the CUL were collected at approximately 1 foot bgs (Table 25), and both were collected within approximately 5 feet of each other (Figure 6). Hexavalent chromium concentrations in several samples collected at multiple depths surrounding GP18 and GP32 were below the industrial-worker CUL. As a result, it appears that soil with hexavalent chromium concentrations above a CUL is limited to a relatively small and well-defined area immediately beneath the building slab.

At present, the building prevents workers from having direct contact with hexavalent chromium in soil, and there is no current unacceptable risk to human health, based on hexavalent chromium in soil. Unacceptable risk would occur only if the building was removed in the future, contaminated soil was left on the ground surface for an extended period of time, and humans were present in the contaminated area.

7.2.1.2 TCE

Soil samples collected at 14.5 feet bgs at GP6, and at 2 and 6.5 feet bgs at GP11, had concentrations of TCE above the vapor-intrusion CUL of 41.5 μ g/kg (Table 27). The maximum detected concentration of TCE in soil was 1,160 μ g/L at GP6. TCE was not detected in soil at concentrations exceeding a direct-contact CUL. As mentioned previously, risk estimates based on comparisons of soil analytical results with soil CULs for vapor intrusion are less reliable than those based on interpretations of indoor-air sample results. TCE was not detected in indoor air at concentrations that exceed the indoor-air CUL. Risks associated with potential exposure to TCE in indoor air are discussed in Section 7.2.5.

7.2.1.3 TPH

Concentrations of extractable petroleum hydrocarbons and other constituents for the soil sample with the highest petroleum-hydrocarbon concentrations (GP21 at 6.5 feet) were input into Ecology worksheets for evaluating petroleum hydrocarbons in soil. The result from the worksheet showed that this soil sample passed the calculated exposure pathways for industrial land use and Method B potable groundwater protection (see Appendix K), and that

concentrations of petroleum hydrocarbons in soil do not pose a threat to human health or the environment.

7.2.1.4 Cumulative Risk for Soil on Former Precision Property

Chemical-specific direct-contact CULs for on-site soil do not require adjustment to account for exposure to multiple hazardous substances via multiple pathways (WAC 173-340-745(6)). Soil direct-contact CULs were calculated assuming multiple potential exposure pathways (e.g., ingestion, inhalation, dermal contact), and all significant alternative exposure routes were considered. Two IHSs were identified for on-site soil: hexavalent chromium and TCE. Total excess cancer and noncancer risk estimates associated with direct-contact exposures to on-site soil are shown in Table 36. Both cancer and noncancer risk estimates associated with exposure to the maximum concentration of TCE in on-site soil are orders of magnitude below the acceptable risk level. The noncancer CUL for hexavalent chromium is lower than the cancer CUL. Because risks associated with exposure to TCE are so low, the noncancer CUL for hexavalent chromium does not need to be adjusted downward in order to achieve acceptable risk levels associated with exposure to multiple chemicals.

7.2.2 Soil in Off-Property Drainage Ditch

The only IHSs that were detected in off-property drainage-ditch soil at a concentration greater than a site-specific soil CUL were lead and arsenic. The spatial extent of CUL exceedances for these IHSs is discussed below. Because no CULs were developed for DRO and ORO, a risk evaluation of petroleum hydrocarbons is also discussed below.

7.2.2.1 Arsenic

The concentrations of arsenic in four shallow soil samples collected from the drainage ditch south of the building (HA3, HA4, HA5, and HA22) were above the direct-contact CUL of 20 mg/kg (Table 26 and Figure 6). The maximum detected concentration was 53.9 mg/kg. All four samples are in locations that would receive runoff from a discharge pipe from the industrial property east of the former Precision property, especially HA22, which is located directly beneath where the outfall discharges (see Section 2.4.1 and Figure 6). As discussed in Section 1.2.2, data collected during this RI indicate that the arsenic in samples from the ditch likely originated from multiple sources.

7.2.2.2 Lead

The concentrations of lead in two shallow soil samples collected from the drainage ditch south of the building (HA4 and HA5) were above the direct contact CUL of 1,000 mg/kg (Table 26 and Figure 6). The maximum detected concentration was 1,710 mg/kg. As discussed in section 1.2.2, data collected during this RI indicate that the lead in samples from the ditch likely originated from multiple sources.

7.2.2.3 TPH

Concentrations of extractable petroleum hydrocarbons and other constituents for the soil sample with the highest petroleum hydrocarbon concentrations (HA4 at 0.5 feet bgs) and ditch-soil samples closer to the site (HA2 and HA3 at 0.5 feet bgs) were entered into Ecology worksheets for evaluating petroleum hydrocarbons in soil. The result from the worksheet showed that these

soil samples passed the calculated exposure pathways for industrial land use and Method B potable groundwater protection (see Appendix K), and that concentrations of petroleum hydrocarbons in soil do not pose a threat to human health or the environment.

7.2.3 Groundwater

The only IHSs that were detected in groundwater at concentrations greater than a site-specific groundwater CUL were arsenic, trivalent and hexavalent chromium, and TCE. Concentrations of PAHs (Table 32), and TPH (Table 33) were below available excavation-worker CULs. Note that Table 32 shows all seven cPAHs along with a total cPAH value calculated by applying TEFs under the new MTCA amendment (Ecology, 2007b), however, the risk results remain unchanged. Risk associated with CUL exceedances for IHSs in groundwater is discussed below.

7.2.3.1 Metals

Concentrations of trivalent chromium in three reconnaissance groundwater samples (GP-4, GP-6, and GP-8) were above the excavation-worker CUL (Table 29). All three of these sample locations are under the southern portion of the building.

On-site groundwater concentrations of hexavalent chromium exceeded the CUL for the protection of surface water. All other IHSs and the modeled PAHs in groundwater were below their respective CULs. Hexavalent chromium concentrations that exceeded CULs for the protection of surface water were detected in groundwater samples collected from borings and MW5, located within the building footprint, and from one sample collected from MW1, which is a deep well assumed to be upgradient of the building. Concentrations of hexavalent chromium in wells located near the eastern property line were not detected above their method reporting limits and did not exceed CULs.

Most groundwater samples had concentrations of arsenic that were above the excavation-worker CUL (Table 30). As mentioned previously, arsenic is present at similar concentrations in groundwater throughout the site, and there is no indication that the former Precision property is a source of arsenic contamination. Arsenic in groundwater does not appear to be related to the site, and ambient levels of arsenic in groundwater are above the excavation-worker CUL.

7.2.3.2 TCE

The concentrations of TCE in reconnaissance groundwater samples GP-6 and GP-8 were above the groundwater CUL protective of indoor industrial workers who may have indirect exposure to chemicals that migrate from groundwater to indoor air (Table 31). Also, a sample from MW-5 in December 2005 had a concentration of TCE above the groundwater CUL. Risk estimates based on comparisons of groundwater analytical results with groundwater CULs are less reliable than those based on interpretations of indoor-air sample results. Based on empirical indoor-air sample results, TCE does not pose unacceptable risks to future workers (see Section 7.2.4). The reconnaissance groundwater sample collected at GP6 had a concentration of TCE that was above the excavation-worker CUL (Table 31).

7.2.4 Soil Gas

A sub-slab soil-gas sample collected at A5 had a concentration of TCE above the preliminary soil-gas CUL (Table 34). The concentrations of TCE and vinyl chloride in all other sub-slab soil-gas samples were below soil-gas CULs protective of indoor industrial workers. Based on empirical indoor-air sample results discussed in Section 7.2.5, TCE does not pose unacceptable risks to future workers.

7.2.5 Indoor Air

As shown in Table 35, TCE was detected both in indoor-air samples and in an outdoor-air sample collected south of the building. Breakdown products of TCE were not detected in indoor-or outdoor-air samples. The presence of TCE in the outdoor-air sample suggests that there are significant sources of TCE near the site that are unrelated to the former Precision facility. The concentrations of TCE in indoor-air samples were higher than the concentration in the outdoor-air sample. However, all TCE concentrations in indoor air were below the MTCA Method C air CUL.

The presence of TCE breakdown products (e.g., vinyl chloride) in groundwater downgradient of the source area indicates that in situ degradation of TCE is taking place. The TCE release must have occurred before the mid-1980s, when Precision stopped using TCE. TCE concentrations in soil and groundwater are expected to continue to decline over time because of natural degradation processes. Absent any new TCE releases, current conditions represent the worst-case conditions for the foreseeable future. TCE concentrations in indoor air are currently below MTCA Method C CULs, indicating that these concentrations do not pose an unacceptable risk to future workers in the building.

7.3 Risk Summary

7.3.1 Hexavalent and Trivalent Chromium

Hexavalent chromium concentrations are above CULs in a limited area of shallow soil immediately beneath the building slab. The building prevents workers from having direct contact with hexavalent chromium in soil. There is no current unacceptable risk to human health based on hexavalent chromium in soil. However, it is assumed that workers could contact soil if the building was removed in the future, if contaminated soil was left on the ground surface for an extended period of time, and if humans were present in the contaminated area.

Hexavalent chromium concentrations that exceeded CULs for the protection of surface water were detected in groundwater samples collected from borings and MW5, located within the building footprint, and from one sample collected from MW1, located upgradient of the building. Concentrations of hexavalent chromium in wells located near the eastern property line were not detected above their method reporting limits and did not exceed CULs. Concentrations of trivalent chromium in shallow groundwater beneath the building were above the excavationworker CUL.

7.3.2 Lead and Arsenic

The concentrations of lead and arsenic in some shallow-soil samples collected from the drainage ditch south of the former Precision property are above direct-contact CULs. These samples are in locations that would receive runoff from the former Precision property, from properties east and west of the former Precision property, from 14th Avenue, and from the Highway 99/W Marginal Way S on-ramp. Data collected during this RI indicate that the lead and arsenic in samples from the ditch originated from sources other than the former Precision property. For example, neither lead nor arsenic was detected above CULs in the sample from HA2, near the discharge pipe from the western part of the former Precision property, and from the two samples collected just off of the paved area, directly in the path of sheet flow from the eastern portion of the site (HA20 and HA21). In addition, lead and arsenic concentrations detected on the north side of the ditch, near the site, were similar in magnitude to concentrations from the south side of the ditch, receiving sheet flow from a different source, the highway on-ramp. Data collected indicate that the arsenic and lead in samples from the ditch likely originated from multiple sources.

Despite evidence of multiple sources of contamination, Ecology indicated that Precision is at least partially responsible for the exceedances of CULs and did not accept Precision's previous proposal of taking no action in the off-property ditch. Therefore, as a cost-effective way to address the comments and concerns expressed by Ecology, Precision proposed to excavate all ditch soil containing IHSs at concentrations that exceed CULs. A separate work plan for removal of soil from the ditch (MFA, 2007) was approved by Ecology via electronic mail on August 2, 2007 (Ecology, 2007a).

Ditch excavation work and confirmation sampling were completed on October 24 and 25, 2007 (see Section 8). Approximately 100 cubic yards of soil were removed and properly disposed of off site. After excavation was complete, the entire area of soil disturbance was backfilled and stabilized with hydroseed. Because two perimeter confirmation samples exceeded CULs, additional sampling was conducted on November 19, 2007, to delineate any potential contamination surrounding the samples. The results of this additional sampling indicated that there is no widespread contamination outside of the area excavated.

As a precautionary measure, two additional small areas where chemical concentrations in confirmation samples were above conservative CULs were excavated on March 27, 2008. Approximately 4 cubic yards of soil was removed and properly disposed of off site. The excavated areas were backfilled with clean soil and stabilized with grass seed. Confirmation soil samples were collected from the bottom of the excavation. One confirmation sample had concentrations of arsenic and lead that exceeded CULs by 8 percent and 2 percent, respectively. Because these concentrations are only slightly above conservative CULs, residual soil impacts are both isolated and small in extent, and over a foot of clean fill material covers the sample location, no additional removal activities were warranted. All disturbed areas were stabilized with hydroseed, and contaminants are not expected to be mobile.

7.3.3 TCE

TCE was detected in soil, groundwater, and sub-slab soil-gas samples collected beneath the building at concentrations above model-derived CULs protective of indoor industrial workers. Concentrations of TCE in groundwater beneath the building were also above the CUL protective of excavation workers. Concentrations of TCE in indoor air of the building were below the applicable CUL, and TCE was present in outdoor air near the site, suggesting that there are sources in the region unrelated to the former Precision property. Given that TCE concentrations in indoor air were lower than model predictions, it can be reasoned that the transport models used to estimate soil, groundwater, and sub-slab soil-gas CULs overpredicted indoor-air concentrations of TCE. Based on empirical indoor-air sample results, site-related volatile chemicals do not appear to pose unacceptable risks to future workers.

Ecology has requested that Precision complete additional investigation of the indoor-air pathway. However, Precision has decided that the most cost-effective way to address this pathway is to proceed with the installation of a sub-slab vapor mitigation system to remediate any potential risks associated with the presence of sub-slab TCE concentrations (see Section 8).

8 CLEANUP ACTIONS

8.1 Off-Property Ditch

Despite evidence of multiple sources of contamination, Ecology did not accept Precision's previous proposal of taking no action in the off-property ditch because of the belief that Precision is at least partially responsible for the exceedances of soil CULs. Therefore, as a cost-effective way to address the comments and concerns expressed by Ecology, Precision proposed to excavate all ditch soil containing IHSs at concentrations that exceed CULs. A separate work plan for removal of soil from the ditch (MFA, 2007) was submitted to and subsequently approved by Ecology (Ecology, 2007a).

In October 2007, approximately 100 cubic yards of soil was removed and properly disposed of off site. After excavation was complete, the entire area of soil disturbance was backfilled and stabilized with hydroseed. Subsequent sampling and removal activities were also completed in November 2007 and March 2008, and are described below.

8.1.1 Procedures

General Environmental Management, Inc. completed the ditch excavation work on October 24 and 25, 2007. A silt fence was installed prior to the excavation work to prevent soil from being transported off the site and entering natural drainages. Consistent with the approved work plan, the area of excavation included approximately 2,685 square feet surrounding sample locations HA3, HA4, HA5, and HA22, where CUL exceedances had been documented (see Figure 10). The depth of excavation was approximately 1 foot, for an approximate excavation volume of 2,685 cubic feet or approximately 100 cubic yards. Based on the area delineated in the work plan for removal of soil from the ditch (MFA, 2007), the excavation area was measured out and flagged prior to digging.

Following the excavation, MFA collected confirmation samples from the bottom of the excavation (B1 through B13) and from the side walls/surface soil along the perimeter of the excavation (P1 through P9). Consistent with the approved work plan, all the samples were analyzed for arsenic and lead. In addition, sample B5 was analyzed for PAHs, GRO, DRO, ORO, and benzene, toluene, ethylbenzene, and xylenes (BTEX). Because of elevated concentrations of arsenic and lead in two perimeter confirmation samples,

additional surface soil samples (SS1 through SS6) were collected on November 19, 2007, and analyzed for arsenic and lead.

Two composite soil samples were collected from the excavated soil and analyzed for eight Resource Conservation and Recovery Act metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver) by TCLP (toxicity characteristic leaching procedure) analysis for the purpose of characterization for disposal. No metals were detected through the TCLP analysis, so the soil was classified as nonhazardous for disposal.

Approximately 123 tons of soil was disposed of at Waste Management's Columbia Ridge facility in Arlington, Oregon. Following confirmation sampling, clean topsoil was backfilled in place of the excavated soil and graded to replicate the original contours. For erosion control, stabilization, and durability, the disturbed surface was hydroseeded with a fiber-bonded grass-seed mix. The fiber-bonding prevents erosion while the grass establishes a root system that will stabilize the soil.

8.1.2 Confirmation Sampling Results

Figure 10 and Tables 37 through 40 provide the locations and analytical results for the 31 initial confirmation samples that were analyzed. Confirmation sampling results indicated one duplicate sample (B13, duplicate of B12) from the bottom of the excavation and one sample (P1) on the perimeter of the excavation that had slight exceedances of the direct-contact CUL of 20 mg/kg for industrial workers for arsenic. Arsenic concentrations at B13 and P1 were 26.3 mg/kg and 22 mg/kg, respectively.

An additional sample on the north border of the excavation (P9) had detections of arsenic and lead (at 111 mg/kg and 2,410 mg/kg, respectively), which exceeded CULs for both arsenic (20 mg/kg) and lead (1,000 mg/kg). On November 19, 2007, additional sampling (SS-1 through SS-6) was conducted in the area surrounding P1 and P9, to delineate the extent of soil exceeding CULs. Analytical results are provided in Table 37. A sample from 1.5 feet bgs at SS-6 contained arsenic at a concentration of 23.7 mg/kg, which slightly exceeded the CUL for arsenic. All other samples contained arsenic and lead below CULs.

The results of this additional sampling indicated that there is no widespread contamination outside of the area excavated. Based on the spatial pattern in concentrations, the exceedances near the boundary of the excavation encompass a very small area.

8.1.3 Followup Excavation

General Environmental Management, Inc. completed additional excavation of the soil surrounding sample points P9, P1, and SS6 on March 27, 2008. An area of approximately

31 square feet was excavated around sample point P9 to a depth of 2 feet (see Figure 10). The 2 cubic yards of excavated material was disposed of as hazardous waste, based on the high concentration of lead detected in sample P9. An area of approximately 39 square feet was excavated around sample points P1 and SS6 to a depth of 1.5 feet. The 2 cubic yards of material excavated from this area was disposed of as nonhazardous waste. The excavated areas were backfilled with clean soil and stabilized with grass seed.

Following the excavation, MFA collected confirmation samples from the bottom of the excavation (C1 through C3). Perimeter samples were not needed, since the surrounding area had been investigated in previous efforts. The soil samples were analyzed for arsenic and lead. The concentrations of the chemicals of concern were below CULs in all of the samples except sample C3. Concentrations of arsenic and lead in sample C3 exceeded CULs by 8 percent and 2 percent, respectively. No additional removal actions were deemed warranted for several reasons: the concentrations are very close to soil CULs, residual soil impacts are both isolated and small in extent, and over a foot of clean fill material covers the sample location.

8.2 Indoor Air

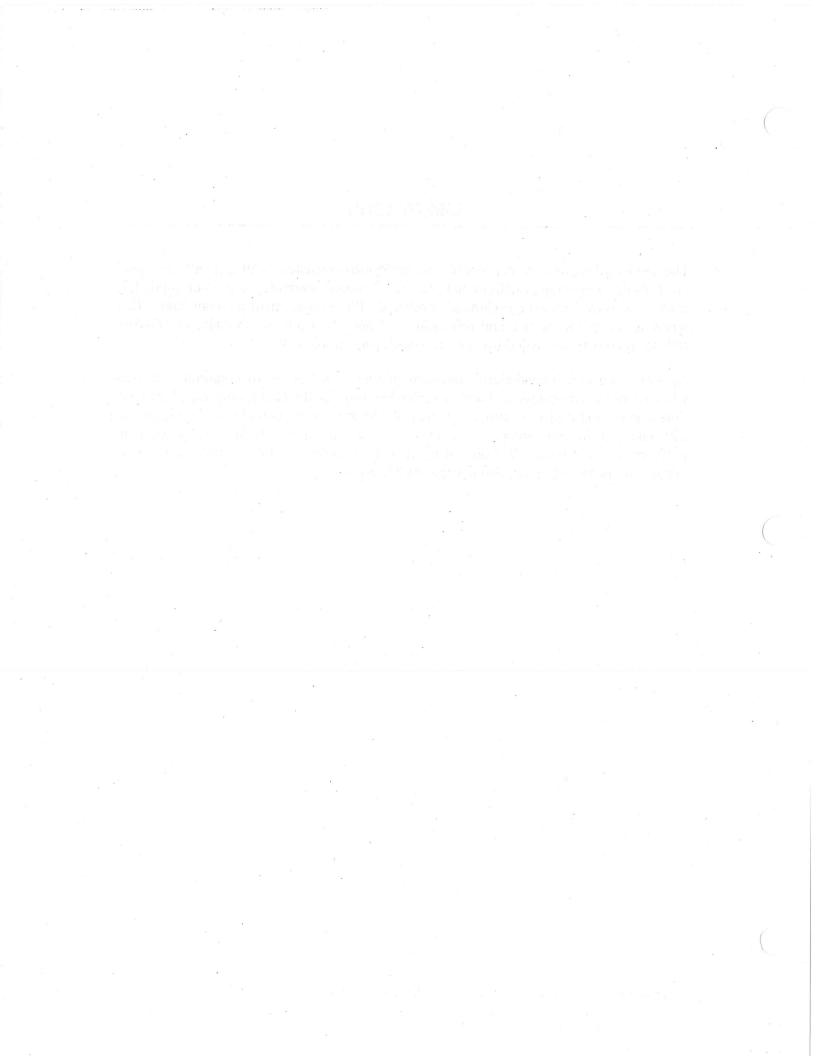
Ecology has requested that Precision complete additional investigation of the indoor-air pathway. However, Precision has decided that the most cost-effective way to address this pathway is to proceed with the installation of a sub-slab vapor mitigation system to remediate any potential risks associated with the presence of sub-slab TCE concentrations. On February 13, 2008, Precision submitted a separate cleanup action plan to Ecology that described the proposed sub-slab vapor mitigation system (Pioneer, 2008).



LIMITATIONS

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

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.



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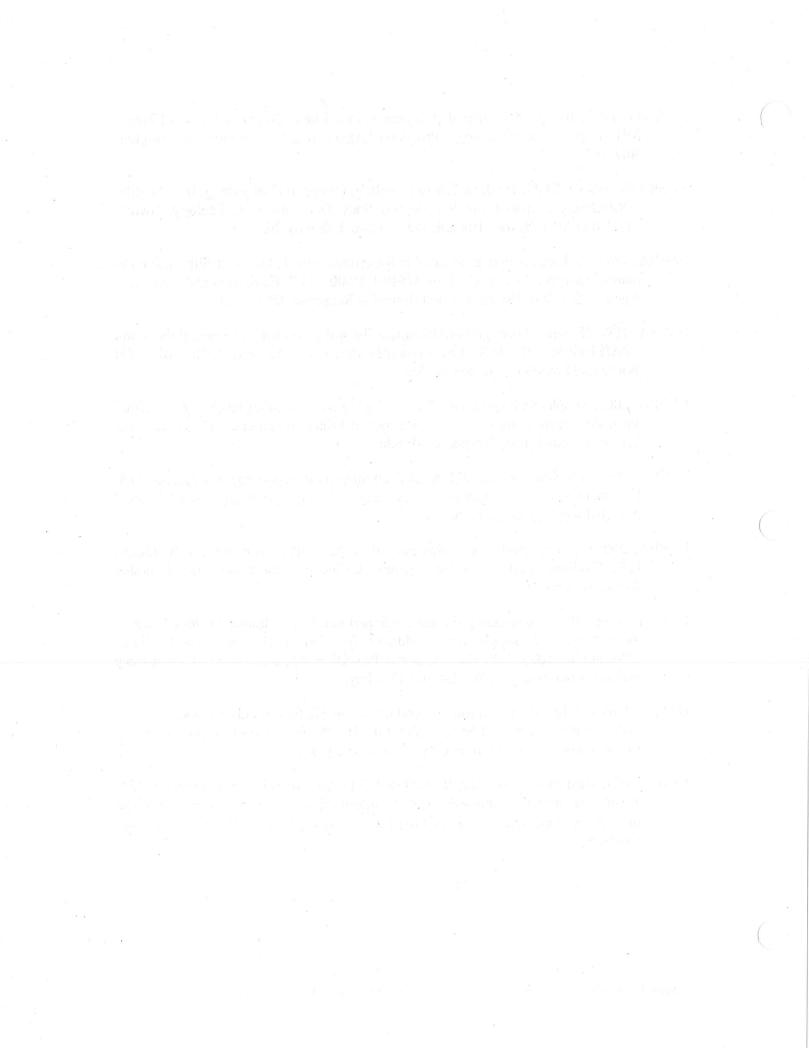
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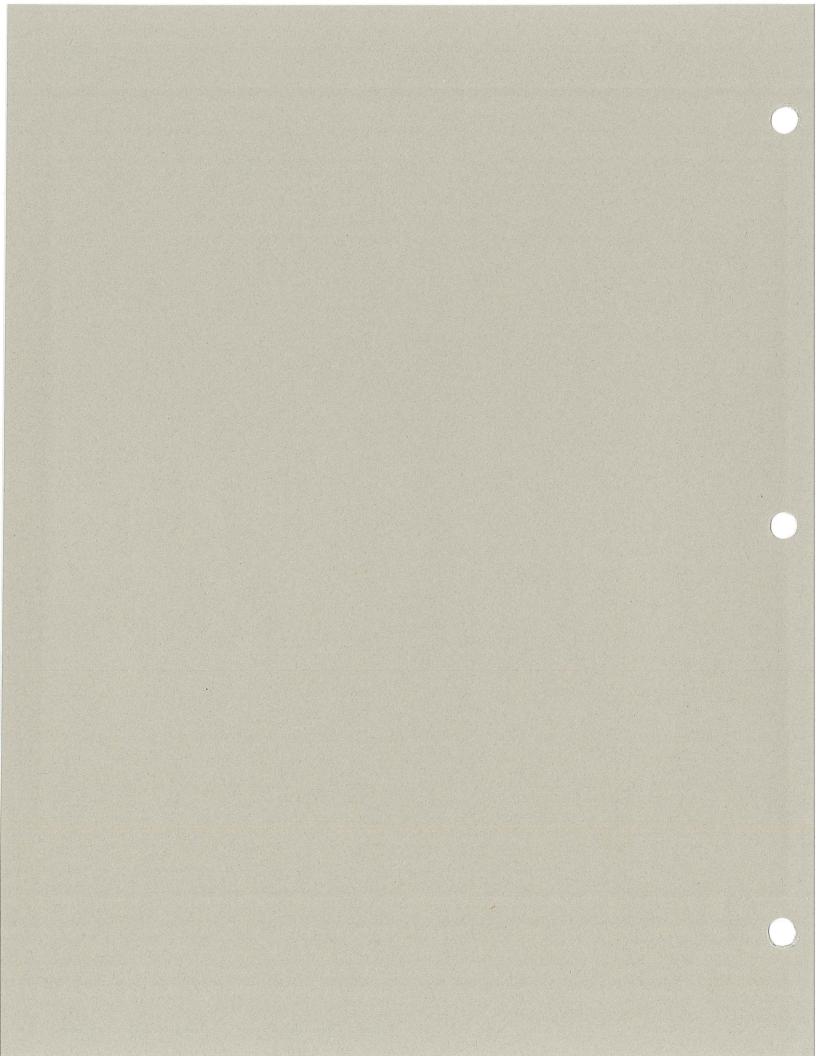


Table Notes Precision Engineering, Inc. Seattle, Washington

ARAR = applicable or relevant and appropriate requirement. AWQC = ambient water quality criteria. bgs = below ground surface.		
AVVQC = ambient water quality criteria. bgs = below ground surface.	· •	
bgs = below ground surface.		
COPC = chemical of potential concern.		
$C_s = soil concentration.$		
CUL = cleanup level.		8 9
CUL _e = Cleanup level based on cancer effects.		
$CUL_{nc} = Cleanup level based on noncancer effects.$		
°C = degrees Celsius.		
DET = detected using Northwest Total Petroleum Hydrocarbon identification scan.		
ELCR = excess lifetime cancer risk (ELCR = $C_s^{*10^5/C}UL_c$).		
ft = feet.		
> Max = greater than 100,000.		
>S = greater than saturation.		
$HQ = hazard quotient (HQ=C_s/CUL_{nc}).$		
IHS = indicator hazardous substance.		
J = estimated concentration.		
mg/kg = milligrams per kilogram.		
mg/L = milligrams per liter.		
MPE = measuring point elevation.	· ·	
MTCA = Washington Department of Ecology's Model Toxics Control Act.		
ug/kg = micrograms per kilogram.		
µg/L = micrograms per liter.		
μg/m³ = micgrograms per cubic meter. uS/cm = microsiemens per centimeter.		
NA = not available.		
NC = not calculated.		
ND = not detected using Northwest Total Petroleum Hydrocarbon identification scan.	an.	
NGVD = National Geodetic Vertical Datum 1929.		
NR = MTCA reported the CUL as not researched.		
NTUs = nephelometric turbidity units.		
NV = no value.		
TEF = Toxixity Equivalency Factors		
U = not detected at or above the method reporting limit.		

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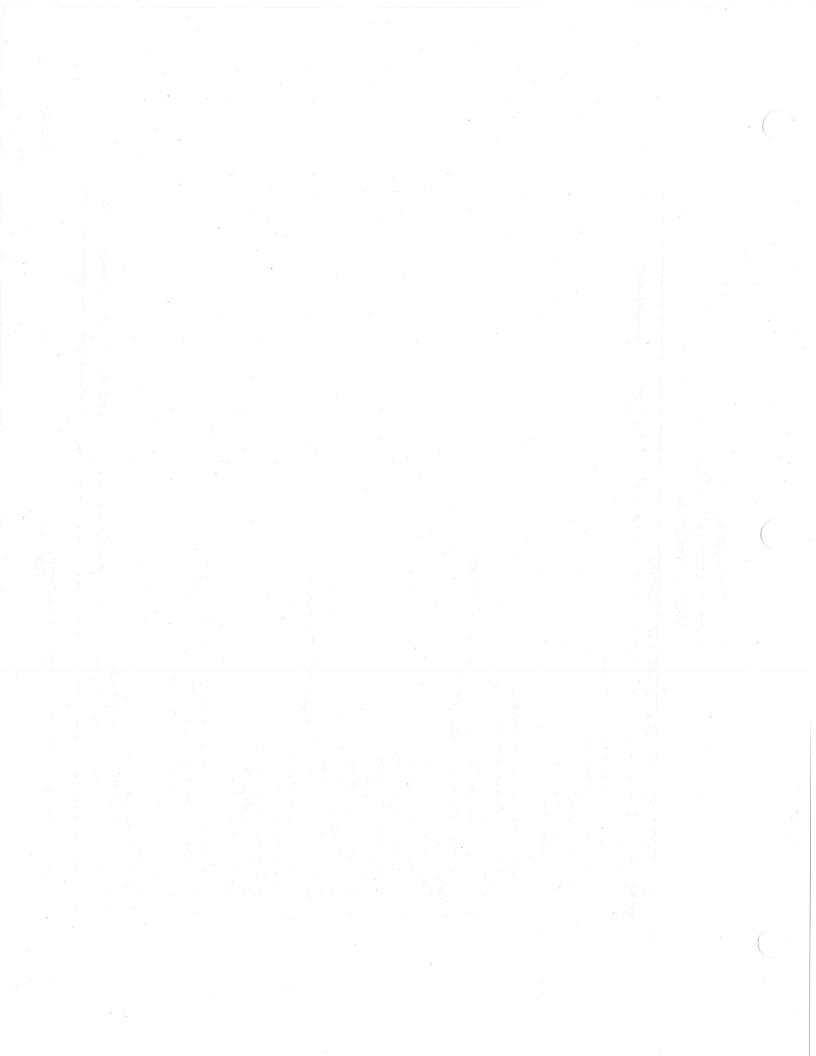


Table 1 Water-Level Elevations Precision Engineering, Inc. Seattle, Washington

Location	Date	Measuring-Point Elevation (MPE) (ft NGVD)	Depth to Water (ft bgs)	Water-Level Elevation (ft NGVD)				
MW-1	12/27/2005	23.16	2.03	21.13				
	4/17/2006	23.16	0.61	22.55				
	6/8/2006	23.16	1.57	21.59				
MW-2	12/27/2005	18.86	4.82	14.04				
1010 0-2	4/17/2006	18.86	4.65	14.21				
	6/8/2006	18.86	4.64	14.22				
MW-3	12/27/2005	19.51	5.48	14.03				
10100-5	4/17/2006	19.51	5.79	13.72				
	6/8/2006	19.51	5.93	14.61				
MW-4	12/27/2005	20.54	5.77	14.77				
	4/17/2006	20.54	5.55	14.99				
	6/8/2006	20.54	5.61	14.93				
MW-5	12/27/2005	19.86	5.52	14.34				
1010 0-0	4/17/2006	19.86	5.32	14.54				
8	6/8/2006	19.86	5.29	14.57				
MW-6	12/27/2005	17.99	4.70	13.29				
1010 0-0	4/17/2006	17.99	4.27	13.72				
	6/8/2006	17.99	4.10	13.89				
MW-7	12/27/2005	17.84	5.77	12.07				
	4/17/2006	17.84	4.64	13.20				
	6/8/2006	17.84	5.17	12.67				
MW-8	12/27/2005	17.35	3.32	14.03				
	4/17/2006	17.35	3.12	14.23				
	6/8/2006	17.35	3.33	14.02				
Staff Gauge	12/27/2005	19.61 ft NGVD @ 8.00	Dry	Dry				
Stan Gauge	4/17/2006	19.61 ft NGVD @ 8.00	Dry	Dry				
	6/8/2006	19.61 ft NGVD @ 8.00	0.02	19.63				

ित्स संयुक्तरान्द्री विकार विकार स्थल कितास के तर्द्वविक पूर्व संदेत हिल्ला स्वित्राय स्थल व स्थल होतित

	M - 26 (2007a)		
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		- 19 Mar 19	
			3

Table 2

Indoor-Air Temperature and Pressure Readings Precision Engineering, Inc.

Seattle, Washington

eadings	Atmospheric Pressure (inches of mercury)	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Eight-Hour Readings	Temperature (°C)	23.8	23.9	24.0	24.0	23.8	23.9	22.9	24.0
	Time	15:46	15:49	15:50	15:53	15:57	15:55	15:45	15:53
adings	Atmospheric Pressure (inches of mercury)	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Four-Hour Readings	Temperature (°C)	21.7	21.7	22.0	22.2	22.3	22.5	21.3	22.2
	Time	11:43	11:42	11:44	11:48	11:49	11:51	11:37	11:48
lings	Atmospheric Pressure (inches of mercury)	30.03	30.03	30.03	30.03	30.03	30.03	30.03	30.03
Initial Readings	Temperature (°C)	20.8	20.9	20.9	21.0	211	21.1	20.4	21.0
	Time	7.46	7-49	7-50	7-53	7-57	7-55	7.42	7:53
	Sample	141	147	143		145	IA6	IA7	IA8

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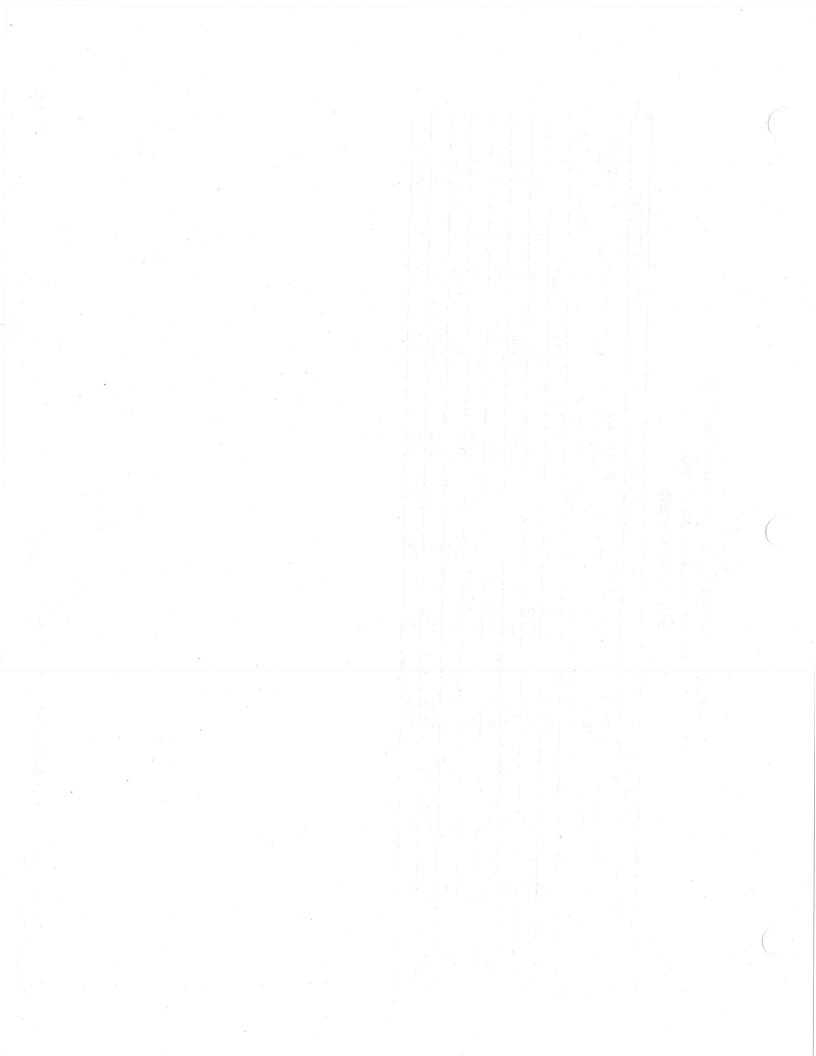


Table 3
Chromium in Soil (mg/kg)
Precision Engineering, Inc.
Seattle, Washington

	<u> </u>		Depth	J	Chromium	Chromium
Location	Sample ID	Date	(ft bgs)	Chromium	(Hexavalent)	(Trivalent) ^a
			(IL DGS)		(Hoxaraiony)	(Intrational)
	Geoprobe Samp		1.5	205	152	53
GP1	GP1-S-1.5	6/7/2005	6	147	31.8	115.2
	GP1-S-6.0	6/7/2005	10	73.5	14.4	59.1
	GP1-S-10.0	6/9/2005	1	2680	523	2157
GP2	GP2-S-1.0	6/7/2005	10	2000	0.109 U	24.9
	GP2-S-10.0	6/9/2005	2	915	27.7	887.3
GP3	GP3-S-2.0	6/9/2005	6	1100	49.8	1050.2
	GP3-S-6.0	6/9/2005	14	941	34.4	906.6
	GP3-S-14	6/9/2005	1.5	1230	53.4	1176.6
GP4	GP4-S-1.5	6/16/2005	1.5	18.9	0.111 U	18.9
GP5	GP5-S-1.5	6/16/2005	1.5	20.1	0.115 U	20.1
	GP5-S-14.0	6/16/2005	14	584	627	NC
GP6	GP6-S-1.0	6/16/2005	14.5	259	0.181	258.819
	GP6-S-14.5	6/16/2005	2	23.6	0.119	23.481
GP7	GP7-S-2.0	6/16/2005	2	23.0	0.113 U	21
	GP7-S-8.0	6/16/2005	1.5	22.2	0.661	21.539
GP8	GP8-S-1.5	6/16/2005	2	43.3	2.97	40.33
GP9	GP9-S-2.0	6/17/2005	1.5	21.8	0.142	21.658
GP10	GP10-S-1.5	6/17/2005		24.1	0.106 U	24.1
	GP10-S-13.5	6/17/2005	13.5 2	24.1	0.573	21.127
GP11	GP11-S-2.0	6/17/2005	(11.567)	17.3	0.37	16.93
	GP11-S-6.5	6/17/2005	6.5	24.3	1.1 UJ	24.3
GP12	GP12-S-3.0	12/13/2005	3 5	24.5	1.0 UJ	25.2
	GP12-S-5.0	12/13/2005	1	26.6	1.4 UJ	26.6
GP13	GP13-S-1.0	12/14/2005	6	46.6	1.3 UJ	46.6
	GP13-S-6.0	12/14/2005	3	24.8	2.0 UJ	24.8
GP14	GP14-S-3.0	12/13/2005	6	31.4	1.2 J	30.2
	GP14-S-6.0	12/13/2005	3	24.7	1.2 UJ	24.7
GP15	GP15-S-3.0	12/13/2005	6	20.2	1.2 UJ	20.2
	GP15-S-6.0	12/13/2005	1	30.0	2.1 UJ	30.0
GP16	GP16-S-1.0	12/13/2005	5	26.2	2.1 UJ	26.2
00/7	GP16-S-5.0	12/13/2005 12/13/2005	1	254	1.7 UJ	254
GP17	GP17-S-1.0	12/13/2005	6	1660	60 J	1600
00/0	GP17-S-6.0	12/13/2005	1	4430	2300 J	2130
GP18	GP18-S-1.0	12/13/2005	1	22.0	2.5 UJ	22.0
GP19	GP19-S-1.0		1	24.8	2.0 UJ	24.8
	GP19-S-1.0-Dup	12/13/2005	7	27.1	2.7 UJ	27.1
0000	GP19-S-7.0 GP20-S-1.0	12/13/2005	1	17.6	1.1 UJ	17.6
GP20		12/14/2005	6	24.5	1.5 UJ	24.5
0004	GP20-S-6.0	12/14/2005	1	25.6	1.0 UJ	25.6
GP21	GP21-S-1.0 GP21-S-6.5	12/14/2005	6.5	23.0	1.3 UJ	23.0
0000	the second s	12/13/2005	1	46.8	2.9 J	43.9
GP22	GP22-S-1.0	12/13/2005	10	32.1	1.3 UJ	32.1
0000	GP22-S-10.0		7	23.3	1.1 UJ	23.3
GP23	GP23-S-7.0	12/14/2005 12/14/2005	10.5	979	1.2 UJ	979
	GP23-S-10.5	12/14/2005	3	30.2	1.0 UJ	30.2
0001		1/14//005		00.2	1.0.00	
GP24	GP24-S-3.0 GP24-S-3.0-Dup	and the second second second second second second	3	26.2	1.1 UJ	26.2

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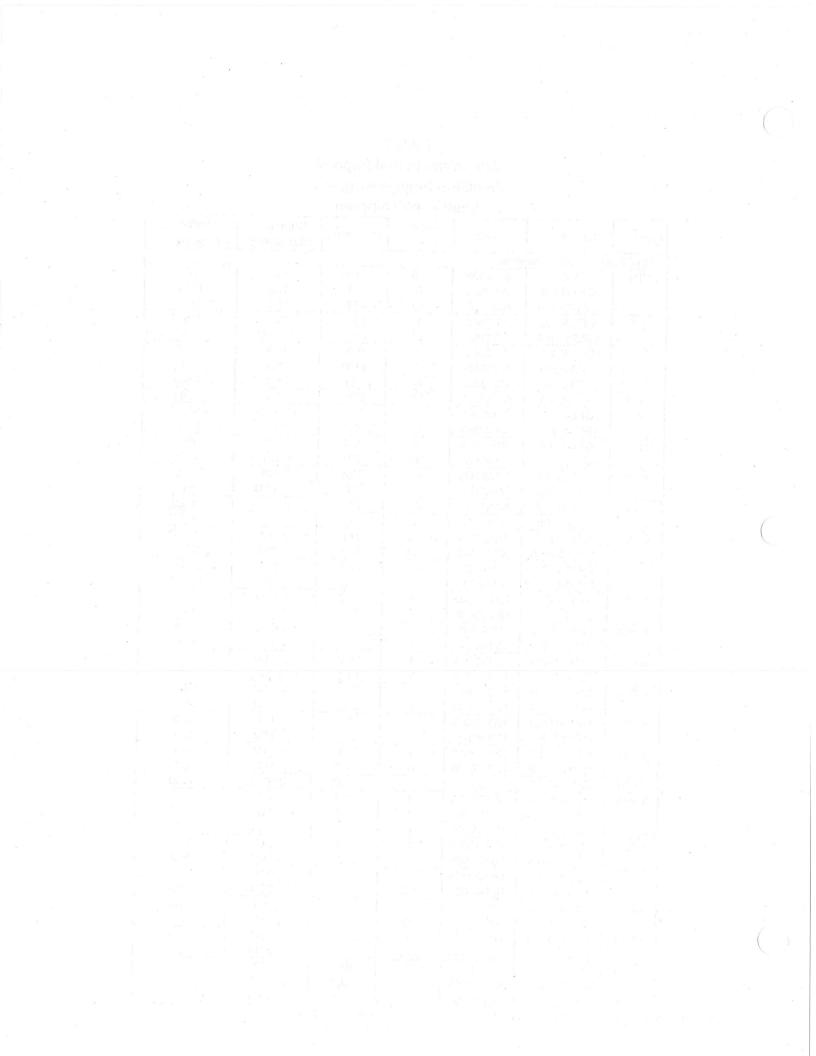


Table 3
Chromium in Soil (mg/kg)
Precision Engineering, Inc.
Seattle, Washington

			Depth	Chromium	Chromium	Chromium
Location	Sample ID	Date	(ft bgs)	Chronnum	(Hexavalent)	(Trivalent) ^a
On-Site	Geoprobe Sam	oling				
GP25	GP25-S-1.0	12/12/2005	1	19.3	1.8 UJ	19.3
0.20	GP25-S-7.0	12/12/2005	7	19.8	1.7 UJ	19.8
GP26	GP26-S-1.0	12/12/2005	1	23.7	2.2 UJ	23.7
0.10	GP26-S-9.5	12/12/2005	9.5	24.0	2.1 UJ	24.0
GP27	GP27-S-1.0	12/12/2005	1	22.0	2.2 UJ	22.0
	GP27-S-13.0	12/12/2005	13	18.6	2.1 UJ	18.6
GP28	GP28-S-1.0	12/12/2005	1	20.5	2.2 UJ	20.5
0. 10	GP28-S-7.0	12/12/2005	. 7	22.4	1.8 UJ	22.4
GP29	GP29-S-1.0	12/12/2005	1	29.6	2.4 UJ	29.6
5. 20	GP29-S-6.0	12/12/2005	6	31.9	2.6 UJ	31.9
GP30	GP30-S-1.0	12/12/2005	1	27.2	2.1 UJ	27.2
01.00	GP30-S-6.0	12/12/2005	6	32.7	2.4 UJ	32.7
GP31	GP31-S-1.0	12/12/2005	1	19.2	2.1 UJ	19.2
0101	GP31-S-6.0	12/12/2005	6	23.6	3.0 UJ	23.6
GP32	GP32-S-1.0	12/14/2005	1	6750	3500 J	3250
	Hand-Auger Sa	mpling				
HA1	HA1-0.5	12/15/2005	0.5	34.3	2.9 UJ	34.3
1011	HA1-1.5	12/15/2005	1.5	110	6.5 J	103.5
	HA1-1.5-Dup	12/15/2005	1.5	84.5	2.8 UJ	84.5
HA2	HA2-0.5	12/15/2005	0.5	206	89 J	117
11/14	HA2-1.5	12/15/2005	1.5	215	3.2 J	211.8
HA3	HA3-0.5	12/15/2005	0.5	1590	2.6 UJ	1590
11/10	HA3-1.5	12/15/2005	1.5	55.2	2.4 UJ	55.2
HA4	HA4-0.5	12/15/2005	0.5	8480	7.2 UJ	8480
10.51	HA4-1.5	12/15/2005	1.5	280	3.0 UJ	280
HA5	HA5-0.5	12/15/2005	0.5	155	5.8 UJ	155
11/10	HA5-1.5	12/15/2005	1.5	32.7	2.9 UJ	32.7
HA6	HA6-0.5	04/18/2006	0.5		3.33 J	NC
HA7	HA7-0.5	04/18/2006	0.5		0.22 J	NC
HA8	HA8-0.5	04/18/2006	0.5		0.26 J	NC
and the second second second	HA8-0.5	04/19/2006	0.5		3.4 J	NC
HA9	HA9-0.5 HA10.05	04/19/2006	0.5		0.074 J	NC
HA10			0.5		0.45 J	NC ·
HA11	HA11-0.5	04/19/2006	0.5			

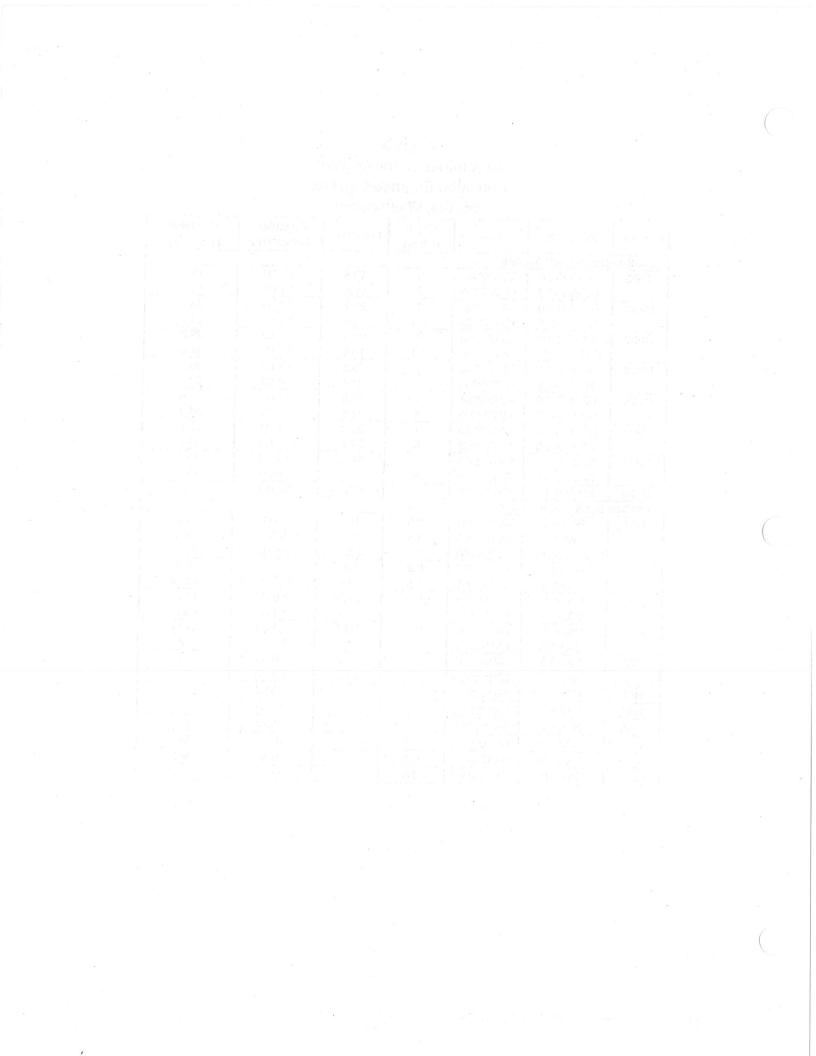


Table 4 Metals in Soil (mg/kg) Precision Engineering, Inc. Seattle, Washington

70.8 J 2620 86.3 293 J 433 46.2 110 44.3 24.9 36.9 140 341 134 358 71.6 49.3 50.4 46.1 1 84.9 38.4 40.9 1 Zinc 32.9 ł l ł 0.819 U 0.703 U 0.549 U 0.576[.]U 0.550 U 0.707 U 0.613 U 0.648 U 0.542 U 0.577 U 0.723 U 0.585 U 1.63 U 1.19 U Thallium 0.615 U 0.532 U 0.542 U 0.592 U 0.591 U 0.593 U 0.609 U 0.529 U ł l ł 0.703 U 0.550 U 0.707 U 0.723 U 0.648 U 0.585 U 0.819 U 0.549 U 0.576 U 0.613 U 1.19 U 0.591 U 0.542 U 0.542 U 0.577 U 1.63 U 0.609 U 0.615 U 0.592 U 0.532 U 0.593 U 0.529 U Silver ł I L 1 0.703 U 0.723 U 0.648 U 0.819 U 1.19 U 0.549 U 0.576 U 0.550 U 0.707 U 0.613 U 0.585 U 1.63 U 0.577 U Selenium 0.542 U 0.542 U 0.609 U 0.532 U 0.591 U 0.593 U 0.529 U 0.615 U 0.592 U L ł ľ 24.7 J 108 J Nickel 21.9 41.6 22.2 14.4 21.3 36.0 31.0 98.4 30.8 22.5 27.0 13.0 28.5 25.3 99.7 32.9 16.4 1 ł L 25.6 21.8 23.1 0.488 U 0.580 U 0.144 U 0.109 U 0.131 U 0.132 U 0.364 U 0.142 U 0.115 U 0.918 0.107 U 0.131 U 0.120 U 0.152 U Mercury 0.168 U 0.154 U 0.328 0.876 0.232 2.28 2.65 1.10 T l ł 1 2.12 U 15.3 J 61.5 95.3 J 23.5 1710 50.8 1440 278 36.5 220 34.6 81.4 545 8.41 1.54 18.0 14.2 Lead 3.33 2.45 2.20 18.7 26.3 3.09 21.1 10.1 Copper 16.2 J 68.4 J 32.8 70.9 16.4 48.8 39.6 28.2 978 129 29.4 16.5 14.3 12.6 15.6 40.2 528 39 30.4 I 113 ł 17.6 29.0 14.4 I 1 Cadmium 0.819 U 0.585 U 0.576 U 0.550 U 0.707 U 0.613 U 0.532 U 0.577 U 0.549 U 0.592 U 0.542 U 0.542 U 0.591 U 0.609 U 0.615 U 0.984 3.13 1.09 0.48 2.53 28.7 0.714 ł 1.29 ł I ł 0.648 U Beryllium 0.550 U 0.707 U 0.723 U 0.613 U 0.585 U 0.819 U 1.19 U 0.703 U 0.576 U 1.63 U 0.532 U 0.549 U 0.542 U 0.591 U 0.593 U 0.529 U 0.592 U 0.542 U 0.577 U 0.609 U 0.615 U ١ Ī 1 1 2.12 U 2.88 J Arsenic 8.35 J 12.5 6.61 5.03 53.9 6.96 44.3 5.25 35.9 9.0 5.3 5.72 3.94 2.71 3.06 3.64 1.89 5.91 3.81 3.55 2.79 9.45 3.00 7.76 5.47 Antimony 2.46 U 3.56 U 2.11 U 1.84 U 1.94 U 1.76 U 1.65 U 2.12 U 1.65 U 1.73 U 1.78 U 1.63 U 1.60 U 2.17 U 1.84 U 1.73 U 1.78 U 1.83 U 1.59 U 1.63 U 6.68 1.77 U | | 1 I (ft bgs) 0.5 0.5 1.5 1.5 0.5 0.5 1.5 0.5 Depth 1.5 0.5 0.5 1.5 0.5 **m** 3 3 3 c 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 04/19/2006 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/12/2005 12/12/2005 12/13/2005 12/14/2005 12/12/2005 1/9/2007 1/9/2007 12/13/2005 12/14/2005 12/13/2005 12/13/2005 12/14/2005 12/14/2005 1/9/2007 1/9/2007 Date Off-Site Hand-Auger Sampling Geoprobe Sampling GP24-S-3.0-Dup HA18-S-0.5 HA18-S-1.5 HA1-1.5-Dup HA17-S-0.5 HA17-S-1.5 GP24-S-3.0 GP31-S-1.0 GP28-S-1.0 GP29-S-1.0 GP12-S-3.0 GP13-S-1.0 GP14-S-3.0 GP15-S-3.0 GP18-S-1.0 GP20-S-1.0 HA5-1.5 HA5-0.5 HA12-0.5 HA2-0.5 HA3-1.5 Sample ID HA1-0.5 HA1-1.5 HA2-1.5 HA3-0.5 HA4-0.5 HA4-1.5 **On-Site** HA18 HA12 HA17 HA5 Location GP28 GP29 GP12 GP13 GP14 GP15 GP18 GP20 GP24 GP31 HA1 HA2 HA3 HA4

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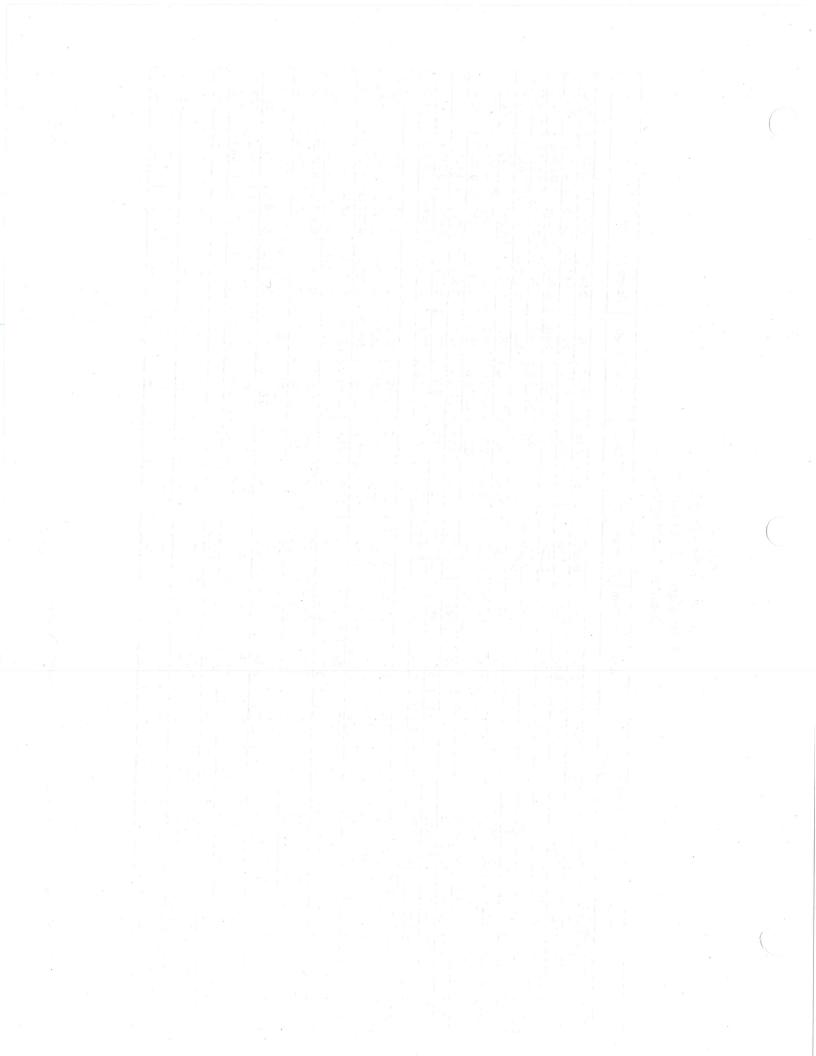


Table 4 Metals in Soil (mg/kg) Precision Engineering, Inc. Seattle, Washington

Zinc I I ł I ł I 1 ł ł ł I ł I I Thallium l l l 1 . 1 Ι. I I I ł 1 ł Silver I 1 1 I ł ł I ł l ł I I I. 1 Selenium 1 1 l 1 l I $\{ \hat{a}_i \}$ I ł ł I I I ł Nickel ł l l 1 1 l I I l ł I l 1 1 Mercury l ł 1 I I I l ł l I ł 1 I ł 63.9 15.5 26.9 20.5 24.3 Lead 32.4 302 11.3 986 27.9 8.91 398 134 121 Copper 1 ł ł ł ł ١ ł I T L I 1 ł 1 Cadmium l I I l l I I I ł l I ł Beryllium I ł I I I ł I 1 1 ł 1 T I ł Antimony Arsenic 1.81 U 2.02 U 11.6 11.8 5.72 5.8353.5 10.3 4.44 5.23 4.91 4.9 4.02 12.7 ł I ł 1 1 I L ł I ł 1 1 I 1 Depth (ft bgs) 0.5 0.5 0.5 0.5 0.5 0.5 1.5 0.5 1.5 1.5 1.5 1.5 1.5 1/10/2007 1/10/2007 1/10/2007 1/10/2007 1/10/2007 1/10/2007 1/10/2007 1/10/2007 1/10/2007 1/10/2007 1/9/2007 1/9/2007 1/9/2007 1/9/2007 Off-Site Hand-Auger Sampling cont. Date HA25-S-0.5 HA25-S-1.5 HA24-S-0.5 HA19-S-0.5 HA19-S-1.5 HA20-S-0.5 HA20-S-1.5 HA21-S-0.5 HA21-S-1.5 HA22-S-0.5 HA22-S-1.5 HA23-S-0.5 HA23-S-1.5 HA24-S-1.5 Sample ID Location HA19 HA22 HA23 HA24 HA25 HA20 HA21

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Volatile Organic Compounds in Soil (µg/kg) Precision Engineering, Inc. Seattle, Washington Table 5

										-					_				-	_			-i				Т		Т		
1,1-Dichloro- propene	-	0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51./ U	35.6 U	35.1 U	40.5 U	42.5 U	41.4 U	39 U	44.2 U	49.3 U	37.1 U	55.8 U	39.8 U	41.9 U	43 U	I	1	ł	1	I	1	I	1
1,1-Dichloro- ethene	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0.839 U	1.12 U	7.65 U	0.96 U	8.81 U	15.9 U	8.96 U	7.71 U	10.3 U	7.12 U	7.03 U	8.1 U	8.5 U	8.28 U	7.81 U	8.84 U	9.86 U	7.42 U	23.7	7.96 U	8.37 U	8.61 U	1	I	I	1	I	1	I	I
1,1-Dichloro- ethane		0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51.7 U	35.6 U	35.1 U	40.5 U	42.5 U	41.4 U	39 U	44.2 U	49.3 U	37.1 U	55.8 U	39.8 U	41.9 U	43 U	1 1	1	١.	1	I	1	l	1
1,1,2-Trichloro- ethane		0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51.7 U	35.6 U	35.1 U	40.5 U	42.5 U	41.4 U	39 U	44.2 U	49.3 U	37.1 U	55.8 U	39.8 U	41.9 U	43 U	I	1	I	ł	I	I	. I	-
1,1,2,2-Tetra- chloroethane		0.839 U	1.12 U	7.65 U	0.96 U	8.81 U	15.9 U	8.96 U	7.71 U	10.3 U	7.12 U	7.03 U	8.1 U	8.5 U	8.28 U	7.81 U	8.84 U	9.86 U	7.42 U	11211	7.96 U	8.37 U	8.61 U	1	I	ļ	1	1	1	I	I
1,1,1-Trichloro- ethane		0.839 U	1.12 U	7.65 U	0.96 U	8.81 U	15.9 U	8.96 U	7.71 U	10.3 U	7.12 U	7.03 U	8.1 U	8.5 U	8.28 U	7.81 U	8.84 U	9.86 U	7.42 U	11011	7 96 U	837 U	8.61 U	1	1	I	1	1	I	-	ł
1,1,1,2-Tetra- chloroethane	- 7	0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51.7 U	35.6 U	35.1 U	40.5 U	42.5 U	41.4 U	39 U	44.2 U	49.3 U	37.1.U	55 B 11	30.811	41911	43 U	ł	I	I	I	1	l	1	1
Depth (ft bgs)		1.5	Q	10	-	10	2	9	14	1.5	1.5	ω	14	-	14.5	6	1 00	15	6	1 1	с. 1 а г	2.0	6.5	e	Q	~	9	ю	9	e	9
Date		6/7/2005	6/7/2005	6/9/2005	6/7/2005	6/9/2005	6/9/2005	6/9/2005	6/9/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/17/2005		0/1/1/0002	G(17/2005	6/17/2005	12/13/2005	12/13/2005	12/14/2005	12/14/2005	12/13/2005	12/13/2005	12/13/2005	12/13/2005
Sample ID	On-Site Geonrobe Sampling	GP1-S-15	GP1-S-6.0	GP1-S-10.0	GP2-S-1.0	GP2-S-10.0	GP3-S-2.0	GP3-S-6.0	GP3-S-14	GP4-S-1.5	GP5-S-1.5	GP5-S-8.0	GP5-S-14 0	GP6-S-1.0	GP6_S-14 5	C-2-2-10		GPR-S-1 5		1 1 0 0 0 0 0	0.1-0-11-0 7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	00000000000	GP11-S-6.5	GP12-S-3.0	GP12-S-5.0	GP13-S-1.0	GP13-S-6.0	GP14-S-3.0	GP14-S-6.0	GP15-S-3.0	GP15-S-6.0
Location	On-Site G	CP1	- 5	TI .	GP2	1	GP3)		GP4	GP5)		GP6	5	207	225	800		010	GP10			GP12		GP13		GP14		GP15	

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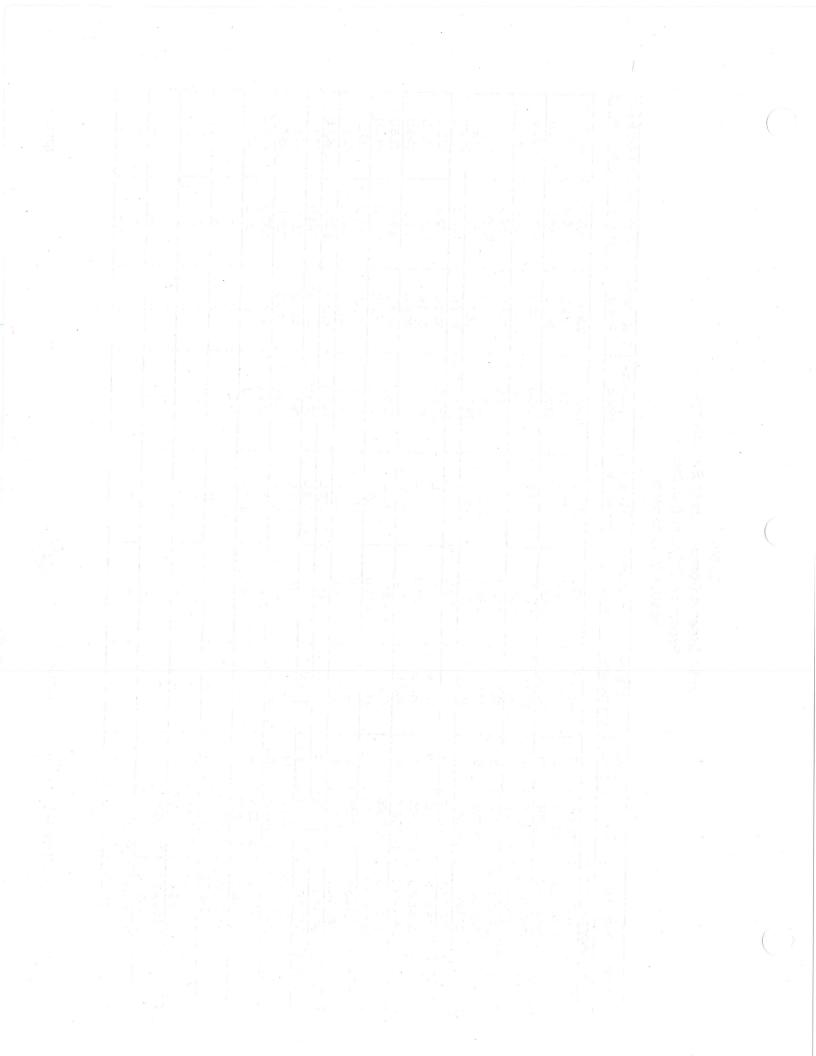


Table 5 Volatile Organic Compounds in Soil (µg/kg) Precision Engineering, Inc. Seattle, Washington 1,1-Dichloropropene I 1 ŀ ۱ 1 I I I I ł I I 1 1 1 ł 1 1 ł I 1 ł 1,1-Dichloroethene I ł 1 ł 1 1 I ł ł I l ł 1 1 I 1 1 ł ł 1 I I I ł ł ł I I 1 1,1-Dichloroethane 1 1 1 I I ł L ł I ł I ł 1 ł I ł ł I I 1 I ł 1 I ł l L L I 1,1,2-Trichloroethane ł ł I l ł ł 1 ۱ l ł L ł 1 I ŀ. I I. I 1 1 1 1 I ł ł I I 1 1,1,2,2-Tetrachloroethane I. 1 1 1 I l ł I 1 I. 1 I I I l I ł 1 ł 1 1 L ł 1 I I 1,1,1-Trichloroethane L I I I L ł ł ł 1 I ł ł ł I ł 1 ł 1 I I l I ł ł 1 1 1,1,1,2-Tetrachloroethane I 1 1 ł l I L 1 I I I ł ł ł I 1 L ł 1 1 I ł ł I I 1 I Depth (ft bgs) 10.5 9.5 6.5 13 6.5 G 10 З ന ~ 9 ŝ 9 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/14/2005 12/14/2005 12/14/2005 12/14/2005 12/13/2005 12/13/2005 12/14/2005 12/14/2005 12/14/2005 12/14/2005 12/13/2005 12/13/2005 12/13/2005 12/14/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 Date **On-Site Geoprobe Sampling** GP24-S-3.0-Dup GP19-S-1.0-Dup GP27-S-13.0 GP22-S-10.0 GP23-S-10.5 GP28-S-7.0 GP29-S-1.0 GP29-S-6.0 GP24-S-6.5 GP25-S-1.0 GP25-S-7.0 GP26-S-1.0 GP26-S-9.5 GP27-S-1.0 GP28-S-1.0 GP21-S-6.5 GP23-S-7.0 GP24-S-3.0 GP19-S-7.0 GP20-S-6.0 GP21-S-1.0 GP22-S-1.0 GP20-S-1.0 GP17-S-6.0 GP19-S-1.0 GP16-S-1.0 GP16-S-5.0 GP17-S-1.0 GP18-S-1.0 Sample ID GP29 GP28 GP24 GP25 GP26 Location GP23 GP27 GP19 GP22 GP16 GP18 GP20 GP21 GP17

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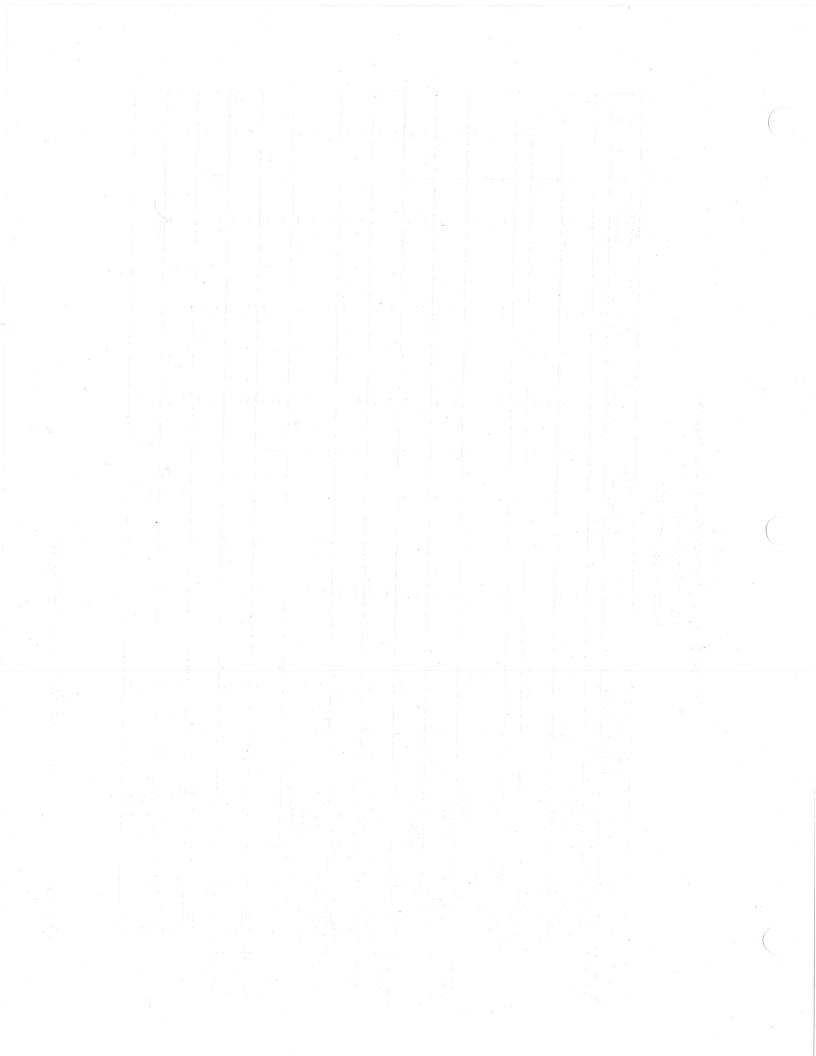


Table 5 Volatile Organic Compounds in Soil (µg/kg) Precision Engineering, Inc. Seattle, Washington 1,1-Dichloro-7.49 U 6.12 U 6.91 U 73.9 U 169 U 26.4 U 7.30 U 93.8 U 5.02 U propene 5.73 U 4.61 U ł .1 I I ł 1,1-Dichloro-4.49 U 4.15 U 15.8 U 2.77 U 93.8 U 3.01 U 44.4 U 3.67 U 169 U 3.44 U 4.38 U ethene I 1 I I I 1,1-Dichloro-2.99 U 29.6 U 2.45 U 10.6 U 2.01 U 169 U 2.29 U 2.77 U 2.92 U 1.84 U 93.8 U ethane I ł ł 1 I 1,1,2-Trichloro-18.5 U 1.53 U 1.87 U 6.60 U 1.83 U 1.15 U 93.8 U 1.26 U 169 U 1.73 U 1.43 U ethane I I I ł 1 1,1,2,2-Tetrachloroethane 6.12 U 7.49 U 93.8 U 5.02 U 73.9 U 6.91 U 26.4 U 7.30 U 169 U 5.73 U 4.61 U I I I 1 1 1,1,1-Trichloro-3.65 U 2.30 U 2.51 U 37.0 U 3.06 U 169 U 3.74 U 3.46 U 13.2 U 93.8 U 2.87 U ethane ł ۱ Ĩ I I 1,1,1,2-Tetrachloroethane 7.49 U 6.12 U 26.4 U 7.30 U 4.61 U 93.8 U 5.02 U 169 U 6.91 U 73.9 U 5.73 U I 1 Ĩ 1 l (ft bgs) Depth 0.5 0.5 1.5 0.5 0.5 1.5 1.5 1.5 1.5 0.5 g ω 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/12/2005 12/12/2005 12/14/2005 12/15/2005 12/15/2005 12/12/2005 12/12/2005 Date **Off-Site Hand-Auger Sampling On-Site Geoprobe Sampling** HA1-1.5-Dup GP30-S-1.0 GP30-S-6.0 GP31-S-1.0 GP31-S-6.0 GP32-S-1.0 HA5-0.5 HA5-1.5 HA1-1.5 HA4-0.5 HA3-0.5 HA3-1.5 HA4-1.5 Sample ID HA1-0.5 HA2-1.5 HA2-0.5 Location GP30 GP32 HA5 GP31 HA2 HA3 HA4 HA1

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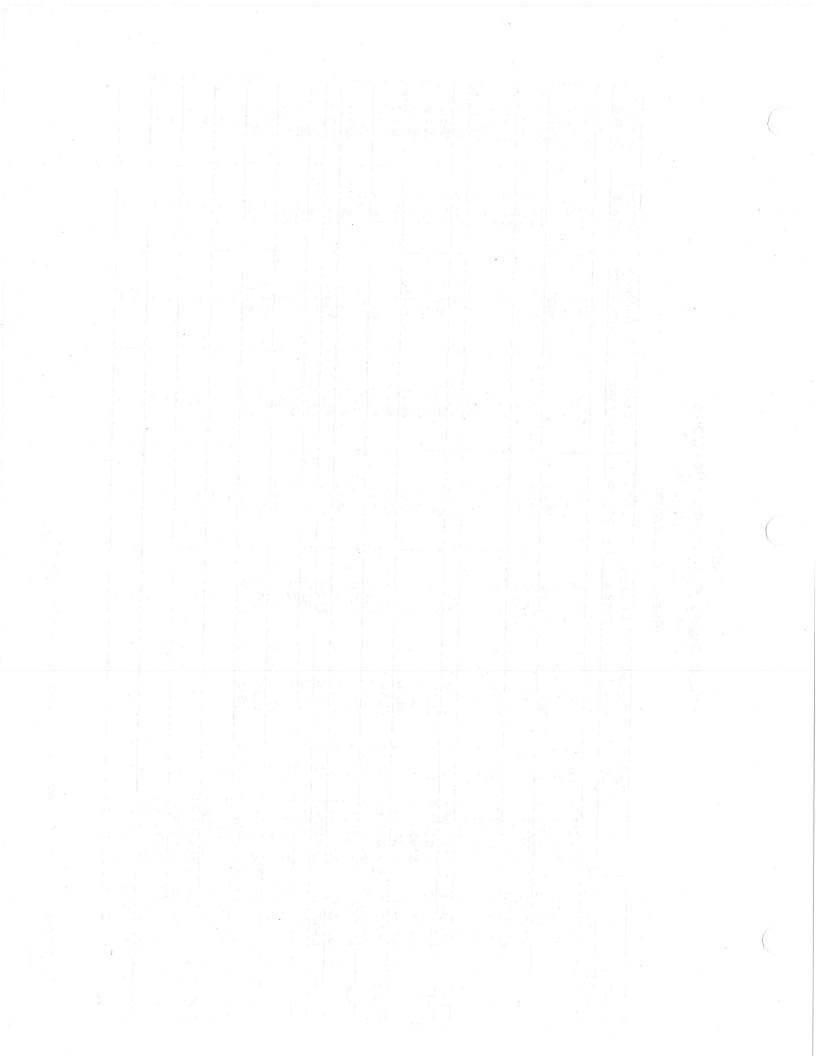
Table 5 Volatile Organic Compounds in Soil (µg/kg) Precision Engineering, Inc.

Seattle, Washington

	2											Ĵ							T-	1		-		-		T		Т		Т		٦
1,2-Dichloro- benzene		0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51.7 U	35.6 U	35.1 U	40.5 U	42.5 U	41.4 U	39 U	44.2 U	49.3 U	37.111	55 8 11		39.0 0	41.9 U	43 U	1		I				1	1
1,2-Dibromo- ethane		0.839 U	1.12 U	1.4 U	0.96 U	1.61 U	2.91 U	1.64 U	1.41 U	1.89 U	1.3 U	1.29 U	1.48 U	1.56 U	1.51 U	1.43 U	1.62 U	18U	1 36 11		2.04 U	1.46 U	1.53 U	U.58.U	1	1	I	1	1	1	ł	1
1,2-Dibromo-3- chloropropane		0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51.7 U	35.6 U	35.1 U	40.5 U	42.5 U	41.4 U	39 U	44.2 U	10311	140.00	31.1 U	D 2.66	39.8 U	41.9 U	43 U	I	1	I	1	J	1	I	1
1,2,4-Tri- methylbenzene		0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51.7 U	35.6 U	35.1 U	40.5 U	42.5 U	41.4 U	3011	11 2 77	10 3 11	49.00	37.1 U	55.8 U	39.8 U	41.9 U	43 U	I	I	1	1	1	1	l	T
1,2,4-Tri- chlorobenzene		0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51.7 U	35.6 U	35.1 U	40.5 U	42.5 U	41.4 U	11.06	0 60	0 1 0 0	49.3 U	37.1 U	55.8 U	39.8 U	41.9 U	43 U	I	ł	I	I	1	1	1	1
1,2,3-Trichloro- propane		0.839 U	1.12 U	7.65 U	0.96 U	8.81 U	15.9 U	8.96 U	7.71 U	10.3 U	7.12 U	7.03 U	8.1 U	8.5 U	8 28 11		0 10.7	0.04 0	9.86 U	7.42 U	11.2 U	7.96 U	8.37 U	8.61 U	I	1	l	T	1	1	1	1
1,2,3-Trichloro- benzene		0.839 U	1.12 U	38.2.11	0.96.0	44 11	79.5 U	44.8.11	38.5 U	517 U	35.6.11	35.1 U	40.5 U	42.511	11 1 11		39 U.	44.2 U	49.3 U	37.1 U	55.8 U	39.8 U	41.9 U	43 U	l	1	I	I	1]	1	1
Depth (ft bas)	1-0	15	ۍ ۲	, (2 -	- 0	2 0	1 (0	74	- ч г	- ч л	<u>ς</u> α	o 2	<u>t</u> ,-	- 77		2	ω	1.5	2	1.5	13.5	2	6.5	3	5	~	9	ŝ	9	e	9
Date		6/7/2005	6/7/2005	6/0/2005	GUSIZ000	6/0/2002	6/0/2005	CUDIELO ELO/DUE	6/0/2005	GIAE/DODE	6/16/2005	6/16/2005	6/16/2005	6/16/2005	010/01/0	CUU2/01/0	6/16/2005	6/16/2005	6/16/2005	6/17/2005	6/17/2005	6/17/2005	6/17/2005	6/17/2005	12/13/2005	12/13/2005	12/14/2005	12/14/2005	12/13/2005	12/13/2005	12/13/2005	12/13/2005
Sample ID	Geonrohe Sampling	CD1_S_1 F	0.1-0-1-10				000000000000000000000000000000000000000		0.0-0-0-0		0.1-0-1-0 3 F 0 3 E 0			010014.0	0.1-0-040	GPD-0-14.0	GP7-S-2.0	GP7-S-8.0	GP8-S-1.5	GP9-S-2.0	GP10-S-1.5	GP10-S-13 5	GP11-S-2.0	GP11-S-6.5	GP12-S-3.0	GP12-S-5.0	GP13-S-1.0	GP13-S-6.0	GP14-S-3.0	GP14-S-6.0	GP15-S-3.0	GP15-S-6.0
Location	On-Site G		5			2 LD	000	С Ц С Ц С		, do	014	019	2		945		GP7		GP8	GP9	GP10	5	GP11	5	GP12		GP13		GP14		GP15	

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Volatile Organic Compounds in Soil (µg/kg) Precision Engineering, Inc. Seattle, Washington

																					1									-
1,2-Dichloro- benzene	5. A	-	1	I	1		I	I		1	I	ł	1	I	1	1	1	1	I	I				1	I	I I	1		I	I
1,2-Dibromo- ethane		1	ł	I	1	I	I	I	Ĩ	ł	1	I	1	1	1	1	1	1	ł	1	1	1	I	1	1	1	1	1	1	1
1,2-Dibromo-3- chloropropane		I	I	I	1	1		1	1	1	-	ł	1	l	I	1	1	ł	I	1	1	1	I	1	I	1	I.	1	1	1
1,2,4-Tri- methylbenzene		I	I	1	1	I	1	I	I	ł	F	l	1	I	1	I	1	1	1	I	ł	1	I	1	1	I	1		I	1
1,2,4-Tri- chlorobenzene	8	I	1	1	1	1	I	1	1	1	1	I	1	I	I	ł	I	I	1	1	1	I	l	1	I	1		I	I	I
1,2,3-Trichloro- propane		I	1	1	1	1	I	I	I	1	Ĩ	1	I	1	1	1	1	I	I	I	I	1	I	I	I	1	1	I	I	I
1,2,3-Trichloro- benzene		I	1	1	1	1	ł	I		ł	1	1	1]	1	I	2 2	I	I	I	1	1	1	I	1	1	1	1	1	1
Depth (ft bgs)		-	5		9	1	~	~	7	~	9	-	6.5	~	10	7	10.5	3	С	6.5	~	7	~	9.5	Ł	13	~	7	5	9
Date	βι	12/13/2005	12/13/2005	12/13/2005	12/13/2005	12/13/2005	12/13/2005	12/13/2005	12/13/2005	12/14/2005	12/14/2005	12/14/2005	12/14/2005	12/13/2005	12/13/2005	12/14/2005	12/14/2005	12/14/2005	12/14/2005	12/14/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005
Sample ID	On-Site Geoprobe Sampling	GP16-S-1.0	GP16-S-5.0	GP17-S-1.0	GP17-S-6.0	GP18-S-1.0	GP19-S-1.0	GP19-S-1.0-Dup	GP19-S-7.0	GP20-S-1.0	GP20-S-6.0	GP21-S-1.0	GP21-S-6.5	GP22-S-1.0	GP22-S-10.0	GP23-S-7.0	GP23-S-10.5	GP24-S-3.0	GP24-S-3.0-Dup	GP24-S-6.5	GP25-S-1.0	GP25-S-7.0	GP26-S-1.0	GP26-S-9.5	GP27-S-1.0	GP27-S-13.0	GP28-S-1.0	GP28-S-7.0	GP29-S-1.0	GP29-S-6.0
Location .	On-Site G	GP16		GP17		GP18	GP19	-		GP20		GP21		GP22		GP23		GP24			GP25		GP26		GP27	i.	GP28		GP29	

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Volatile Organic Compounds in Soil (µg/kg) Precision Engineering, Inc. Seattle, Washington

			-	_		Г		1	Т	Т				Г	_	Т			Г			Ē	-	٦
1,2-Dichloro-	benzene			1	I	1		1		E 73 11	0.100	6.91 U	26.4 U	7 30 11	0.00	4.61 U	93.8 U	5.02 U	110 02	13.2 0	6.12 U	169 U	1107 4	0.04.0
1.2-Dibromo-	ethane			1	I	;	I		l.	11 02 3	0.67.0	6.91 U	26.4 U	7 30 11	0 00.1	4.61 U	93.8 U	5 02 11	110 01	/3.9 U	6.12 U	16011		1.49 U
1 2-Dibromo-3-	chloropropane			1	, ,			1	I		11.5 U	13.8 U	52 8 11	1 0 1 1	14.0 0	9.22 U	46911		10.0.0	148 U	12 2 U	04411	0 ++0	15.0 U
1 2 A_Tri_	methylbenzene			1		1	1	1	1		5.73 U	6911	0 1 1 J	20.4.0	7.30 U	4.61 U	03 8 11		0.2UZ	73.9 U	E 17	0.41.0	n Rol	7.49 U
1 0 V H	chlorobenzene			I		1	1	1	1		5.73 U	6 01 11	0.0	20.4 U	7.30 U	46111		80.0 C	5.02 U	73.9 U	11 07 0	0.12.0	169 U	7.49 U
	1,2,3-1 richloro- propane	2.000		Differ a	I	1	1	l I	I		5 73 U		0.810	26.4 U	7 30 U	11121	4.010	93.8 U	5.02 U	73 9 11		6.12 U	169 U	7.49 U
	1,2,3-Trichloro-	חבוולבוום			1	ł	I	1	I		E 73 11		6.91 U	26.4 U	7 30 11		4.61 U	93.8 U	5.02 U	72 0 11	0.00	6.12 U	169 U	7.49 U
	Depth	(III n/s/			-	9	-	g	1		LU C	0.0	1.5	1.5	40	0.0	1.5	0.5	1.5		0.0	1.5	0.5	1.5
	Date		na		12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/14/2005	plina	ADIATIONE		12/15/2005	12/15/2005	A D LA L'DDOF	GUU2/G1/21	12/15/2005	12/15/2005	12/15/2005		GUUZ/GL/ZL	12/15/2005	12/15/2005	12/15/2005
	Sample ID		On-Site Geonrohe Sampling		GP30-S-1.0	GP30-S-6.0	GP31-S-1.0	GP31-S-6.0	GP32-S-1.0	Off-Site Hand-Auger Sampling		C.U-1AH	HA1-1.5	HA1-1.5-Dup		HA2-0.5	HA2-1.5	HA3-0.5	HA3.1 5	0.1-0411	HA4-0.5	HA4-1.5	LAR O R	HA5-1 5
-	1 ocation		On-Site (GP30		GP31		GP32	Off_ Site		HA1				HA2		HA3			HA4		1175	

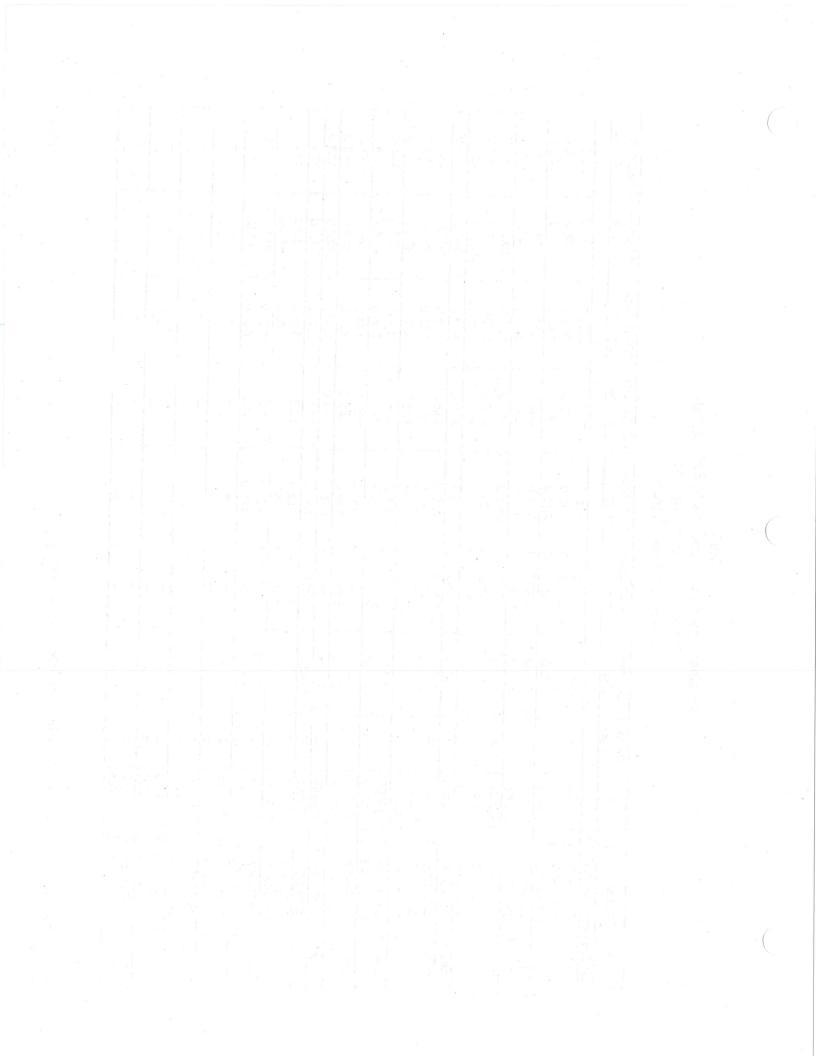
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Volatile Organic Compounds in Soil (µg/kg) Precision Engineering, Inc. Seattle, Washington

	Cample ID	Date	Depth	1,2-Dichloro-	1,2-Dichloro-	1,3,5-Trimethyl-	1,3-Dichloro-	1,3-Dichloro-	1,4-Dichloro- henzene	2,2-Dichloro- propane	
LUCATION	odilipie in	במוכ	(ft bgs)	ethane	propane	Denzene	חפוולפוופ	pipping	20102102		
On-Site G	Geoprobe Sampling	ing						000 0	110000	0 830 11	
GP1	GP1-S-1.5	6/7/2005	1.5	0.839 U	0.839 U	0.839 U	0.839 U	U.839 U	0.000		
	GP1-S-6.0	6/7/2005	9	1.12 U	1.12 U	1.12 U	1.12 U	1.12 U	1.12 U	1.12.0	
	GP1-S-10.0	6/9/2005	10	7.65 U	7.65 U	7.65 U	38.2 U	7.65 U	38.2 U	38.2 U	
600	GP2-S-10	6/7/2005		0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	
2 2	GP2-S-10 0	6/9/2005	10	8.81 U	8.81 U	8.81 U	44 U	8.81 U	44 U	44 U	
503	GP3_S_2 0	6/9/2005	2	15.9 U	15.9 U	15.9 U	79.5 U	15.9 U	79.5 U	79.5 U	
5	CP3_S_6 0	6/9/2005	9	8.96 U	8.96 U	8.96 U	44.8 U	8.96 U	44.8 U	44.8 U	(
	GP3-S-14	6/9/2005	14	7.71 U	7.71 U	7.71 U	38.5 U	7.71 U	38.5 U	38.5 U	
	2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6/16/2005	1.5	10.3 U	10.3 U	10.3 U	51.7 U	10.3 U	51.7 U	51.7 U	
674 70 70	CD5 0.1 5	6/16/2005	1.1.2	7.12 U	7.12 U	7.12 U	35.6 U	7.12 U	35.6 U	35.6 U	
		6/16/2005	0	7.03 U	7.03 U	7.03 U	35.1 U	7.03 U	35.1 U	35.1 U	
		6/16/2005	14	8.1 U	8.1 U	8.1 U	40.5 U	8.1 U	40.5 U	40.5 U	
900	0.41-0-10-10	6/16/2005	-	8.5 U	8.5 U	8.5 U	42.5 U	8.5 U	42.5 U	42.5 U	
010	2 1 1 2 2 2 1 2 2 2 1 2 2 2 2 2 2 2 2 2	6/16/2005	14.5	8.28 U	8.28 U	8.28 U	41.4 U	8.28 U	41.4 U	41.4 U	
	0.010-0-0-0		0.0	7 81 11	7 81 11	7.81 U	39 U	7.81 U	39 U	39 U	
GP7	GP7-S-2.0	CUU2/01/0	V 0		0 10.1 11 A8 A	8.84 U	44.2 U	8.84 U	44.2 U	44.2 U	
	GP7-5-8.U	CNN7/01/0	0	0 1000	0.00	Q RG LI	49.3.11	9.86 U	49.3 U	49.3 U	
GP8	GP8-S-1.5	6/16/2005	c.1	9.00 U	8.00 U	11 07 2	37 111	7 42 U	37.1 U	37.1 U	
GP9	GP9-S-2.0	6/17/2005	2	7.42 U	1.42 U	0 74.7	55 0 11	11011	55.8.0	55.8 U	-
GP10	GP10-S-1.5	6/17/2005	1.5	11.2 U	11.2 U	0 Z.IT		7 06 11	30.8.11	39.8 U	
	GP10-S-13.5	6/17/2005	13.5	7.96 U	7.96 U	1.96.1	00.80	1.70.0	11011	41911	
GP11	GP11-S-2.0	6/17/2005	2	8.37 U	8.37 U	8.37 U	41.9 U	0.5/ 0	41.90	11.54	
	GP11-S-6.5	6/17/2005	6.5	8.61 U	8.61 U	8.61 U	43 U	0.010	2		-
GP12	GP12-S-3.0	12/13/2005	e	1	1	l	1	I		I	
	GP12-S-5.0	12/13/2005		I	1	1	1				-
GP13	GP13-S-1.0	12/14/2005		1	I	1	I	1	I		
	GP13-S-6.0	12/14/2005	9	1	1	1	1	1			-
GP14	GP14-S-3.0	12/13/2005	e S	1	1		I	I	1	I	
	GP14-S-6.0	12/13/2005		1	I	1	1	I		1	-
GP15	GP15-S-3.0	12/13/2005		I	I	1	I	I		1	
	GP15-S-6.0	12/13/2005		1	1	ł	1	1			٦

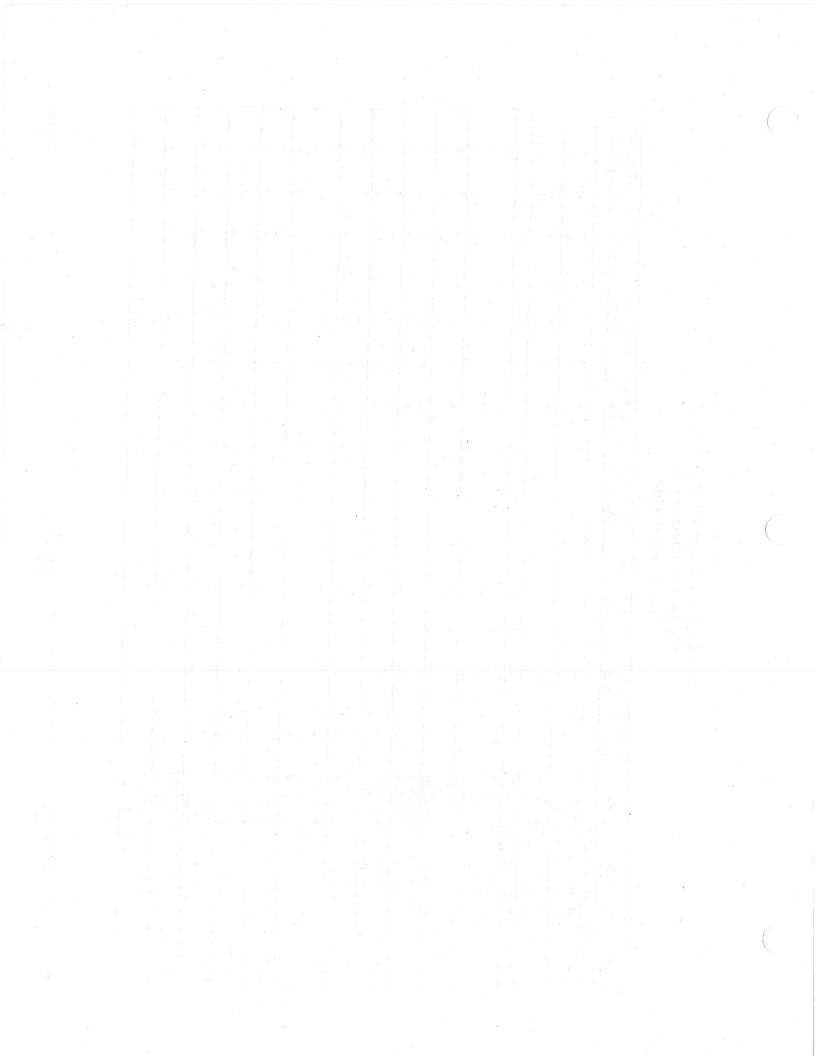
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Volatile Organic Compounds in Soil (µg/kg) Precision Engineering, Inc. Seattle, Washington

				÷											-							-		Т		T		T		٦
2,2-Dichloro- propane		I		1				I		• 		5.0				I		1	, I , I , I				I							
1,4-Dichloro- benzene		1	1	1	I	1	1		(I	1	1	1	I	1	1	I	1	1	1	1.1				1	1	l		I	1
1,3-Dichloro- propane		1	1	I	I	1	1		1	1	1	l	1	I	1	I	ł	1	1	1	I	1	l	1	1	1	1	1	I	I
1,3-Dichloro- benzene		I [.]	1	1	1	1	1	I	1	I	1	ł	1	1	I	1	I	l	1	1	1	1	I]	1	I	I	1	1	1
1,3,5-Trimethyl- benzene		ł	I	1	1	1	1	l	I	I	1	I	1	1	1	,l	1	1	Ì	-	I	1	I	1	1	1	I	1	1,22	I
1,2-Dichloro- propane	2	I	1	ł	1	ł	I.	ł	1	I	I	I	I	I	I	ł	1	I	I	I	I	1	I	1	1	1	1	1	I	1
1,2-Dichloro- ethane		1	1	ł	I	I	1	I	1)	I	1	1	I	ł	1	I,	1	1	1	I	I	Ĩ	I	-1 -1	1	1	ł	1	1	
Depth (ft bgs)		1	ъ	~	9	1	~	~	7	~	9	-	6.5	-	10	7	10.5	ę	ო	6.5	~	2	-	9.5	~	13	5	7	~	9
Date		12/13/2005	12/13/2005	12/13/2005	12/13/2005	12/13/2005	12/13/2005	12/13/2005	12/13/2005	12/14/2005	12/14/2005	12/14/2005	12/14/2005	12/13/2005	12/13/2005	12/14/2005	12/14/2005	12/14/2005	12/14/2005	12/14/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005
Sample ID	On-Site Geonrohe Sampling	GP16-S-1.0	GP16-S-5.0	GP17-S-1.0	GP17-S-6.0	GP18-S-1.0	GP19-S-1.0	GP19-S-1.0-Dup	GP19-S-7.0	GP20-S-1.0	GP20-S-6.0	GP21-S-1.0	GP21-S-6.5	GP22-S-1.0	GP22-S-10.0	GP23-S-7.0	GP23-S-10.5	GP24-S-3.0	GP24-S-3.0-Dup	GP24-S-6.5	GP25-S-1.0	GP25-S-7.0	GP26-S-1.0	GP26-S-9.5	GP27-S-1.0	GP27-S-13.0	GP28-S-1.0	GP28-S-7.0	GP29-S-1.0	GP29-S-6.0
Location	On-Site G	GP16		GP17		GP18	GP19			GP20		GP21		GP22		GP23		GP24			GP25		GP26		GP27		GP28		GP29	

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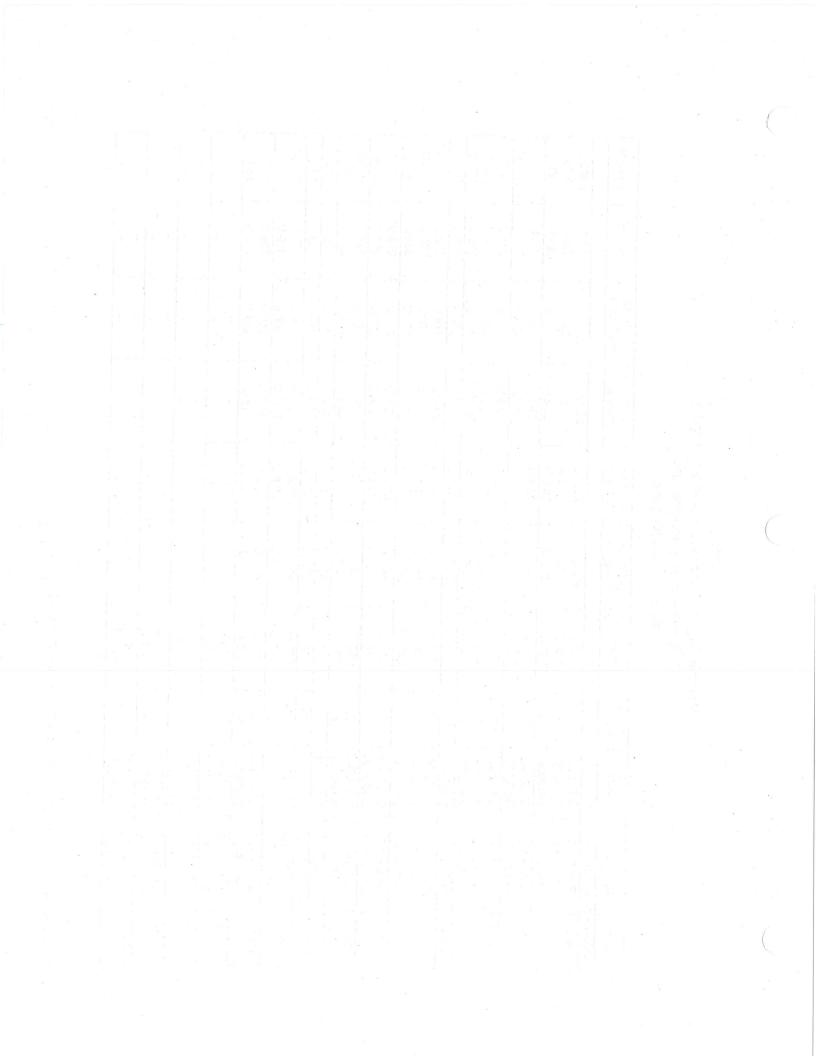
2,2-Dichloro-10.0 U 15.0 U 93.8 U 12.2 U 169 U propane 11.5 U 13.8 U 52.8 U 14.6 U 9.22 U 148 U ł I I I ł 1,4-Dichloro-7.49 U 26.4 U 5.02 U 73.9 U 6.12 U 6.91 U 7.30 U 4.61 U 93.8 U 169 U benzene 5.73 U l l l ł 1 1,3-Dichloro-73.9 U 6.12 U 7.49 U 6.91 U 26.4 U 7.30 U 4.61 U 93.8 U 5.02 U 169 U propane 5.73 U I I l I I 1,3-Dichloro-4.61 U 6.12 U 7.49 U 93.8 U 5.02 U 73.9 U 26.4 U 169 U 6.91 U 7.30 U benzene 5.73 U ł 1 ł I 1 1,3,5-Trimethyl-7.49 U 73.9 U 93.8 U 5.02 U 6.12 U benzene 6.91 U 26.4 U 7.30 U 4.61 U 169 U 5.73 U l ł l I 1 1,2-Dichloro-7.49 U 26.4 U 4.61 U 93.8 U 5.02 U 73.9 U 6.12 U propane 6.91 U 7.30 U 5.73 U 169 U ł L I I I 1,2-Dichloro-1.87 U 93.8 U 1.26 U 18.5 U 169 U 1.73 U 1.83 U 1.43 U 6.60 U 1.15 U 1.53 U ethane 1 l I 1 I Depth (ft bgs) 0.5 0.5 0.5 1.5 0.5 1.5 1.5 1.5 0.5 -9 G 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/12/2005 12/14/2005 12/15/2005 12/15/2005 12/12/2005 12/12/2005 12/12/2005 12/15/2005 Date Off-Site Hand-Auger Sampling **On-Site Geoprobe Sampling** HA1-1.5-Dup GP30-S-1.0 GP30-S-6.0 GP31-S-1.0 GP31-S-6.0 GP32-S-1.0 HA5-1.5 HA3-1.5 Sample ID HA1-0.5 HA5-0.5 HA1-1.5 HA2-0.5 HA2-1.5 HA3-0.5 HA4-0.5 HA4-1.5 Location GP30 GP32 HA5 HA3 HA4 GP31 HA2 HA1

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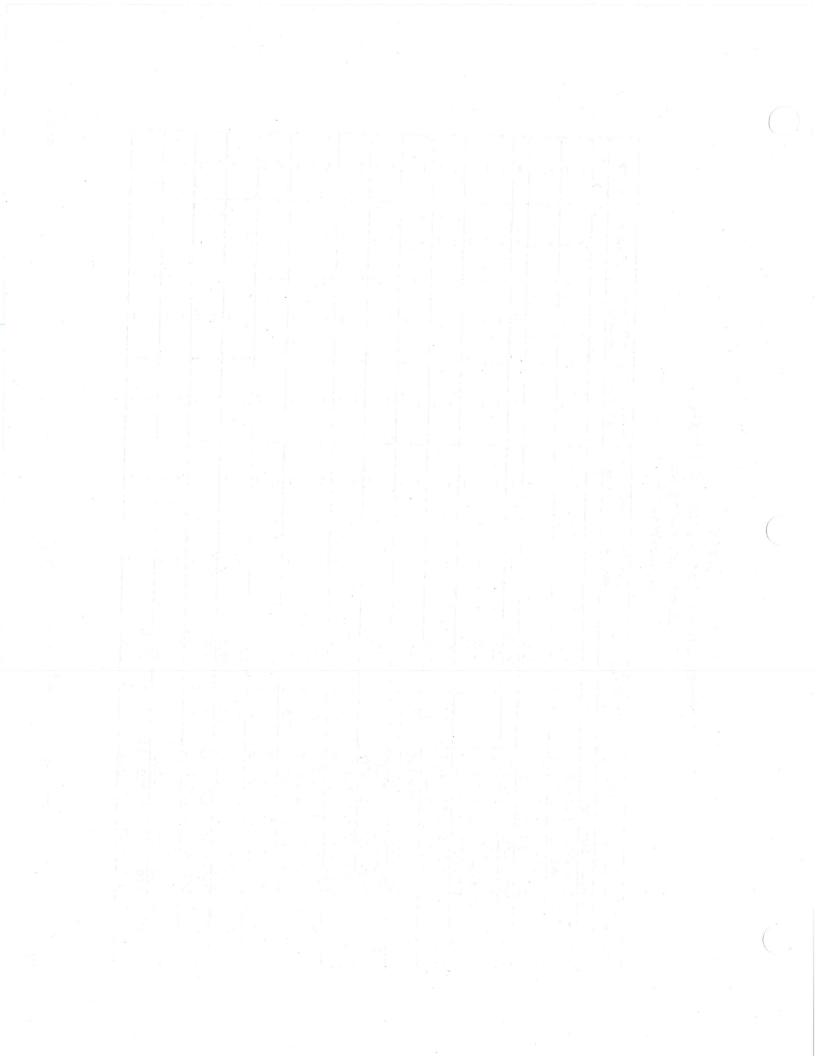
11.2 U 7.96 U 8.37 U 8.61 U Benzene 8.28 U 7.81 U 8.84 U 9.86 U 7.42 U 8.96 U 7.71 U 7.03 U 0.839 U 8.81 U 10.3 U 7.12 U 8.5 U 15.9 U 8.1 U 7.65 U 0.96 U I 2.55 1 1 1 I ł Acetone 207 U 195 U 221 U 246 U 185 U 279 U 199 U 209 U 215 U 193 U 259 U 178 U 176 U 202 U 213 U 191 U 220 U 224 U 397 U 17.6 13.4 29.1 I ł 1 1 L Ť I pentanone 4-Methyl-2-279 U 215 U 246 U 185 U 199 U 209 U 176 U 213 U 207 U 195 U 221 U 178 U 202 U 191 U 220 U 224 U 193 U 259 U 397 U 5.6 U 4.8 U 4.2 U ۱ I ł ł ł 1 1 4-Isopropyl-39.8 U 41.9 U 55.8 U 0.839 U 38.2 U 44.8 U 38.5 U 35.6 U 35.1 U 40.5 U 42.5 U 41.4 U 44.2 U 37.1 U 1.12 U 79.5 U toluene 51.7 U 49.3 U 43 U 0.96 U 39 U 44 U ł ł I I 1 1 ł 39.8 U 4-Chloro-35.6 U 35.1 U 40.5 U 41.4 U 44.2 U 49.3 U 37.1 U 55.8 U 41.9 U 43 U 0.839 U 44.8 U 38.5 U 1.12 U 38.2 U 51.7 U toluene 79.5 U 42.5 U 39 U 0.96 U 44 U 1 1 ۱ I I I I 55.8 U 39.8 U 41.9 U 2-Chloro-42.5 U 41.4 U 44.2 U 49.3 U 37.1 U 44.8 U 35.6 U 35.1 U 40.5 U 0.839 U 0.96 U 79.5 U 38.5 U toluene 1.12 U 38.2 U 51.7 U 39 U 43 U 44 U Ŧ ł I I ł I I 1 2-Butanone 63.0⁻U 15.7 U 279 U 199 U 209 U 215 U 14.3 U 13.6 U 14.7 U 176 U 202 U 213 U 207 U 195 U 221 U 185 U 193 U 178 U 246 U 397 U 224 U 259 U 191 U 220 U 215 47,6 123 5.6 U 4.8 U 4.2 U (ft bgs) 13.5 14.5 1.5 Depth 6.5 1.5 1.5 1.5 3 9 2 3 G N с 10 ഗ 4 14 2 ω 5 9 01 10 8 0 5 -12/13/2005 12/13/2005 12/14/2005 12/14/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 6/17/2005 6/16/2005 6/16/2005 6/16/2005 6/17/2005 6/17/2005 6/17/2005 6/17/2005 6/16/2005 6/16/2005 6/16/2005 6/16/2005 6/16/2005 6/16/2005 6/9/2005 6/9/2005 6/9/2005 6/9/2005 6/7/2005 6/7/2005 6/9/2005 6/7/2005 Date **On-Site Geoprobe Sampling** GP10-S-1.5 3P10-S-13.5 GP11-S-2.0 GP11-S-6.5 GP12-S-3.0 GP12-S-5.0 GP13-S-1.0 GP13-S-6.0 GP14-S-3.0 GP14-S-6.0 GP15-S-3.0 GP15-S-6.0 GP5-S-14.0 GP6-S-14.5 GP7-S-8.0 GP8-S-1.5 GP2-S-10.0 GP7-S-2.0 GP9-S-2.0 3P1-S-10.0 GP5-S-1.5 GP5-S-8.0 GP6-S-1.0 GP3-S-2.0 GP3-S-6.0 GP4-S-1.5 GP1-S-6.0 GP2-S-1.0 GP3-S-14 Sample ID GP1-S-1.5 GP15 GP12 GP13 GP14 GP10 Location GP11 GP8 GP9 GP6 GP4 GP5 GP7 GP3 GP1 GP2

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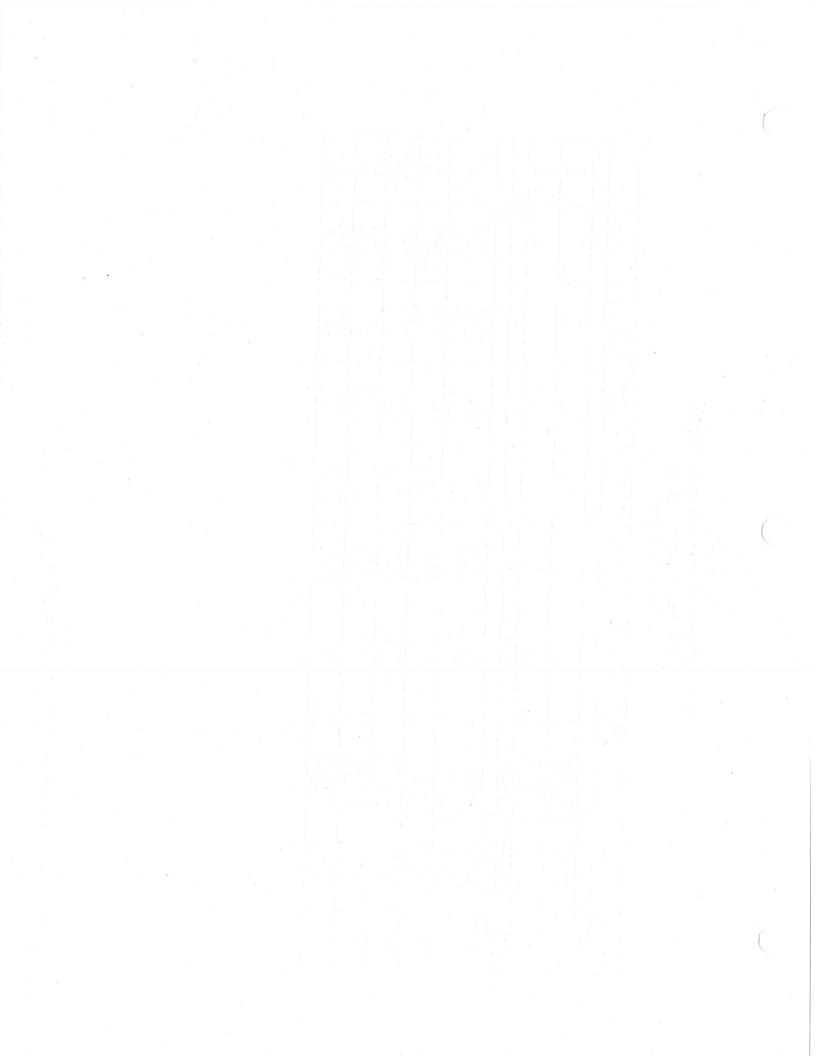
Benzene ł I I I 1 E 1 1 ł 1 ł ł 1 ١ I I 1 ł ł 1 I Acetone I I ł I ł l 1 I. ł 1 T 1 ł 1 I l ł L ł ١ I ł I ł I ł ł pentanone 4-Methyl-2ł ł l ł ł I ł 1 Ł 1 I I I 1 ł l ł 1 ł I I 1 L 1 4-Isopropyltoluene l ł 1 I ł I I 1 1 1 1 I ł 1 I I ł I 1 ł 1 ł 4-Chlorotoluene I I ł ł I I 1 Ĩ I ł 1 I ł ł 1 I I I I I 1 2-Chlorotoluene ł l ł 1 I ł 1 1 ł 1 ł 1 ł ł 1 1 I I I 2-Butanone 14.6 U 13.0 U 14.8 U 12.3 U 11.2 U 14.8 U 12.1 U 15.9 U 13.2 U 13.6 U 10.8 U 13.6 U 15.5 U 15.0 U 17.0 U 12.8 U 13.1 U 16.3 U 12.7 U 14.2 U 11.1 U 12.8 66.3 66.7 29.5 22.3 60.1 37.5 21.7 Depth (ft bgs) 10.5 6.5 9.5 33 6.5 -**~** ~ 9 10 **സ** സ 7 9 ŝ Θ 12/12/2005 12/12/2005 12/12/2005 12/14/2005 12/14/2005 12/14/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/14/2005 12/13/2005 12/14/2005 12/14/2005 12/13/2005 12/14/2005 12/14/2005 12/14/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 Date **On-Site Geoprobe Sampling** GP24-S-3.0-Dup GP19-S-1.0-Dup GP27-S-13.0 GP23-S-10.5 GP29-S-1.0 GP29-S-6.0 GP22-S-10.0 GP24-S-3.0 GP24-S-6.5 GP25-S-1.0 GP25-S-7.0 GP26-S-1.0 GP26-S-9.5 GP27-S-1.0 GP28-S-1.0 GP28-S-7.0 GP23-S-7.0 GP21-S-6.5 GP22-S-1.0 GP20-S-1.0 GP20-S-6.0 GP21-S-1.0 GP18-S-1.0 GP19-S-1.0 GP19-S-7.0 GP16-S-1.0 GP17-S-1.0 GP17-S-6.0 GP16-S-5.0 Sample ID GP29 GP25 GP26 GP28 GP27 Location GP24 GP22 GP23 GP16 GP18 GP19 GP20 GP21 GP17

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2.25 U 22.2 U 1.84 U 2.19 U 1.38 U 93.8 U 1.51 U 169 U 2.07 U Benzene 1.72 U 7.92 U ١ ł ł 1 Ĭ. 1690 U 36.7 U 30.1 U 444 U 41.5 U 158 U 43.8 U 938 U Acetone 27.7 U 80.3 34.4 U ł I 1 1 ł 4-Methyl-2pentanone 1690 U 29.9 U 20.1 U 24.5 U 18.4 U 296 U 27.7 U 938 U 22.9 U 106 U 29.2 U 1 1 I I ł 4-lsopropyl-7.49 U 26.4 U 93.8 U 5.02 U 73.9 U 6.12 U 169 U 6.91 U 7.30 U 4.61 U toluene 5.73 U ł I I I ł 7.49 U 4-Chloro-26.4 U 4.61 U 93.8 U 5.02 U 73.9 U 6.12 U 169 U 6.91 U 7.30 U 5.73 U toluene ١ I I I 26.4 U 4.61 U 5.02 U 73.9 U 6.12 U 7.49 U 7.30 U 93.8 U 169 U 2-Chloro-6.91 U 5.73 U toluene ł ł I I I 2-Butanone 15.1 U 18.4 U 1690 U 79.2 U 21.9 U 13.8 U 938 U 222 U 20.7 U 12.1 U 14.2 U 17.2 U 27.2 56.8 16.9 52.6 (ft bgs) 0.5 0.5 Depth 0.5 1.5 0.5 1.5 1.5 1.5 1.5 0.5 ω --9 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/12/2005 12/12/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/14/2005 12/12/2005 12/12/2005 Date Off-Site Hand-Auger Sampling **On-Site Geoprobe Sampling** HA1-1.5-Dup GP31-S-6.0 GP30-S-1.0 GP30-S-6.0 GP31-S-1.0 GP32-S-1.0 HA5-1.5 HA5-0.5 Sample ID HA2-0.5 HA4-1.5 HA1-0.5 HA1-1.5 HA2-1.5 HA3-0.5 HA3-1.5 HA4-0.5 Location GP32 HA5 GP30 HA3 HA4 GP31 HA1 HA2

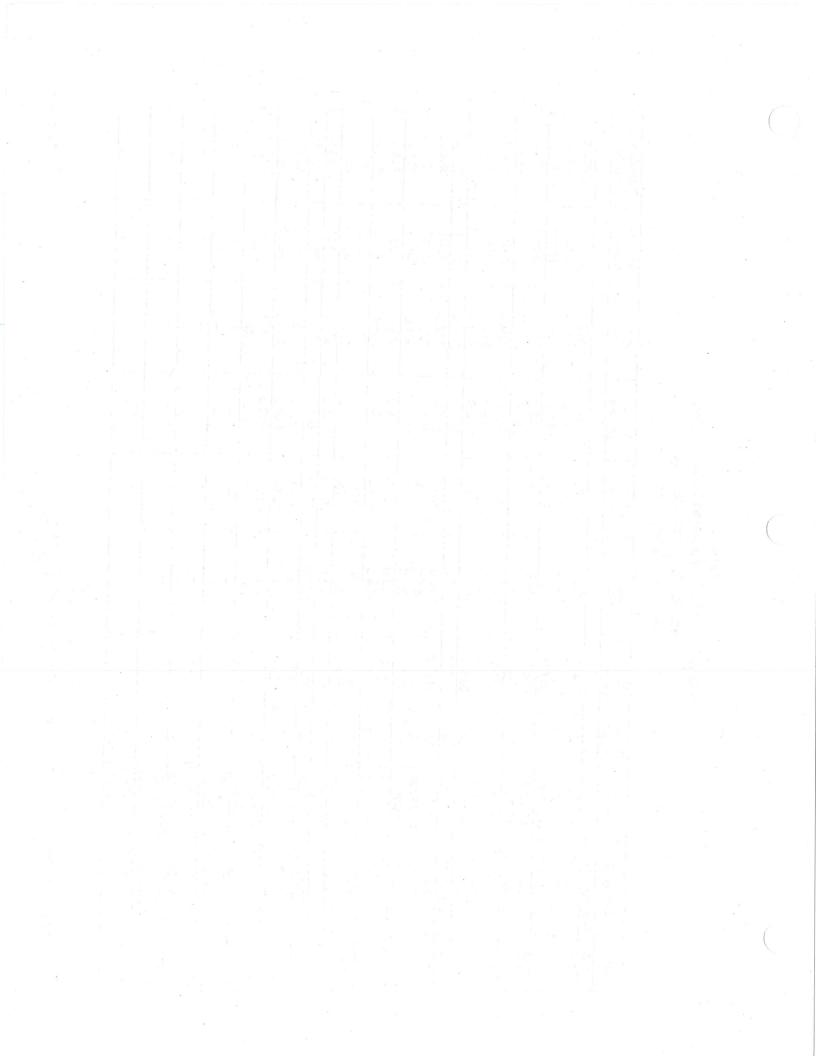
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Volatile Organic Compounds in Soil (µg/kg) Precision Engineering, Inc. Seattle, Washington

		*	Denth	Bromo-	Bromodichloro-	Bromo-	Bromo-	Carbon	Chloro-	Chlorobromo-
Location	Sample ID	Date	(ft bgs)	benzene	methane	form	methane	Tetrachloride	benzene	methane
On-Site 0	On-Site Geoprobe Sampling	ing							1,000,0	11 068 0
100	GP1-S-15	6/7/2005	1.5	0.839 U	0.839 U	0.839 U	0.839 U	0.839 U	0.839 U	0.039 0
5		6/7/2005	ų	1.12 U	1.12 U	1.12 U	1.12 U	1.12 U	1.12 U	1.12 U
	GP1-S-100	6/9/2005	10	38.2 U	38.2 U	38.2 U	38.2 U	7.65 U	38.2 U	38.2 U
Cau	01-2-02	6/7/2005	-	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U
GFZ,		6/9/2005	. 01	44 U	44 U	44 U	44 U	8.81 U	44 U	44 U
503	GP3-S-20	6/9/2005	2	79.5 U	79.5 U	79.5 U	79.5 U	15.9 U	79.5 U	79.5 U
	C 2-2-C 10	6/9/2005	9	44.8 U	44.8 U	44.8 U	44.8 U	8.96 U	44.8 U	44.8 U
	GP3-S-14	6/9/2005	14	38.5 U	38.5 U	38.5 U	38.5 U	7.71 U	38.5 U	38.5 U
Vac	GP4-S-15	6/16/2005	1.5	51.7 U	51.7 U	51.7 U	51.7 U	10.3 U	51.7 U	n / l.c
1 10 UD2	GP5-S-15	6/16/2005	1.5	35.6 U	35.6 U	35.6 U	35.6 U	7.12 U	35.6 U	35.6 U
5	GP5-S-8.0	6/16/2005	80	35.1 U	35.1 U	35.1 U	35.1 U	7.03 U	35.1 U	30. I U
	GP5-S-14.0	6/16/2005	14	40.5 U	40.5 U	40.5 U	40.5 U	8.1 U	40.5 U	40.5 0
GP6	GP6-S-1.0	6/16/2005	-	42.5 U	42.5 U	42.5 U	42.5 U	8.5 U	42.5 U	0 0.74
) j	GP6-S-14.5	6/16/2005	14.5	41.4 U	41.4 U	41.4 U	41.4 U	8.28 U	41.4 U	41.4 U
207	GP7-S-20	6/16/2005	2	39 U	39 U	39 U	39 U	7.81 U	39 U	39 0
5		6/16/2005	œ	44.2 U	44.2 U	44.2 U	44.2 U	8.84 U	44.2 U	44.2 U
	CD8 C 1 F	6/16/2005	1.5	49.3 U	49.3 U	49.3 U	49.3 U	9.86 U	49.3 U	49.3 U
040	0.1-0-0-00	0070010	2.0	37 111	37.1 U	37.1 U	37.1 U	7.42 U	37.1 U	37.1 U
Gha	0-7-9-9-7-0 0-7-0-7-1	2/1/1/2002	14	55 8 11	55.8.11	55.8 U	55.8 U	11.2 U	55.8 U	55.8 U
GP10	G.1-2-01-45	CUU2/11/0	с. г. с.	20.00	39.8 U	39.8 U	39.8 U	7.96 U	39.8 U	39.8 U
	GF 10-0-10.0	100012110	2	41011	41911	419U	41.9 U	8.37 U	41.9 U	41.9 U
GP11	GP11-S-2.0	GNN7//1/9		4. 	11 67	11 51	43 11	8.61 U	43 U	43 U
s	GP11-S-6.5	6/17/2005	6.9	43 0	4° 0	2			1	1
GP12	GP12-S-3.0	12/13/2005	ო 	I	I	I	1		I	I
	GP12-S-5.0	12/13/2005	5	1	1	1	1			
GP13	GP13-S-1.0	12/14/2005	~	I,	I	I	I	1		I
	GP13-S-6.0	12/14/2005	9	1	-	1	1	1		1
GP14	GP14-S-3.0	12/13/2005		l	1	I	I	1		I
	GP14-S-6.0	12/13/2005	9	1	1	1	I			
GP15	GP15-S-3.0	12/13/2005	ი	I	1	Ľ	I	1		ļ
	GP15-S-6.0	12/13/2005		1	1	1	1	÷ I	-	

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Chlorobromomethane I I ł ł I I ł 1 ł I ł ł I 1 I ł ł 1 ł I ł 1 benzene Chloro-I ł 1 Ì. I l I I I ł I ۱ 1 I 1 I 1 1 ł I l 1 1 1 1 Tetrachloride Carbon - 1 I I. ł l 1 ł ł I 1 I l ł I 1 ł ł 1 1 l I 1 ł I methane Bromoł 1 ł I ł 1 1 1 1 ł 1 1 ł ł 1 I I ł I l 1 1 1 ł Bromoł I I form I I ļ L ł 1 1 ł 1 1 ł. ł ł ł Ĩ. 1 ł I 1 I ł I I L Bromodichloromethane I ł I 1 L I 1 I I 1 ł 1 1 l 1 1 I 1 I Ĩ I I I benzene Bromo-1 1 I 1 I 1 1 I 1 1 T 1 1 I I ł 1 I ł 1 I 1 I ł 1 1 1 Depth (ft bgs) 10.5 9.5 6.5 33 6.5 10 Θ ~ -ന 3 ~ ω ~ ~ 5 G 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/14/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/13/2005 12/14/2005 12/14/2005 12/12/2005 12/14/2005 12/13/2005 12/14/2005 12/14/2005 12/13/2005 12/13/2005 12/14/2005 12/14/2005 12/14/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 Date **On-Site Geoprobe Sampling** GP24-S-3.0-Dup GP19-S-1.0-Dup GP27-S-13.0 GP28-S-7.0 GP29-S-6.0 GP22-S-10.0 GP23-S-10.5 GP27-S-1.0 GP28-S-1.0 GP29-S-1.0 GP24-S-3.0 GP24-S-6.5 GP25-S-1.0 GP25-S-7.0 GP26-S-1.0 GP26-S-9.5 GP23-S-7.0 GP19-S-7.0 GP20-S-6.0 GP21-S-1.0 GP21-S-6.5 GP22-S-1.0 GP19-S-1.0 GP20-S-1.0 GP16-S-1.0 GP18-S-1.0 GP16-S-5.0 GP17-S-1.0 GP17-S-6.0 Sample ID GP26 GP28 GP29 GP25 Location GP27 GP22 GP23 GP24 GP16 GP18 GP19 GP20 GP21 GP17



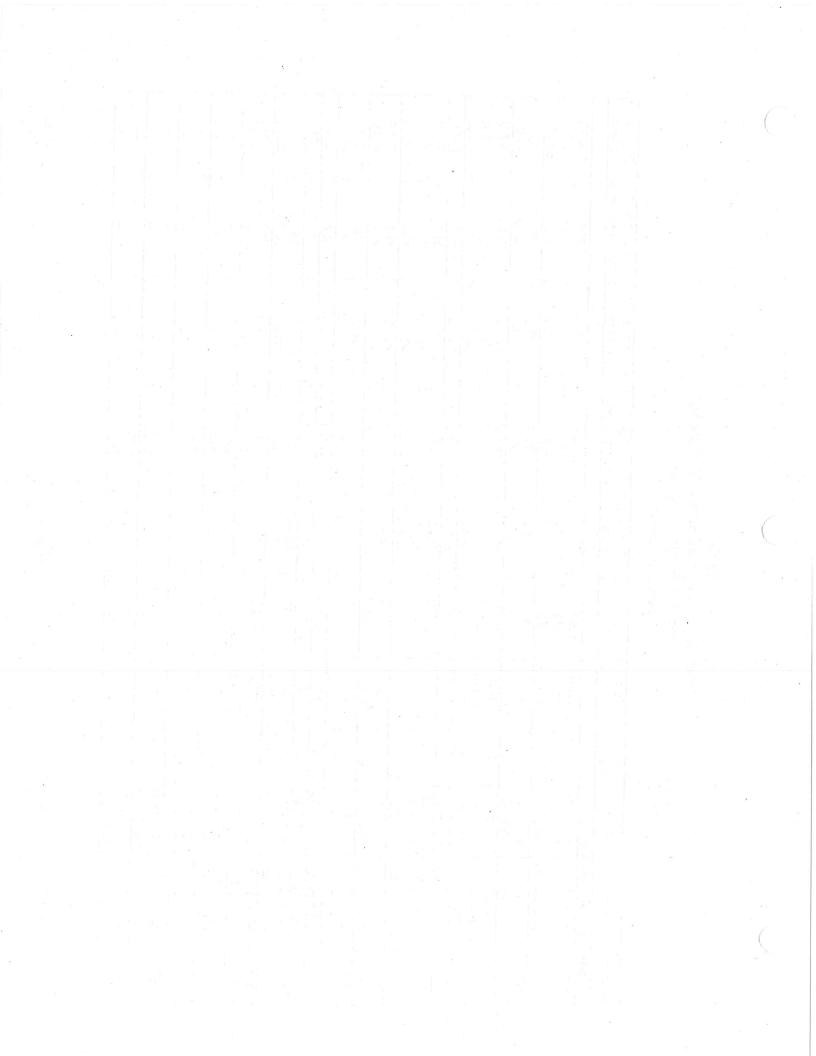
Chlorobromo-7.49 U 73.9 U 6.12 U 169 U 26.4 U 7.30 U 93.8 U 5.02 U methane 6.91 U 4.61 U 5.73 U ł I l ł ł 29.6 U 2.45 U 169 U 2.99 U 10.6 U 2.92 U 1.84 U 93.8 U 2.01 U Chlorobenzene 2.77 U 2.29 U I ł ł ł 1 Tetrachloride 93.8 U 5.02 U 73.9 U 6.12 U 169 U 7.49 U 6.91 U 26.4 U 7.30 U 4.61 U 5.73 U Carbon I 1 ł I 1 15.0 U 12.2 U 52.8 U 10.0 U 169 U methane 13.8 U 14.6 U 9.22 U 93.8 U 148 U 11.5 U Bromo-I ۱ l I 1 7.49 U 6.12 U 6.91 U 26.4 U 7.30 U 93.8 U 5.02 U 73.9 U 169 U 4.61 U Bromo-5.73 U form l l ł I I Bromodichloro-7.49 U 6.91 U 26.4 U 4.61 U 93.8 U 5.02 U 73.9 U 6.12 U 169 U methane 7.30 U 5.73 U l ł I I I 7.49 U 73.9 U 6.12 U 169 U 6.91 U 26.4 U 7.30 U 4.61 U 93.8 U 5.02 U benzene 5.73 U Bromo-I I I I 1 (ft bgs) Depth 1.5 0.5 1.5 0.5 1.5 0.5 0.5 0.5 1.5 1.5 Ю c 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/14/2005 12/15/2005 12/15/2005 12/15/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 Date **Off-Site Hand-Auger Sampling On-Site Geoprobe Sampling** HA1-1.5-Dup GP30-S-6.0 GP31-S-6.0 GP32-S-1.0 GP30-S-1.0 GP31-S-1.0 HA5-0.5 HA5-1.5 HA4-1.5 HA1-0.5 HA1-1.5 HA2-0.5 HA2-1.5 HA3-0.5 HA3-1.5 HA4-0.5 Sample ID Location GP30 GP32 HA4 HA5 GP31 HA3 HA1 HA2

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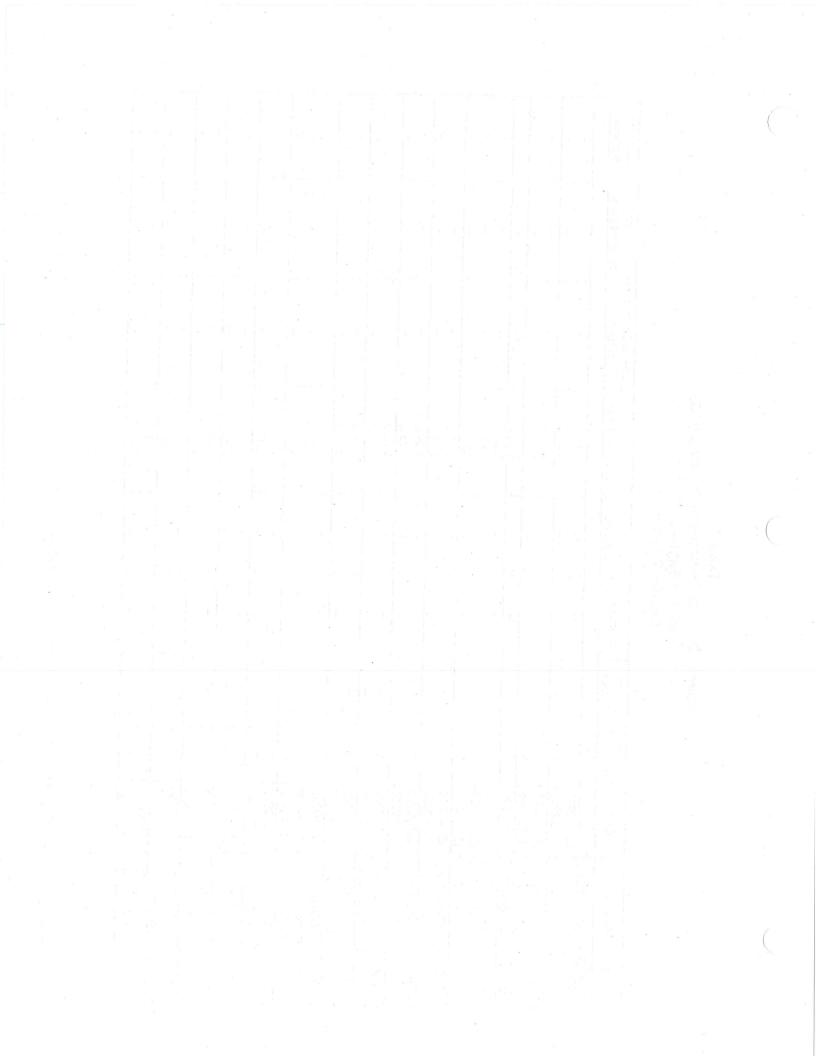
				_									Т		-		Т								Т			n	Т		٦
Dibromo- methane		0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51.7 U	35.6 U	35.1 U	40.5 U	42.5 U	41.4 U	39 U	44.2 U	49.3 U	37.1 U	55.8 U	39.8 U	41.9 U	43 U	I	1	1	1	I	1	l	1
Dibromo- chloromethane		0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51.7 U	35.6 U	35.1 U	40.5 U	42.5 U	41.4 U	39 U	44.2 U	49.3 U	× 37.1 U	55.8 U	39.8 U	41.9 U	43 U	1	1	ļ	1	1	l	I	1
cis-1,3-Dichloro- propene	1	0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51.7 U	35.6 U	35.1 U	40.5 U	42.5 U	41.4 U	39 N	44.2 U	49.3 U	37.1 U	55.8 U	39.8 U	41.9 U	43 U	I	1	1	1	1	1	1	I
cis-1,2- Dichloroethene		0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51.7 U	35.6 U	35.1 U	40.5 U	42.5 U	149	39 U	44.2 U	49.3 U	37.1 U	55.8 U	39.8 U	41.9 U	78.8	2.86 U	2.73 U	11.9 U	3.47 U	2.93 U	3.15 U	3.26 U	12.6 U
Chloro- methane		0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51.7 U	35.6 U	35.1 U	40.5 U	42.5 U	41.4 U	39 U	44.2 U	49.3 U	37.1 U	55.8.11	39.8 U	41.9 U	43 U	1	1	1	1	1	I	I	1
Chloroform		0.839 U	1.12 U	38.2 U	0.96 U	44 U	79.5 U	44.8 U	38.5 U	51.7 U	35.6 U	35.1 U	40.5 U	42.5 U	41.4 U	39 U	44.2 U	49.3 U	37.1 U	55 8 1 I	39.8 U	41.9 U	43 U	1	1	I	I	I	I	I	I
Chloro- ethane	0	0 839 11	1 12 11	76.5 U	0.96.0	88.1 U	159 U	89.6 U	77.1 U	103 U	71.2 U	70.3 U	81 U	85 U	82.8 U	78.1 U	88.4 U	98.6 U	11 6 74	11014	79.61	83.7 U	86.1 U	1	I	1	l	1	I	1	1
Depth (ft has)	1.1.2201	15	<u>.</u> c	0	-	10	2	G	14	1.5	1.5	ω	14	-	14.5	2	œ	15	2.0	1 4	13.5	6	6.5	3	Q	-	9	e	g	e	ű
Date		ETTIONE	6/7/2005	6/9/2005	6/7/2005	6/9/2005	6/9/2005	6/9/2005	6/9/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/17/200E	100012110	6/17/2005	6/17/2005	6/17/2005	12/13/2005	12/13/2005	12/14/2005	12/14/2005	12/13/2005	12/13/2005	12/13/2005	10/13/2005
Sample ID	On Site Cooncehe Sampling			0.01-0-120	01 2 200	0.1-2-2-0	GP3-S-2 0	C 2 2 2 2 2	GP3-S-14	GP4-S-15	GP5-S-1.5	GP5-S-8.0	GP5-S-14 0	GP6-S-10	GP6-S-14.5	GP7_S-7 0		CD8-C-1 5		0.7-0-2-0	GP10-2-1.0	C-11-2-10.0	GP11-S-6.5	GP12-S-3.0	GP12-S-5.0	GP13-S-1.0	GP13-S-6.0	GP14-S-3.0	GP14-S-6.0	GP15-S-3.0	0015 0 6 0
Location		Alle-lio	- 19			240	503) j		GP4	GP5))		GP6	5	207	5	000		679	6710	1100	5	GP12		GP13	2	GP14	5	GP15	

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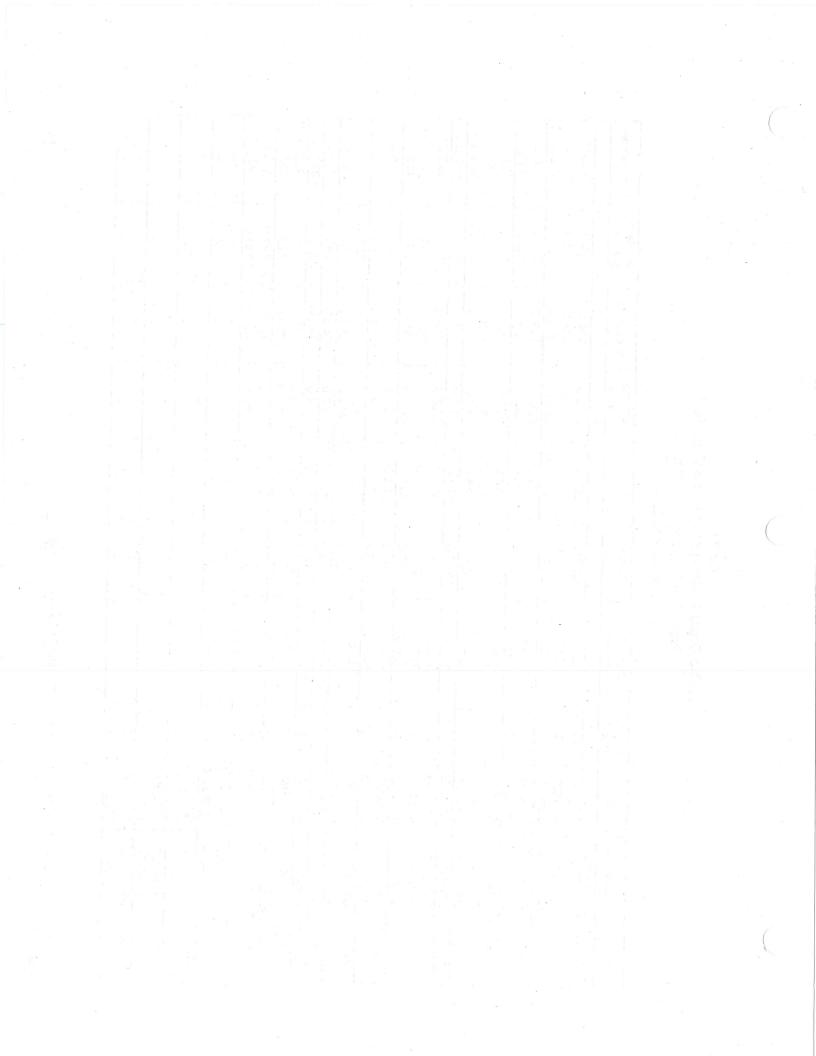
7.49 U 169 U 5.02 U 73.9 U 6.12 U methane 6.91 U 26.4 U 93.8 U Dibromo-7.30 U 4.61 U 5.73 U ł ۱ 1 I I chloromethane 6.12 U 7.49 U 26.4 U 73.9 U 169 U Dibromo-6.91 U 7.30 U 4.61 U 93.8 U 5.02 U 5.73 U l I I l I cis-1,3-Dichloro-7.49 U 73.9 U 6.12 U 5.02 U 169 U propene 6.91 U 26.4 U 7.30 U 4.61 U 93.8 U 5.73 U Ĩ I 1 I 1 Dichloroethene 93.8 U 44.4 U 3.67 U 4.49 U 4.15 U 2.77 U 3.01 U 169 U 15.8 U 4.38 U 3.99 U 4.09 U 2.87 U 2.84 U 3.44 U cis-1,2-2.42 U 12.2 U 15.0 U 10.0 U methane 13.8 U 52.8 U 14.6 U 9.22 U 469 U 148 U 844 U 11.5 U Chloroł ł ł ł I Chloroform 3.74 U 3.46 U 2.30 U 93.8 U 2.51 U 37.0 U 3.06 U 169 U 3.65 U 13.2 U 2.87 U l l ľ l I 7.49 U 5.02 U 73.9 U 6.12 U 169 U 7.30 U 4.61 U 6.91 U 5.73 U 26.4 U 93.8 U Chloroethane I I ł I 1 Depth (ft bgs) 0.5 1.5 0.5 1.5 0.5 1.5 0.5 1.5 1.5 0.5 1.5 ω 9 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/12/2005 12/12/2005 12/14/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/12/2005 12/12/2005 Date Off-Site Hand-Auger Sampling **On-Site Geoprobe Sampling** HA1-1.5-Dup GP32-S-1.0 GP31-S-1.0 HA5-1.5 GP30-S-6.0 GP31-S-6.0 HA5-0.5 GP30-S-1.0 HA3-1.5 Sample ID HA1-1.5 HA3-0.5 HA4-0.5 HA4-1.5 HA1-0.5 HA2-0.5 HA2-1.5 Location GP32 HA5 GP30 HA1 HA3 HA4 GP31 HA2

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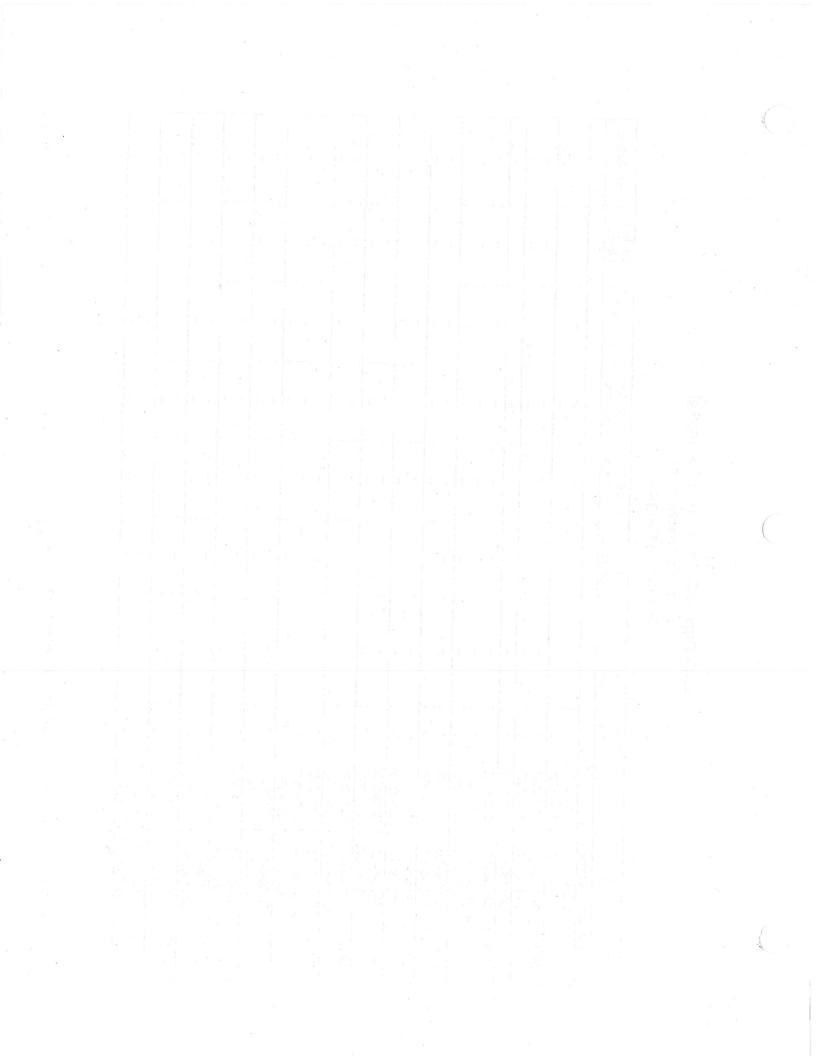
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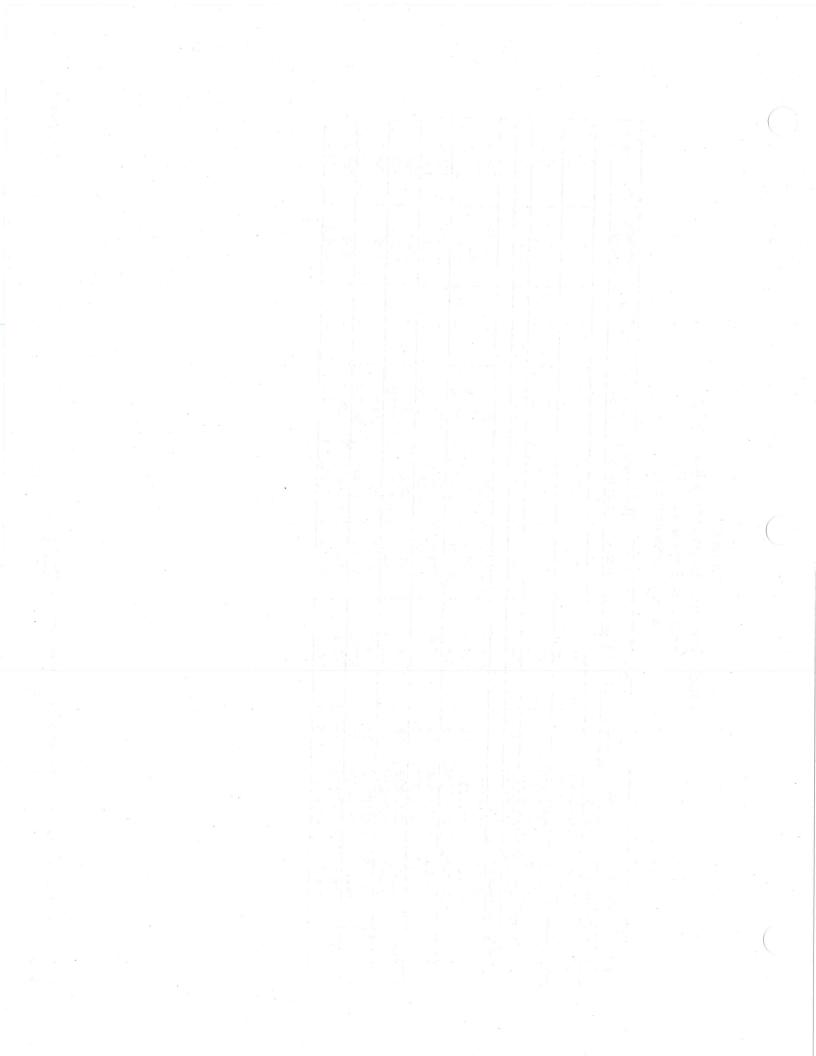
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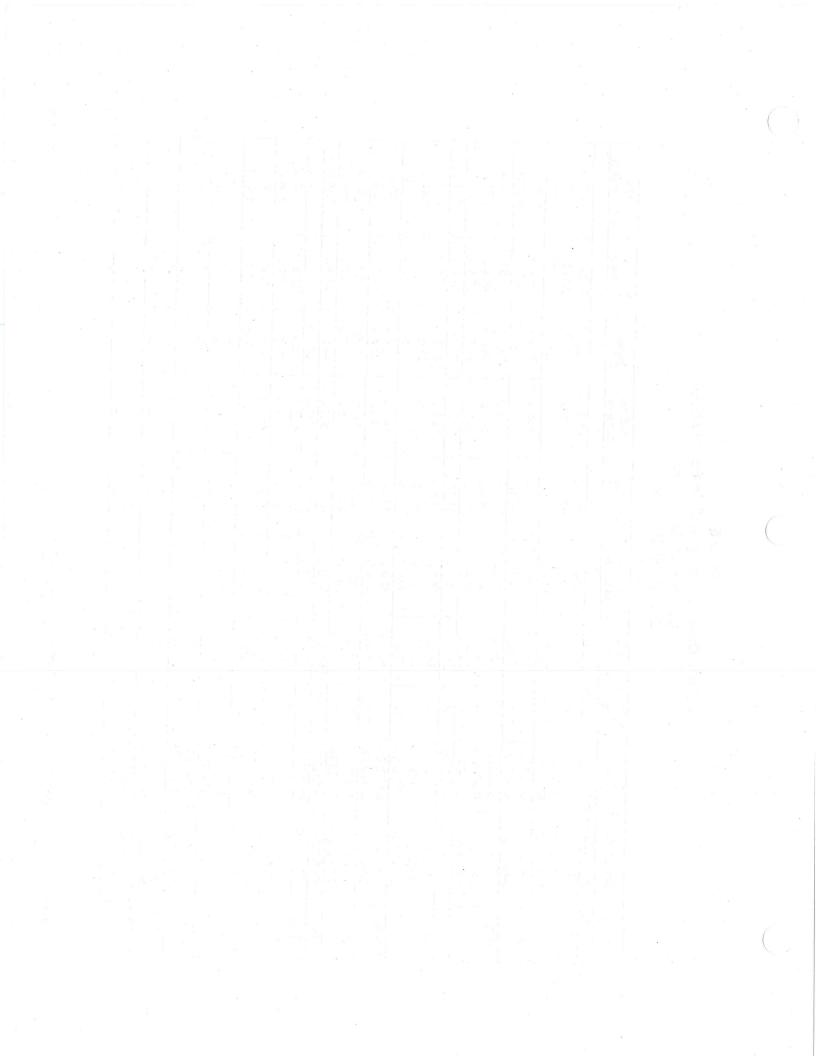
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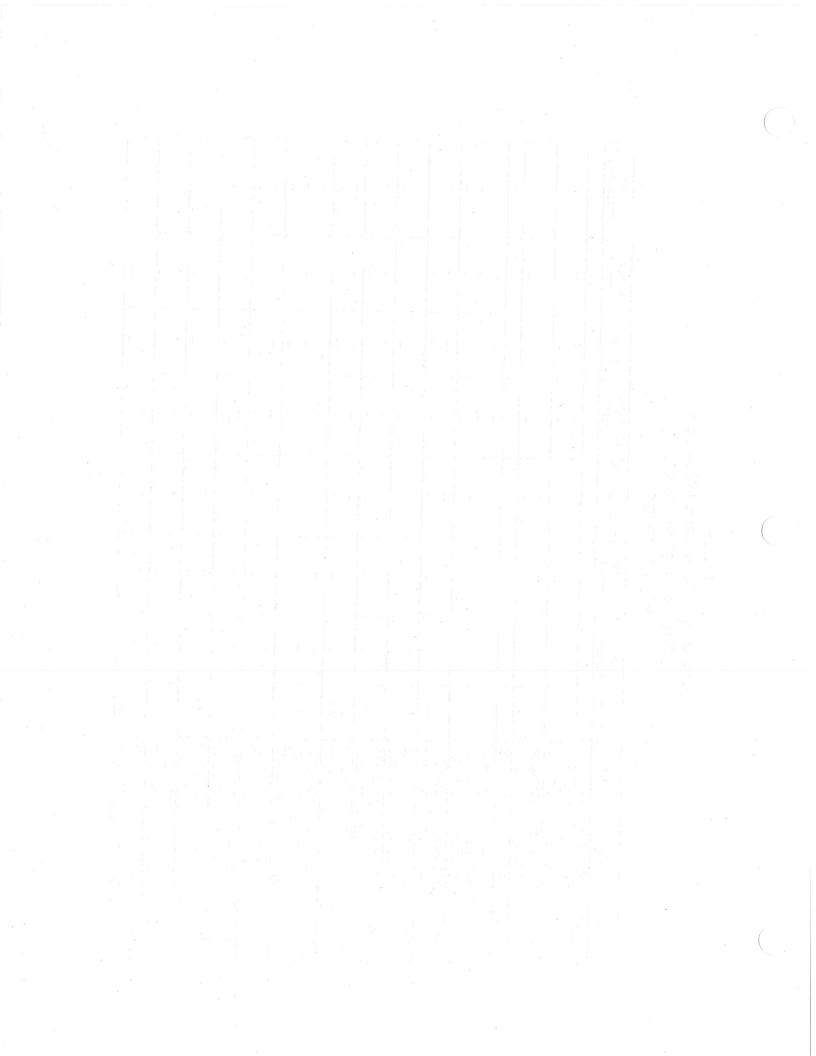
chloroethene 7.42 U 11.2 U 7.96 U 8.37 U 8.61 U 0.839 U 7.03 U 8.28 U 7.81 U 8.84 U 9.86 U 8.96 U 1.12 U 7.71 U 10.3 U 7.12 U 0.96 U 8.81 U 15.9 U 8.1 U 8.5 U 7.65 U I Tetra-I I L 1 ł tert-Butyl-44.2 U 37.1 U 55.8 U 39.8 U 35.1 U 41.4 U 49.3 U benzene 44.8 U 38.5 U 35.6 U 40.5 U 41.9 U 43 U 51.7 U 42.5 U 0.839 U 1.12 U 38.2 U 0.96 U 79.5 U 39 U 44 U l I I I. ł ł I ł 39.8 U 42.5 U 41.4 U 44.2 U 37.1 U 35.1 U 40.5 U 55.8 U 41.9 U 44.8 U 38.5 U 49.3 U 38.2 U 79.5 U 35.6 U 43 U Styrene 0.839 U 1.12 U 0.96 U 39 U 51.7 U 44 U I l l ł I I ł I sec-Butyl-55.8 U 44.2 U 39.8 U 35.1 U 42.5 U 49.3 U 37:1 U 41.9 U benzene 44.8 U 38.5 U 51.7 U 43 U 0.839 U 1.12 U 38.2 U 0.96 U 40.5 U 41.4 U 39 U 35.6 U 79.5 U 44 U l I l I I ł I I 55.8 U 39.8 U 41.9 U 37.1 U 44.2 U 35.1 U 40.5 U 41.4 U 49.3 U 43 U o-Xylene 38.2 U 44.8 U 35.6 U 38.5 U 42.5 U 0.839 U 1.12 U 0.96 U 79.5 U 51.7 U 39 U 44 U 1 I ł ł ł ł l 1 39.8 U 41.9 U 49.3 U 55.8 U 44.2 U 37.1 U n-Propylbenzene 35.6 U 35.1 U 40.5 U 42.5 U 44.8 U 38.5 U 51.7 U 43 U 0.839 U 1.12 U 0.96 U 79.5 U 41.4 U 38.2 U 39 U 44 U ł ł I 1 I 1 55.8 U 41.9 U 39.8 U 40.5 U 42.5 U 41.4 U 44.2 U benzene 35.6 U 35.1 U 1.12 U 38.2 U 0.96 U 79.5 U 44.8 U 38.5 U 49.3 U 37.1 U 43 U n-Butyl-0.839 U 39 U 51.7 U 44 U I 1 ł l I ł ł. 1 13.5 Depth (ft bgs) 14.5 6.5 <u>с</u> 1.5 9 3 9 1.5 1.5 2 e 5 9 3 4 2 00 1.5 14 10 0 9 ω -2 9 12/13/2005 12/13/2005 12/13/2005 12/13/2005 12/14/2005 12/14/2005 12/13/2005 12/13/2005 6/17/2005 6/17/2005 6/17/2005 6/17/2005 6/17/2005 6/16/2005 6/16/2005 6/16/2005 6/16/2005 6/16/2005 6/16/2005 6/16/2005 6/16/2005 6/16/2005 6/9/2005 6/9/2005 6/9/2005 6/7/2005 6/7/2005 6/9/2005 6/7/2005 6/9/2005 Date **On-Site Geoprobe Sampling** GP15-S-6.0 GP14-S-3.0 GP15-S-3.0 GP10-S-13.5 GP12-S-3.0 GP13-S-6.0 GP14-S-6.0 GP11-S-2.0 GP11-S-6.5 GP12-S-5.0 GP13-S-1.0 GP10-S-1.5 GP6-S-14.5 GP5-S-14.0 GP1-S-10.0 GP2-S-10.0 GP7-S-2.0 GP7-S-8.0 GP8-S-1.5 GP9-S-2.0 GP4-S-1.5 GP5-S-1.5 GP5-S-8.0 GP6-S-1.0 GP1-S-1.5 GP1-S-6.0 GP2-S-1.0 GP3-S-2.0 GP3-S-6.0 GP3-S-14 Sample ID GP15 GP14 GP12 GP13 GP10 GP11 Location GP9 GP8 GP4 GP5 GP6 GP7 GP3 GP1 GP2

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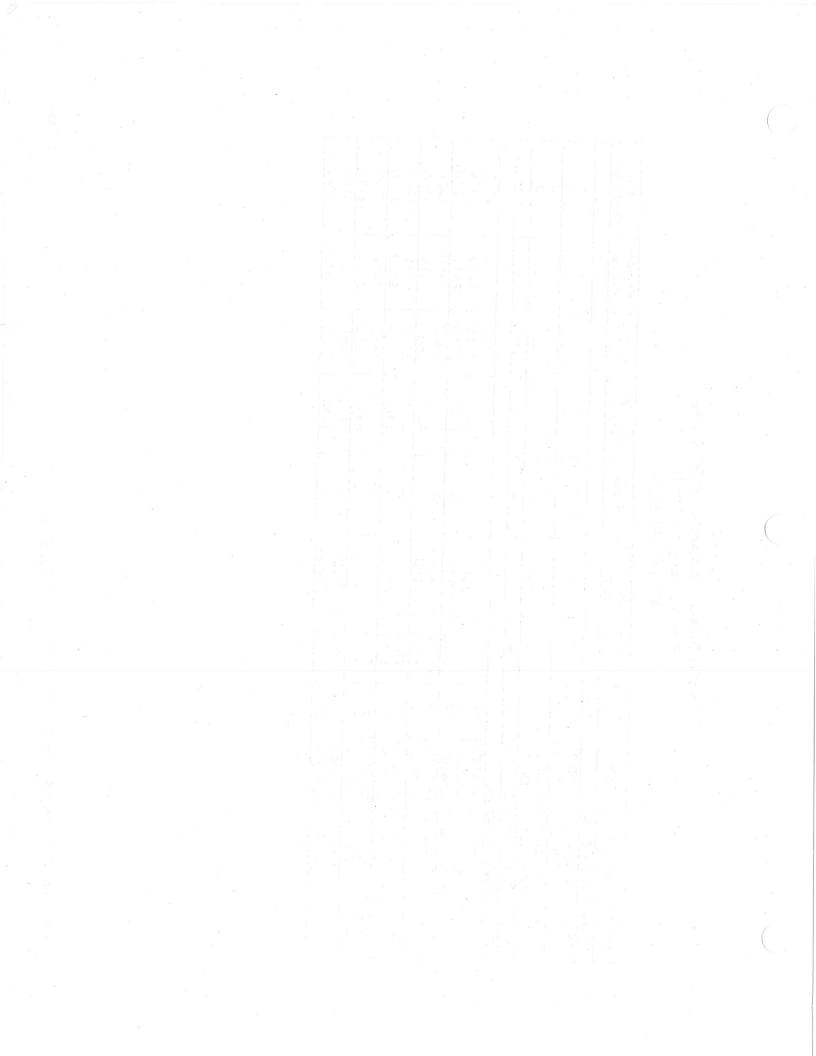
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chloroethene 29.6 U 2.45 U 2.99 U 10.6 U 2.92 U 1.84 U 93.8 U 2.01 U 169 U 2.29 U 2.77 U Tetrał I ł ł I benzene 169 U 7.49 U tert-Butyl-5.02 U 73.9 U 6.12 U 6.91 U 26.4 U 7.30 U 4.61 U 93.8 U 5.73 U I I I ł 1 14.8 U 1.22 U 169 U 1.50 U 5.28 U 0.922 U 93.8 U 1.00 U 1.15 U 1.38 U 1.46 U Styrene I l 1 I ł sec-Butyl-7.49 U 6.91 U 5.02 U 73.9 U 6.12 U benzene 5.73 U 7.30 U 4.61 U 93.8 U 169 U 26.4 U I l I I ۱ o-Xylene I I I l I I 1 I ł. 1 1 Ĩ I 1 1 4.61 U 6.12 U 7.49 U 26.4 U 5.02 U 6.91 U 7.30 U 73.9 U 169 U n-Propylbenzene 93.8 U 5.73 U l I 1 ł 1 7.49 U 4.61 U 93.8 U 5.02 U 73.9 U 6.12 U 169 U 6.91 U 26.4 U 7.30 U benzene 5.73 U n-Butyl-۱ l 1 ١ 1 Depth (ft bgs) 0.5 1.5 0.5 0.5 1.5 0.5 1.5 0.5 1.5 1.5 9 9 ~ ~ 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/14/2005 12/15/2005 Date Off-Site Hand-Auger Sampling **On-Site Geoprobe Sampling** HA1-1.5-Dup GP32-S-1.0 GP30-S-6.0 GP31-S-1.0 GP31-S-6.0 GP30-S-1.0 HA3-0.5 Sample ID HA4-0.5 HA4-1.5 HA5-0.5 HA5-1.5 HA1-1.5 HA2-0.5 HA2-1.5 HA3-1.5 HA1-0.5 Location GP32 HA5 GP30 HA3 HA4 GP31 HA1 HA2

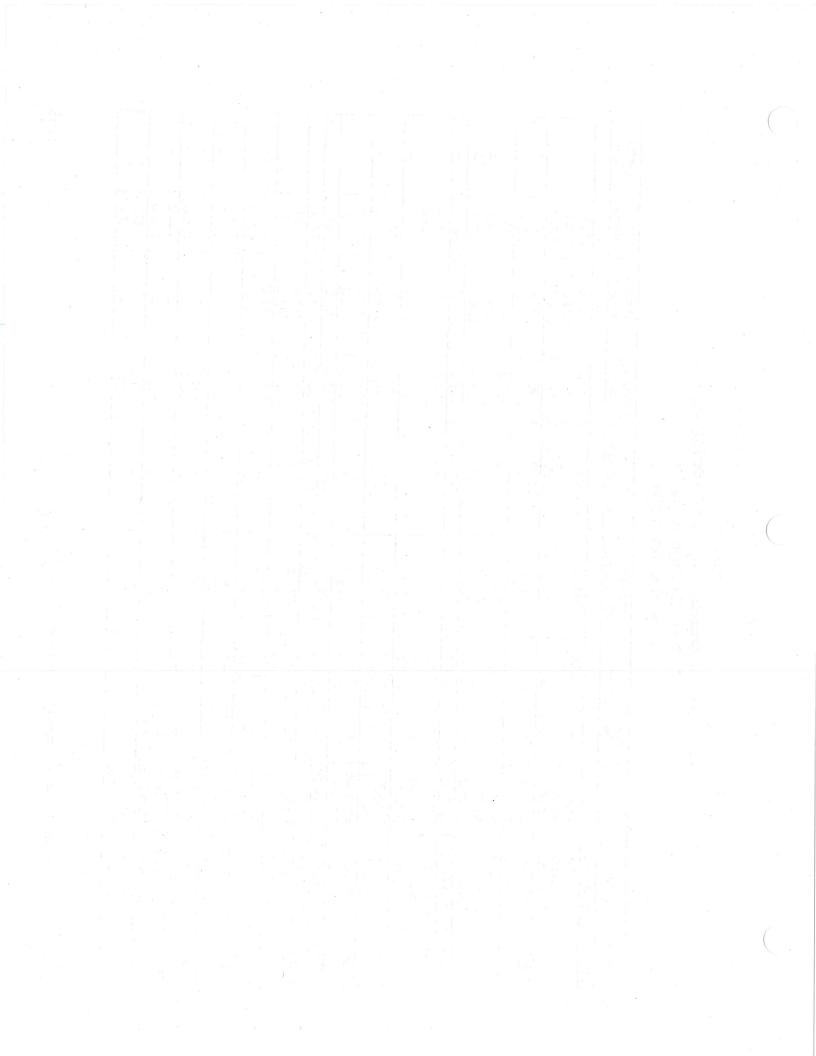
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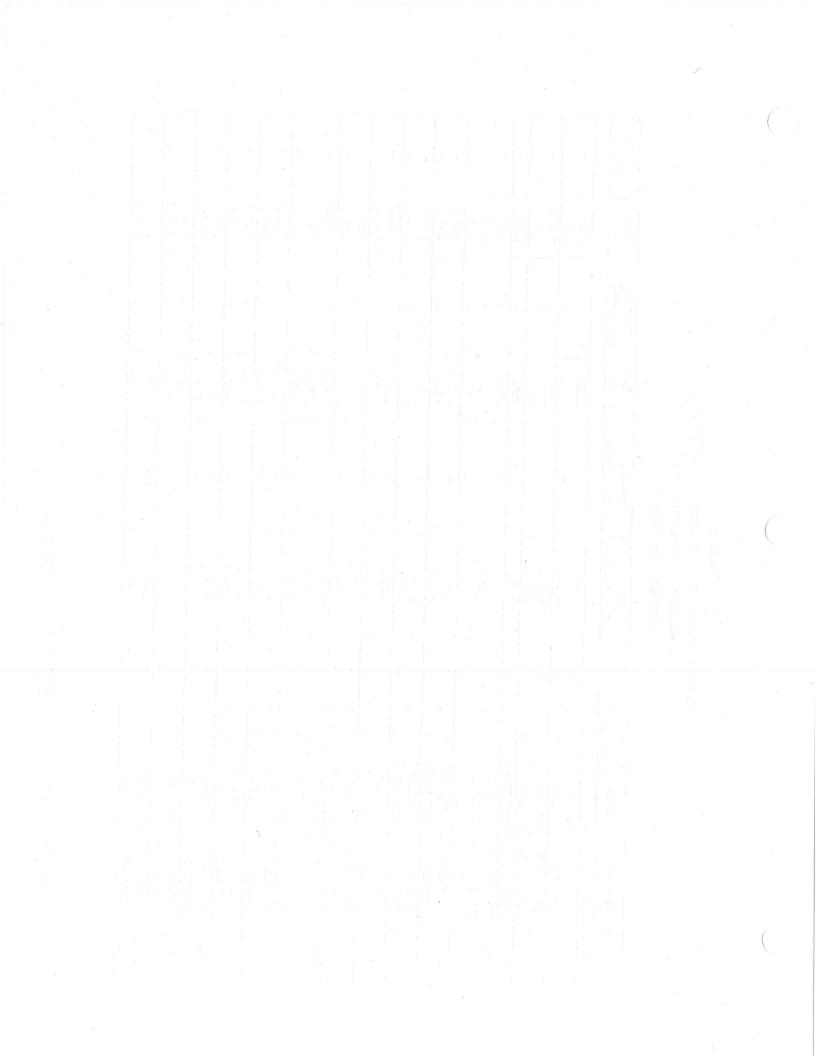
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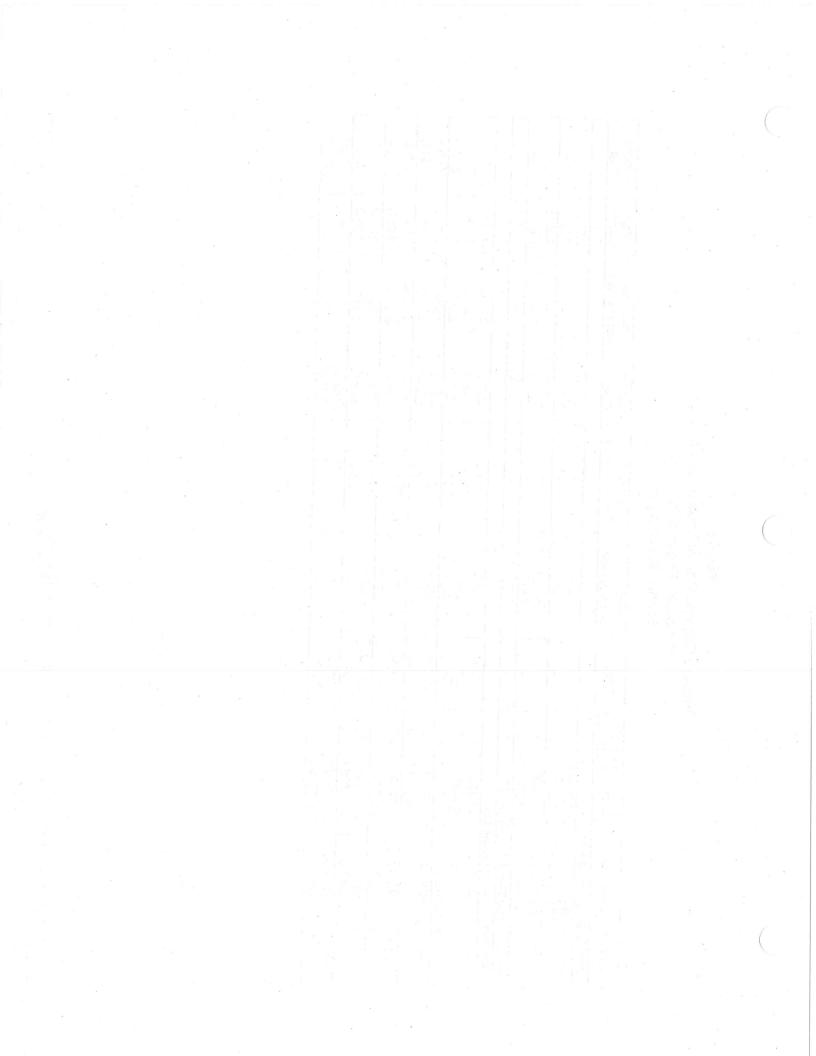


Xylenes, I Total ł I I ł ł ł ł I ł 1 ł ł ł 1 ł ł 1 ł ł I ł 2.17 U 2.05 U 2.47 U 2.43 U 2.65 U 2.19 U 1.80 U 2.27 U 2.58 U 2.50 U 2.83 U 2.13 U 2.47 U 2.01 U 1.87 U 1.89 U 2.18 U 2.40 U 2.62 U 4.52 U 2.79 U 2.26 U chloride 2.12 U 2.09 U 2.27 U 2.36 U 2.67 U 2.72 U 1.85 U Vinyl fluoromethane Trichlorol 1 I T I ł 1 1 1 ł 1 ł 1 ۱ 1 1 - I ł 1 ł ł ł 1 I - 1 ł. 1.87 U 2.47 U 2.47 U 2.01 U 2.19 U 2.43 U 2.50 U 2.65 U 2.58 U 2.83 U 2.05 U 2.17 U Trichloro-2.26 U 1.89 U 1.80 U 2.27 U 2.13 U 2.62 U 4.52 U 2.18 U 2.79 U 2.40 U 2.67 U 2.72 U 2.12 U 2.09 U 2.27 U ethene 3.63 3.43 Dichloropropene trans-1,3-İ ł ł 1 1 1 I. 1 l ł ł ł 1 ł I ł l 1 1 I ł I I ł Dichloroethene 2.43 U 2.05 U 2.47 U 2.19 U 2.17 U 2.58 U 2.50 U 2.83 U 2.13 U 2.47 U 2.01 U 2.65 U 1.89 U 2.27 U 1.87 U 2.79 U trans-1.2-2.72 U 4.52 U 2.18 U 1.80 U 2.12 U 2.27 U 2.67 U 2.40 U 2.62 U 2.26 U 1.85 U 2.36 U 2.09 U Toluene 1 ł ł I I. 1 1 I 1 I I 1 ł I I 1 I ł 1 1 ł 1 (ft bgs) 10.5 9.5 Depth 6.5 6.5 13 9 10 З 3 9 -5 G -12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/14/2005 12/14/2005 12/14/2005 12/13/2005 12/14/2005 12/14/2005 12/14/2005 12/14/2005 12/13/2005 12/13/2005 12/13/2005 12/14/2005 12/14/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 12/13/2005 Date **On-Site Geoprobe Sampling** GP24-S-3.0-Dup GP19-S-1.0-Dup GP27-S-13.0 GP28-S-7.0 GP29-S-1.0 GP29-S-6.0 GP23-S-10.5 GP22-S-10.0 GP26-S-1.0 GP26-S-9.5 GP28-S-1.0 GP24-S-6.5 GP25-S-1.0 GP25-S-7.0 GP27-S-1.0 GP23-S-7.0 GP24-S-3.0 GP20-S-6.0 GP22-S-1.0 GP19-S-1.0 GP19-S-7.0 GP20-S-1.0 GP21-S-1.0 GP21-S-6.5 GP16-S-1.0 GP17-S-1.0 GP17-S-6.0 GP18-S-1.0 GP16-S-5.0 Sample ID GP29 GP25 GP26 GP28 Location GP24 GP27 GP22 GP23 GP20 GP16 GP18 GP19 GP17 GP21



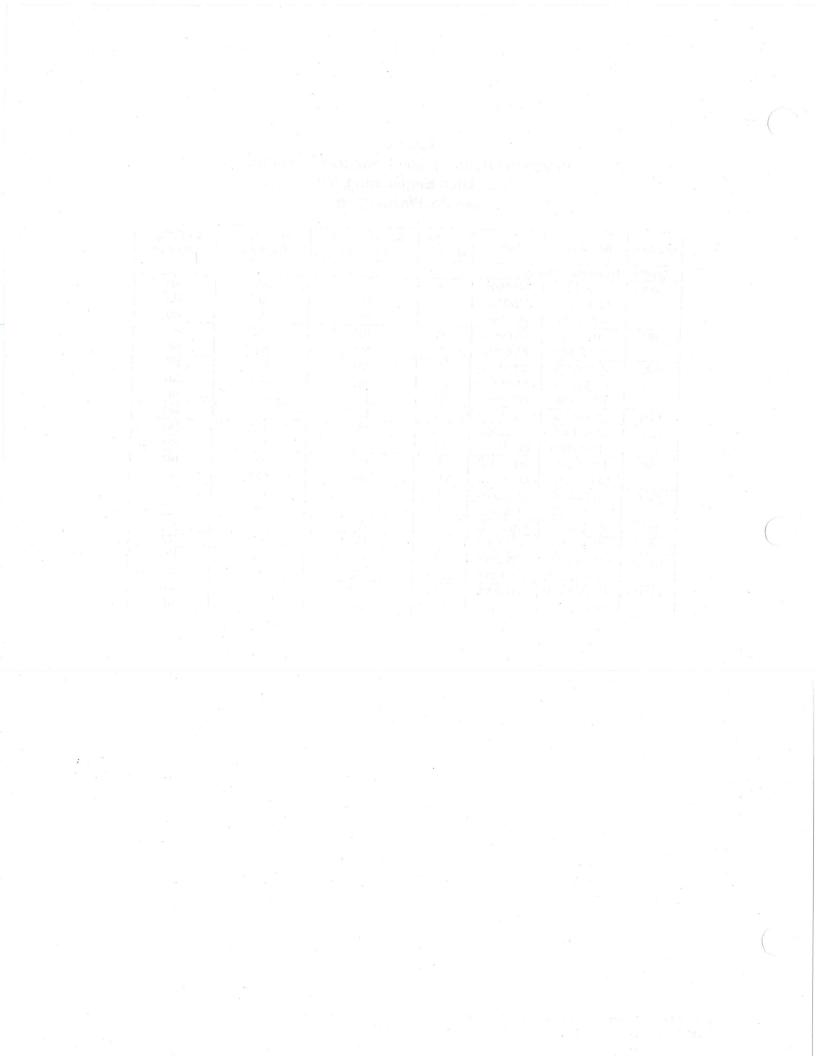
			-				5	Г	Т	Т				-			Т		-		_	Т	2		1
Xylenes,	Total			I	I	1	1		1		11.5 U	13 8 11	0.0	52.8 U	14.6 U	11 00 0	3.22.0	281 U	10.0 U	148 U	10 01	0 2.21	506 U	15011	
Vinvl	chloride		11 06 6	0 60.7	3.32 U	2.02 U	3 41 11		n /c.7		2.87 U	2 46 11	0.400	13.2 U	3 65 U		2.30 U	93.8 U	2.51 U	37.011		3.00 U	169 U	3 74 11	0
Trichloro-	fluoromethane			1		1			1		5 73 11		0.910	26.4 U	7 30 11		4.61 U	93.8 U	5.02 U	73 0 11		6.12 U	169 U	7 10 11	0.04.
Trichloro-	ethene			2.39 U	3.32 U	0 00 11	0 40.7	0.410	2.37 U		11 28 6		3.46 U	13.2 U	0.6E 11	0.00	2.30 U	93.8 U	2.51 U		00.10	3.06 U	1691		0.140
trans 1 3	Dichloropropene			1	I		ł	ł	I	K	11 67 7	0.04.1	1.73 U	6 60 U		1.63.0	1.15 U	93.8 U	1 26 11	0.01	U C.81	1.53 U	16011	0.00-	1.8/ U
	Dichloroethene			2.39 U	3 37 11	0 20.0	2.02 U	3.41 U	2.37 U			2.8/ U	3.46 U	13 2 11	0.2.01	3.65 U	2.30 U	03 Å 11	0.000	2.010	37.0 U	3 06 U	11001	108 0	3.74 U
	Toluene]		I	1.	1	1			1.72 U	2 07 11		1.32.0	2.19 U	1 38 U	11 8 60			22.2 U	1 84 11	D 1007	169 0	2.25 U
	Depth (# has)	(in uge)		~	- u	0	-	9	1			0.5	л Т		C.I	0.5	ע ר		0.1	c.1	0.5	ц т	<u>.</u>	0.5	1.5
	Date		ing	10/0/0/0F	2000/07/07	CUU2/21/21	12/12/2005	12/12/2005	12/14/2005	:	pling	12/15/2005	10/12/10/2	10002101121	GUU2/GL/21	12/15/2005	10/16/2005	12/10/2/12/12/	CUU2/G1/21	12/15/2005	12/15/2005		C007/C1/71	12/15/2005	12/15/2005
	Sample ID		On-Site Geoprobe Sampling		GF30-2-1.0	GP30-S-6.0	GP31-S-1.0	GP31-S-6.0	GP32-S-1.0		Off-Site Hand-Auger Sampling	HA1-0.5		C.1-1 AH	HA1-1.5-Dup	HA2-0.5		C.1-2AH	HA3-0.5	HA3-1.5	HA4-0.5		G.T-4AH	HA5-0.5	HA5-1.5
	Location		On-Site (0000	GP30		GP31		GP32	20 02	Off-Site	HA1				HA7			HA3		HAA			· HA5	

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		S	eattle, V	Vashington	, ,	
Location	Sample ID	Date	Depth (ft bgs)	Gasoline-Range Organics	Diesel-Range Organics	Oil-Range Organics
On-Site	Geoprobe Sam	oling				
GP1	GP1-S-1.5	6/7/2005	1.5	ND	ND	ND
	GP1-S-6.0	6/7/2005	6	ND	ND	ND
	GP1-S-10.0	6/9/2005	10	ND	ND	ND
GP2	GP2-S-1.0	6/7/2005	1	ND	ND	ND
	GP2-S-10.0	6/9/2005	10	ND	ND	ND
GP3	GP3-S-2.0	6/9/2005	2	ND	ND	ND
	GP3-S-6.0	6/9/2005	6	ND	ND	ND
	GP3-S-14	6/9/2005	14	ND	ND	ND
GP4	GP4-S-1.5	6/16/2005	1.5	ND	ND	ND
GP5	GP5-S-1.5	6/16/2005	1.5	ND	ND	ND
	GP5-S-14.0	6/16/2005	14	ND	ND	ND
GP6	GP6-S-1.0	6/16/2005	1	ND	ND	ND
	GP6-S-14.5	6/16/2005	14.5	ND	ND .	ND
GP7	GP7-S-2.0	6/16/2005	2	ND	ND	ND
	GP7-S-8.0	6/16/2005	8	ND	ND	ND
GP8	GP8-S-1.5	6/16/2005	1.5	ND	ND	ND
GP9	GP9-S-2.0	6/17/2005	2	ND	ND	ND
GP10	GP10-S-1.5	6/17/2005	1.5	ND	ND	ND
	GP10-S-13.5	6/17/2005	13.5	ND	ND	ND
GP11	GP11-S-2.0	6/17/2005	2	ND	ND	ND
	GP11-S-6.5	6/17/2005	6.5	ND	ND	ND

Table 6 Petroleum Hydrocarbon Identification in Soil Precision Engineering, Inc. Seattle, Washington



		Jea		Simgton		
			Depth	Gasoline-Range	Diesel-Range	Oil-Range
ocation	Sample ID	Date	(ft bgs)	Organics	Organics	Organics
On-Site	Geoprobe Samplin	g				26.6.1.1
GP12	GP12-S-3.0	12/13/2005	3	'	10.7 U	26.6 U
GP13	GP13-S-6.0	12/14/2005	6		12.8 U	56.1
GP14	GP14-S-6.0	12/13/2005	6		10.8 U	26.9 U
GP15	GP15-S-3.0	12/13/2005	3		17.7	59.1
GP16	GP16-S-5.0	12/13/2005	5		11.2 U	28.0 U
GP17	GP17-S-1.0	12/13/2005	1		11.6	63.1
GP18	GP18-S-1.0	12/13/2005	1		156	742
GP19	GP19-S-1.0	12/13/2005	1		52.8	172
GP19	GP19-S-1.0-Dup	12/13/2005	1		18.2	43.8
GP19	GP19-S-7.0	12/13/2005	7		14.5 U	56.7
GP20	GP20-S-1.0	12/14/2005	1		198	301
GP20	GP20-S-6.0	12/14/2005	6		75.9	294
GP21	GP21-S-1.0	12/14/2005	1	1	11.2 U	28.0 U
GP21	GP21-S-6.5	12/14/2005	6.5		5270	19900
GP22	GP22-S-10.0	12/13/2005	10		11.3 U	28.2 U
GP23	GP23-S-7.0	12/14/2005	7		10.8 U	26.9 U
GP24	GP24-S-3.0	12/14/2005	3		11.1 U	27.8 U
GP25	GP25-S-7.0	12/12/2005	7		10.6 U	26.6 U
GP26	GP26-S-1.0	12/12/2005	1		36.4	121
GP26	GP26-S-9.5	12/12/2005	9.5		10.8 U	27.1 U
GP27	GP27-S-13.0	12/12/2005	13		10.9 U	27.2 U
GP28	GP28-S-1.0	12/12/2005	1		10.8 U	27.0 U
GP28	GP28-S-7.0	12/12/2005	7	· ·	10.4 U	26.0 U
GP29	GP29-S-1.0	12/12/2005	1		80.4	249
GP29	GP29-S-6.0	12/12/2005	6		12.8 U	32.0 U
GP30	GP30-S-1.0	12/12/2005	1		14.9	90.5
GP30	GP30-S-6.0	12/12/2005	6		39.6	165
GP31	GP31-S-1.0	12/12/2005	1		145	1300
GP31	GP31-S-6.0	12/12/2005	6		58.9	157
GP32	GP32-S-1.0	12/14/2005	1		11.3 U	28.3 U
	e Hand-Auger Sam	pling				1 4470
HA1	HA1-0.5	12/15/2005	0.5	11.4	210	1170
HA1	HA1-1.5	12/15/2005	1.5	6.57 U	37.6	182
HA1	HA1-1.5-Dup	12/15/2005	1.5	7.00 U	67.0	328
HA2	HA2-0.5	12/15/2005	0.5	8.20 U	636	3170
HA2	HA2-1.5	12/15/2005	1.5	4.79 U	73.8	409
HA3	HA3-0.5	12/15/2005	0.5	7.58 U	278	2470
HA3	HA3-1.5	12/15/2005	1.5	5.65 U	11.7 U	30.1
HA4	HA4-0.5	12/15/2005	0.5	22.1 U	35900	106000
HA4	HA4-1.5	12/15/2005	1.5	10.2 U	1350	3550
HA5	HA5-0.5	12/15/2005	0.5	21.3 U	1130	7330
HA5	HA5-1.5	12/15/2005	1.5	8.11 U	61.8	347

Table 7 Petroleum Hydrocarbons in Soil (mg/kg) Precision Engineering, Inc. Seattle, Washington

. Readings

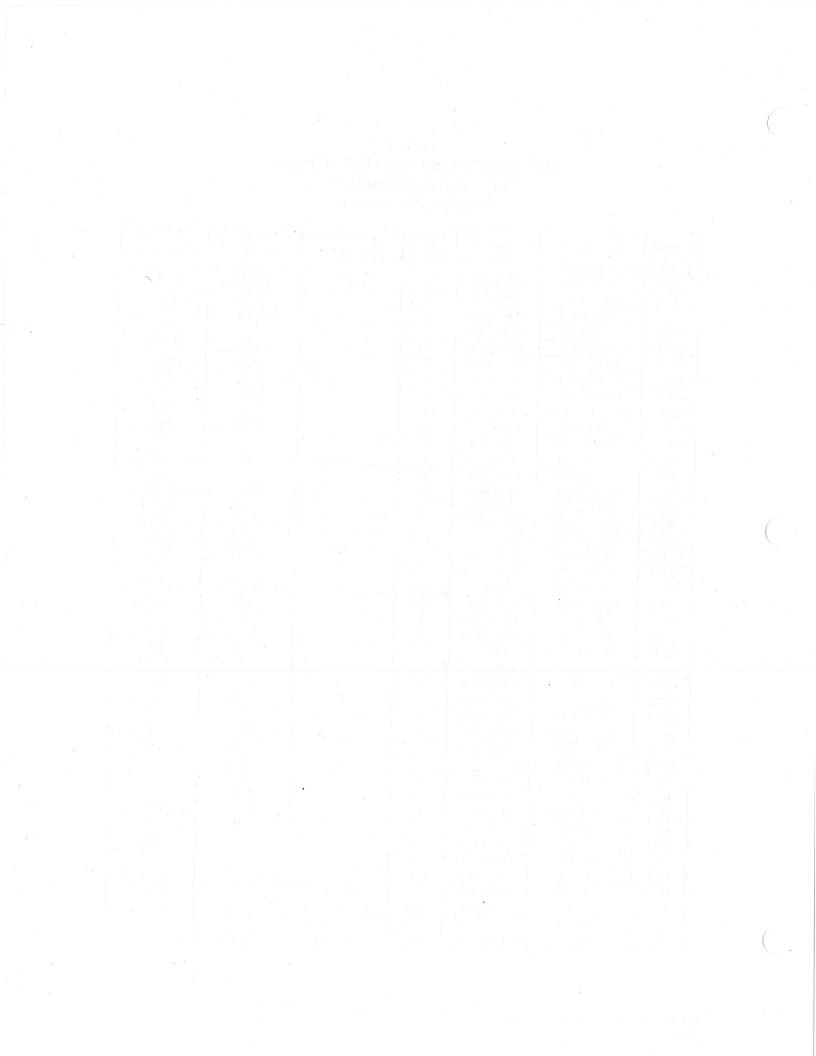
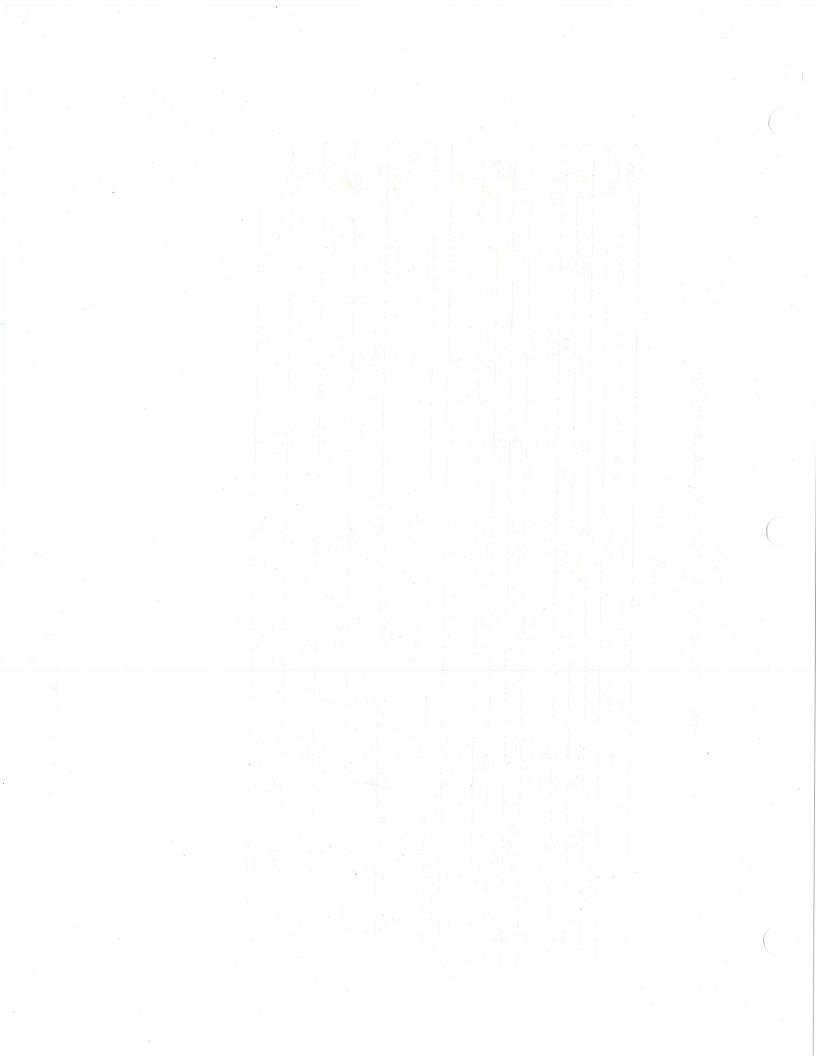


Table 8 Polycyclic Aromatic Hydrocarbons in Soil (mg/kg) Precision Engineering, Inc. Seattle, Washington

0.0129 U anthracene 0.0176 U 0.0118 U 0.0159 U 0.0153 U 0.0151 U 0.0125 U 0.0139 U 0.0120 U 0.0129 U 0.0117 U 0.0340 Benzo(a) 0.0124 L 0.0288 0.0750 0.0154 0.554 0.862 0.0235 0.0211 Anthracene 0.0153 U 0.0129 U 0.0152 U 0.0176 U 0.0133 U 0.0118 U 0.0159 U 0.0120 U 0.0139 U 0.0146 U 0.0117 U 0.0134 U 0.0151 U 0.0125 U 0.267 U 0.0111 U 0.340 U 0.0124 U 0.0129 U 0.0137 Acenaphthylene 0.0129 U 0.0152 U 0.0176 U 0.0125 U 0.0133 U 0.0118 U 0.0159 U 0.267 U 0.0153 U 0.0120 U 0.0129 U 0.0134 U 0.0151 U 0.340 U 0.0139 U 0.0146 U 0.0117 U 0.0111 U 0.0124 U 0.0119 U Acenaphthene 0.0129 U 0.0152 U 0.0176 U 0.0159 U 0.0153 U 0.0117 U 0.0134 U 0.0151 U 0.0125 U 0.0133 U 0.0118 U 0.267 U 0.0111 U 0.0120 U 0.0146 U 0.340 U 0.0129 U 0.0119 U 0.0124 U 0.0139 U naphthalene 0.0153 U 0.0129 U 0.0152 U 0.0125 U 0.0133 U 0.0118 U 0.0159 U 0.0151 U 0.0176 U 0.0120 U 0.0139 U 0.0146 U 0.0117 U 0.0134 U 0.340 U 0.267 U 2-Methyl-0.0124 U 0.0119 U 0.0129 U 0.0202 naphthalene 0.0153 U 0.0129 U 0.0118 U 0.0159 U 0.0120 U 0.0139 U 0.0129 U 0.0119 U 0.0146 U 0.0117 U 0.0134 U 0.0151 U 0.0152 U 0.0176 U 0.0125 U 0.0133 U 0.340 U 0.267 U 0.0124 U 1-Methyl-0.0167 (ft. bgs) Depth 0.5 1.5 0.5 1.5 1.5 0.5 1.5 1.5 1.5 0.5 6.5 0.5 9 9 G ~ 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/13/2005 12/13/2005 12/14/2005 12/12/2005 12/12/2005 12/12/2005 12/12/2005 12/15/2005 12/14/2005 12/14/2005 Date **Off-Site Hand-Auger Sampling On-Site Geoprobe Sampling** HA1-1.5-Dup GP31-S-1.0 GP31-S-6.0 GP18-S-1.0 GP19-S-1.0 GP20-S-1.0 GP20-S-6.0 GP21-S-6.5 GP29-S-1.0 GP30-S-6.0 HA5-0.5 HA5-1.5 Sample ID HA1-1.5 HA3-0.5 HA4-0.5 HA1-0.5 HA2-0.5 HA2-1.5 HA3-1.5 HA4-1.5 Location GP20 GP29 GP31 GP31 HA5 HA5 GP18 GP19 GP20 GP21 GP30 HA3 HA3 HA4 HA4 HA2 HA2 HA1 HA1 HA1

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Polycyclic Aromatic Hydrocarbons in Soil (mg/kg) Precision Engineering, Inc. Seattle, Washington Table 8

Dibenzo(a,h) 0.0133 U 0.0153 U 0.0176 U 0.0159 U anthracene 0.0151 U 0.0129 U 0.0152 U 0.0125 U 0.0118 U 0.340 U 0.0117 U 0.0134 U 0.0139 U 0.0120 U 0.0111 U 0.0124 U 0.0129 U 0.0146 U 0.435 0.0162 0.0153 U 0.0129 U 0.0118 U Chrysene 0.0151 U 0.0120 U 0.0139 U 0.0129 U 0.0159 0.0276 0.0804 0.899 0.0334 0.0340 0.0612 0.0179 0.0449 0.0717 0.0127 .54 0.122 fluoranthene 0.0153 U 0.0159 U 0.0151 U 0.0129 U 0.0118 U 0.0146 U 0.0117 U 0.0120 U 0.0139 U 0.0706 0.0129 U 0.0124 U 0.0205 0.749 Benzo(k) 0.0581 0.0178 0.0151 1.82 0.0703 0.0560 0.0153 U 0.0159 U 0.0129 U Benzo(ghi) 0.0117 U 0.0151 U 0.0176 U 0.0125 U 0.0118 U 0.0139 U 0.0146 U 0.0134 U 0.0120 U 0.0111 U 0.0124 U perylene 0.0129 U 0.0243 0.352 0.0532 0.0249 1.19 fluoranthene 0.0153 U 0.0118 U 0.0159 U 0.0129 U 0.0151 U 0.0117 U 0.0146 U 0.0124 U 0.0120 U 0.0139 U 0.0204 Benzo(b) 0.0129 L 0.0769 0.0982 0.0222 0.0611 0.0746 0.771 0.0261 1.62 0.0159 U 0.0153 U 0.0176 U 0.0125 U 0.0118 U 0.0151 U 0.0129 U 0.0120 U 0.0139 U 0.0117 U 0.0124 U 0.0111 U 0.0129 U 0.0146 U Benzo(a) pyrene 0.0500 0.0525 0.694 0.0176 1.45 0.0571 (ft. bgs) 0.5 1.5 Depth 0.5 1.5 0.5 1.5 0.5 1.5 0.5 1.5 1.5 6.5 9 g G 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/14/2005 12/12/2005 12/12/2005 12/12/2005 12/15/2005 12/13/2005 12/14/2005 12/12/2005 12/13/2005 12/14/2005 Date **Off-Site Hand-Auger Sampling On-Site Geoprobe Sampling** HA1-1.5-Dup GP30-S-6.0 GP31-S-1.0 GP31-S-6.0 GP18-S-1.0 GP19-S-1.0 GP20-S-6.0 GP21-S-6.5 GP29-S-1.0 GP20-S-1.0 HA3-1.5 HA5-0.5 HA5-1.5 HA1-0.5 HA1-1.5 HA2-0.5 HA2-1.5 HA3-0.5 HA4-0.5 HA4-1.5 Sample ID Location HA5 GP31 HA3 HA4 HA4 HA5 GP18 GP30 HA2 HA3 GP19 GP20 GP20 GP29 GP31 HA2 HA1 HA1 HA1 GP21

Page 2 of 3 R:\8006.08 Stoel Rives LLP\Report\04_Final RI RA Report 7.21.08\Tables\Tables 1-40\Td-3-8 Soil\

S-PAHs

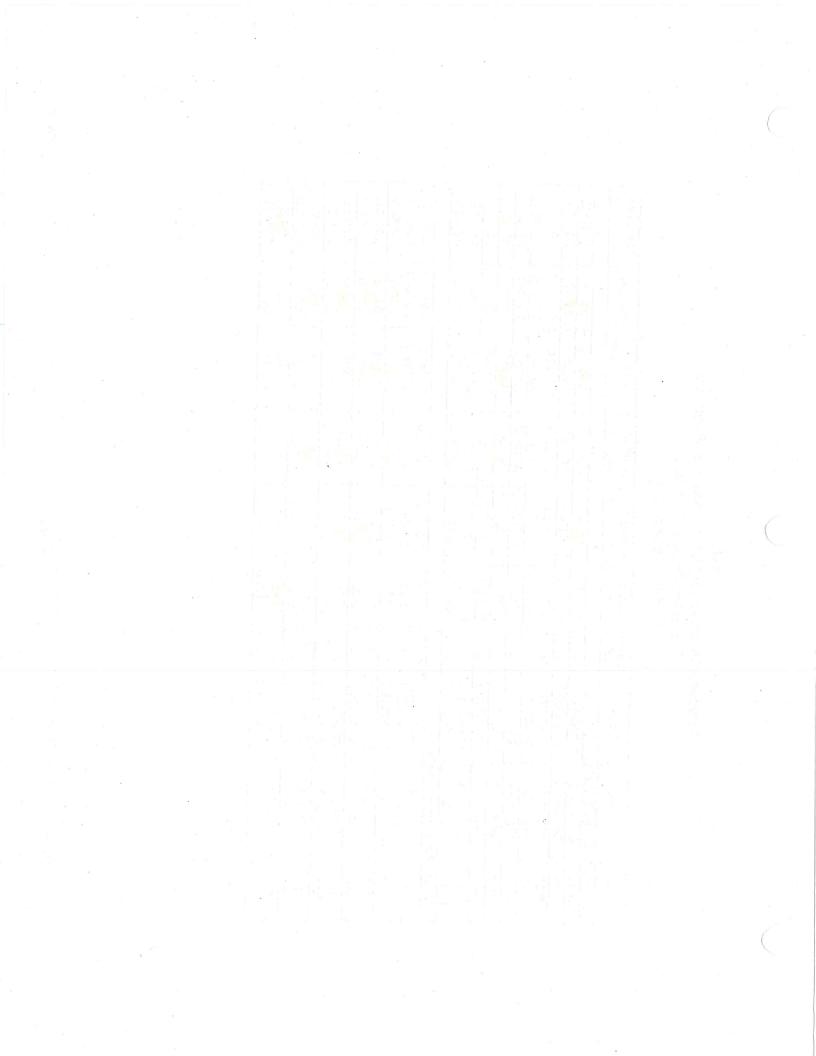
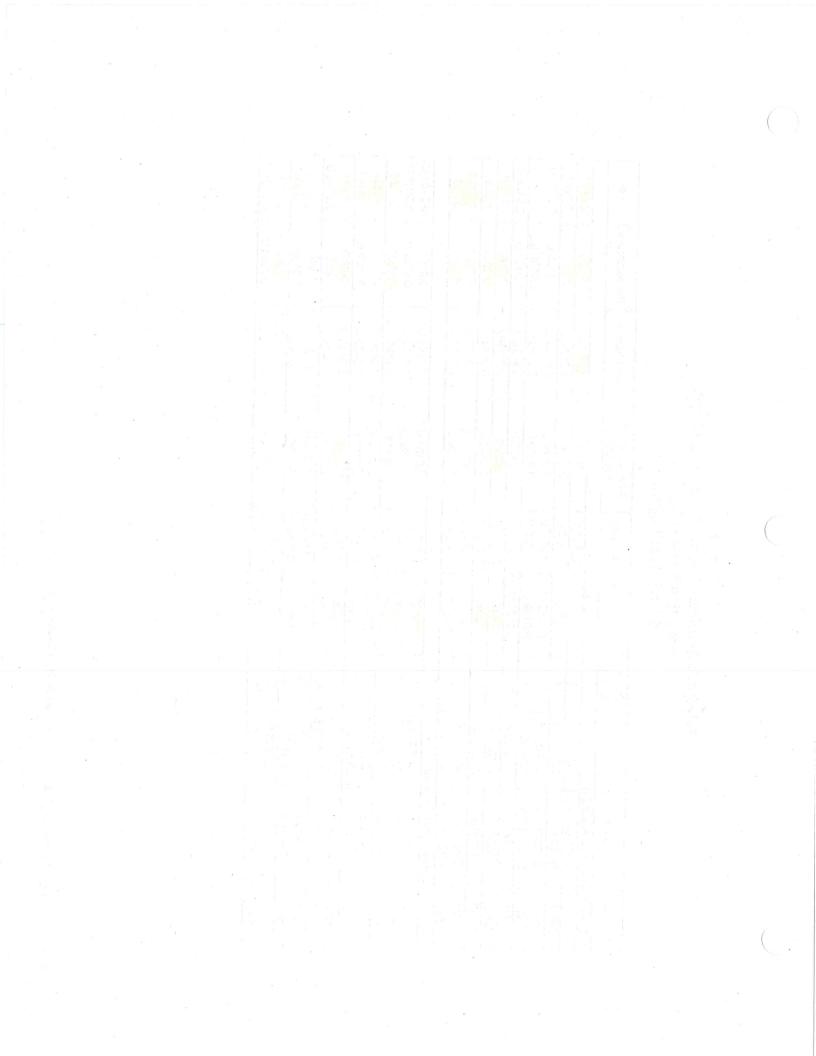


Table 8 Polycyclic Aromatic Hydrocarbons in Soil (mg/kg) Precision Engineering, Inc. Seattle, Washington

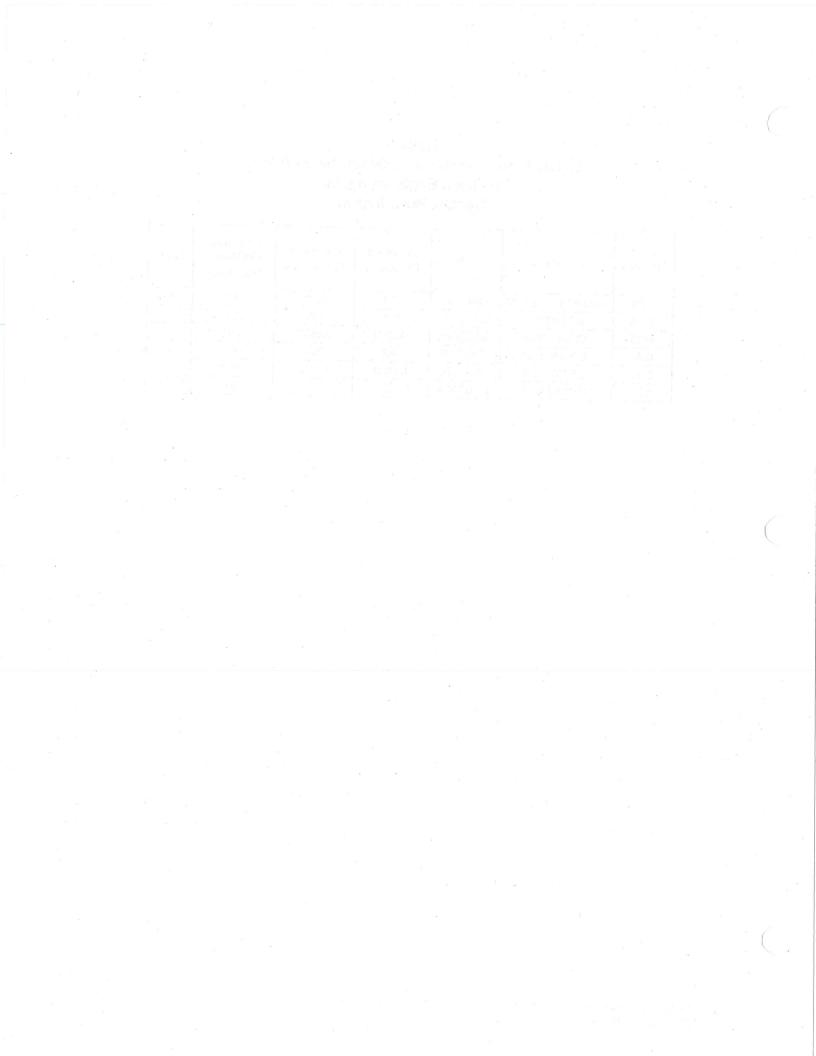
0.0153 U 0.0129 U 0.0118 U 0.0151 U 0.0120 U 0.0139 U 0.0129 U 0.0218 Pyrene 0.0531 0.0334 0.0240 0.134 2.15 0.0500 0.0657 1.52 0.0884 0.0203 0.0254 0.156 Phenanthrene 0.0118 U 0.0153 U 0.0151 U 0.0125 U 0.0159 U 0.0129 U 0.340 U 0.0120 U 0.0139 U 0.0826 0.0129 U 0.0180 0.0153 0.0382 0.930 0.0258 0.0382 0.0287 0.0161 0.109 Naphthalene 0.0133 U 0.0159 U 0.0153 U 0.0129 U 0.0125 U 0.0118 U 0.0134 U 0.0151 U 0.0152 U 0.0176 U 0.340 U 0.267 U 0.0119 U 0.0117 U 0.0120 U 0.0139 U 0.0129 U 0.0146 U 0.0124 U 0.0179 Indeno(1,2,3-cd) 0.0153 U 0.0134 U 0.0151 U 0.0129 U 0.0176 U 0.0125 U 0.0118 U 0.340 U 0.0159 U 0.0117 U 0.0139 U 0.0146 U 0.0385 0.0124 U 0.0120 U 0.0111 U 0.0129 L 0.0201 0.0260 1.02 pyrene 0.0129 U 0.0152 U 0.0176 U 0.0125 U 0.0133 U 0.0118 U 0.0159 U 0.0153 U 0.0151 U 0.267 U 0.0117 U 0.0134 U 0.340 U 0.0124 U 0.0120 U 0.0139 U 0.0119 U 0.0146 U Fluorene 0.0111 U 0.0129 U Fluoranthene 0.0153 U 0.0118 U 0.0129 U 0.0139 U 0.0129 U 0.0120 U 0.0455 0.0329 0.0191 0.0196 0.0951 0.0253 0.120 0.0517 2.38 1.30 0.0245 0.149 0.0467 0.195 (ft. bgs) Depth 0.5 1.5 0.5 1.5 1.5 1.5 0.5 0.5 1.5 1.5 0.5 6.5 9 ω 9 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/12/2005 12/12/2005 12/12/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/15/2005 12/12/2005 12/14/2005 12/14/2005 12/14/2005 12/13/2005 12/13/2005 Date Off-Site Hand-Auger Sampling **On-Site Geoprobe Sampling** HA1-1.5-Dup GP31-S-1.0 GP30-S-6.0 GP31-S-6.0 GP18-S-1.0 GP20-S-1.0 GP20-S-6.0 GP21-S-6.5 GP29-S-1.0 GP19-S-1.0 HA5-0.5 HA5-1.5 HA1-1.5 HA3-1.5 HA4-0.5 HA4-1.5 HA1-0.5 HA2-0.5 HA2-1.5 HA3-0.5 Sample ID Location HA5 HA5 GP20 GP20 GP29 GP30 GP31 HA2 HA2 HA3 HA3 HA4 HA4 GP18 GP19 GP31 GP21 HA1 HA1 HA1

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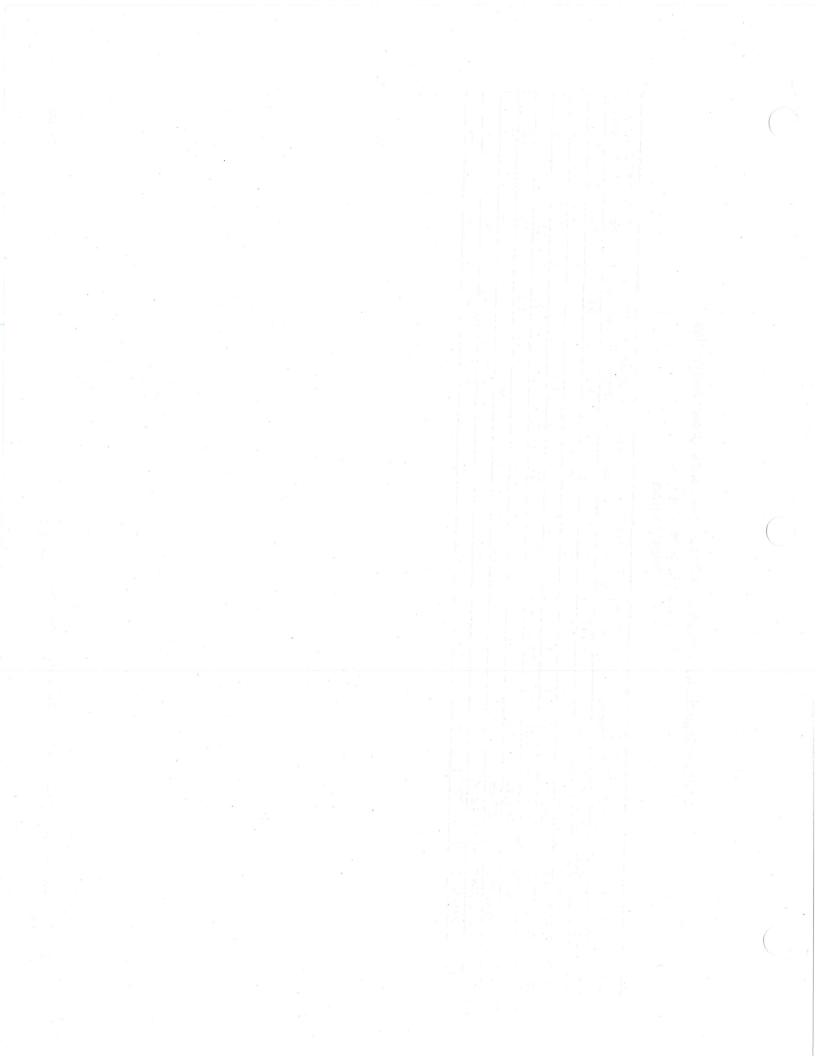
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GP2	GP2-W-17-RECON	6/9/2005	37.1	4.72	32.38	15 U
GP2 GP4	GP4-W-8.0	6/16/2005	267	236	31	
GP4 GP5	GP5-W-18.0	6/16/2005	0.02 U	0.0897	NC	
GP5 GP6	GP6-W-18.0	6/16/2005	343	300	43	
	GP7-W-14.0	6/16/2005	0.02 U	0.101	NC	
GP7 GP8	GP8-W-10.0	6/16/2005	355	294	61	

Table 9 Metals in Reconnaissance Groundwater (mg/L) Precision Engineering, Inc. Seattle, Washington



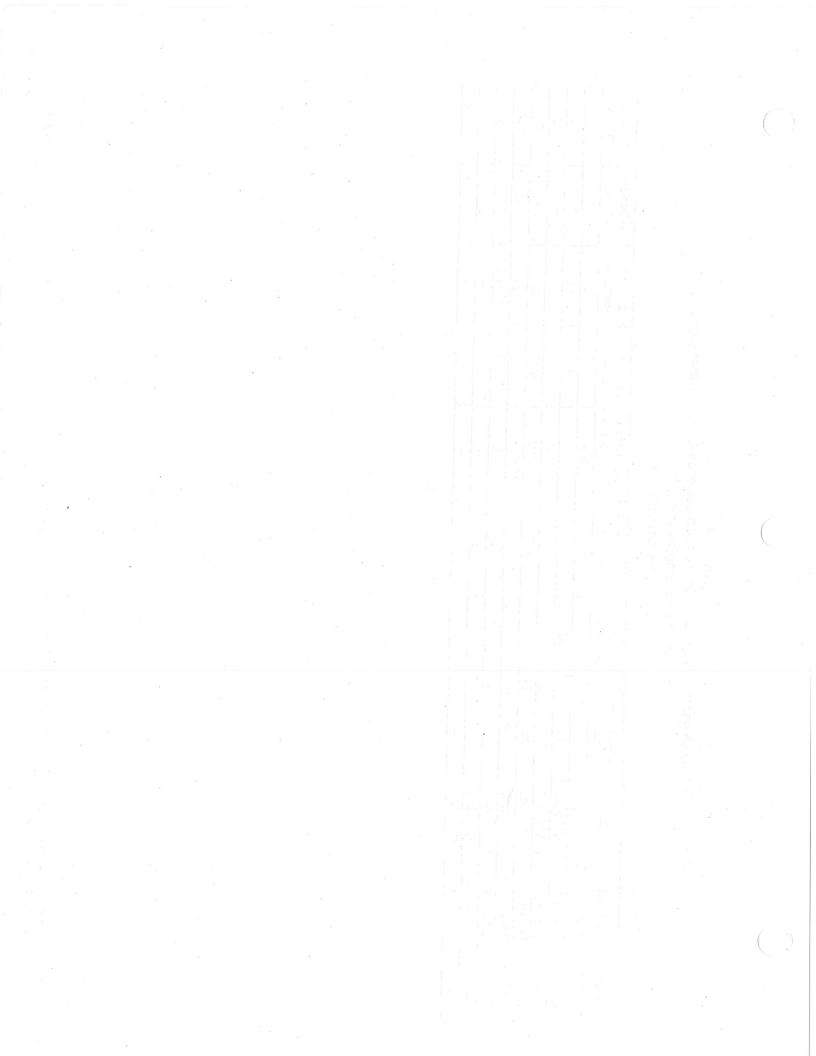
	–	-		Т		Т	_	Т		Т	-	Т	_	Т		1	
1,2,3-Trichloro- henzene		5 U	101	-			201	0		-	10		1		I		
-	higher	5 U	111	2	11		11 00	50 0	11	-	=	-	I		I		
1,1-Dichloro-	allalla	5 U	111			0		70 N	11.6	0	11	-	I		l		
1,1-Dichloro-	etnane	5 U 3		D L		n	1.00	50 N		10		-					
1,1,2-Trichloro-	ethane	5 U		10.		1 U		20 U		10	7	n I.		I		1	
	chloroethane	5 U		10		0,		20 U		10	:	10		I		1	
1,1,	ethane	5 U		10		10		20 U	I.	10	•	10		I		I	
1,1,1,2-Tetra-	chloroethane	511	0	10		10		1100	0 04		2	10		I		I	
-+-C	Dale	RID/2005		6/16/2005	000210110	6/16/2005	0004010	RIADODE	011012000	RIADOR	000710110	6/16/2005		12/14/2005		12/14/2005	
<u>-</u>	Sample IU		NODUU-1-10-749	0 87/17	0.0-11-0	CDE WL18 D	0.01-0.00	0 01 101 000	0-01-11-0-0		GP / - VV- 14.U	GP8-W-10.0		GP13-W-8.0		GP15-W-8.0	
:	Location	+	249	VOV	サレワ	100	っしり		949		149	5P8	0 0	GP-13	2	GP-15	>

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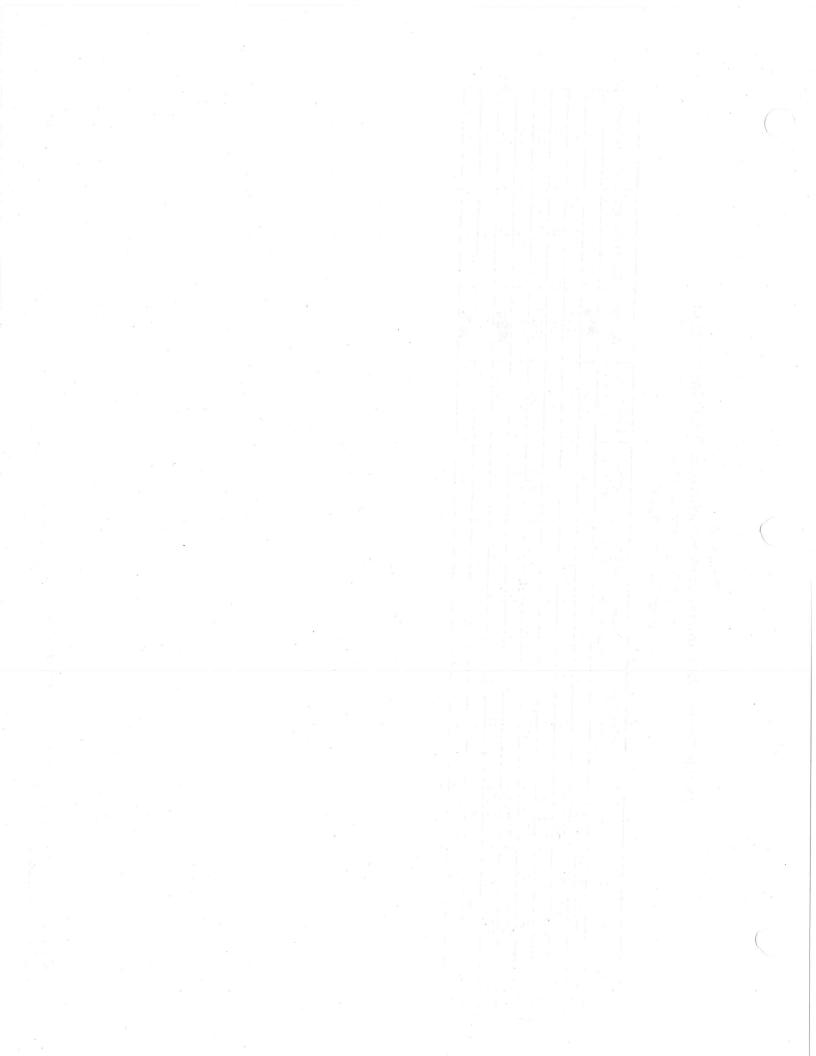
										A Dichloro
			1 2 3-Trichloro-	1 2 4-Trichloro-	1.2.4-Trimethyl-	1,2-Dibromo-3-	1,2-Dibromo-	1,2-Dichloro-	5	-010111010-21
Location	Sample ID	Date		[benzene	chloropropane	ethane	benzene	ethane	propane
			pi opai ic					11 2	511	511
	NU 17 DECON	6/9/2005	5.U	5 U	5 U	5 U	n c	0.0	2	
249	NOOJU-11-N-240							111	111	10
		R/16/2005	110	10	10	0	0-	2)	
515	0-1-1-1-1-0-0	0007010	-				-1-5	1 1	111	10
		R/16/2005	111	10	10	01	0 -		2	
649	0-01-0-0-0-0		-			00	11 00	11.00	2011	20 U
	0.01.10.000	CI4CIOUS	11 06	2011	20 U	20 N	ZU U	20 02	50.02	0
GP6	GP0-VV-10.U	01012001	20.02	0.01						
	0	DIA CIONOE	-	11	10	10	0,	5	5	-
Ch/	GP1-VV-14.0	011012000	-	-					111	10
	GDR_11/10 0	6/16/2005	10	10	10				2	
010	0.010							1	1	1
01 10	CD13_WL8 0	12/14/2005	I	1	1		1			
2-10	0.0-0-0-00	000000000000000000000000000000000000000						1	I	1
GP_15	GP15-W-8.0	12/14/2005	1	I	1	1				
5										

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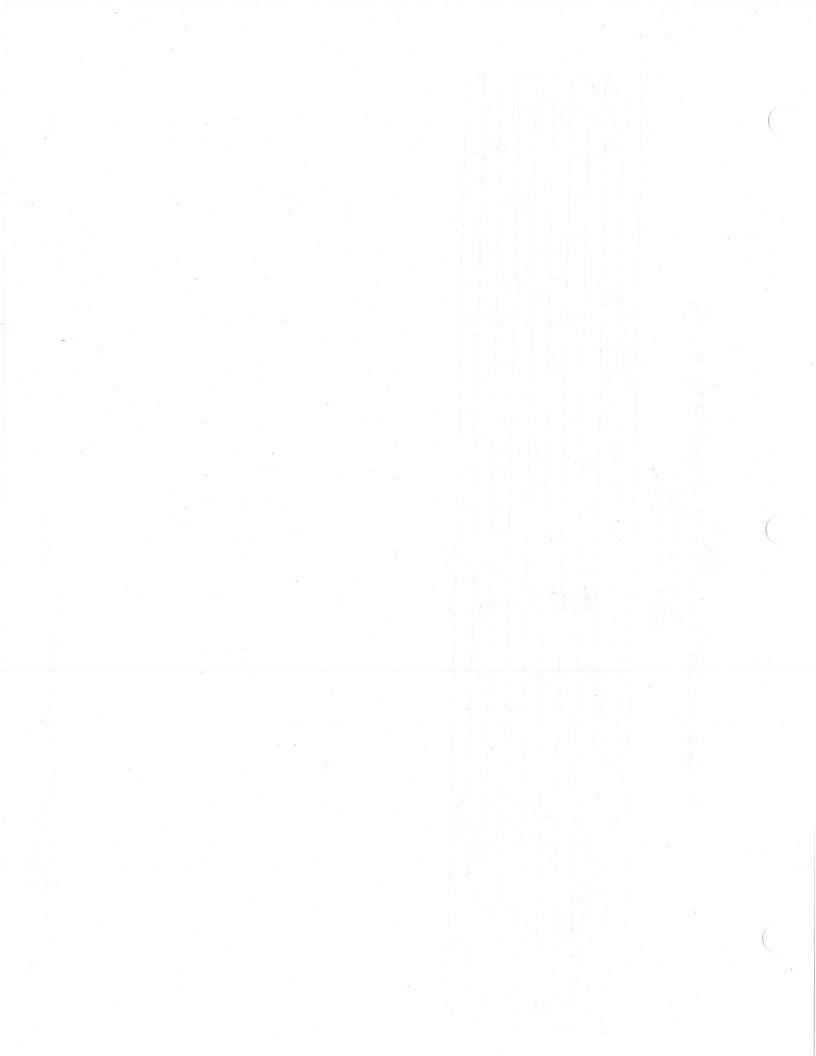
			1,3,5-Trimethyl-	1,3-Dichloro-	1,3-Dichloro-		1,4-Dichloro- 2,2-Dichloro-	2-Butanone	2-Chlorotoluene	4-Chlorotoluene
Location	Sample ID	Date	benzene	benzene	propane	benzene	propane			
		6/0/2005	112	5 U	5 U	5 U	5 U	729	5 U	5 U
GP2	0-2-2-11-V-2-10	000700			11 5		111	511	1U	10
GP4	GP4-W-8.0	6/16/2005	10	D L	D 1	2				7
300	CDF W 18 0	6/16/2005	10	1 U	10	1 U	1 U	5 U	10	01
0	0.01-0-0-0	000000000				1.00	1100	1001	2011	20 U
GDG	GP6-W-18.0	6/16/2005	20 U	20 U	20 U	20 U	20 N		0.04	
			,			111	111	5 U	10	10
GP7	GP7-W-14.0	6/16/2005	10	0 I.	2	-		5		1 - 7
c	0 01 101 000	R/1R/2005	111	1 U	10	10	10	10.3	1.U	
210	0-01-0-0-0		-					11 0		I
GP-13	GP13-W-8 0	12/14/2005	1	I	I	1	1	0 V	I	
2							1	202	I	I
GP-15	GP15-W-8.0	12/14/2005	1	I	1					

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													-	
Carbon Tetrachloride	5 U	10		U L	1100	50.02	7		10		I	J		
Bromomethane	5 U	11		1 U	11.00	70 N	111		11	2	I			
Bromoform	5 U	111	2	10	1.00	20 0		0		2	1		1	
Bromodichloro- methane	5 U	111	0	1 U		20 U		1 U	11 5		I		ľ	
Bromobenzene	5 U		0	10		20 U		10			I		1	
Benzene	5 U	-	n I	1U		20 U		10		U L	1		1	
Acetone	295	L	¢.04	7.2		100 U		5 U	0 11	15.8	I		I	
4-Isopropyi- 4-Methyl-2- toluene pentanone	25 U		5 U	5 U		100 U		5 U		5 U	1		1	
4-Isopropyl- toluene	5 U	,	10	111	-	20.11)	10		10	1		ł	
Date	6/9/2005	00041010	6/16/2005	R/16/2005	01012000	6/16/2005	000700100	6/16/2005		6/16/2005	10/11/005	0002141121	12/14/2005	
Sample ID	CD2-M-17-RECON	012-11-11-10	GP4-W-8.0	CDE M 18 0	0-01-10-0-00	CD6 WL18 0	0.01-0.010	GP7-1/14 0	011 1 10	GP8-W-10.0	0 0 101 0 100	0-12-12-0.0	GP15-W-8.0	
Location	CDO	-+	GP4	200	CLD CLD	200	010	CD7	5	GP8		5-15	GP-15	2

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ſ	-		Т		_	Т		Т		Т	T		٦	
cis-1,3-Dichloro- propene	5 U	111		10	11 06	50 N	-		10		I	1		
cis-1,2- Dichloroethene	5 U	111		10	1 1 1	144	11 5	0	7 26		6.03	1100	0.4.0	
Chloromethane	5 U	11 5	-	10		20 U			11.4		I		1	
Chloroform	5 U	-	0	10		20 U		10	11 4		I		I	
Chloroethane	5 U		1 U	10		20 U		10		n L	ł		1	
Chlorobromomethane	511)	10	111	-	20 U		1 U		10	1	-	I	
Chlorobenzene	R II	2	10	115	-	2011	50 0	10		10	1		I	
Date	E IO JOOR	012/2000	6/16/2005	CIACIODE	CUU2/01/0	RIADOR		R/16/2005	0001010	6/16/2005	10111100E	CUU2141 121	12/14/2005	
Sample ID		GPZ-VV-1/-KECON	GP4-W-8.0		GP3-00-18.0	0 01 10 00	0-01-040	CD7 W 14 0	0.41-14-110	GP8-W-10.0		0-13-000	GP15-W-8.0	
Location		GPZ	GP4		GH9		640	100	229	GP8		64-13	GP-15	2

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							l'		Mothur N
Sample ID	Date	Dibromo-	Dibromo- methane	Dichloro- difluoromethane	Ethylbenzene	Hexachloro- butadiene	isopropyi- benzene	m,p-Xylene	tert-butyl ether
		CI IIOI OI IICIIICIIICI		5			:	0	11
GP2-M-17-RFCON	6/9/2005	5 U	5 U	5 U	5 U	5 U	50	nn I	00
		11 5	11	10	10	1U .	10	2 U	1 U
0.0-1-1-10.0	n INZANA	0	2				11.8		11
GP5-W-18.0	6/16/2005	10	1 U	1U	10	1 N	-	V 4	
0 0 7 10	CI1C/DUE	1100	2011	20 U	20 U	20 U	20 U	40 U	20 U
0-01-00-00		20.04	2						111
GP7-W-14.0	6/16/2005	10	1 U	10	10	1 U	n I	z U	
	1000					10	1 U	2 U	10
GP8-W-10.0	GUU2/01/0		2	0					
GD13-WLR D	12/14/2005	I	ł	1	1	I	1	1	1
0.0									I
GP15-W-8.0	12/14/2005	I	I	1	I	1	1		

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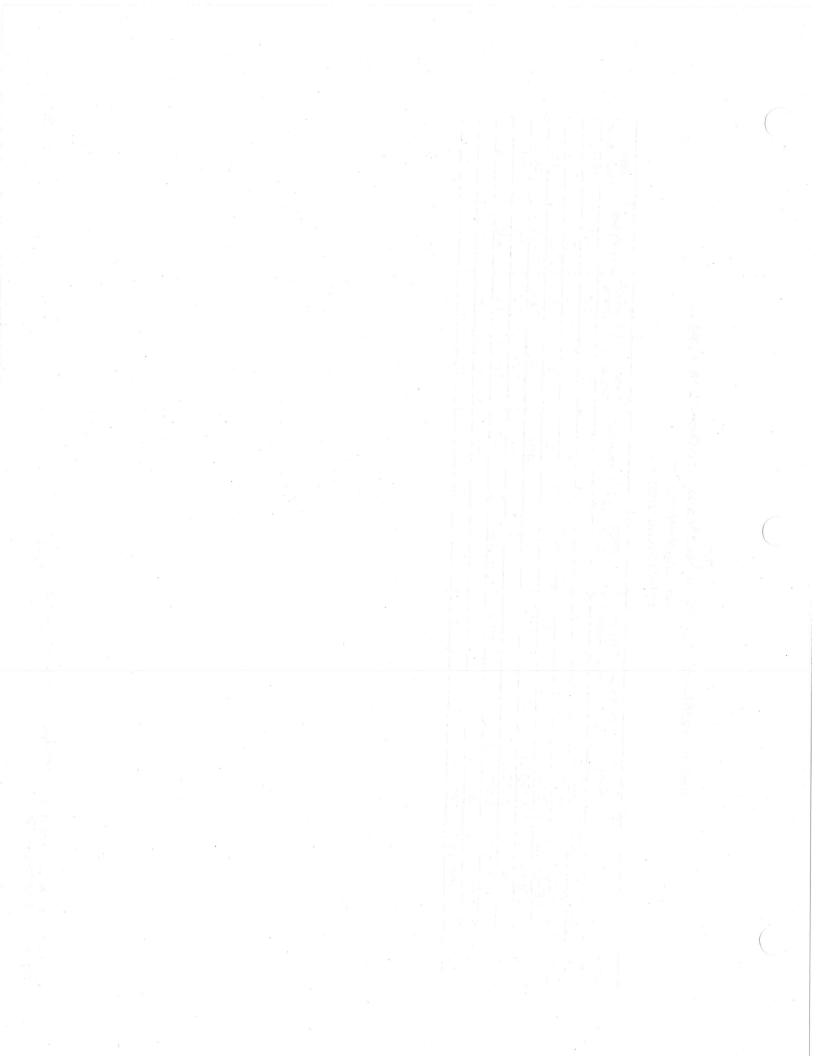


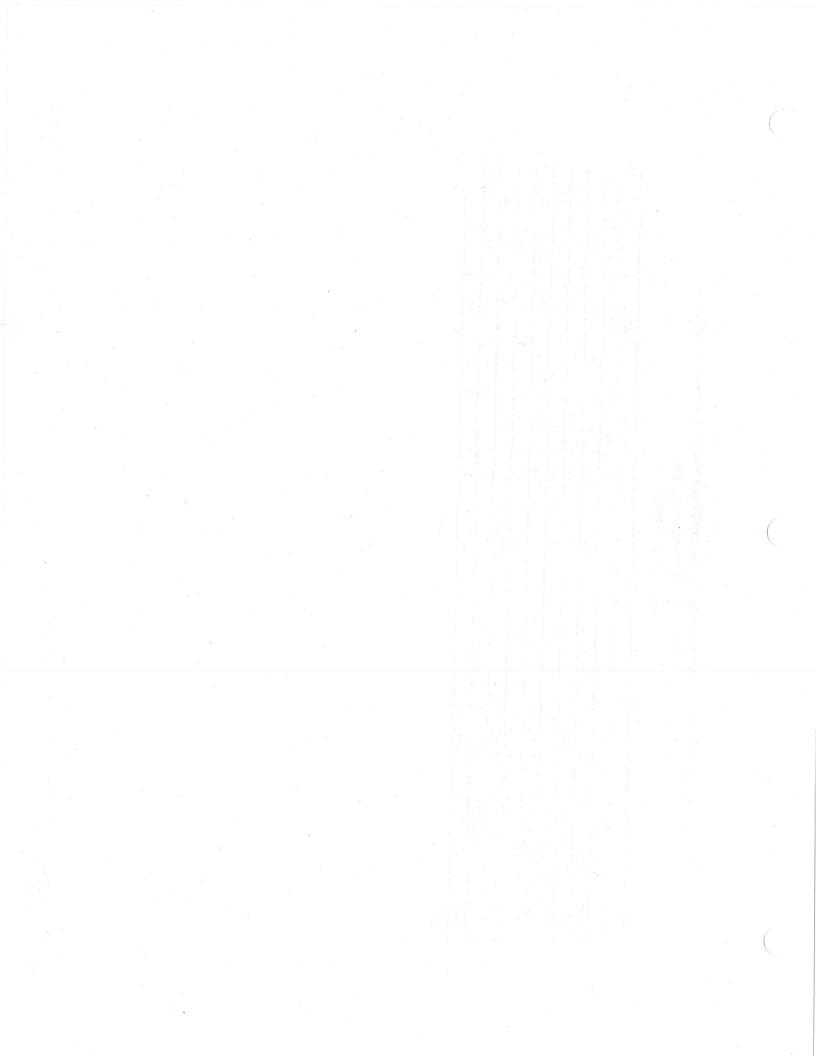
 Table 10

 Volatile Organic Compounds in Reconnaissance Groundwater (µg/L)

Precision Engineering, Inc. Seattle, Washington

						-		-	_	-		T -	-1	
tert-Butyl- benzene	5 U	1 U	111	-	11 06	20.02		-		-	I		L	
Styrene	5 U	10		-	1100	20 02	111	-	1	-	I		I	
sec-Butyl- benzene	5 U	1 U		0.1	11 00	20 N			7	-	1		1	
o-Xylene	5 U	1 U		1 U		20 U	11 1		-	-	I		1	
n-Butyl- n-Propyl- o-Xylene benzene benzene	5 U	10		1 U	11.00	20 U		U L	11.6		I		I	
n-Butyl- benzene	5 U	10		10		20 U		10		U.I		I	I	
Naphthalene	5 U	111	-	10		20 U		10		87		I.	I	
Methylene chloride	5 U	11	2	10		20 U		10		10		1	1	
Date	6/0/07	CUSE COOL	011012000	6/16/2005	000210110	6/16/2005	00040-0	6/16/2005		6/16/2005		12/14/2005	12/14/2005	200121121
Sample ID	NU 17 DECON	NDD11-11-12-2-20	GP4-VV-8.U	GD5-111-18 0	0.01-0-0-0	CD6_M/_18 D	0.01-0-0	GP7-W-14 0		GP8-W-10.0		GP13-W-8.0	CD1F W BD	0.0-10-10
Location		245	GP4	200	010		010	CD7	5	GP8	5	GP-13		020

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₽ ₽										V ferred
Sample ID Date chloroethene Toluene Dickloroethene propene ethene fluoromethane cth GP2-W-17-RECON 6/9/2005 5 U 1 U				Tetra-	j	trans-1,2-	trans-1,3-Dichloro-	Trichloro-	I richloro-	NIIN
GP2-W-17-RECON 6/9/2005 5 U 7 U	Location		Date	chloroethene	Toluene	Dichloroethene	propene	ethene	fluoromethane	chloride
GP2-W-17-RECON 6/9/2005 5U 5U <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>112</td> <td>Б II</td>									112	Б II
GFA-W-B.O. 6/16/2005 1U	C L L	CD2 W 17 BECON		5 U	5 U	5 U	5 U	n c	0.0	2
GP4-W-B.0 $6/16/2005$ $1U$	740							11 5	111	11
GP5-W-18.0 6/16/2005 1U 1U 1U 1U 1U 1U GP5-W-18.0 6/16/2005 20 U 20 U 20 U 20 U 20 U 1U 1U 1U GP5-W-18.0 6/16/2005 20 U 20 U 20 U 20 U 1U 110 1U GP7-W-14.0 6/16/2005 1U 1U 1U 1U 1U 1U 1U GP7-W-14.0 6/16/2005 1U	CDA	GP4-W-8 D	6/16/2005	10	10	10	n I.	-	-	-
CP5-W-18.0 6/16/2005 1U	5							-	11	
GPC-W-18.0 G/16/2005 20 U 20 U 20 U 1130 20 U GPC-W-18.0 G/16/2005 1 U 1 U 1 U 1 U 1 U 1 U 1 U GPT-W-14.0 G/16/2005 1 U 1 U 1 U 1 U 1 U 1 U 1 U GPT-W-18.0 G/16/2005 1 U 1 U 1 U 1 U 1 U 1 U GPT-W-18.0 G/14/2005 - - - 0.2 U - - - GP13-W-8.0 12/14/2005 - - 0.2 U - 0.2 U - - - GP15-W-8.0 12/14/2005 - - 0.2 U - 0.2 U - <td>300</td> <td>CDE WL18 D</td> <td>6/16/2005</td> <td>1 · U</td> <td>10</td> <td>10</td> <td>01</td> <td>0-</td> <td>-</td> <td>-</td>	300	CDE WL18 D	6/16/2005	1 · U	10	10	01	0-	-	-
GP6-W-18.0 6/16/2005 20 U	019	0.01-0.0	000000000					0000	1100	1106
GP7-W-14.0 6/16/2005 1 U <td>900</td> <td>CDE-ML1R D</td> <td>6/16/2005</td> <td>20 U</td> <td>20 U</td> <td>20 U</td> <td>20 U</td> <td>1130</td> <td>50 D</td> <td>2024</td>	900	CDE-ML1R D	6/16/2005	20 U	20 U	20 U	20 U	1130	50 D	2024
GP7-W-14.0 6/16/2005 1U	220		0000000					11 1	11	-
GPR-W-10:0 6/16/2005 1U	207	CD7_1/1/10	6/16/2005	10	10	10	0,1	D I	-	-
GP8-W-10.0 6/16/2005 1 U 1 U 1 U 1 U 0.00	210	0.41-0.10	0001010					0 01		1
GP13-W-8.0 12/14/2005 - - 1.01 - 0.220 - GP15-W-8.0 12/14/2005 - - 0.2 U - 0.2 U -	2DR	GPR-W-10 0	6/16/2005	10	10	10	U L	0.01	0	2
GP13-W-8.0 12/14/2005 - - 1.01 - 0.2 U - GP15-W-8.0 12/14/2005 - - 0.2 U - - 0.2 U -	5					10		0000	I	16.5
GP15-W-8.0 12/14/2005 0.2 U - 0.2 U -	00 12	CP13_W_R D	12/14/2005	I	I	1.01	1	0.22.0		
GP15-W-8.0 12/14/2005 0.2.U 0.2.U	2-10	0.0-0-0						1100	1	0211
	GD-15	GP15-W-8.0	12/14/2005	1	I	0.2 N	1	0.2.U		1
	2									

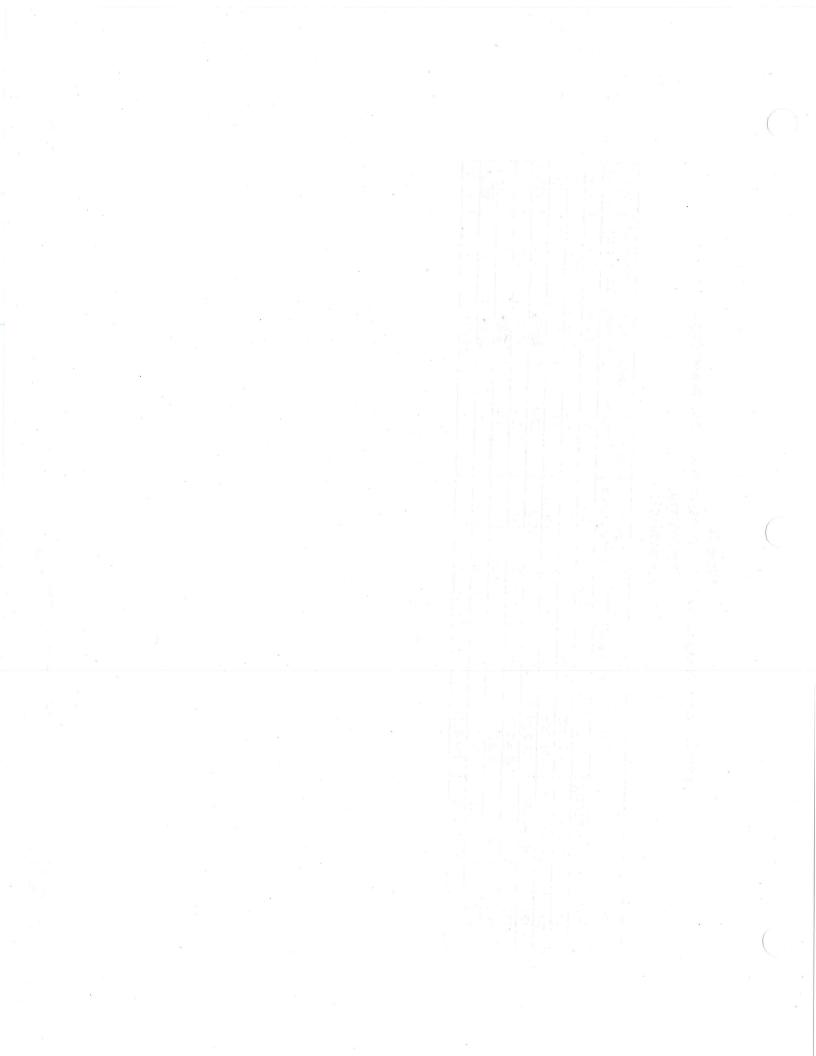


Table 11
Petroleum Hydrocarbon Identification in Reconnaissance Groundwater
Precision Engineering, Inc.
Seattle, Washington

Location	Sample ID	Date	Gasoline-Range Organics	Diesel-Range Organics	Oil-Range Organics
GP2	GP2-W-17-RECON	6/9/2005	DET	ND	ND
GP2 GP4	GP4-W-8.0	6/16/2005	ND	DET	ND
GP4 GP5	GP5-W-18.0	6/16/2005	ND	ND	ND
GP5 GP6	GP6-W-18.0	6/16/2005	ND	ND	ND
	GP7-W-14.0	6/16/2005	ND	ND	ND
GP7			DET	DET	DET
GP8	GP8-W-10.0	6/16/2005	DET	DET	DET

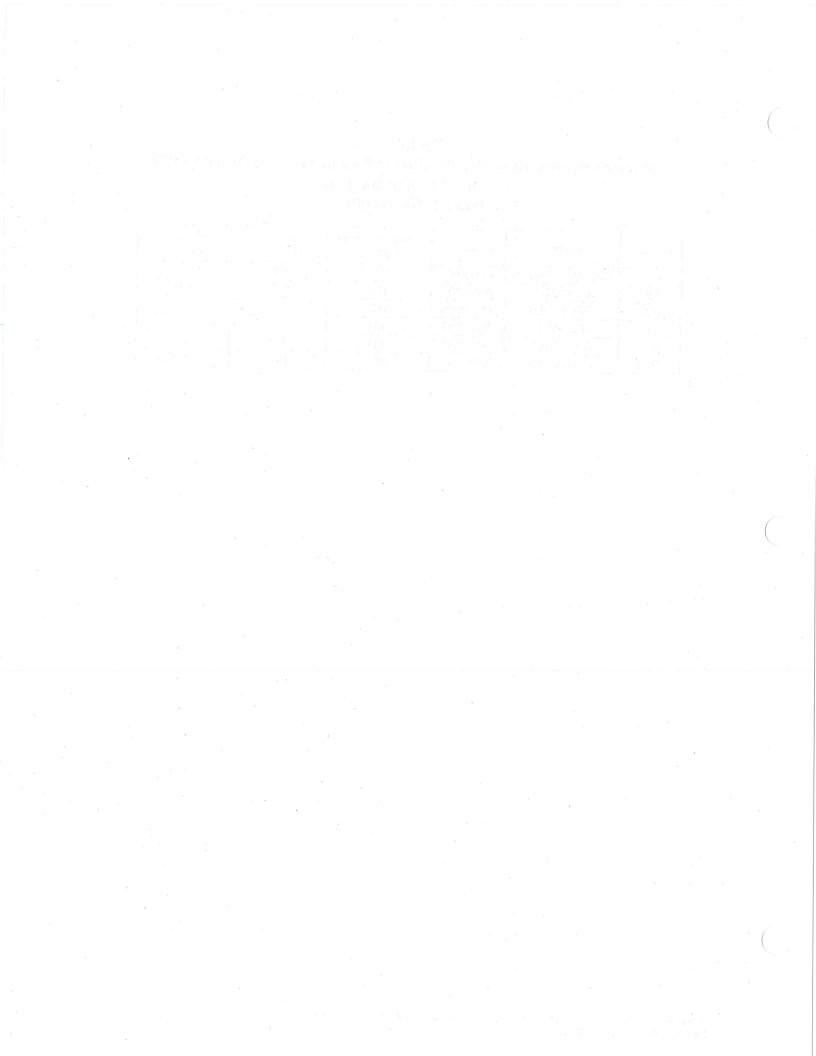
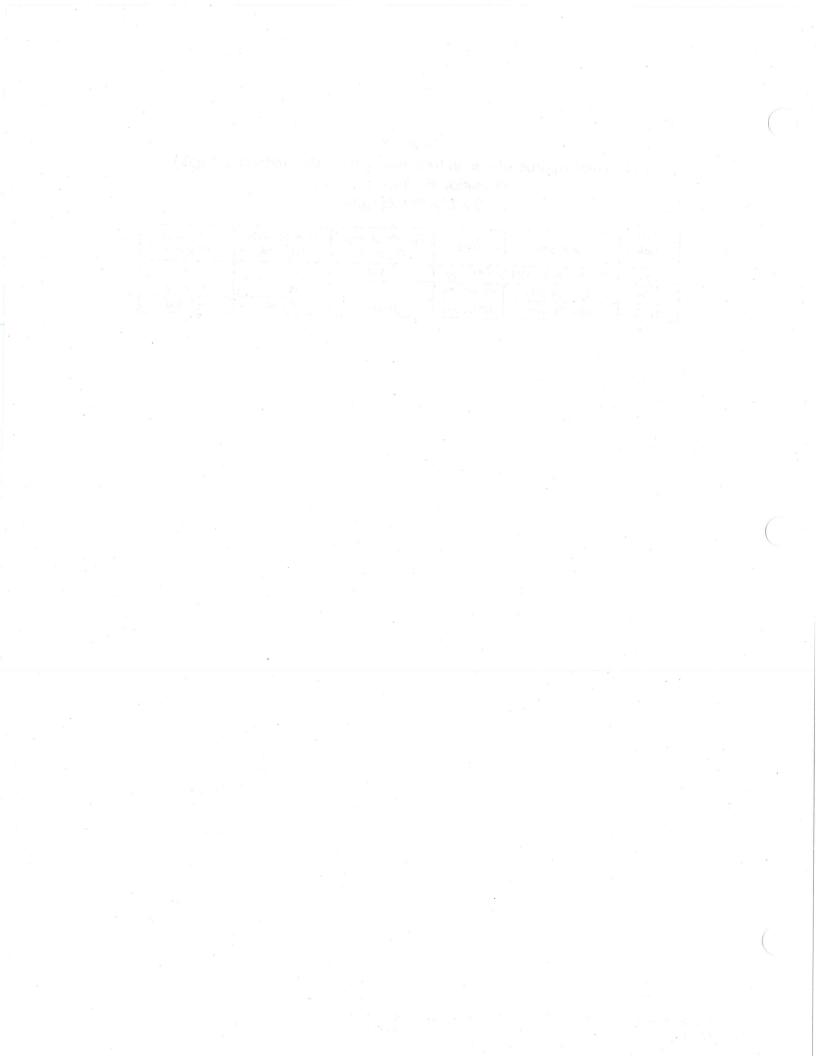


Table 12
Petroleum Hydrocarbons in Reconnaissance Groundwater (mg/L)
Precision Engineering, Inc.
Seattle, Washington

2

Location	Sample ID	Date	Gasoline-Range Organics	Diesel-Range Organics	Oil-Range Organics
GP2	GP2-W-17-RECON	6/9/2005	0.1 U		
	GP4-W-8.0	6/16/2005		0.325	0.478 U
GP4	<u> </u>		0.155	0.814	0.479 U
GP8	GP8-W-10.0	6/16/2005	0.155	0.011	



Polycyclic Aromatic Hydrocarbons in Reconnaissance Groundwater (µg/L) Precision Engineering, Inc. Seattle, Washington Table 13

			Т		Т			1		
Renzn(h+k)		fluoranthene		0 954 1	0.000	1 10 0	0.8.0			
Bonzo(a)	חבוודה(מ)	pyrene		111010	0.1210		0 194 U			
Doracla!	Accompatibility Anthracene Benzo(a) Benzo(a)	anthracene		11 101 0	U. 181 U		0 194 11	0.0		
	A shore and a large a	Allilliacelle		1 101 0	0.181.0			0 +01.0		
		Acenaphinylene			0.191 U			0.104 0		
		Acenaphthene			0 191 11	0.0.0	00000	0.328		
	2-Methyl-		analan		U 777 II	0 - 1 - 0		8.56		
	2 Chloro-		naphthalene		11 101 0	0.181.0		0 194 11	0-0-0	
		Date			LOOOLO FLO	GUU2/91/9		6/16/2005		
		Sample ID	1		0.0.10	GP4-W-8.0			0.01-04040	
		Incation				7d5			670	



Polycyclic Aromatic Hydrocarbons in Reconnaissance Groundwater (µg/L) Precision Engineering, Inc. Table 13

Seattle, Washington

	-	1	Benzo(ahi)		Dibenzo(a,h)	Cuchterer I	Elitoropo	Indeno(1,2,3-cd)	Nanhthalana	Phenanthrene Pyrene	Pvrene
Location	Sample ID	Date	pervlene	Chrysene	anthracene	Fluoraritherie		pyrene			
									11 111 0	11 101 0	111010
	C D V V B O	R/18/2005	0 191 11	0 191 11	0.191 U	0.191 U	0.191 U	0.191 U	0.4// U	U. 181 U	U. 131 U
515	0.0-1-1-1-0	000700100	0.0.0	2						K L L	111010
202	GDR-M/-10 0 6/16/2005	6/16/2005	0 194 U	0.194 U	0.194 U	0.194 U	0.298	0.194 U	C.02	9.04	U. 134 U
200		0001010									

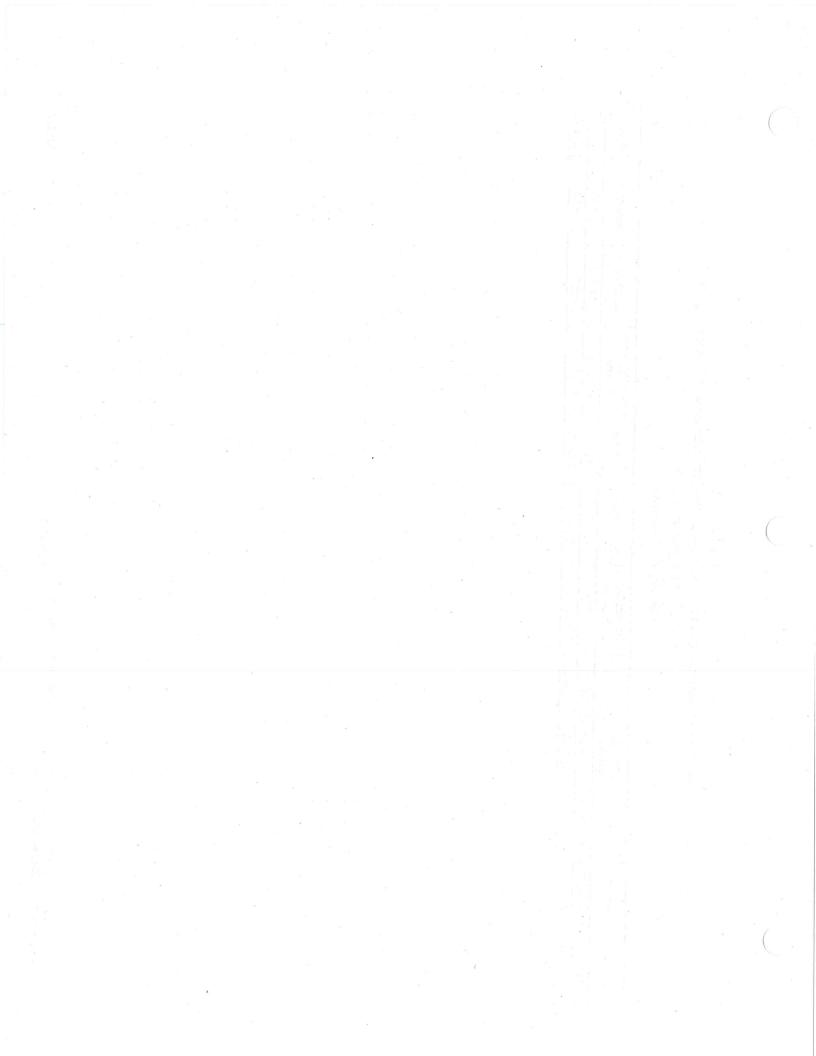
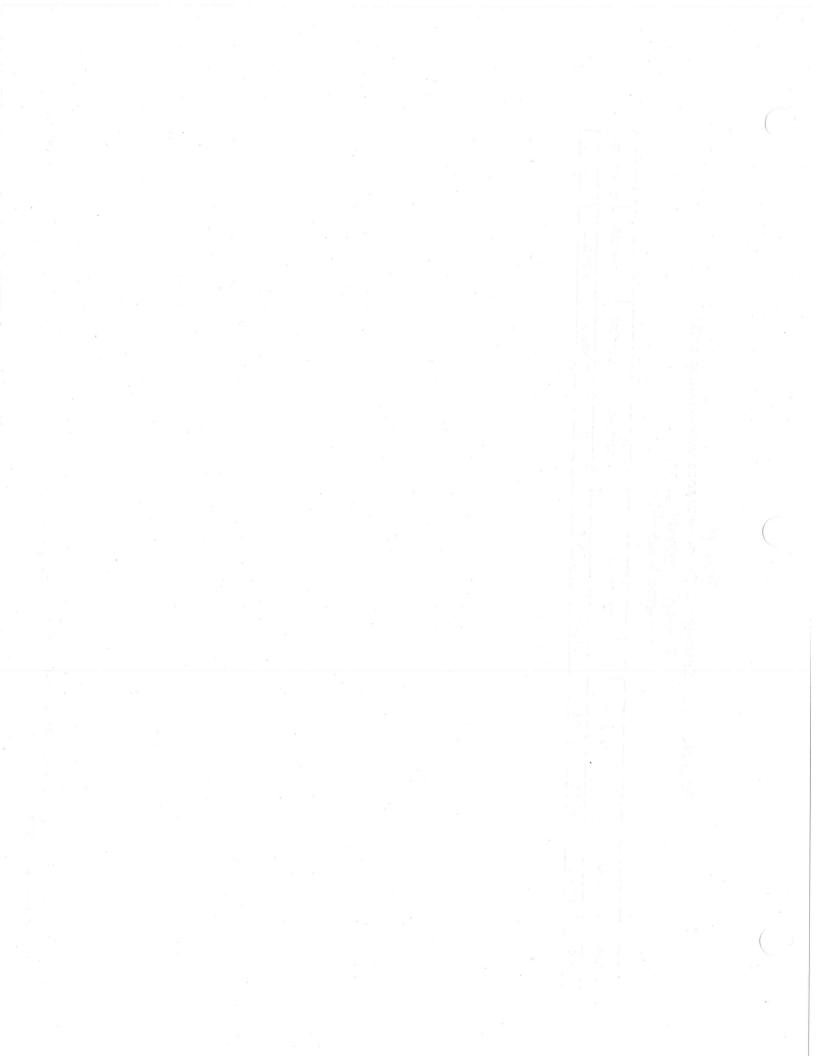


Table 14 Polychlorinated Biphenyls in Reconnaissance Groundwater (µg/L) Precision Engineering, Inc.

Seattle, Washington

Location	Sample ID	Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Arocior 1200	
000	CDR WL10 0	6/16/2005	0.0958 U	U 868U.U						
019	0.01-0-0-0	000700100	-							



Location	Sample ID	Date	Dissolved Chromium	Chromium (Hexavalent)	Dissolved Chromium (Trivalent) ^a
MW1	MW1-W-35.0	6/16/2005	0.02 U	0.269	NC
	MW1-122705	12/27/2005	0.001 U	0.00625 U	NC
e -	MW1-041806	4/18/2006	0.00014 U	0.00063 U	NC
MW2	MW2-W-0605	6/17/2005	0.02 U	0.01 U	NC
111112	MW2-122805	12/28/2005	0.00879	0.00625 U	0.00879
	MW2-041906	4/19/2006	0.021	0.00063 U	0.021
MW3	MW3-0605	6/7/2005	0.02 U	0.01 U	NC
101000	MW3-122905	12/29/2005	0.00215	0.00625 U	0.00215
	MW3-041706	4/17/2006	0.0078	0.00063 U	0.0078
MW4	MW4-0605	6/9/2005	0.02 U	0.01 U	NC
1010 0.5	MW4-0605-Dup	6/9/2005	0.02 U	0.01 U	NC
	MW4-122705	12/27/2005	0.001 U	0.00625 U	NC
	MW4-041806	4/18/2006	0.0020	0.023	NC
MW5	MW5-122805	12/28/2005	497	450	47
	MW5-041906	4/19/2006	32	350	NC
MW6	MW6-122905	12/29/2005	0.0187	0.00625 U	0.0187
initio	MW6-041906	4/19/2006	0.047	· 0.00063 U	0.047
MW7	MW7-122805	12/28/2005	0.0106	0.00738	0.0106
	MW7-041806	4/18/2006	0.013	0.00063 U	0.013
	MW7-041806-Dup	4/18/2006	0.013	0.00063 U	0.013
MW8	MW8-122805	12/28/2005	0.00755	0.00625 U	0.00755
	MWDup-122805	12/28/2005	0.00849	0.00625 U	0.00849
	MW8-041806	4/18/2006	0.021	0.00063 UJ	0.021

Table 15	
Dissolved Chromium in Groundwater (mg/L)	
Precision Engineering, Inc.	
Seattle, Washington	

Table 16 Dissolved Metals in Groundwater (µg/L) Precision Engineering, Inc. Seattle, Washington

0.016 U 0.016 U 0.016 U 1.00 U 1.00 U 0.016 U 0.016 U 0.016 U⁻ 0.016 U 0.016 U 1.00 U 0.016 U 1.00 U 1.00 U 1.00 U 1.00 U 1.00 U 1.00 U Lead 0.075 U Copper 0.075 U 0.075 U 1.00 U 0.075 U 1.00 U 1.00 U 0.075 U 1.03 2.12 4.02 3.67 5.1 2.4 1.17 2.5 3.3 1.01 Cadmium 1.00 U ł ł ł ł l 1.00 U 1.00 U Beryllium 1.00 U ł ł ł ł Arsenic 7.85 11.9 6.41 15.3 4.59 6.62 4.8 32.3 5.63 15.1 4.9 7.3 3.8 7.1 24 13 15 33 Antimony 3.00 U I ł I 1 I 1 ł 12/28/2005 12/28/2005 12/28/2005 12/29/2005 12/28/2005 12/29/2005 12/27/2005 4/18/2006 12/27/2005 12/28/2005 4/19/2006 4/19/2006 4/18/2006 4/18/2006 4/17/2006 4/18/2006 4/19/2006 4/18/2006 Date VIW7-041806-Dup MWDup-122805 MW8-041806 MW7-041806 MW8-122805 MIW6-122905 MIV/6-041906 MW7-122805 MW4-122705 MW4-041806 MW5-122805 MW5-041906 MW3-122905 MW1-122705 MW1-041806 MW2-122805 MW2-041906 MW3-041706 Sample ID Location MW6 MW8 MW5 **NW7** MW4 MW3 **NW1** MW2

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7/21/2008

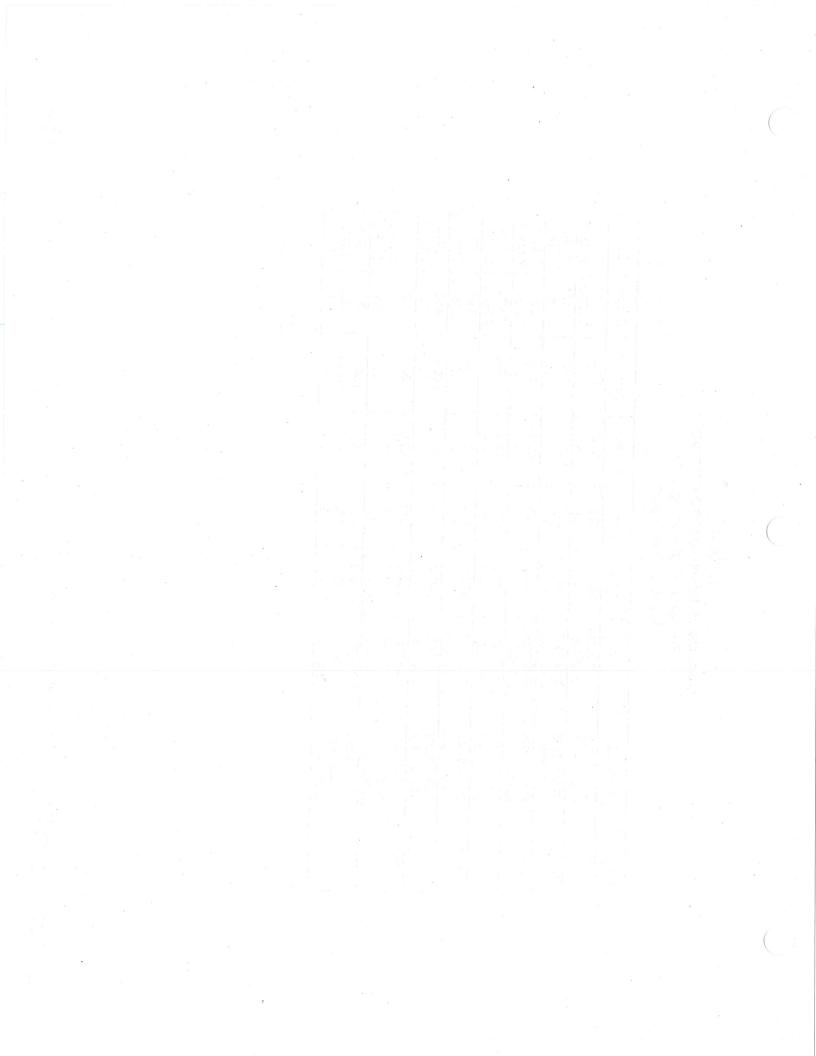


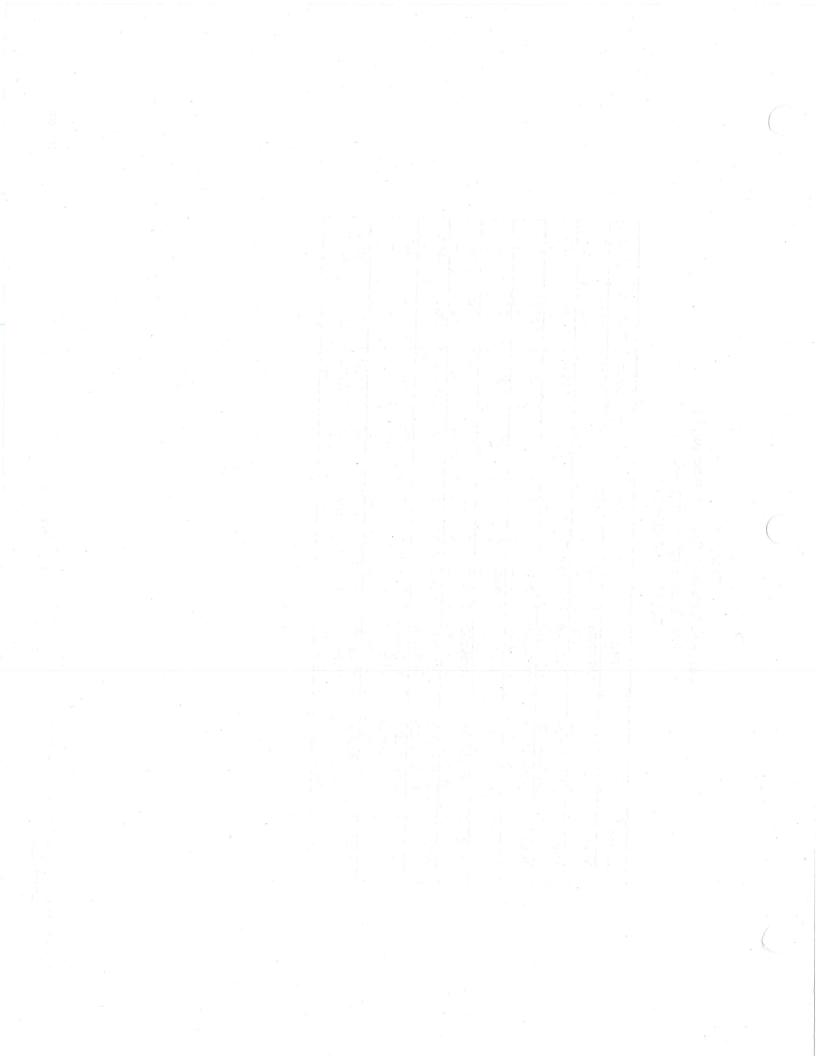
Table 16 Dissolved Metals in Groundwater (µg/L) Precision Engineering, Inc. Seattle, Washington

							* v											-
Zinc	10.0 U	1	10.0 U	1	10.0 N	ī	10.0 U	I	14.0	I	10.0 U	L	10.8	I	1	10.0 U	10.0 U	I
Thallium	1.00 U	1	1.00 U	1	1.00 U	I	1.00 U	1	1.00 U	1	1.00 U	I	1.00 U	1	L	1.00 U	1.00 U	1
Silver	1.00 U	I	1.00 U	1	1.00 U	I	1.00 U	I	1.00 U	I	1.00 U	1	1.00 U	I	I	1.00 U	1.00 U	1
Selenium	1.00 U	1.1 U	6.28	10	1.00 U	1.1 U	1.00 U	1.1 U	1000 U	1.1 U	12.3	19	2.77	5.0	4.6	4.11	4.27	3.6
Nickel	1.00 U	1	2.51	-1	1.70	I	1.33	ł	32.2	I	16.3	١	11.8	I	I	2.91	3.14	, I
Mercury	0.200 U	1	0.200 U	I	0.200 U	1	0.200 U	1	0.200 U	I	0.200 U	1	0.200 U	I	I	0.200 U	0.200 U	I
Date	12/27/2005	4/18/2006	12/28/2005	4/19/2006	12/29/2005	4/17/2006	12/27/2005	4/18/2006	12/28/2005	4/19/2006	12/29/2005	4/19/2006	12/28/2005	4/18/2006	4/18/2006	12/28/2005	12/28/2005	4/18/2006
Sample ID	MW1-122705	MW1-041806	MW2-122805	MW2-041906	MW3-122905	MW3-041706	MW4-122705	MW4-041806	MW5-122805	MW5-041906	MV6-122905	MW6-041906	MW7-122805	MW7-041806	MW7-041806-Dup	MW8-122805	MWDup-122805	MW8-041806
Location	1MM		MW2		MW3		MW4		MW5		MW6		MW7			MINNB		

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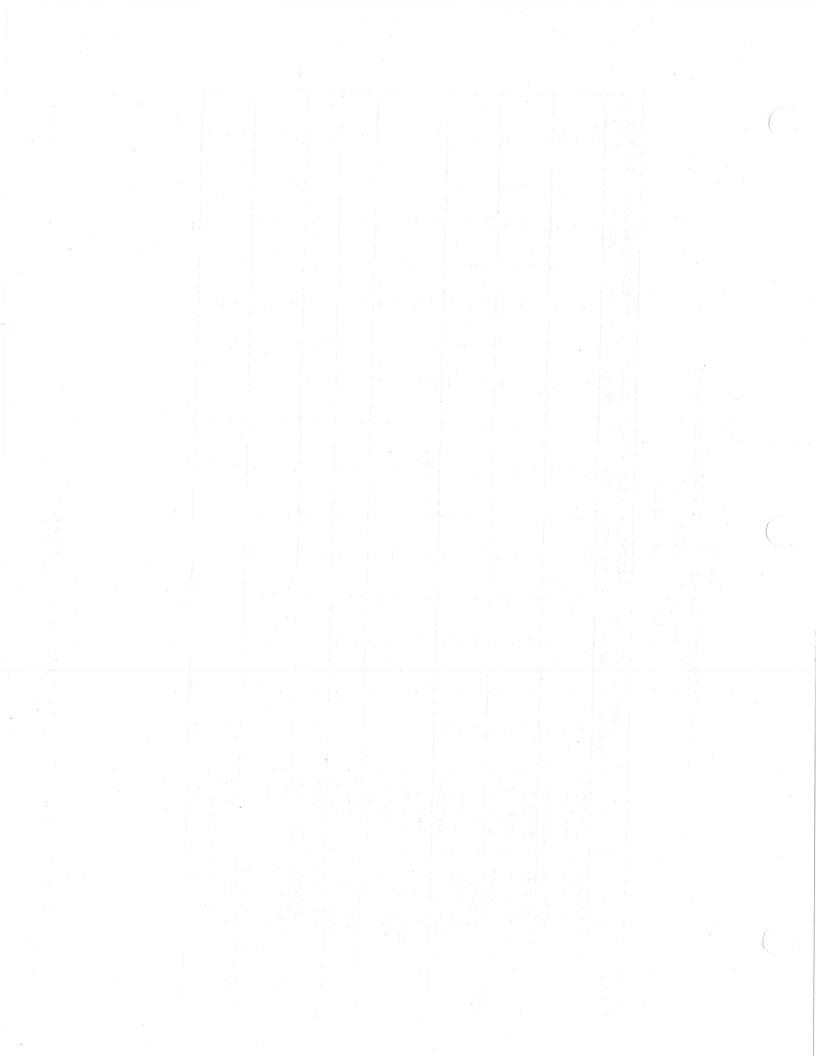
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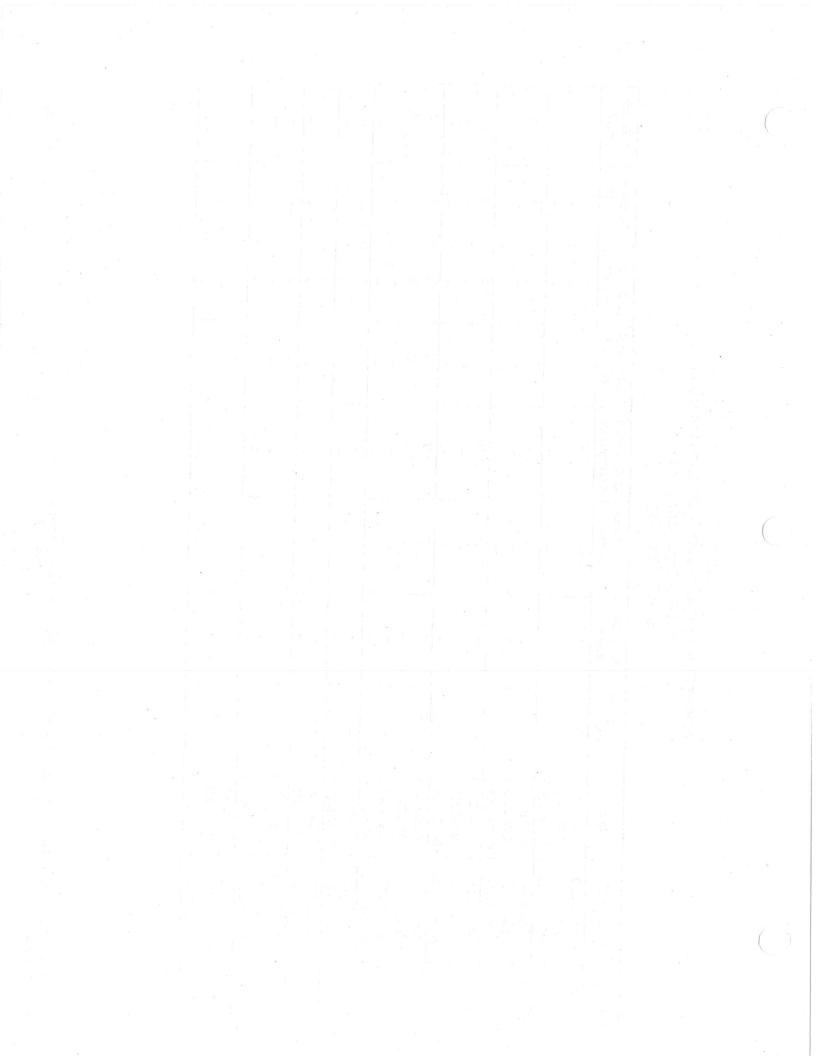
1,2,3-Trichlorobenzene 10 1 U I ł I ł 10 ł 1 1 U I ł 10 I ł ł I ł 1 ł I 1,1-Dichloropropene 1 U 1 U l ł 1 U l 10 I 1 ł I ł I ł 10 ł 1 l ١ ł I I I 1,1-Dichloroethene 1 C 1 U ۱ I ł 1 U 10 1 ł ł l 10 ł 1 I I I l I I ł 1,1-Dichloroethane 1 U 1 U ł ł I. ł 1 U 1 1 l I 1 U 1 U I I ł I I I I 1 I 1,1,2-Trichloroethane 1 U 1 1 U ł ł 10 I I ł 1 U 1 U ł ۱ I ۱ I ł 1 I ł Ł 1 1,1,2,2-Tetrachloroethane 1 U I 1 U I I 10 1 U 1 ł ł 1 U l ł ł l ł I I I 1 I 1 1,1,1-Trichloroethane 1 C 1 U I ł I 10 I ł ł I 1 U 1 C ł l I ł I I ł 1 ł I 1,1,1,2-Tetra-chloroethane 10 1 U ł ł 1 U 10 I ł 1 U l 1 ł I 1 I I ł 1 I ł ۱ I l 12/28/2005 12/28/2005 04/18/2006 04/18/2006 12/28/2005 04/19/2006 12/29/2005 04/19/2006 12/28/2005 04/18/2006 12/27/2005 04/18/2006 2/29/2005 04/17/2006 12/27/2005 04/18/2006 12/28/2005 04/19/2006 6/17/2005 6/9/2005 6/9/2005 6/16/2005 6/7/2005 Date MW7-041806-Dup MWDUP-122805 MW4-0605-Dup MW8-122805 MW8-041806 MW6-122905 MW7-122805 MW7-041806 MW6-041906 MW4-122705 MW4-041806 MW5-122805 MW5-041906 MW3-041706 MW2-W-0605 MW2-041906 MW3-122905 MW1-041806 MW2-122805 MW1-122705 MW1-W-35.0 MW3-0605 MW4-0605 Sample ID Location MW8 MW6 MW5 **TWW** MW4 MW2 **MW3 NW1**

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1,2-Dichloropropane 10 1 U 1 U I ł I 1 10 1 1 U ł ۱ I 1 1 ł I 1 ۱ ł 1 1,2-Dichloroethane 10 1 U Т ł U L 1 U 1 U ۱ 1 I ł I I 1 ł ł ł I ۱ ł ł I 1,2-Dichlorobenzene 1 U 1 U I I l 1 U l 1 ł 10 ł ł ł ł 10 ۱ I I ł ł ł ł 1,2-Dibromoethane 1 U 10 1 U 10 ł I ł ł 1 U ł ł 1 ł ł ۱ 1 ł ł Ī I ł ł 1,2-Dibromo-3chloropropane 1 U 10 10 I ł 1 10 1 U I ł I 1 ł I I I I l ł ł I 1 1,2,4-Trimethylbenzene 1 U 1 U 1 U ł 1 U ۱ I I ł ł D C ł I 1 1 1 ł I L ł ١ ł 1 1,2,4-Trichlorobenzene 10 1 U 1 U 1 U ۱ I ł 1 I 1 U I ł I I I l I 1 ł ł 1 I T 1,2,3-Trichloropropane 10 1 U 1 U 1 C ł I I L ł 1 U I I ł ١ I ł 1 1 l I I I I 12/28/2005 12/28/2005 04/18/2006 12/28/2005 04/18/2006 12/28/2005 12/29/2005 04/19/2006 04/18/2006 2/27/2005 04/18/2006 04/19/2006 12/29/2005 04/17/2006 12/28/2005 04/19/2006 12/27/2005 04/18/2006 6/16/2005 6/17/2005 6/7/2005 6/9/2005 6/9/2005 Date //W7-041806-Dup MWDUP-122805 MIW4-0605-Dup MW8-041806 MW8-122805 MW7-041806 MW6-041906 MW7-122805 MW3-041706 MW4-122705 MW4-041806 MW5-122805 MW5-041906 MW6-122905 MW2-W-0605 MW3-122905 MW2-122805 MW2-041906 MW1-041806 MW1-W-35.0 MW1-122705 MW4-0605 MW3-0605 Sample ID MW8 Location MW6 **NW7** MW4 MW5 **MW3** MW2 MW1

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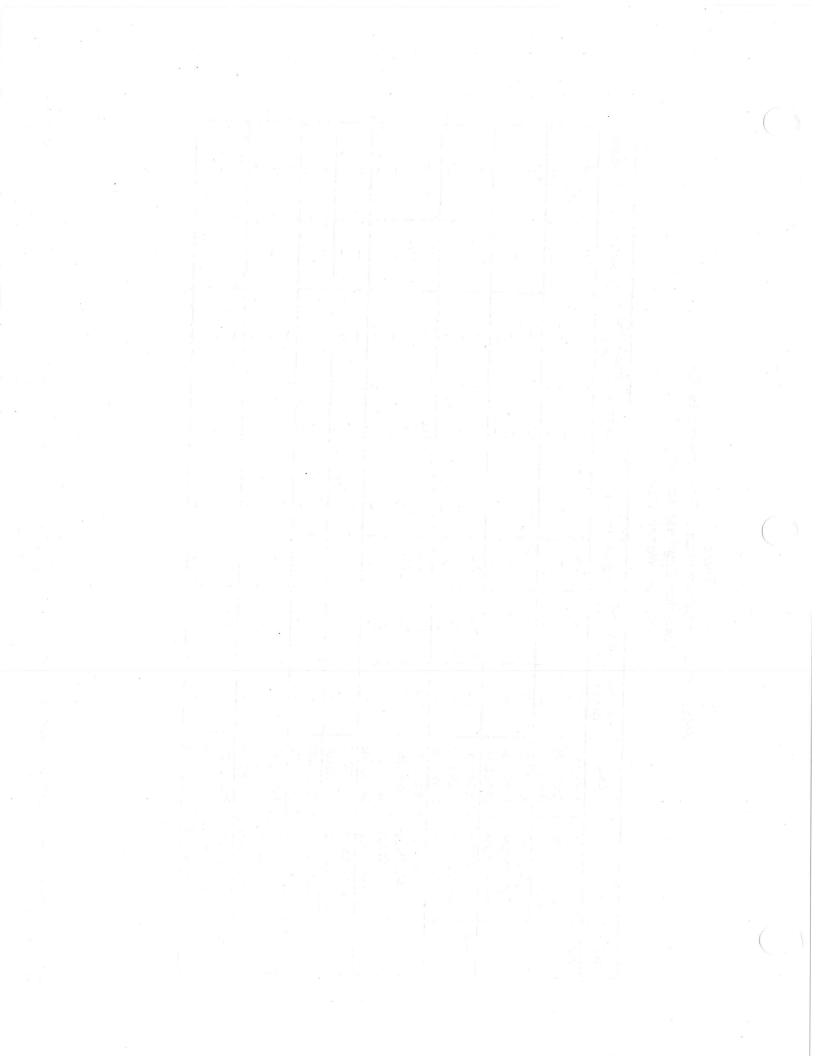
4-Chlorotoluene 1 U T 1 U 1 U I DI L 10 ł ł ł 1 ł ۱ I ł I ł I 1 2-Chlorotoluene 1 U 1 C 1 I I 10 1 U I I ł I ł 1 U ł 1 1 ł I 1 I I l I 2-Butanone 15.5 10.7 2 U 2 U 17 5.43 2 U 5 U 2 U 5 U 2 U 5 U 34 I 5 U l I l I ł 2,2-Dichloropropane 1 U 1 U 10 1 10 ۱ ł ł I I ł I 1 U 1 l ł I l I I I ł 1,4-Dichlorobenzene 1 U 10 10 ł 10 1 I ł I I I I 1 1 1 C 1 1 ł I. I l ł 1,3-Dichloropropane 1 U 1 U I 1 U 1 U 1 1 10 I I ł I 1 ł I ł I I 1 I I 1,3-Dichlorobenzene 1 U 1 U 1 U 1 10 l l l 10 l ł ł 1 I 1 ł 1 I I I L I 1,3,5-Trimethylbenzene 1 U 1 U 1 U I I ł 1 U 1 C I ł I I 1 ł l l I I L I I 1 04/18/2006 12/28/2005 12/28/2005 04/19/2006 12/28/2005 04/18/2006 04/18/2006 12/28/2005 04/19/2006 12/29/2005 12/27/2005 04/18/2006 04/17/2006 04/19/2006 12/29/2005 2/27/2005 04/18/2006 12/28/2005 6/17/2005 6/16/2005 6/9/2005 6/9/2005 6/7/2005 Date MW7-041806-Dup MWDUP-122805 MW8-122805 MW4-0605-Dup MW8-041806 MW6-041906 MW7-122805 MW7-041806 MW4-041806 MW5-041906 MW6-122905 MW4-122705 MW5-122805 MW3-122905 MW3-041706 MW1-122705 MW1-041806 MW2-W-0605 MW2-122805 MW2-041906 MW1-W-35.0 MW4-0605 MW3-0605 Sample ID MW8 Location MW6 MW5 **NW7** MW4 MW3 MW2 **NWN**

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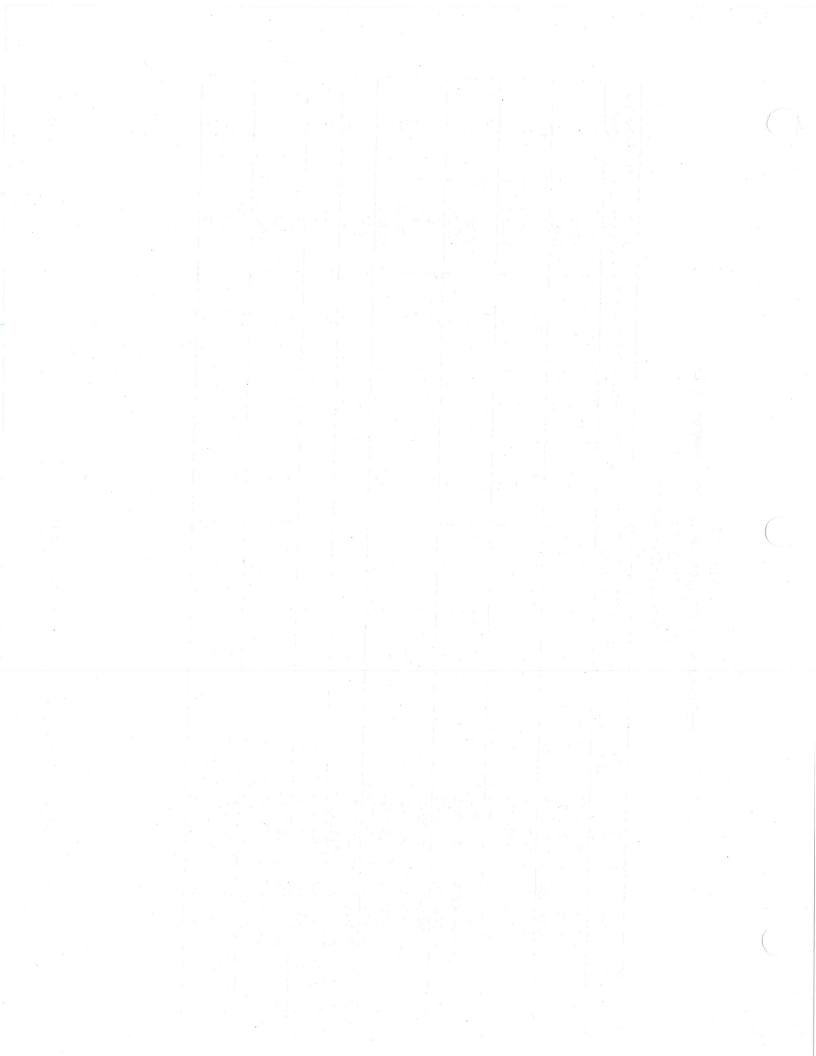
Bromomethane 1 U 1 10 10 I ł ł 1 C ł I I ł 1 U ł ۱ 1 I I I Bromoform 10 1 U 1 U I I I I I 1 U 1 U I I I 1 l ł ł ł 1 I Ĩ 1 1 Bromodichloromethane 10 1 U I 1 U 1 U 1 U 1 I I ۱ ł I I 1 ۱ I I l ł l Bromobenzene 1 U 1 C 1 U 1 I l I I I ł l 1 U 1 I ۱ 1 ł I 1 I ł Benzene 10 1 U 1 U ۱ I ł I ł I 10 I I I I 1 10 ł ľ ł I ł I Acetone 5 U 5 U 17.1 5 U 5 U I. I I 1 1 ł ł ł ł ł 1 l ł I. ł ١ ł l 4-Methyl-2pentanone 5 U 5 U 5 U 5 U 5 U ł I ł 1 l l I ł ł I l I I I ł l I 4-Isopropyltoluene 1 U 1 U 1 0 ł 1 1 U Ī I ł l 10 ł I ł I ł ł 1 I l 12/28/2005 12/28/2005 04/18/2006 04/18/2006 04/18/2006 12/28/2005 12/29/2005 04/19/2006 12/28/2005 04/19/2006 12/27/2005 04/18/2006 12/29/2005 04/17/2006 12/27/2005 04/18/2006 12/28/2005 04/19/2006 6/17/2005 6/9/2005 6/7/2005 6/9/2005 6/16/2005 Date MW7-041806-Dup MWDUP-122805 MW4-0605-Dup MW8-122805 MW8-041806 MW5-122805 MW6-122905 MW6-041906 MW7-122805 MW7-041806 MW4-041806 MW5-041906 MW4-122705 MW3-122905 MW3-041706 MW2-W-0605 MW2-122805 MW2-041906 MW1-W-35.0 MW1-122705 MW1-041806 MW4-0605 MW3-0605 Sample ID MW8 Location **MW5** MW6 TWW7 MW2 **MW3** MW4 **NW1**

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cis-1,3-Dichloropropene 10 10 I I l 1 C 1 C ł 10 ł ł ł ł I ł ł ł ١ I 1 Dichloroethene 0.200 U 0.062 U 0.062 U 0.062 U 0.200 U 0.062 U 0.200 U 0.062 U 1.00 U 0.200 U 0.062 U 0.062 U 0.920 cis-1,2-0.200 1.03 1.5 2.42 1 U 1 U 1 U 10 10 Chloromethane 1 U 10 1 I 1 I ł ł 1 U 1 C 10 1 ł 1 ł I ł I I ł l l 1 Chloroform 1 U 1 U 1 C ۱ l 1 I I 1 1 ł 10 10 ۱ l I ł I ł I I ł I Chloroethane 1 U 1.U 10 I I I ł I ł ł I 1 U 1 U ł I 1 ł I l ŀ ł ł T Chlorobromomethane 1 U 1 U 1 U l 10 l 1 ۱ l I ۱ ł ł ł 10 ł ł I I ł ł I 1 Chlorobenzene 1 U 10 I 1 I I ł 1 C I ł 10 I I ł 10 I I I 1 ۱ 1 I I Tetrachloride Carbon 1 U 1 U I I I 1 U I 1 U I ł ł 1 U I ł I I I 1 ł I 1 ۱ I 12/28/2005 12/28/2005 04/18/2006 12/28/2005 12/28/2005 04/18/2006 04/18/2006 2/27/2005 04/18/2006 04/19/2006 12/29/2005 04/19/2006 04/17/2006 12/28/2005 04/19/2006 12/29/2005 12/27/2005 04/18/2006 6/17/2005 6/7/2005 6/9/2005 6/9/2005 6/16/2005 Date VIV7-041806-Dup MWDUP-122805 MIW4-0605-Dup MW8-122805 MIVVB-041806 MW5-122805 MW6-122905 MW6-041906 MW7-122805 MW7-041806 MW4-122705 MW4-041806 MW5-041906 MW3-122905 MW3-041706 MW2-W-0605 MW1-041806 MW2-122805 MW2-041906 MW1-122705 MW1-W-35.0 MW4-0605 MW3-0605 Sample ID Location MW6 MW8 MW5 **WW7 MW4** MW3 MW2 **NW1**

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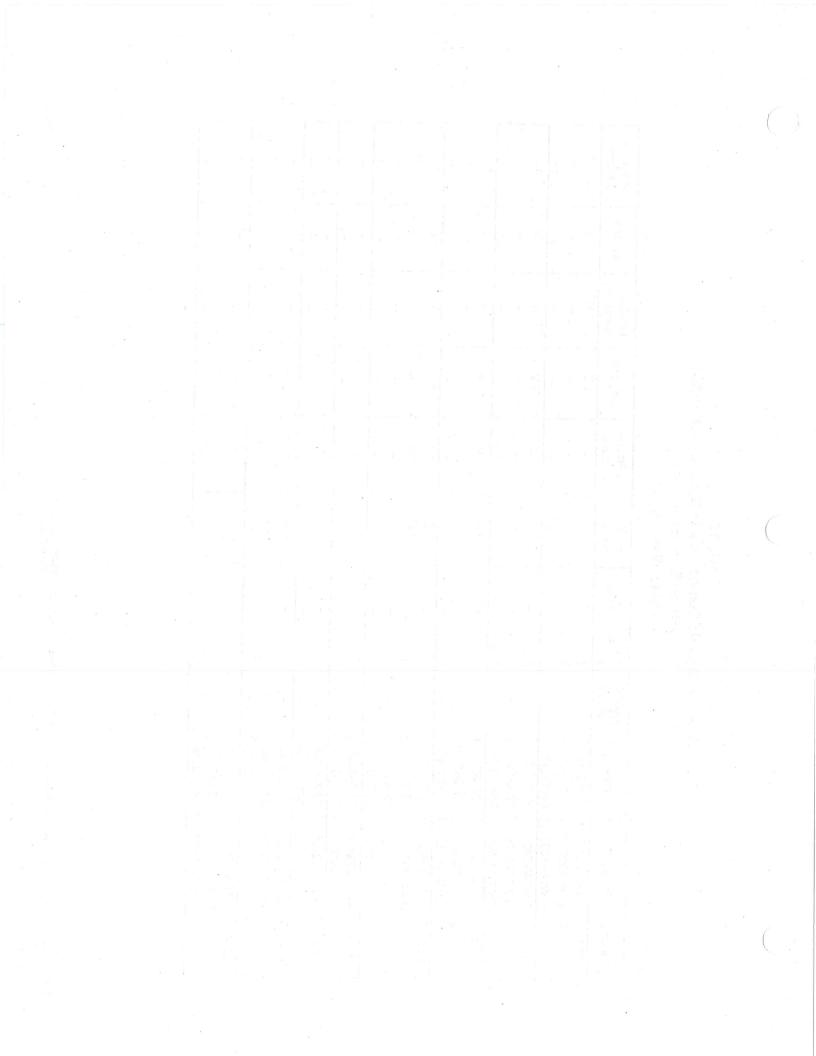


Methyl tertbutyl ether 1 C ł 1 U 1 C ł ł ł 10 1 C ł I I I ł ł ł Ĭ I ł i ł m,p-Xylene 2 U 2 U 2 U I 1 I I 2 U 2 U ł 1 ł ۱ I I ł ł I ł ł Isopropylbenzene 1 U 1 U ł ł 1 U 1 ł I I ł ł 1 1 U I 1 U I I ł 1 I I 1 Hexachlorobutadiene 1 U 1 C 1 C I l I I ł ł 1 1 U l l ł 1 10 ł I ł I L I I Ethylbenzene 1 U 1 U I I I 10 1 U 10 1 I 1 ł ł ł ۱ I I 1 l ł 1 difluoromethane Dichloro-1 U 1 U 1 U 10 1 U ł ł 1 I 1 ł I l ł I ł ł ł ł ł I methane Dibromo-1 U 10 1 U 1 U 1 U I ł l ł I I 1 ł I 1 ł -1 ł 1 I I I chloromethane Dibromo-1 U 1 U 1 U l 1 1 I I I ł 10 10 ł 1 ł I ł ł 1 I 1 12/28/2005 04/18/2006 12/29/2005 12/28/2005 04/18/2006 04/18/2006 12/28/2005 12/28/2005 04/19/2006 12/29/2005 04/17/2006 12/27/2005 04/18/2006 04/19/2006 04/19/2006 04/18/2006 12/28/2005 12/27/2005 6/17/2005 6/7/2005 6/9/2005 6/9/2005 6/16/2005 Date MW7-041806-Dup MWDUP-122805 MW4-0605-Dup MIVV8-122805 MW8-041806 MW6-041906 MW7-122805 MW7-041806 MW6-122905 MW4-122705 MIVV4-041806 MW5-122805 MW5-041906 MW3-041706 MW2-W-0605 MW1-041806 MW2-122805 MW2-041906 MW3-122905 MW1-122705 MW4-0605 MW1-W-35.0 MW3-0605 Sample ID Location MW8 MW5 MW6 **TWM** MW4 MW2 MW3 **NW1**



tert-Butylbenzene 10 1 U ł 1 U I 10 I I I I 1 ł I l I 1 ł 1 ł I Styrene 1 U 1 U I 1 1 U 10 ۱ ł I 10 I ł I 1 I I l I. I 1 l I sec-Butylbenzene 1 U U L 10 1 U 1 U 1 I I ł ł ۱ I l I ł 1 I I I ł ł ł I o-Xylene 1 U 1 U 10 1 U 1 U I l I I I ł I I ł ł I 1 I 1 I I ł n-Propylbenzene 10 1 U 10 10 l l I ł I I 10 I ł l I I ۱ I ł I I I n-Butylbenzene 1 U 1 U 1 U 1 U I 1 I 1 U ľ I 1 l 1 -۱ - 1 I I ł I l I I. Naphthalene 1 U 1 U 10 I ł I 1 U ł I 1 ł 10 I I ł 1 l ł ł 1 I ł ł Methylene chloride 10 1 U 1 U 1 U 10 1 I L ł I I ł I 1 1 ł I I I 1 12/29/2005 12/28/2005 12/28/2005 12/28/2005 04/18/2006 12/28/2005 04/19/2006 04/18/2006 04/18/2006 04/17/2006 12/27/2005 04/18/2006 04/19/2006 12/28/2005 04/19/2006 12/29/2005 12/27/2005 04/18/2006 6/17/2005 6/9/2005 6/9/2005 6/16/2005 6/7/2005 Date MW7-041806-Dup MWDUP-122805 MW4-0605-Dup MW8-122805 MIVV8-041806 MW7-041806 MW6-041906 MW7-122805 MW4-122705 MW4-041806 MW5-122805 MW5-041906 MW6-122905 MW2-041906 MW3-122905 MW3-041706 MW1-122705 MW1-041806 MW2-W-0605 MW2-122805 MW1-W-35.0 MW4-0605 MW3-0605 Sample ID Location MW8 MW5 MW6 **WW7** MW3 MW4 MW2 **NW1**

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										κ													
Vinyl chloride	1 U	0.200 U	0.14 U	1 U	0.200 U	0.14 U	10	0.200 U	0.14 U	10	10	0.200 U	0.14 U	0.200 U	0.14 U	1.00 U	0.14 U	0.200 U	0.14 U	0.14 U	0.560	0.400	0.80 J
Trichloro- fluoromethane	1 U	1	Ì	1 U	I	1	1 U	1	1	10	1 U	1	I	l	1	I	L	1	1	1	I	1	l
Trichloro- ethene	1 U	0.200 U	0.055 U	1 U	0.200 U	0.055 U	10	0.200 U	0.055 U	10	10	0.200 U	0.055 U	22.1	7.9	1.00 U	0.055 U	0.200 U	0.055 U	0.055 U	0.200 U	0.200 U	0.055 U
trans-1,3-Dichloro- propene	10	1	I	1 U	I	1	10	l	1	1U	1 U	I	1	I	I	, I	1	4	I	I	1	I	1
trans-1,2- Dichloroethene	1 U	0.200 U	0.091 U	1 U	0.200 U	0.091 U	1 U	0.200 U	0.091 U	10	1 U	0.200 U	0.091 U	0.260	0.091 U	1.00 U	0.091 U	0.200 U	0.091 U	0.091 U	0.200 U	0.200 U	0.091 U
Toluene	10	I	1	10	1	I	1 U	I	1	10	1 U	I	I	1		1	I	1	I	I	1	1	1
Tetra- chloroethene	10	I	I	10	I	1	1 U	1	I	10	1 U	I	1	-1	- 	-1	I	-1	1	1	1	I	I
Date	6/16/2005	12/27/2005	04/18/2006	6/17/2005	12/28/2005	04/19/2006	6/7/2005	12/29/2005	04/17/2006	6/9/2005	6/9/2005	12/27/2005	04/18/2006	12/28/2005	04/19/2006	12/29/2005	04/19/2006	12/28/2005	04/18/2006	04/18/2006	12/28/2005	12/28/2005	04/18/2006
Sample ID	MW1-W-35.0	MW1-122705	MW1-041806	MVV2-VV-0605	MW2-122805	MW2-041906	MW3-0605	MW3-122905	MW3-041706	MW4-0605	MW4-0605-Dup	MW4-122705	MVV4-041806	MIN/5-122805	MW5-041906	MW/6-122905	MIW6-041906	MW7-122805	MW7-041806	MW/7-041806-Dun	MIN/R-122805		MW8-041806
Location	1MM			MW2			MW3			MW4				NAME		MINNE		MINT7		-	MMMB		

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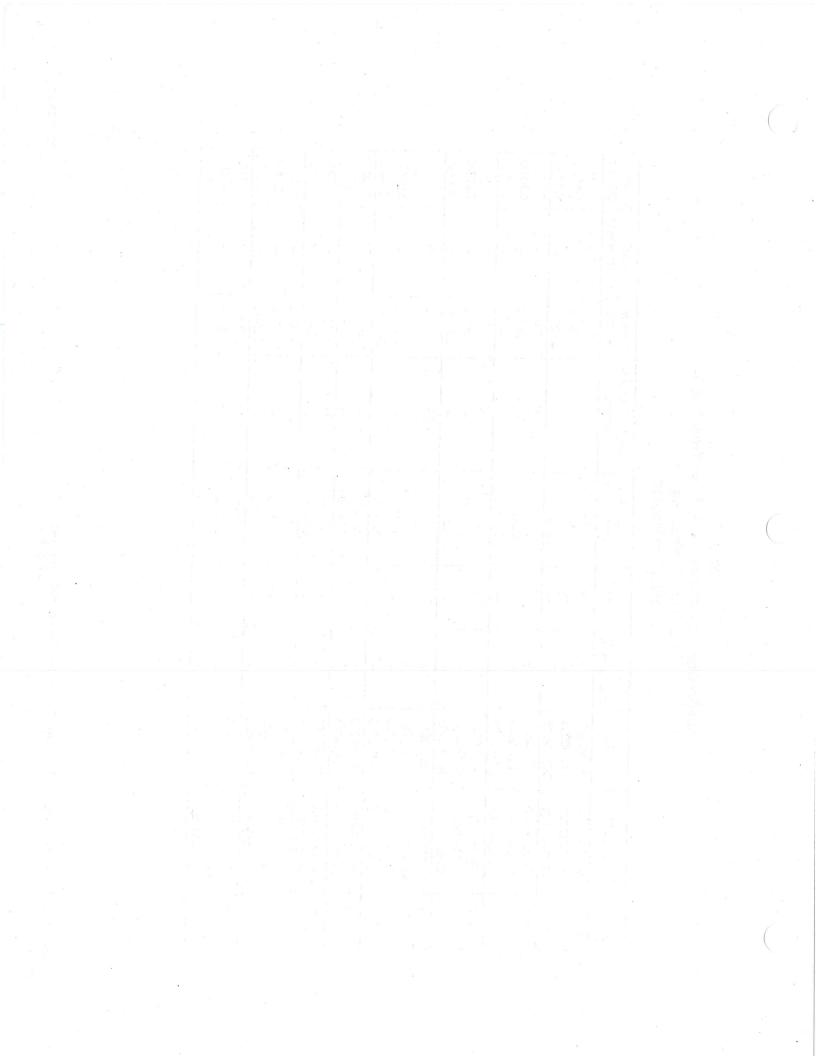
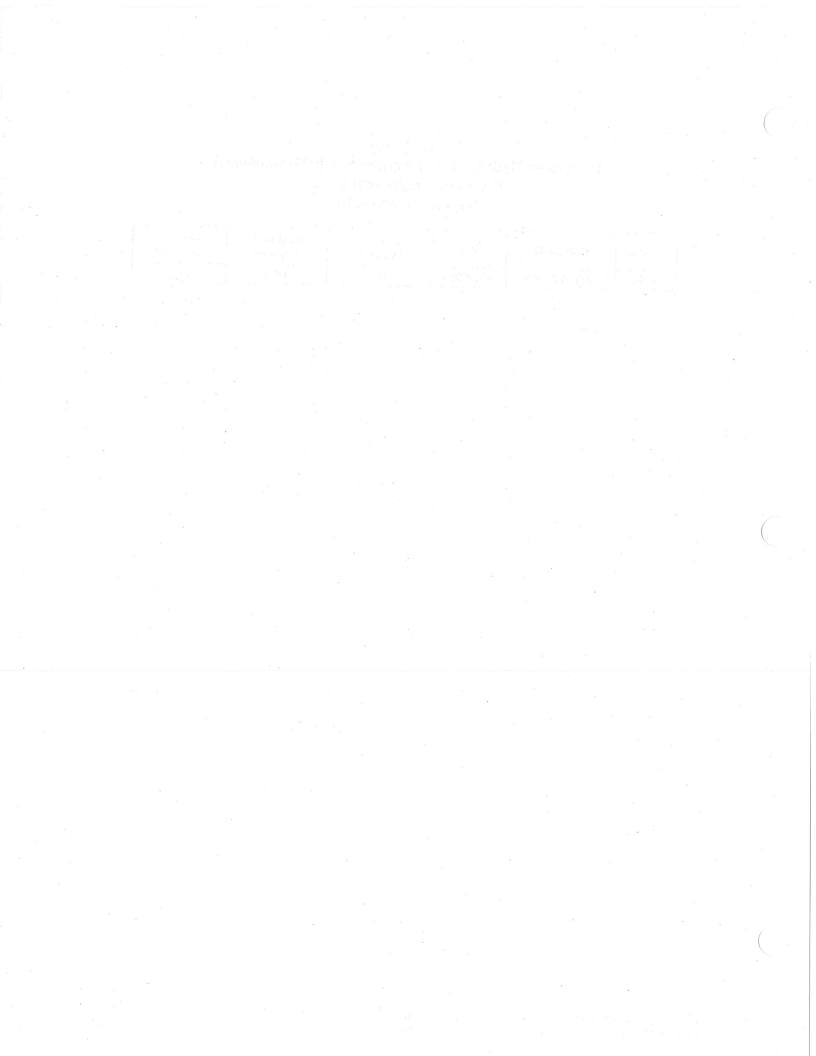


Table 18
Petroleum Hydrocarbon Identification in Groundwater
Precision Engineering, Inc.
Seattle, Washington

Location	Sample ID	Date	Gasoline-Range Organics	Diesel-Range Organics	Oil-Range Organics
MW2	MW2-W-0605	6/17/2005	ND	DET	DET



				and the second	
Location	Sample ID	Date	Gasoline-Range Organics	Diesel-Range Organics	Oil-Range Organics
MW1	MW1-122705	12/27/2005		0.248 U	0.495 U
	MW1-041806	4/18/2006		0.26 U	0.52 U
MANO	MW2-W-0605	6/17/2005	0.1 U	0.438	0.512
MW2	MW2-122805	12/28/2005		1.19	1.04
	MW2-041906	4/19/2006	8	0.41	0.58 U
1.014/0	MW3-122905	12/29/2005	· · · · · · · · · · · · · · · · · · ·	0.312	0.505 U
MW3	MW3-041706	4/17/2006		0.28 U	0.57 U
	MW4-122705	12/27/2005		0.248 U	0.495 U
MW4	the state of the second state	4/18/2006		0.27 U	0.54 U
	MW4-041806	12/28/2005		0.831	0.495 U
MW5	MW5-122805	4/19/2006		0.26 U	0.51 U
	MW5-041906	12/29/2005		2.64	1.32
MW6	MW6-122905	4/19/2006		0.76	1.2
	MW6-041906	12/28/2005		0.248 U	0.495 U
MW7	MW7-122805			0.26 U	0.51 U
	MW7-041806	4/18/2006	-	0.26 U	0.51 U
	MW7-041806-Dup	4/18/2006		1.71	1.00
MW8	MW8-122805	12/28/2005		1.79	1.21
	MWDup-122805	12/28/2005		0.45	0.58 U
	MW8-041806	4/18/2006		0,45	0.000

Table 19 Petroleum Hydrocarbons in Groundwater (mg/L) Precision Engineering, Inc. Seattle, Washington

Table 20 Polycyclic Aromatic Hydrocarbons in Groundwater (µg/L) Precision Engineering, Inc. Seattle, Washington

			_				_	_					-							-	_		7
Benzo(a) anthracene	0.107	0.029 J	0.192 U	0.00990 U	0.031 J	· 0 0100 U	0 0005 11	0.0000	0.0100 0	0.0092 U	U 06600.0		0.0086 0	0.00990 U	0.0093 U	U 06600 0		r c20.0	0.0091 U	0.0100 U	0 0990 0		0.110.0
Anthracene	0.114 U	0.030 J	0.192 U	0.0990 U	0.035 J	0 100 11		0.0004 0	0.100 U	0.0082 U	0 0990 1		0.033 J	U 0660.0	0.039 J		0,000,0	0.037 J	0.029 J	0.100 U			0.010.0
Acenaphthylene	0.114 U	0.020 J	0.192 U	0 0990 U	0.0044 U	0 100 11	0.100.0	0.0042 U	0.100 U	0.019 J		0.0000.0	0.020 J	0.0990 U	0.0041 U		0.0330.0	0.028 J	0.0041 U	0.100 U		0.0880.0	0.0050 U
Acenaphthene	0.114 U	0.0038 J	n 197 LI		0.015 J	110010	0.100 U	0.0032 U	0.100 U	0.0031 U		0.0330.0	0.0061 J	U 0660.0	0 0031 1	1100000	0.0880.0	0.011 J	0.0043 J	0 100 11		0.0880.0	0.0038 U
2-Methyl- naphthalene	0 114 U	0 0086 U	0 481 11				0.100 U	0.0095 U	0.100 U	0.0092 U	- 0000 0	0.0990.0	0.017 J	0 0990 11	0.012		0.0990 0	0.014 J	0.0091 U	0 100 1	0.00	0.0990 U	0.011 U
1-Methyl- naphthalene	0 114 11	0 030 11	0000	1 0000	0.03511	0.000.0	0.100 U	0.034 U	0.100 U	0 033 U		0.0990 U	0.030 U			0.000	0.0990 U	0.032 U	0.032 U	0100	0.100	0.103	0.040 U
2-Chloro- naphthalene		1	1 0 0	0.19Z U	1	1	1	1		ł		1			1	1	1	1	ł		1	1	1
Date		GUUZ/17/7/7	U4/ 16/2000	6/17/2009	12/28/2005	041/18/2000	12/29/2005	04/17/2006	12/27/2005	0002/12/20	04/10/2000	12/28/2005	01/10/2006		CUU2/182/21	04/19/2006	12/28/2005	04/18/2006	0/18/2006		GUUZ/82/21	12/28/2005	04/18/2006
Sample ID	101001 1111	GD/771-LAAM	MW1-041806	MW2-W-0605	MW2-122805	MW2-041906	MW3-122905	MW3-041706	MININ 122705	001221-44VIV	MIVV4-U418U0	MW5-122805	NIME ONTOOR		GURZZ1-9NNM	MW6-041906	MW7-122805	MINT 011806		MIVV/-U410U0-LUU	MW8-122805	MWDup-122805	MW8-041806
Location		1MM		MW2			MW3		NAL AL	INIV 4		MW5			MW6		NINN7				MW8		

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Table 20 Polycyclic Aromatic Hydrocarbons in Groundwater (µg/L) Precision Engineering, Inc. Seattle, Washington

										-							the state of the s		
Dibenzo(a,h) anthracene ,	0.0114 U	0.011 U	0.192 U	0.00990 U	0.013 U	0.0100 U	0.013 U	0.0100 U	0.012 U	0.00990 U	0.011 U	0.00990 U	0.012 U	0.00990 U	0.038 J	0.012 U	0.0100 U	0.00990 U	0.015 U
Chrysene	0.132	0.014 J	0.192 U	0.00990 U	0.0098 U	0.0100 U	0.0095 U	0.0100 U	0.0092 U	U 06600.0	0.0086 U	0.00990 U	0.0093 U	U 06600.0	0.013 J	0.0091 U	0.0100 U	0.00990 U	0.011 U
Benzo(ghi) perylene	0.114 U	0.017 U	0.192 U	0.0990 U	0.020 U	0.100 U	0.019 U	0.100 U	0.018 U	0.0990 U	0.017 U	0.0990 U	0.019 U	0.0990 U	0.018 U	0.018 U	0.100 U	0.0990 U	0.023 U
Benzo(b+k) fluoranthene	1	0.030 U	0.962 U	I	0.034 U	I	0.033 U	I	0.032 U	1	0.030 U	1	0.032 U	, I	0.031 U	0.031 U	I	1	0.039 U
Benzo(k) fluoranthene	0.108	ł	1	U 06600.0	I	0.0100 U	1	0.0100 U	l	0.00990 U	1	0.00990 U	I	U 06600.0	I	I	0.0100 U	0.00990 U	I
Benzo(b) fluoranthene	0.104	1	1	U 06600.0	1	0.0100 U	l	0.0100 U	I	0.00990 U	ł	U 06600.0	I	0.00990 U	ł	I	0.0100 U	0.00990 U	I
Benzo(a) pyrene	0.0114 U	0.057 U	0.192 U	0.00990 U	0.066 U	0.0100 U	0.063 U	0.0100 U	0.061 U	U 06600.0	0.057 U	U 06600.0	0.062 U	U 06600.0	0.061 U	0.061 U	0.0100 U	0.00990 U	0.075 U
Date	12/27/2005	04/18/2006	6/17/2005	12/28/2005	04/19/2006	12/29/2005	04/17/2006	12/27/2005	04/18/2006	12/28/2005	04/19/2006	12/29/2005	04/19/2006	12/28/2005	04/18/2006	04/18/2006	12/28/2005	12/28/2005	04/18/2006
Sample ID	MW1-122705	MW1-041806	MW2-W-0605	MW2-122805	MW2-041906	MW3-122905	MW3-041706	MW4-122705	MW4-041806	MIN/5-122805	MIN/5-041906	MW/6-122905	MW6-041906	MW7-122805	MW77-041806	MW7-041806-Dup	MW8-122805	MWDup-122805	MW8-041806
Location	PINNA		CIMIN			MW3		MW4		MINNE		MINNE		N/N/7			MINNB		

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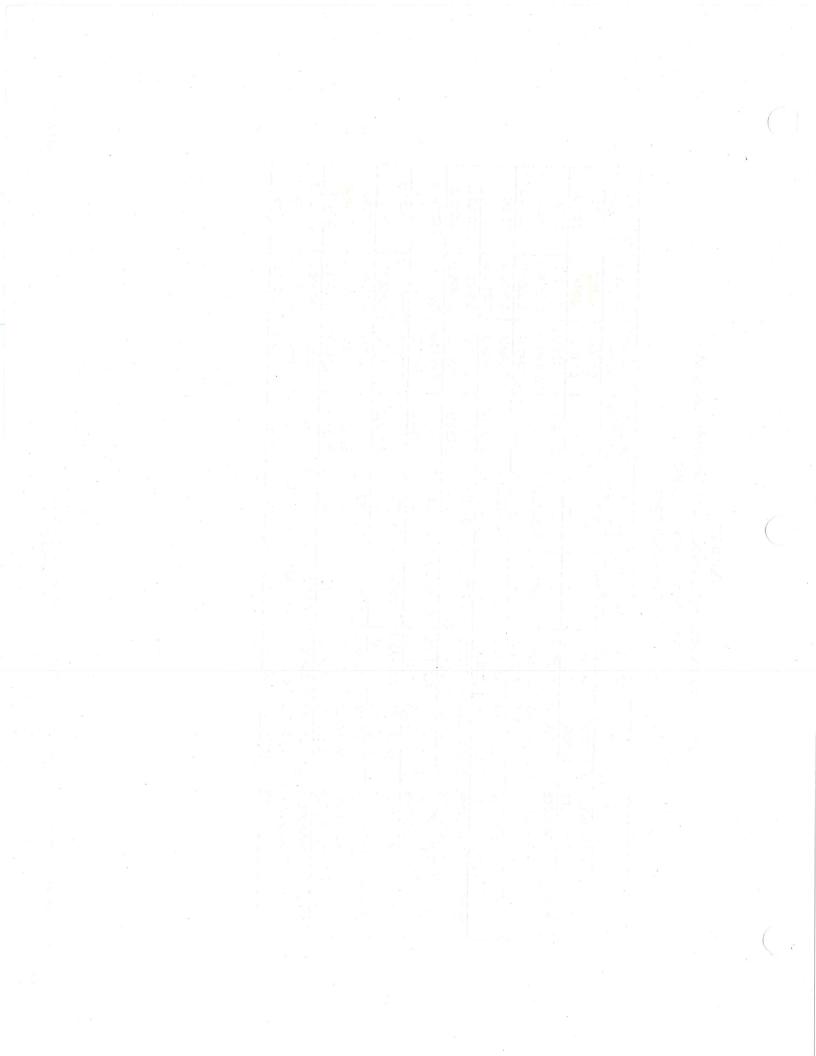
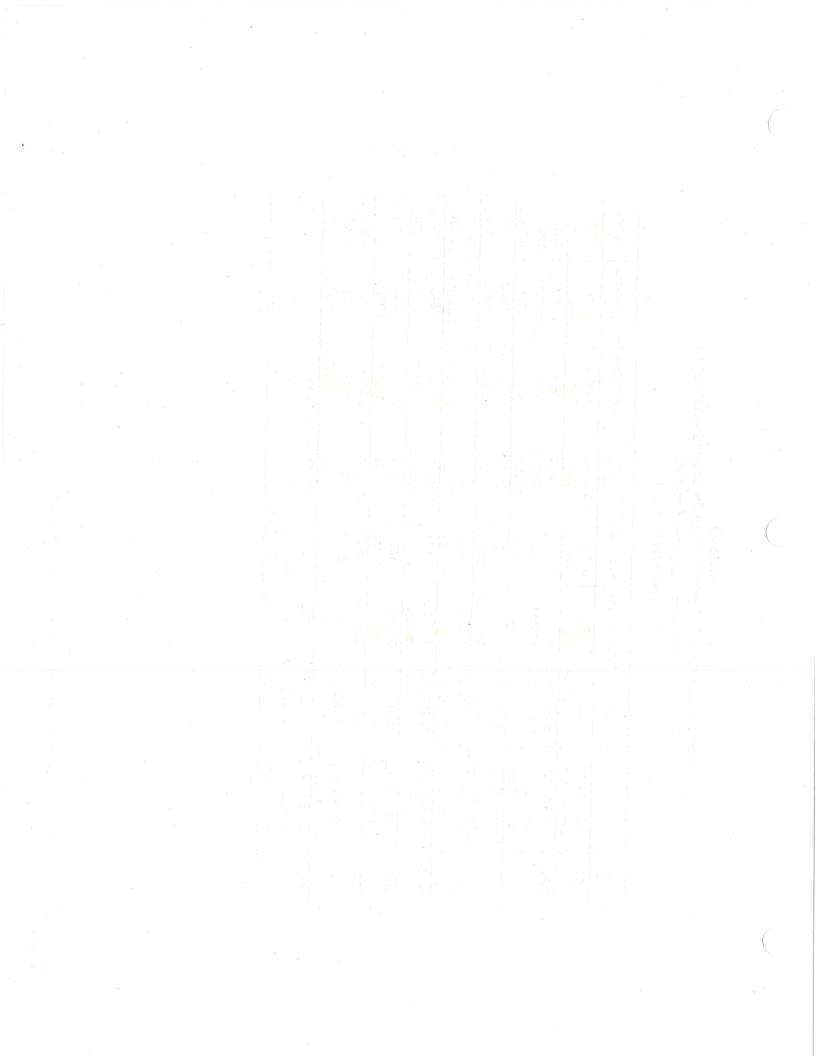


Table 20 Polycyclic Aromatic Hydrocarbons in Groundwater (µg/L) Precision Engineering, Inc. Seattle, Washington

Pyrene	0.310	0.043 U	0.192 U	U 0660.0	0.014 U	0.100 U	0.014 U	0.100 U	0.030 U	0.0990 U	0.032 U	0.0990 U	0.034 U	0.0990 U	0.037 U	0.013 U	0.100 U	0.0990 U	0.016 U
Phenanthrene	0.159	0.024 J	0.192 U	U 0660.0	0.0052 U	0.100 U	0.0032 U	0.100 U	0.0064 U	0.0990 U	0.014 U	0.0990 U	0.011 U	0.0990 U	0.022 J	0.0081 U	0.100 U	0.0990 U	0.0038 U
Naphthalene	0.114 U	0.011 J	0.854	0.271	0.93	0.100 U	0.0063 U	0.100 U	0.011 J	0.457	0.13	0.0990 U	0.013 J	U 0660.0	0.023 J	0.019 J	0.100 U	0.0990 U	0.0075 U
Indeno(1,2,3-cd) pyrene	0.0114 U	0.034 J	0.192 U	U 06600.0	0.016 U	0.0100 U	0.016 U	0.0100 U	0.015 U	0.00990 U	0.014 U	U 06600.0	0.016 U	U 06600.0	0.039 J	0.015 U	0.0100 U	0.00990 U	0.019 U
Fluorene	0.114 U	0.0076 U	0.192 U	0.0990 U	0.0087 U	0.100 U	0.0084 U	0.100 U	0.0082 U	U 0660.0	0.0076 U	0.0990 U	0.0083 U	U 0660.0	0.013 J	0.0081 U	0.100 U ·	0.0990 U	0.010 U
Fluoranthene	0.384	0.053 J	0.192 U	0.0990 U	0.032 J	0.100 U	0.0095 U	0.100 U	0.029 J	0.0990 U	0.032 J	U 0660.0	0.033 J	0.0990 U	0.036 J	0.0091 U	0.100 U	U 0660.0	0.011 U
Date	12/27/2005	04/18/2006	6/17/2005	12/28/2005	04/19/2006	12/29/2005	04/17/2006	12/27/2005	04/18/2006	12/28/2005	04/19/2006	12/29/2005	04/19/2006	12/28/2005	04/18/2006	04/18/2006	12/28/2005	12/28/2005	04/18/2006
Sample ID	MW1-122705	MW1-041806	MW2-W-0605	MW2-122805	MW2-041906	MW3-122905	MVV3-041706	MW4-122705	MW4-041806	MIN/5-122805	MW/5-041906	MNN/6-122905	MW6-041906	MW/7-122805	MW7-041806	MW7-041806-Dup	MMM8-122805	MM/Mu-122805	MW8-041806
Location	LINNIA		CIVIN	1		MVV3		MW4		MINNE		MINAR		N/N/7			MIN/R		U

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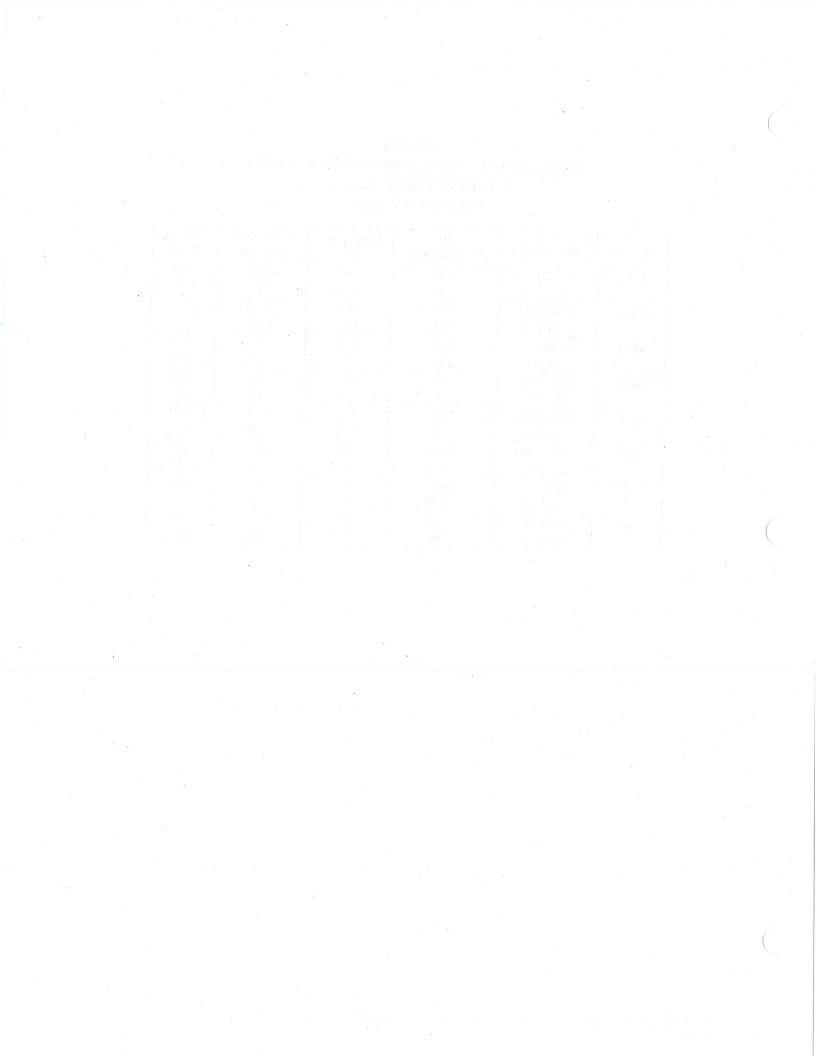
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				and the second se
Date Collected	pH (Standard Units)	Temperature (°C)	Conductivity (µS/cm)	Turbidity (NTUs)
12/27/2005		12.0	232	10.2
,		12.7	219	2.13
		14.5	1484	78.2
		15.9	1260	46.4
	and the second	14.4	397	11.9
		13.8	371	1.14
		16.3	403	4.16
	-	15.6	391	2.70
		16.5	1020	1.46
		15.4	693	1.56
		14.9	2620	16.88
		14.4	1691	24.9
		14.3	1115	3.00
	5	16.3	996	5.33
		14.5		388
	5	14.2	920	135.2
	Date Collected 12/27/2005 4/18/2006 12/28/2005 4/19/2006 12/29/2005 4/17/2006 12/27/2005 4/18/2006 12/28/2005 4/19/2006 12/28/2005 4/19/2006 12/28/2005 4/18/2006 12/28/2005 4/18/2006	Date Collected (Standard Units) 12/27/2005 8.09 4/18/2006 8.42 12/28/2005 6.30 4/19/2006 6.71 12/29/2005 6.13 4/17/2006 6.63 12/27/2005 7.53 4/18/2006 8.15 12/28/2005 5.97 4/19/2006 6.63 12/29/2005 6.29 4/19/2006 6.63 12/29/2005 6.82 4/19/2006 6.63 12/28/2005 6.82 4/18/2006 7.28 12/28/2005 6.43	Date Collected (Standard Units) (°C) 12/27/2005 8.09 12.0 4/18/2006 8.42 12.7 12/28/2005 6.30 14.5 4/19/2006 6.71 15.9 12/29/2005 6.13 14.4 4/17/2006 6.63 13.8 12/27/2005 7.53 16.3 4/18/2006 8.15 15.6 12/28/2005 5.97 16.5 4/19/2006 6.63 14.4 12/28/2005 5.97 16.5 4/19/2006 6.50 15.4 12/28/2005 6.29 14.9 4/19/2006 6.63 14.4 12/28/2005 6.82 14.3 4/18/2006 7.28 16.3 12/28/2005 6.43 14.5	Date Collected(Standard Units)(°C)(μ S/cm)12/27/20058.0912.02324/18/20068.4212.721912/28/20056.3014.514844/19/20066.7115.9126012/29/20056.1314.43974/17/20066.6313.837112/27/20057.5316.34034/18/20068.1515.639112/28/20055.9716.510204/19/20066.6314.469312/29/20056.2914.926204/19/20066.6314.4169112/28/20056.8214.311154/18/20067.2816.399612/28/20056.4314.512/28/20056.4314.512/28/20056.4314.2920

Table 21 Summary of Field Parameters in Groundwater Precision Engineering, Inc. Seattle, Washington

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Volatile Organic Compounds in Sub-Slab Vapor (µg/m³) Precision Engineering, Inc. Seattle, Washington

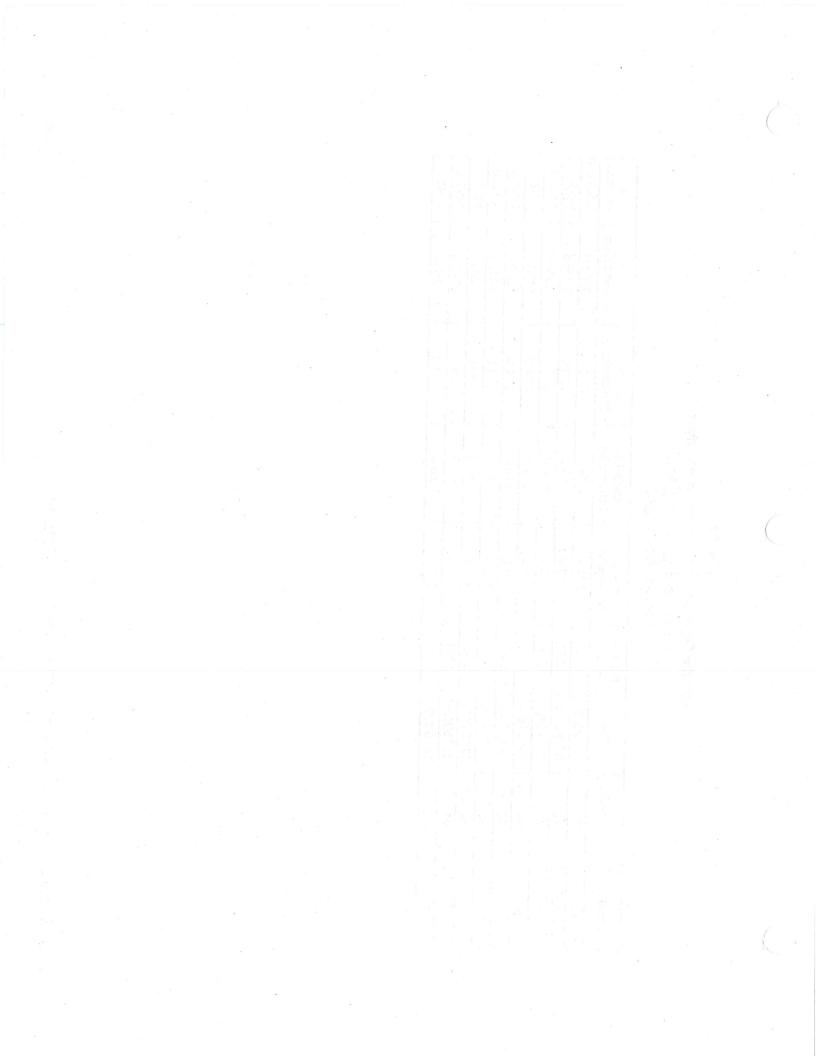
	_	_	-		-	_	-		-		-	_		
Butane	73	160	001	1116	010	NIA		11020	0 067	350	222	330	0000	
Isobutane	5800 J	EEOO -	r nnee	- 0000	7000 J	NIA	NA	11 000	070 N				5 00001 V	
Vinyl chloride	1.9 U		2.3 U		8.4 U		NA		420	1 1 1	1.1 0	11 1 1	1. <i>1</i> U	
trans-1,2- Dichloroethene	3.0 U		3.6 U	A set been	13 U		NA		100 U		2.6 U		2.6 U	
cis-1,2- Dichloroethene	3011	0	3.6 U		470		NA		1700		2.6 U		2.6 U	
Trichloro- ethene	100	t.0 0.	4.9 U		6100		NA		37000		3.5 U		3.5 U	
Date		04/ 10/2000	N4/18/2006	0007101100	00/18/2006	0411017000	0/118/2006	00010110	04/18/2006		04/18/2006		04/18/2006	
Sample ID		A1-042800	AD DAPROR	AZ-04200	SUGCLO CA	A3-042000		24-044000	<u> </u>	000710-01	AG-DA7RDG		A7-042806	
Location		A1		AZ		A3		A4	AE	R	20		A7	



Table 23 Volatile Organic Compounds in Air (µg/m³) Precision Engineering, Inc. Seattle, Washington

Vinyl chloride	0.040 U	0.042 U	0.048 U	0.045 U	0.051 U	0.039 U	0.039 U	0.042 U	0.042 U
1,1- Dichloroethene	0.063 U	0.065 U	0.074 U	0.069 U	0.080 U	0.060 U	0.060 U	0.065 U	0.065 U
1,1- Dichloroethane	0.13 U	0.13 U	0.15 U	0.14 U	0.16 U	0.12 U	0.12 U	0.13 U	0.13 U
trans-1,2- Dichloroethene	0.63 U	0.65 U	0.74 U	0.69 U	0.80 U	0.60 U	0.60 U	0.65 U	0.65 U
cis-1,2- Dichloroethene	0.12 U	0.13 U	0.15 U	0.14 U	0.16 U	0.12 U	0.12 U	0.13 U	0.13 U
Trichloro- ethene	0.2	0.083	0.11	0.14	0.16	0.15	0.15	0.046	0.15
Date	06/13/2006	06/13/2006	06/13/2006	06/13/2006	06/13/2006	06/13/2006	06/13/2006	06/13/2006	06/13/2006
Sample ID	1A1	IA7	IA3	IA4	IA5	IAG	IA6 Dunlicate	147	IAB
Location	101	147	143	IAA	145	IAG	IAG	147	IA8

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Precision Engineering, Inc. Seattle, Washington Table 24 Exposure Scenarios

Medium	Exposure Pathway	Receptors	Selected Pathway	Reason for Selection or Exclusion
Soil (0 to 15 feet bgs)	Ingestion, Inhalation, and Dermal Absorption	Outdoor Industrial Workers	Yes	Future industrial workers may have contact with soil if the building and pavement are removed.
Vadose-Zone Soil (0 to15 feet bgs)	Volatilization to Indoor Air	Indoor Industrial Workers	Yes	Volatile chemicals in vadose-zone soil may penetrate an on-site building and enter indoor air.
Soil	Leaching to Groundwater	Industrial Workers	Yes	IHSs in soil may leach to groundwater.
Groundwater	Ingestion, Inhalation, and Dermal Absorption	Residents and Industrial Workers	No	Groundwater in the area is not used for drinking.
Groundwater	Volatilization to Indoor Air	Indoor Industrial Workers	Yes	Volatile chemicals in groundwater may penetrate an on-site building and enter indoor air.
Groundwater	Volatilization to Outdoor Air	Industrial Workers	N	Volatile chemicals in groundwater may migrate to outdoor air. However, CULs protective of indoor industrial workers are more stringent than those protective of outdoor workers.
Surface Water	Fish Ingestion	Recreational Fishers	No	Impacted groundwater does not extend to the Duwamish River.
Surface Water	Gill Uptake	Aquatic/Benthic Biota	No	Impacted groundwater does not extend to the Duwamish River.

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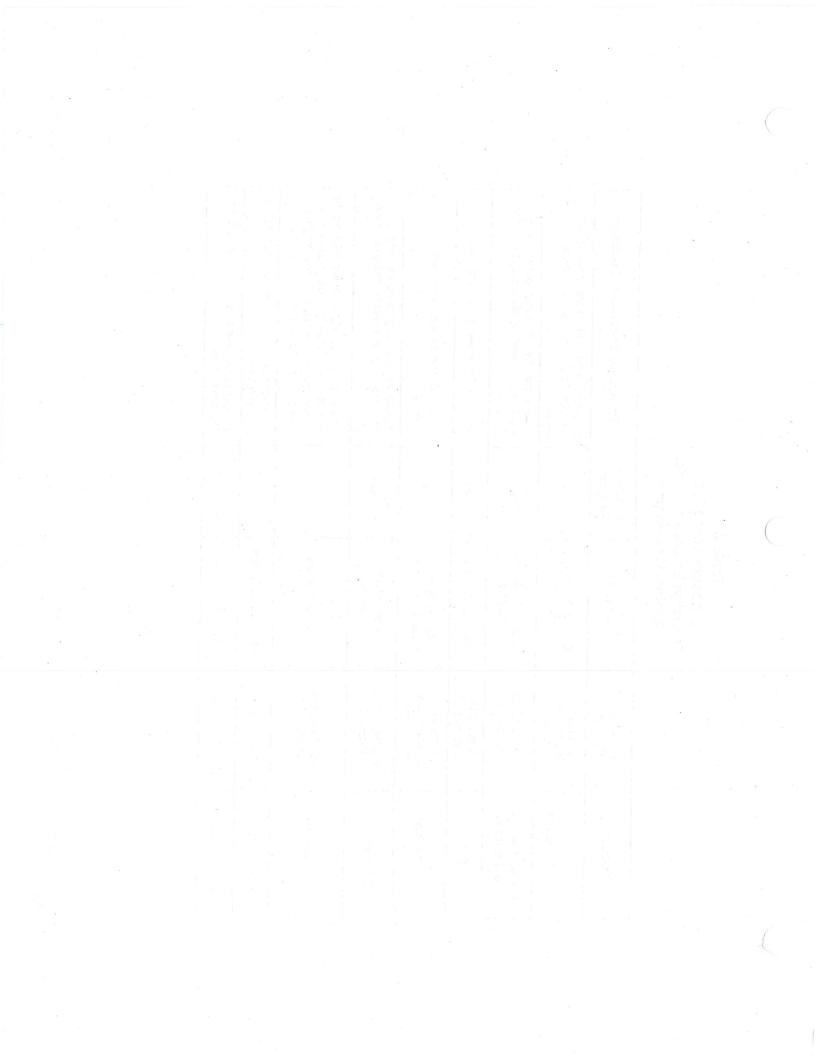
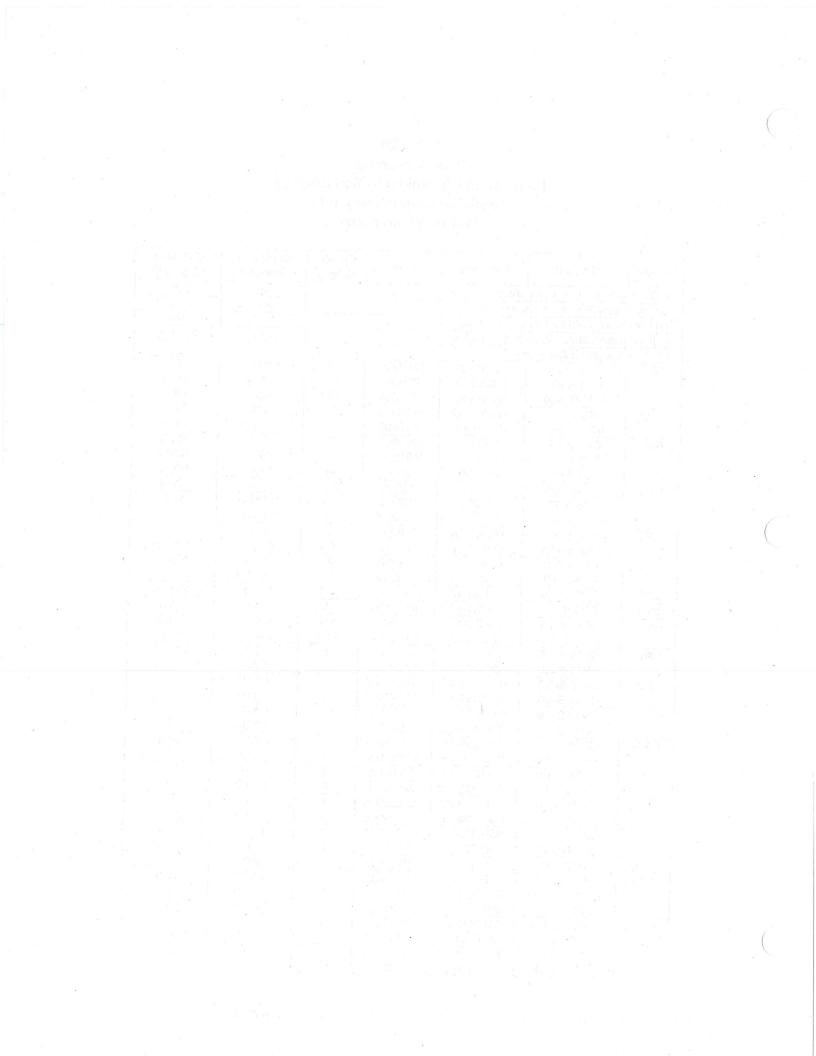


Table 25 Risk Screening Hexavalent Chromium in Soil (mg/kg) Precision Engineering, Inc. Seattle, Washington

Leastion	Sample ID	Lab Code	Date	Depth	Chromium	Chromium
Location			1.1	(ft bgs)	(Hexavalent)	(Trivalent) ^a 2000
MTCA M	ethod A CULs for Ur	restricted Land	Use		19	
MTCA M	ethod B CULs for Ing	gestion only			240	NV
MTCA M	ethod C CULs for Ing	gestion Only			11,000	NV
CUL for I	Industrial Workers-	Direct Contact			775	390,000
	Geoprobe Sampling					50
GP1	GP1-S-1.5	128268-01	6/7/2005	1.5	152	53
	GP1-S-6.0	128268-02	6/7/2005	6	31.8	115.2
1	GP1-S-10.0	128318-02	6/9/2005	10	14.4	59.1
GP2	GP2-S-1.0	128268-03	6/7/2005	1	523	2157
	GP2-S-10.0	128318-01	6/9/2005	10	0.109 U	24.9
GP3	GP3-S-2.0	128318-03	6/9/2005	2	27.7	887.3
0.0	GP3-S-6.0	128318-04	6/9/2005	6	49.8	1050.2
	GP3-S-14	128318-05	6/9/2005	14	34.4	906.6
GP4	GP4-S-1.5	128457-01	6/16/2005	1.5	53.4	1176.6
GP5	GP5-S-1.5	128457-02	6/16/2005	1.5	0.111 U	18.9
0.0	GP5-S-14.0	128457-04	6/16/2005	14	0.115 U	20.1
GP6	GP6-S-1.0	128457-05	6/16/2005	1	627	NC
0.0	GP6-S-14.5	128457-07	6/16/2005	14.5	0.181	258.819
GP7	GP7-S-2.0	128457-08	6/16/2005	2	0.119	23.481
GFI	GP7-S-8.0	128457-09	6/16/2005	8	0.113 U	21
GP8	GP8-S-1.5	128457-10	6/16/2005	1.5	0.661	21.539
GP8 GP9	GP9-S-2.0	128457-11	6/17/2005	2	2.97	40.33
GP10	GP10-S-1.5	128457-12	6/17/2005	1.5	0.142	21.658
GPTU	GP10-S-13.5	128457-14	6/17/2005	13.5	0.106 U	24.1
GP11	GP11-S-2.0	128457-15	6/17/2005	2	0.573	21.127
GFTT	GP11-S-6.5	128457-16	6/17/2005	6.5	0.37	16.93
GP12	GP12-S-3.0	B5L0339-30	12/13/2005	3	1.1 UJ	24.3
GF12	GP12-S-5.0	B5L0339-31	12/13/2005	5	1.0 UJ	25.2
GP13	GP12-0-0.0	B5L0418-01	12/14/2005	1	1.4 UJ	26.6
GP15	GP13-S-6.0	B5L0418-02	12/14/2005	6	1.3 UJ	46.6
GP14	GP14-S-3.0	B5L0339-24	12/13/2005	3	2.0 UJ	24.8
GF 14	GP14-S-6.0	B5L0339-25	12/13/2005	6	1.2 J	30.2
GP15	GP15-S-3.0	B5L0339-32	12/13/2005	3	1.2 UJ	24.7
GF15	GP15-S-6.0	B5L0339-33	12/13/2005	6	1.2 UJ	20.2
GP16	GP16-S-1.0	B5L0339-22	12/13/2005	1	2.1 UJ	30.0
GPID	GP16-S-5.0	B5L0339-23	12/13/2005	5	2.1 UJ	26.2
0047	GP17-S-1.0	B5L0339-17	12/13/2005	1	1.7 UJ	254
GP17	GP17-S-6.0	B5L0339-18	12/13/2005	6	60 J	1600
0040	GP18-S-1.0	B5L0339-26	12/13/2005	1	2300 J	2130
GP18	GP19-S-1.0	B5L0339-19	12/13/2005	1	2.5 UJ	22.0
GP19		B5L0339-19	12/13/2005	1	2.0 UJ	24.8
	GP19-S-1.0-Dup	B5L0339-19 B5L0339-21	12/13/2005	7	2.7 UJ	27.1
0.544	GP19-S-7.0	B5L0339-21 B5L0418-05	12/13/2005	1 1	1.1 UJ	17.6
GP20	GP20-S-1.0	B5L0418-05 B5L0418-06	12/14/2005	6	1.5 UJ	24.5
	GP20-S-6.0	and the second se	12/14/2005	1 1	1.0 UJ	25.6
GP21	GP21-S-1.0	B5L0418-03	12/14/2005	6.5	1.3 UJ	23.0
	GP21-S-6.5	B5L0418-04	12/14/2005	0.0	1.000	1

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Risk Screening Hexavalent Chromium in Soil (mg/kg) Precision Engineering, Inc. Seattle, Washington

Leastier	Sample ID	Lab Code	Date	Depth	Chromium	Chromium (Trivalent) ^a
Location				(ft bgs)	(Hexavalent)	2000
MTCA N	lethod A CULs for U	nrestricted Land	Use		19 240	NV
MTCA N	lethod B CULs for In	gestion only	1		11,000	NV
MTCA N	Nethod C CULs for In	gestion Only			775	390,000
	Industrial Workers-				115	000,000
On-Site	Geoprobe Samplin	g cont.	10/10/0005	1	2.9 J	43.9
GP22	GP22-S-1.0	B5L0339-27	12/13/2005	1.1	1.3 UJ	32.1
	GP22-S-10.0	B5L0339-29	12/13/2005	10 7	1.1 UJ	23.3
GP23	GP23-S-7.0	B5L0418-10	12/14/2005	10.5	1.2 UJ	979
	GP23-S-10.5	B5L0418-11	12/14/2005	3	1.0 UJ	30.2
GP24	GP24-S-3.0	B5L0418-12	12/14/2005	3	1.1 UJ	26.2
	GP24-S-3.0-Dup	B5L0418-12	12/14/2005	6.5	2.4 UJ	29.3
	GP24-S-6.5	B5L0418-14	12/14/2005	1	1.8 UJ	19.3
GP25	GP25-S-1.0	B5L0339-01	12/12/2005	7	1.7 UJ	19.8
	GP25-S-7.0	B5L0339-02	12/12/2005	1	2.2 UJ	23.7
GP26	GP26-S-1.0	B5L0339-03	12/12/2005	9.5	2.1 UJ	24.0
	GP26-S-9.5	B5L0339-05	12/12/2005 12/12/2005	9.5	2.1 UJ	22.0
GP27	GP27-S-1.0	B5L0339-06	Success and an interaction and	13	2.1 UJ	18.6
	GP27-S-13.0	B5L0339-08	12/12/2005 12/12/2005	1	2.2 UJ	20.5
GP28	GP28-S-1.0	B5L0339-09	12/12/2005	7	1.8 UJ	22.4
	GP28-S-7.0	B5L0339-10	12/12/2005	1	2.4 UJ	29.6
GP29	GP29-S-1.0	B5L0339-11	12/12/2005	6	2.6 UJ	31.9
	GP29-S-6.0	B5L0339-12		1	2.1 UJ	27.2
GP30	GP30-S-1.0	B5L0339-13	12/12/2005 12/12/2005	6	2.4 UJ	32.7
	GP30-S-6.0	B5L0339-14	12/12/2005	1	2.1 UJ	19.2
GP31	GP31-S-1.0	B5L0339-15	12/12/2005	6	3.0 UJ	23.6
	GP31-S-6.0	B5L0339-16	12/12/2005	1	3500 J	3250
GP32	GP32-S-1.0	B5L0418-08	12/14/2003			
	e Hand-Auger Sam	B5L0418-17	12/15/2005	0.5	2.9 UJ	34.3
HA1	HA1-0.5	12 DEDUCTION NUMBER OF STREET, ST. AN	12/15/2005	1.5	6.5 J	103.5
	HA1-1.5	B5L0418-18	12/15/2005	1.5	2.8 UJ	84.5
	HA1-1.5-Dup	B5L0418-18 B5L0418-19	12/15/2005	0.5	89 J	117
HA2	HA2-0.5	B5L0418-19 B5L0418-20	12/15/2005	1.5	3.2 J	211.8
	HA2-1.5	B5L0418-20	12/15/2005	0.5	2.6 UJ	1590
HA3	HA3-0.5	B5L0418-21 B5L0418-22	12/15/2005	1.5	2.4 UJ	55.2
	HA3-1.5	B5L0418-22 B5L0418-23	12/15/2005	0.5	7.2 UJ	8480
HA4	HA4-0.5	B5L0418-23 B5L0418-24	12/15/2005	1.5	3.0 UJ	280
115 0	HA4-1.5	B5L0418-25	12/15/2005	0.5	5.8 UJ	155
HA5	HA5-0.5	B5L0418-25 B5L0418-26	12/15/2005	1.5	2.9 UJ	32.7
1110	HA5-1.5	580-2284-4	04/18/2006	0.5	3.33 J	NC
HA6	HA6-0.5	and the second distance of the second distanc	04/18/2006	0.5	0.22 J	NC
HA7	HA7-0.5	580-2284-6	the second se	0.5	0.26 J	NC
HA8	HA8-0.5	580-2284-8	04/18/2006		3.4 J	NC
HA9	HA9-0.5	580-2284-13	04/19/2006	0.5	0.074 J	NC
HA10	HA10.05	580-2284-15	04/19/2006	0.5		NC
HA11	HA11-0.5	580-2284-17	04/19/2006	0.5	0.45 J	

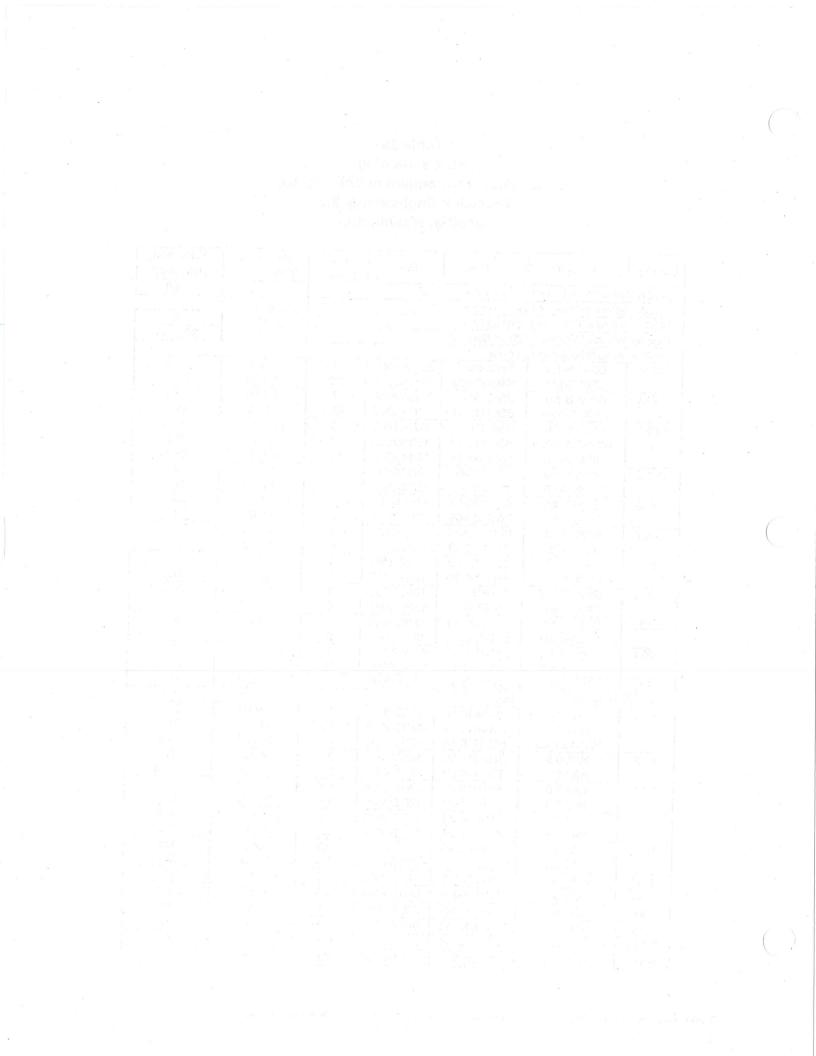


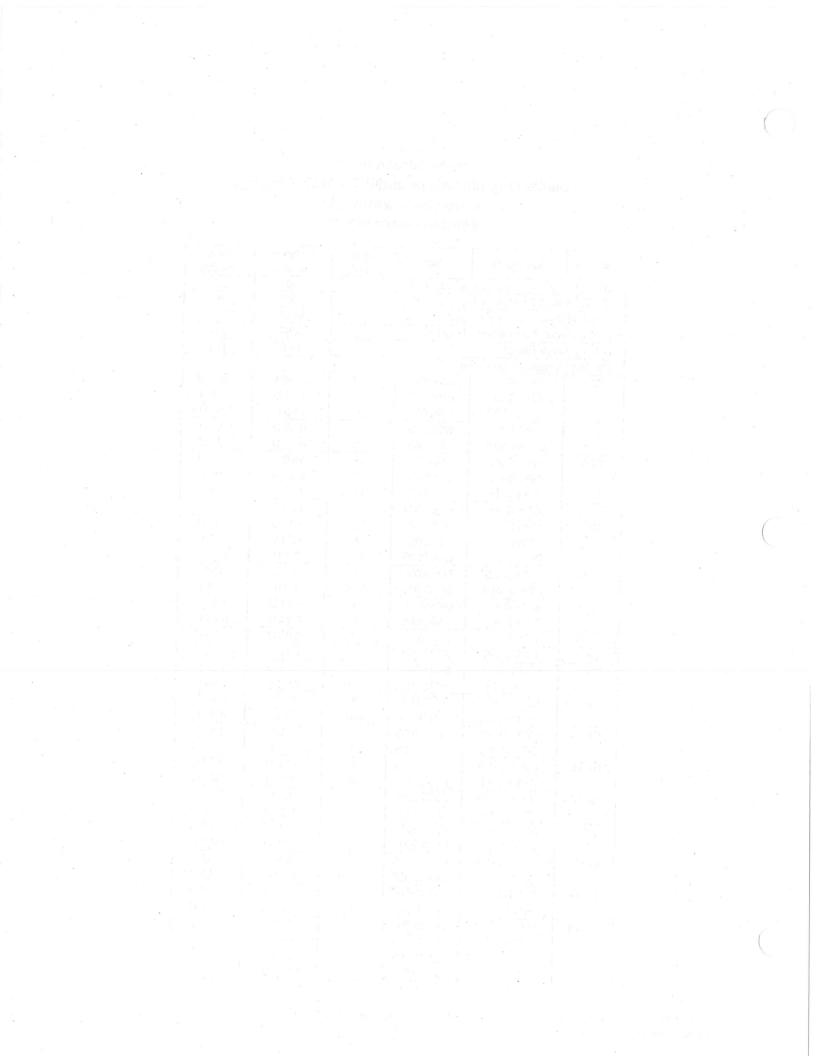
Table 26 Risk Screening Metal IHSs in Soil (mg/kg) Precision Engineering, Inc. Seattle, Washington

Location	Sample ID	Date	Depth (ft bgs)	Arsenic	Cadmium	Copper	Lead
MTCA Met	thod A CULs for Un	restricted Land	Use	20	2	NV	250
	thod B CULs for Ing		0.67	80	3000	NV	
	thod C CULs for Ing		88	3,500	130,000	NV	
	dustrial Workers—[20*	2,350	53,300	1,000*
	and-Auger Sampli						15
HA1	HA1-0.5	12/15/2005	0.5	3.81	0.576 U	32.8	34.6
	HA1-1.5	12/15/2005	1.5	2.88 J	0.550 U	16.2 J	15.3 J
	HA1-1.5-Dup	12/15/2005	1.5	8.35 J	0.707 U	68.4 J	95.3 J
HA2	HA2-0.5	12/15/2005	0.5	3.94	0.984	70.9	81.4
1174	HA2-1.5	12/15/2005	1.5	2.71	0.613 U	28.2	36.5
НАЗ	HA3-0.5	12/15/2005	0.5	53.9	2.53	528	545
11AU	HA3-1.5	12/15/2005	1.5	6.96	0.585 U	16.4	8.41
HA4	HA4-0.5	12/15/2005	0.5	44.3	28.7	978	1710
	HA4-1.5	12/15/2005	1.5	5.25	0.819 U	48.8	50.8
HA5	HA5-0.5	12/15/2005	0.5	35.9	3.13	129	1440
	HA5-1.5	12/15/2005	1.5	12.5	1.09	39.6	209
HA12	HA12-0.5	4/19/2006	0.5	9.0	0.48 J	39	220
HA17	HA17-S-0.5	1/9/2007	0.5	6.61			278
	HA17-S-1.5	1/9/2007	1.5	5.3			23.5
HA18	HA18-S-0.5	1/9/2007	0.5	5.03			61.5
IAIO	HA18-S-1.5	1/9/2007	1.5	2.12 U)	2.12 L
HA19	HA19-S-0.5	1/9/2007	0.5	12.7			134
HA19	HA19-S-1.5	1/9/2007	1.5	4.02			11.3
HA20	HA20-S-0.5	1/9/2007	0.5	2.02 U			27.9
I IAZU	HA20-S-1.5	1/9/2007	1.5	1.81 U			8.91
HA21	HA21-S-0.5	1/10/2007	0.5	5.72			398
11/1/2 1	HA21-S-1.5	1/10/2007	1.5	5.83			121
HA22	HA22-S-0.5	1/10/2007	0.5	53.5			986
MA22	HA22-S-1.5	1/10/2007	1.5	10.3			32.4
HA23	HA23-S-0.5	1/10/2007	0.5	4.44			26.9
IIA20	HA23-S-1.5	1/10/2007	1.5	4.91			20.5
HA24	HA24-S-0.5	1/10/2007	0.5	4.9			63.9
117424	HA24-S-1.5	1/10/2007	1.5	5.23			24.3
HA25	HA25-S-0.5	1/10/2007	0.5	11.6			302
TAZO	HA25-S-1.5	1/10/2007	1.5	11.8	· · · ·		15.5



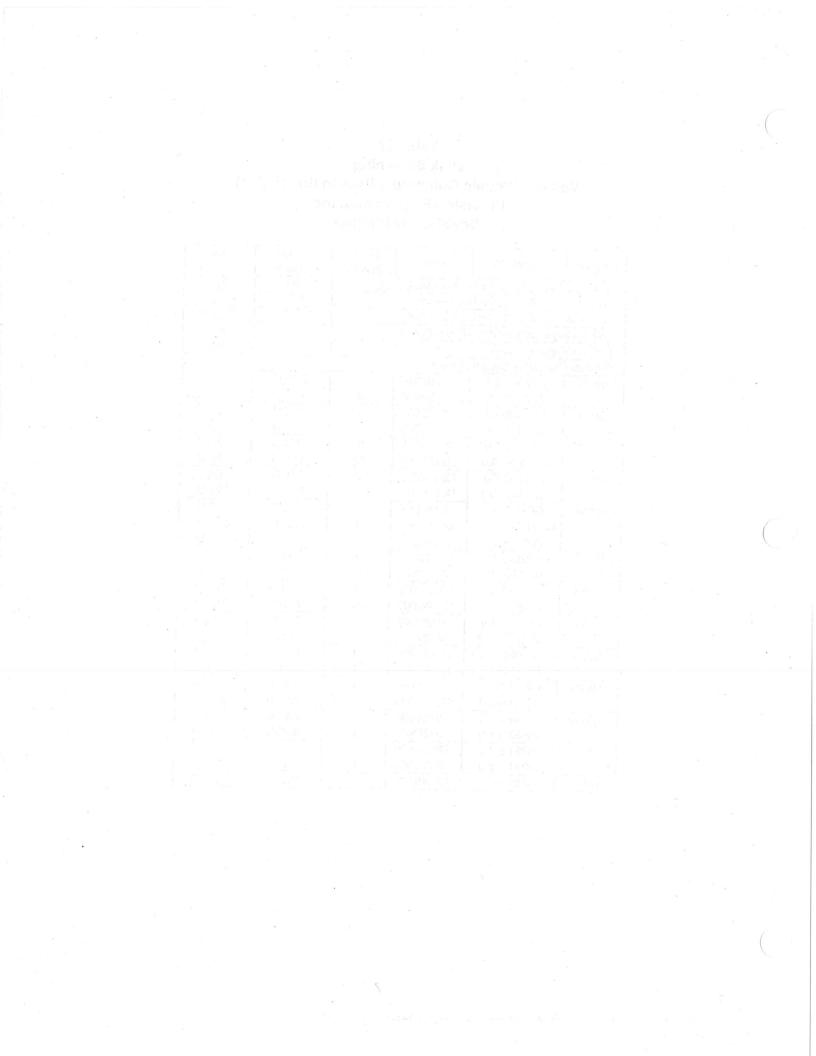
Risk Screening Volatile Organic Compound IHSs in Soil (µg/kg) Precision Engineering, Inc. Seattle, Washington

			Depth	Trichloro-	Vinyl
Location	Sample ID	Date	(ft bgs)	ethene	chloride
MTCA Me	thod A CULs for Ur	restricted Lan	d Use	30	NA
MTCA Me	thod B CULs for Ing		2500	667	
MTCA Me	thod C CULs for Ing		330,000	88,000	
CUL for Ir	ndustrial Workers-		6780	NA	
CUL for V	apor Intrusion		41.5	NA	
On-Site C	Geoprobe Sampling	9			
GP1	GP1-S-1.5	6/7/2005	1.5	0.839 U	0.839 U
	GP1-S-6.0	6/7/2005	6	1.12 U	1.12 U
	GP1-S-10.0	6/9/2005	10	7.65 U	7.65 U
GP2	GP2-S-1.0	6/7/2005	1	0.96 U	0.96 U
	GP2-S-10.0	6/9/2005	10	8.81 U	8.81 U
GP3	GP3-S-2.0	6/9/2005	2	15.9 U	15.9 U
	GP3-S-6.0	6/9/2005	6	8.96 U	8.96 U
	GP3-S-14	6/9/2005	14	7.71 U	7.71 U
GP4	GP4-S-1.5	6/16/2005	1.5	10.3 U	10.3 U
GP5	GP5-S-1.5	6/16/2005	1.5	7.12 U	7.1 <u>2</u> U
	GP5-S-8.0	6/16/2005	8	7.03 U	7.03 U
	GP5-S-14.0	6/16/2005	14	8.1 U	8.1 U
GP6	GP6-S-1.0	6/16/2005	1	40.5	8.5 U
	GP6-S-14.5	6/16/2005	14.5	1160	8.28 U
GP7	GP7-S-2.0	6/16/2005	2	7.81 U	7.81 U
	GP7-S-8.0	6/16/2005	8	8.84 U	8.84 U
GP8	GP8-S-1.5	6/16/2005	1.5	9.86 U	9.86 U
GP9	GP9-S-2.0	6/17/2005	2	7.42 U	7.42 U
GP10	GP10-S-1.5	6/17/2005	1.5	11.2 U	11.2 U
	GP10-S-13.5	6/17/2005	13.5	7.96 U	7.96 U
GP11	GP11-S-2.0	6/17/2005	2	87.2	8.37 U
	GP11-S-6.5	6/17/2005	6.5	281	8.61 U
GP12	GP12-S-3.0	12/13/2005	3	2.39 U	2.39 U
	GP12-S-5.0	12/13/2005	5	2.27 U	2.27 U
GP13	GP13-S-1.0	12/14/2005	1	9.89 U	9.89 U
	GP13-S-6.0	12/14/2005	6	2.89 U	2.89 U
GP14	GP14-S-3.0	12/13/2005	3	4.49	2.44 U
	GP14-S-6.0	12/13/2005	6	2.62 U	2.62 U
GP15	GP15-S-3.0	12/13/2005	3	2.72 U	2.72 U
	GP15-S-6.0	12/13/2005	6	10.5 U	10.5 U
GP16	GP16-S-1.0	12/13/2005	1	3.63	1.85 U
	GP16-S-5.0	12/13/2005	5	2.12 U	2.12 U
GP17	GP17-S-1.0	12/13/2005	1	2.09 U	2.09 U
	GP17-S-6.0	12/13/2005	6	2.27 U	2.27 U
GP18	GP18-S-1.0	12/13/2005	1	3.43	2.36 U
GP19	GP19-S-1.0	12/13/2005	1	2.67 U	2.67 U
	GP19-S-1.0-Dup	12/13/2005	1	2.40 U	2.40 U
	GP19-S-7.0	12/13/2005	7	2.72 U	2.72 U



Risk Screening Volatile Organic Compound IHSs in Soil (µg/kg) Precision Engineering, Inc. Seattle, Washington

Location	Sample ID	Date	Depth (ft bgs)	Trichloro- ethene	Vinyl chloride
		prostricted Lan		30	NA
MTCA Me	ethod A CULs for U ethod B CULs for In	2500	667		
	ethod C CULs for In	gestion Only		330,000	88,000
MICA ME	ndustrial Workers-	Direct Contact		6780	NA
and the second se	the same the same which the same state and the same state and the same state and the same state and the same st	-Direct Contact		41.5	NA
	/apor Intrusion Geoprobe Samplin	a cont			Ϋ́ς τ
	GP20-S-1.0	12/14/2005	1	2.62 U	2.62 U
GP20	GP20-S-6.0	12/14/2005	6	4.52 U	4.52 U
0.004	GP20-3-0.0 GP21-S-1.0	12/14/2005	1	2.18 U	2.18 U
GP21	GP21-S-1.0 GP21-S-6.5	12/14/2005	6.5	2.79 U	2.79 U
0000	GP21-3-0.5	12/13/2005	1	2.26 U	2.26 U
GP22	GP22-S-10.0	12/13/2005	10	1.89 U	1.89 U
GP23	GP23-S-7.0	12/14/2005	7	1.80 U	1.80 U
GP23	GP23-S-10.5	12/14/2005	10.5	2.27 U	2.27 U
GP24	GP23-3-10.3	12/14/2005	3	2.58 U	2.58 U
GP24	GP24-S-3.0-Dup	12/14/2005	3	2.50 U	2.50 U
	GP24-S-6.5	12/14/2005	6.5	2.83 U	2.83 U
GP25	GP25-S-1.0	12/12/2005	1	2.13 U	2.13 U
GP25	GP25-S-7.0	12/12/2005	7	2.47 U	2.47 U
GP26	GP26-S-1.0	12/12/2005	1	2.01 U	2.01 U
GF20	GP26-S-9.5	12/12/2005	9.5	2.65 U	2.65 U
GP27	GP27-S-1.0	12/12/2005	1	2.19 U	2.19 U
GF21	GP27-S-13.0	12/12/2005	13	2.05 U	2.05 U
GP28	GP28-S-1.0	12/12/2005	1	1.87 U	1.87 U
0120	GP28-S-7.0	12/12/2005	7	2.17 U	2.17 U
GP29	GP29-S-1.0	12/12/2005	1	2.47 U	2.47 U
0120	GP29-S-6.0	12/12/2005	6	2.43 U	2.43 U
GP30	GP30-S-1.0	12/12/2005	1	2.39 U	2.39 U
	GP30-S-6.0	12/12/2005	6	3.32 U	3.32 U
GP31	GP31-S-1.0	12/12/2005	1	2.02 U	2.02 U
	GP31-S-6.0	12/12/2005	6	3.41 U	3.41 U
GP32	GP32-S-1.0	12/14/2005	1	2.37 U	2.37 U



Risk Screening Polycyclic Aromatic Hydrocarbon IHSs in Soil (mg/kg) Precision Engineering, Inc. Seattle, Washington

Location	Sample ID	Date	Depth (ft bgs)	Benzo(a) anthracene*	Benzo(a) pyrene*	Benzo(b) fluoranthene*	Benzo(k) fluoranthene*
MTCA Mot	hod A CIIIs fo	r Unrestricted La	nd Use	NV	0.1	NV	NV
		r Ingestion only		0.14	0.14	0.14	0.14
		r Ingestion only		18	18	18	18
		s-Direct Contac	t	NC	NC	NC	NC
	and-Auger Sa						
the second se	HA1-0.5	12/15/2005	0.5	0.0151 U	0.0151 U	0.0151 U	0.0151 U
HA1	HA1-0.5	12/15/2005	1.5	0.0129 U	0.0129 U	0.0129 U	0.0129 U
11			1.5	0.0288	0.0500	0.0769	0.0581
	HA1-1.5-Dup	12/15/2005	0.5	0.0176 U	0.0176 U	0.0222	0.0205
HA2	HA2-0.5	12/15/2005	1.5	0.0125 U	0.0125 U	0.0204	0.0151
	HA2-1.5	12/15/2005	0.5	0.0340	0.0525	0.0982	0.0706
HA3	HA3-0.5	12/15/2005	1.5	0.0118 U	0.0118 U	0.0118 U	0.0118 U
	HA3-1.5	12/15/2005	0.5	0.554	0.694	0.771	0.749
HA4	HA4-0.5	1000000 V	1.5	0.0159 U	0.0159 U	0.0159 U	0.0159 U
	HA4-1.5	12/15/2005	0.5	0.862	1.45	1.62	1.82
HA5	HA5-0.5	12/15/2005	1.5	0.002 0.0153 U	0.0153 U	0.0153 U	0.0153 U
	HA5-1.5	12/15/2005	1	0.0100 0	1 0.0100 0		
*Criteria show		es pre October 200)7.				

**Criteria shown is for benzo(a)pyrene for MTCA cPAH screening post October 2007.



Risk Screening Polycyclic Aromatic Hydrocarbon IHSs in Soil (mg/kg) Precision Engineering, Inc. Seattle, Washington

Location	Sample ID	Date	Depth (ft bgs)	Chrysene*	Dibenzo(a,h) anthracene*	Indeno(1,2,3-cd) pyrene*	Total cPAHs including TEFs**
MTCA Met	hod A CULs for	r Unrestricted La	nd Use	NV	NV	NV	0.1
	and the second se	r Ingestion only		0.14	0.14	0.14	0.14
		r Ingestion only		18	18	18	18
	the second se	s-Direct Contac	t	3420	NC	NC	NC
	and-Auger Sar						
HA1	HA1-0.5	12/15/2005	0.5	0.0151 U	0.0151 U	0.0151 U	0.011
	HA1-1.5	12/15/2005	1.5	0.0129 U	0.0129 U	0.0129 U	0.010
	HA1-1.5-Dup		1.5	0.0612	0.0152 U	0.0201	0.070
HA2	HA2-0.5	12/15/2005	0.5	0.0276	0.0176 U	0.0176 U	0.016
11/ 12	HA2-1.5	12/15/2005	1.5	0.0179	0.0125 U	0.0125 U	0.012
НАЗ	HA3-0.5	12/15/2005	0.5	0.0804	0.0133 U	0.0385	0.078
11/10	HA3-1.5	12/15/2005	1.5	0.0118 U	0.0118 U	0.0118 U	0.009
HA4	HA4-0.5	12/15/2005	0.5	0.899	0.34 U	0.34 U	0.944
1 11 (4	HA4-1.5	12/15/2005	1.5	0.0159	0.0159 U	0.0159 U	0.012
HA5	HA5-0.5	12/15/2005	0.5	1.54	0.435	1.02	2.041
110	HA5-1.5	12/15/2005	1.5	0.0153 U	0.0153 U	0.0153 U	0.012

**Criteria shown is for benzo(a)pyrene for MTCA cPAH scre

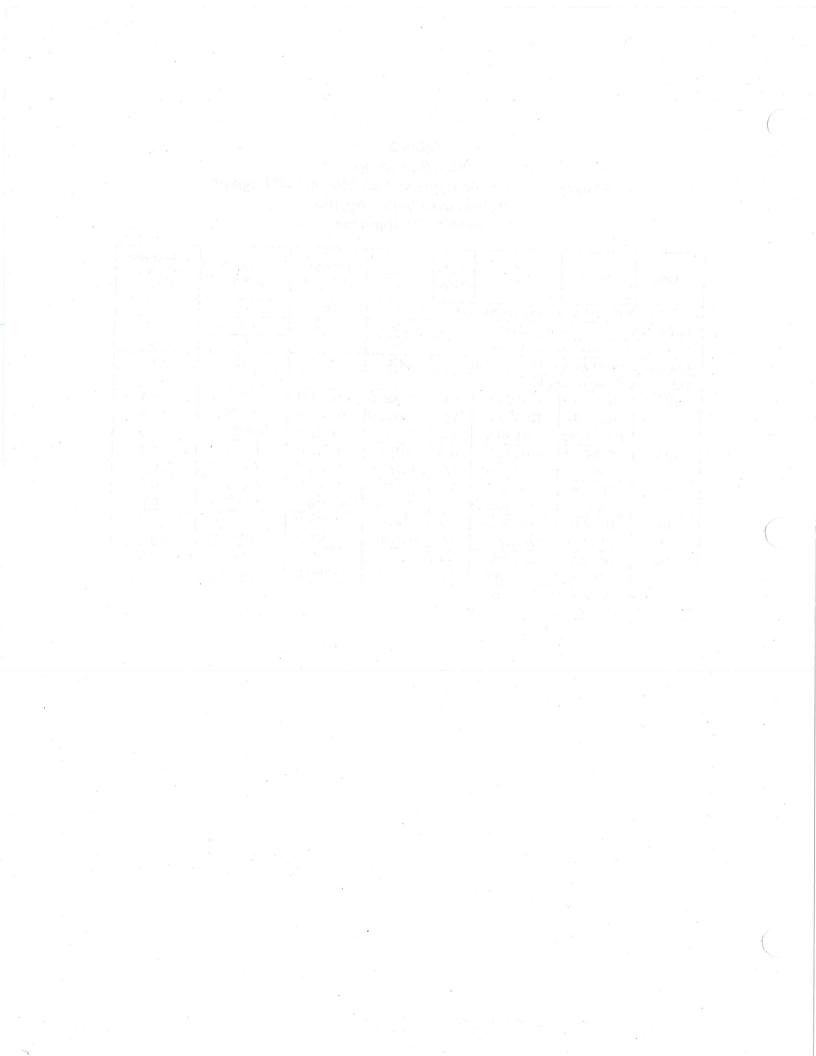


Table 29 Risk Screening Hexavalent Chromium in Groundwater (mg/L) Precision Engineering, Inc. Seattle, Washington

Location	Sample ID	Date	Chromium (Hexavalent)	Dissolved Chromium (Trivalent) ^a
MTCA M	ethod A Groundwater	CUIS	NV	NV
	ethod B Groundwater	CUIS	0.048	24
MICAM	ethod C Groundwater	CULS	0.11	53
MICAM	ethod C Surface-Wate	er CULs	1.20	610
	Human Health		NR	NR
Surface	Water ARAR—Aquati	c Life—Acute	0.015	1.8
AWOC-	Aquatic Life—Chroni	C	0.01	0.057
Site-Spe	cific Groundwater CU n of Surface Water	L for the	0.15	2,800,000,000
	on Worker Direct-Con	tact	>Max	190
	ng Well Groundwate			
MW1	MW1-W-35.0	6/16/2005	0.269	NC
101 0 1	MW1-122705	12/27/2005	0.00625 U	NC
	MW1-041806	04/18/2006	0.02 U	NC
MW2	MW2-W-0605	6/17/2005	0.01 U	NC
IVIVVZ	MW2-122805	12/28/2005	0.00625 U	0.00879
8	MW2-041906	04/19/2006	0.02 U	0.021
MW3	MW3-0605	6/7/2005	0.01 U	NC
101003	MW3-122905	12/29/2005	0.00625 U	0.00215
*	MW3-041706	04/17/2006	0.02 U	0.0078
MW4	MW4-0605	6/9/2005	0.01 U	NC
1010 04	MW4-0605-Dup	6/9/2005	0.01 U	NC
	MW4-122705	12/27/2005	0.00625 U	NC
	MW4-041806	04/18/2006	0.023	NC
MW5	MW5-122805	12/28/2005	450	47
CVVN	MW5-041906	04/19/2006	350	NC
MW6	MW6-122905	12/29/2005	0.00625 U	0.0187
INIAAO	MW6-041906	04/19/2006	0.02 U	0.047
MW7	MW7-122805	12/28/2005	0.00738	0.0106
	MW7-041806	04/18/2006	0.02U	0.013
	MW7-041806-Dup	04/18/2006	0.02 U	NC
MW8	MW8-122805	12/28/2005	0.00625 U	0.00755
IVIVO	MWDUP-122805	12/28/2005	0.02 U	0.00849
	MW8-041806	04/18/2006	0.02 UJ	0.021
Becom	aissance Groundwa	and the second se		
GP2	GP2-W-17-RECON	6/9/2005	32.38	4.72
GP2 GP4	GP4-W-8.0	6/16/2005	31	236
GP4 GP5	GP5-W-18.0	6/16/2005	NC	0.0897
GP5 GP6	GP6-W-18.0	6/16/2005	43	300
	GP7-W-14.0	6/16/2005	NC	0.101
GP7	GP8-W-10.0	6/16/2005	61	294
GP8	GP13-W-8.0	12/14/2005	NC	NA
GP-13	GP15-W-8.0	12/14/2005	NC	NA
GP-15	GF10-00-0.0	1211112000		

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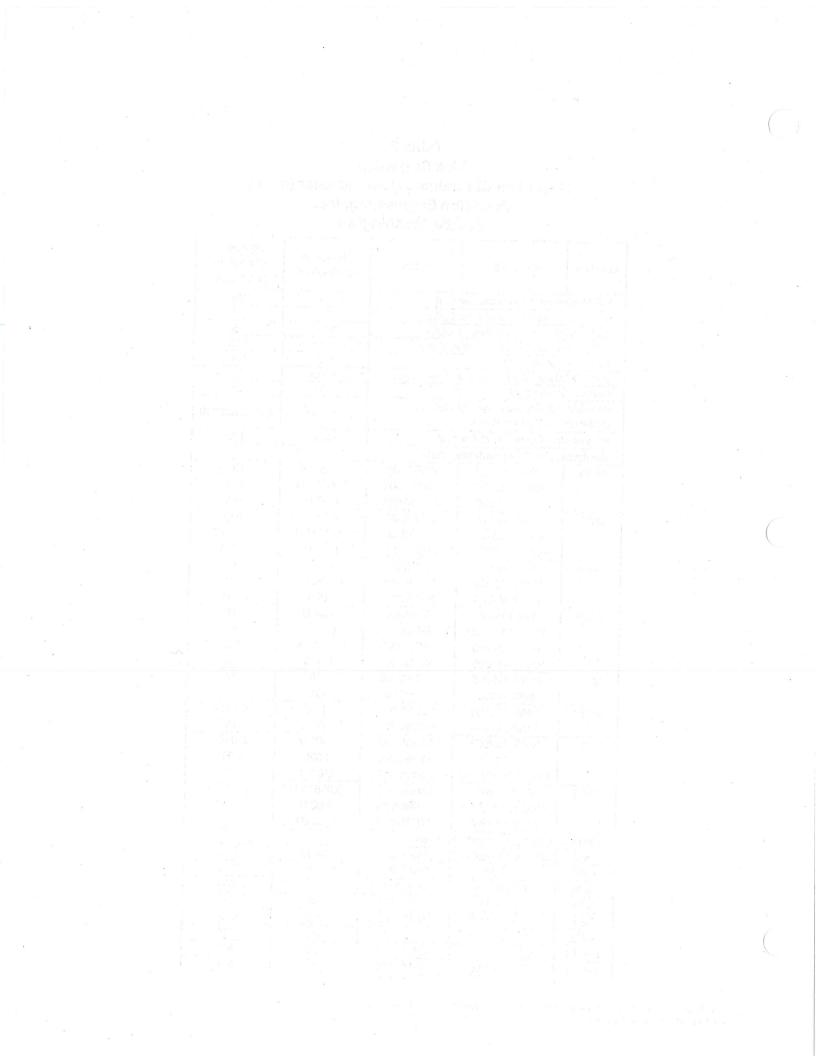
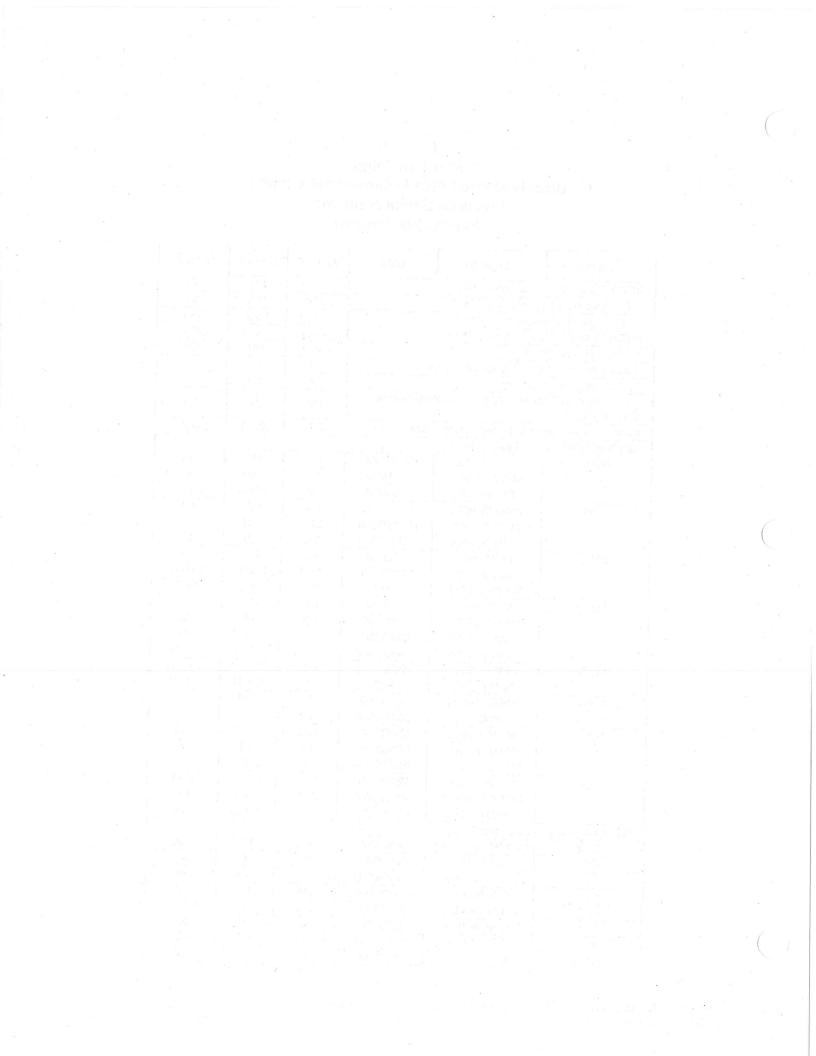


Table 30 **Risk Screening** Dissolved Metal IHSs in Groundwater (µg/L) Precision Engineering, Inc. Seattle, Washington

1				1	
Location	Sample ID	Date	Arsenic	Copper	Selenium
MTCA Method A G	roundwater CULs		5	NV	NV
MTCA Method B G		0.0583	592	80	
MTCA Method C G		0.0583	1,300	175	
MICA Method C C	Surface-Water CULs		2.46	6,660	6,750
AWQC-Human H			0.018	NR	170
AVVQC-Humann	AR—Aquatic Life—Acu	Jte	360	4.6	20
AWQC-Aquatic L	ifo Chronic		190	3.5	5
Site-Specific Grou	ndwater CUL for the Pr	rotection of	NV	22	NV
Surface Water			5.8	5000	NV
Excavation Worke	r Direct-Contact Groun	dwater COL	5,6	0000	
Monitoring Well (Groundwater Data	0/40/0005	NA	NA	NA
MW1	MW1-W-35.0	6/16/2005	32.3	1.01	1.00 U
	MW1-122705	12/27/2005	1403 0007 407 C-1	2.0 U	2.0 U
5	MW1-041806	04/18/2006	33 NA	NA	NA
MW2	MW2-W-0605	6/17/2005		1.17	6.28
	MW2-122805	12/28/2005	5.63	2.5	10
	MW2-041906	04/19/2006	3.8	NA	NA
MW3	MW3-0605	6/7/2005	NA	1.00 U	1.00 U
	MW3-122905	12/29/2005	15.3	2.0 U	2.0 U
	MW3-041706	04/17/2006	13	NA	NA
MW4	MW4-0605	6/9/2005	NA	NA	NA
	MW4-0605-Dup	6/9/2005	NA		1.00 U
	MW4-122705	12/27/2005	15.1	1.00 U	2.0 U
	MW4-041806	04/18/2006	15	2.0 U	1000 U
MW5	MW5-122805	12/28/2005	4.59	3.67	
	MW5-041906	04/19/2006	4.9	2.0 U	2.0 U
MVV6	MW6-122905	12/29/2005	11.9	4.02	12.3
	MW6-041906	04/19/2006	24	5.1	19
MW7	MW7-122805	12/28/2005	6.62	2.12	2.77
	MW7-041806	04/18/2006	7.1	2.4	5
	MW7-041806-Dup	04/18/2006	NA	NA	NA
MW8	MW8-122805	12/28/2005	6.41	1.00 U	4.11
	MWDUP-122805	12/28/2005	7.85	1.03	4.27
	MW8-041806	04/18/2006	4.8	2.0 U	3.6
Reconnaissance	e Groundwater Data			1 114	
GP2	GP2-W-17-RECON		NA	NA	NA
GP4	GP4-W-8.0	6/16/2005	NA	NA	NA
GP5	GP5-W-18.0	6/16/2005	NA	NA	NA NA
GP6	GP6-W-18.0	6/16/2005	NA	NA	NA
GP7	GP7-W-14.0	6/16/2005	NA	NA	NA
GP8	GP8-W-10.0	6/16/2005	NA	NA	NA
GP-13	GP13-W-8.0	12/14/2005	NA	NA	NA
GP-15	GP15-W-8.0	12/14/2005	NA	NA	NA

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Risk Screening Volatile Organic Compound IHSs in Groundwater (µg/L) Precision Engineering, Inc. Seattle, Washington

Location	Sample ID	Date	Trichloro- ethene	Vinyl chloride
MTCA Met	hod A Groundwater	CULs	5	0.2
MTCA Met	hod B Groundwater	CULs	0.109	0.0292
MTCA Met	hod C Groundwater	CULs	1.1	0.29
MTCA Met	hod C Surface-Wate	r CULs	37	92
AWQC-H	luman Health		2.5	0.025
Surface-W	ater ARAR—Aquatic	Life—Acute	NR	NR
AWQC-A	quatic Life—Chronic		NR	NR
CUL for Va	apor Intrusion		10.8	71.5
Site-Speci	fic Groundwater CUL of Surface Water	1,630	52	
	Worker Direct-Cont	act	420	1100
Groundwa			130	1100
sources the manufacture of the second	g Well Groundwate	r Data		
MW1	MW1-W-35.0	6/16/2005	1 U	1 U ⁻
	MW1-122705	12/27/2005	0.200 U	0.200 U
	MW1-041806	04/18/2006	0.055 U	0.14 U
MW2	MW2-W-0605	6/17/2005	1 U	1 U
	MW2-122805	12/28/2005	0.200 U	0.200 U
	MW2-041906	04/19/2006	0.055 U	0.14 U
MW3	MW3-0605	6/7/2005	10	1 U
1010 03	MW3-122905	12/29/2005	0.200 U	0.200 U
	MW3-041706	04/17/2006	0.055 U	0.14 U
MW4	MW4-0605	6/9/2005	1 U	1 U
. 1010 0-4	MW4-0605-Dup	6/9/2005	1 U	1 U
	MW4-122705	12/27/2005	0.200 U	0.200 U
	MW4-041806	04/18/2006	0.055 U	0.14 U
MW5	MW5-122805	12/28/2005	22.1	0.200 U
101005	MW5-041906	04/19/2006	7.9	0.14 U
MW6	MW6-122905	12/29/2005	1.00 U	1.00 U
NIVVO	MW6-041906	04/19/2006	0.055 U	0.14 U
MW7	MW7-122805	12/28/2005	0.200 U	0.200 U
	MW7-041806	04/18/2006	0.055 U	0.14 U
	MW7-041806-Dup	04/18/2006	0.055 U	0.14 U
DALA/O	MW8-122805	12/28/2005	0.200 U	0.560
MW8	MWDUP-122805	12/28/2005	0.200 U	0.400
	MW8-041806	04/18/2006	0.055 U	0.80 J
		the second s	0.000 0	0.000
	issance Groundwat		5 U	5 U
GP2	GP2-W-17-RECON	6/16/2005	10	10
GP4	GP4-W-8.0	6/16/2005	10	10
GP5	GP5-W-18.0	6/16/2005	1130	20 U
GP6	GP6-W-18.0		10	10
GP7	GP7-W-14.0	6/16/2005	16.8	10
GP8	GP8-W-10.0	6/16/2005	0.220	16.5
GP-13	GP13-W-8.0	12/14/2005	0.220 0.2 U	0.2 U
GP-15	GP15-W-8.0	12/14/2005	0.20	0.20

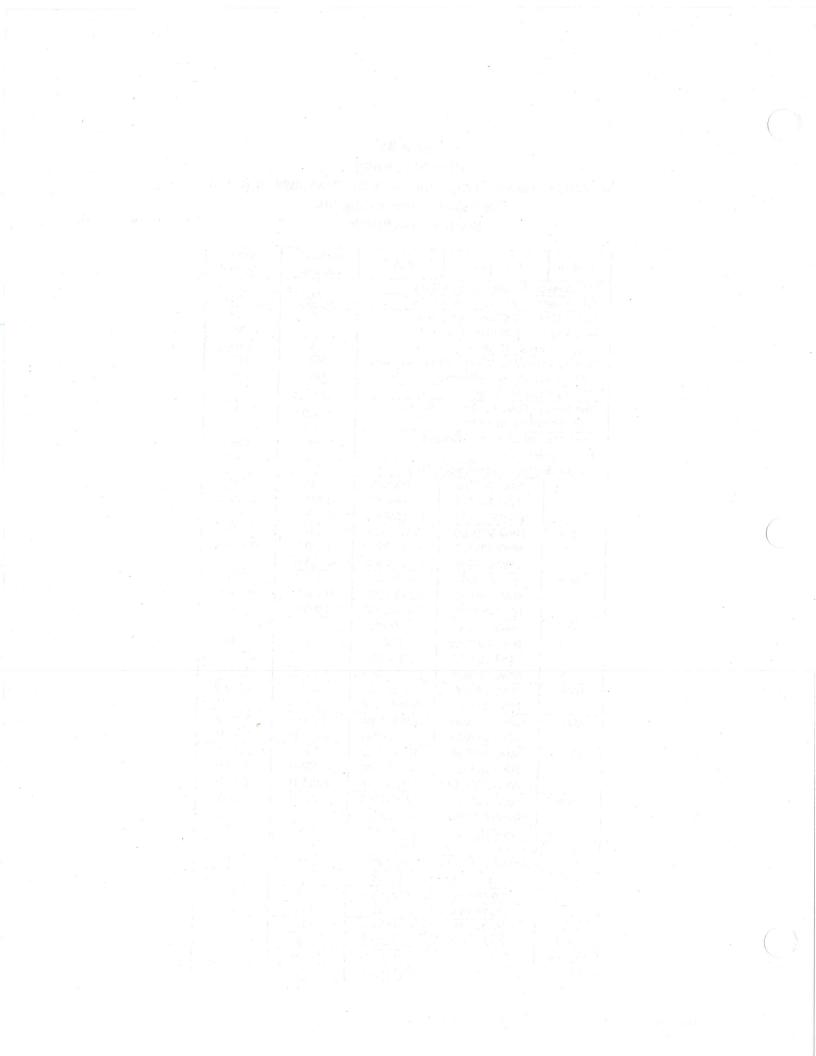
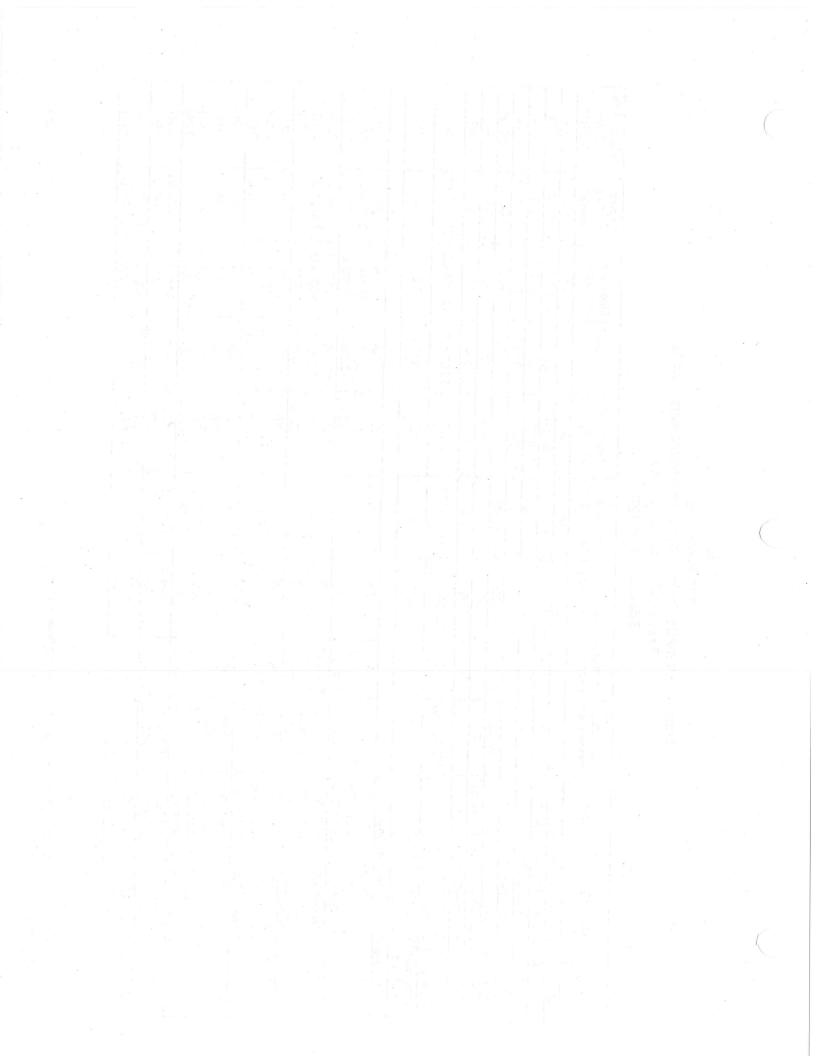


Table 32 Risk Screening Polycyclic Aromatic Hydrocarbons in Groundwater (µg/L) Precision Engineering, Inc. Seattle, Washington

Fotal cPAHs including 0.045 0.048 0.008 0.048 0.008 0.040 0.174 0.007 0.049 0.050 0.007 0.007 0.041 TEFs** 0.0038 NA 0.012 AN AN 0.12 0.74 NR NR AN NC S 0.1 0.01 U 0.11 U 0.1 U 0.1 U 0.01 U 0.0099 U 0.0099 U 0.095 U 97,000,000 0.192 U 0.11 U 0.0099 U 0.0114 U 0.034 J (1,2,3-cd) Indeno AN NA AN pyrene* 0.012 0.0038 AN 0.12 0.74 2.9 NR NR NV 0.1 U 0.1 U 100,000,000 0.01 U 0.01 U 0.11 U 0.0099 U 0.095 U 0.0099 U Dibenzo(a,h) 0.0114 U U 6600.0 0.11 U anthracene* 0.095 U 0.192 U AN NA NA 0.0038 0.012 0.21 AN 0.12 0.74 NR NR Z 0.1 U 0.01 U 0.11 U 0.11 U 0.01 U 0.1 U 0.0099 U 0.0099 U 0.095 U 95,000,000 0.0099 U 0.192 U Chrysene* 0.014 J AN 0.0038 AN AN 0.132 0.012 AN 0.12 0.74 910 NR NR \geq 0.032 U NA 0.03 U 0.033 U 0.032 U 0.03 U 0.034 U fluoranthene* 0.962 U Benzo(b+k) NA NA NA AN AN AN AN AN AN 0.012 0.74 0.12 NR NC NR NC NR N fluoranthene* 0.01 U 0.01 U NA 0.0099 U 38,000,000 0.0099 U 0.0099 U Benzo(k) ΝA AN 0.0038 ΝA NA AN NA NA 0.108 0.012 AN AN AN 0.74 0.12 NR NR 49 N 0.01 U 0.01 U U 6600.0 0.0099 U fluoranthene* 108,000,000 0.0099 U NA AN AN AN NA NA AN 0.104 NA AN AN AN Benzo(b) 0.0038 0.012 0.12 0.74 NR 5.2 RN NV 0.01 U 0.011 U 0.01 U 0.061 U 0.01 U 0.057 U 0.01 U 0.062 U 0.01 U 0.063 U pyrene* 0.192 U 0.066 U Benzo(a) 0.057 U 0.0038 0.012 0.12 0.74 AN NR AN NA NC NC NR AN 0.7 0.1 U 0.11 U 0.1 U 0.01 U 0.095 U 0.01 U 0.0099 U 0.0099 U 145,000,000 0.0099 U 0.029 J 0.031 J anthracene* 0.192 U AN Benzo(a) 0.0038 0.107 AN NA AN 0.012 0.74 0.12 NR 9.1 NR NV 12/28/2005 04/19/2006 12/29/2005 04/19/2006 12/27/2005 04/17/2006 04/18/2006 12/29/2005 12/27/2005 04/18/2006 12/28/2005 04/19/2006 Surface-Water ARAR-Aquatic Life-Acute 6/17/2005 6/9/2005 6/9/2005 6/16/2005 6/7/2005 Date Site-Specific Groundwater CUL for the MTCA Method C Surface-Water CULs Monitoring Well Groundwater Data MTCA Method C Groundwater CULs MTCA Method A Groundwater CULs MTCA Method B Groundwater CULs Excavation Worker Direct-Contact AWQC—Aquatic Life—Chronic MW4-0605-Dup MW6-122905 Protection of Surface Water MW5-041906 MW6-041906 MW4-122705 MW4-041806 MW5-122805 MW3-122905 MW3-041706 MW2-W-0605 MW2-041906 MW1-122705 MW1-041806 MW2-122805 MW1-W-35.0 MW4-0605 MW3-0605 Sample ID AWQC-Human Health Groundwater CUL **MW5 MW6** Location MW4 MW3 IWM MW2

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Polycyclic Aromatic Hydrocarbons in Groundwater (µg/L) Precision Engineering, Inc. **Risk Screening** Table 32

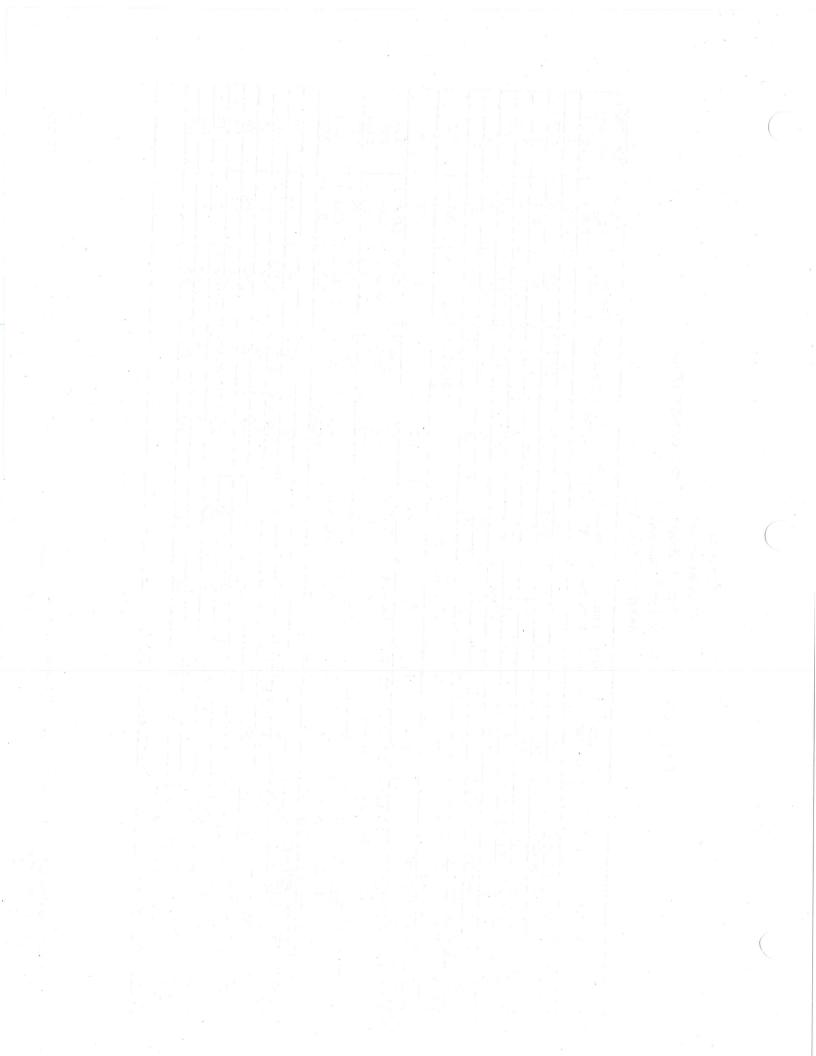
Seattle, Washington

	N																		-	_	-		-	_			Т		7	
Total cPAHs	including TEFs**	0.1	0.012	0.12	0.74	0 0038	0000.0	NK	NK	NC		NC	0.007	0.043	0.048	0.008	0.012	0.060		NA	0.173	NA	NA	NA	0.176	NA	NA			1
Indeno	(1,2,3-cd) pyrene*	NV	0.012	0.12	0 74	00000	00000	NX N	YN	97,000,000	0	2.9	0.0099 U	0.039 J	0.1 U	0.01 U	U 6600.0	0.13 U		NA	0.191 U	NA	NA	NA	0.194 U	NA	NA			
1 - 7 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	Dibenzo(a,n) anthracene*	NV	0.012	0 12	074	10000	0.0038	NR	NR	100,000,001		0.21	0.0099 U	0.038 J	0.1 U	0.01.11	0.0099 U	0.13 U		NA	0.191 U	NA	NA	NA	0.194 U	NA	NA			
	Chrysene*	NN	0.012	0.12	0.74	0./4	0.0038	NR	NR	95,000,000	5	910	N 0099 11	0.013 J		11100		0.13 U	2	NA NA	0 191 U	NA	NA	NA	0 194 II	NA	NA			
	Benzo(b+k) fluoranthene*	NN	0.012	410.0	0.12	U./4	NR	NR	NR	NC		NC	NIA			0.000	AN	11 020 0	0 000.0	MA	U QEA 11	NA	NA	NA		NIA O	VIN .			
	Benzo(k) fluoranthene*	NN	0100	210.0	7L.N	0.74	0.0038	NR	NR	38,000,000		49			AN	NA	0.01 U	0.0099 0	EN.	VIV	AN			VIV .	AN	AN	AN	NA		
	Benzo(b) fluoranthene*	NN/	2000	0.UTZ	0.12	0.74	0.0038	NR	NR	108 000.000		5.2		0.0099 0	NA	NA	0.01 U	0.0099 U	NA		NA	NA	AN	NA	NA	AN	NA	NA		.20
-	Benzo(a) pyrene*	, C		0.012	0.12	0.74	0.0038	NR	NR	UN		NC				0.061 U			0.075 U		AN	0.191 U	AN	AN	NA	0.194 U	NA	NA		st October 200
	Benzo(a) anthracene*		NV	0.012	0.12	0.74	0 0038	NR	NR	1 45 000 000	140,000,000	9.1		0.0099 U	0.035 J	0.1 U	0.01 U	0.099 U	0.13 U		NA	0.191 U	NA	NA	NA	0.194 U	NA	NA		AH screening po
	Date		CULS	curs	CULS	r CIII s	200	0+··· V	Clie-Acute	for the		tact		12/28/2005	04/18/2006	04/18/2006	12/28/2005	12/28/2005	04/18/2006	ter Data	6/9/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	12/14/2005	12/14/2005	e October 2007.	the for MTCA cP/
-	Sample ID		MTCA Method A Groundwater CULs	MTCA Method B Groundwater CULs	MTCA Method C Groundwater CULs	Mater Clis	100 0 001 1000 V 000	AWQC-Human Health	Surface-Water AKAKAquatic LiteAuure	AWQC—Aquatic Lite—Critoric Site-Specific Groundwater CUL for the	Protection of Surface Water	Excavation Worker Direct-Contact	ter CUL	MW7-122805	MW7-041806	MN/7-041806-Dup	MW8-122805	MWDUP-122805	MW8-041806	Reconnaissance Groundwater Data	GP2-W-17-RECON	GP4-W-8.0	GP5-W-18.0	GP6-W-18.0	GP7-W-14.0	GP8-W-10.0	GP13-W-8.0	GP15-W-8.0	*Criteria shown for MTCA values pre October 2007	**Criteria shown is for benzo(a)pyrene for MTCA cPAH screening post October 2007.
	Location		- MTCA Meth	MTCA Meth	MTCA Meth	ALCA ACTER	MI LA MEU	AWQCH	Surface-Wi	Site-Snecif	Protection	Excavation	Groundwater CUI	MW7			MWB			Reconnai	GP2 0	GP4	GP5	GP6	GP7	GP8	GP-13	GP-15	*Criteria shov	**Criteria shc

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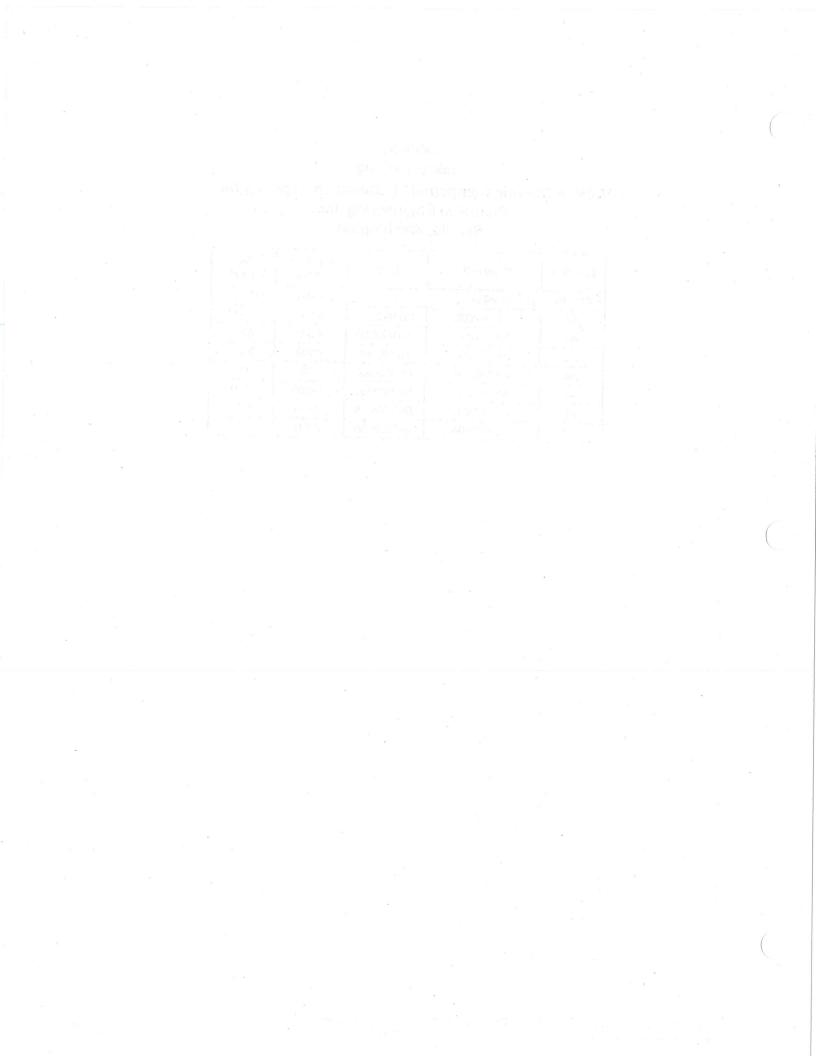
Risk Screening Petroleum Hydrocarbon IHSs in Groundwater (mg/L) Precision Engineering, Inc. Seattle, Washington

		Date	Diesel-Range	Oil-Range Organics
Location	Sample ID		Organics	500
MTCA Metho	d A Groundwater CULs	3	500	NV
MTCA Metho	d B Groundwater CUL	3	NV	NV
MTCA Metho	d C Groundwater CUL	s	NV,	NV
MTCA Metho	d C Surface-Water CU	Ls	NV	. NV
AMOC-Hur	nan Health		NV	NV
Surface-Wate	er ARAR—Aquatic Life	-Acute	NV	NV
AWQC-Aqu	atic Life—Chronic		NV	NV
CIII for Van	or Intrusion		NV	
Site-Specific of Surface W	Groundwater CUL for /ater		NV	NV
Excavation V	Vorker Direct-Contact (Groundwater	>S	NV
	Well Groundwater Da	ta		
MW1	MW1-W-35.0	6/16/2005	NA	NA
	MW1-122705	12/27/2005	0.248 U	0.495 U
	MW1-041806	04/18/2006	0.26 U	0.52 U
1114/0	MW2-W-0605	6/17/2005	0.438	0.512
MW2	MW2-122805	12/28/2005	1.19	1.04
	MW2-041906	04/19/2006	0.41	0.58 U
	the second s	6/7/2005	NA	NA
MW3	MW3-0605	12/29/2005	0.312	0.505 U
9 9	MW3-122905	04/17/2006	0.28 U	0.57 U
	MW3-041706	the second division of	NA	NA
MW4	MW4-0605	6/9/2005	NA	NA
	MW4-0605-Dup	6/9/2005	0.248 U	0.495 U
	MW4-122705	12/27/2005	0.240 U	0.54 U
	MW4-041806	04/18/2006		0.495 U
MW5	MW5-122805	12/28/2005	0.831	0.51 U
-	MW5-041906	04/19/2006	0.26 U	1.32
MW6	MW6-122905	12/29/2005	2.64	1.2
	MW6-041906	04/19/2006	0.76	0.495 U
MW7	MW7-122805	12/28/2005	0.248 U	
	MW7-041806	04/18/2006	0.26 U	0.51 U
	MW7-041806-Dup	04/18/2006	0.26 U	0.51 U
MVV8	MW8-122805	12/28/2005	1.71	1.00
1010 00	MWDUP-122805	12/28/2005	1.79	1.21
	MW8-041806	04/18/2006	0.45	0.58 U
Pacannaia	sance Groundwater			
GP2	GP2-W-17-RECON	6/9/2005	NA	NA
GP2 GP4	GP4-W-8.0	6/16/2005	0.325	0.478 U
GP4 GP5	GP5-W-18.0	6/16/2005	NA	NA
GP5 GP6	GP6-W-18.0	6/16/2005	NA	NA
GP0 GP7	GP7-W-14.0	6/16/2005	NA	NA
GP7 GP8	GP8-W-10.0	6/16/2005	0.814	0.479 U
GP-13	GP13-W-8.0	12/14/2005	NA	NA
GP-15 GP-15	GP15-W-8.0	12/14/2005	NA	NA



Risk Screening Volatile Organic Compounds in Sub-Slab Vapor (µg/m³) Precision Engineering, Inc. Seattle, Washington

Location	Sample ID Date		Trichloro- ethene	Vinyl chloride
CI II for V	apor Intrusion		8150	103,000
A1	A1-042806	04/18/2006	4.0 U	1.9 U
A1 A2	A2-042806	04/18/2006	4.9 U	2.3 U
A2 A3	A3-042806	04/18/2006	6100	8.4 U
A4	A4-042806	04/18/2006	NA	NA
A4 A5	A5-042806	04/18/2006	37000	420
A5 A6	A6-042806	04/18/2006	3.5 U	1.7 U
A0 A7	A7-042806	04/18/2006	3.5 U	1.7 U
AT	AT-042000			



Risk Screening Volatile Organic Compounds in Air (µg/m³) Precision Engineering, Inc. Seattle, Washington

Location	Sample ID	Date	Trichloroethene
CUL for Air			0.22
IA1	IA1	06/13/2006	0.2
IA2	IA2	06/13/2006	0.083
1A3	IA3	06/13/2006	0.11
1A4	IA4	06/13/2006	0.14
IA5	IA5	06/13/2006	0.16
IA6	IA6	06/13/2006	0.15
IA6	IA6 Duplicate	06/13/2006	0.15
IA7	IA7	06/13/2006	0.046
IA8	IA8	06/13/2006	0.15

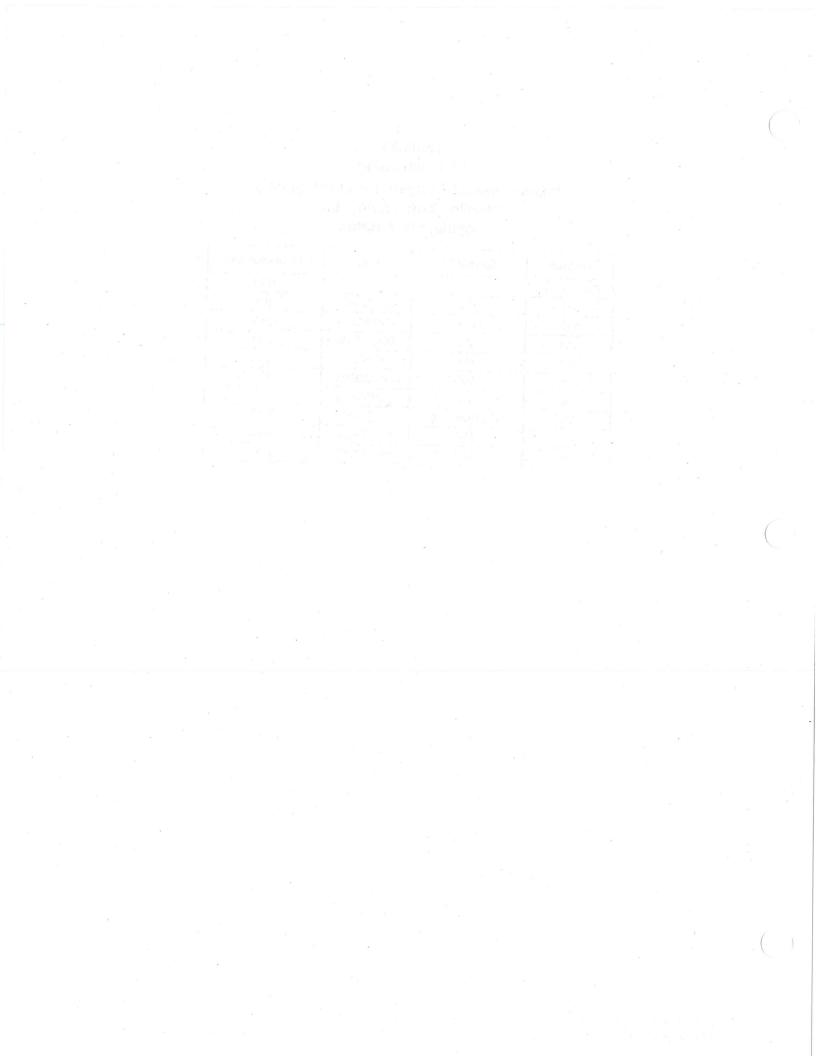


Table 36 Cumulative Risk for On-Site Soil Precision Engineering, Inc. Seattle, Washington

COPC	Maximum Detected Concentration	Industrial Worker Direct-Contact Scenario					
0010	Cs	CUL	ELCR	CULnc	HQ		
	mg/kg	mg/kg	Unitless	mg/kg	Unitless		
Li sustent ebromium	3.50E+03	2.2E+03	1.6E-05	1.4E+03	2.5E+00		
Hexavalent chromium	1.16E+00	6.8E+00	1.7E-06	3.6E+02	3.2E-03		
Trichloroethene		NC	1.8E-05	NC	2.5E+00		
Cumulative Risk	NC	NC	1.02-00				

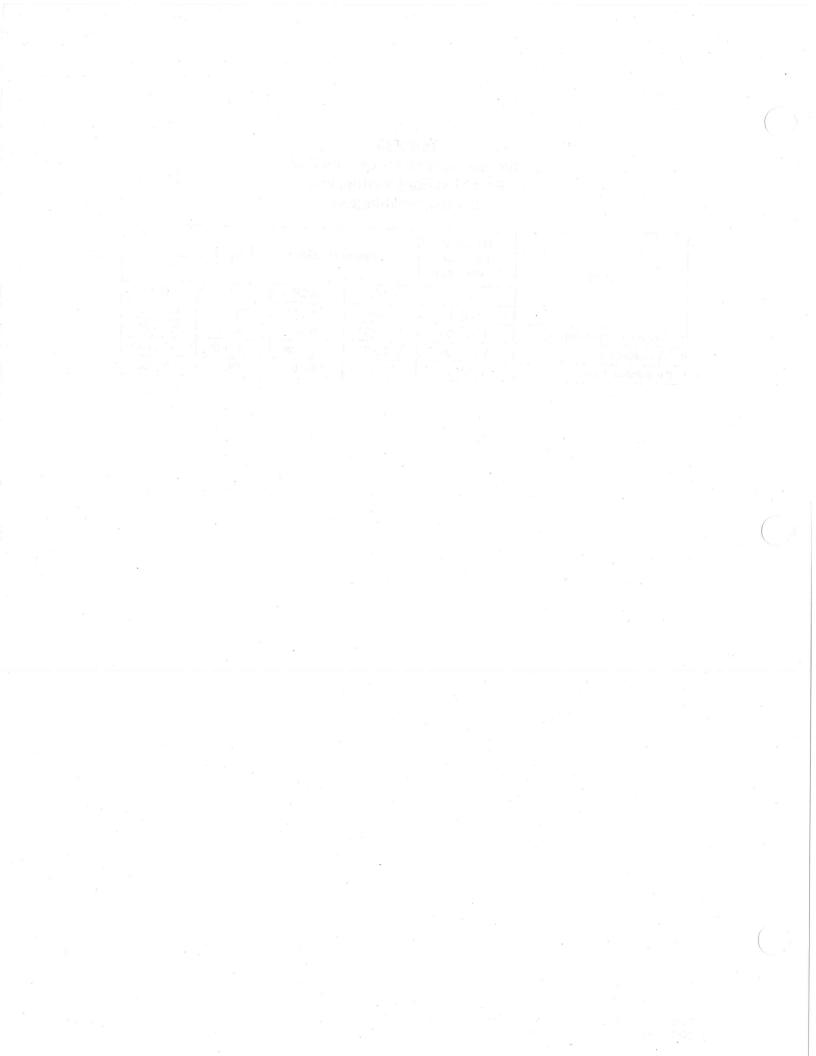


Table 37 Total Metals in Soil from Ditch Removal Confirmation Samples (mg/kg) Precision Engineering, Inc. Seattle, Washington

Location	Sample	Depth (ft bgs)	Date Collected	Arsenic	Lead
MTCA Metho	d A CULs fo	r Unrestricted I	and Use	20	NR
		r Ingestion only	and the second se	0.67	NR
		r Ingestion Onl		88	NR
			—Direct Contact	20	1000 ^a
B1	B1	1.5	10/24/2007	16.2	11.2
B1 B2	B2	1.5	10/24/2007	13.9	36.7
B2 B3	B3	1.5	10/24/2007	10.7	29.7
B3	B4	1.5	10/24/2007	3,79	3.6
B5	B5	1.5	10/24/2007	3.07	5.19
B6	B6	1.5	10/24/2007	2.76	3.5
B0 B7	B7	1.5	10/24/2007	7.21	22.2
B8	B8	1.5	10/24/2007	10	40.4
B9	B9	1.5	10/24/2007	8	19.5
B10	B10	1.5	10/24/2007	16.1	37.2
B10	B11	1.5	10/24/2007	8.26	16
B12	B12	1.5	10/24/2007	11.3	108
B12	B13	1.5	10/24/2007	26.3	55.5
P1	P1	0.5	10/24/2007	22	653
P2	P2	0.5	10/24/2007	15.7	200
P3	P3	0.5	10/24/2007	13.3	. 202
P4	P4	0.5	10/24/2007	11.6	103
P5	P5	0.5	10/24/2007	9.54	64.6
P6	P6	0.5	10/24/2007	9.05	108
P7	P7	0.5	10/24/2007	19.9	196
P8	P8	0.5	10/24/2007	13.8	76.8
P9	P9	0.5	10/25/2007	111	2410
P10	P10	0.5	10/25/2007	15.6	365
SS-1	SS1-6	0.5	11/19/2007	2.64	120
SS-2	SS2-6	0.5	11/19/2007	4.82	75.2
SS-3	SS3-6	0.5	11/19/2007	37	668
SS-3	SS3-18	1.5	11/19/2007	6.79	230
	SS4-6	0.5	11/19/2007	3.58	18.5
SS-5	SS5-6	0.5	11/19/2007	4.43	44
SS-6	SS6-6	0.5	11/19/2007	16.8	838
SS-6	SS6-18	1.5	11/19/2007	23.7	526
C-1	C-1	2	3/27/2008	9.91	470
C-2	C-2	1.5	3/27/2008	21.6	1020
C-3	C-3	1.5	3/27/2008	13.2	213

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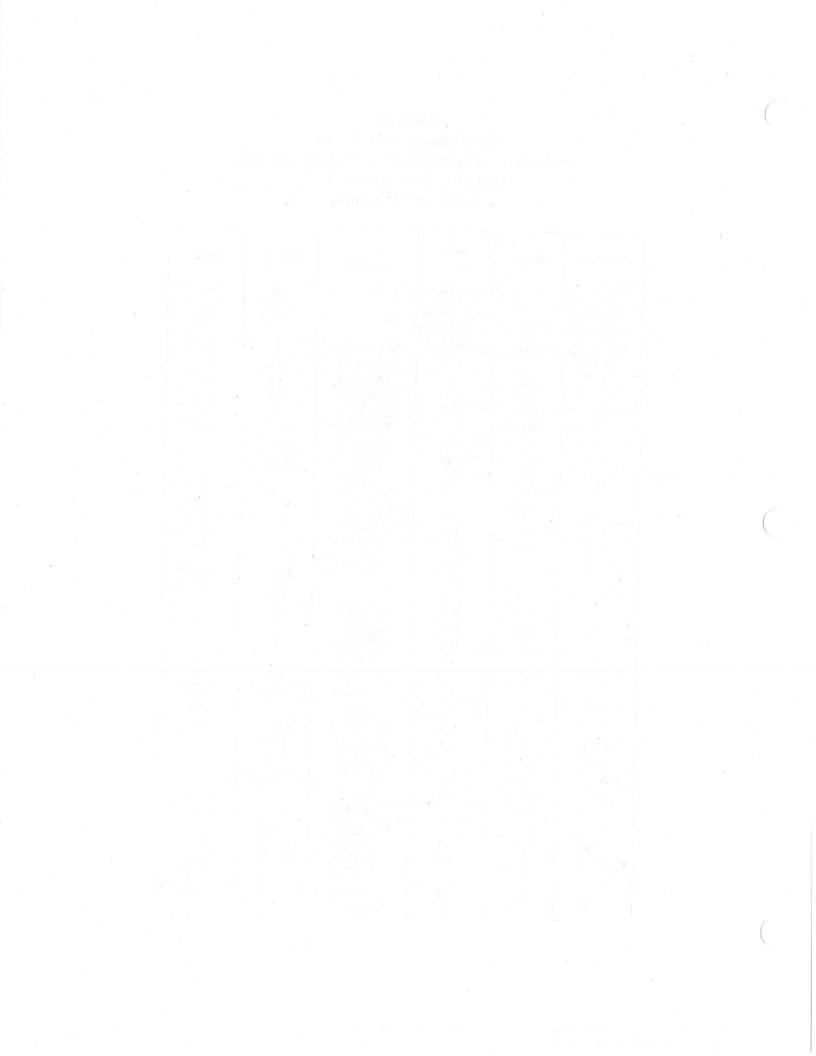


Table 38 Polycyclic Aromatic Hydrocarbons in Soil from Ditch Removal Confirmation Samples (mg/kg) Precision Engineering, Inc. Seattle, Washington

Benzo(a) anthracene	0.0130 U
Anthracene	0.0130 U
Acenaph- thylene	0.0130 U
Acenaph- thene	0.0130 U
2-Methyl- naphthalene	0.0130 U
1-Methyl- naphthalene	0.0130 U
Date Collected	10/24/2007
Depth (ft bgs)	1.5
Sample	B5
Location	B5

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Table 38 Polycyclic Aromatic Hydrocarbons in Soil from Ditch Removal Confirmation Samples (mg/kg) Precision Engineering, Inc. Seattle, Washington

Dibenzo(a,h) anthracene	0.0130 U
Chrysene	0.0130 U
Benzo(k) fluoranthene	0.0130 U
Benzo(ghi) perylene	0.0130 U
Benzo(b) fluoranthene	0.0130 U
Benzo(a) pyrene	0.0130 U
Date Collected	10/24/2007
Depth (ft bgs)	1.5
Sample	B5
Location	B5

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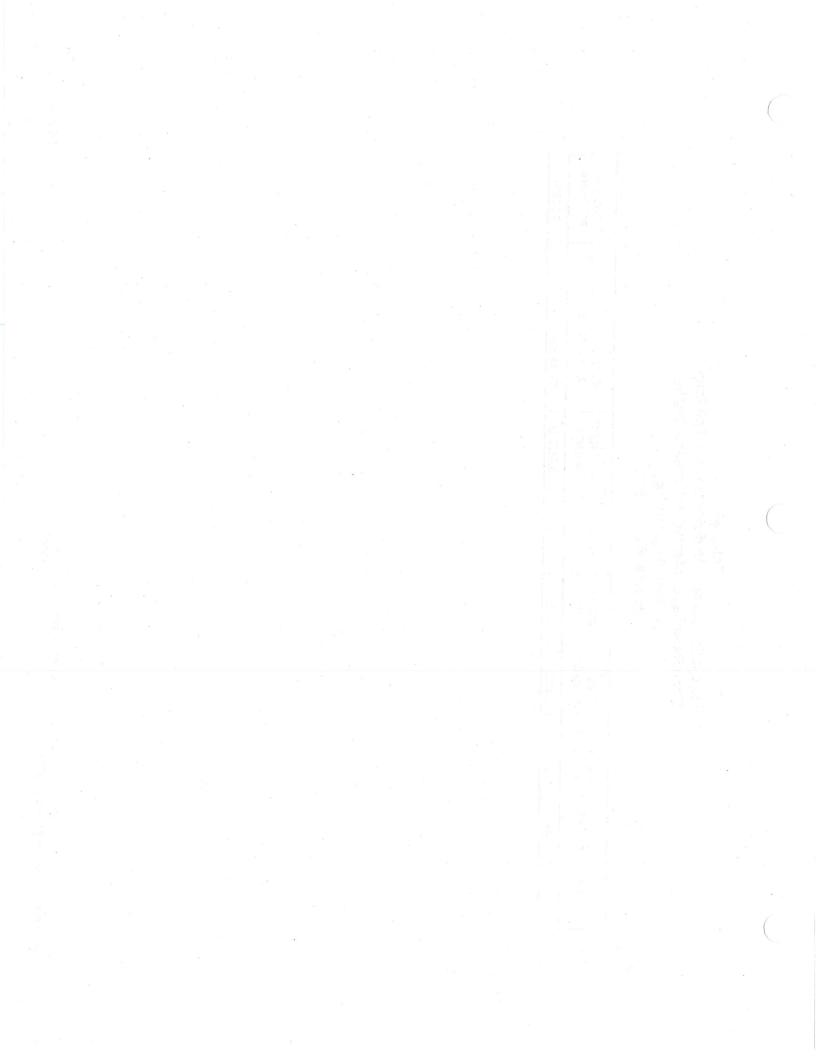


Table 38 Polycyclic Aromatic Hydrocarbons in Soil from Ditch Removal Confirmation Samples (mg/kg) Precision Engineering, Inc. Seattle, Washington

÷	
Pyrene	0.0130 U
Phenanthrene	0.0130 U
Naphthalene	0.0130 U
Indeno(1,2,3- cd)pyrene	0.0130 U
Fluorene	0.0130 U
Fluoranthene	0.0130 U
Date Collected	10/24/2007
Depth (ft bgs)	1.5
Sample	B5
Location	B5

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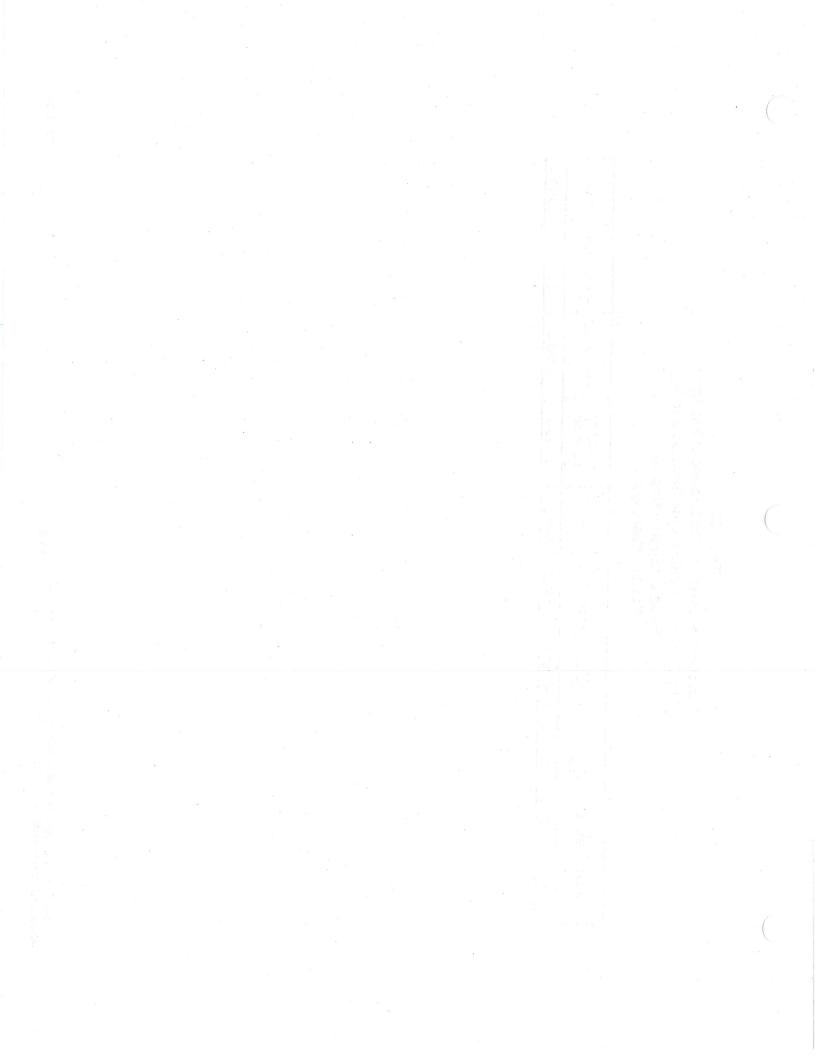


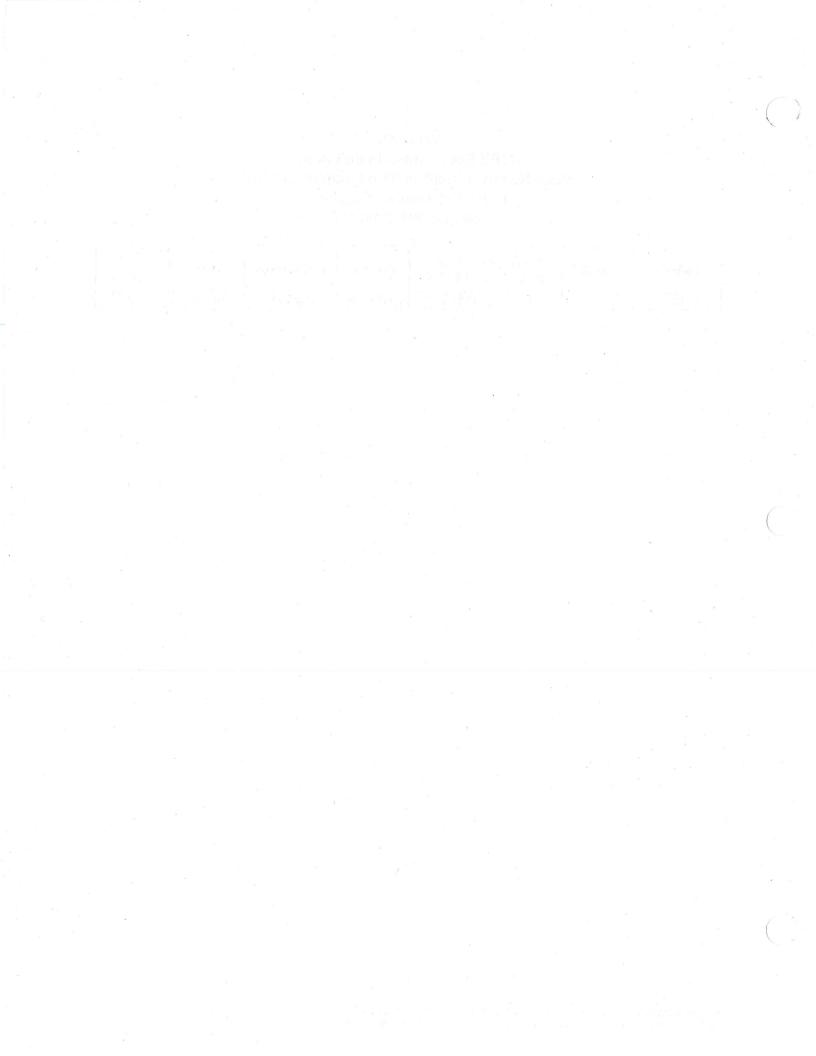
Table 39 Total Petroleum Hydrocarbons in Soil from Ditch Removal Confirmation Samples (mg/kg) Precision Engineering, Inc. Seattle, Washington

Location	Sample	Depth (ft bgs)	Date Collected	Gasoline-Range Hydrocarbons	Diesel	Lube-Oil-Range Hydrocarbons
B5	B5	1.5	10/24/2007	5.30 U	13.0 U	32.5 U

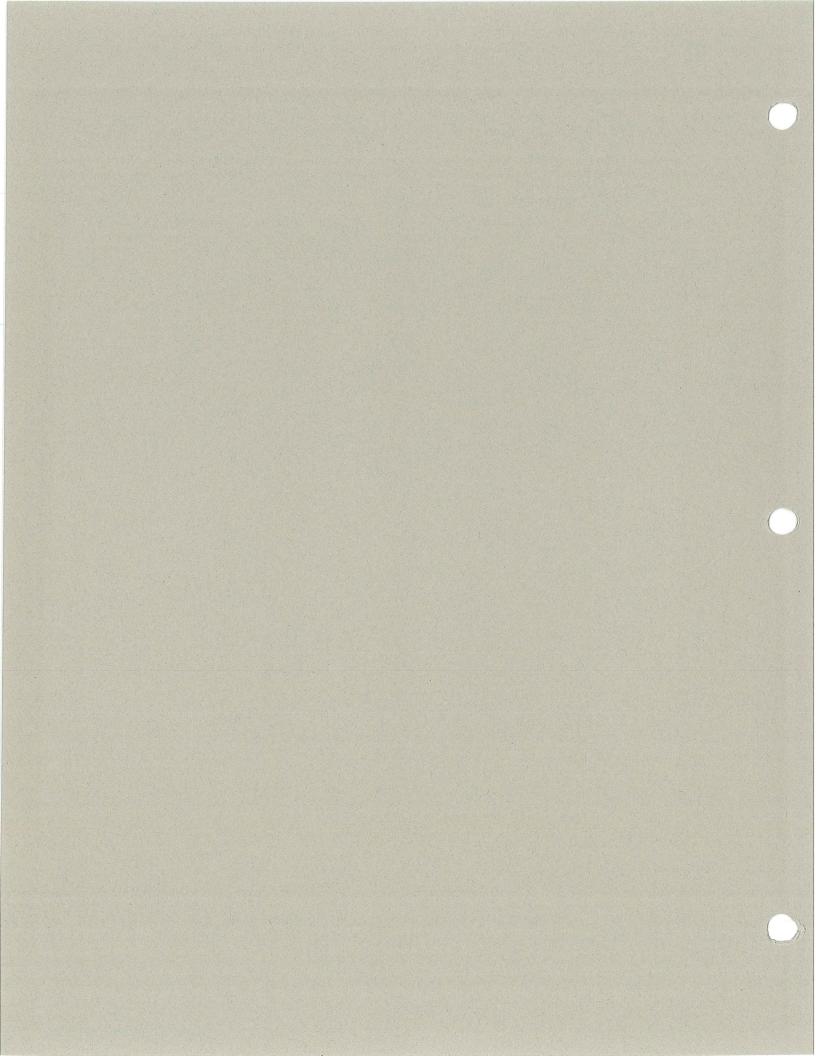


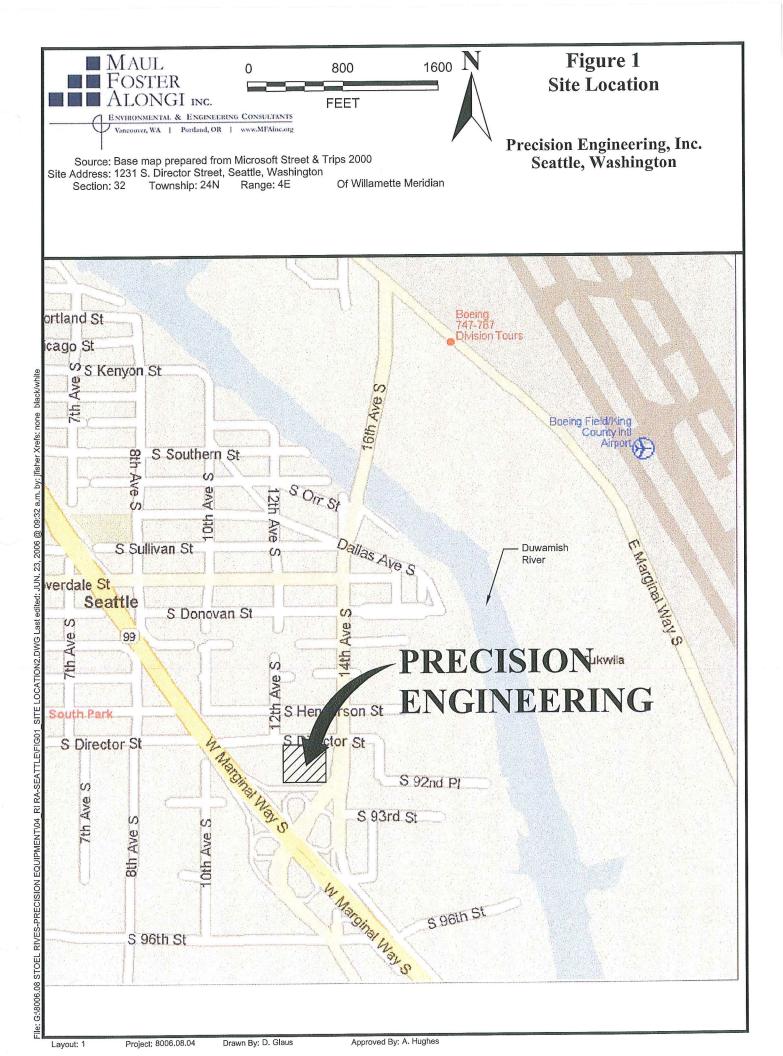
Table 40 BTEX Compounds in Soil from Ditch Removal Confirmation Samples (mg/kg) Precision Engineering, Inc. Seattle, Washington

Location	Sample	Depth (ft bgs)	Date Collected	Benzene	Ethylbenzene	Toluene	Total Xylenes
B5	B5	1.5	10/24/2007	0.0318 U	0.0530 U	0.0530 U	0.106 U



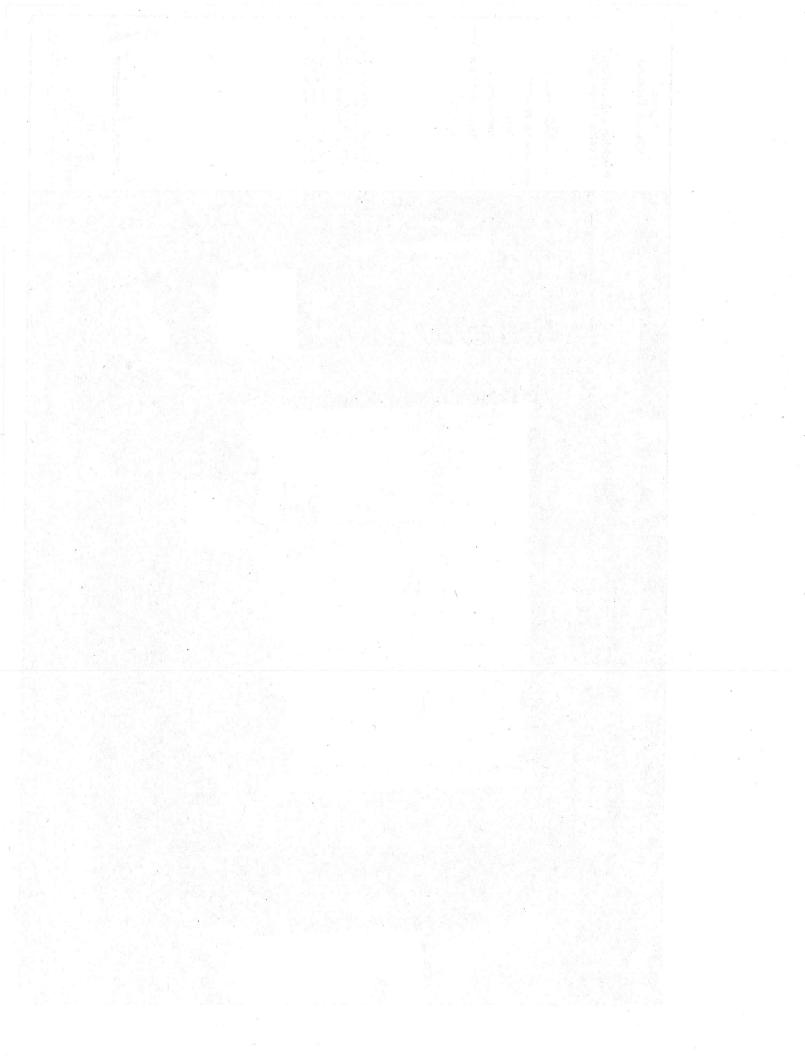
FIGURES

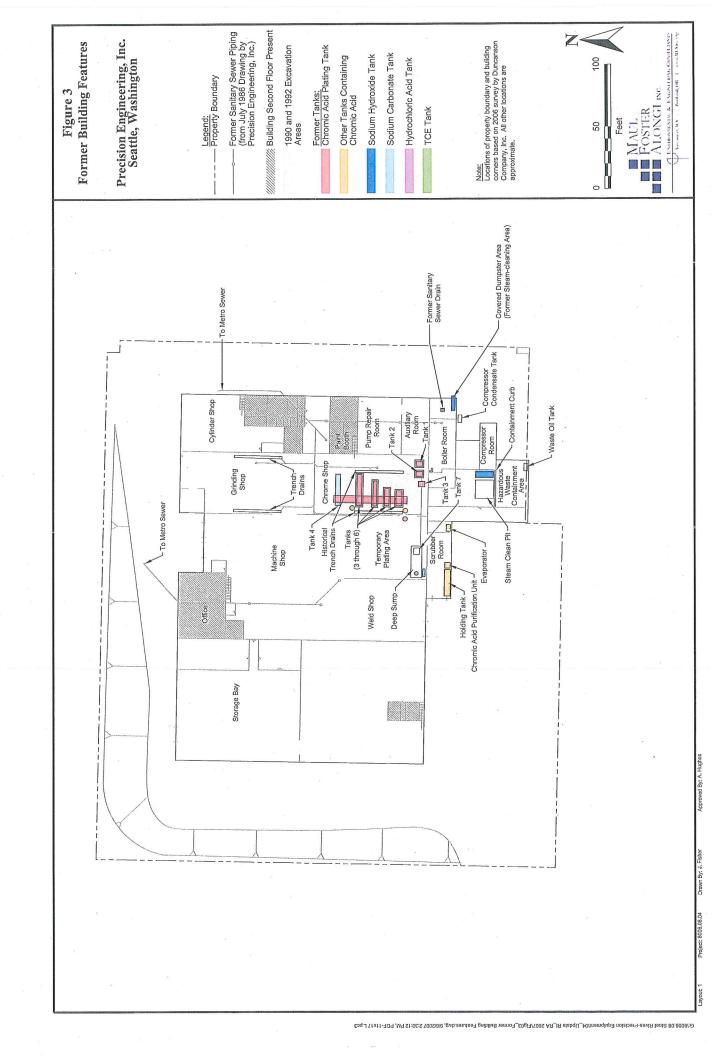


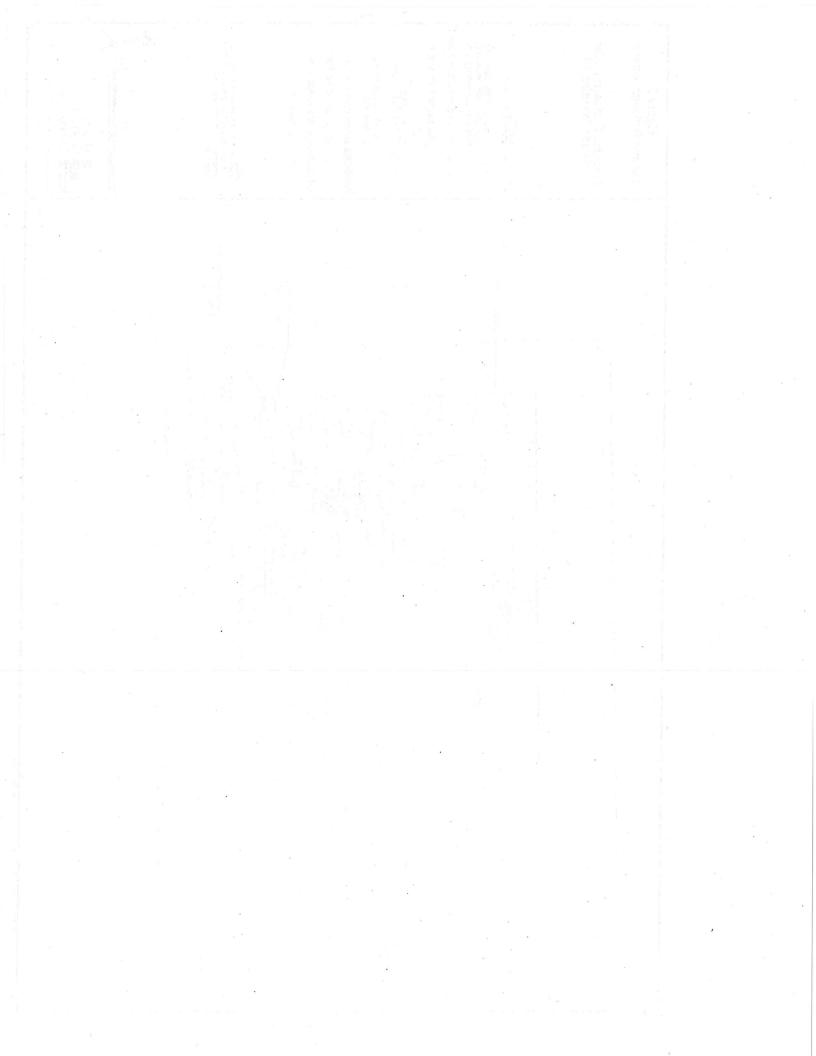


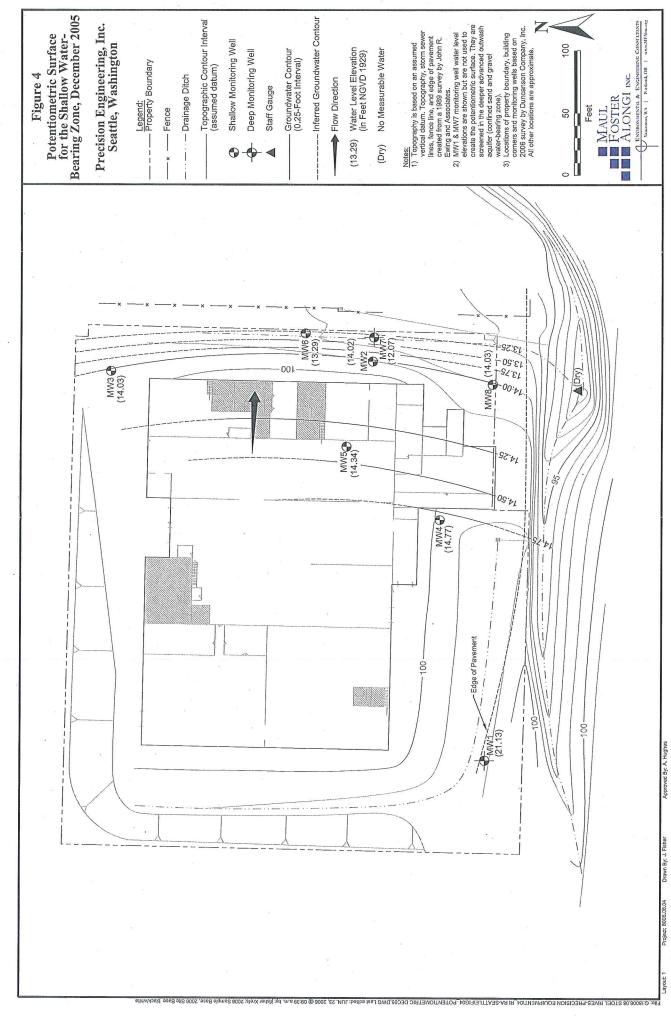


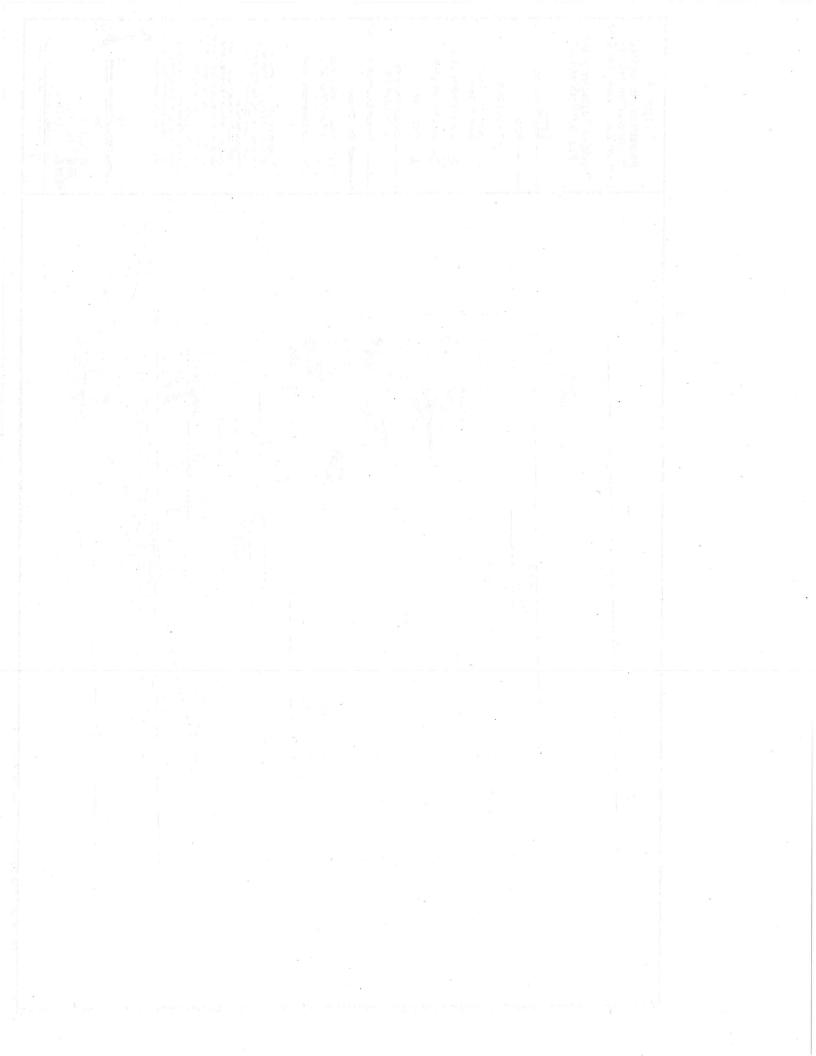


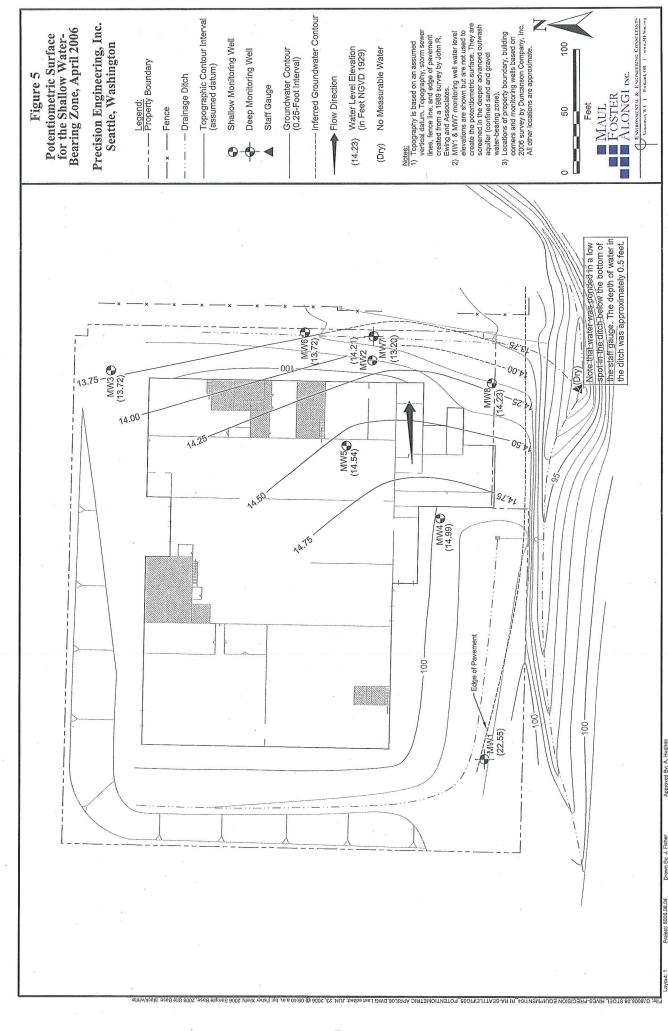




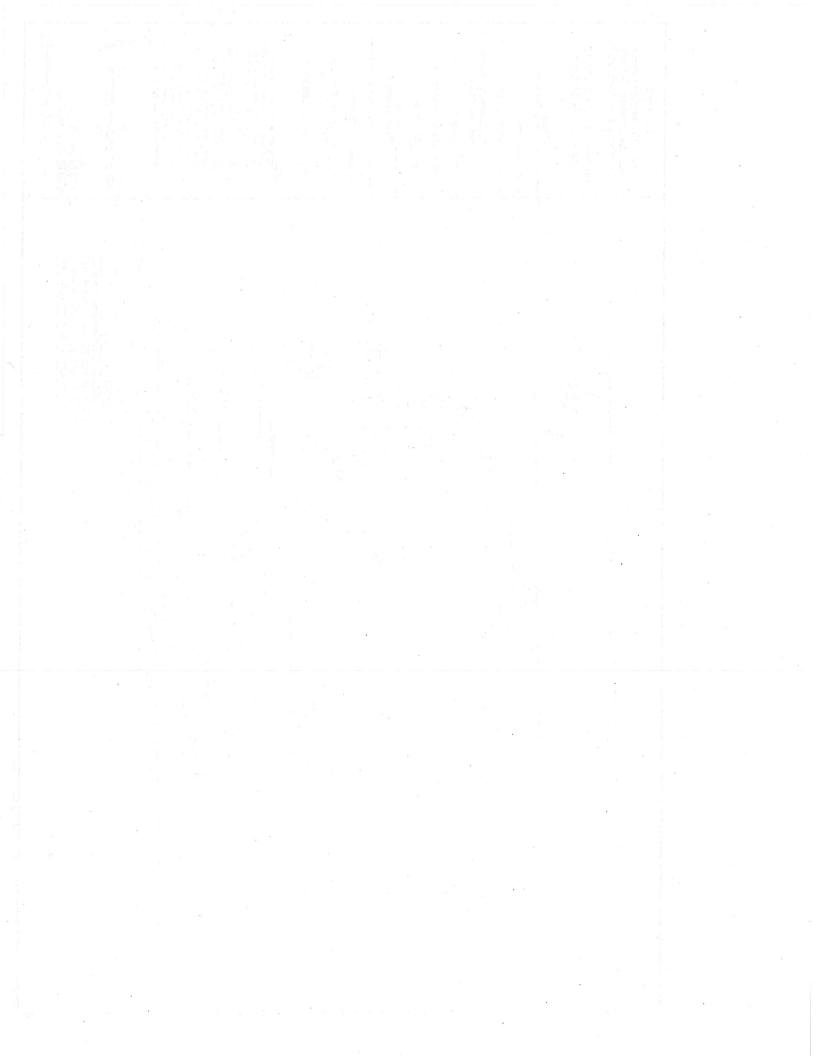


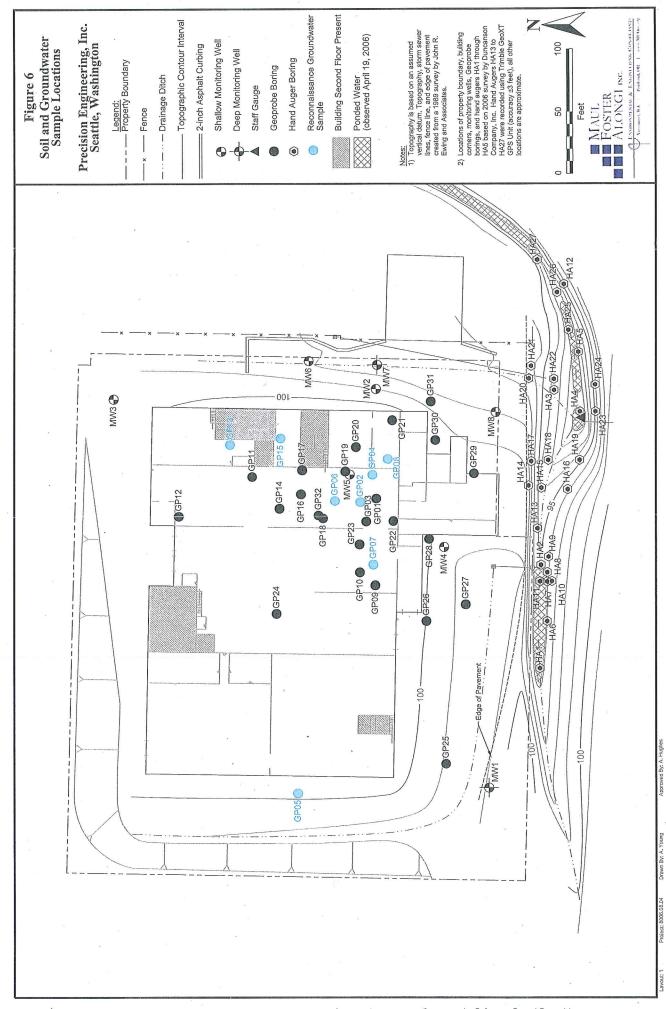






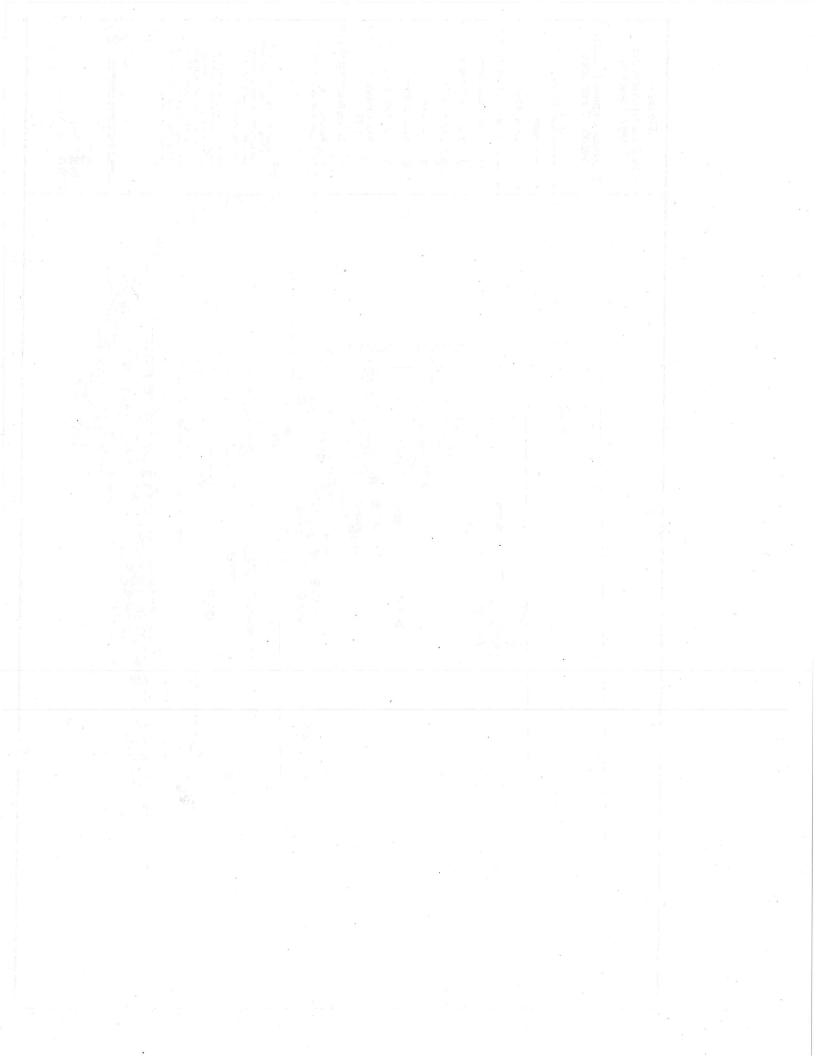
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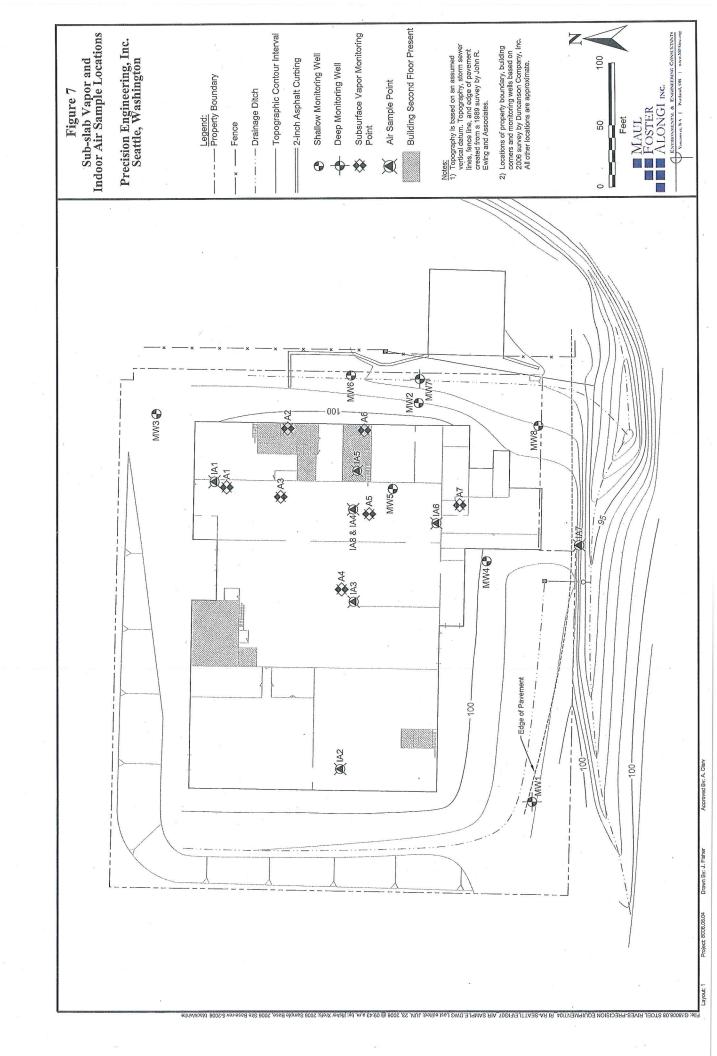


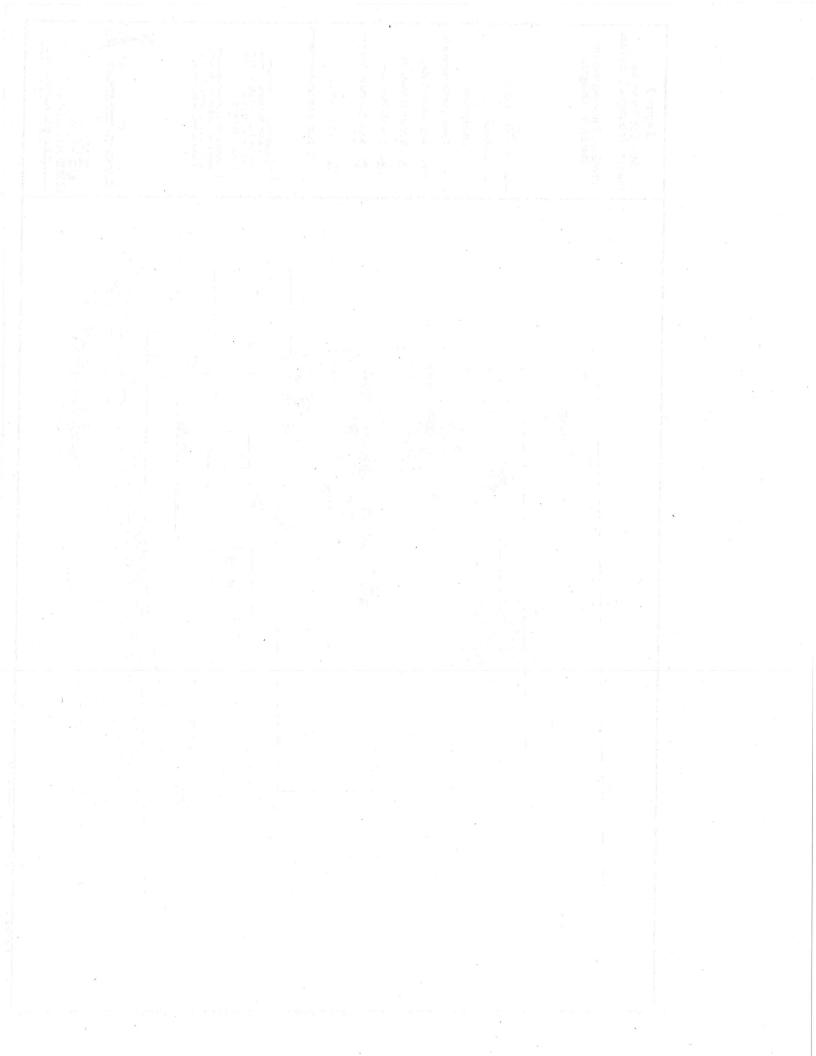


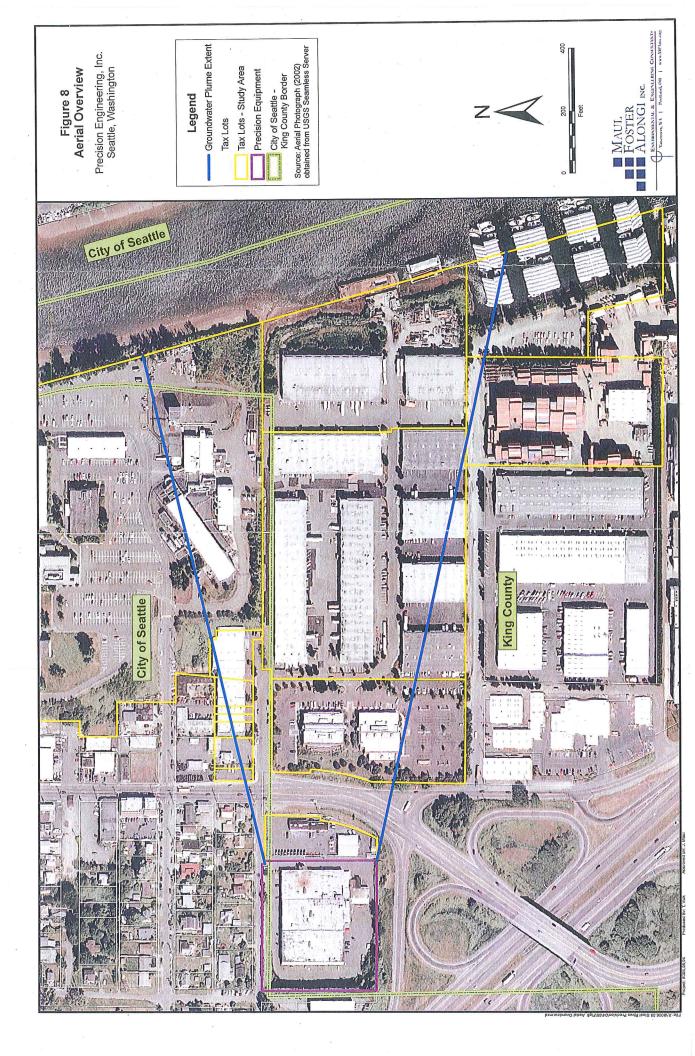
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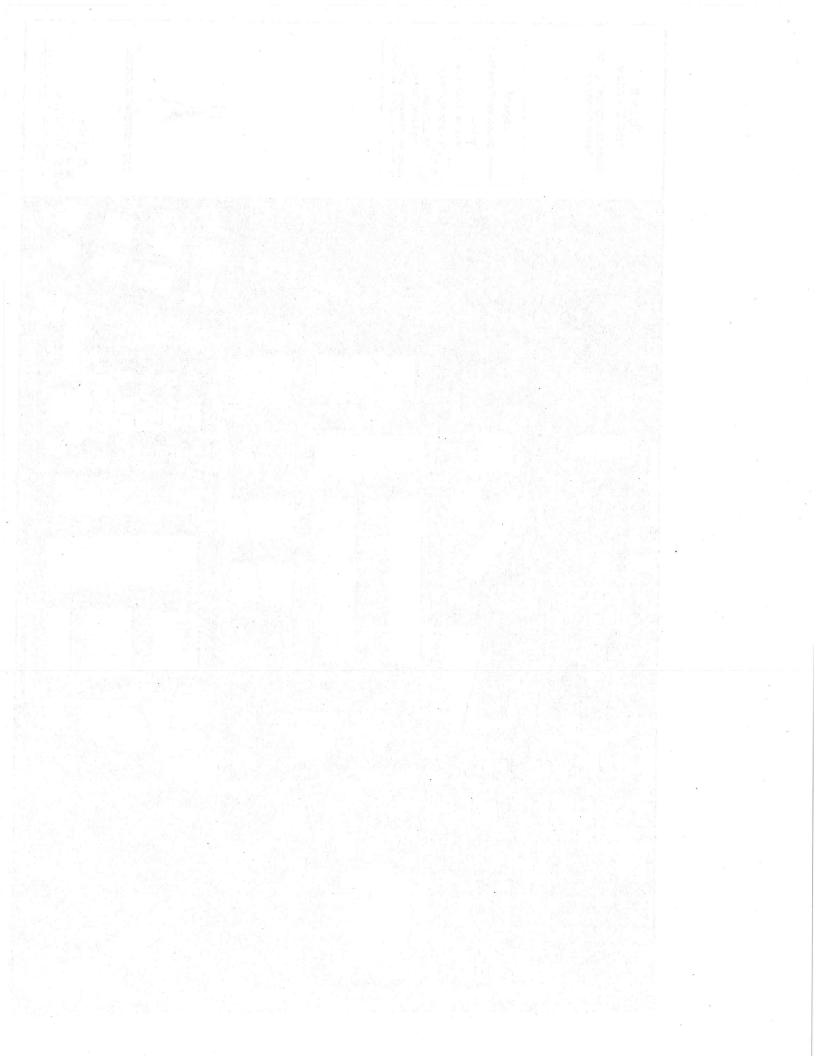
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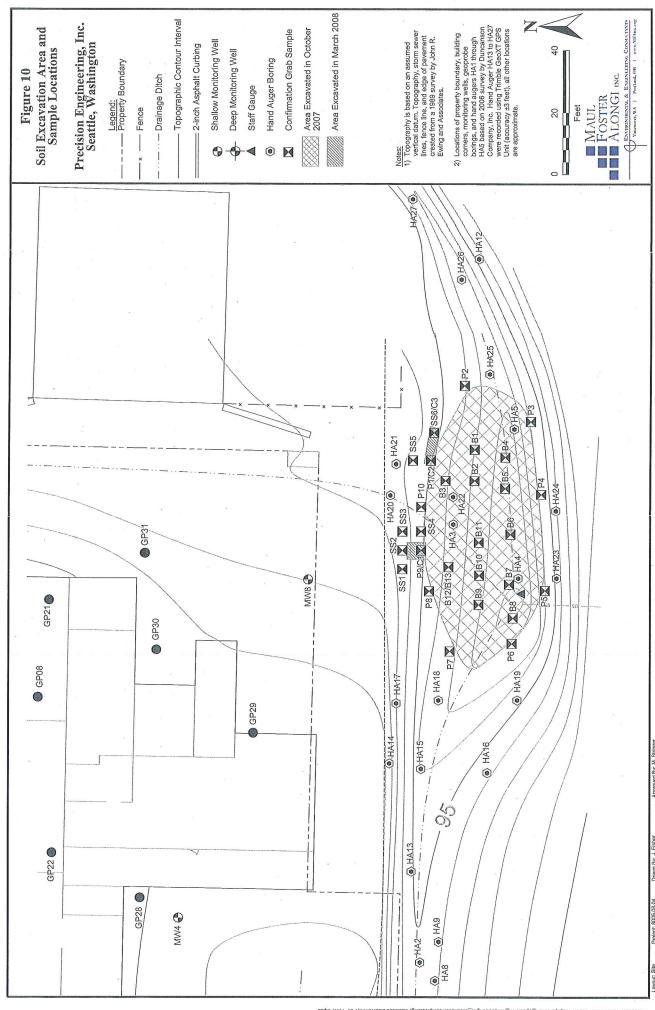




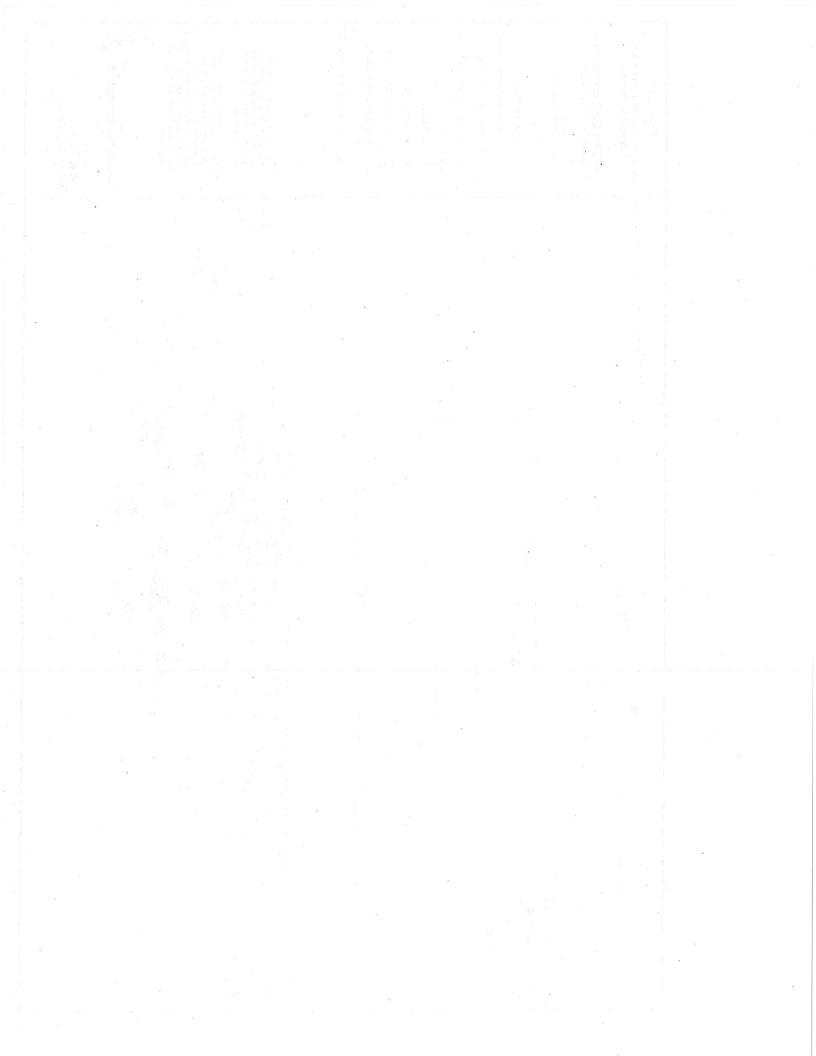


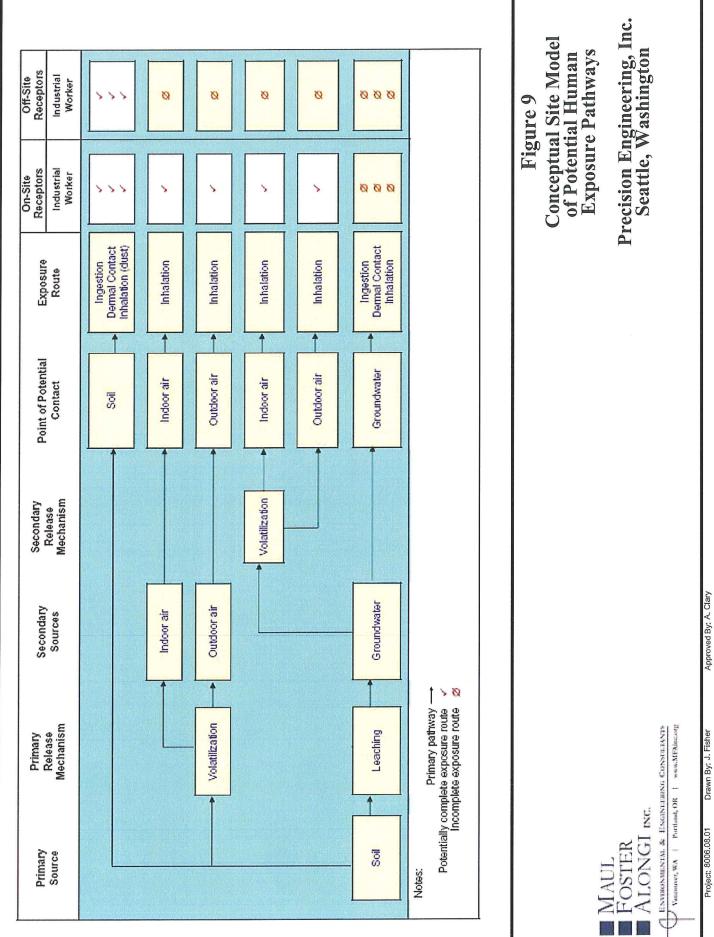






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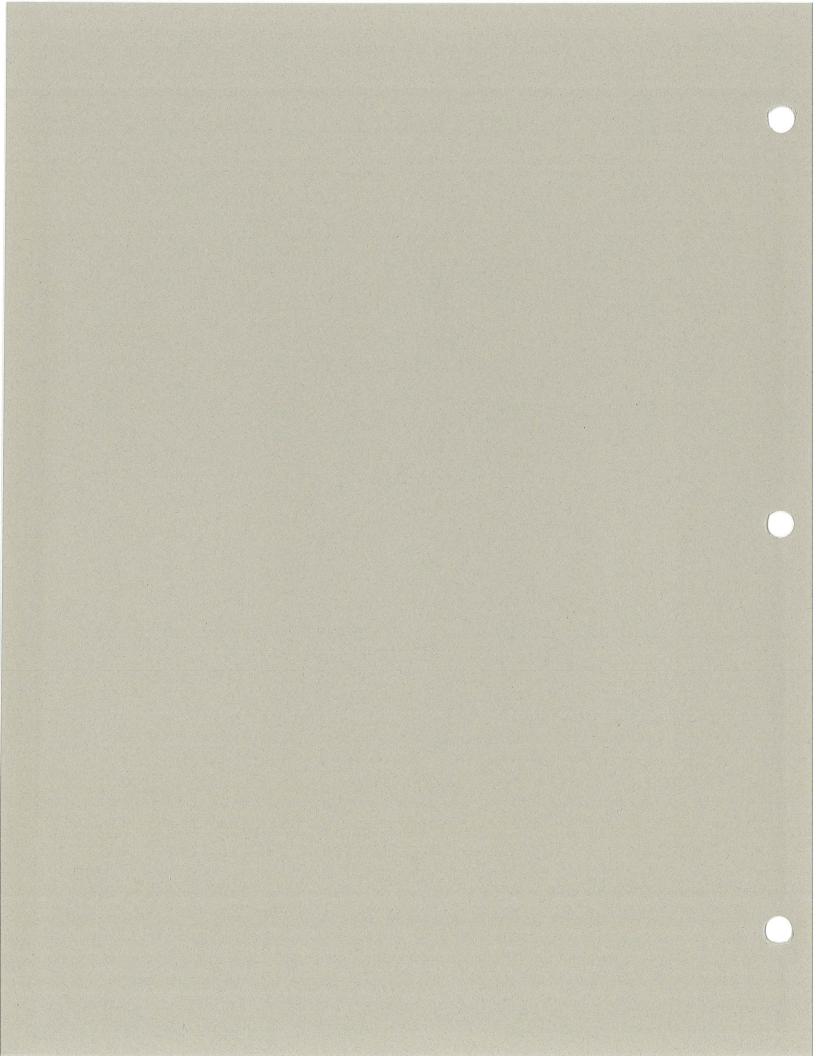
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APPENDIX A

GROUNDWATER FATE AND TRANSPORT MODELING





FROM:

To: Mark Adams, Ecology

MEMORANDUM

DATE: February 25, 2008

Matthew Hickey and James Peale

PROJECT: No. 8006.08.04

RE: Groundwater Cleanup Levels for the Protection of Surface Water and Groundwater Fate and Transport Modeling for the Former Precision Engineering Site, VCP ID Number NW 1511

Maul Foster & Alongi, Inc. (MFA) has prepared this memorandum to describe groundwater fate and transport modeling for the Precision Engineering, Inc. (Precision) site located at 1231 S Director Street in Seattle, Washington. This memorandum also addresses a request by the Washington State Department of Ecology (Ecology) to develop groundwater cleanup levels (CULs) for the protection of surface water. Because the modeling shows that indicator hazardous substances (IHSs) present at the site will not reach the Duwamish River, groundwater CULs that exceed surface-water CULs can be established consistent with WAC 173-340-720(6)(c)(i)(E).

MFA used the groundwater model to derive groundwater CULs for site IHSs that, if exceeded at the eastern property boundary, are predicted to result in exceedances of surface-water criteria at the point where groundwater discharges to the Duwamish River. The following discussion includes a description of the groundwater model used, model inputs, assumptions, and results.

Model Description

MFA performed the groundwater modeling using U.S. Environmental Protection Agency's (USEPA's) BIOCHLOR model (USEPA, 2002). BIOCHLOR is based on the Domenico analytical solute transport model and has the ability to simulate 1-D advection, 3-D dispersion, linear adsorption, and biotransformation or degradation. BIOCHLOR includes three different model types:

- Type I: Solute transport without decay
- Type II: Solute transport with biotransformation or degradation modeled as a sequential firstorder decay process
- Type III: Solute transport with biotransformation or degradation modeled as a sequential first-order decay process with two different reaction zones (i.e., each zone has a different set of rate coefficient values)

All compounds were modeled using the Type I or II models Type II was used for all compounds except metals. Type I was used for metals, which do not decay. Type I and Type II were used for trichloroethene (TCE) and vinyl chloride, to accommodate a request by Ecology, as explained further below.



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Model Inputs, Assumptions, and Output

The model required the following data inputs:

- Source concentrations
- Source dimensions (lateral and vertical)
- Groundwater velocity (either entered directly or calculated using gradient, hydraulic conductivity, and porosity)
- Retardation factors (either entered directly or calculated using default partition coefficients and organic carbon data for soil)
- Degradation rates based on half-life data (a half-life x factor of 2 was used for TCE and VC)
- Model domain size and duration

These parameters are summarized on Table A1 and discussed further (along with the assumptions) in the following sections. The output of the model is the concentration at a designated distance downgradient of the source.

Compounds Modeled

MFA modeled the fate and transport of the following IHSs:

- Copper
- Trivalent and hexavalent chromium
- Trichloroethene (TCE)
- Vinyl chloride

Diesel- and oil-range organics are also IHSs in site groundwater, but the chemical properties necessary to run the model are not available for diesel or oil. Instead, selected polycyclic aromatic hydrocarbons (PAHs) (which are constituents of diesel- and oil-range organics) that were detected in site groundwater at a concentration above the Ecology or USEPA surface-water criteria were modeled. Benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were modeled as surrogates.

Arsenic and selenium, which are IHSs at the site, were not modeled because based on the data collected, Precision does not appear to be a source of these IHSs. The spatial distribution of arsenic concentrations in groundwater is not consistent with what would be expected if the former Precision site was the source. The arsenic detections are representative of naturally occurring background concentrations. For example, the highest concentration of arsenic detected at the site (32.3 μ g/L) was in a sample from monitoring well MW1, located upgradient of the facility. Arsenic is ubiquitous in groundwater throughout the site at concentrations that appear to be consistent with naturally occurring background levels and there is no indication that Precision is a source of the arsenic in groundwater. Selenium is detected in some of the downgradient

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monitoring wells at the site; however, selenium was not detected in soil and is no link between selenium and Precision.

It was not necessary to model benzo(b)fluoranthene and benzo(k)fluoranthene to demonstrate that these constituents would not reach the river reach the Duwamish River as it was already shown that they were not detected in monitoring locations at or near the property boundary nor in borings where IHSs may not be detected in downgradient locations.

Source Concentrations, Downgradient Concentrations, and Surface-Water Criteria

The maximum detected concentrations in groundwater samples collected from monitoring wells at the eastern property boundary were used as the source concentration to demonstrate that constituents at the site will not reach the river (see Table A1). Although TCE and vinyl chloride were not detected in property boundary monitoring wells, concentrations from geoprobe groundwater reconnaissance sample GP-13, located approximately 75 feet upgradient of the property boundary were used. Data from GP-13 was used as the boring was in a location where Ecology had expressed concern that IHSs may not show up in downgradient wells.

To calculate the groundwater CUL, an iterative process was used whereby assumed source concentrations were input into the model until the calculated downgradient concentration matched the most conservative applicable surface-water criteria. The groundwater CUL for a given IHS is the source concentration that predicts groundwater concentrations equal to the surface-water criteria (see Table A2). Groundwater CULs for the volatile organic compounds (VOCs) TCE and vinyl chloride were calculated in three ways: using a degradation rate based on reference values (Howard, et. El., 1991), using the same reference value multiplied by a factor of two, and with no degradation occurring (i.e., Type I model).

Table A3 summarizes applicable surface-water criteria. The most conservative (lowest) criteria from Table A3 were used for the model. Water-quality criteria were obtained from the Cleanup Levels and Risk Calculations (CLARC) Web page (Ecology, 2007). Applicable surface-water criteria included Model Toxics Control Act (MTCA) Method B and Method C CULs for surface water, and Ecology and USEPA surface-water criteria for aquatic life and for human health in both freshwater and marine environments. Criteria for both freshwater and marine environments were used based on reports that the base of the Duwamish is saline, while approximately the top 10 feet is freshwater (Duwamish Coalition, 1998). Use of water-quality criteria for the consumption of organisms and water is overly conservative, as water in the Duwamish is brackish and is not used for drinking water.

Source Area Dimensions

Source dimensions were based on the areal extent of IHS detections at the site. The extent of the contaminants was estimated to be equal to the distance between a sample location in which the constituent was detected in groundwater and the nearest sample location in which the constituent was not detected. Data from both monitoring wells and reconnaissance borings were considered in estimating the source-area widths.

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The source width for trivalent chromium, and all of the PAHs was 300 feet (based on detections near the north and south property boundaries). The source width for hexavalent chromium was 50 feet (based on detections in GP6 and MW4). Copper source width was 225 feet, based on detections in MW6, MW2, and MW8. The source width for vinyl chloride was 200 feet (based on the detection of vinyl chloride in GP-13 and MW-8). The source width for TCE was 40 feet (based on the detections of TCE in GP6, GP8, and GP-13). It is important to note that hexavalent chromium, TCE, and vinyl chloride were not detected at the property boundary (i.e., applying these concentrations at the property boundary is an overly conservative case).

The source-area thickness for all IHSs was estimated as 15 feet (based on the difference in elevation between the top of the water table and the top of the aquitard).

BIOCHLOR allows the user to specify either a constant concentration source or a variety of source decay scenarios. Using a decay scenario requires an estimate of the mass contained in the original release. MFA conservatively assumed a constant, nondegrading source. This assumption significantly overestimates the amount of mass in the subsurface, considering that TCE use at the property ended in the mid-1980s, that the outside steam-cleaning area was relocated before 1986, that the boiler UST was abandoned in place and filled with a slurry in 1992, that chrome-plating operations ceased in 2005, and the evidence that the organic compounds are degrading (the presence, for example, of the TCE degradation product vinyl chloride).

Groundwater Velocity

Groundwater models are typically sensitive to variations in groundwater velocity, which is dependent on the hydraulic conductivity (K) of the water-bearing zone (as well as the porosity [n] and the gradient [i]). A gradient of 0.003 was calculated using site groundwater-elevation data collected from MW6 (located at the property boundary) on April 17, 2006, and an average daily staff-gauge elevation for the Duwamish on the same day (USGS, 2007). A porosity of 0.3 was assumed based on typical estimates for the soil types at the site.

Values of K can range over orders of magnitude. The estimate of K from the document titled Development of a Three-Dimensional Numerical Groundwater Flow Model for the Duwamish River Basin (Duwamish Coalition, 1998) is 0.001 centimeters per second for the area near the former Precision site. MFA modeled the groundwater flow using a K value five times the Duwamish Coalition estimate (i.e. 0.005 centimeters per second). Applying this value to Darcy's law results in a linear velocity of 52 feet per year. The assumed K value is conservative compared to the value used by the Duwamish Coalition (i.e., overestimates groundwater velocity and consequently potential contaminant migration).

Retardation Factor

The velocity of organic constituents in the dissolved phase is usually less than (i.e., retarded relative to) the groundwater velocity due to sorption effects. Sorption of organic constituents occurs as dissolved-phase organic constituents partition to the organic carbon in soil. The rate of sorption depends on the amount of organic carbon in the soil and the distribution coefficients (K_{oc} values). The K_{oc} values for TCE, benzo(a)anthracene, benzo(b)fluoranthene,

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benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were obtained from Ecology's CLARC Web page (Ecology, 2007). The CLARC Web page listed distribution coefficients for volatile organic compounds (VOCs) of 94 L/kg for TCE and 19 L/kg for vinyl chloride, indicating low tendency for sorption (and thus retardation). Distribution coefficients for PAHs were significantly larger (i.e., 3.6×10^5 L/kg for benzo(a)anthracene, 1.2×10^6 L/kg for benzo(b)fluoranthene and benzo(k)fluoranthene, 4.0×10^5 L/kg for chrysene, 1.8×10^6 L/kg for dibenzo(a,h)anthracene, and 3.5×10^6 L/kg for indeno(1,2,3-cd)pyrene).

Sorption of dissolved inorganic constituents occurs primarily due to cation- or anion-exchange processes. The amount of solute that is adsorbed to the aquifer matrix is also described by a distribution coefficient (K_d). Distribution coefficients for arsenic, copper, trivalent chromium, hexavalent chromium, and selenium were also obtained from the CLARC Web page. The CLARC Web page listed distribution coefficients for metals of 29 L/kg for arsenic, 22 L/kg for copper, 1,000 L/kg for trivalent chromium, 19 L/kg for hexavalent chromium, and 5 L/kg for selenium.

No organic carbon data are available for the former Precision site. MFA used the default value (0.0018) supplied by the BIOCHLOR model and the distribution coefficients to calculate retardation factors. Resulting retardation factors for the metals and VOCs were calculated and are shown on Tables A1 and A2.

Because of the high propensity of PAHs to adhere to soil, (reflected in the high partitioning coefficients for the PAHs), calculated retardation factors for PAHs were also high. Solutions to the advection-dispersion equations using the superposition approach used by BIOCHLOR for solving the Domenico analytical model are known to diverge from solutions obtained by more robust numerical models for contaminants with large retardation factors. MFA confirmed this when attempting to model the PAH contaminants; high retardation factors caused the model to produce unrealistic results. In order to make the model function correctly, while still maintaining a high level of model conservatism, MFA set the retardation factors for all PAHs to a value of 10. This is a highly conservative approach, and resulted in migration of these contaminants being overestimated. Therefore, the CULs for the PAHs developed using these lower retardation factors are much lower than CULs that would have been calculated had the model been able to use the higher retardation factors.

Degradation Rates and Dispersion

BIOCHLOR allows the application of half-life data for calculating a first-order decay scenario. Literature values for half-lives of the VOCs and PAHs are appropriate to use. At the request of Ecology, MFA modeled a range of degradation rates for both TCE and vinyl chloride. CULs were calculated for all IHS's using the average of literature values for the degradation rates. Additionally, CULS for TCE and VC were calculated based on half lives that are two times longer than the literature values as well as with no degradation. Degradation of TCE at the site has been confirmed by the presence of vinyl chloride (a degradation product); however, to be conservative, the final groundwater CULs for TCE and vinyl chloride are assumed to be those calculated using the half lives increased by a factor of two. Degradation of total petroleum

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hydrocarbon constituents in the subsurface has been widely documented and can be inferred at this site.

Dispersion occurs when groundwater encounters soil grains and the contaminant molecules are deflected or dispersed away from each other. Dispersion occurs in the longitudinal direction (i.e., along the groundwater plume axis in the direction of groundwater flow) and in the transverse planes (i.e., lateral or crossgradient to groundwater flow, in two dimensions). The amount of longitudinal and lateral dispersion is typically considered to be a function of plume length. For the purposes of this model, dispersion was calculated (using the internal BIOCHLOR algorithm) to be 180 feet, based on a hypothetical plume length of 1,800 feet.

Model Domain Size and Duration

The model domain was set at 800 feet wide and 3,600 feet long, well in excess of the width of the property and the distance to the Duwamish River. The models were run assuming a 35-year period, which is the estimated approximate length of time that it would take groundwater to travel 1,800 feet (i.e., the distance from the eastern property boundary to the Duwamish River), based on estimated groundwater seepage velocity at the site. Given that the primary sources of the contamination are no longer present, it is unlikely that impacts will continue for this length of time.

It is important to note that the assumptions of constant contaminant sources at maximum detected concentrations assumed at the eastern property edge are very conservative. Mass loading to the system is in fact finite due to the UST decommissioning and soil excavation conducted in the 1980's, and maximum concentrations in several cases were located an additional 50 to 130 feet west of the eastern property edge. The model was also set up to assume maximum concentrations throughout the source area. In reality, this would not be the case due to dispersive effects.

Results

Table A1 presents a summary of modeling results indicating that none of the IHSs at the site will reach the Duwamish River at concentrations at or above method detection limits. Figures A1 through A9 show concentration vs. distance with the assumed source area concentration at the eastern property boundary and the corresponding concentration at the river.¹

Table A2 provides the modeling results to determine site specific CULs for the protection of surface water. Concentration vs. distance graphs showing the most stringent surface water CUL concentration at the Duwamish (i.e, at 1,800 feet, and the site specific CUL at the property boundary (0 feet), are included as Figures A10 through A20.

Table A4 compares the calculated CULs to concentrations of IHSs and PAHs detected in site groundwater samples. On-site groundwater concentrations of hexavalent chromium exceeded their respective CULs. All other IHSs and the modeled PAHs in groundwater are below their

¹ Note that the modeled concentrations shown on the graphs are expressed in milligrams per liter. Some modeled concentrations were converted to micrograms per liter $(\mu g/L)$ in the tables for the ease of comparison, as site data and criteria are presented in $\mu g/L$ for the constituents modeled.

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respective CULs. Hexavalent chromium concentrations that exceeded CULs were detected in groundwater samples collected from borings and MW5, located within the building footprint, and from one sample collected from MW1, located upgradient of the building. Concentrations of hexavalent chromium in wells located near the eastern property line were not detected above their method reporting limits and did not exceed CULs.

Attachments

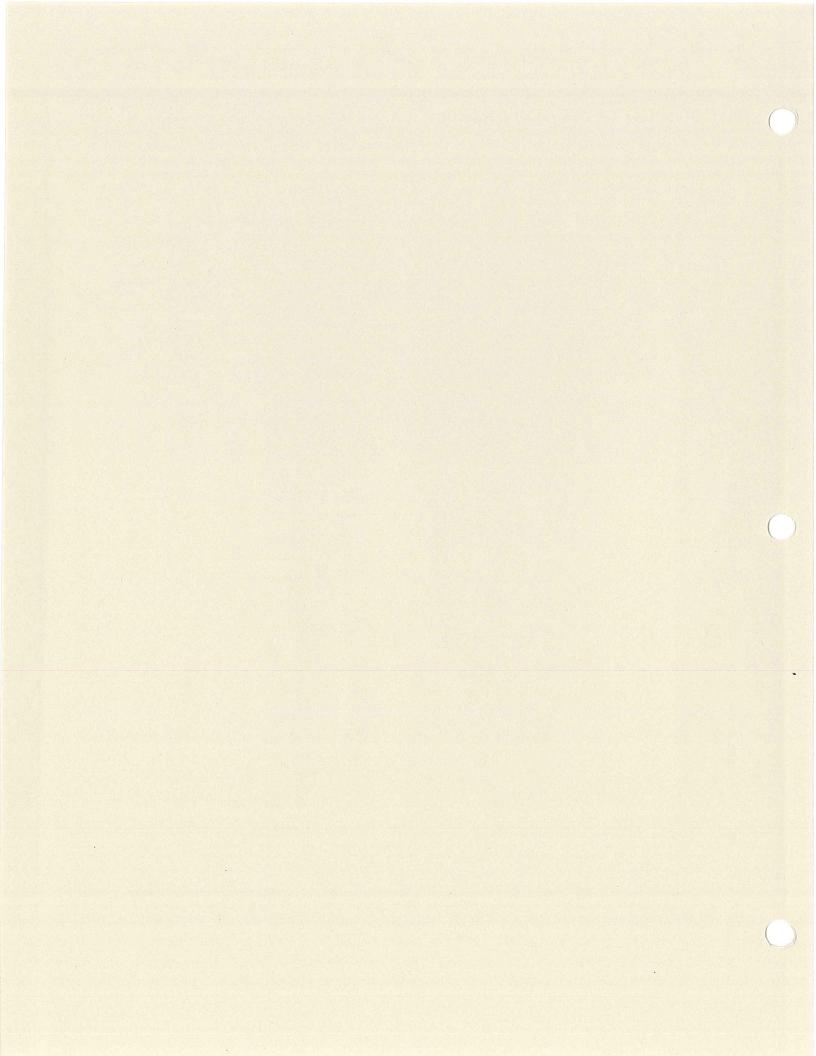
References Tables A1 through A4 Figures A1 through A20

References

- Duwamish Coalition. 1997. Development of a three-dimensional, numerical groundwater flow model for the Duwamish River Basin. Prepared by J. Fabritz, J. Massmann, and D. Booth for City of Seattle Office of Economic Development and King County Office of Budget and Strategic Planning. August.
- Ecology. 2007. Cleanup levels and risk calculations. https://fortress.wa.gov/ecy/ clarc/CLARCHome.aspx (November 12, 2007).
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- USEPA. 2002. Biochlor. Natural attenuation decision support system. Ver. 2.2. U.S. Environmental Protection Agency. <u>http://www.epa.gov/ada/csmos/models/biochlor.html.</u> March.
- USGS. 2007. Real-time water data for USGS 12113350 Green River at Tukwila, WA. Water resources. National water information system: Web interface. <u>http://waterdata.usgs.gov/wa/nwis/uv/?site_no=12113350&PARAmeter_cd=00060,0006</u>5.



TABLES



Precision Engineering, Inc. Seattle, Washington	nce of the CUL. ant and appropriate requirement. ality criteria.	mg/L = milligrams per liter. MTCA = Washington State Department of Ecology's Model Toxics Control Act. μg/L = micrograms per liter. NA = not analyzed. NC = not calculated.		J = not detected at or above the method reporting limit. ^a Surface water of the Duwamish is brackish and is not used for drinking. ^b Based on literature estimates from <i>Development of a Three-Dimensional Numerical Groundwater Flow Model for the Duwamish River Basin</i> ; University of Washington; August, 1998.	п.	culated (R=1+(rho/n)*Koc*foc). tardation factor or more conservative. oetween sample locations with detections.	ⁱ Based on screen intervals/recon intervals. ^j Groundwater Chemicals Desk Reference; Montgomery ed.; CRC Press, 1996. ^k Concentration at a distance of 1,800 ft from eastern property boundary (distance to Duwamish River) was set equal to the surface-water criteria.
	Bold font indicates an exceedance of the CUL. ARAR = applicable or relevant and appropriate requirement. AWQC = ambient water quality criteria. CUL = cleanup level. J = estimated.	mg/L = milligrams per liter. MTCA = Washington State Department of Ecology μg/L = micrograms per liter. NA = not analyzed. NC = not calculated.	NR = not researched. NV = no value.	U = not detected at or above the method reporting I ^a Surface water of the Duwamish is brackish and is ^b Based on literature estimates from <i>Development</i> August, 1998.	 Based on field data. Standard assumption. Calculated (v=(k[*]i)/n). 	^f Due to sorption; calculated (R=1+(rho/n)*Koc*foc). ^g Actual calculated retardation factor or more conservative. ^h Based on distance between sample locations with detections.	ⁱ Based on screen intervals/recon intervals. ^j Groundwater Chemicals Desk Reference; I ^k Concentration at a distance of 1,800 ft from

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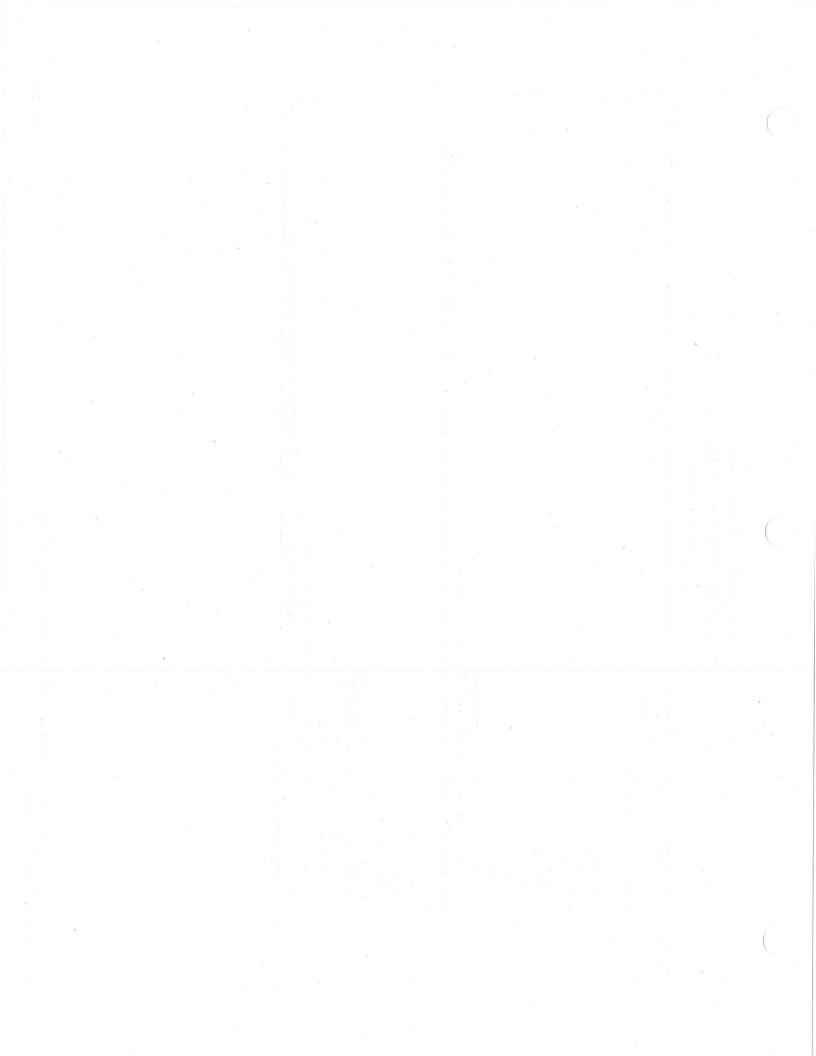


Table A1

Fate and Transport Model Inputs and Results Showing no Discharge of IHSs to the Duwamish Precision Engineering, Inc.

Seattle, Washington

					a contract of the second secon
Model Parameters	Chromium, Trivalent	Chromium, Hexavalent	Copper	Trichloro- ethene	Vinyl Chloride
Hydraulic Conductivity (k, cm/sec) ^b	5.00E-03	5.00E-03	5.00E-03	5.00E-03	5.00E-03
Gradient (i) ^c	0.003	0.003	0.003	0.003	0.003
Porosity (n) ^d	0.3	0.3	0.3	0.3	0.3
Groundwater Velocity (v, ft/yr) ^e	52	52	52	52	52
Retardation Factor ^f	5334	102	118	1.90	1.18
Modeled Retardation ^g	10	10	10	1.90	1.18
Simulation Time (yrs)	35	35	35	35	35
Source Concentration (µg/L)	47	7.38	4.02	0.220	16.5
Source Width (ft) ^h	300	50	225	40	200
Source Thickness (ft) ⁱ	15	15	15	15	15
Modeled Half-life (days)	NV	NV	NN	1751	832
Results					
Detection Limits (µg/L)	10	10	1	0.2	0.2
Concentration at Duwamish (ug/L)	<10	<10	<1	<0.01	<0.1

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Fate and Transport Model Inputs and Results Showing no Discharge of IHSs to the Duwamish Table A1

Precision Engineering, Inc. Seattle, Washington

Model Parameters	Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Chrysene	Dibenzo(a,h) anthracene	Indeno(1,2,3- cd)pyrene
Hydraulic Conductivity (k, cm/sec) ^b	5.00E-03	5.00E-03	5.00E-03	5.00E-03	5.00E-03	5.00E-03
Gradient (i) ^c	0.003	0.003	0.003	0.003	0.003	0.003
Porosity (n) ^d	0.3	0.3	0.3	0.3	0.3	0.3
Groundwater Velocity (v, ft/yr) ^e	52	52	52	52	52	52
Retardation Factor ^f	3,433	11,809	11,809	3,822	17,176	33,313
Modeled Retardation ^g	10	10	10	10	10	10
Simulation Time (yrs)	35	35	35	35	35	35
Source Concentration (µg/L)	0.035	ND	QN	0.013	- 0.038	0.039
Source Width (ft) ^h	300	300	300	300	300	300
Source Thickness (ft) ⁱ	15	15	15	15	15	15
Modeled Half-life (days) ^j	782	970	3,029	1,371	1,301	1,330
Results						
Detection Limits (µg/L)	0.01	0.01	0.01	0.01	0.01	0.01
Concentration at Duwamish (ug/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

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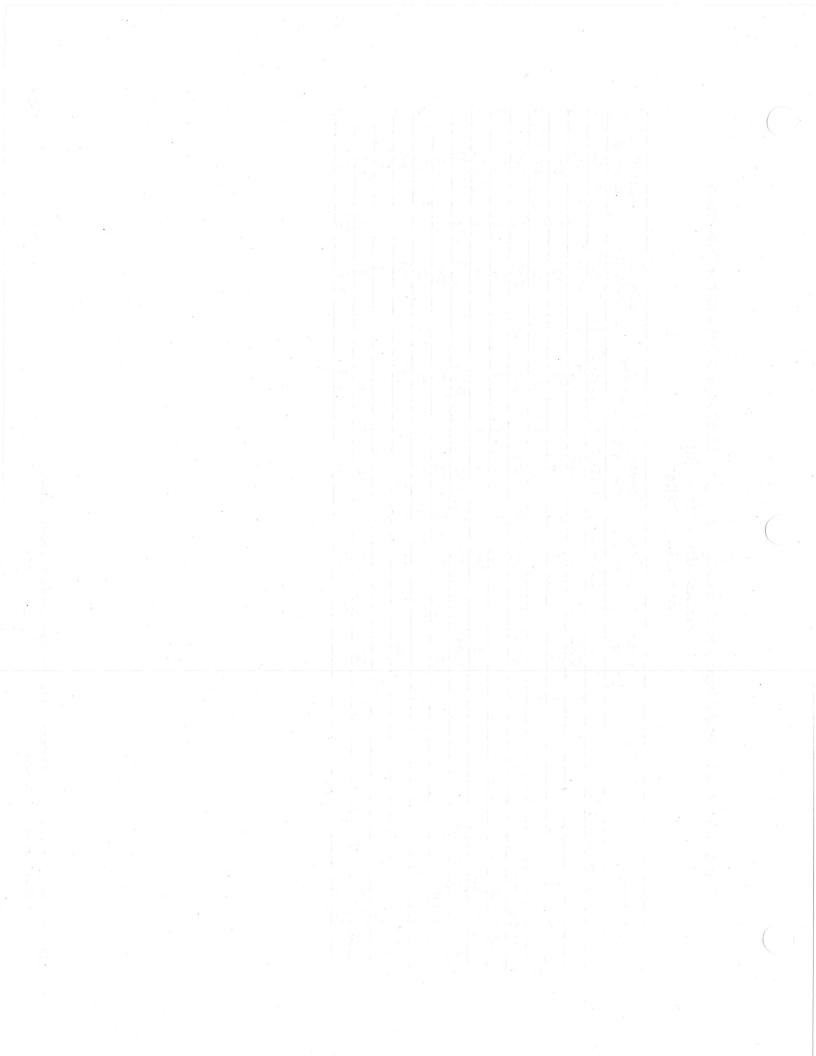


 Table A2

 Development of Site Specific Groundwater Clean-up Levels

 Precision Engineering, Inc.

 Seattle, Washington

 Chromium, Trivalent	Chromium, Hexavalent	Copper	Trichloro- ethene	Vinyl Chloride
5.00E-03	5.00E-03	5.00E-03	5.00E-03	5.00E-03
0.003	0.003	0.003	0.003	0.003
 0.3	0.3	0.3	0.3	0.3
52	52	52	52	52
5334	102	118	1.9	1.18
10	10	10	1.9	1.18
35	35	35	35	35
 300	50	225	40	200
 15	15	15	15	15
NV	NN	NV	876	416
74	11	3.1	1.5	0.025
 3,600,000,000,000	160	22	188	18.70
 NC	NC	NC	128,800	2,640
 NC	NC	NC	1,630	52

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 Table A2

 Development of Site Specific Groundwater Clean-up Levels

 Precision Engineering, Inc.

 Seattle, Washington

Model Parameters	Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Chrysene	Dibenzo(a,h) anthracene	Indeno(1,2,3- cd)pyrene
Hydraulic Conductivity (k, cm/sec) ^b	5.00E-03	5.00E-03	5.00E-03	5.00E-03	5.00E-03	5.00E-03
Gradient (i) ^c	0.003	0.003	0.003	0.003	0.003	0.003
Porosity (n) ^d	0.3	0.3	0.3	0.3	0.3	0.3
Groundwater Velocity (v, ft/yr) ^e	52	52	52	52	52	52
Retardation Factor ^f	3,433	11,809	11,809	3,822	17,176	33,313
Modeled Retardation ^g	10	10	10	10	10	10
Simulation Time (yrs)	35	35	35	35	35	35
Source Width (ft) ^h	300	300	300	300	300	300
Source Thickness (ft) ⁱ	15	15	15	15	15	15
Half-life (days) ^j	782	970	3,029	1,371	1,301	1,330
Concentration of groundwater discharge to surface water = Surface Water Criteria value (µg/L) ^k	0.0038	0.0038	0.0038	0.0038	0.0038	0.0038
Results (Source Area Concentration)						
Type I	NC	NC	NC	NC	NC	NC
Type II	200,000,000	165,000,000	55,000,000	130,000,000	135,000,000	132,000,000
Type II with Half-life x factor of 2 for TCE and VC (µg/L)	NC	NC	NC	NC	NC	NC

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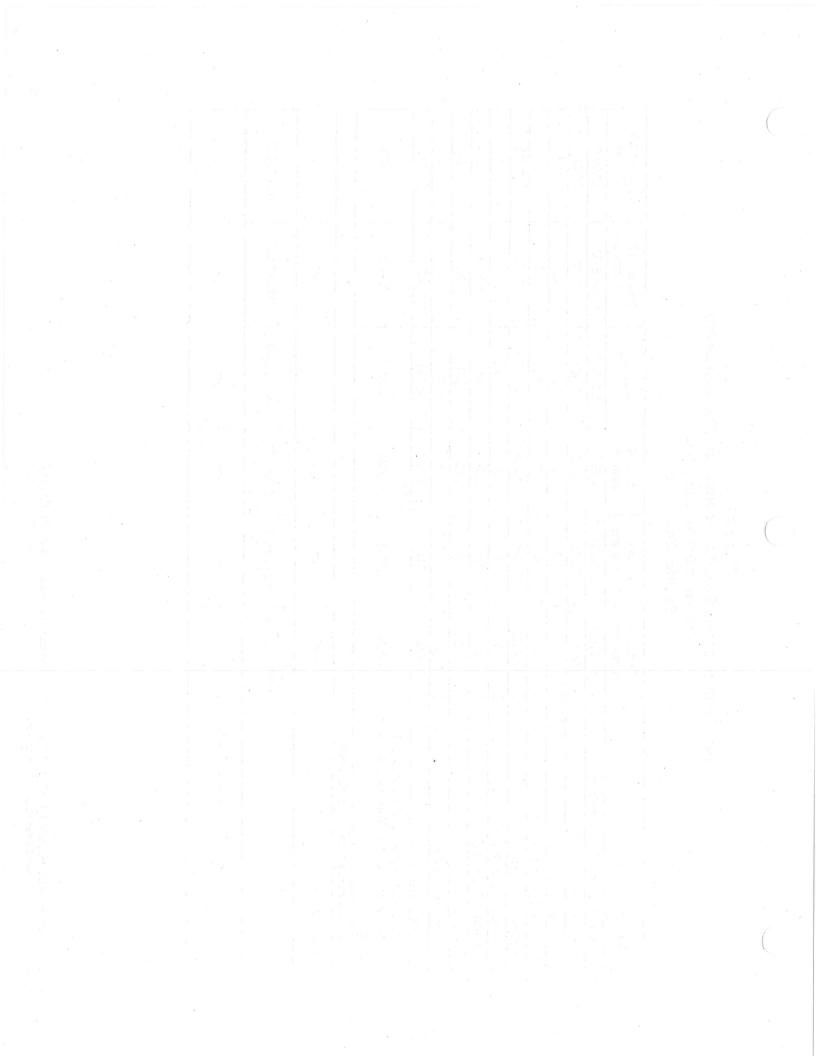


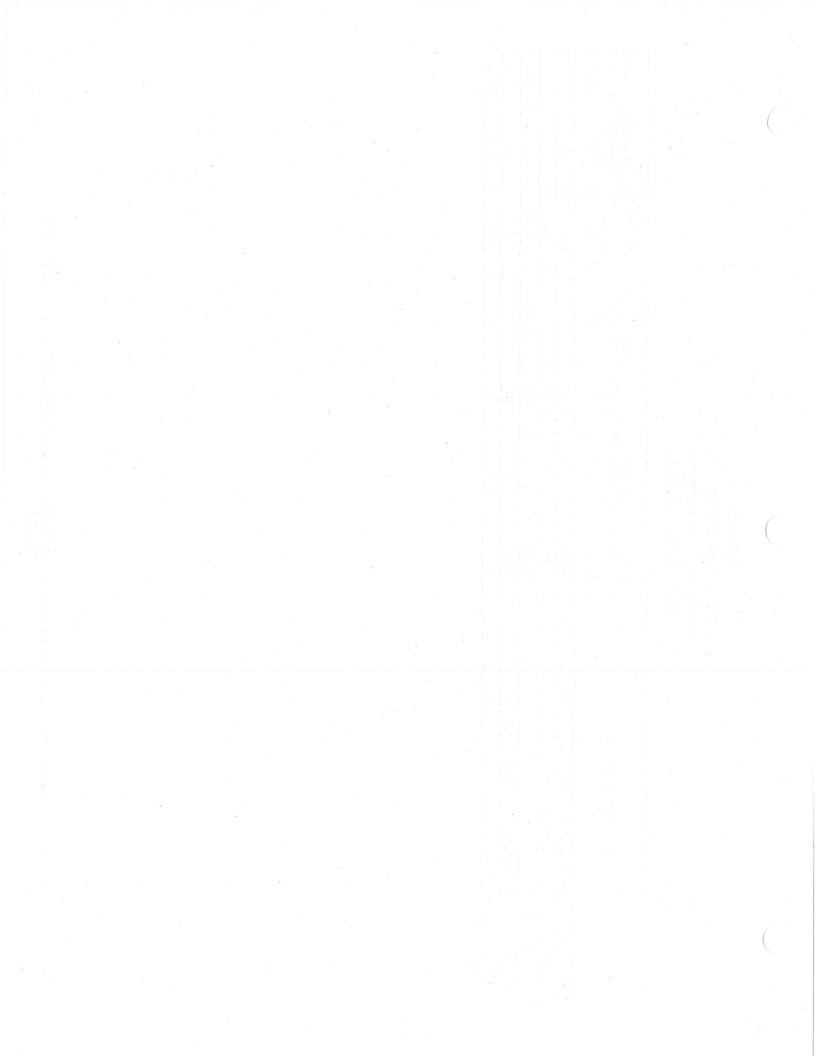
Table A3 Applicable Surface-Water Criteria Precision Engineering, Inc. Seattle, Washington

Surface-Water Criteria	Hexavalent Chromium (mg/L)	Dissolved Trivalent Chromium ^a (mg/L)	Copper (µg/L)	Trichloro- ethene (µg/L)	Vinyl chloride (µg/L)	Benzo(a) anthracene (µg/L)	Benzo(b) fluoranthene (µg/L)
MTCA Method B Surface Water CULs, carcinogen or non-carcinogen	0.490	240	2700	1.5	3.7	0.0300	0.0300
MTCA Method C Surface Water CULs, carcinogen or non-carcinogen	1.20	610	6,700	37	92	0.74	0.74
AWQCHuman Health	NR	NR	1,300	2.5	0.025	0.0038	0.0038
Surface Water ARAR—Aquatic Life—Freshwater/Acute	0.15	1.8	4.6	NR	NR	NR	NR
AWQC—Aquatic Life—Chronic	0.011	0.074	3.1	NR	NR	NR	NR
*Lowest CUL bolded	0						



Table A3 Applicable Surface-Water Criteria Precision Engineering, Inc. Seattle, Washington

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Oil-Range 0.495 U Organics 0.505 U 0.495 U 0.52 U 0.57 U 0.495 U 0.51 U 0.58 U 0.54 U 0.51 U 0.495 U 0.58 U 0.512 0.51 U 1.04 mg/L 1.00 1.32 1.21 N AN AN AN 1.2 AN Diesel-Range Organics 0.248 U 0.248 U 0.248 U 0.26 U 0.28 U 0.27 U 0.26 U 0.26 U 0.26 U 0.312 0.831 0.438 1.19 2.64 0.76 1.79 0.45 0.41 1.71 mg/L AN AN AA ΝA N chloride 0.200 U 0.200 U 0.200 U 0.200 U 0.200 U 0.14 U 0.200 U 0.80 J Vinyl 0.560 0.400 10 1 U 1 U 1 U 1 U 10 1 U hg/L 1 C 10 1 U 1 U 52 0.200 U 0.200 U 0.200 U 0.200 U 0.200 U **Trichloro**ethene 0.200 U 0.200 U 1,630 1 U 1 U 1U 1 U 1 U 1 U 1 U hg/L 10 10 1 U 10 22.1 10 1 C 10 7.9 Selenium 1.00 U 1.00 U 1.00 U 1000 U 2.0 U 2.0 U 2.0 U 2.0 U 12.3 6.28 4.11 4.27 hg/L NA 2.77 ΝA 3.6 AN 10 AN NA 19 NA 25 S Copper NA 1.00 U 1.00 U 2.0 U 2.0 U 2.0 U 2.0 U 1.00 U 2.0 U 1.17 4.02 2.12 1.03 3.67 1.01 2.5 5.1 2.4 hg/L AN AN NA AN 22 (Hexavalent) Chromium 0.00625 U 0.00625 U 0.00625 U 0.00625 U 0.00625 U 0.00625 U 0.00738 0.02 U 0.02 U 0.02 UJ 0.02 U 0.01 U 0.02 U 0.01 U 0.01 U 0.02U 0.01 U 0.02 U 0.02 U 0.269 0.023 0.15 mg/L 450 350 Dissolved Chromium 2,800,000,000 (Trivalent) 0.00215 0.00879 0.00755 0.00849 0.0078 0.0187 0.0106 0.013 0.021 0.047 0.021 NC mg/L NC N C N C NC NON 47 NC **Monitoring Well Groundwater Data** Site-Specific Groundwater CUL for 12/27/2005 12/28/2005 04/18/2006 12/28/2005 04/19/2006 12/29/2005 12/27/2005 12/28/2005 12/29/2005 04/19/2006 12/28/2005 04/18/2006 04/18/2006 12/28/2005 04/18/2006 04/18/2006 04/17/2006 04/19/2006 6/16/2005 6/17/2005 6/7/2005 6/9/2005 6/9/2005 the Protection of Surface Water Date Location MW2 MW3 MW4 MW5 MW6 MW8 MW1 NW7

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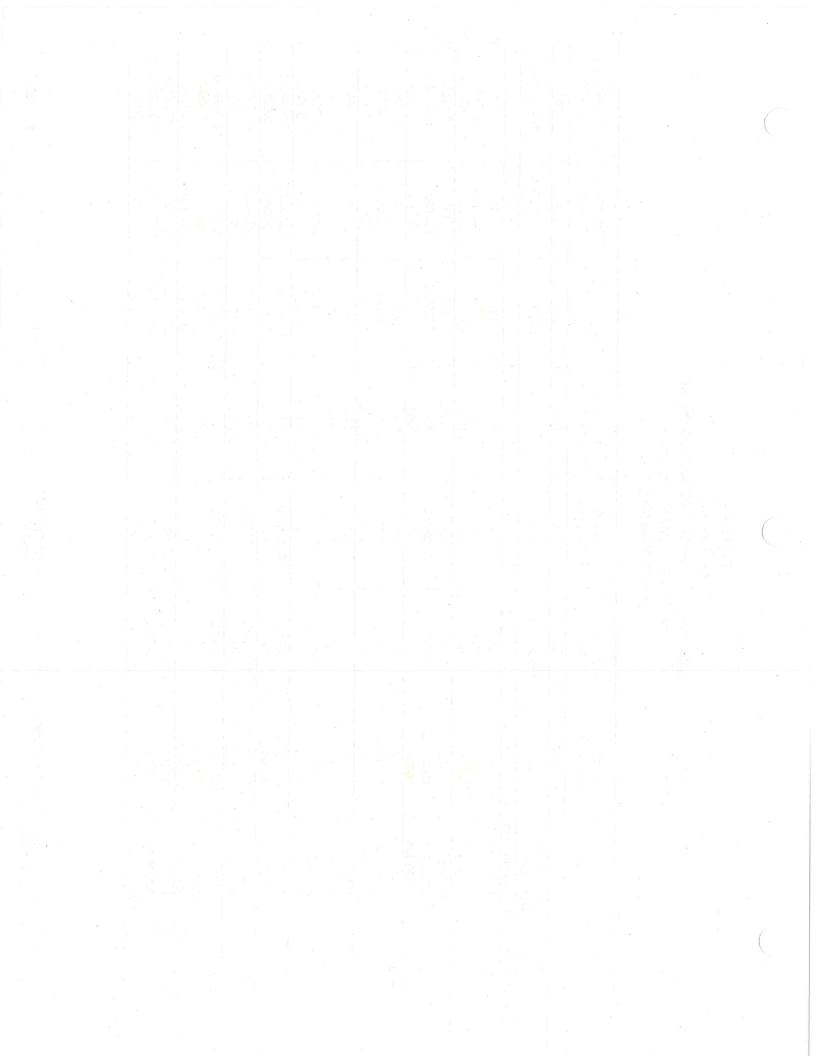
2		-										
	Oil-Range Organics	mg/L	NN	51	NA	0.478 U	NA	NA	NA	0.479 U	NA	NA
	Diesel-Range Organics	mg/L	N	8	NA	0.325	NA	NA	NA	0.814	NA	AN
	Vinyl chloride	hg/L	52		5 U	1 U	1 U	20 U	١U	10	16.5	0.2 U
and a set of the set o	Trichloro- ethene	hg/L	1,630		5 U	1 U	1 U	1,130	1 U	16.8	0.220	0.2 U
	Selenium	hg/L	25		NA	NA .	NA	NA	NA	NA	NA	NA
	Copper	hg/L	22		NA	NA	NA	NA	NA	NA	NA	NA
	Chromium (Hexavalent)	mg/L	0.15		4.72	236	0.0897	300	0.101	294	NA	NA
	Dissolved Chromium (Trivalent)	mg/L	2,800,000,000		32.38	31	NC	43	NC	61	NC	NC
	Date	2	Indwater CUL for Surface Water	Reconnaissance Groundwater Data	6/9/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	12/14/2005	12/14/2005
	Location	20	Site-Specific Groundwater CUL for the Protection of Surface Water	Reconnaissance	GP2	GP4	GP5	GP6	GP7	GP8	GP-13	GP-15

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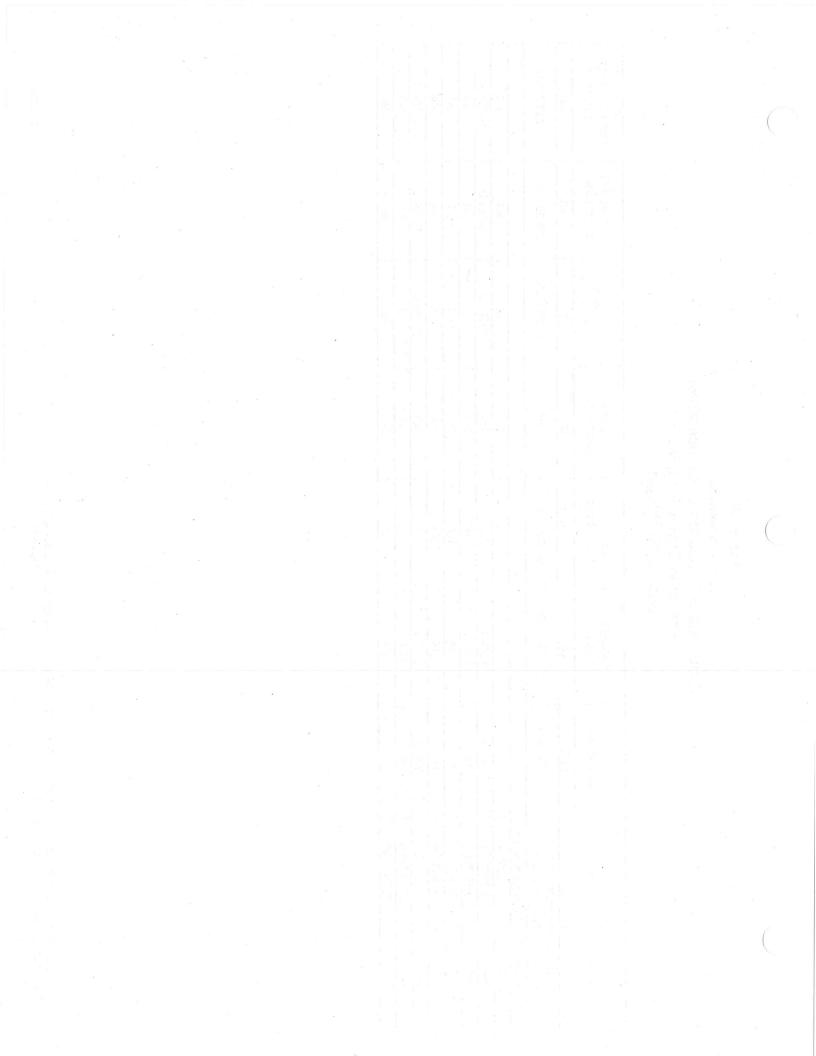
ndeno(1,2,3-cd) 97,000,000 U 06600.0 D.00990 U 0.00990 U U 06600.0 0.0100 U 0.0100 U 0.0100 U 0.0114 U 0.00990 U 0.10 U 0.11 U 0.095 U 0.039 J 0.034 J 0.192 U 0.11 U 0.10 U 0.13 U pyrene 0.10 U NA hg/L AN ΝA AN 100,000,000 Dibenzo(a,h) anthracene U 06600.0 U 06600.0 0.0114 U 0.0100 U 0.0100 U U 06600.0 U 06600.0 0.00990 U 0.038 J 0.0100 U 0.095 U 0.192 U 0.11 U 0.10 U 0.095 U 0.10 U 0.13U 0.11 U 0.10 U hg/L AN AN NA AN 95,000,000 U 06600.0 Chrysene U 06600.0 0.0100 U 0.0100 U U 06600.0 0.00990 U 0.00990 U 0.013 J 0.0100 U 0.014 J 0.192 U 0.11 U 0.11 U 0.095 U 0.10 U 0.13 U 0.10 U 0.10 U 0.132 hg/L NA AN AN AN luoranthene Benzo(b+k) 0.031 U NA 0.033 U 0.032 U 0.030 U 0.032 U 0.039 U 0.031 U 0.030 U 0.962 U 0.034 U ΝA NA NA hg/L AN NA. AN NA NA NA NA NA N AN lluoranthene 38,000,000 U 06600.0 U 06600.0 U 06600.0 U 06600.0 U 06600.0 0.0100 U 0.0100 U 0.0100 U Benzo(k) 0.108 AN AN AN AN AN AN hg/L AN AN AN AN AN AN AN AN fluoranthene 108,000,000 U 06600.0 D.00990 U U 06600.0 U 06600.0 U 06600.0 0.0100 U 0.0100 U 0.0100 U Benzo(b) 0.104 AN NΑ AN AN NA AN AN AN NA hg/L AN AN AN AN AN 145,000,000 anthracene U 06600.0 0.0100 U 0.00990 U 0.00990 U 0.00990 U 0.0100 U 0.0990 U 0.0100 U Benzo(a) 0.095 U 0.10 U 0.035 J 0.10 U 0.13 U 0.029 J 0.192 U 0.031 J 0.11 U 0.10 U 0.107 hg/L NA AN AN AN Monitoring Well Groundwater Data Site-Specific Groundwater CUL for 2/27/2005 12/28/2005 12/28/2005 12/28/2005 12/28/2005 12/27/2005 04/18/2006 2/28/2005 04/19/2006 2/29/2005 04/17/2006 04/18/2006 04/19/2006 12/29/2005 04/19/2006 04/18/2006 04/18/2006 04/18/2006 6/16/2005 6/17/2005 6/7/2005 6/9/2005 6/9/2005 the Protection of Surface Water Date Location MW4 MW5 MW6 MW2 MW3 MW8 **NW1 WW7**

R:\8006.08 Stoel Rives LLP\Report\04_Final RI RA Report 7.21.08\Appendices\Appendix A - BioChlor Modeling\ Page 3 of 4 App A T-Surf Water CUL and ScreenA4 screen

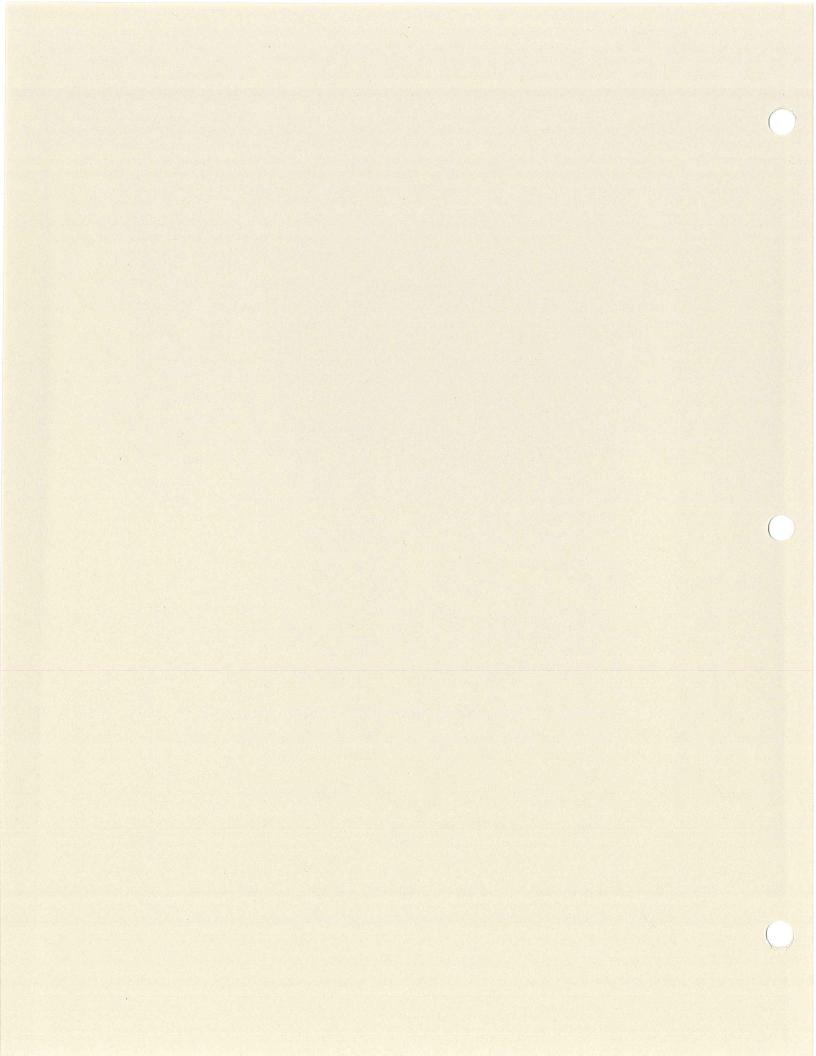


		_		Т	Т			Т	Т	Т	Т			1
Indeno(1,2,3-cd)	b) clic	hg/L	97,000,000		ALA	NA	0.191 U	NIA		VIV	LINA C	U.194 U	NA	NA
Dibenzo(a,h) anthracene	1.2	hg/L	100,000,000		VIV	AN	0.191 U	NA	VIN	VIV		U.194 U	NA	NA
Chrysene	1/2010	hg/L	95,000,000		VIV	WN	0.191 U	NA	NA	AN		0.134 0	NA	NA
Benzo(b+k) fluoranthene	110/1	1994	N		NA		NA	NA	NA	NA	NIA	WI	NA	NA
Benzo(k) fluoranthene	110/1	1	38,000,000		NA	1.01	NA	NA	NA	NA	NIA		NA	NA
Benzo(b) fluoranthene	ua/l		108,000,000		NA		0.954 U	NA	NA	AN	0 97 11	0 10:0	NA	NA
Benzo(a) anthracene	na/L	-	145,000,000		NA		0.191 U	NA	NA	NA	0.194 U		NA	NA
Date		ndwater OIII for	Surface Water	Reconnaissance Groundwater Data	6/9/2005	010000	GUU2/01/0	6/16/2005	6/16/2005	6/16/2005	6/16/2005	10001 4 10 4	CUU2/41/21	12/14/2005
Location		Cita Chacific Gran	the Protection of Surface Water	Reconnaissance	GP2		420	GP5	GP6	GP7	GP8	CD 13	C1-10	GP-15

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FIGURES

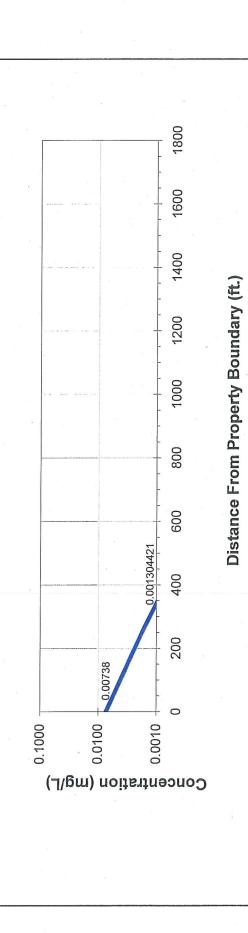


1800 1600 1400 Distance From Property Boundary (ft.) 1200 Fate and Transport Modeling Precision Engineering, Inc. 1000 **Trivalent Chromium** Seattle, Washington Figure A1 800 0.002653042 600 0.019130775 400 200 0.046999999 0 1.0000 0.1000 0.0100 0.0010 Concentration (mg/L)

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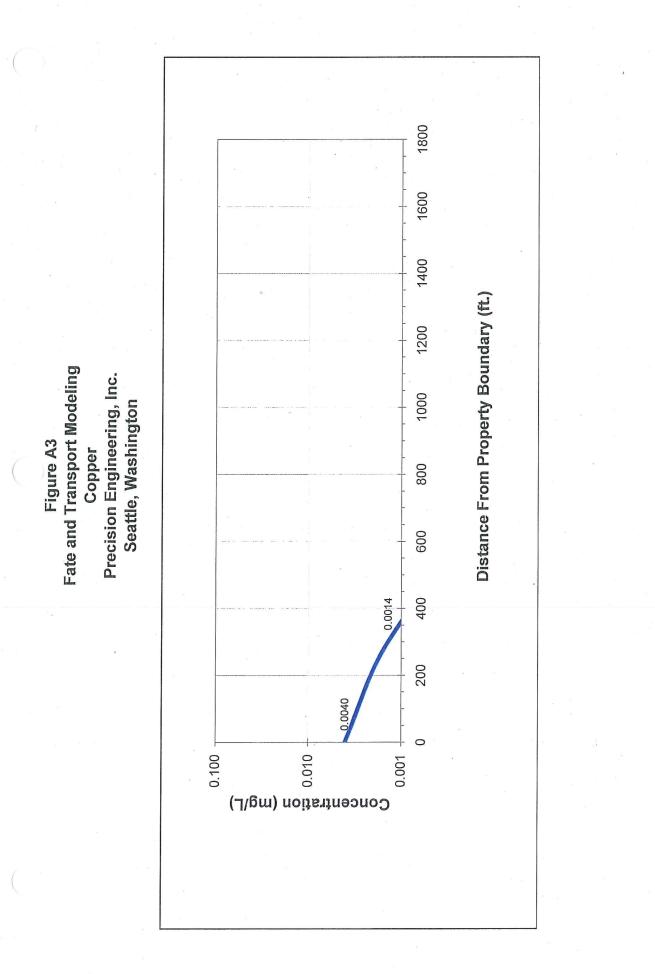


Figure A2 Fate and Transport Modeling Hexavalent Chromium Precision Engineering, Inc. Seattle, Washington



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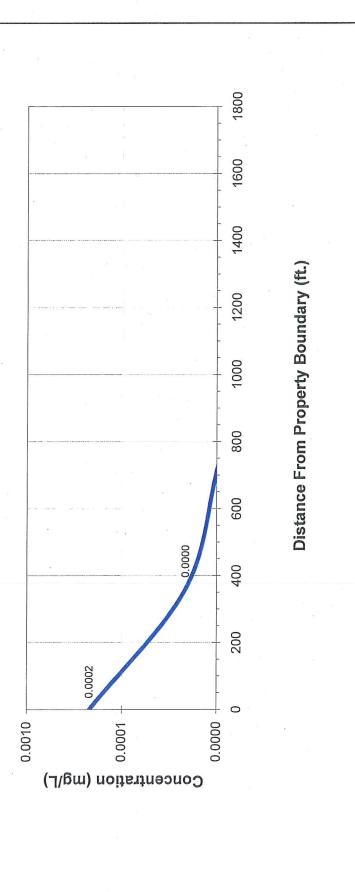




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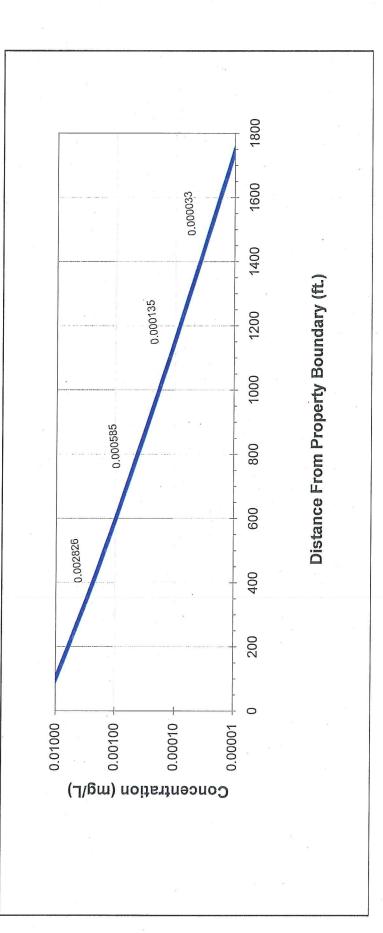
Figure A4 Fate and Transport Modeling Trichloroethene Precision Engineering, Inc. Seattle, Washington



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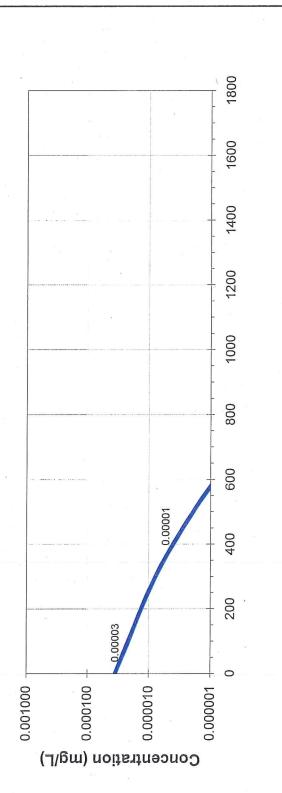
Figure A5 Fate and Transport Modeling Vinyl Chloride Precision Engineering, Inc. Seattle, Washington



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Figure A6 Fate and Transport Modeling Benzo(a)anthracene Precision Engineering, Inc. Seattle, Washington



Distance From Property Boundary (ft.)

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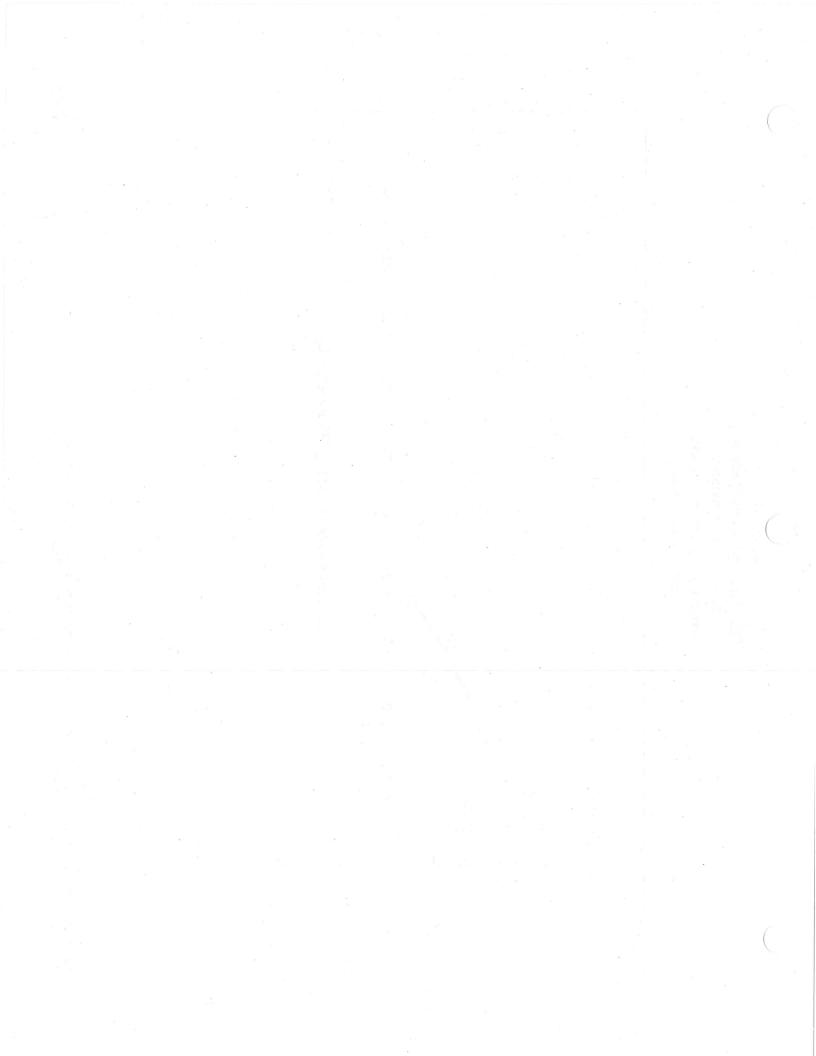
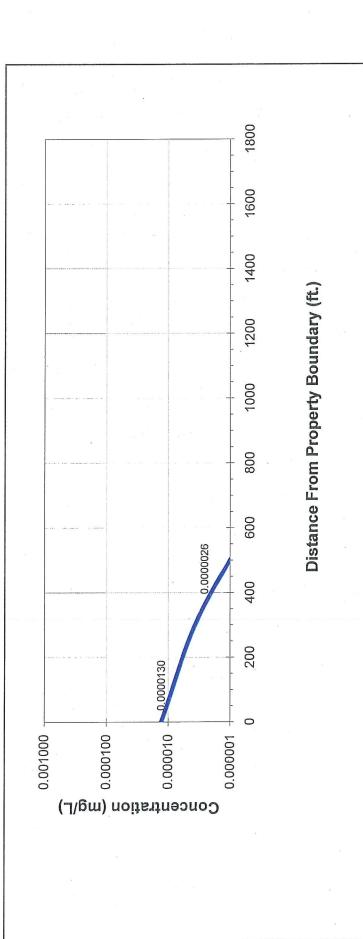


Figure A7 Fate and Transport Modeling Chrysene Precision Engineering, Inc. Seattle, Washington



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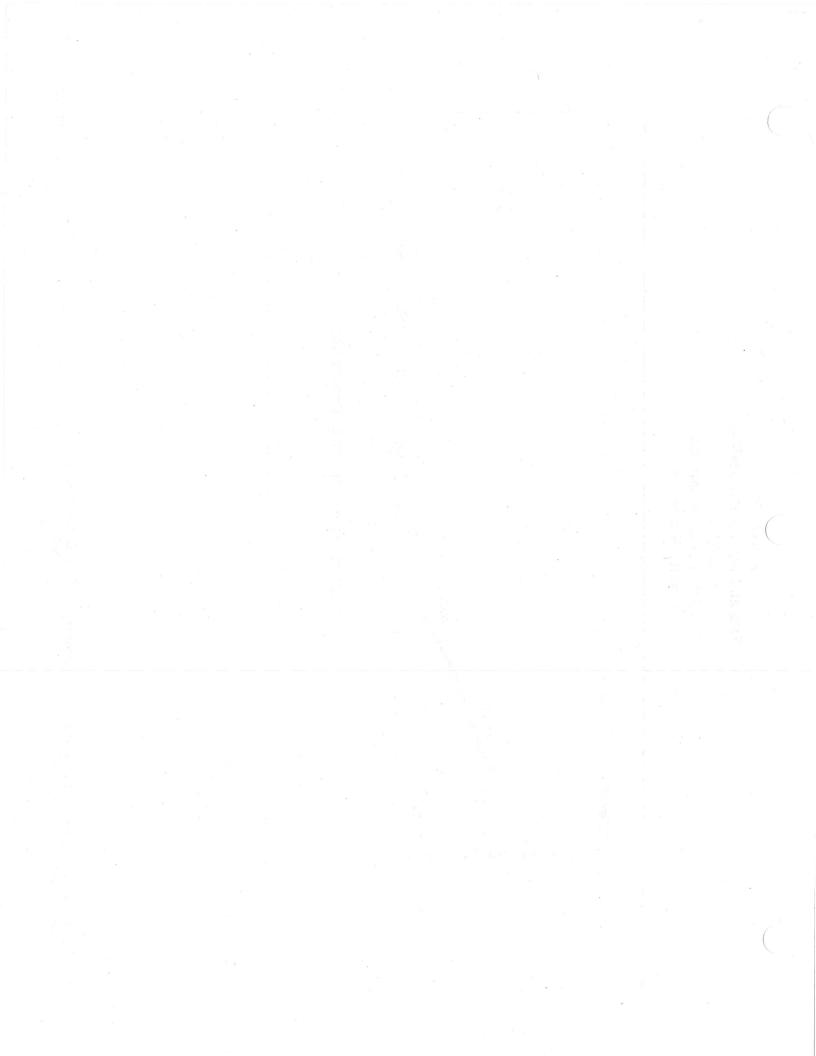
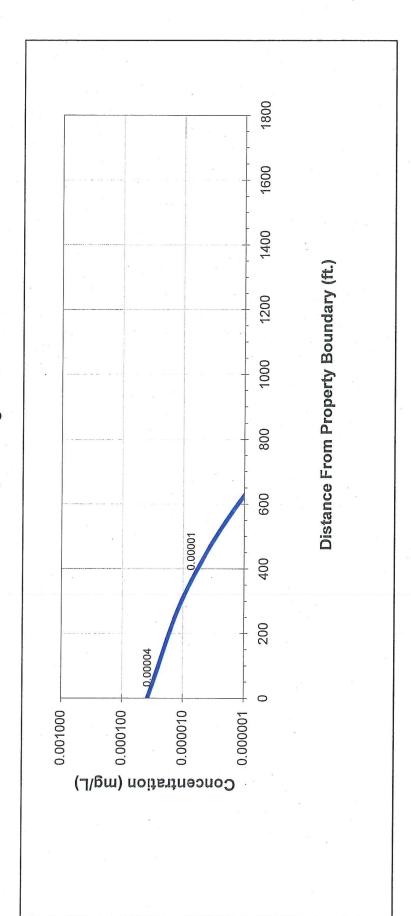


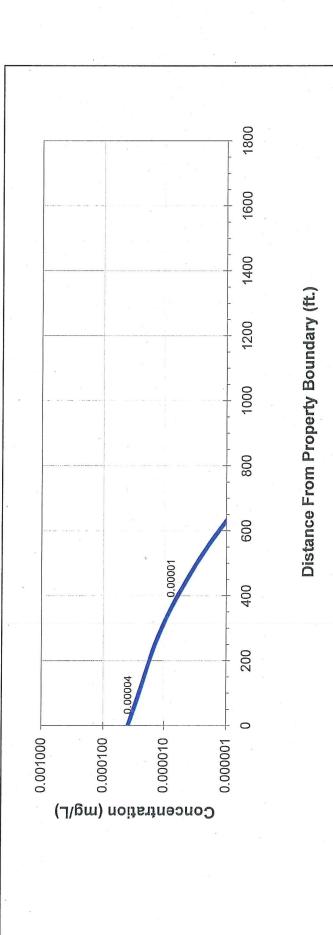
Figure A8 Fate and Transport Modeling Dibenzo(a,h)anthracene Precision Engineering, Inc. Seattle, Washington



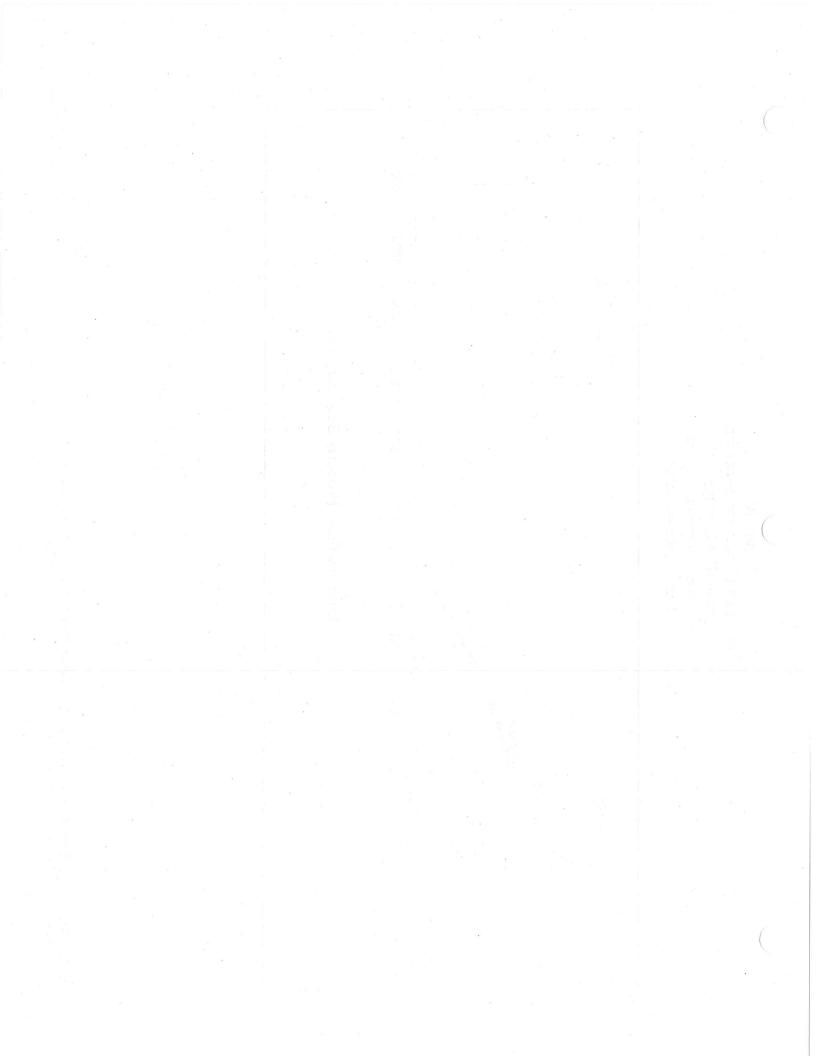
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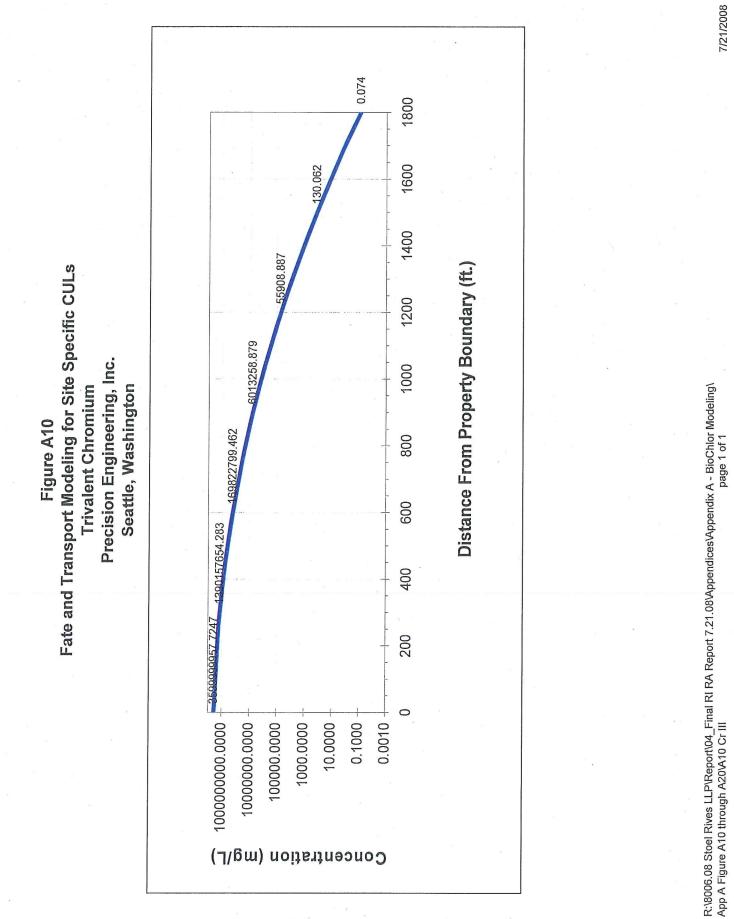


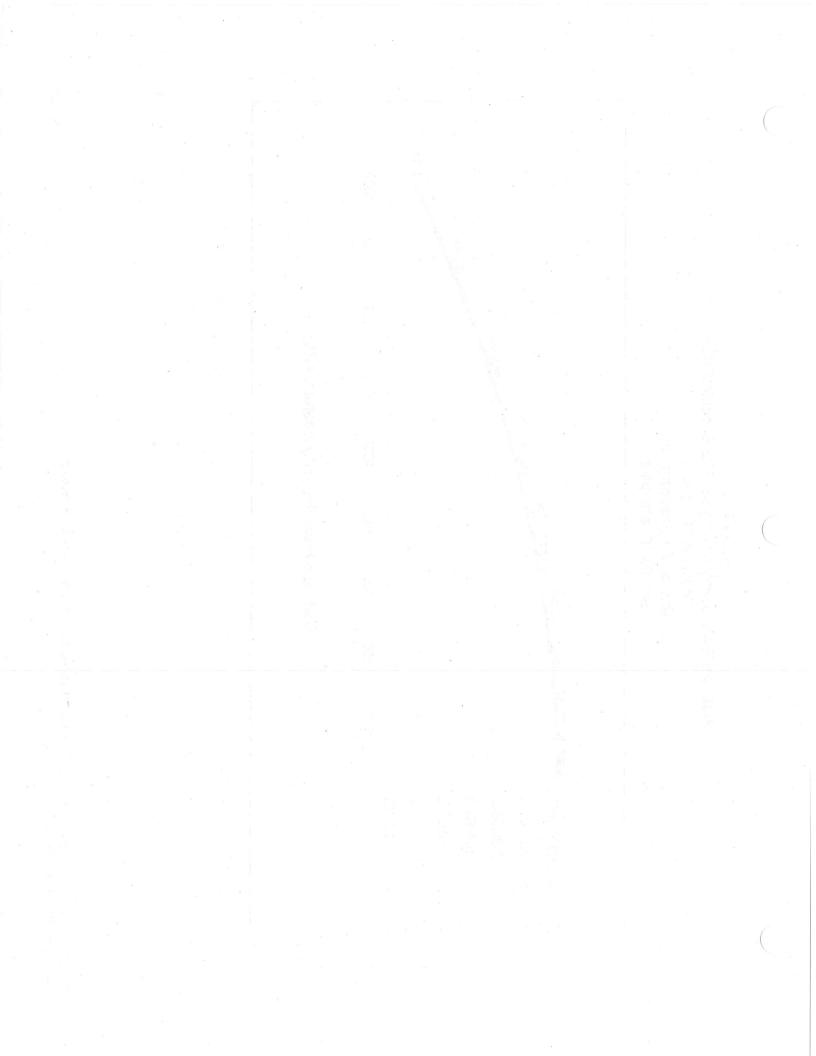
Figure A9 Fate and Transport Modeling Indeno(1,2,3,-cd)pyrene Precision Engineering, Inc. Seattle, Washington



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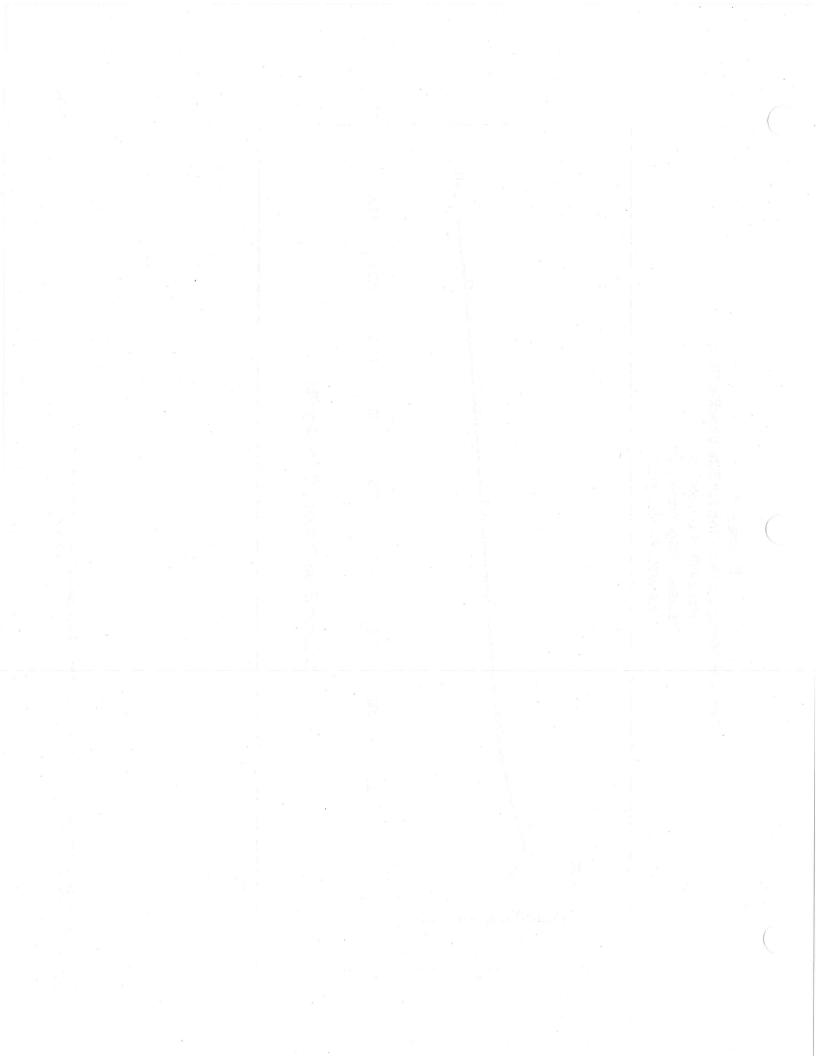


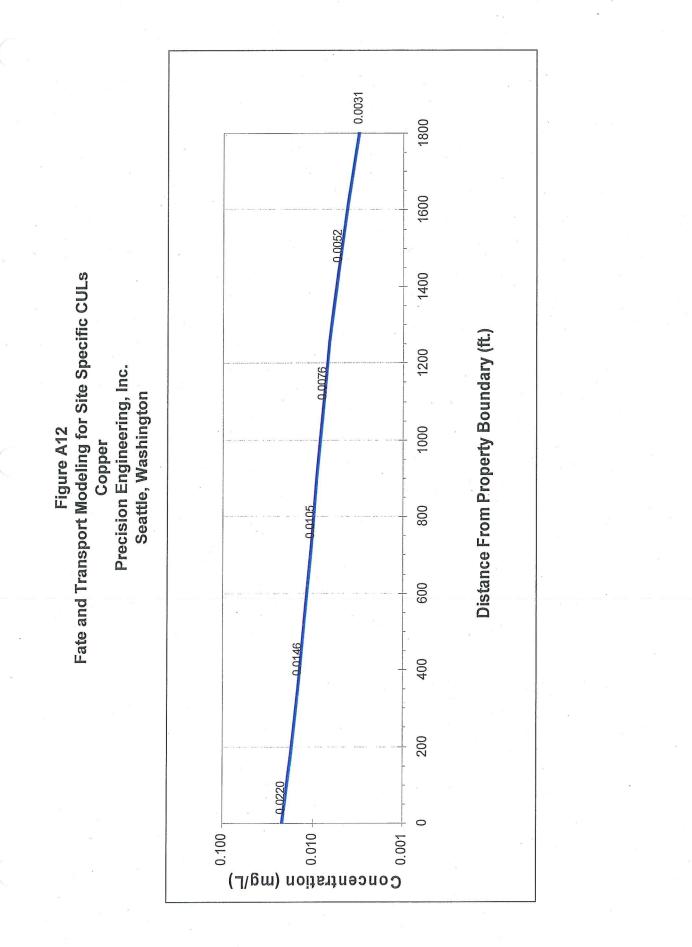




0.011 1800 1600 0.017 1400 Fate and Transport Modeling for Site Specific CULs Distance From Property Boundary (ft.) 0 0 33 1200 Precision Engineering, Inc. Hexavalent Chromium Seattle, Washington 1000 Figure A11 23 800 600 400 200 0.1600 0 0.0010 0.0100 1.0000 0.1000 Concentration (mg/L)

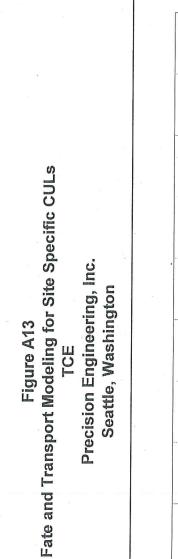
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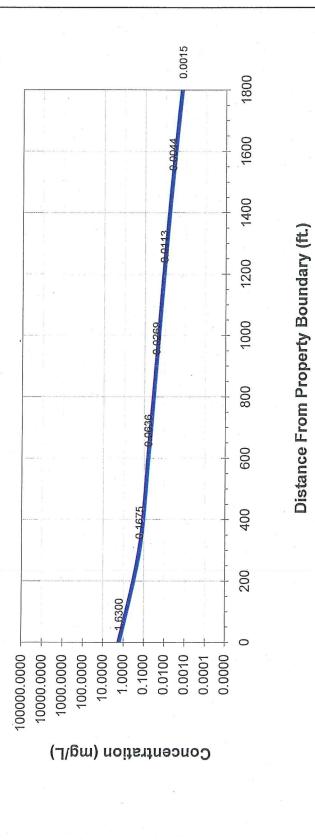




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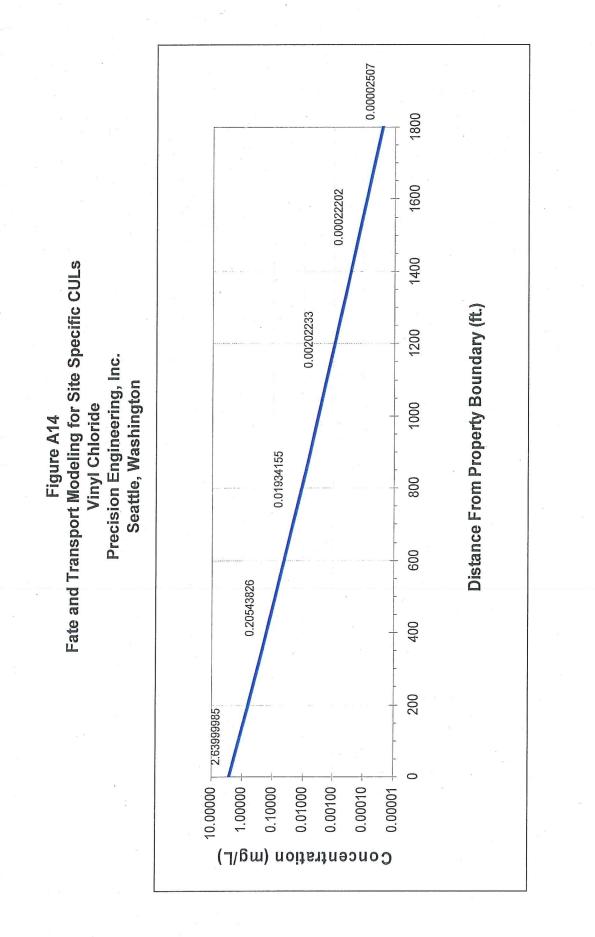






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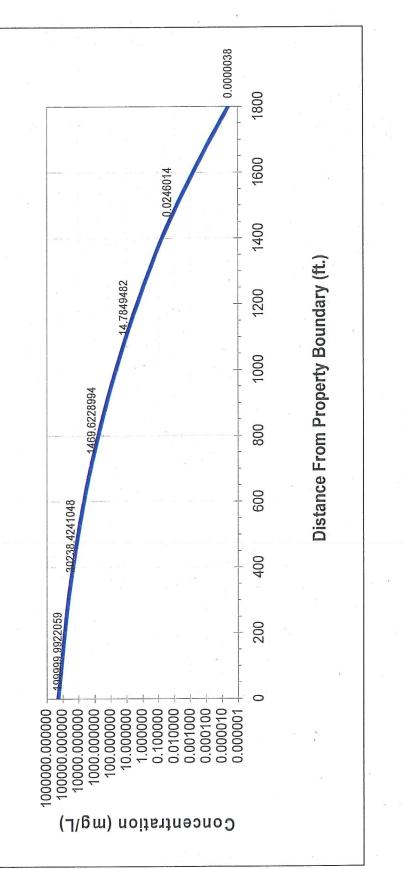




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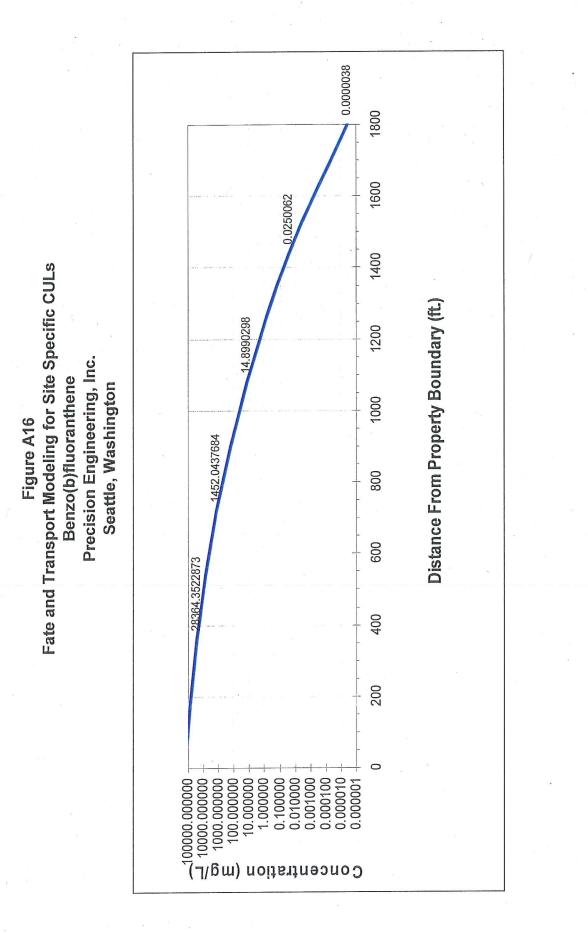


Figure A15 Fate and Transport Modeling for Site Specific CULs Benzo(a)anthracene Precision Engineering, Inc. Seattle, Washington



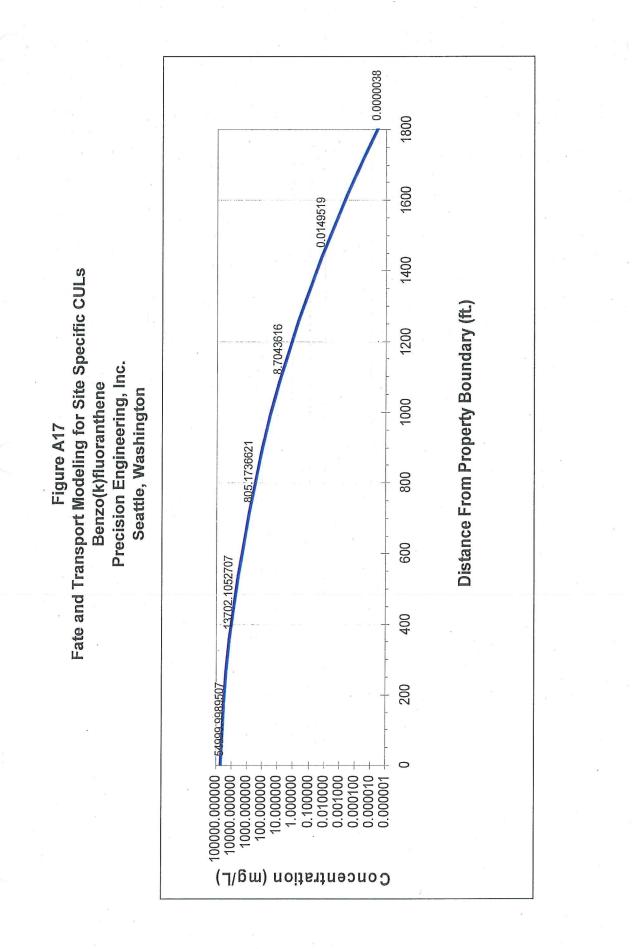
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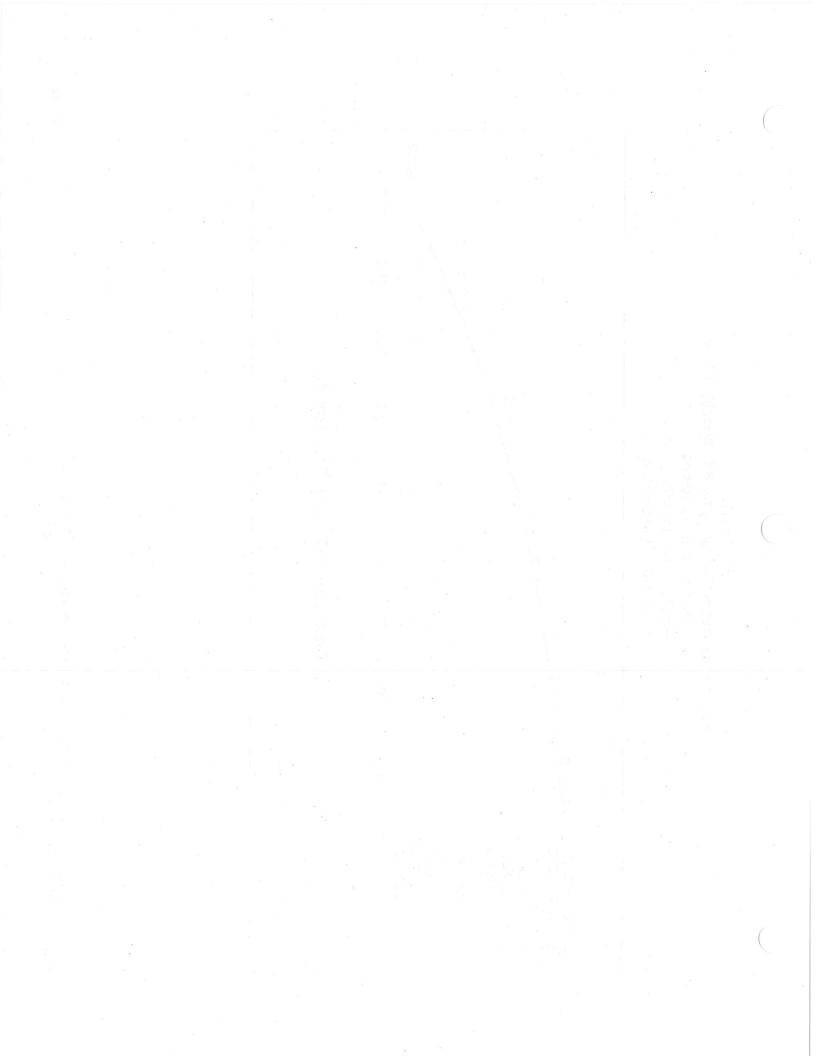


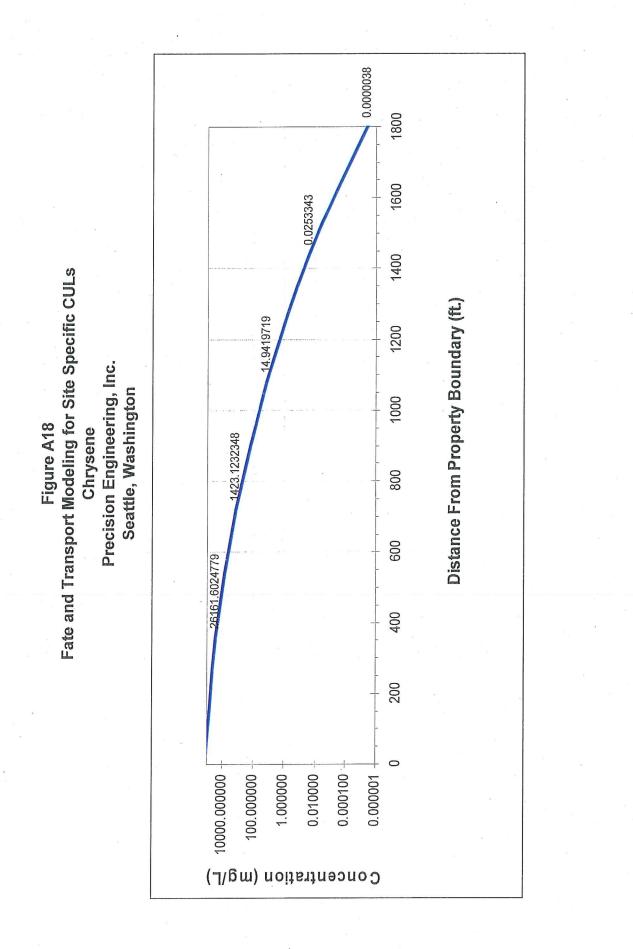
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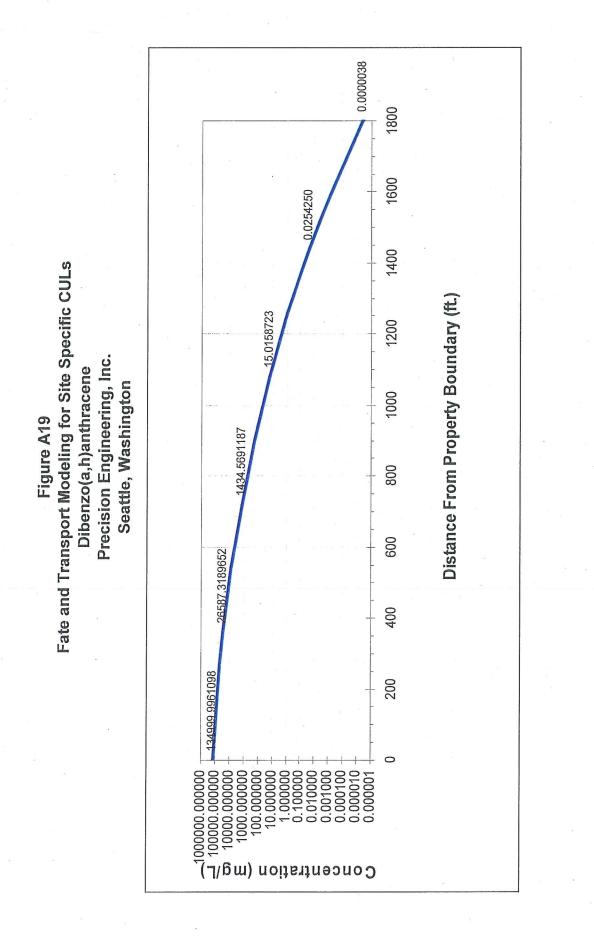
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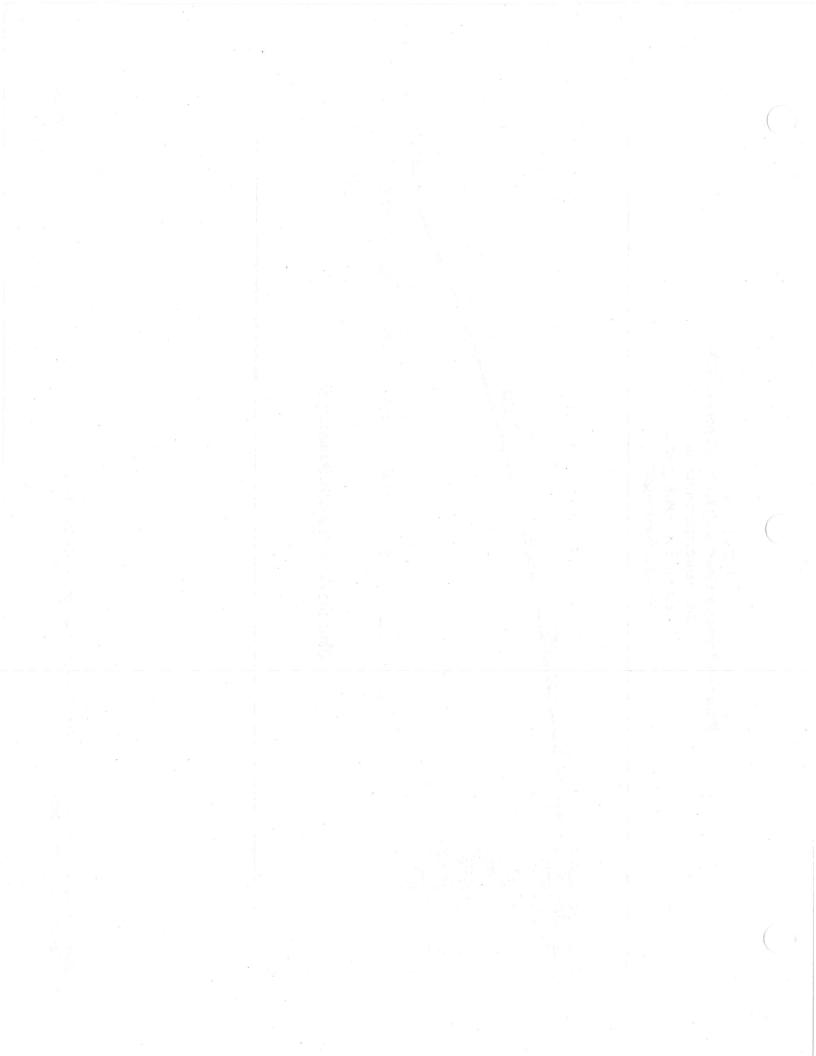


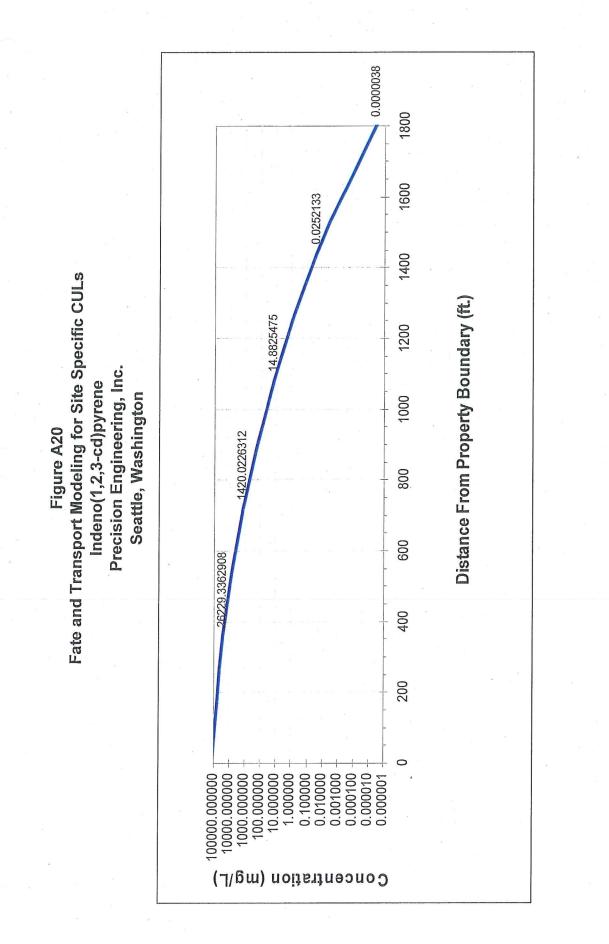
R:\8006.08 Stoel Rives LLP\Report\04_Final RI RA Report 7.21.08\Appendices\Appendix A - BioChlor Modeling\ App A Figure A10 through A20\A18 Chrysene



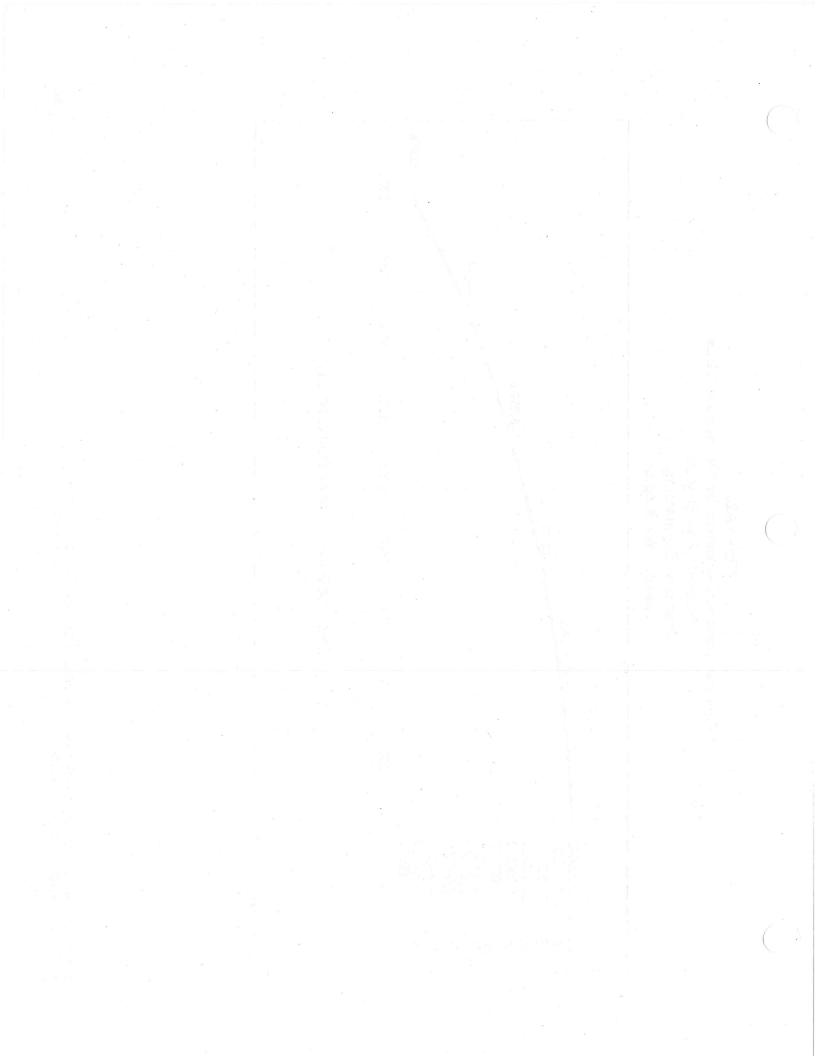


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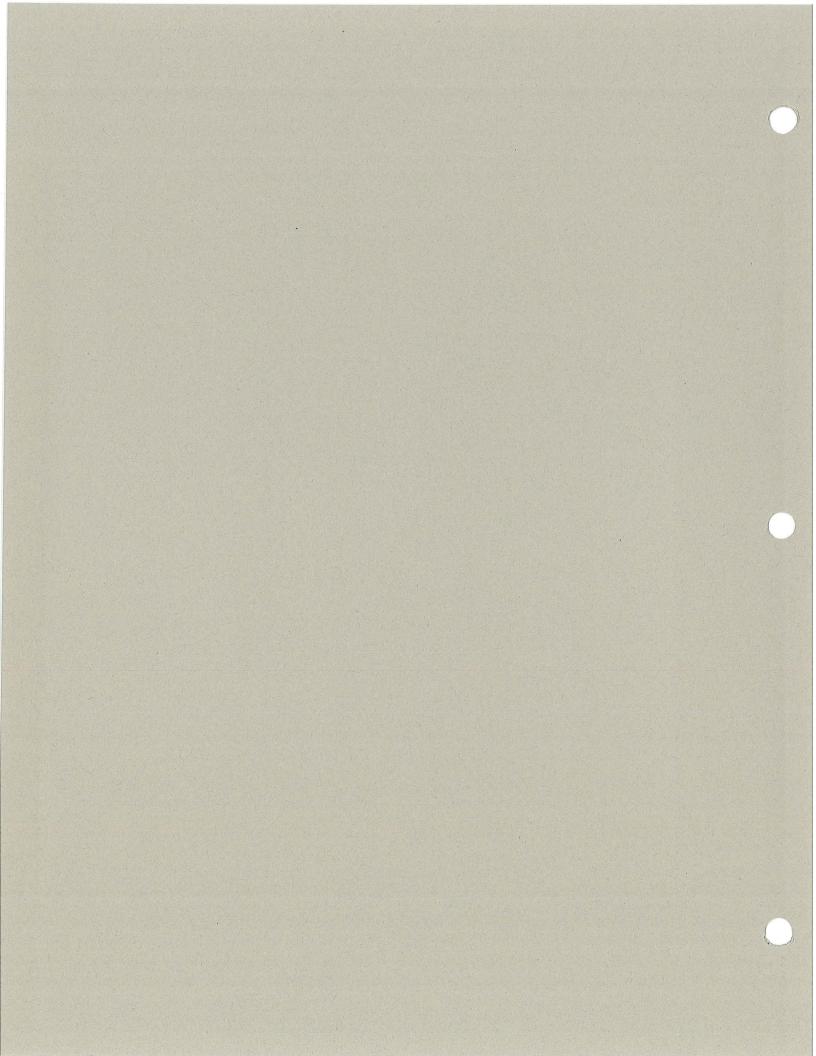


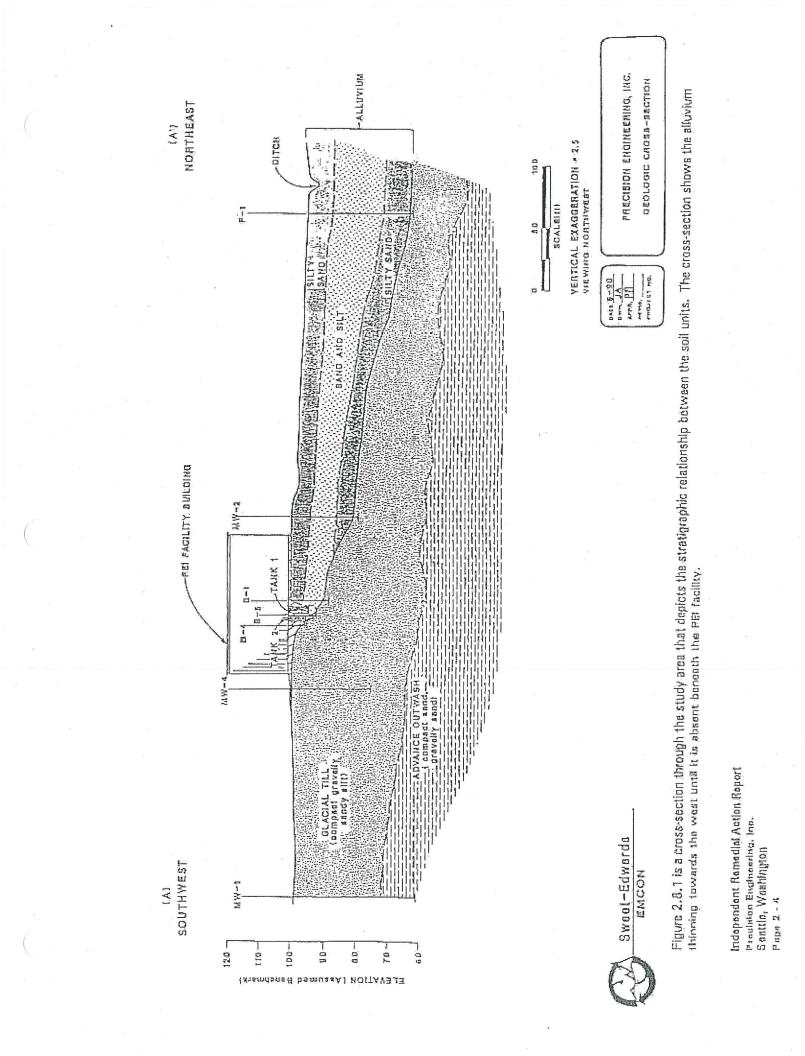
R:\8006.08 Stoel Rives LLP\Report\04_Final RI RA Report 7.21.08\Appendices\Appendix A - BioChlor Modeling\ App A Figure A10 through A20A20 Indeno(123-cd) App A Figure A10 through A20A20 Indeno(123-cd)

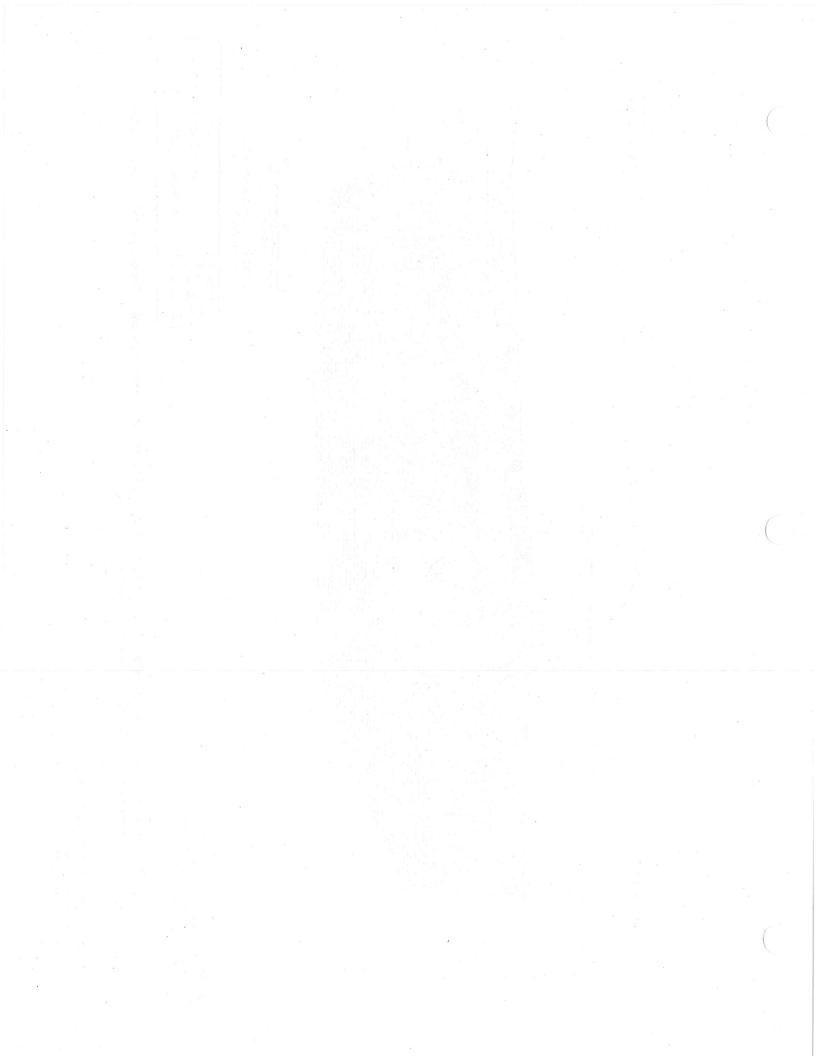


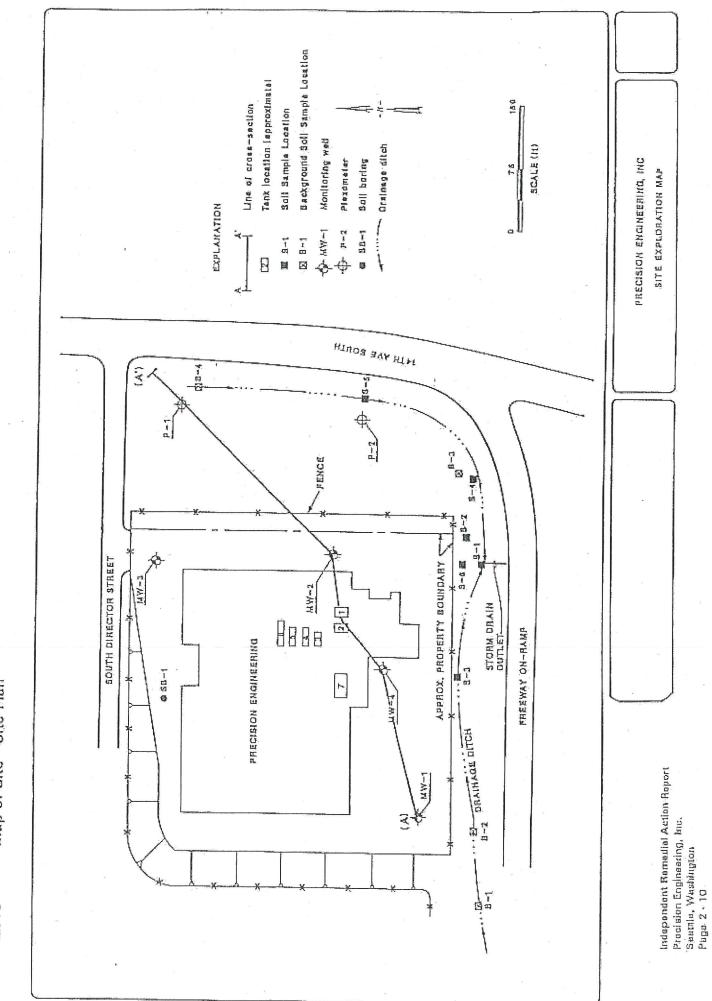
APPENDIX B

CROSS SECTION



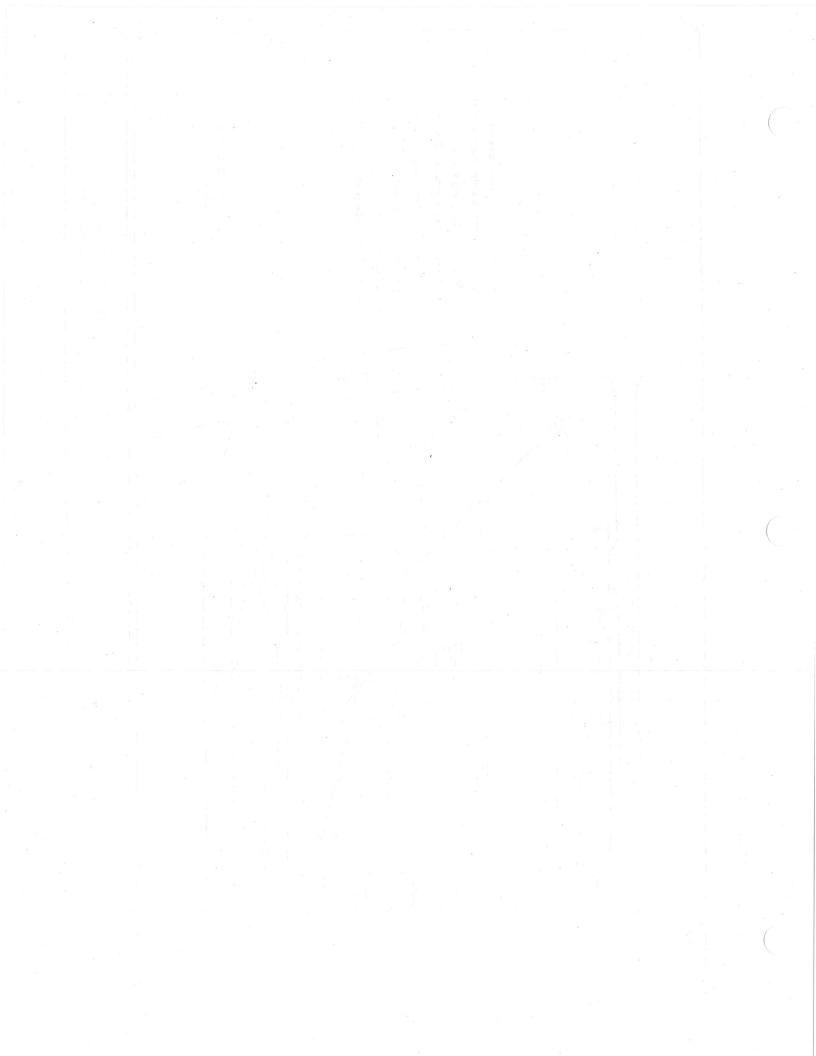






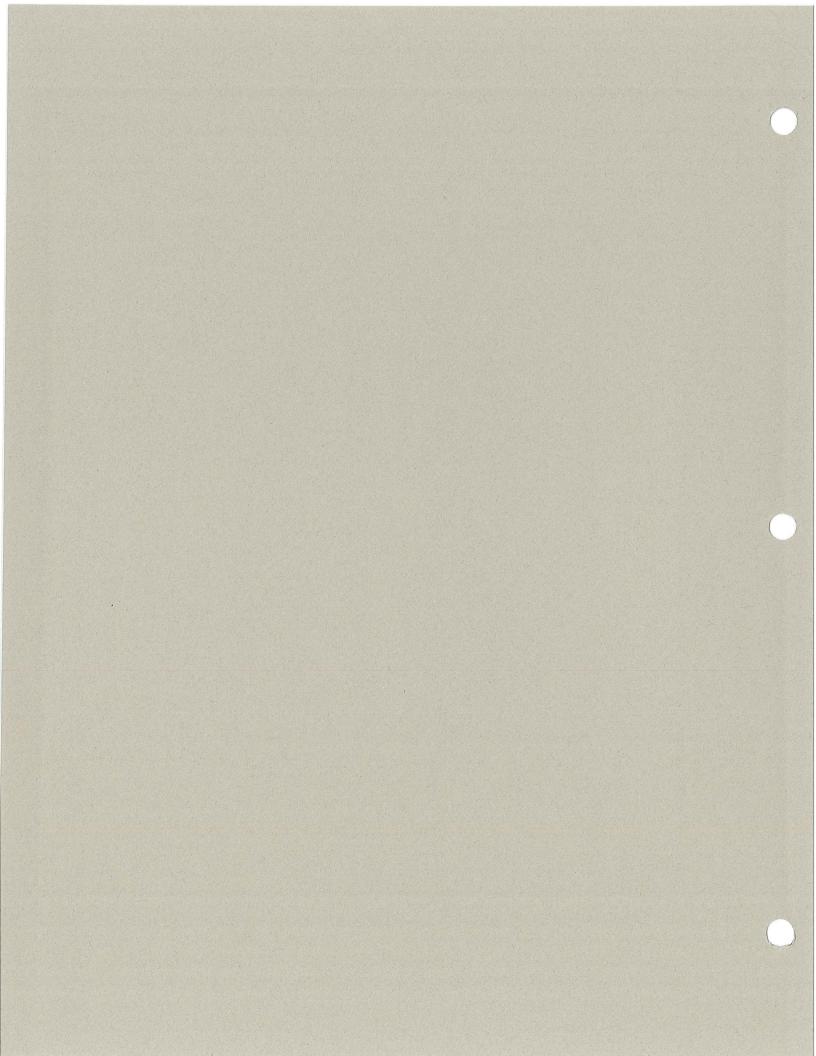
Map of Site - Site Plan

2.16



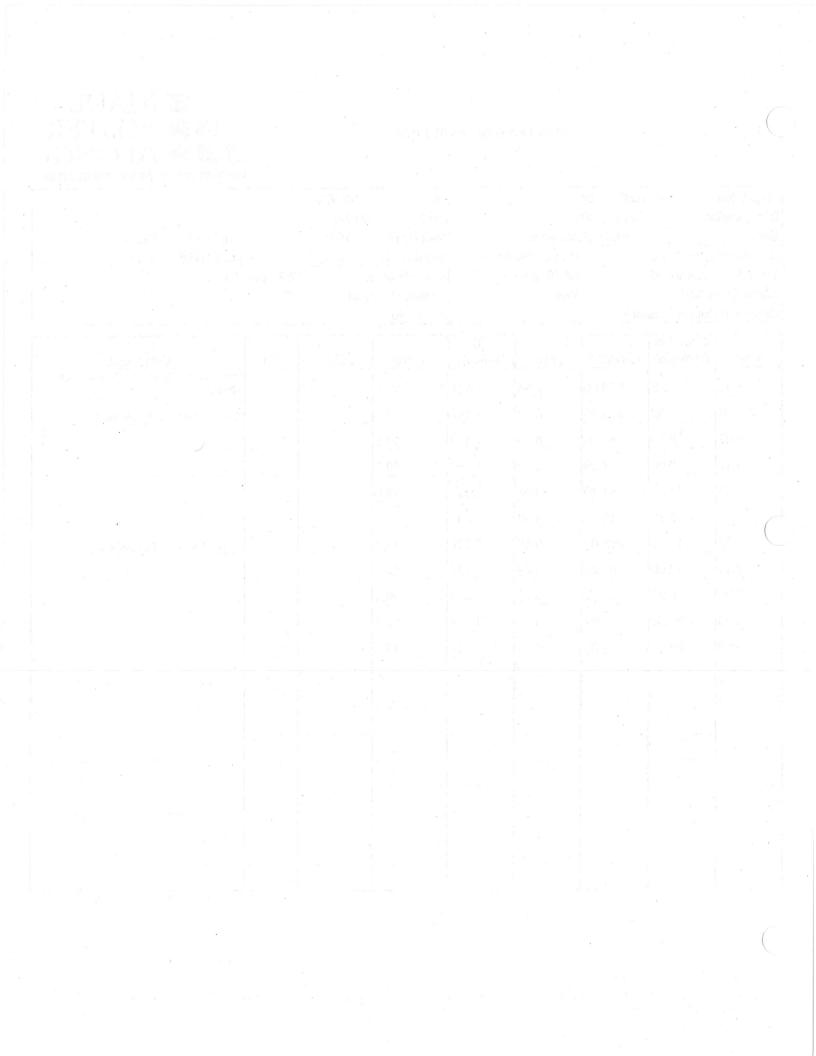
APPENDIX C

BORING LOGS AND WELL DEVELOPMENT FORMS





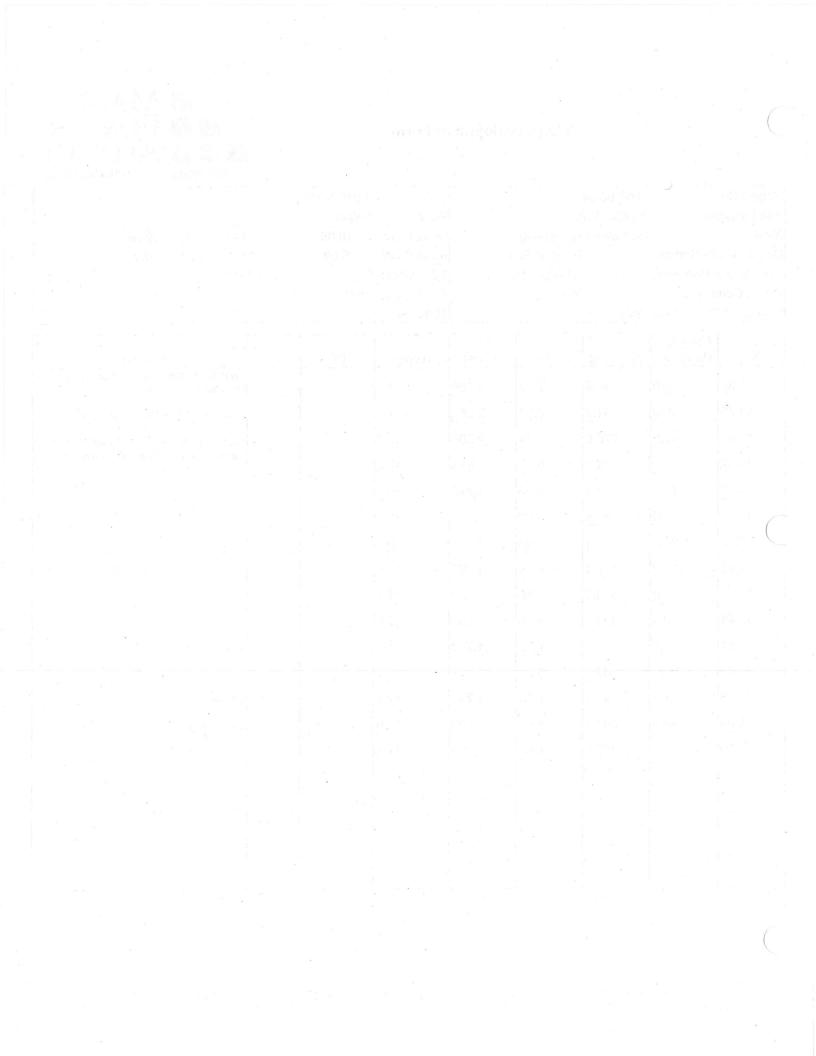
Project No		8006.08.04			Date	12/21/2005	; .	
Site Location:		Seattle, W/	4		Well:	MW-5		
Name: Precision Engineerin			Ingineering		Initial DTB:	19.60		Final DTB 19.66
Development Method: P-pump/Bailer					Initial DTW:	6.00		Final DTW 7.51
· · · · ·					Pore Volume	Э:	2.22 gal	llons
					Casing Dian	neter:	2"	
Estimated	Specific Ca	pacity			Meter No.		:	-
	Cum. Vol			EC	-		1	1
Time	Removed		pН	(µhos)	Temp	DO	Eh	Comments
7:43	2.25		7.14		18.7			Pump on at 7:28; stop pump and surge w/bailer.
7:54	4.50	396.00	6.73	1,487	19.2			Water is electric yellow/orange.
8:07	6.75	147.50	6.56	1,388	19.2			
8:17	9.00	77.30	6.12	1,346	19.1			
8:32	[.] 11.25	47.40	5.96	1,369	19.0			
8;46	13.50	13.89	5.89	1,337	19.2			
9:02	15.75	271.00	5.84	1,329	19.1			Stopped pump and surged w/bailer.
9:11	18.00	61.80	5.79	1,322	19.2	a		
9:22	20.25	21.50	5.76	1,316	19.1	0		
9:33	22.50	5.67	5.74	1,317	19.1			
9:46	24.75	3.32	5.71	1,314	19.0			
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Project No.		8006.08.04	ŀ		Date	12/16 & 21/	2005	
Site Location:		Seattle, WA			Well:	MW-6		
Name:		Precision E	Ingineering	<u>.</u>	Initial DTB:	19.85		Final DTB 19.86
Developme	ent Method:		P-pump/Ba	iler	Initial DTW:	5.09		Final DTW dry
· ·	r Removed		41.5 gallon	S	Pore Volume:		2.40 gallons	
Water Con	Water Contained		Yes		Casing Diameter:		2"	
Estimated	Specific Ca	pacity			Meter No.			
	Cum. Vol		1	EC.			1	
Time	Removed	Sand/Silt	рH	(µhos)	Temp	DO	Eh	Comments
12:37	5.0	116.9	7.07	3,290	17.6			12/16/05. Conductivity won't calibrate. Orangish yellow color.
12:46	10.0	81.7	6.24	2,960	17.9	2 ig		Surged right after 10.0 gal w/bailer.
12:58	12.5	228.0	6.34	2,900	17.3			Well went dry after approximately 14 gal.
14:02	15.0	121.9	6.49	1,913	17.2			Pump back on at 13:58. Clear w/yellowish tint. Surged w/bailer.
14:21	17.5	117.2	6.55	1,775	16.7	-		
14:55	20.0	49.5	6.52	1,722	15.5			
15:15	22.5	28.1	6.53	1,701	15.0			
13:24	25.0	127.1	6.78	1,866	16.6	· · · ·	2 	12/21/05. Surged with bailer.
13:33	27.5	332.0	6.50	1,820	17.4			
13:41	30.0	122.3	6.46	1,751	17.6	5		1
13:51	32.5	103.1	6.35	1,749	17.6	,		Yellow/orange in color.
14:03	35.0	60.7	6.36	1,767	17.3			
14:20	37.5	91.2	6.51	1,741	17.1			Well went dry.
15:05	40.0	47.1	6.55	1,800	17.0		2-2	Well went dry.
15:30	41.5	117.0	6.52	1,750	17.1			Well went dry.
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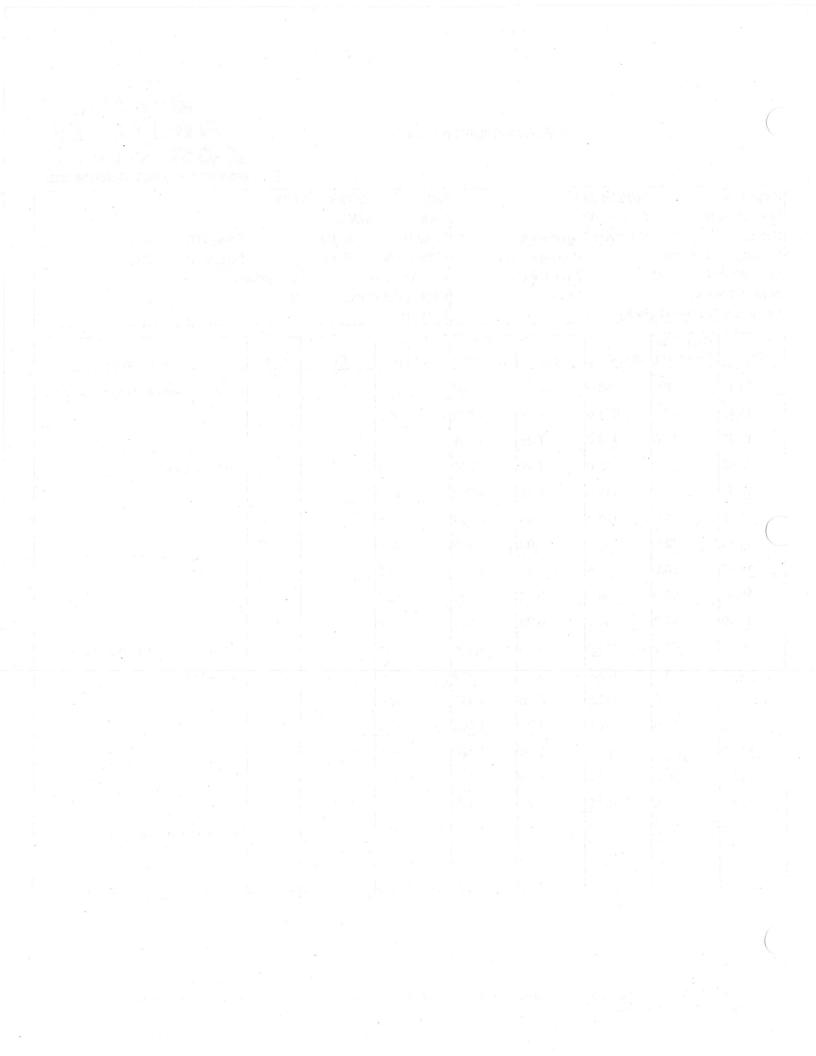
Page 1 of 1





					* ,			LINVIRONMENTAL & ENGINEERING CONSULTANTS
Project No. 8006.			4		Date	12/19 & 21	/2005	
Site Location:		Seattle, WA			Well:	MW-7		
Name: Precision E			Engineering		Initial DTB:	30.00		Final DTB 31.3
			P-pump/Ba	ailer	Initial DTW:	6.10		Final DTW dry
-			54.0 gallor	IS	Pore Volum	e:	3.9 gall	ons
Water Con			Yes		Casing Diameter: 2"		2"	
Estimated	Specific Ca	pacity			Meter No.			·
2	Cum. Vol	2		EC	1	1	1	
Time	Removed	Sand/Silt	pН	(µhos)	Temp	DO	Eh	Comments
11:19	8.0	358.0	7.75	2,080	15.5			12/19/05. Surged w/bailer before pumping
11:49	12.0	644.0	7.47	1,970	16.9		2	
12:32	16.0	428.0	7.28	1,980	16.9			
13:06	20.0	342.0	7.16	2,060	16.4			Switch to a bailer.
13:32	24.0	411.0	7.15	1,980	16.3			0
14:00	28.0	130.2	7.04	2,000	16.4			
14:25	32.0	87.3	7.02	2,000	16.4			
14:40	36.0	73.6	6.97	1,970	16.5			
15:00	40.0	50.1	6.96	1,970	16.4			
15:10	42.0	54.7	6.95	2,000	16.4			
10:33	43.0	474.0	6.78	1,555	16.5			12/21/05. DTB = 31.15 DTW = 5.49
10:45	44.0	173.2	6.82	1,199	16.0			Surge w/bailer.
10:52	45.0	171.2	6.76	1,194	16.7			
10:57	46.0	219.0	6.72	1,193	16.5	х Э	× ^	
11:08	48.0	98.6	6.74	1,190	16.2			
11:27	50.0	29.6	6.74	1,186	16.1	2		
11:43	52.0	15.05	6.75	1,176	16.1			
12:04	54.0	5.69	6.79	1,165	16.3			Clear w/slight yellow tint.
			9					
			16					

Page 1 of 1

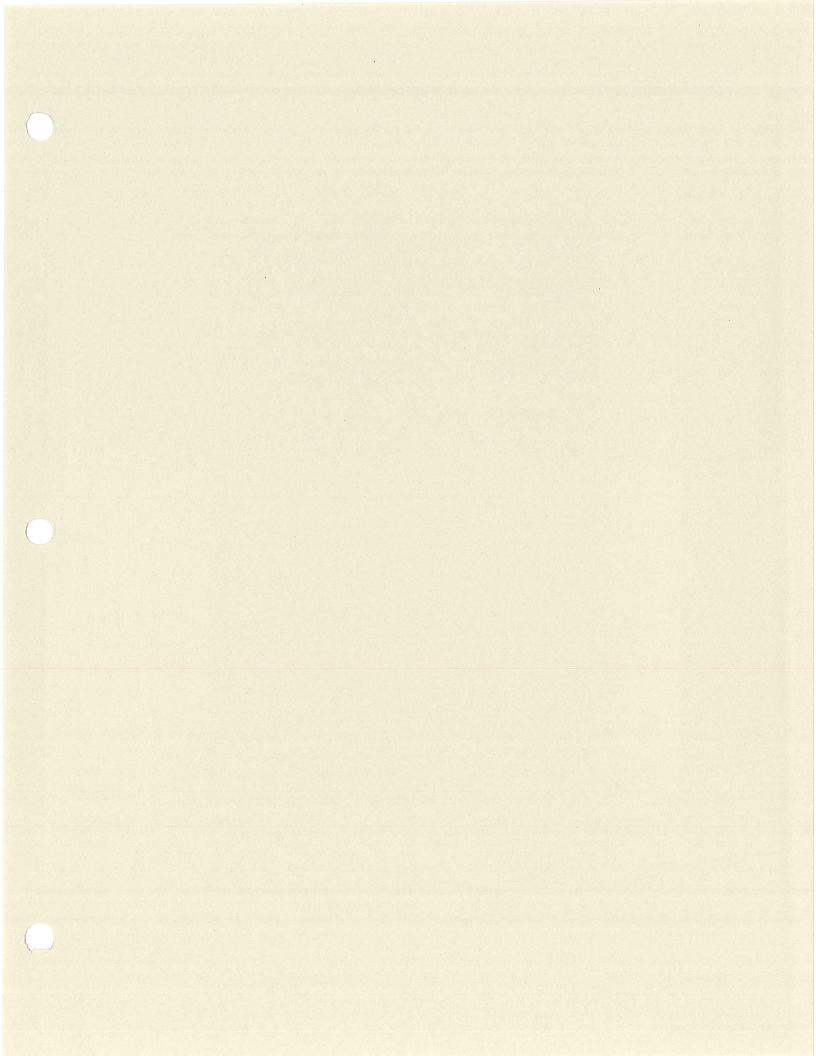


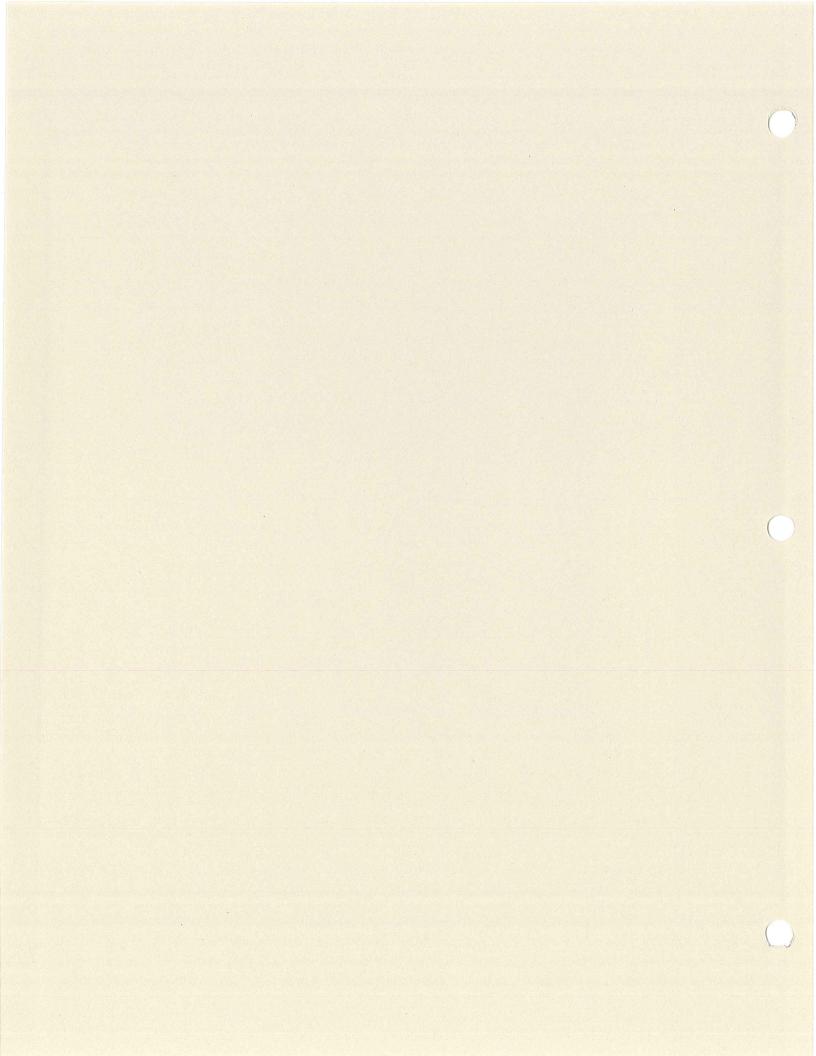


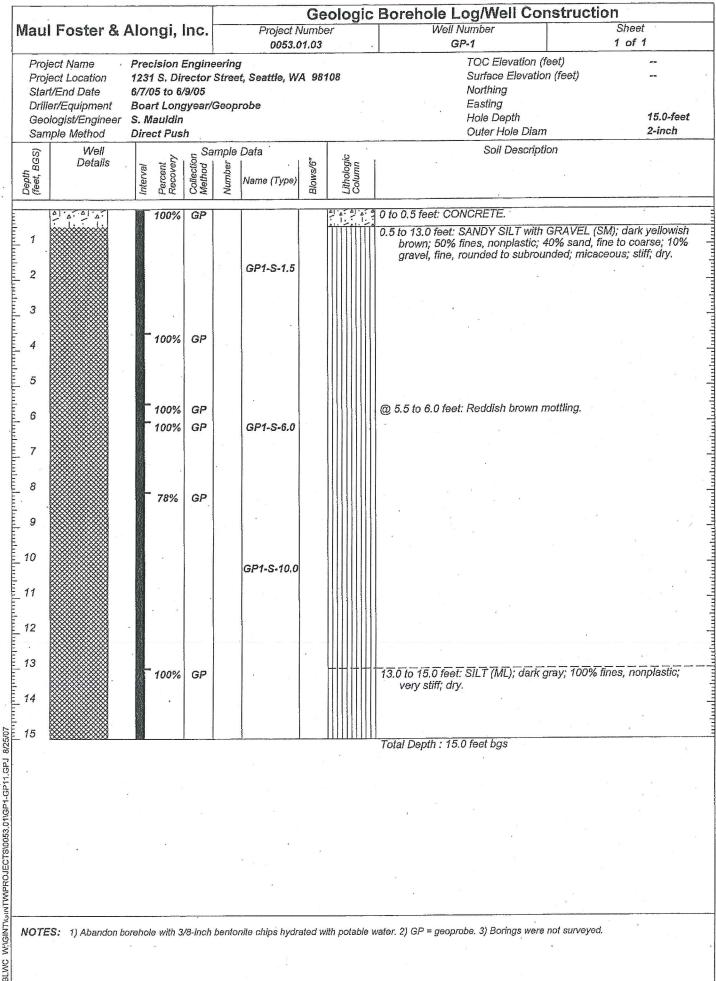
Project No.		8006.08.04			Date	12/19 & 20/	2005		
Site Location: Seattle, WA						MW-8			
Name:		Precision E	Ingineering		Initial DTB:	18.10		Final DTB 19.55	
				Initial DTW:	3.90		Final DTW dry		
Total Water Removed 29.0 gallons					Pore Volume:		2.3 gallons		
Water Cont	tained	Yes			Casing Diameter:		2"		
Estimated S	Specific Ca			Meter No.		6			
	Cum. Vol			EC			1		
Time	Removed	Sand/Silt	pН	(µhos)	Temp	DO	Eh	Comments	
14:38	4.5	>1,000	7.02	2,040	16.7	2 a.		Well went dry after one pore volume.	
15:12	7.0	>1,000	6.93	1,970	16.5			Let recharge.	
15:58	9.3	171.0	6.49	2,130	15.4				
7:36	11.6	689.0	7.23	2,260	16.0			12/20/05. Surge w/bailer. Sheen in purge water. Purge w/bailer.	
8:33	13.9	726.0	7.16	2,220	15.5			· · · · · · · · · · · · · · · · · · ·	
10:17	16.2	303.0	7.25	2,240	13.6			Switched back to p-pump.	
11:04	18.5	429.0	6.79	2,100	15.5				
12:17	20.8	308.0	7.11	2,060	13.6	· · ·			
13:30	23.1	115.6	6.58	2,010	15.4				
14:34	25.4	83.7	6.57	1,970	15.3	н. ^{- и}			
15:12	26.5	63.4	6.52	1,960	15.2				
15:39	27.7	60.7	6.55	1,930	14.9	· · · · · · · · · · · · · · · · · · ·		Yellow tint with sheen.	
15:51	28.4	44.3	6.52	1,950	14.9				
16:05	29.0	27.7	6.53	1,974	14.8				
					2	11			
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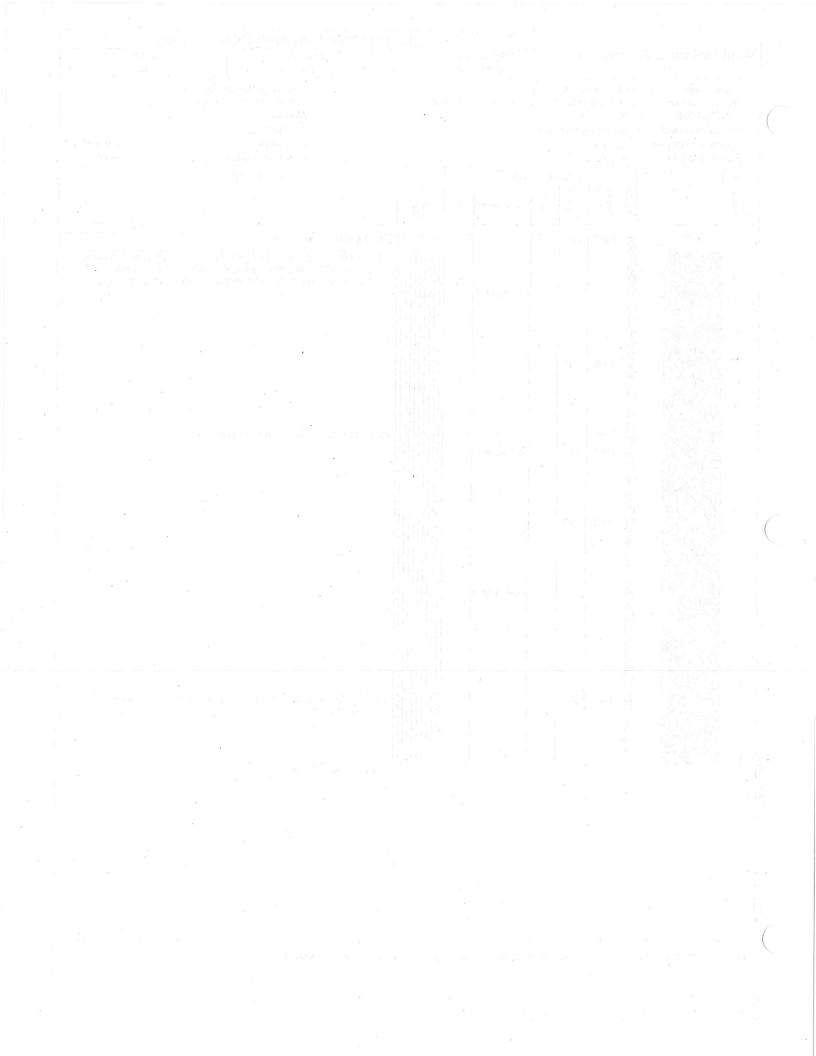


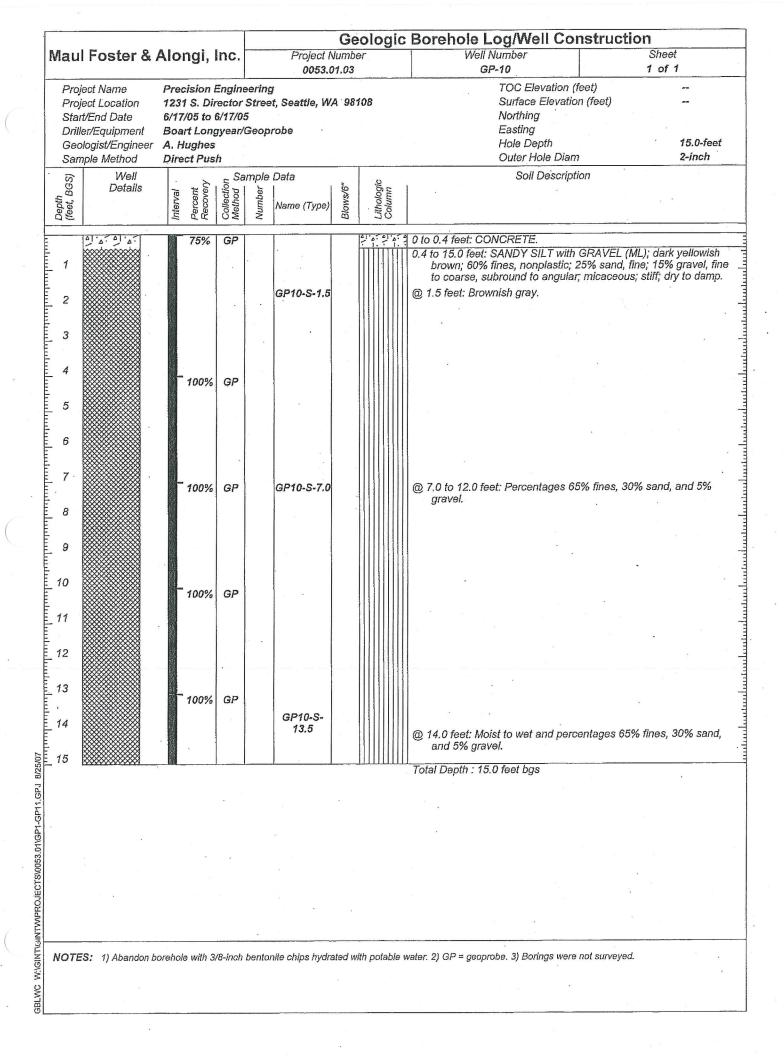


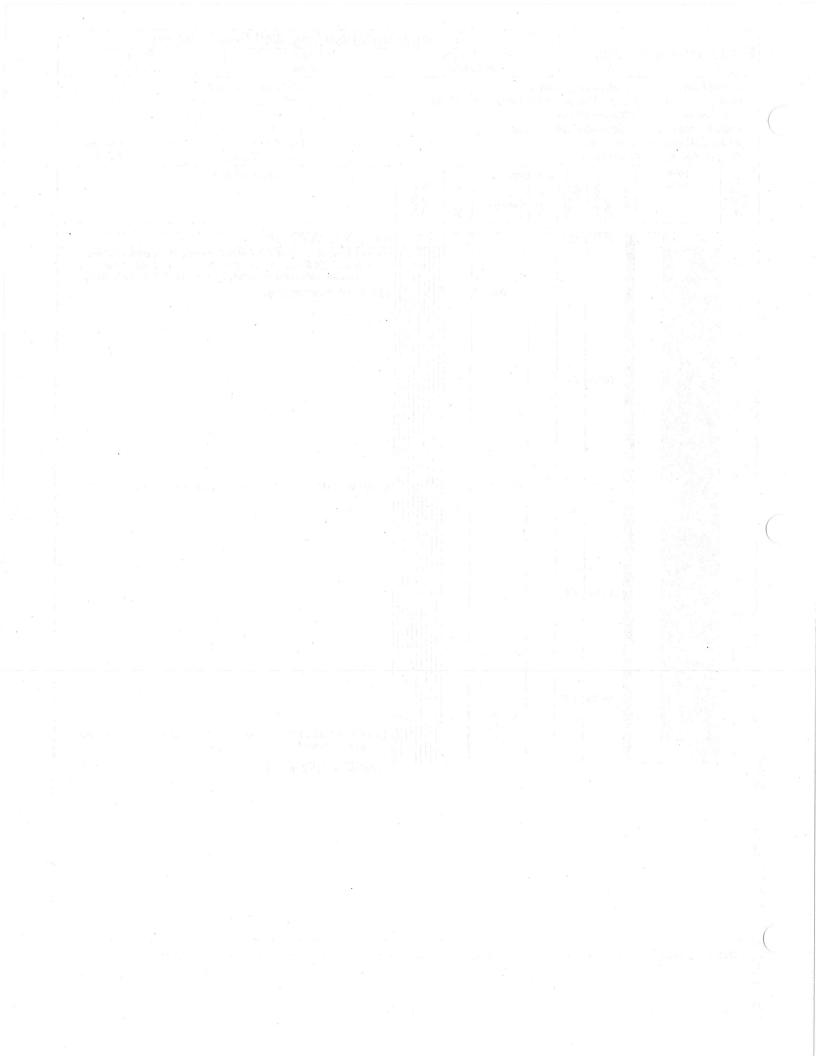




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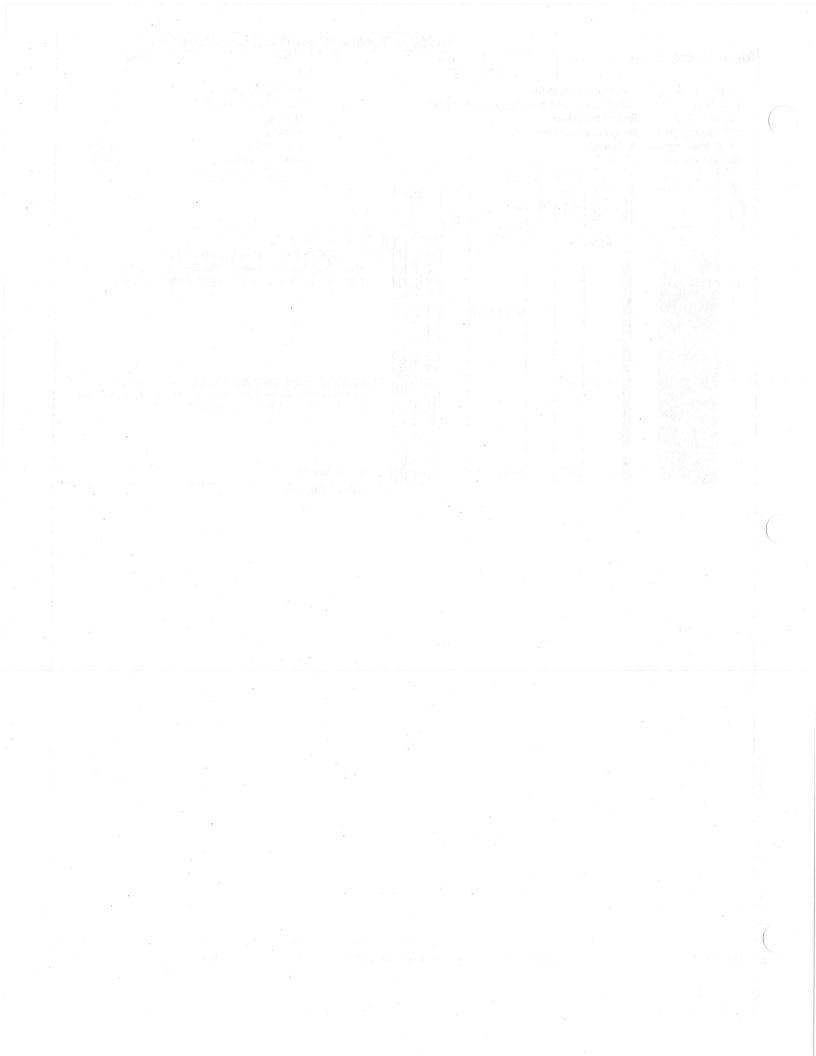


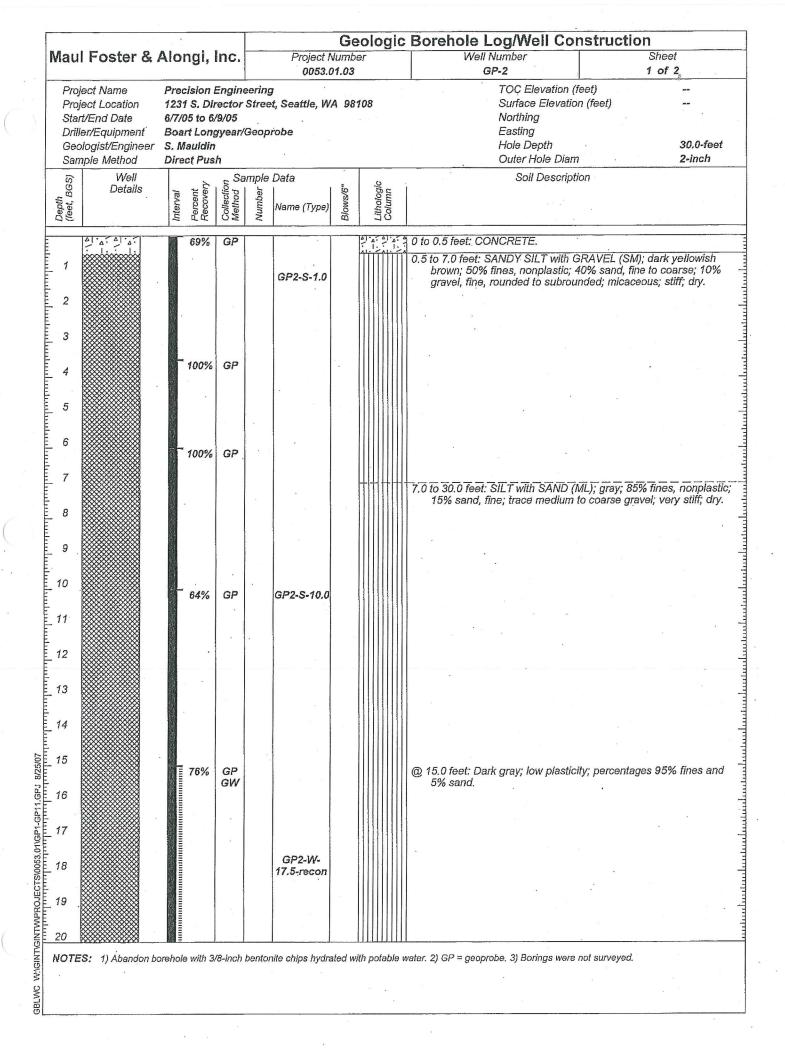


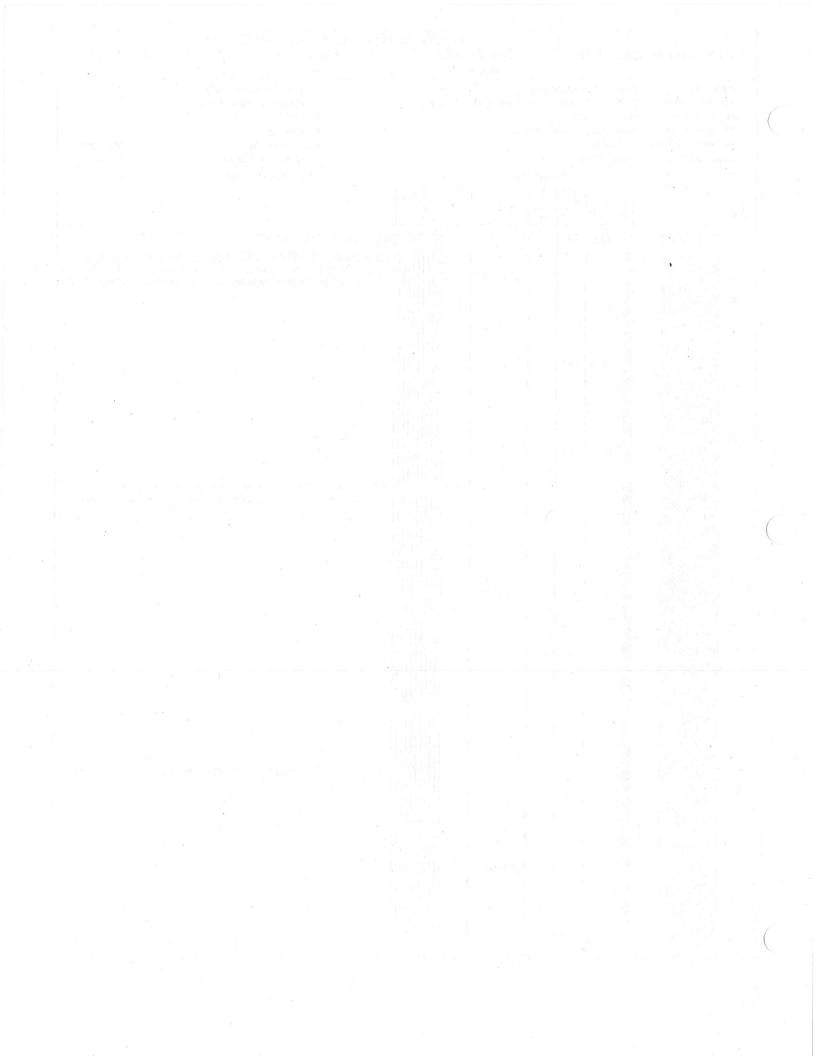
2		κ.,				gic Bo	rehole Log/M	lell Constru	
laul Fos	ster &	Alongi, li	nc.	Project Nu 0053.01			Well Number GP-11		Sheet 1 of 1
Project Nat Project Loc Start/End L Driller/Equi Geologist/E Sample Me	cation Date ipment Engineer	6/17/05 to 6 Boart Long A. Hughes Direct Push	ector Stro /17/05 year/Geo	eet, Seattle, WA oprobe	98108		GP-11 1 or 1 TOC Elevation (feet) Surface Elevation (feet) Northing Easting Hole Depth 7.0- Outer Hole Diam 2-ir		
(SE	Well	<u>ک</u>	Samp	le Data	ic i		Sc	il Description	
Depth (feet, BGS)	Details	Interval Percent Recovery	Collection Method S Number due	Name (Type)	Blows/6" Litholoaic	Column	· · ·		
1 2 3 4 5 6 7		95% - 100% - 100%	GP GP GP	GP11-S-2.0 GP11-S-6.5		0.4 4.0 @ 0	brown; 30% fines, n gravel, fine to coars	AND with GRAVEL onplastic; 55% sar e, subangular to a SILT (ML); dark ye ing; 70% fines, nor ed gravel; damp to	Ilowish brown with
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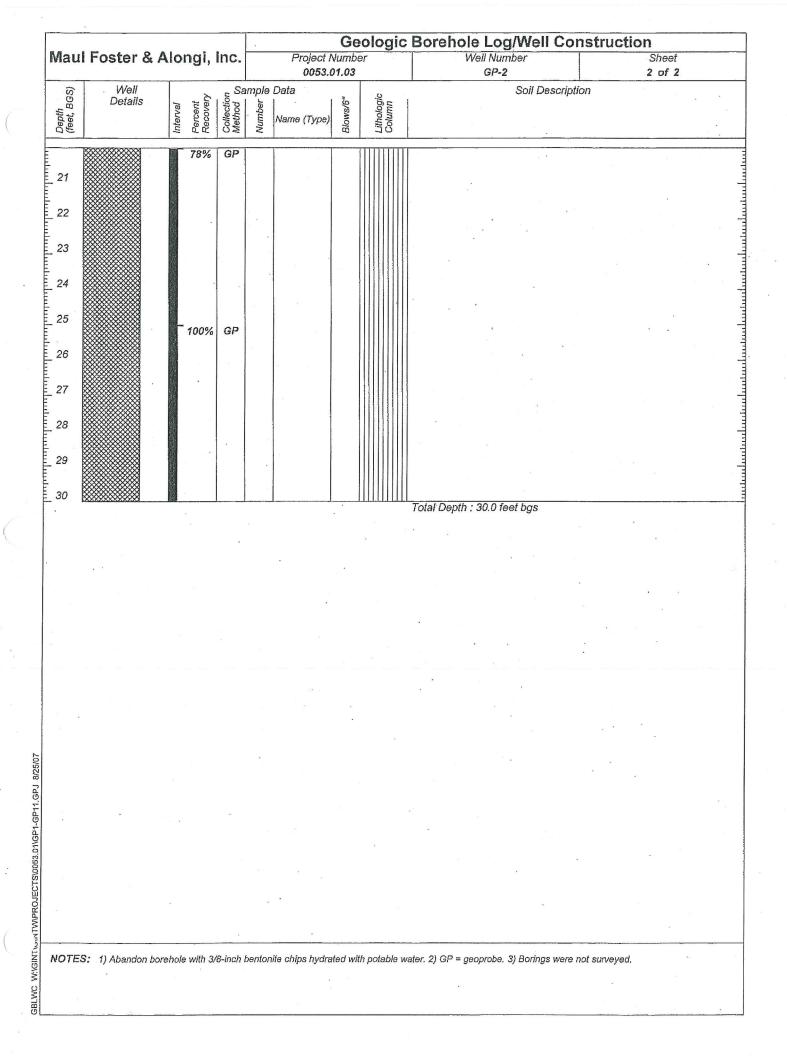
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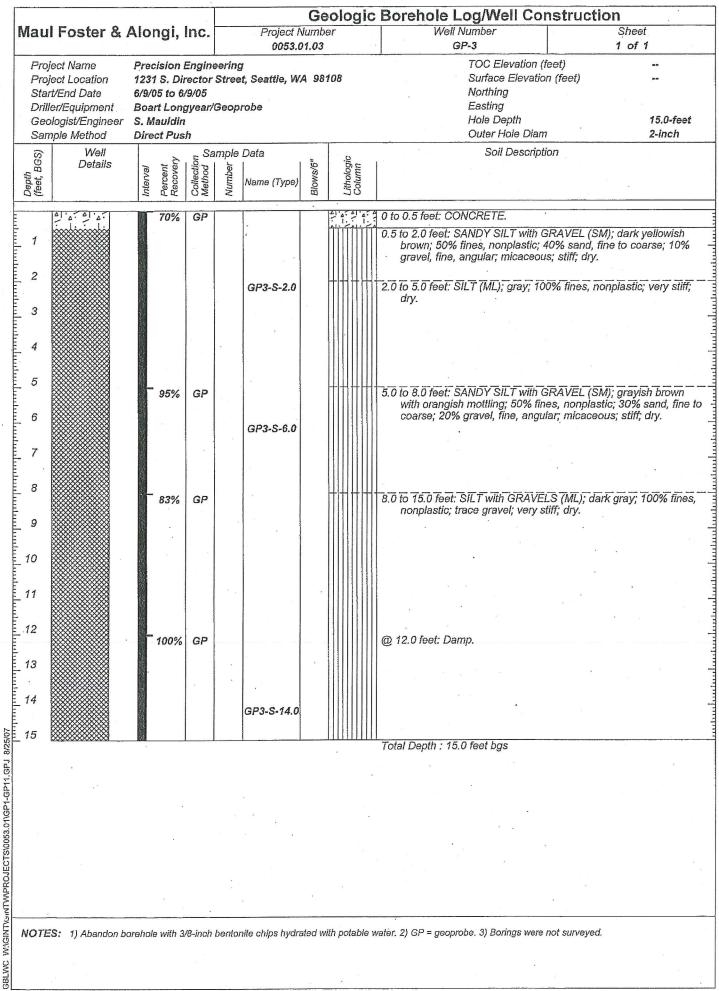


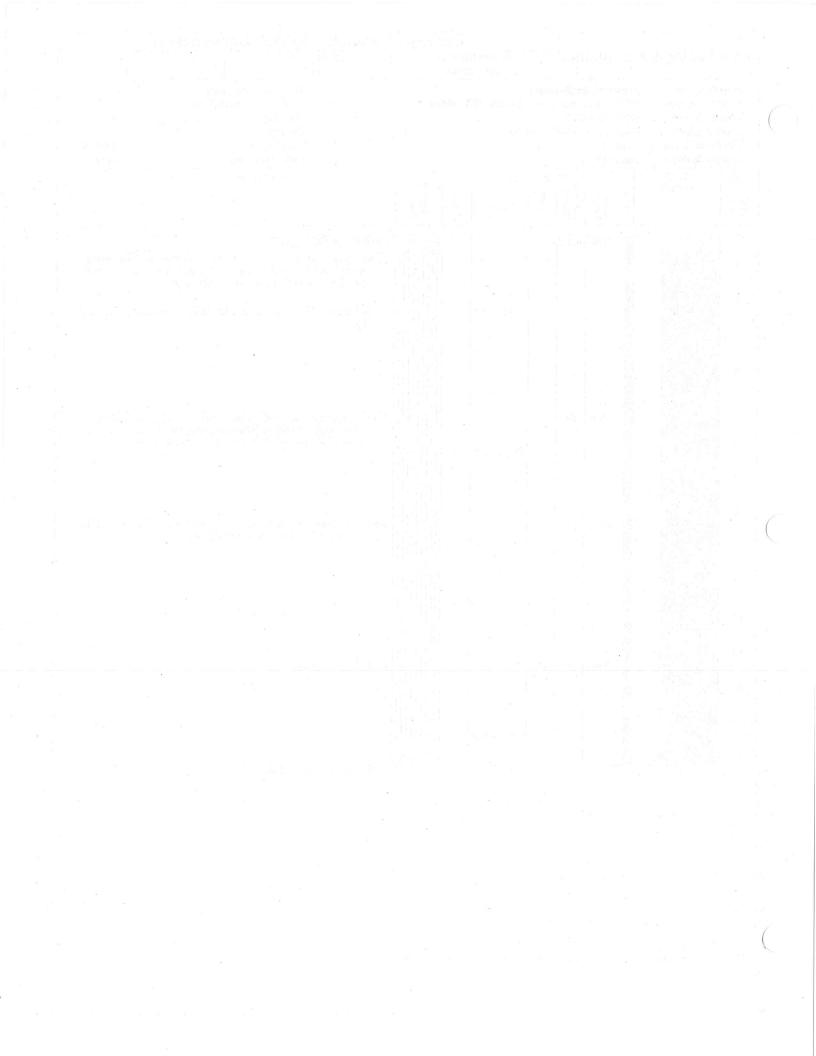






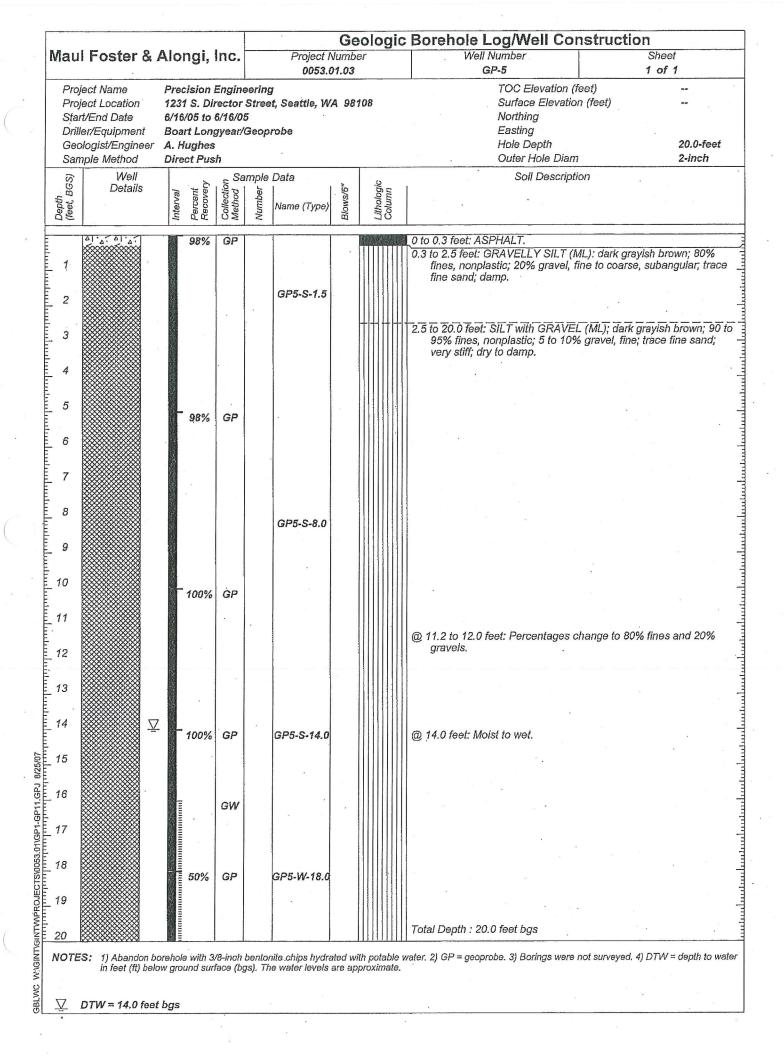


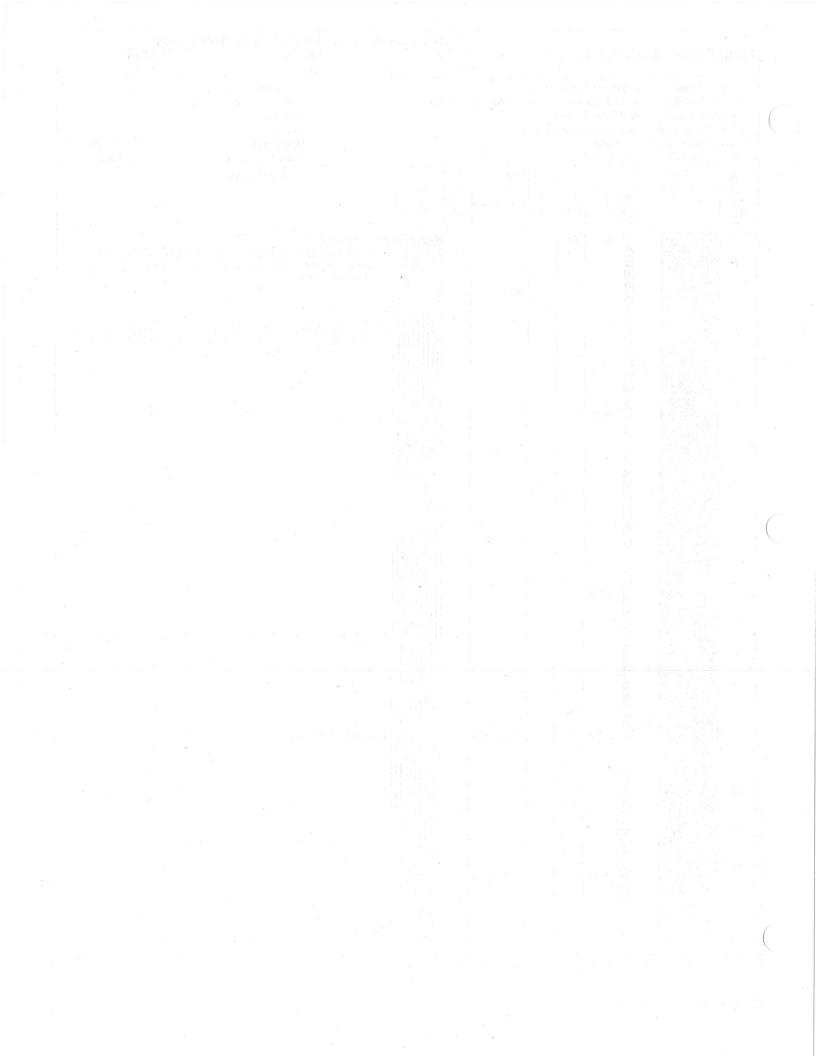


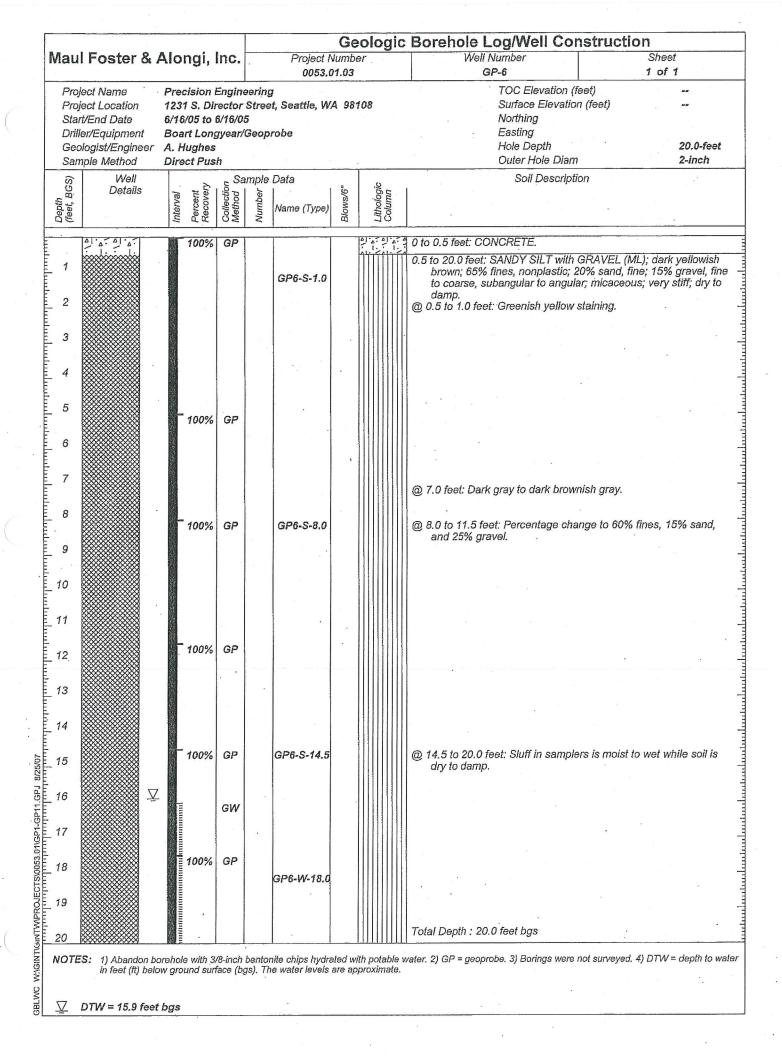


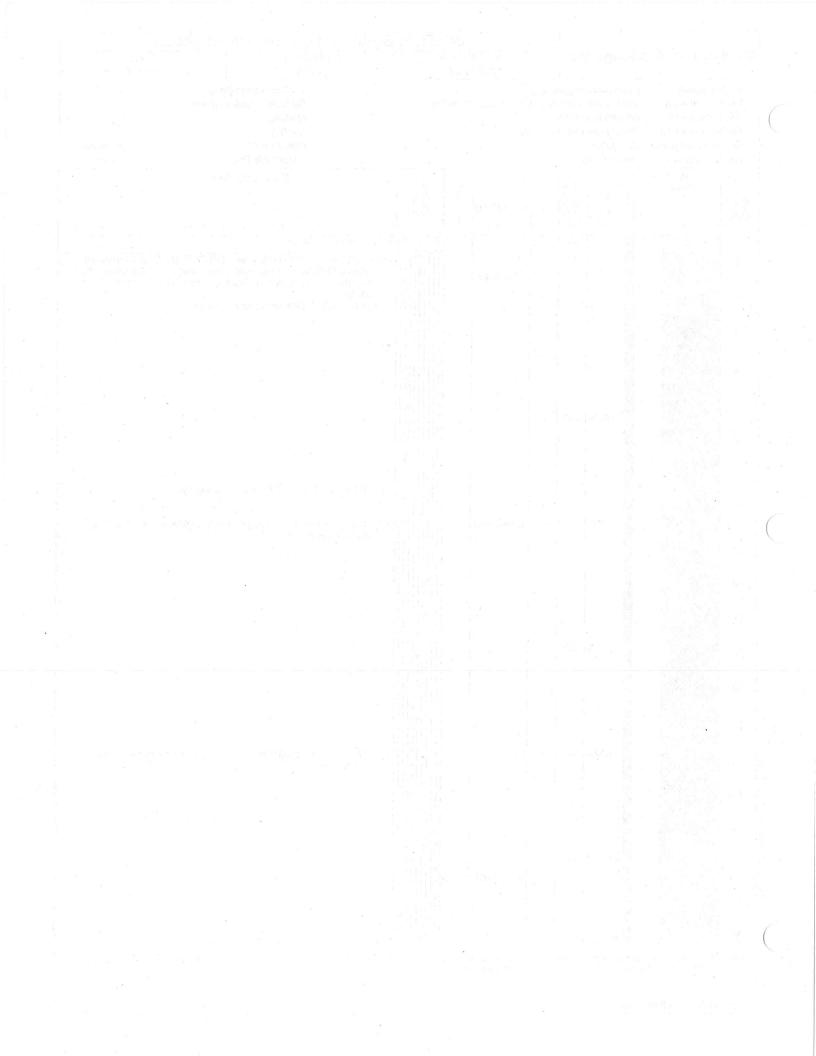
laul F	oster &	410	ngi,	Inc.		Project	Vumb		Borehole Log/Well Cons Well Number	Sheet
						0053.	01:03		GP-4	1 of 1
Project Name Precision Engine Project Location 1231 S. Director S Start/End Date 6/16/05 to 6/16/05 Driller/Equipment Boart Longyear/G Geologist/Engineer A. Hughes Sample Method Direct Push			Stree 5	t, Seattle, W	A 98	108	TOC Elevation (fee Surface Elevation Northing Easting Hole Depth Outer Hole Diam			
(S)	Well		~	sa Sa	mple	Data		U	Soil Description]
(feet, BGS)	Details	Interval	Percent Recovery	Collection Method C	Number	Name (Type)	Blows/6"	Lithologic Column		
1 2 3 4 5 6 7	· a : a) · a : 11.		68% 70%	GP GP GW		GP4-S-1.5			 0 to 0.5 feet: CONCRETE. 0.5 to 0.9 feet: GRAVELLY SAND (S 10% fines; 70% sand, fine to men subround; micaceous; damp	dium; 20% gravel, fine, ark yellowish brown; 65% sand, fine; micaceous; damp
3						GP5-W-8.0			9.7 to 10.0 feet: SILT (ML); dark gray mottling; 100% fines, nonplastic; Total Depth : 10.0 feet bgs	rish brown with reddish brow firm; moist to wet.
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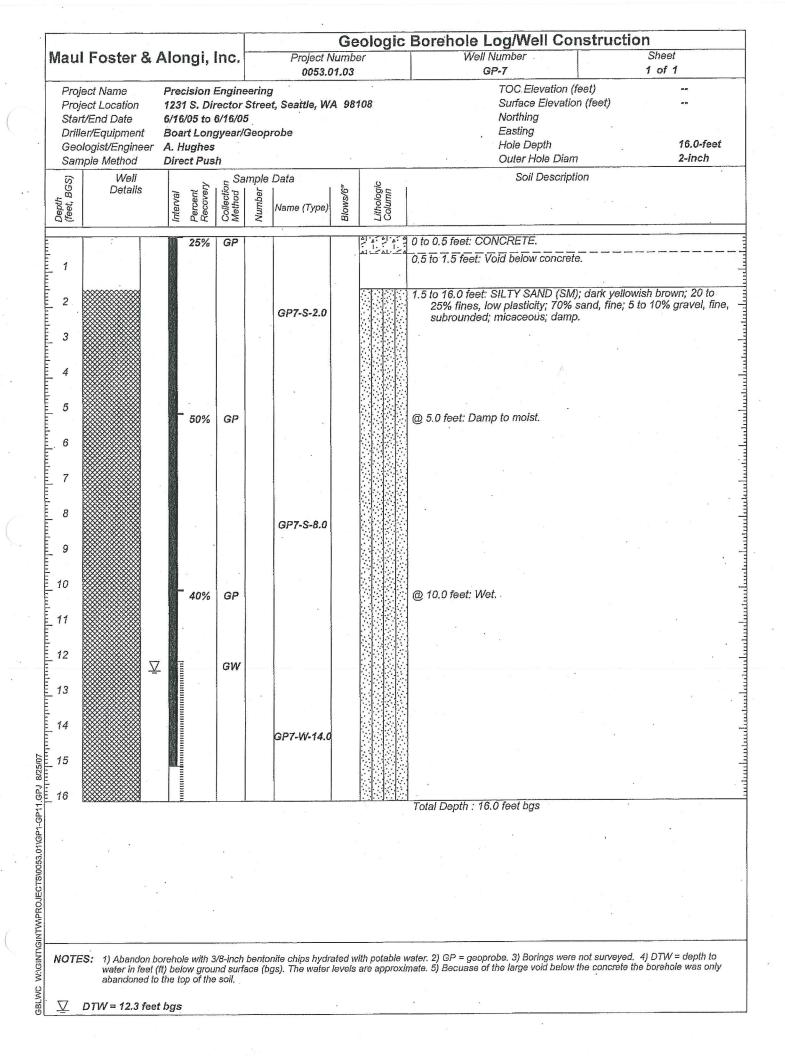


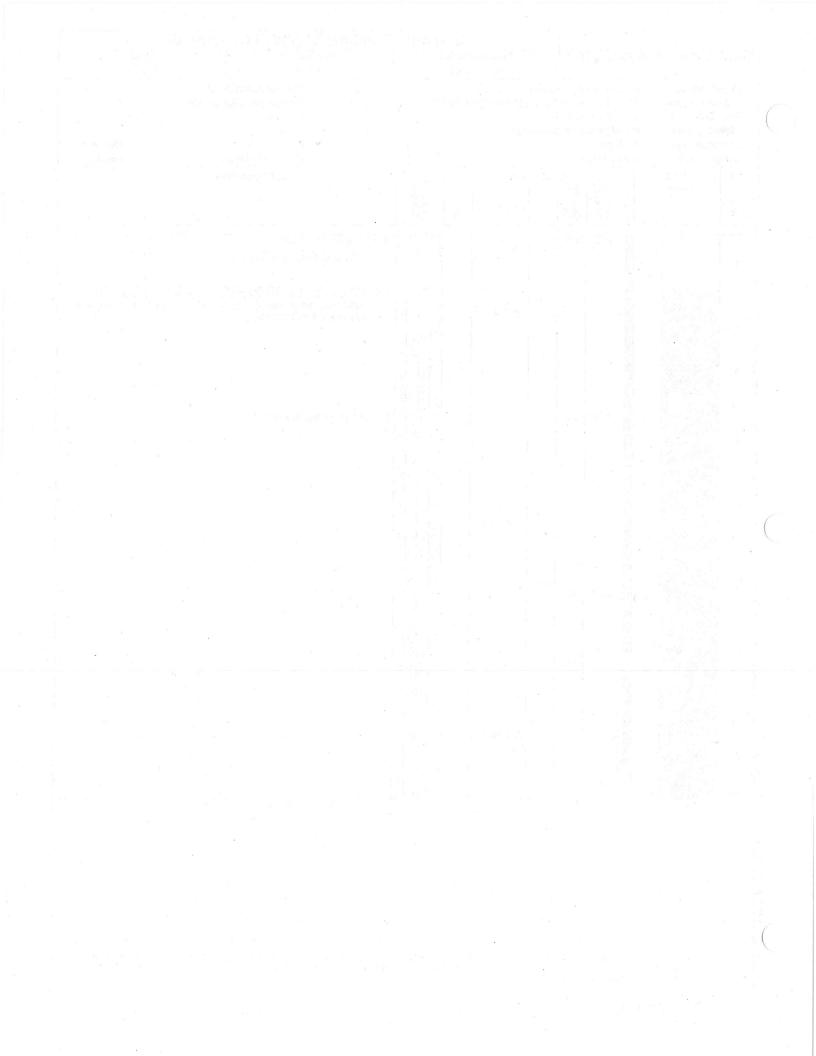


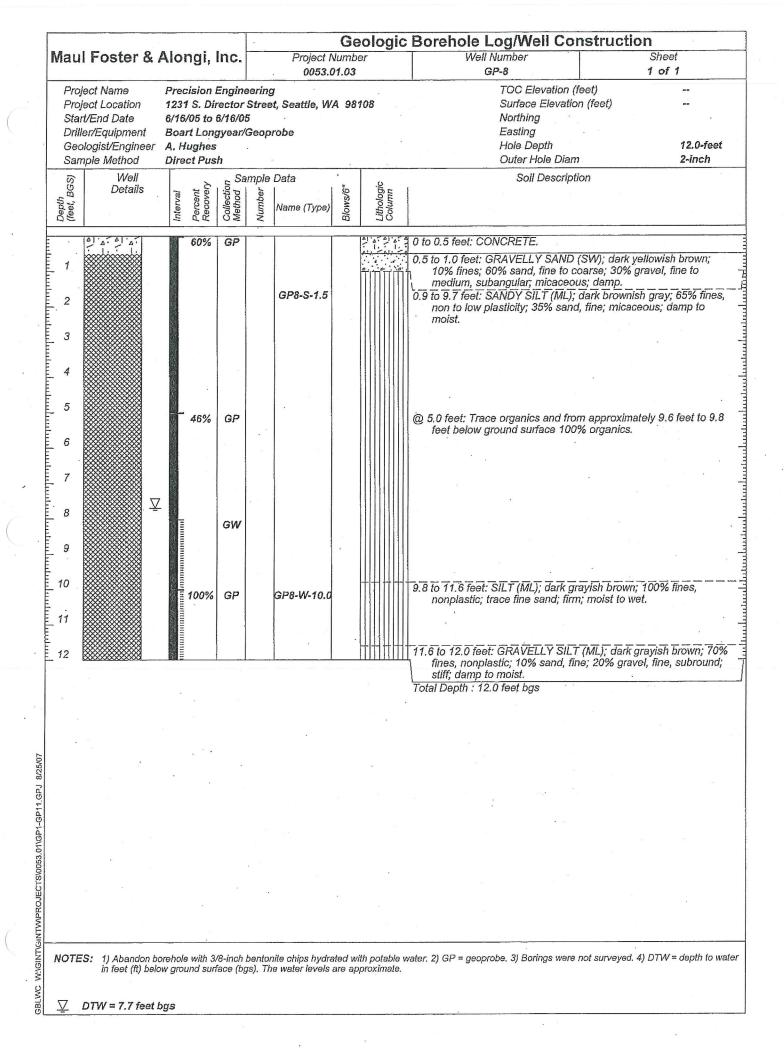


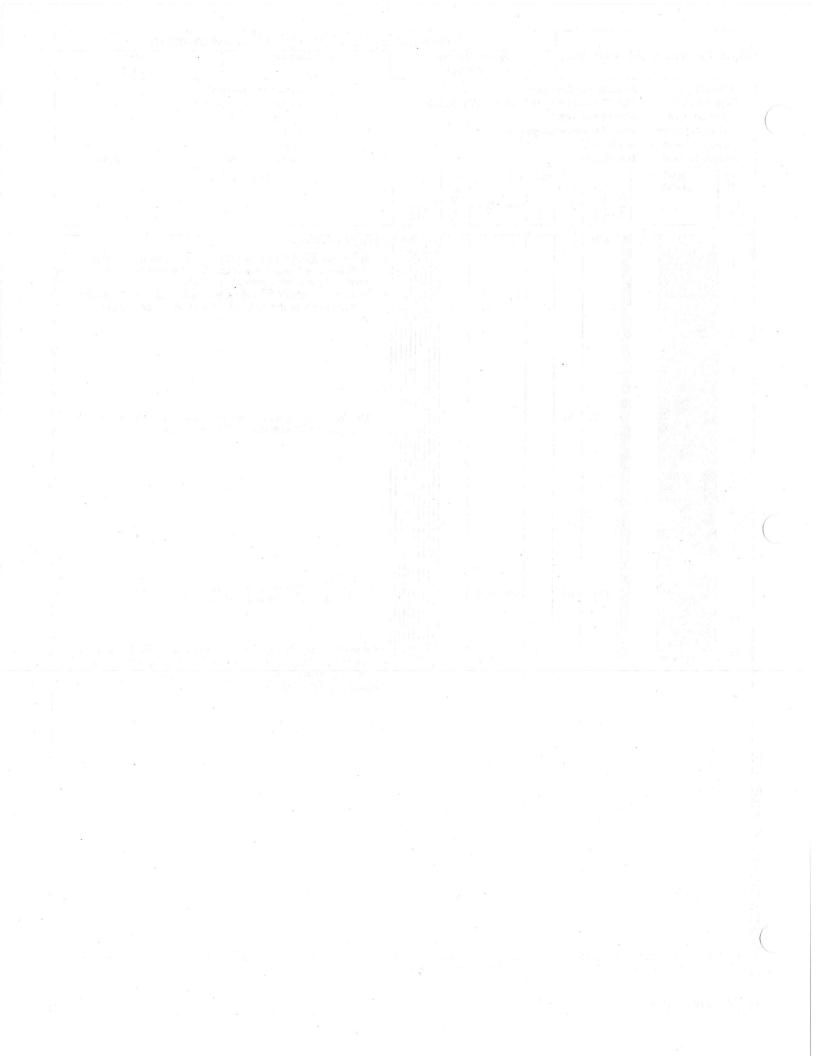




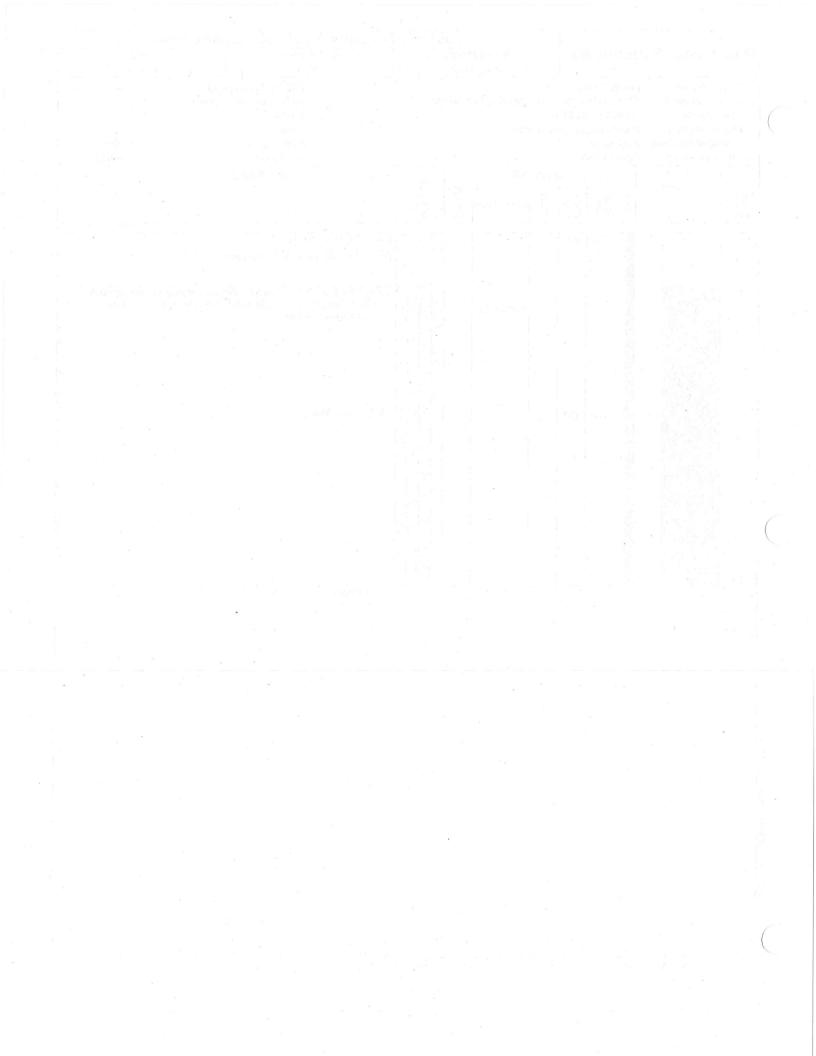






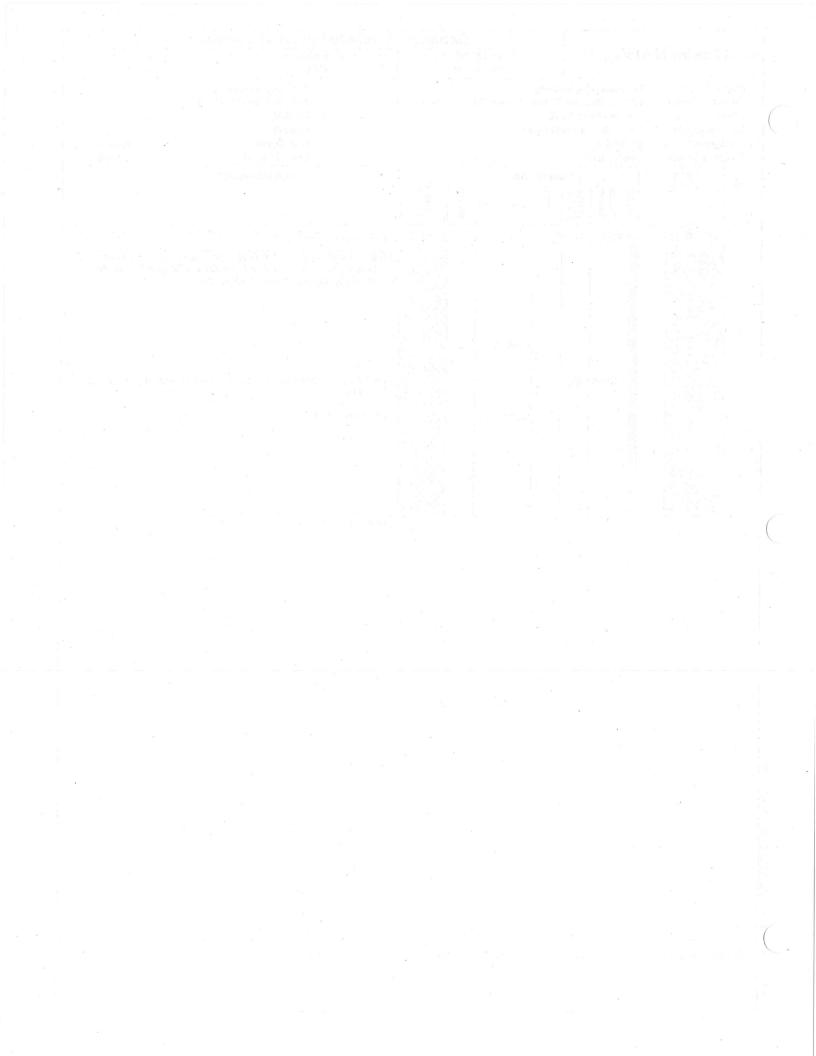


Mau	I Foster &	Alongi, Inc.	Project Number	logic Borehole Log/Well Co Well Number GP-9	Sheet
Proj Star Drill Geo	iect Name iect Location nt/End Date ler/Equipment blogist/Engineer nple Method	6/17/05 to 6/17/0 Boart Longyear	Street, Seattle, WA 98108 5	TOC Elevation (n (feet) 10.0-fe
	Well	-	ample Data	Soil Descript	
Depth (feet, BGS)	Details	Interval Percent Recovery Collection Method <u>c</u>	Name (Type)	Column Column	
E		28% GP		0 to 0.5 feet: CONCRETE.	
1			نم • نم	0.5 to 1.5 feet: Void below concret	e,
1			GP9-S-2.0	1.5 to 10.0 feet: SILTY SAND (SM fines, low plasticity; 55% sand subangular; damp.); dark yellowish brown; 40% fine; 5% gravel, medium,
4 5				@ 4.9 feet: Wet.	
6 6		4% GP		4.9 1861. Wel.	
- 7 					
9 10					
			<u> </u>	Total Depth : 10.0 feet bgs	
		н 1			
GPJ 8/25/07					
P1-GP11.					
10053.01/G			ť	• •	
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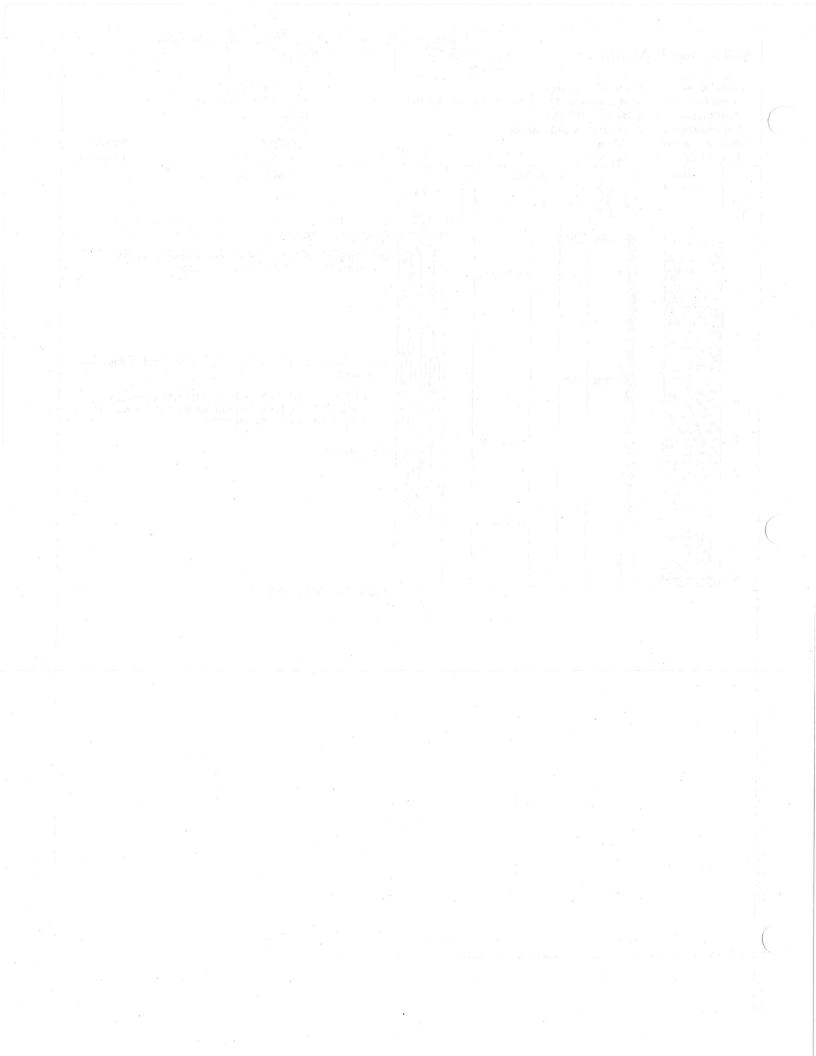


laul Foster &	Alongi Inc	Project Numbe	r logic Dore	ehole Log/Well Co Well Number	Sheet
idul ruster a	Alongi, mc.	8006.08.04	1	GP12	1 of 1
Project Name Project Location Start/End Date Driller/Equipment Geologist/Engineer Sample Method	12/13/05 to 12/1 Cascade Drillin	neering r Street, Seattle, Washing 3/05	nton 98108	TOC Elevation Surface Elevati Northing Easting Hole Depth Outer Hole Dia	ion (feet) 8.0-feet
i Well	5 65	ample Data	U	Soil Descrip	otion
(S) Details	Interval Percent Recovery Collection Method cr	Name (Type) Name (Type)	Lithologic Column		
	50% GP	GP12-S-3.0	0.5 to nc m 0.5 to nc m to nc to to to to to to to to to to to to to	onplastic; 60% sand, fine to edium, angular to subround	D with SILT (SW); 15% fines, medium; 25% gravels, fine to led; dry.
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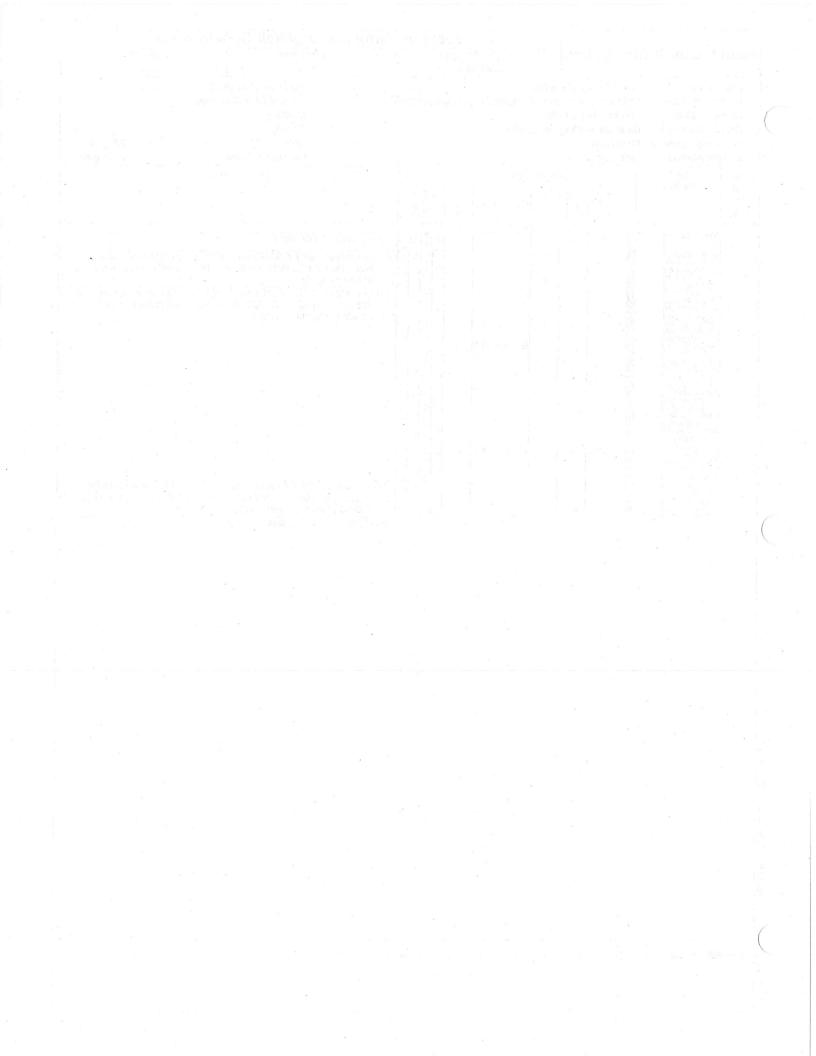
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Mai	ul Foster &	Alongi, Inc.	Project Number 8006.08.04	Borehole Log/Well Co Well Number GP13	Sheet 1 of 1
Pr St Dr Ge	oject Name oject Location art/End Date iller/Equipment sologist/Engineer imple Method	12/14/05 to 12/14 Cascade Drilling	eering Street, Seattle, Washington 9810 4/05	Northing Easting Hole Depth Outer Hole Dia	non (feet) 10.0-fe m 3 1/4-ir
Depth (feet, BGS)	Well Details	Interval Percent Recovery Collection Method go	ample Data Parta Sample Data Name (Type) Blows/g Column	Soil Descrip	otion
2	212,122,212 212,122	75% GP	GP13-S-1.0	0 to 0.5 feet: CONCRETE. 0.5 to 3.5 feet: SILTY SAND (SI nonplastic; 70% sand, fine, d	1); dark brown; 30% fines, ense; damp.
3 4	100000000 00000000 00000000 00000000 000000	- 75% GP		3.5 to 4.5 feet: SILT with SAND plasticity; 15% sand, fine; mo	vist. with SAND (MI): dark gravisl
6 1	50505000 105050500 105050000 105050000 105050000 105050000 105050000 105050000 105050000 105050000 105050000 1050500000 1050500000 105050000000000	GW	GP13-S-6.0	brown; 70% fines, low to med 20% gravels, fine to medium,	lium plasticity; 10% sand, fine moist.
8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	100000000 5000000 50000000 50000000 50000000 50000000 50000000 50000000 50000000 50000000 500000000	GW	GP13-W-8.0		
10	0000000000 000000000000000000000000000			Total Depth: 10.0 feet bgs	
	• •	с., с.,			
	- -				
B/25/07					•
JECTS\8006.08\G					
GBLWC WAGINTYOM TROJECTS18006.08/GP12-GP32.GPJ	TES: 1) Abandon	borehole with 3/8-inc	h bentonite chips hydrated with potable	e water. 2) GP = geoprobe.	
BLWC W:\G					

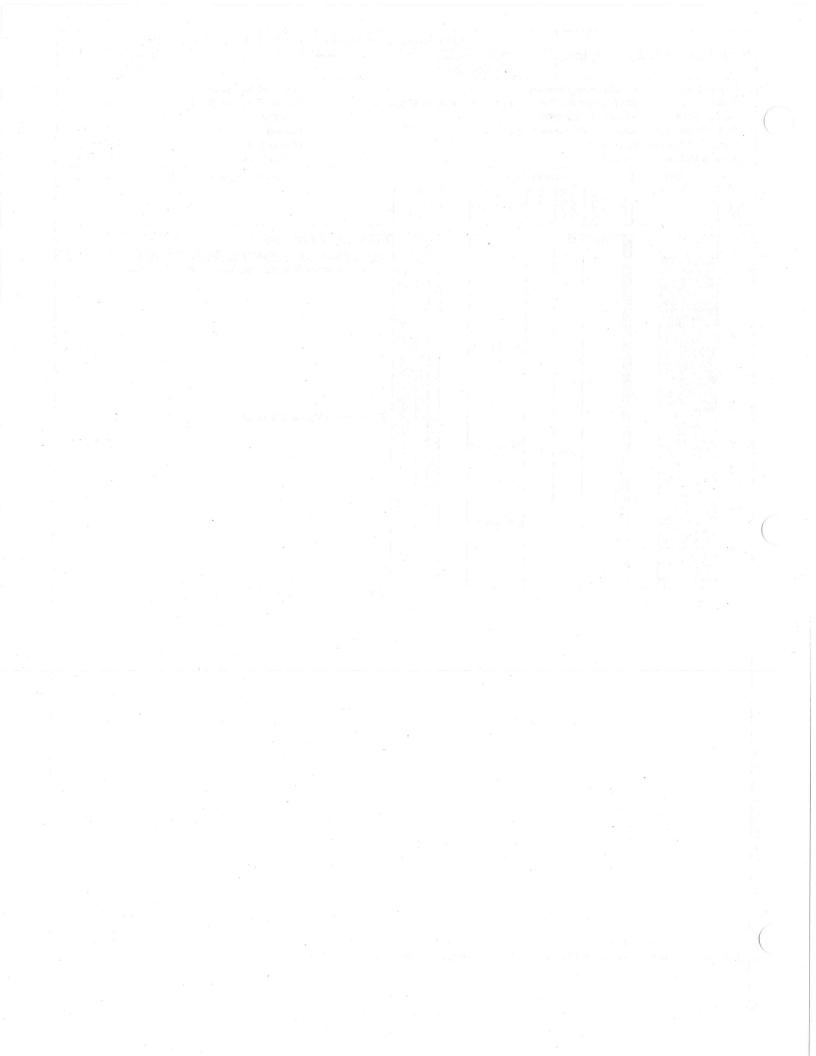


_	1			c Borehole Log/Well Const	ruction
Maul F	oster &	Alongi, Inc.	Project Number 8006.08.04	Well Number GP14	Sheet 1 of 1
Start/Er Driller/E Geolog	Location	Precision Engine 1231 S. Director S 12/13/05 to 12/13/ Cascade Drilling/ M. Gibson Direct Push	ering treet, Seattle, Washington 981 95	TOC Elevation (feet)	0
(SE	Well Details	Sar	nple Data	Soil Description	
Depth (feet, BGS)	Details	Interval Percent Recovery Collection Method	Number Data Number (Lithologic Column		
4		100% GP			
1 000	0000000 0000000 0000000 0000000 0000000			0.5 to 1.0 feet: SILTY SAND with GRA fines, nonplastic; 60% sand, fine; 1 subangular; dry.	0% gravels, fine to mediur
2 000	0000000 000000 000000 000000 000000			1.0 to 7.0 feet: SANDY SILT with GRA 70% fines, nonplastic; 20% sand, f medium, subangular; dry.	VEL (ML); yellowish brow ine; 10% gravels, fine to
3 000	0000000 0000000 0000000 00000000 000000		GP14-S-3.0		a
4 000		- 100% GP			
5 000					
6 000		- 100% GP	GP14-S-6.0		
7 00				7.0 to 8.0 feet: SILTY SAND with GRA	MIEL (SM) Rabt vallowish
8				brown; 30% fines, nonplastic; 60% gravels, fine to medium; wet.	sand, fine to course; 10%
•				Total Depth: 8.0 feet bgs.	
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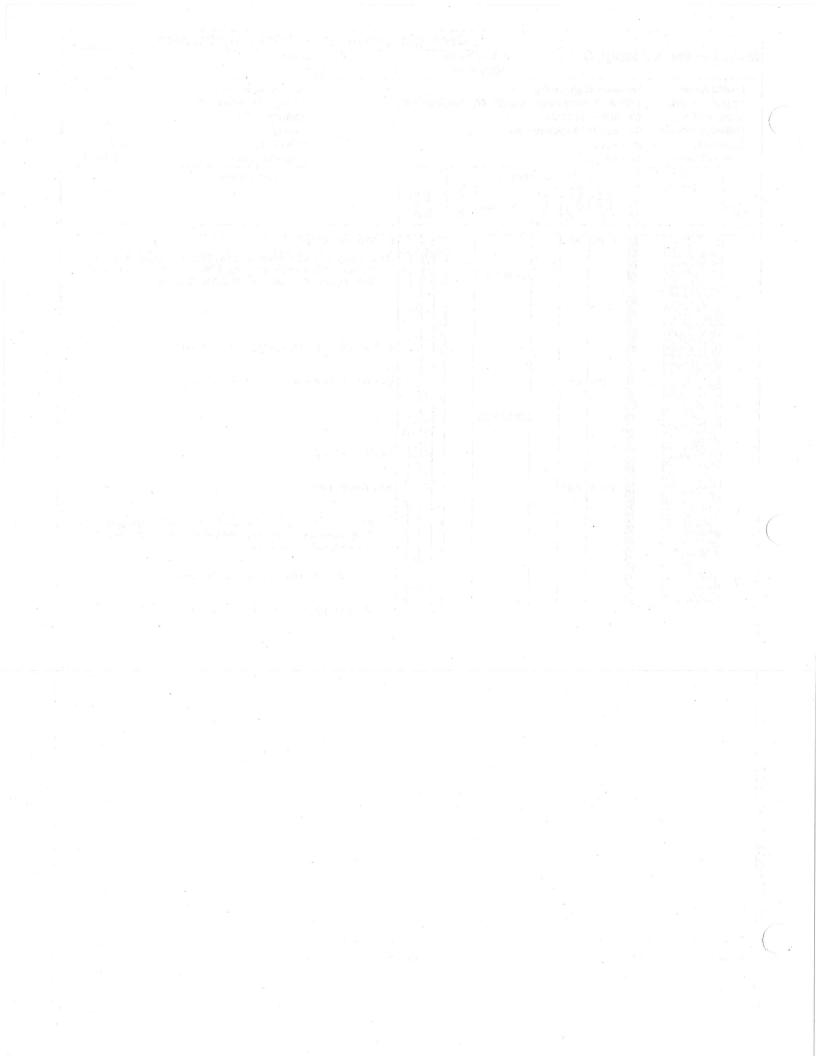


Maul	Foster &	Alonai.	Inc.		Project N			Borehole Log/Well		Sheet	
	. outors with				8006.0			GP15		1 of :	
Proje Start Drille Geol	act Name act Location /End Date n/Equipment ogist/Engineer ole Method	12/13/05 Cascade)irector to 12/13 Drilling n	Stree 3/05	t, Seattle, W	ashin	gton 98101	TOC Eleva Surface El Northing Easting Hole Depti Outer Hole	evation (feet)		10.0-fee 3 1/4-inc
	Well	Direct Pu		ample	Data				scription		
Depth (feet, BGS)	Details	Interval Percent Recovery	Collection Method C	ber	Name (Type)	Blows/6"	Lithologic Column			¥ - *	1
		100%	6 GP	[-		0 to 0.5 feet: CONCRETE.			
1		- 1009	% GP GW		GP15-S-3.0 GP15-S-6.0 GP15-W-8.0			0.5 to 8.0 feet: SILTY SAND nonplastic; 80% sand, fir @ 5.0 feet: Organic debris;	ne; trace grave	ay; 20% fine is, fine; dam	s, p.
	5161616160	<u>_</u>		1			2	Total Depth: 10.0 feet bgs.			
÷								· ·	н ¹ х		
×		4 1 2	đ		2				•	a t	
		•			а. Г					• 83	
NOTE	S: 1) Abandon l	borehole with	h 3/8-inci	h bento	onite chips hyd	rated v	vith potable	waler. 2) GP = geoprobe.		•	

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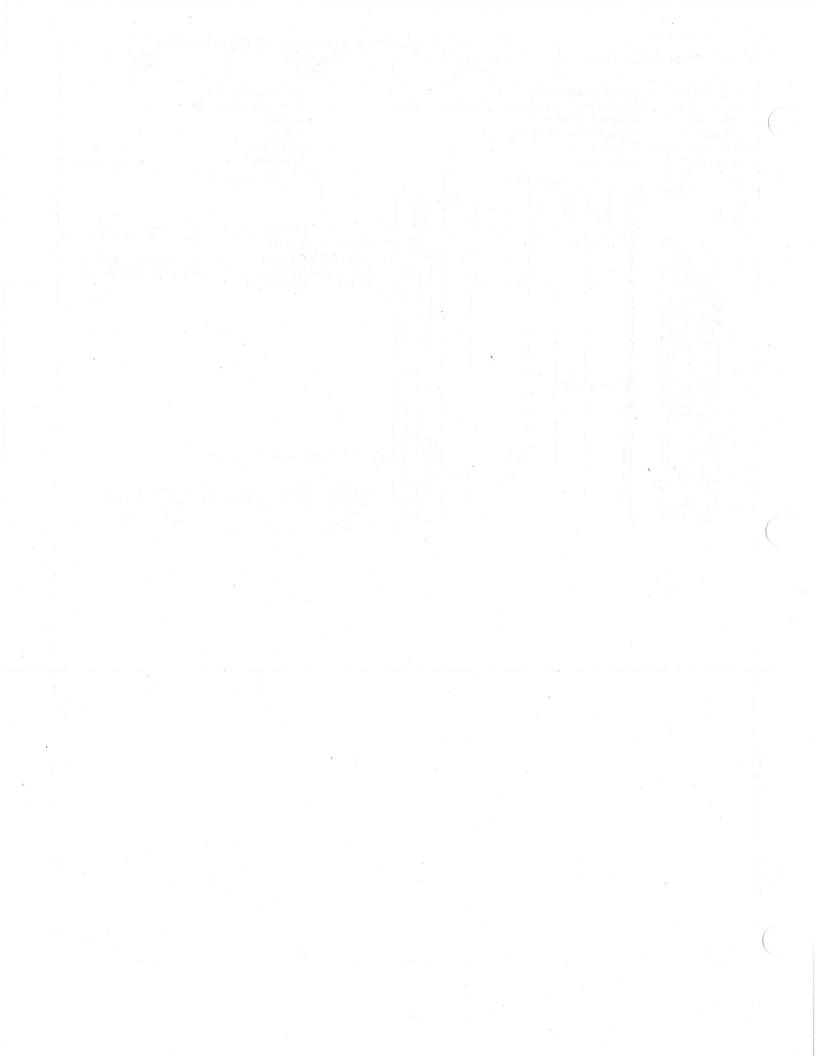
Maul	Foster &	Alongi, Inc.	Project	Number	Borehole Log/Well Co	Sheet
Proje Start/ Drille Geolo	ct Name ct Location End Date /Equipment ogist/Engineer de Method	12/13/05 to 12/1 Cascade Drillin	eering Street, Seattle, 1 3/05	0.08.04 Washington 9810	GP16 TOC Elevation 8 Surface Elevati Northing Easting Hole Depth Outer Hole Dia	on (feet) 10.5-
	Well		ample Data		Soil Descrip	
Depth (feet, BGS)	Details	Interval Percent Recovery Collection Method C	Name (Type	Blows/6" Lithologic Column		
		100% GP			0 to 0.5 feet: CONCRETE.	
1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0		⁻ 100% GP ⁻ 100% GP	GP16-S-1.		 0.5 to 8.0 feet: SILTY SAND with staining; 20% fines, nonplast fine to medium, angular to su (a) 3.0 feet: Color change to yello (a) 4.0 feet: Water in the top of to	ic; 65% sand, fine; 15% gra brounded; damp. owish brown; dry. ne sample. th GRAVEL (ML); light gray and, fine; 10% gravels, fine owish brown.
1111					Total Depth: 10.5 feet bgs. Hit re	fucal
	а. М. ж.				Tolai Deplit, 10.5 feet bys. There	
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5				929 2 •		
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						<u> </u>
NOTES	S: 1) Abandon	borehole with 3/8-ind	ch bentonite chips h	ydrated with potable	water. 2) GP = geoprobe.	



				Borehole Log/Well Const	truction
Maul Foster &	Alongi, Inc.	Project Number 8006.08.04		Well Number GP17	Sheet 1 of 1
Project Name Project Location Start/End Date Driller/Equipment Geologist/Engineer Sample Method	12/13/05 to 12/13/ Cascade Drilling/	Street, Seattle, Washing 05	ton 98108	TOC Elevation (feet) Surface Elevation (fe Northing Easting Hole Depth Outer Hole Diam	
Depth Details Details	Interval Percent Recovery Collection Method PS	nple Data Legunny Name (Type)	Lithologic Column	Soil Description	2 5
 A) A A A A) A A A) A A B) B) A B) B) A B) B) A B) A 	100% GP	GP17-S-1.0 GP17-S-6.0		 20 to 0.5 feet: CONCRETE. 20 to 7.0 feet: SANDY SILT with GRA fines, nonplastic; 20% sand, fine; angular to subrounded; damp. 20 6.0 feet: Color change to gray; wet 7.0 to 8.0 feet: SANDY SILT (ML); yea staining; 70% fines, nonplastic; 30 damp. 	10% gravels, fine to medium
			· · ·	Total Depth: 8.0 feet bgs.	

GBLWC W:/GINTYGINTWPROJECTS\8006.08\GP12-GP32.GPJ 8/25/07

NOTES: 1) Abandon borehole with 3/8-inch bentonite chips hydrated with potable water. 2) GP = geoprobe.

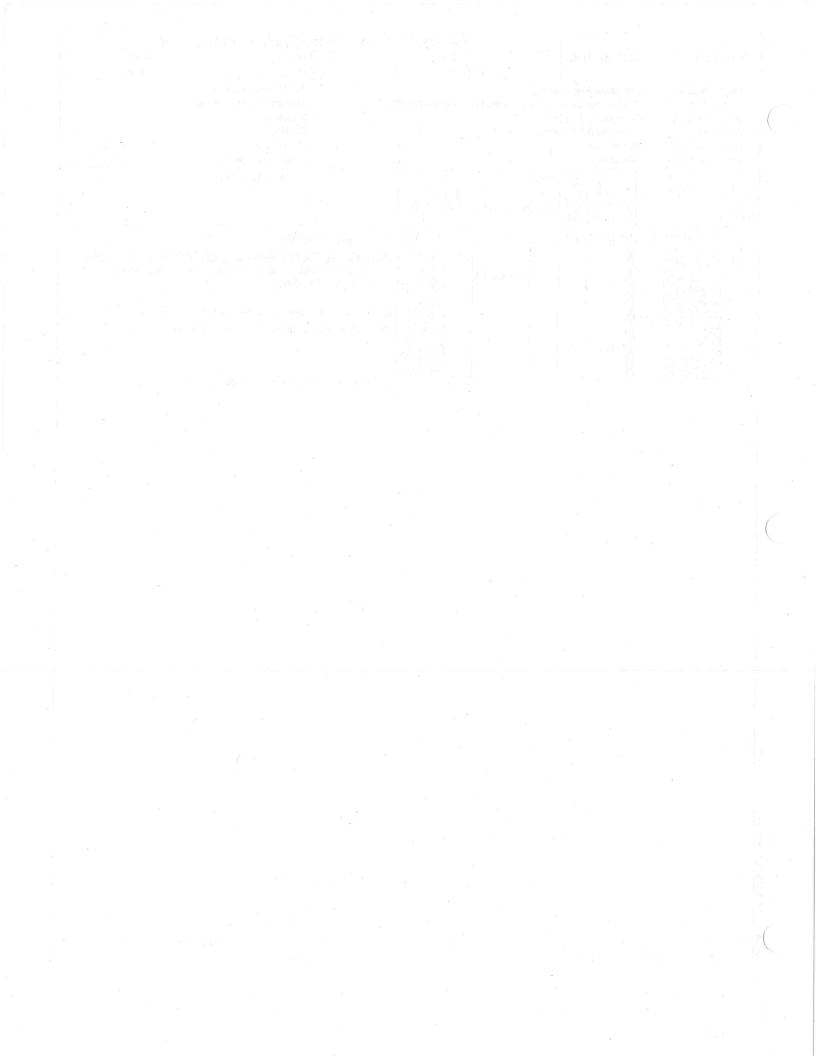


							Ge	ologic	Borehole Log/Well Cor	nstruction		
Mau	Foster &	Alo	nai.	Inc.		Project I	Vumb	er	Well Number	S	heėt	
1			0.7		8006.08.04				GP18	GP18 1 of 1		
Proi	ect Name	Pred	cision	Engine	erino	7			TOC Elevation (f	eet)		
	ect Location					, t, Seattle, W	ashin	gton 98108	Surface Elevation	n (feet)		
-	t/End Date		3/05 to					1	Northing			
	er/Equipment		cade D			orobe			Easting			
	logist/Engineer		Sibson						Hole Depth		4.0-feet	
1	ple Method		ct Pus	h					Outer Hole Diam		3 1/4-inch	
	Well	T		Se	mple	Data			Soil Descripti	on		
BGS)	Details	-	it eny	d tion	. <u>`</u> .	1	12	Lithologic Column				
oth et, E		Interval	Percent Recovery	Collection	Number	Name (Type)	Blows/6"	lor				
Depth (feet, E		Inte	Rei	Ne	Nu	(1)00	Blo	SE				
					_	1		101.201.201			•	
E	A A A A		100%	GP					0 to 0.5 feet: CONCRETE.	·	3	
E a	000000000								0.5 to 4.0 feet: SILTY SAND with 0	GRAVEL (SM); II	ght gray; 20%	
	000000000					GP18-S-1.0			fines, nonplastic; 70% sand, fin	e, dense; 10% g	raveis, tine to -	
E.	000000000								medium; odor; damp.	90 - C		
2	000000000				1							
Ę	0000000000			x ¹⁴	~		1		@ 2.0 feet: Color change to dark b		_	
1 3	000000000								@ 2.5 feet: Color change to yellow	vish brown.		
- 3			100%	GP							-	
E	000000000			-	ų.							
E 4	000000000											
1									Total Depth: 4.0 feet bgs. Hit refu	Sal.		

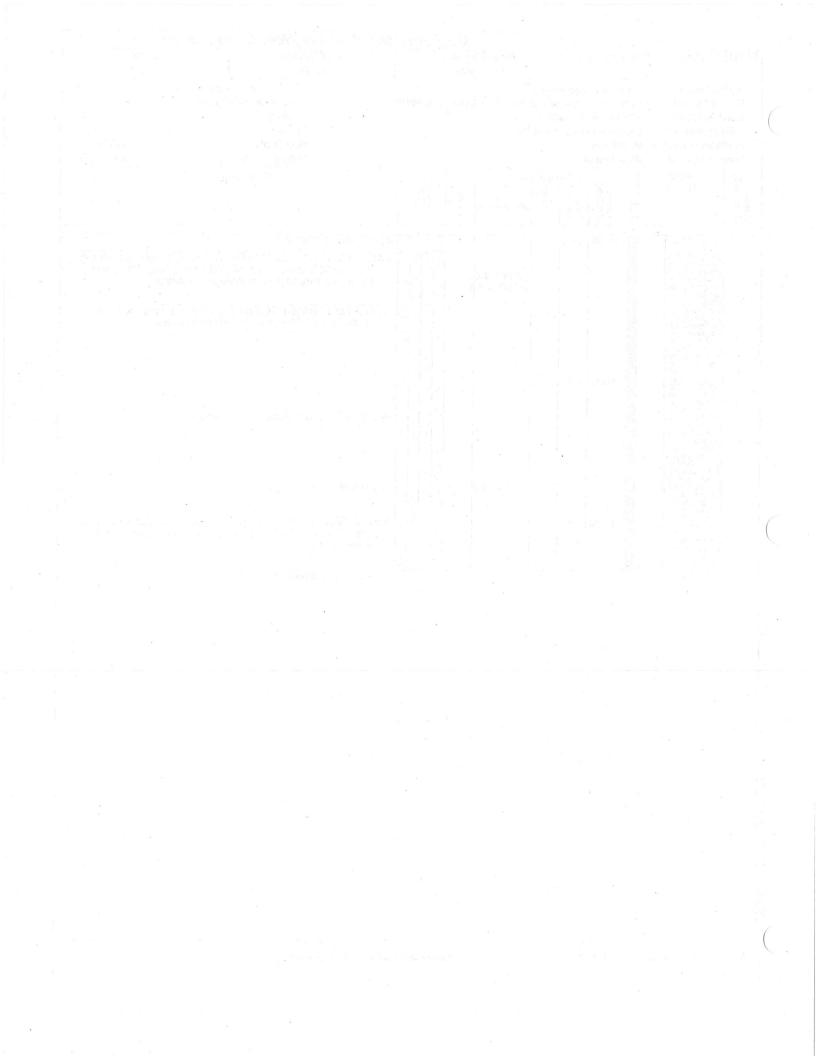
NOTES: 1) Abandon borehole with 3/8-inch bentonite chips hydrated with potable water. 2) GP = geoprobe.

GBLWC WAGINTIGINTWIPROJECTS\8006.08\GP12-GP32.GPJ 8/25/07

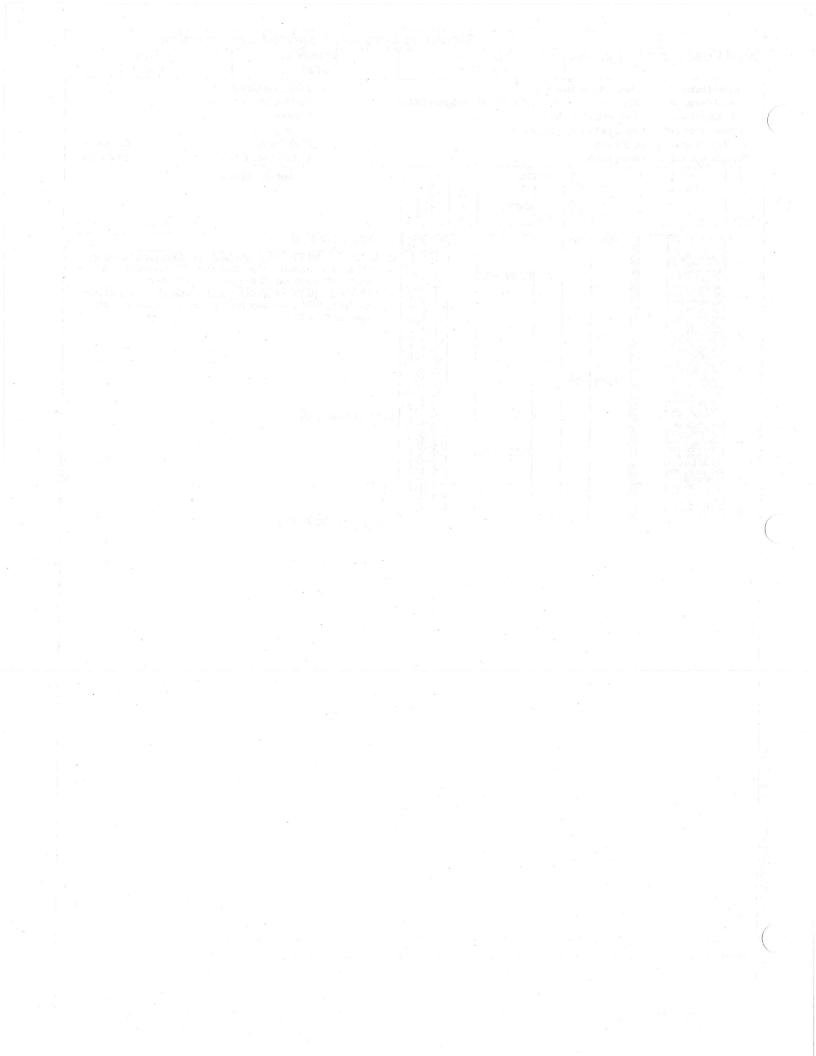
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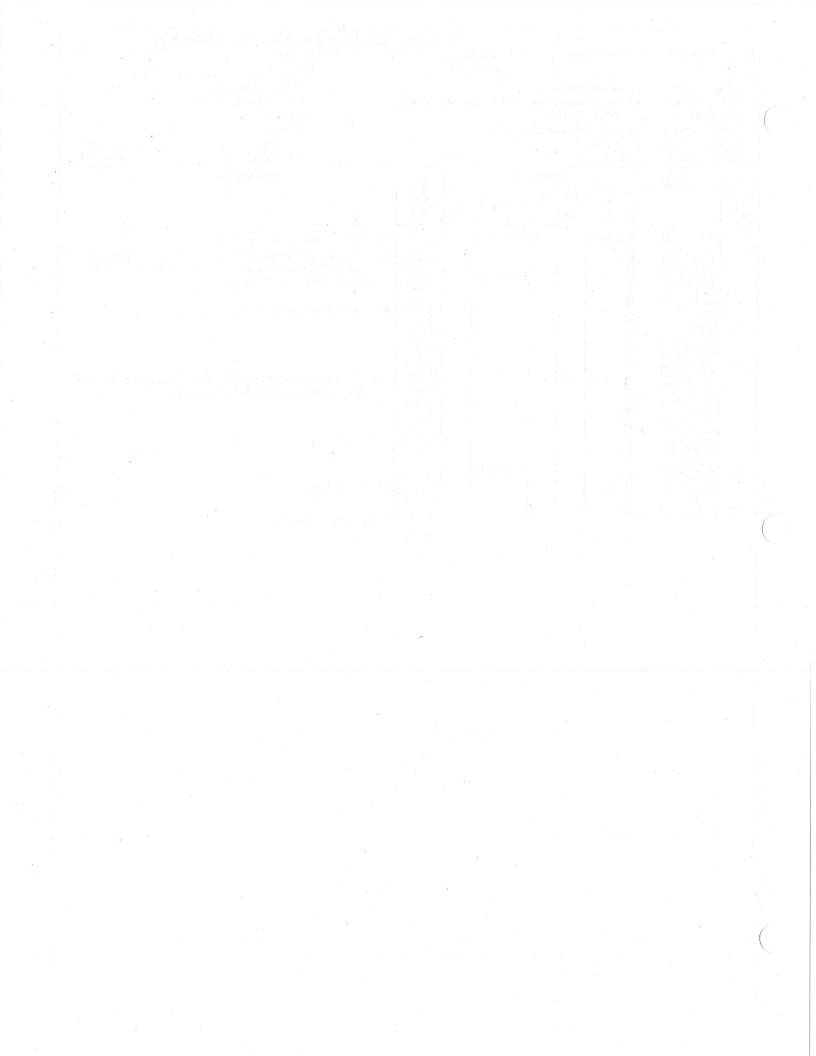
laul Foster & Alongi, Inc.					5			Borehole Log/	Borehole Log/Well Construction		
Maul Fo	ster & A	longi,	Inc.		Project I 8006 .0			Well Numb GP19	ər		Sheet 1 of 1
Sample N	ocation Date uipment VEngineer	12/13/05 Cascade M. Gibso Direct Pu	irector to 12/1: Drilling n sh	Stree 3/05 g/Geop	t, Seattle, W probe	ashir		Sun Non Eas Hole Out	Elevation (fe ace Elevation hing Depth Depth er Hole Diam Soil Descriptio	(feet)	9.5-feet 3 1/4-inch
Depth (feet, BGS)	Details	Interval Percent Recovery	Collection Method 0	Number d	Name (Type)	Blows/6"	Lithologic Column				•
1 1 1 1 1 0 1 0 1 0 1 0 1 0 1 0 0 0 1 0		- 1009 - 1009 - 1009	6 GP		GP19-S-1.0 SPDUP-S-1. GP19-S-7.0	0	1.1. 1.1. 1.1	 0 to 0.5 feet: CONCR 0.5 to 2.0 feet: SILTY mottling; 30% fine fine to medium, ar 2.0 to 8.0 feet: SAND plasticity, stiff; 40% @ 5.0 feet: Trace gra @ 7.0 feet: Wet. 8.0 to 9.5 feet: SILTY 30% fines, nonpla medium; dry. 	SAND with G s, nonplastic; gular to subro Y SILT (ML); G & sand, fine; c vels, fine to m vels, fine to m SAND with G stic; 60% sand	60% sand, fi bunded; dam dark brown; d lamp to mois nedium. RAVEL (SM	ne; 10% gravels, 5. 50% fines, low t.
			1				-	Total Depth: 9.5 feet	bgs.		
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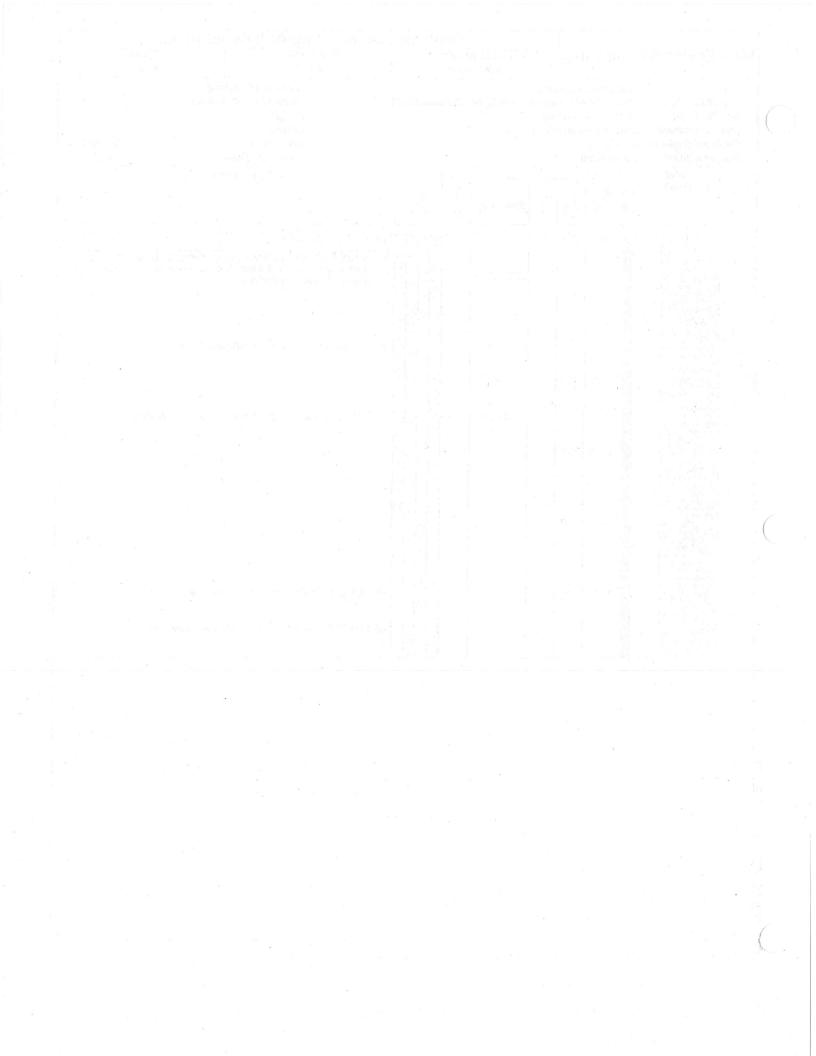
	4.						Ge	ologic	Borehole Log/Wel	I Constru	uction	
Maul	Foster &	Alo	ngi, l	Inc.		Project 1 8006.0	lumb	er .	Well Number GP20		She 1 of	
Proj Star Drille Geo Sar	ect Name ect Location t/End Date er/Equipment logist/Engineer ple Method	1231 12/1 Case M. C	4/05 to cade D	rector 12/14)rilling h	Stree /05 /Geop	t, Seattle, W probe	ashir	ngton 98108	Surface E Northing Easting Hole Dep Outer Ho	le Diam)	8.0-feet 3 1/4-inch
Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method Co	Number du	Dafa Name (Type)	Blows/6"	Lithologic Column	Soil E	escription		
1 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8			а 80% 100%	GP	N	GP20-S-1.0 GP20-S-6.0			0 to 0.5 feet: CONCRETE. 0.5 to 1.5 feet: SILTY SAN 20% fines, nonplastic; medium, subrounded; s 1.5 to 8.0 feet: SILTY SAN nonplastic; 65% sand, n slight odor; moist Grades to sandy silt. @ 7.0 feet: Wet. Total Depth: 8.0 feet bgs.	70% sand, fine slight odor: da	e; 10% grave mp to moist.	els, fine to
		, ••• •,	×	,		· · · ·				ی مراجع مراجع		
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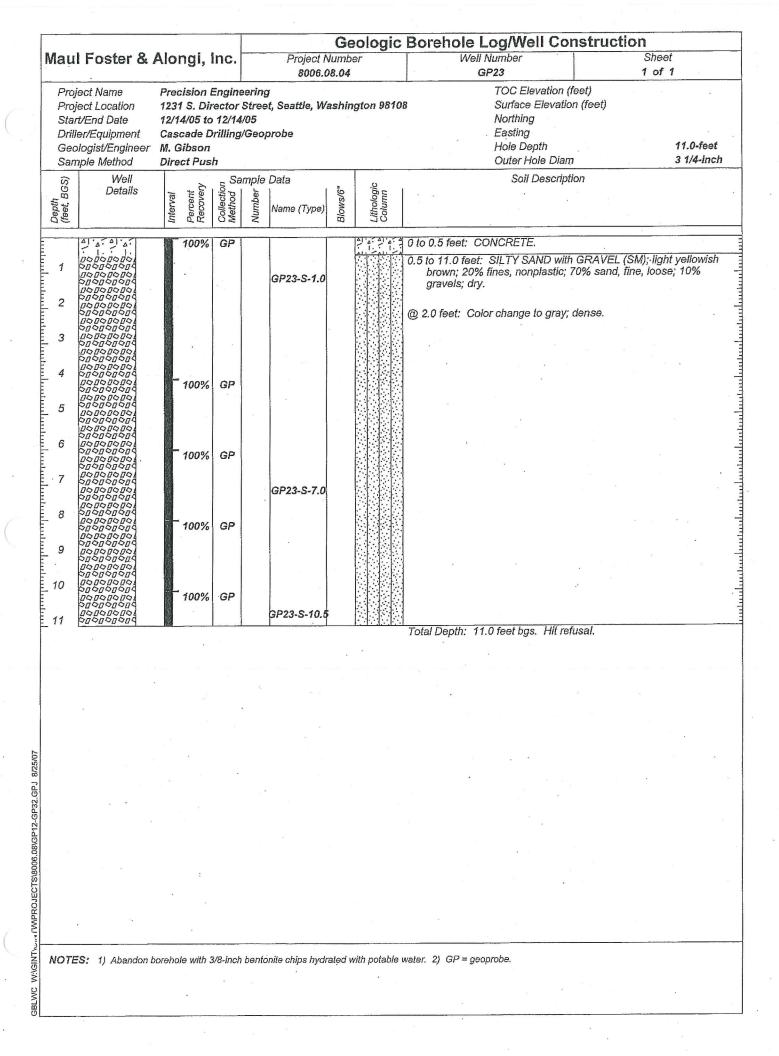


Project Name Precision Engineering TOC Elevation (feet) Project Location 1231 S. Director Street, Seattle, Washington 98108 Surface Elevation (feet) Start/End Date 12/14/05 to 12/14/05 Northing Driller/Equipment Cascade Drilling/Geoprobe Easting Geologist/Engineer M. Gibson Hole Depth 8.0-feet	aul Foster &	Alongi Inc	Project Numbe		Borehole Log/Well C Well Number		Sheet
Project Location 1231 S. Director Street, Seattle, Washington 98108 Surface Elevation (feet) StartEnd Date 12/14/05 to 12/14/05 Nonthing Driller/Equipment Cascade Drilling/Geoprobe Easting Geologist/Engineer M. Gibson Outer Hole Depth 8.0-feet Sample Method Direct Push Sample Data 0 Soil Description Image: Sample Data Sample Data Soil Description Soil Description Image: Sample Data Sample Data Soil Description Soil Description Image: Sample Data Sample Data Soil Description Soil Description Image: Sample Data Sample Data Soil Description Soil Description Image: Sample Data Sample Data Soil Description Soil Description Image: Sample Data Sample Data Soil Description Soil Description Image: Sample Data Sample Data Soil Description Soil Description Image: Sample Data Sample Data Soil Description Soil Description Image: Sample Data Sample Data Soil Description Soil Description Image: Sample Data Sample Data Soil Description Soil Description Image: Sample Data Sample Data Soil Descriptin Soil Descript	aur roster or	nongi, mo.					
1 1 50% GP 1 1 1 50% GP 1 5000000000000000000000000000000000000	Project Location Start/End Date Driller/Equipment Geologist/Engineer	1231 S. Director 12/14/05 to 12/14 Cascade Drilling M. Gibson	Street, Seattle, Washing ⁄05	aton 98108	Surface Eleva Northing Easting Hole Depth	ition (feet)	8.0-feet 3 1/4-ind
A1 A A A A A A A A A A A A A A A A A A	S Well	S Sa	mple Data	ji -	Soil Descr	iption	
 a b b b b c b c b c b c b c b c b c b c	Teeth BC	Interval Percent Recovei Collectio Method	Name (Type) Name (Type)	Litholog Column	· · · ·		•
1 Strand GP00 0 Strand GP00 1 Strand GP00 1 Strand GP00 1 Strand GP00 2 Strand GP00 1 Strand GP00 2 Strand GP00 1 Strand GP00 <td< td=""><td></td><td>50% GP</td><td></td><td></td><td></td><td></td><td></td></td<>		50% GP					
5 ⁰	5050000 50500000 505050500 30505050 30505050 1050505050 1050505050 1050505050 1050505050	- 100% GP	GP21-S-1.0		brown; 20% fines, nonplasti fine, subangular; dry to dam @ 2.0 feet: Color change to gra 4.0 fo 8.0 feet: SILTY SAND (S	c; 70% sand, fine; p. ay; damp. M); dark blackish	10% gravels, brown; 35% fir
	раноророно распоророн пороророн ороророн ороророн порон поророн поророн поророн поророн поророн поро		GP21-S-6.5		@ 7.0 feet: Wet.	% sand, 11ne; mol	56.
					Total Depth. 0.0 reet bys.		
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	ADADAON	ມບາຍາາບາຍ พານາ 3/0-INCI	вопоние опре пуснаец и	שמטוס ש	and by Ci - gooploso.		
NOTES: 1) Abandon borehole with 3/8-inch bentonile chips hydrated with potable water. 2) GP ≈ geoprobe.							

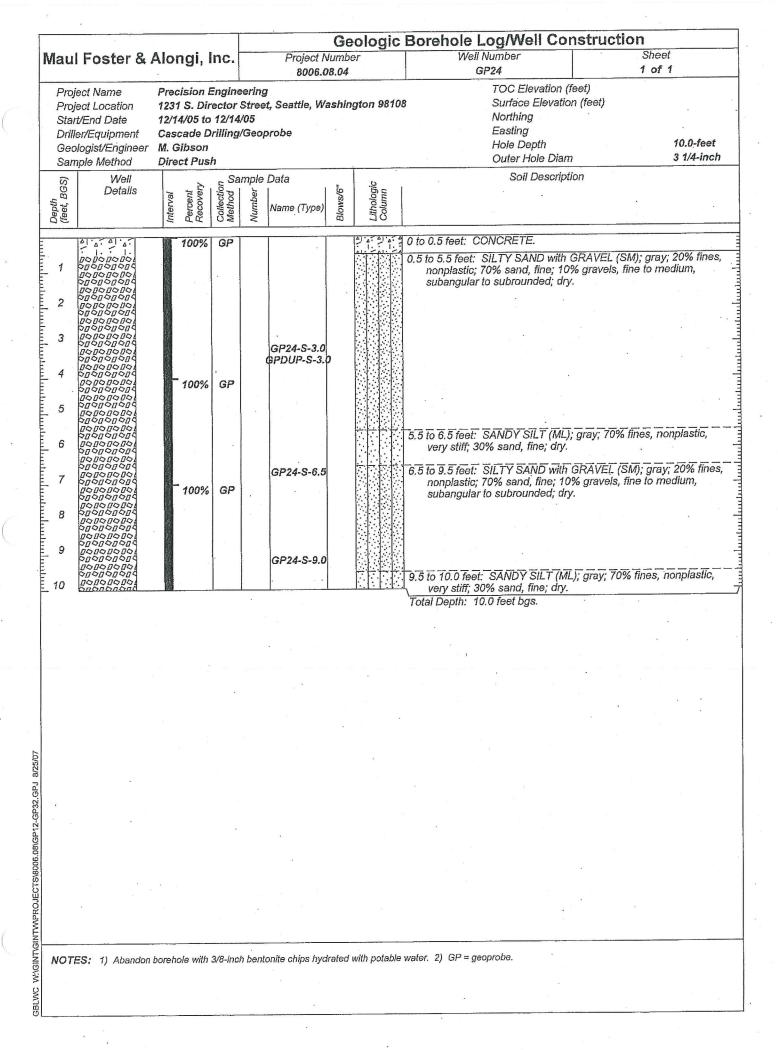


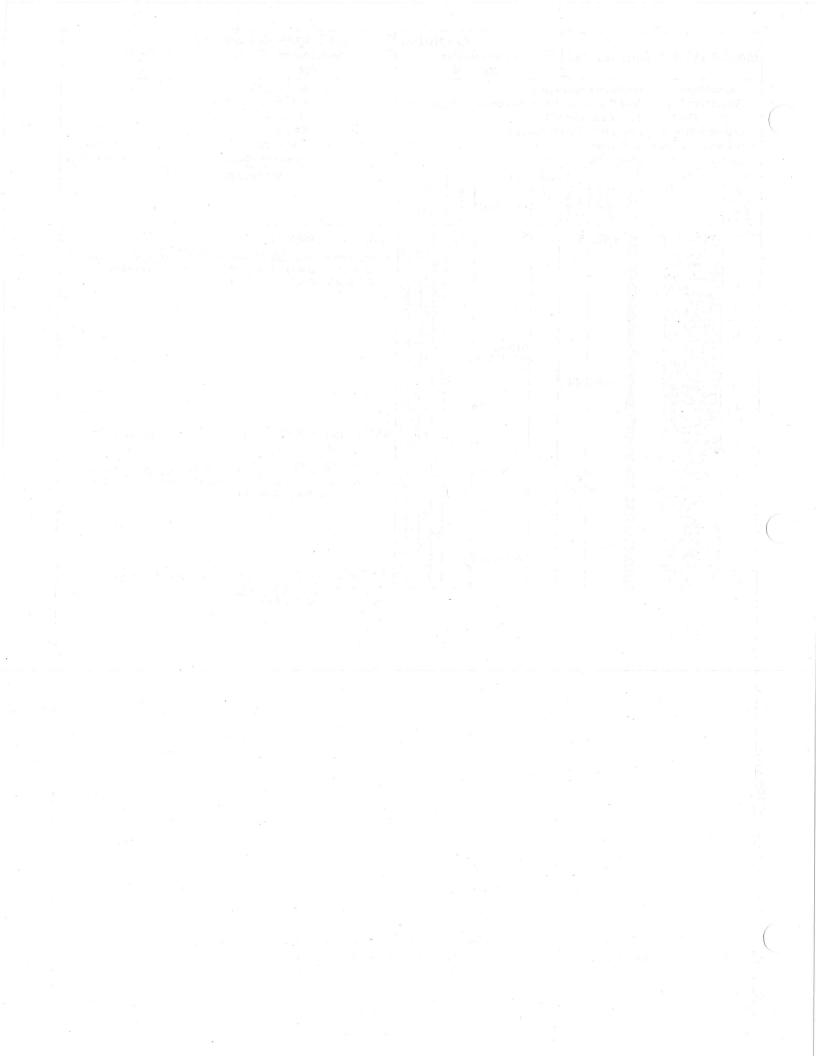
Maul F	oster &	Alongi, l	nc.	Project N	lumber	Borehole Log/Well Con Well Number GP22	Sheet 1 of 1	
Start/Er Driller/E Geologi	Location	12/13/05 to Cascade D	ector S 12/13/ rilling/	Street, Seattle, Wa 05		TOC Elevation (feet)		
Depth (feet, BGS)	Well Details	Interval Percent. Recovery	Collection Method S	nple Data lag mn Name (Type)	Blows/6" Lithologic Column	Soil Descript	ion	
1.00		100% - 100% - 100% - 100%	GP GP GP GP GP	GP22-S-1.0 GP22-S-5.0 GP22-S-10.0		 0 to 0.5 feet: CONCRETE. 0.5 to 12.0 feet: SILTY SAND with fines, nonplastic; 70% sand, fir angular to subrounded; dry. @ 3.0 feet: Color change to yellow @ 5.0 feet: Color change to gray; @ 10.0 feet: Color change to brow 	ne; 10% gravels, fine to mediur vish brown. increase in density.	
11 000 000 000 000 000 000 000 000 000 0	50,000,000 50,000,000 50,000,000 50,000,000 50,000,000 50,000,000 50,000,000					@ 11.0 feet: Color change to yello	wish brown; dry.	
into Tato	; ,				· ·			
		,		·				
NOTES:	1) Abandon b	orehole with 3	3/8-inch .	bentonite chips hyd	rated with potable	water. 2) GP = geoprobe.		



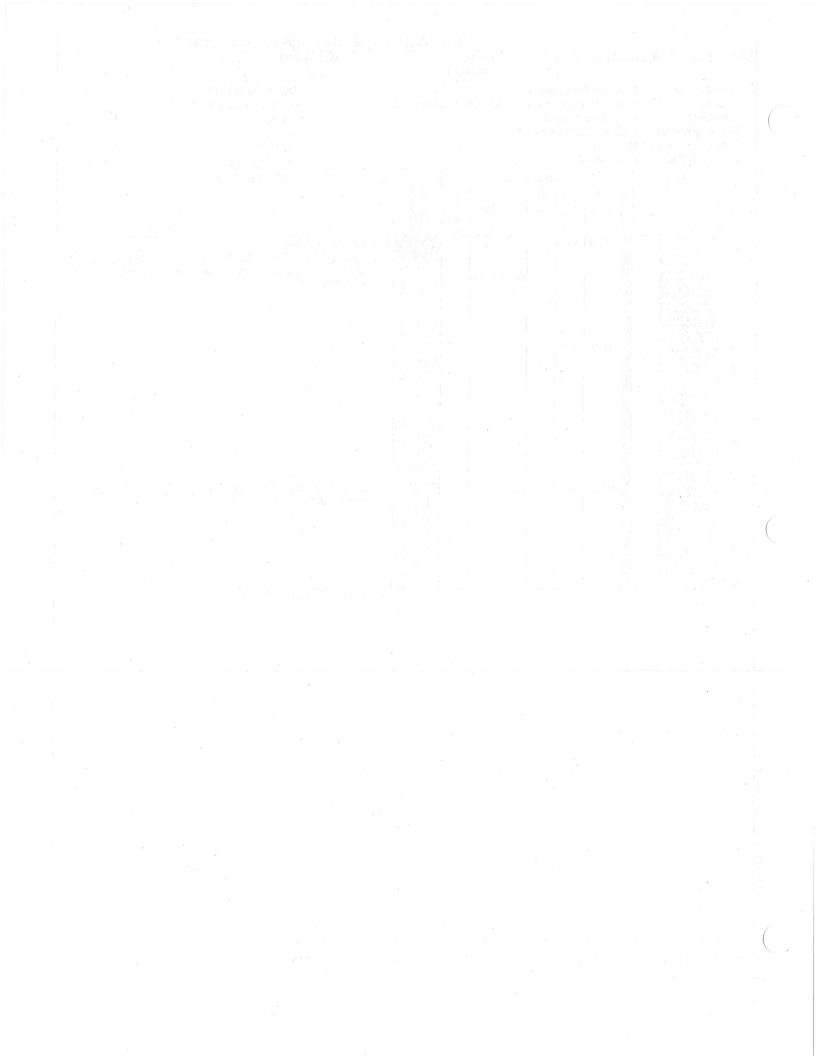




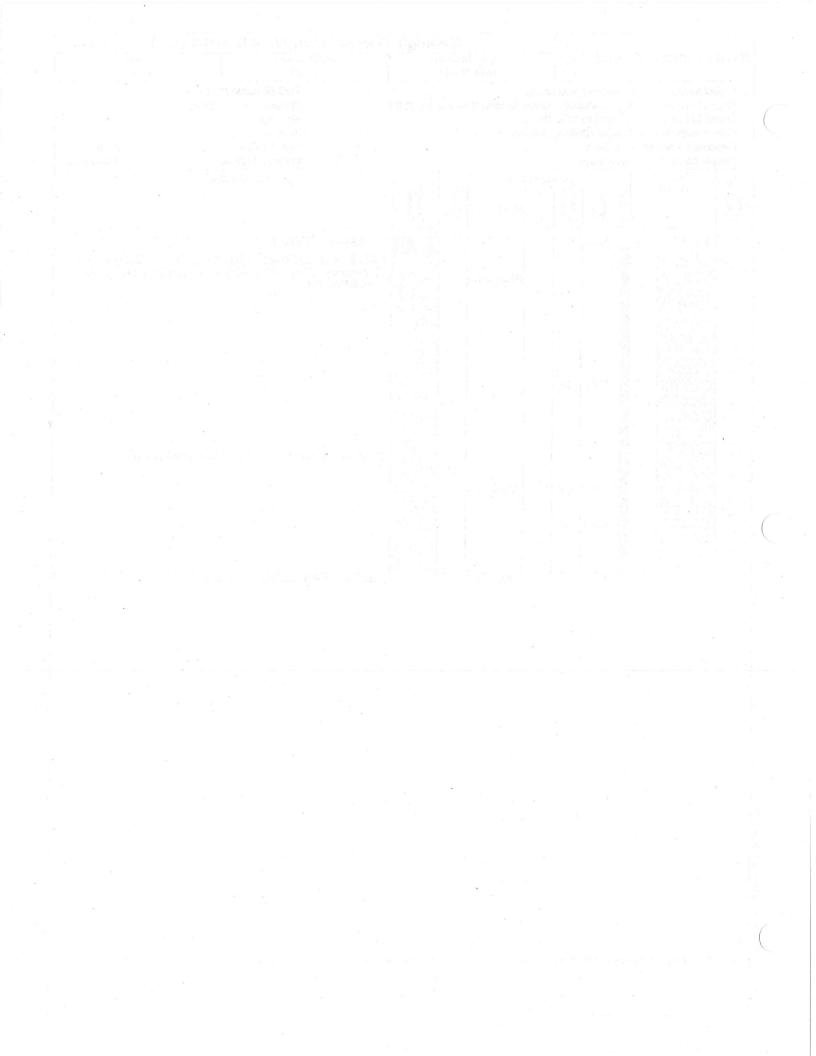




la	Easter 9	A1~	nal	Inc		Deplacet			Borehole Log/Well Construction	
nau	I Foster &	A10	ngi,	m¢.		Project I 8006.0			Well Number Sheet GP25 1 of 1	
Proj Stai Drill Geo	ject Name ject Location rt/End Date ler/Equipment blogist/Engineer nple Method	123 12/1 Cas M. (cision 1 S. Di 2/05 to cade L Gibson ect Pus	rector 5 12/12 Drilling	Stree /05	t, Seattle, W	ashii	ngton 9810	TOC Elevation (feet) 8 Surface Elevation (feet) Northing Easting Hole Depth 10.0-feeton Outer Hole Diam 3.1/4-incon	
	Well	Τ	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	s Sa	mple	Data		U	Soil Description	
Depth (feet, BGS)	Details	Interval	. Percent Recovery	Collection Method C.	Number	Name (Type)	Blows/6"	Lithologic Column		
	A . A . A .		100%	GP	e				0 to 0.5 feet: ASPHALT.	
1 2 3 4 5 6 7 8 9 9			100%	GP GP		GP25-S-1.0 GP25-S-7.0	•		 0.5 to 7.0 feet: SAND with GRAVEL (SW); light gray; trace fines 85% sand, fine, dense; 15% gravels, fine to medium, angula subrounded; dry. 7.0 to 70.0 feet: SANDY SILT (ML); brownish gray; 70% fines; 30% sand, fine to medium; wet. 	s; nr
10	Sasasasas]			Total Depth: 10.0 feet bgs.	
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VOTE	S: 1) Abandon b	oreho	le with 3	3/8-inch	bento	nite chips hydr	ated v	with potable v	vater. 2) GP = geoprobe.	
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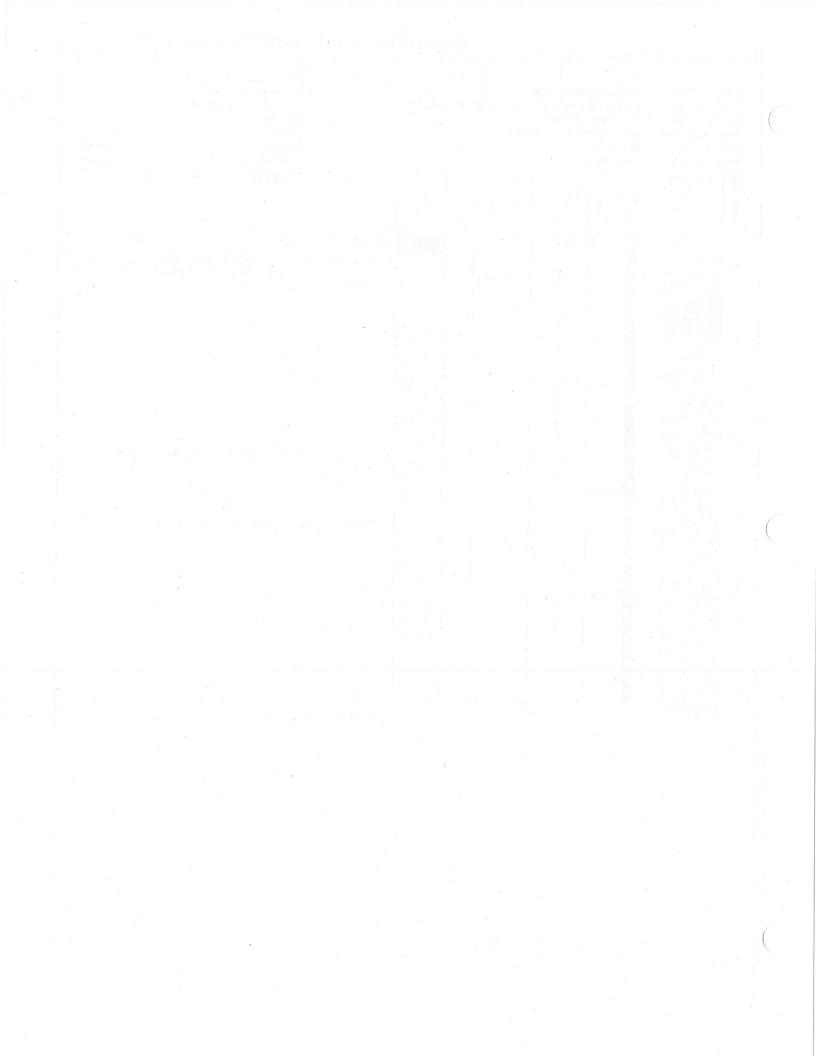


laul Fo	ster &	Aloi	ngi, I	nc.		Project N	lumbe			le Log/M Nell Number		Sh	eet
						8006.0	98.04			GP26		1 0	of 1
	ocation I Date uipment t/Engineer	1231 12/1 Case M. G	ision E 1 S. Dir 2/05 to cade D ibson ct Pusi	ector 12/12 rilling	Stree /05	t, Seattle, W	ashing	gton 9810l	}	Surfac Northi Eastin Hole I	g	t)	9.5-feet 3 1/4-inc
(St	Well	1.80	2	s Sa		Data	F	u.		So	il Description		
(feet, BGS)	Details	Interval	Percent Recovery	Collection Method C	Number	Name (Type)	Blows/6"	Lithologic Column					1 1 1
	· · · · ·		100%	GP						t: ASPHALT		5	
	50501 70000 70000 70000 70000 70000 70000 200000 20000 20000 20000 20000 20000 20000 20000 20000 2					GP26-S-1.0		a	0.5 to 9.5 fe brownis medium	h yellow; 859	ith GRAVEL (SV % sand, fine, de	V); light gray nse; 15% gr	v with spots (avel, fine to
4 000			100%	GP			2	e			н Т В	, ,	
5 000 000 000 000 000 000 000 000 000	000001 000001 00000 00000 00000 00000 000001 00000		-					0 0 0 0 0 0	@ 6.0 feet:	Color chang	ie to spots of gra	enish yellov	ν.
7 202 040 040 040 040 8 200 040 8 200 040 040			100% 100%	GP GP		GP26-S-7.0	- 1)	а, о, о, а, а, а, в, о, о,					
9 000	10000 00000 10000 00000						,	o o o					
200						GP26-S-9.5		<u></u>	Total Depth	: 9.5 feet bg	s. Hit refusal.		4
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INTER) Abandor	horeho	le with S	R/R-inch	bento	onite chips hydr	ated M	ith potable v	vater, 21 GP	= aeonmhe	5 *		
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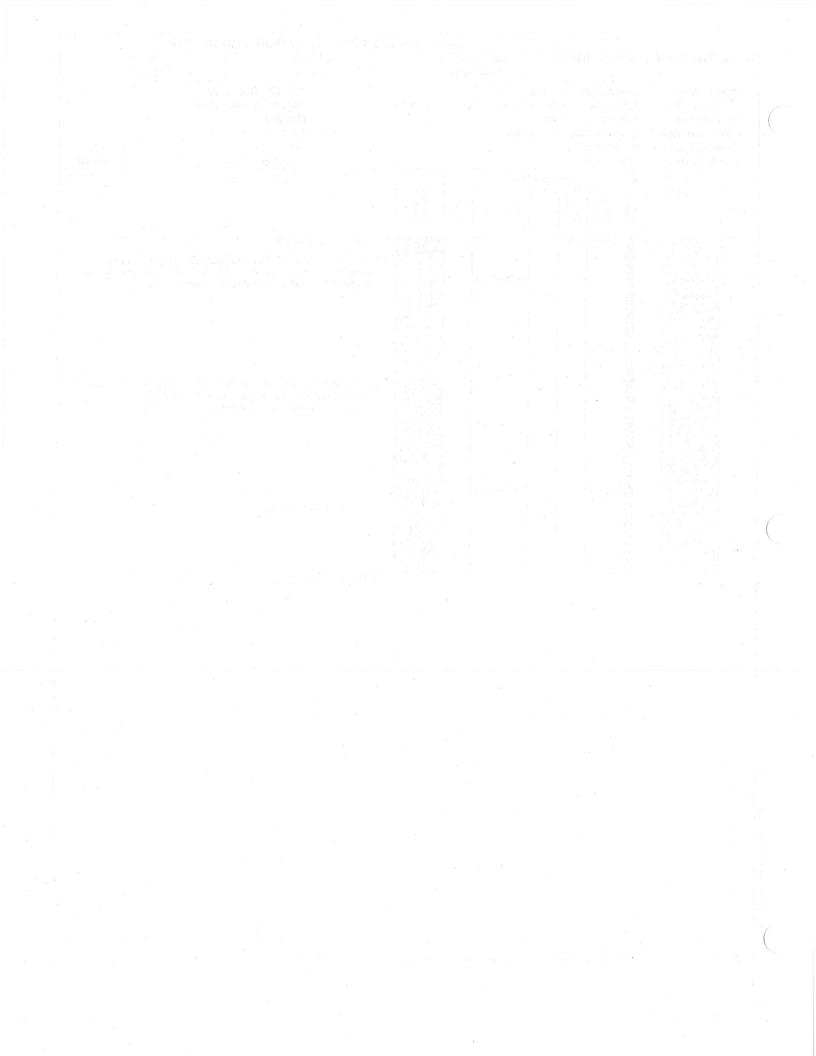


lan	Foster &	Alongi	Inc	Proiect	Number	Borehole Log/Well C	Sheet
au	I USICI U	Jongi,			i,08,04	GP27	1 of 1
Proj Star Drille Geo	ect Name ect Location t/End Date er/Equipment logist/Engineer sple Method	12/12/05 to Cascade D	rector 12/12 Drilling	Street, Seattle, V /05	Vashington 9810	TOC Elevatio 8 Surface Eleva Northing Easting Hole Depth Outer Hole D	ation (feet) 13.5-feet
(SE	Well	4	s Sa	mple Data	i i	Soil Desc.	ription
(feet, BGS)	Details	Interval Percent Recovery	Collection Method C	Name (Type	Blows/6" Lithologic Column		
		100%	GP			0 to 0.5 feet: ASPHALT.	-
1 2	00000000000000000000000000000000000000		2	GP27-S-1.	0	0.5 to 13.5 feet: SAND with GF 85% sand, fine, dense; 15% subrounded; dry.	RAVEL (SW); light gray; trace fines 6 gravels, fine to medium, angular
3					р. р. р. р. г. р.	2 0 4 6 •	
4		- 100%	GP				
5 6	00000000000000000000000000000000000000				o o o		
7				GP27-S-6.	5	@ 6.0 feet: Color change to sli yellow.	ght pinkish color with spots of
8	00000000000000000000000000000000000000	100%	GP		a a a	@ 8.0 feet: Decrease in course	eness; gravels, fine.
9 0	<u>0000000000000000000000000000000000000</u>				р		
1	70777777777777777777777777777777777777	100%	GP		6 . 6 . 4		· · ·
2	0000000000 0000000000 0000000000 000000	- 100%	GP		0 16. "P	······	
3	2000000000 0000000000 0000000000000000			GP27-S-13	8.0		
	515151513	δ'b.	I		p, b, ib,	Total Depth: 13.5 feet bgs.	
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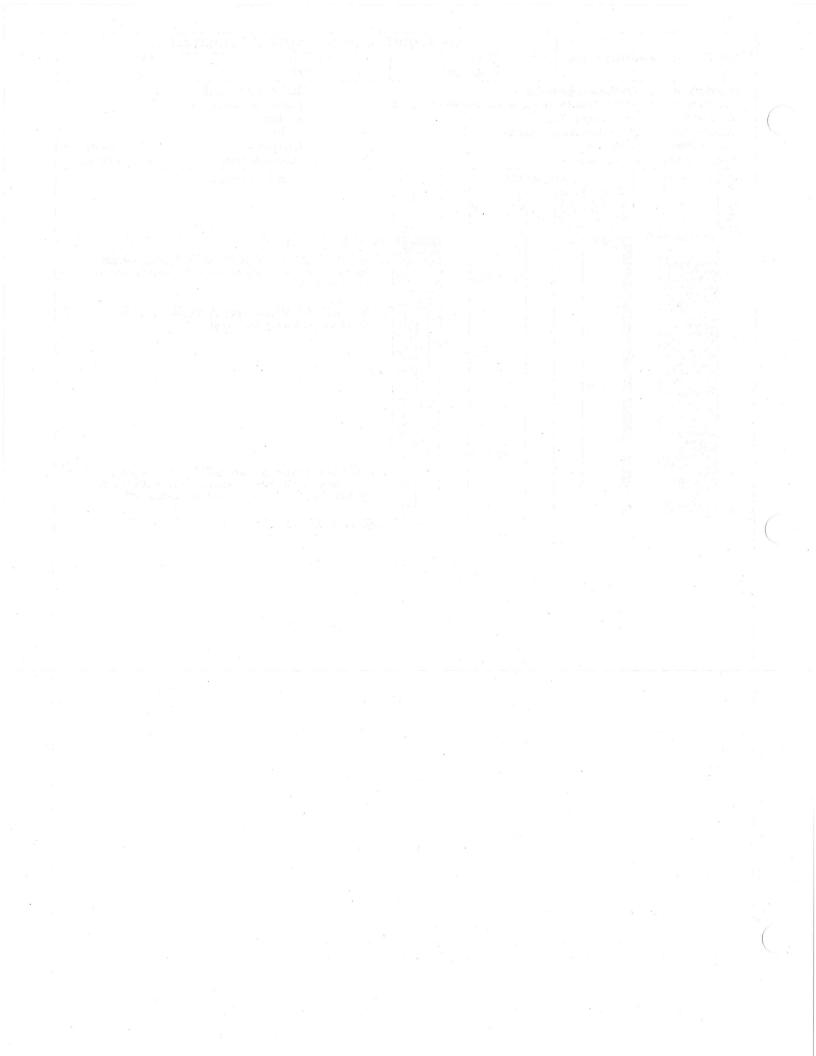
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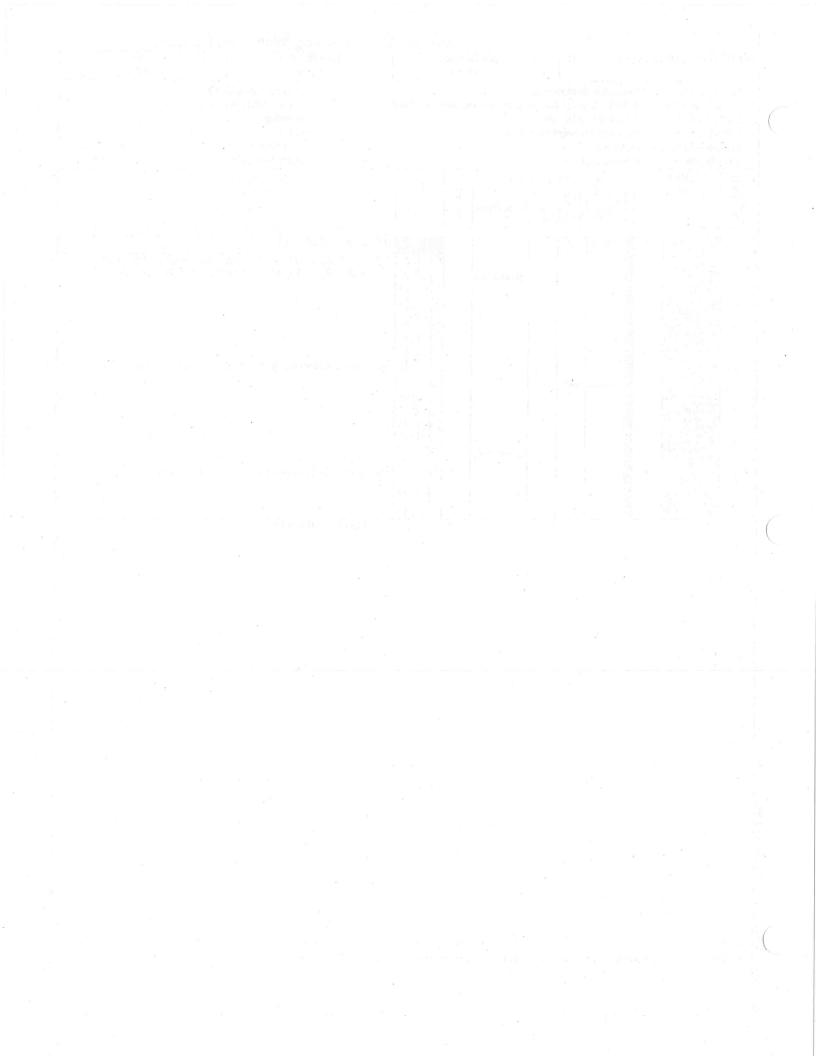
		Geologic Borehole Log/Well Construction					
Maul Foster &	Alongi, Inc.		nber	Well Number GP28	Sheet 1 of 1		
Project Name Project Location Start/End Date Driller/Equipment Geologist/Engineer Sample Method	12/12/05 to 12/12 Cascade Drilling	Street, Seattle, Wash 2/05	ington 9810l	TOC Elevation (fe Surface Elevation Northing Easting Hole Depth Outer Hole Diam			
		ample Data	. 0	Soil Descriptio	n		
Deptil Details	Interval Percent Recovery Collection Method o	ample Data Lagun Name (Type)	Lithologic Column		· · · ·		
0.0.0.0.	100% GP			0 to 0.5 feet: ASPHALT			
 1.1.1. 1.1.1. 1.1.1. 1.1.1. 1.1.1. 1.1.1. 1.1.1.1. 1.1.1.1. 1.1.1.1.1. 1.1.1.1.1.1. 1.1.1.1.1.1. 1.1.1.1.1.1. 1.1.1.1.1.1.1. 1.1.1.1.1.1.1.1.1. 1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	- 100% GP	GP28-S-1.0 GP28-S-7.0		 0.5 to 4.0 feet: SILTY SAND with G gray; 30% fines, nonplastic; 609 to medium, angular to subround 4.0 to 9.5 feet: SAND with GRAVEL brown; trace fines; 85% sand, fi medium, angular to subrounded @ 7.5 feet: Moist to Wet. 	6 sand, fine; 10% gravels, fine ed; damp to moist. - (SW); light gray with spots of ne: 15% gravels, fine to		
<u> </u>				Total Depth: 9.5 feet bgs.			
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NOTES: 11 Abordon	horebale with 2/R.ing	h bestosite chine hudrate	d with notable 1	water, 2) GP = aeoorobe.			
NOTES: 1) Abandon	borehole with 3/8-inc	h bentonite chips hydrate	d with potable ,	wałer. 2) GP = geoprobe.			



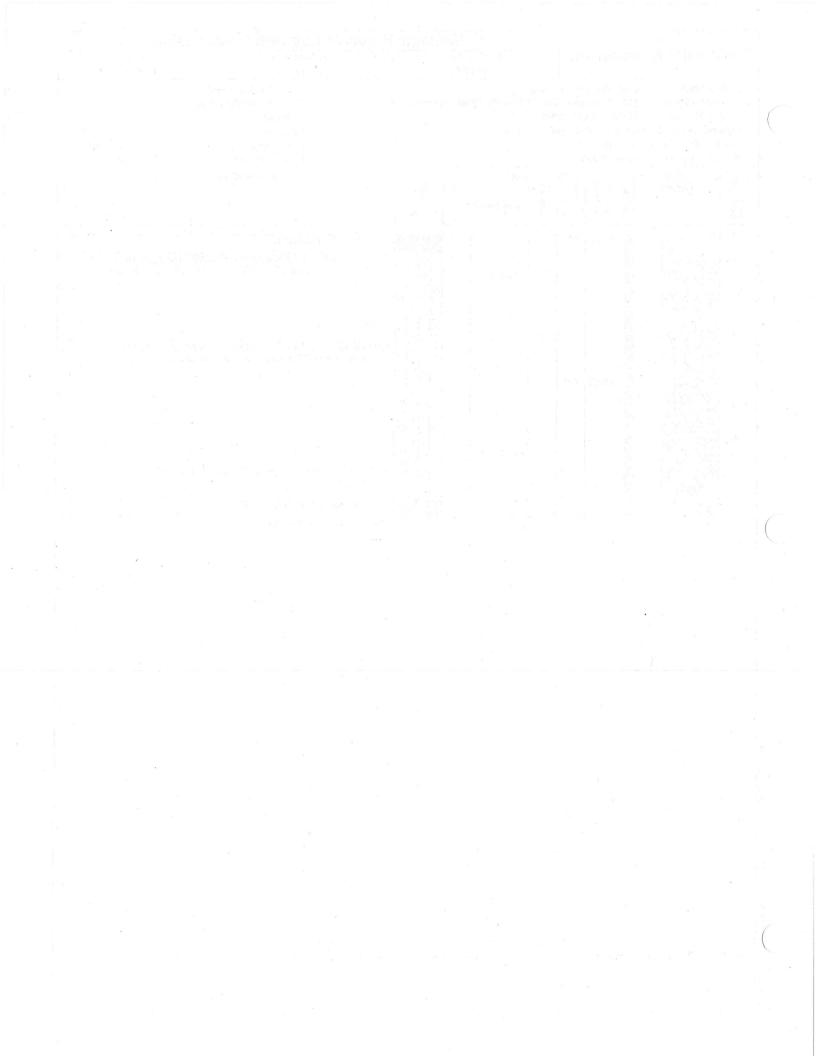
				Borehole Log/Well Construction			
Mau	I Foster &	Alongi, Inc.	Project Number 8006.08.04	Well Number Sheet GP29 1 of 1			
Proj Stai Drill Geo	ject Name ject Location tt/End Date ler/Equipment ologist/Engineer nple Method	12/12/05 to 12/1 Cascade Drilling M. Gibson Direct Push	eering Street, Seattle, Washington 98 2/05 //Geoprobe	TOC Elevation (feet)			
Depth (feet, BGS)	Well Details	Interval Percent Recovery Collection Method 20	umble Data Number Blows/6" Blows/6" Column	Soil Description			
1 2 3	1 2 1 1 2 1 1 1 1	100% GP	GP29-S-1.0	 0 to 0.5 feet: ASPHALT. 0.5 to 2.0 feet: GRAVELLY SAND with SILT (SW); greenish g 5% fines, nonplastic; 70% sand, fine; 25% gravels, fine to medium; damp. 2.0 to 6.5 feet: SILTY SAND (SM); dark brown; 30% fines, nonplastic; 70% sand, fine; damp. 			
4 5 6	Do Do Do Do Lo Do Do Do Do Lo Do Do Do Do Lo D	⁻ 100% GP	GP29-S-6.0				
7 8	20202020 20202020 20202020 20202020 20202020 20202020 20202020 20202020 20202020 20202020 20202020 20202020 2020 202020 200 2020 200 2020 200 200			6.5 to 8.0 feet: SANDY SILT with GRAVEL (ML); brown; 60% fines, medium plasticity; 30% sand, fine to medium; 10% gravels, fine; trace organics and woody debris; wet. Total Depth: 8.0 feet bgs.			
			9 1				
			* *	· · · ·			
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			Ge	eologic	Borehole Log/Well Constr	uction
Mau	I Foster &	Alongi, Inc.	Project Numb 8006.08.04		Well Number GP30	Sheet 1 of 1
Pro Sta Dril Geo	ject Name ject Location rt/End Date ler/Equipment ologist/Engineer nple Method	12/12/05 to 12/12 Cascade Drilling	eering Street, Seattle, Washin /05	2	TOC Elevation (feet)	t) 8.0-feet 3 1/4-incl
	Well	D. S Sa	mple Data	ġ.	Soil Description	
Depth (feet, BGS)	Details	Interval Percent Recovery Collection Method	mple Data	Lithologic Column	· ·	
		100% GP			0 to 0.5 feet: ASPHALT.	
1	000000000 0000000000000000000000000000		00000000		0.5 to 8.0 feet: SILTY SAND (SM); gree nonplastic; 70% sand, fine; trace gree	nish gray; 30% fines, avels, fine; damp.
			GP30-S-1.0			
2	00000000					
3	000000000					• 0
	000000000000000000000000000000000000000				@ 3.5 feet: Color change to dark brown	some organice
4	0000000000 0000000000 000000000	- 100% GP	· · · ·		@ 3.5 feet. Color change to dark brown	, some organics.
5	00000000000000000000000000000000000000	10070 01	×,			a
. 0	000000000 000000000 00000000					
6						
	00000000		GP30-S-6.0		@ 6.5 feet: Color change to blackish br	own: wet.
7	000000000000000000000000000000000000000					
8	000000000000000000000000000000000000000					
-					Total Depth: 8.0 feet bgs.	r
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		, , <u>.</u>	, , ,			
NOTI	ES: 1) Abandon l	porehole with 3/8-inch	bentonite chips hydrated	with potable i	vərər. 2) GH = деоргоре.	
				8		
						e



Project Name Precision Engineering TOC Elevation (feet) Project Location 1231 S. Director Street, Seattle, Washington 98108 Surface Elevation (feet) Start/End Date 12/12/05 to 12/12/05 Northing Driller/Equipment Cascade Drilling/Geoprobe Easting Geologist/Engineer M. Gibson Hole Depth 8.0-feet Sample Method Direct Push 0uter Hole Diam 3 1/4-inc	laul Foster &	Alongi, Inc.	Project Numbe	1000-000	all Number	Sheet
Korsepande Well Details Sample Data Soil Description 1 Details Image details <th>Project Location Start/End Date Driller/Equipment Geologist/Engineer</th> <th>1231 S. Director S 12/12/05 to 12/12/ Cascade Drilling/ M. Gibson</th> <th>Street, Seattle, Washing 05</th> <th></th> <th>Surface Elevation (feet) Northing Easting Hole Depth</th> <th></th>	Project Location Start/End Date Driller/Equipment Geologist/Engineer	1231 S. Director S 12/12/05 to 12/12/ Cascade Drilling/ M. Gibson	Street, Seattle, Washing 05		Surface Elevation (feet) Northing Easting Hole Depth	
Al * * Al * 50% GP 1 Debologing 50% GP 1 Debologing 0 to 0.5 feet: SILTY SAND with GRAVEL (SM); greenish gray; 20% fines, nonplastic; 70% sand, fine; 10% gravels, fine; damp. 2 Strongenged 3 Bologing 3 Bologing 4 Strongenged 5 Strongenged 5 Strongenged 6 Strongenged 6 Strongenged 7 Strongenged 8 Strongenged 9 Strongenged	S Well	and a first state of the second state of the s	nple Data Lagunn Name (Type)	Lithologic Column		
Total Depth: 8.0 feet bgs.		50% GP	GP31-S-1.0	0 to 0.5 feet: 0 0.5 to 3.0 feet: 20% fines, damp. 3.0 to 8.0 feet: nonplastic 0 6.5 feet: Co 7.5 to 8.0 feet	SILTY SAND with GRAVE , nonplastic; 70% sand, fine; SILTY SAND (SM); dark b ; 80% sand, fine; damp to m olor change to blackish brow : WOODY DEBRIS.	10% gravels; fine; rown; 20% fines, poist.
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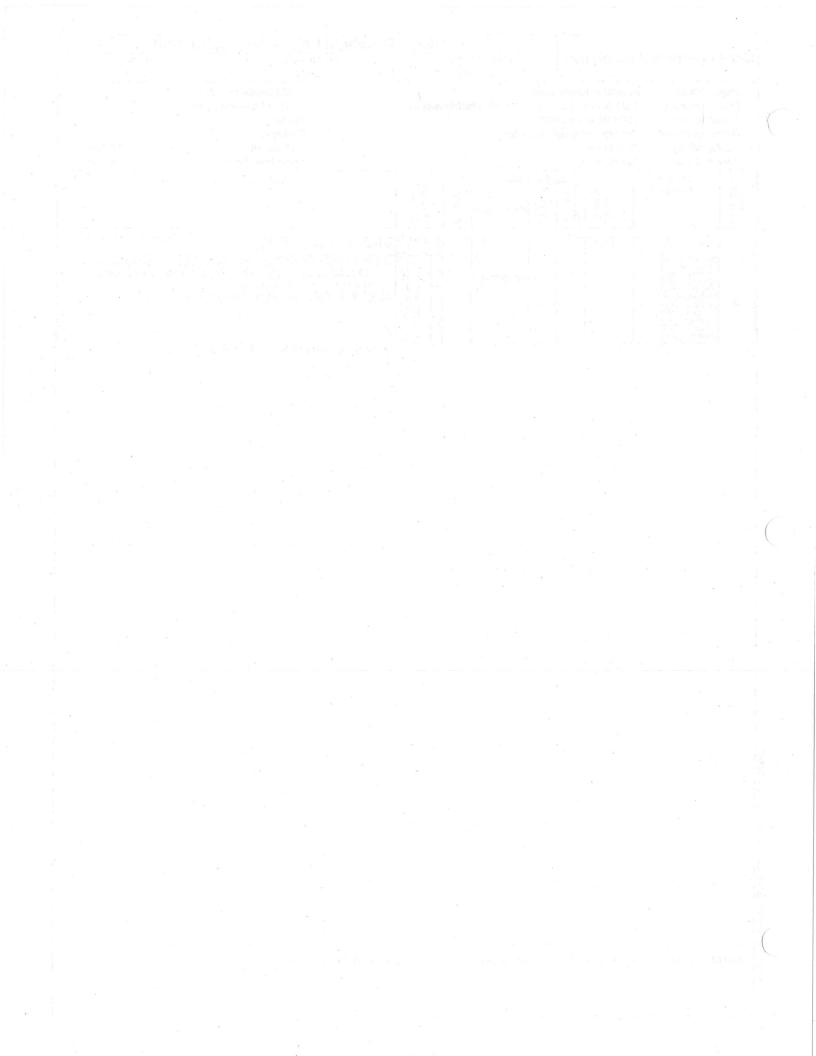
		· · · · · · · · · · · · · · · · · · ·	G	eologic E	Borehole Log/Well Co	Instruction
Ма	ul Foster &	Alongi, Inc.	Project Numb 8006.08.04		Well Number GP32	Sheet 1 of 1
Pro Sta Dn Ge	oject Name oject Location art/End Date iller/Equipment pologist/Engineer mple Method	Precision Engine 1231 S. Director 12/14/05 to 12/14 Cascade Drilling M. Gibson Direct Push	eering Street, Seattle, Washii /05		TOC Elevation Surface Elevati Northing Easting Hole Depth Outer Hole Dia	(feet) on (feet) 3.0-feet
Depth (feet, BGS)	Well Details	Interval Percent Recovery Collection Method Sp	mple Data	Lithologic Column	Soil Descrip	tion
1 2 3		100%	GP32-S-1.0		0 to 0.5 feet: CONCRETE. 0.5 to 3.0 feet: SILTY SAND with 20 % fines, nonplastic; 70% s fine to medium; odor, damp. 1.0 feet: Color change to yello	GRAVEL (SM); orangish brown; and, fine, dense; 10% gravels, - wish brown; dry.

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NOTES: 1) Abandon borehole with 3/8-inch bentonite chips hydrated with potable water. 2) GP = geoprobe.

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Projec Start/L Driller Geolo	ct Location End Date	Precision				08.04		MW5 1 of 2
BGS)	Project Name Precision Engine Project Location 1231 S. Director Start/End Date 12/15/05 to 12/15 Driller/Equipment Cascade Drilling/ Geologist/Engineer Merideth Gibson Sample Method Split Spoon		Stree /05 /Hollo	t, Seattle, W	A 9810	08	TOC Elevation (feet)Surface Elevation (feet)NorthingEastingHole DepthOuter Hole Diam10.25-inc	
eet,	Well Details	Interval Percent Recovery	Collection Method Co	mple Data Namber Blows/6 Blows/6 Column			Lithologic Column	Soil Description
				~				0 to 10.0 feet: See boring log for GP19.
1 00								
2 0000	100 000 100 000 100 000 100 000 100 000				* * *	÷		
4 0	100 000 100 000 100 000 100 000 100 000	/		2				
5 07 0	00 000 100 000 100 000 100 000 100 000 100 000	9	а ²	8	•	(a) 5		
6 6								
	00000000000000000000000000000000000000			5			¢	
9								
0		10%	SS		÷ 6	50/2"		10.0 to 20.5 feet: SANDY SILT with GRAVEL; grayish brown; 7 fines, low plasticity; 20% sand, fine to medium; 10% grave; s fine to medium; wet.
2					: 	12		
3		25%	SS			50/4"	8 	
5				-				
5		25%	SS			50/4"		@ 15.0 feet: Large Gravel, subrounded.
7		28%	SŞ			50/5"	ан. Эл	@ 17.5 feet: Large Gravel approximately 3-inches in diameter;
9							, •	damp.
0								elow ground surface.

laul	Foster & A	lon	gi, I	nc.		Project	Numb	er	c Boreho	Well Nul	nber	, I.S.	l april	She		
2	Mell	1		Cor	nole I		.08.04	1		MW:	Soil De	scriptio	n	2 of	2	
(feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method S	Number d	Name (Type	Blows/6"	Lithologic Column			001120					
		1	100%	SS	1		50/6'	1	@ 20.0 fee	t: Dry.	<u> </u>					
ľ	<u></u>		I.						Total Depti	h: 20.5 f	eet bgs.					
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								Borehole Log/Well Cons	Struction
laul	Foster &	Alongi, I	nc.		Project I 8006.0		er	Well Number MW6	Sheet 1 of 2
Project Name Precision Engine Project Location 1231 S. Director S Start/End Date 12/15/05 to 12/15/ Driller/Equipment Cascade Drilling/ Geologist/Engineer Merideth Gibson Sample Method Split Spoon			Street, 105	, Seattle, W	A 981	08	TOC Elevation (fee Surface Elevation Northing Easting Hole Depth Outer Hole Diam	∋t)	
(S)	Well		s Sar	nple [Data		<u>.</u>	Soil Description	1
Depth (feet, BGS)	Details	Inferval Percent Recovery	Collection Method C	Number	Name (Туре)	Blows/6*	Lithologic Column		
	000 000 000 000							0 to 0,5 feet; ASPHALT.	
1 2	000 000 000 000 000 000 000 000 000 00								
3	D D <thd< th=""> <thd< th=""> <thd< th=""> <thd< th=""></thd<></thd<></thd<></thd<>	56%	SS			19 50/6'		2.5 to 3.0 feet: SANDY GRAVEL (G green and black; 40% sand, fine medium; damp. 3.0 to 6.0 feet: SILTY SAND (SM); o plastic; 65% sand, fine, dense; n	to medium; 60% gravel, fine t lark grav: 35% fines, non
5	Bod Bod Bod 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000	100%	ss		а 2 - С. 2 - О.	11 12 13		אסווס, שאויס אויס, שרווס, שרווס, שרווסה, וו	
6 7								6.0 to 8.0 feet; WOODY DEBRIS.	
8 9		90%	SS		-	10 11 10		8.0 to 20.0 feet: SILT with SAND (M spots of black; 90% fines, low pl organics; wet.	L); light grayish brown with asticity; 10% sand, fine, trace
10 11		100%	SS			10 11 15		@ 10.0 feet: Color change to pinkis	h graylsh brown.
12 13		100%	SS			24 20		@ 12.5 feet: Increase in stiffness.	
14						19			
15 16		90%	SS					@ 15.0 feet: Color change to grayis	h brown with spots of black.
17		100%	SS			20		@ 16.5 feel: Trace woody debris.	
18 19						19 12			
20								·	1
	S: 11 SS = 25	-inch x 1.5-foo	t lona si	teel spi	lit spoon sam	pler. 2	2.) bgs = bei	ow ground surface.	ter a ser ser ser ser ser
	, 00-2.0						,	nen 15 okulardan e okularda (* 1900)	

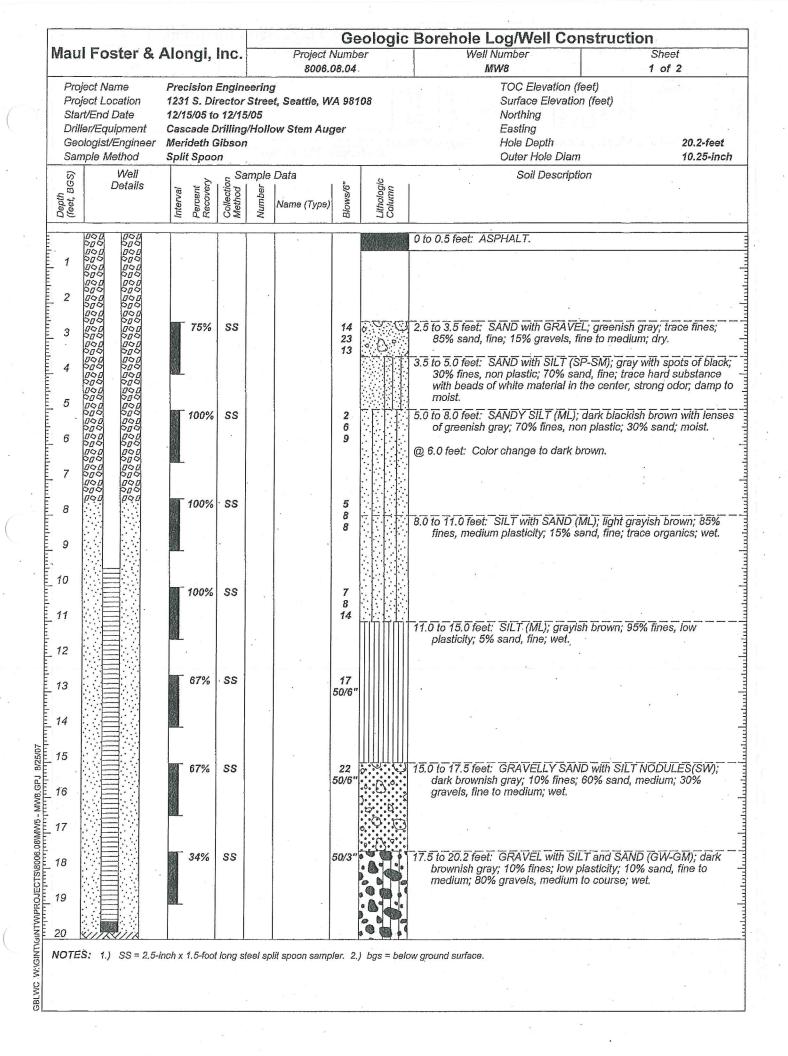
Maul Foster & Alongi, Inc.			nc.	Project I	Numb	er	Borehole Log/Well Cons Well Number	Sheet
			8006.			MW6	2 of 2	
Depth (feet, BGS)	Well • Details	ery	Collection Method S Number	le Data		n	Soil Description	ng santa an anna
epth eet, E		Interval Percent Recovery	ollect lethou	Name (Type)	Blows/6"	Lithologic Column		
<u>so</u>	е 1				-	44		
1		100%	SS	n steller og t		0000	20.0 to 20.75 feet: SILTY GRAVEL w brown; 20% fines, medium plastic 65% gravels, fine to medium, app	vith SAND (GM); grayish city; 15% sand, fine to course;
	//K///K//			No.	L	1-01-01	65% gravels, fine to medium, app diamete; wet.	proximately 3-inches in
				×			Total Depth: 20.75 feet bgs.	
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NOTE	S: 1.) SS = 2.5-	inch x 1.5-foot l	long steel	split spoon samj	oler. 2	.) bgs = bek	ow ground surface.	

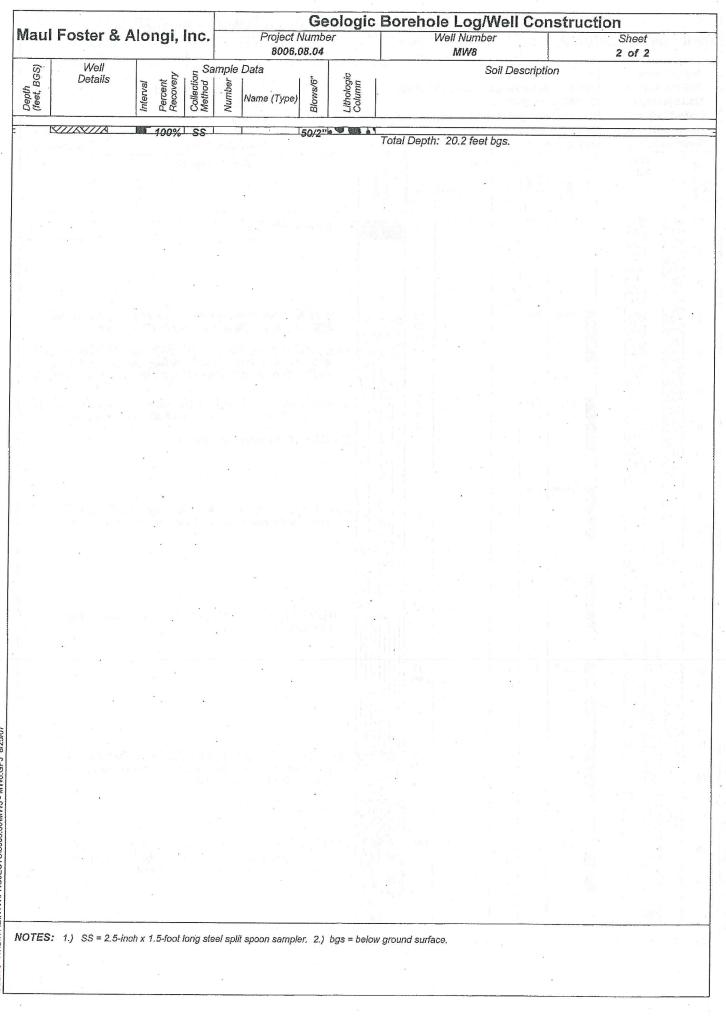
Project Name Precision Engi Project Name Precision Engi Project Location 1231 S. Director Start/End Date 12/16/05 to 12/7 Driller/Equipment Cascade Drillin Geologist/Engineer Merideth Gibsc Sample Method Split Spoon				neerin or Stree 16/05 og/Holl	et, Seattle, W.	08.04 A 981		Well Number Sheet MW7 1 of 2 TOC Elevation (feet) Surface Elevation (feet) Northing Easting Hole Depth 35.5-fe Outer Hole Diam 10.25-i		
Depth (feet, BGS)	Well Details	Interval Demont	Recovery Collection Method ro	Sample Inthe International Int	Data Name (Type)	Blows/6"	Lithologic Column	Soil Description		
					-			0 to 0.5 feet: ASPHALT.		
1										
3		6	7% SS		e e Alexandre	4 5 5		2.5 to 3.5 feet: GRAVELLY SAND (SW); dark brown; trace fines; 70% sand, fine to course; 30% gravels, fine; dry to damp.		
4				(B) (P) (P)		5		3.5 to 5.0 feet: SILTY SAND (SM); dark grayish brown; 30% fines low plasticity; 70% sand, fine; damp.		
5	000 000 000 000 000 000 000 000 000	10	00% SS			3		5.0 to 7.5 feet: SANDY SILT with GRAVEL (ML); light grayish brown; 70% fines, non plastic; 20% sand, fine; 10% gravels, fine to medium; trace organics; damp to moist.		
7								ine to medium, trace organise, damp to molet.		
8		10	00% SS	i pres		1 2 4		7.5 to 13.5 feet: SANDY SILT (ML); light grayish brown; 70% fine non plastic; 30% sand, fine, dense; trace organics; moist.		
9								@ 8.5 feet: Wet.		
10	000 000 000 000 000 000 000 000 000 000 000 000	10	00% SS	e be dig N		34				
12		<u>.</u>	90 1 1 2 A (Eq. 1973) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					@ 11.5 feet: Woody debris.		
13		10	00% SS			5 6 7		@ 12.5 feet: Color change to light pinkish grayish brown; increase in fines, some clay.		
14	000 000 000 000 000 000 000 000 000 000				٠	, ,		13.5 to 16.0 feet: SAND with SILT (SP-SM); dark brown; 15% fines, non plastic; 85% sand, fine; trace shells; wet.		
15		10	0% SS			3				
16. 17						3		16.0 to 18.0 feet: SILT with SAND (ML); grayish brown; 85% fine low to medium plasticity; 15% sand, fine; trace shells; wet.		
18 19 20	Uppli Dob Uppli </td <td>6</td> <td>7% SS</td> <td></td> <td></td> <td>8 10 26</td> <td></td> <td>18.0 to 28.8 feet: GRAVELLY SAND with SILT (SW); greenish gray; 10% fines, non plastic; 50% sand, fine to course; 40% gravels, fine to medium, some approximately 3-inches in diameter, subrounded; dry to damp.</td>	6	7% SS			8 10 26		18.0 to 28.8 feet: GRAVELLY SAND with SILT (SW); greenish gray; 10% fines, non plastic; 50% sand, fine to course; 40% gravels, fine to medium, some approximately 3-inches in diameter, subrounded; dry to damp.		

lau	Foster &	Along	i, Inc		Project 8006 ,			Borehole Log/Well Co Well Number MW7	Sheet 2 of 2
BGS)	Well Details	al	ery tion	Sample ວ່ໄ ຮ	e Data 		ogic	Soll Descrip	tion
(feet, BGS)		Interval Percent	Recovery Collection	Number	Name (Type,	Blows/6'	Lithologic Column	an e sua parente antian. A casiji	 No. 1997 M. House M. Market M. 1997 No. 1997 M. House M. Market M. 1997 No. 1997 M. House M. 1997 No. 1997 /li> No. 1997
	000 000	50	% 55	\$	interio Inderi	50/6'	وبه ک		
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2	000 000 000 000						00		
		-		2	H 2 2 2		•	0.00.7.6	in the second
3	000 000 000 000 000 000	50	% SS			50/6'		@ 22.5 feet: Increase in sand, de	crease in fines; ary to damp.
4	000 000 000 000 000 000				. '				
	000 000 000 000 000 000								
5	000 000	50	% 55	1 an	ures: A	50/5"	• Q D		
5				8	a area fa	- (- 2)	••••••••••••••••••••••••••••••••••••••	@ 25.5 feet: Color change to yell increase in fines to 15%; dry.	owish brown with iron staining;
				173	Ania - she Abbi - she		0.0	increase in mics to 1270, dry.	
7							ب م. (ک. ۵.		
3		50	% \$5		st and raise	50/5") 5 - 6 - 6		
				ar liði (* 1 17 ₁₁ ann	n an	10.00	00		
9					•			28.8 to 29.0 feet: SAND with SIL 85% sand, fine; dry.	T (SP-SM); dark gray ; 15% fine
0							• B • §	29.0 to 32.5 feet: SAND with GRA fines; 85% sand, medium; 15%	AVEL (SW); dark gray; trace
		90	% \$5			50/6"	5. D.	subrounded; wet.	·
1									
2					* • •		0. D.		그는 것은 많은 옷을
~		90	% \$5			17	<u>~0_C</u>	32.5 to 33.5 feet: SAND (SP); dar	k grav: 100% sand, medium:
3						50/6"		trace gravels; wet.	
4							0.0.0	33.5 to 35.5 feet: GRAVELLY SA 10% fines; 60% sand, fine; 30	ND with SILT (SW); dark brown, % gravels; dry.
5		×.							
		100	0% SS	;		50/6"	00		
								Total Depth: 35.5 feet bgs.	
	а С. С.								

NOTES: 1.) SS = 2.5-inch x 1.5-foot long steel split spoon sampler. 2.) bgs = below ground surface.

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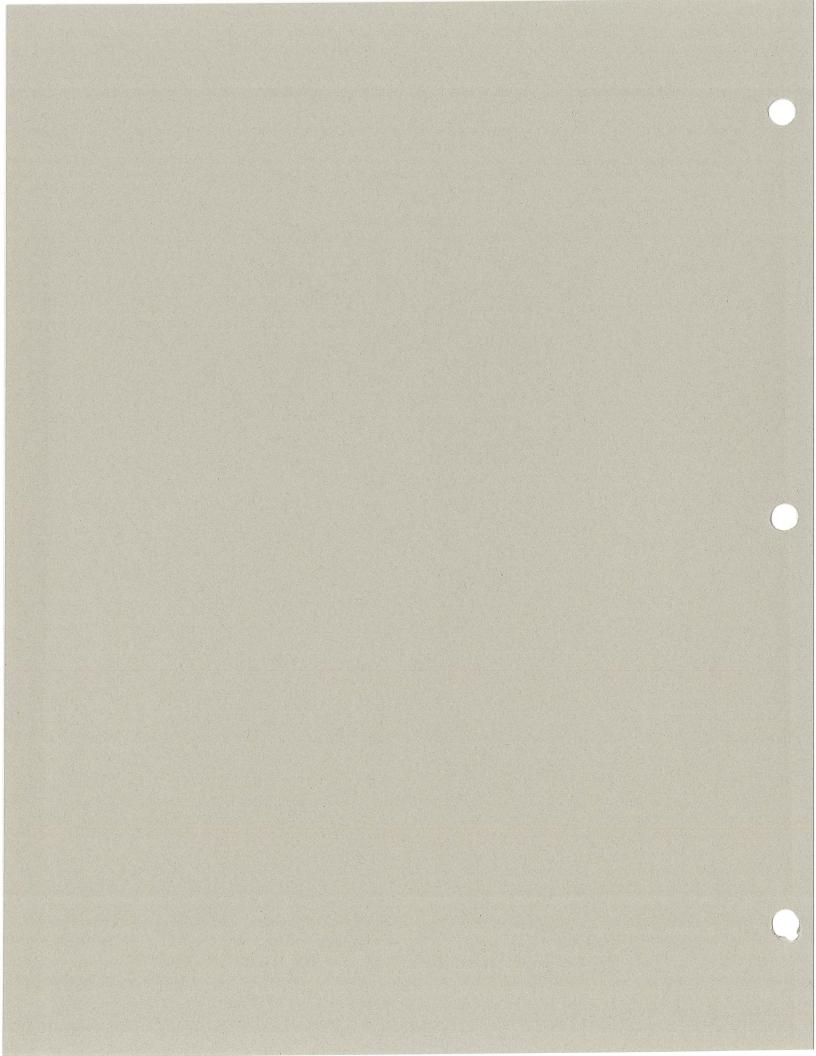




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APPENDIX D

LABORATORY ANALYTICAL REPORTS



ANALYTICAL REPORT

SEVERN

TRENT

STL

Job Number: 580-2284-1

Job Description: Precision Metals

For: Maul Foster & Alongi Inc 7223 NE Hazel Dell Ave Suite B Vancouver, WA 98665

Attention: Alan Huges

Hanbon

Heather Curbow Project Mgmt. Assistant hcurbow@stl-inc.om 05/15/2006 Revision: 1

Project Manager: Tom Coyner

STL Seattle is a part of Severn Trent Laboratories, Inc.

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Severn Trent Laboratories, Inc. STL Seattle 5755 8th Street East, Tacoma, WA 98424 Tel (253) 922-2310 Fax (253) 922-5047 www.stl-inc.com





Case Narrative for job: 580-J2284-1

Client: Maul Foster & Alongi Inc 05/15/2006 Date:

6010B-Hexavalent chromium Analysis Batch: 580-6211 Samples 580-2284-1, -2, -3, -10, -11, -12, -22

Samples 580-2284-1and 580-2284-22 were prepped for chromium IV analysis 1 hour and 33 minutes past the 24 hold time, the samples are flagged with "H". Samples 580-2284-2, -3, -10, -11, -12 were prepped within the required 24hr hold time and the "H" flags were omitted due to ontime lab prep.

login

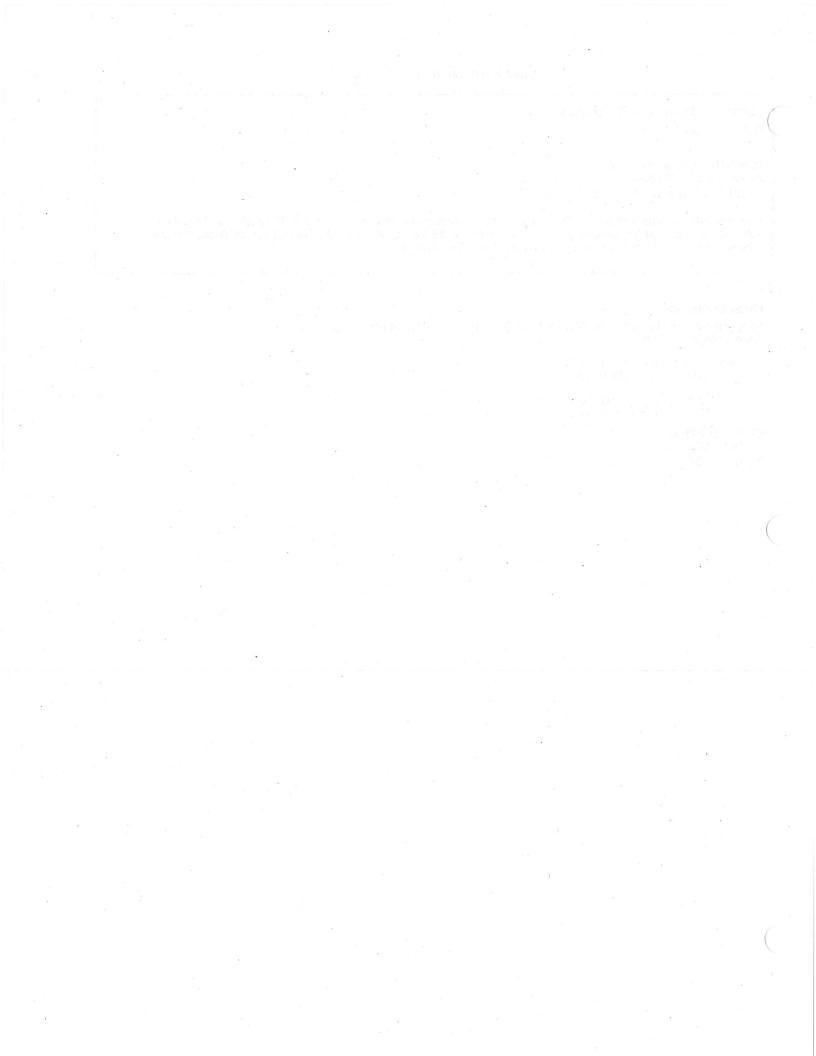
Other Deficiency

Sample Times were changed on the COC, on the bottles and in login for the following samples per Aaron Jimbrosnick 4/21/06.

Sample ID: HA7-0.5 from 1405 to 1805 HA7-1.5 from 1420 to 1820

> HA8-0.5 from 1330 to 1730 HA8-1.5 from 1345 to 1845

Affected Items Sample: 580-2284-8 Sample: 580-2284-6



METHOD SUMMARY

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

Descrip	tion	Lab Location	Method	Preparation Method
Matrix:	Solid			
Inductive	ly Coupled Plasma - Atomic Emission Spectrometry	STL-SEA	SW846 6010B	
	Acid Digestion of Sediments, Sludges, and Soils	STL-SEA		SW846 3050B
	Chromium, Hexavalent (Coprecipitation,	STL-SEA		SW846 7195
Percent N	loisture	STL-SEA	EPA PercentN	loisture
			a	
Matrix:	Water	2		-
Volatile O	organic Compounds by GC/MS	STL-SEA	SW846 8260B	
й.	Purge-and-Trap	STL-SEA	* .	SW846 5030B
Semivolat Monitorin	tile Organic Compounds by GC/MS (Selective Ion	STL-SEA	SW846 8270C	
	Separatory Funnel Liquid-Liquid Extraction	STL-SEA		SW846 3510C
Semi-Vola	atile Petroleum Products by NWTPH-Dx	STL-SEA	NWTPH NWT	PH-Dx
	Separatory Funnel Liquid-Liquid Extraction	STL-SEA		SW846 3510C
Inductive	y Coupled Plasma - Atomic Emission Spectrometry	STL-SEA	SW846 6010B	
	Chromium, Hexavalent (Coprecipitation,	STL-SEA		SW846 7195
	Sample Filtration performed in the Field	STL-SEA		FIELD_FLTRD
Inductivel	y Coupled Plasma - Mass Spectrometry	STL-SEA	SW846 6020	
	Sample Filtration performed in the Field	STL-SEA		FIELD_FLTRD

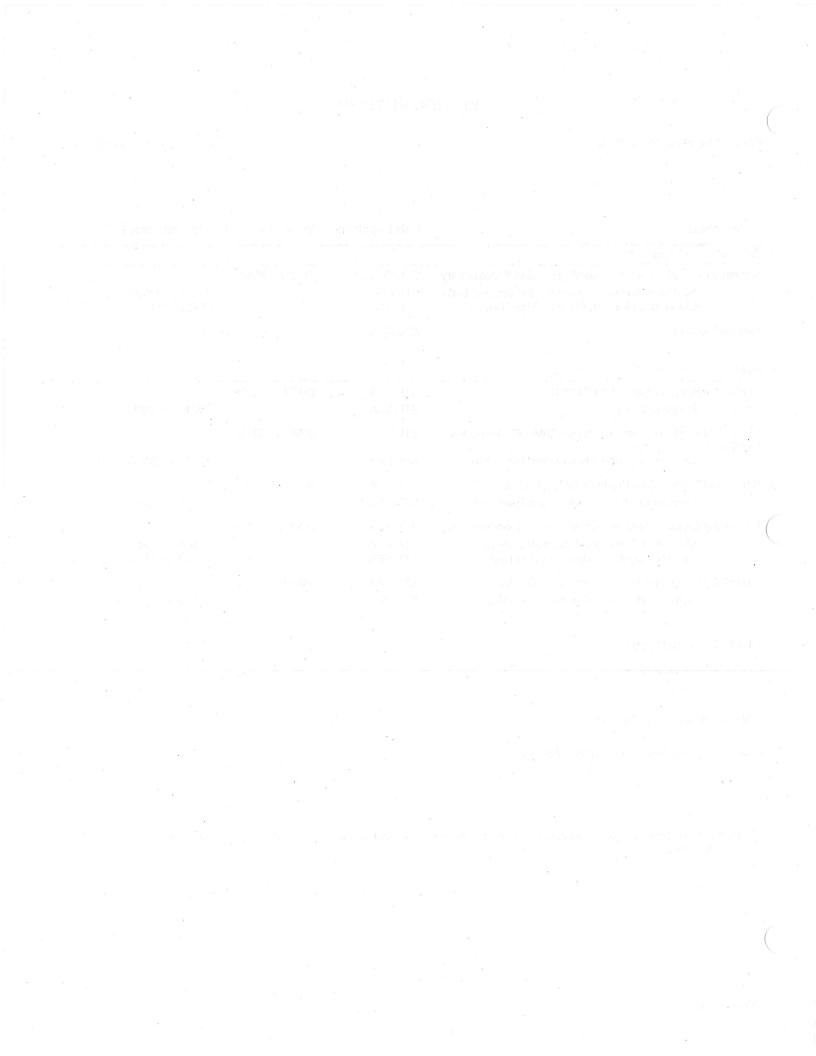
LAB REFERENCES:

STL-SEA = STL-Seattle

METHOD REFERENCES:

EPA - US Environmental Protection Agency

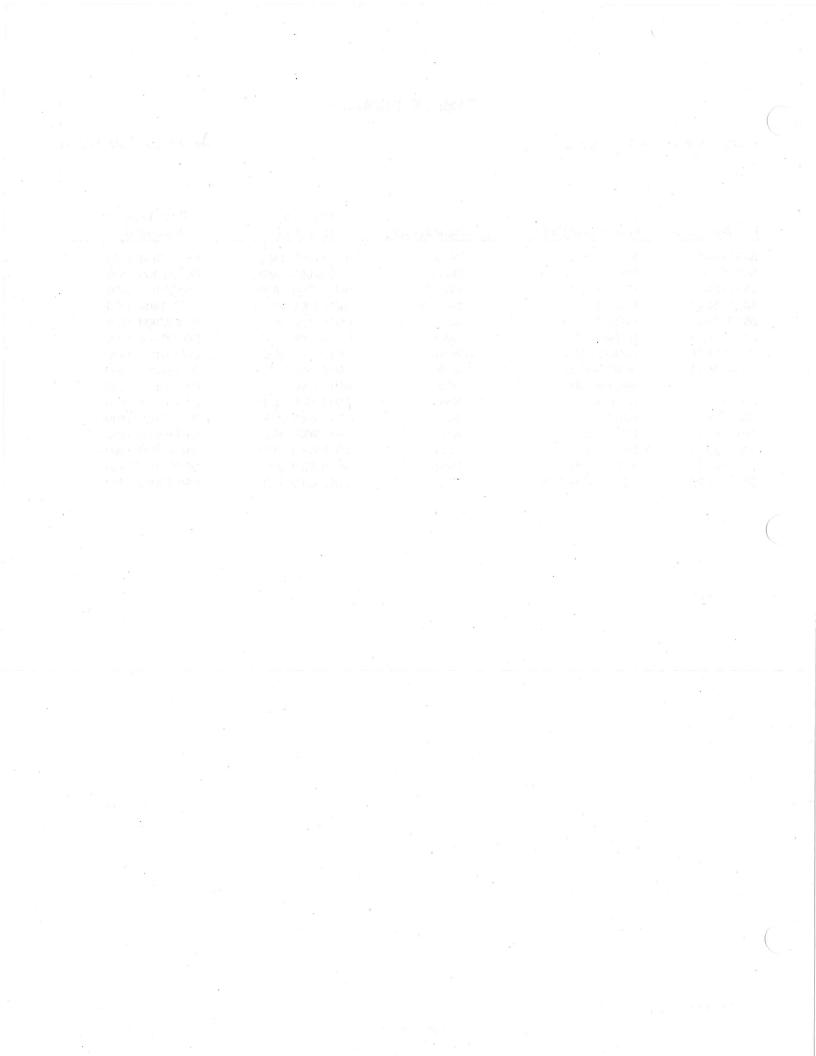
SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.



SAMPLE SUMMARY

Client: Maul Foster & Alongi Inc

	Olivert Oceanity ID	Olio ut Matuin	Date/Time	Date/Time Received
Lab Sample ID	Client Sample ID	Client Matrix	Sampled	Received
580-2284-1	MW7-041806	Water	04/18/2006 1430	04/19/2006 1400
580-2284-2	MW4-041806	Water	04/18/2006 1750	04/19/2006 1400
580-2284-3	MW1-041806	Water	04/18/2006 1830	04/19/2006 1400
580-2284-4	HA6-0.5	Solid	04/18/2006 1930	04/19/2006 1400
580-2284-6	HA7-0.5	Solid	04/18/2006 1805	04/19/2006 1400
580-2284-8	HA8-0.5	Solid	04/18/2006 1730	04/19/2006 1400
580-2284-10	MW2-041906	Water	04/19/2006 0815	04/19/2006 1400
580-2284-11	MW6-041906	Water	04/19/2006 1015	04/19/2006 1400
580-2284-12	MW5-041906	Water	04/19/2006 1230	04/19/2006 1400
580-2284-13	HA9-0.5	Solid	04/19/2006 0820	04/19/2006 1400
580-2284-15	HA10.05	Solid	04/19/2006 0950	04/19/2006 1400
580-2284-17	HA11-0.5	Solid	04/19/2006 1030	04/19/2006 1400
580-2284-19	HA1205	Solid	04/19/2006 1130	04/19/2006 1400
580-2284-21	TRIP BLANK	Water	04/19/2006 0000	04/19/2006 1400
580-2284-22	MW- DUP-041806	Water	04/18/2006 1430	04/19/2006 1400



Client: Maul Foster & Alongi Inc

Client Sample ID: MW7-041806

Client Sample ID:	WW7-041	1806						
Lab Sample ID: Client Matrix:	580-2284 Water	-1 -1 -1				Date Sampled: Date Received:	04/18/2006 04/19/2006	
		8260B Vola	atile Organic Com	pounds by	GC/MS	h the state of the second s	2.	
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	8260B 5030B 1.0 04/25/2006 04/25/2006		Analysis Batch: 5	80-6218	L			
Analyte	y a		Result (ug/L)	Qualifier	MDL	RL	une relation in F.S. Administration of the second second
Vinyl chloride trans-1,2-Dichloroe cis-1,2-Dichloroeth Trichloroethene		894° mB 2014 1011 - 2	ND ND ND ND			0.14 0.091 0.062 0.055	1.0 1.0 1.0 1.0	
Surrogate	5 - C. 1 - C. 1	fη, [*]	%Rec			Accepta	ance Limits	
Fluorobenzene (Su Toluene-d8 Ethylbenzene-d10 4-Bromofluorobenz Trifluorotoluene (Su	zene (Surr)		103 101 108 91 115		÷	80 - 1 80 - 1 80 - 1 80 - 1 80 - 1	20 20 20	in a start of the

Client: Maul Foster & Alongi Inc

Client Sample ID:	MW4-0418	806					
Lab Sample ID: Client Matrix:	580-2284- Water	2			Date Sample Date Receive		
		8260B Vola	tile Organic Compoun	ds by GC/MS			
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	8260B 5030B 1.0 04/25/2006 2 04/25/2006 2		Analysis Batch: 580-62	218			
Analyte			Result (ug/L)	Qualifi	ier MDL	RL	. 1. 44
Vinyl chloride trans-1,2-Dichloroe cis-1,2-Dichloroethe Trichloroethene			ND ND ND ND		0.14 0.091 0.062 0.055	1.0 1.0 1.0 1.0	
Surrogate			%Rec		Acce	eptance Limits	
Fluorobenzene (Su Toluene-d8	ırr)		100 105			- 120 - 120	

Client: Maul Foster & Alongi Inc

Client Sample ID: MW1-041806

Client Sample ID): MW1-04	1806								
Lab Sample ID: Client Matrix:	580-228 Water	4-3						Date Sampled: Date Received:	04/18/2006 04/19/2006	
		8260B Vola	atile Orga	anic Compo	unds by (GC/MS	da cali.	g 1995 -	6 - 2 ^{- 9}	~
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	8260B 5030B 1.0 05/01/2006 05/01/2006		Analys	is Batch: 580)-6377		Lab F Initial			kori uk Ampiosi Son Distor Auto malgouist Teto ottege usta
Analyte				Result (ug	/L)	Qualifi	ier	MDL	RL	by a
Vinyl chloride trans-1,2-Dichloro cis-1,2-Dichloroeth Trichloroethene				ND ND ND ND		raan ya dhala ahay ku ya dha ahar dha fa	naad Tay In-construction for	0.14 0.091 0.062 0.055	1.0 1.0 1.0 1.0	er part dans Janaan S. S. Janaa 1990 - Jan S. Serier 1990 - Serier S. Serier 1990 - Serier S. Serier
Surrogate		A *		%Rec	a 197			Accept	ance Limits	ديد وفيخط
Fluorobenzene (S Toluene-d8 Ethylbenzene-d10 4-Bromofluoroben Trifluorotoluene (S) izene (Surr)			97 104 103 107 113				80 - 80 - 80 - 80 - 80 - 80 -	120 120 120	
an a	- ·									

Client: Maul Foster & Alongi Inc

Client Sample ID:	MW2-04	1906								
Lab Sample ID: Client Matrix:	580-228 Water	4-10		n ar a an a			Date Sample Date Receive		19/2006 19/2006	
		8260B Vola	tile Organ	ic Compoun	ds by GC/	MS				
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	8260B 5030B 1.0 04/25/2006 04/25/2006		Analysis	Batch: 580-6ź	218	L	nstrument ID: .ab File ID: nitial Weight/Volu Final Weight/Volu		.D 5 mL 5 mL	Andrea Andrea Provinsion Sector Contra Sector Andrea Contra Andrea Contra Andrea
Analyte				Result (ug/L)	Qu	ualifier	MDL		RL	
Vinyl chloride trans-1,2-Dichloroe cis-1,2-Dichloroethe Trichloroethene				ND ND ND ND			0.14 0.091 0.062 0.055		1.0 1.0 1.0 1.0	hadi i saka States Li Satal Prifik sigadan atale prifiku
Surrogate				%Rec			Acce	eptance	Limits	
Fluorobenzene (Su Toluene-d8 Ethylbenzene-d10 4-Bromofluorobenz Trifluorotoluene (Su	ene (Surr)			101 100 110 100 119			80 80 80	- 120 - 120 - 120 - 120 - 120 - 120		

Client: Maul Foster & Alongi Inc

Client Sample ID: MW6-041906			
Lab Sample ID: 580-2284-11 Client Matrix: Water			04/19/2006 1015 04/19/2006 1400
8260B \	/olatile Organic Compounds by GC/N	NS	1
Method: 8260B Preparation: 5030B Dilution: 1.0 Date Analyzed: 05/01/2006 1633 Date Prepared: 05/01/2006 1633	Analysis Batch: 580-6377	Instrument ID: ITS4 Lab File ID: X24 Initial Weight/Volume: Final Weight/Volume:	099.D
Analyte	Result (ug/L) Qua	alifier MDL	RL
Vinyl chloride trans-1,2-Dichloroethene cis-1,2-Dichloroethene Trichloroethene	ND ND ND ND	0.14 0.091 0.062 0.055	1.0 1.0 1.0 1.0
Surrogate Fluorobenzene (Surr) Toluene-d8 Ethylbenzene-d10	%Rec 104 103 100	80 - 12 80 - 12 80 - 12 80 - 12	0 0
4-Bromofluorobenzene (Surr) Trifluorotoluene (Surr)	105 108	80 - 12 80 - 12	

Client: Maul Foster & Alongi Inc

Client Sample ID:	MW5-04	1906						a de la calendaria de la c	
Lab Sample ID: Client Matrix:	580-228 Water	4-12					ate Sampled ate Received		1230 1400
· · ·	2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	8260B Volati	le Organic (Compound	s by GC/N	IS			n nama nama na manina B
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	8260B 5030B 1.0 04/25/2006 04/25/2006	2034	Analysis Bat	ch: 580-621	18	Lab Fil Initial V			
Analyte	2		Re	sult (ug/L)	Qua	lifier	MDL	RL	2 8
Vinyl chloride trans-1,2-Dichloroe cis-1,2-Dichloroeth Trichloroethene			N N 1. 7.	D 1		~	0.14 0.091 0.062 0.055	1.0 1.0 1.0 1.0	
Surrogate	and the desire of the particular second second second second second	107781714091-1038-00140174-017171-10-0471-0-0471-0-041-0-04-0-04	%R	ec		and a fair an	Acce	otance Limits	ni de Carlo andre an angle an carlo an angle an ang
Fluorobenzene (SL Toluene-d8 Ethylbenzene-d10 4-Bromofluorobenz Trifluorotoluene (Sl	ene (Surr)		99 97 10 94 11	7)3 1			80 - 80 - 80 -	120 120 120 120 120	

Client: Maul Foster & Alongi Inc

Client Sample ID: TRIP BLANK

client Sample ID. TRIP	BLANK				
Lab Sample ID: 580-2 Client Matrix: Wate	2284-21 r		e e e e e e e e e e e e e e e e e e e	Date Sampled: Date Received:	04/19/2006 0000 04/19/2006 1400
	8260B Volatile	Organic Compounds	by GC/MS	- par - s deb	5
	Ar 006 2009 006 2009	nalysis Batch: 580-621	Ĺ	nstrument ID: ITS ab File ID: X2 nitial Weight/Volume inal Weight/Volume	4023.D :: 5 mL
Analyte		Result (ug/L)	Qualifier	MDL	RL
Vinyl chloride		ND		0.14	1.0
trans-1,2-Dichloroethene		ND		0.091	1.0
cis-1,2-Dichloroethene		ND		0.062	1.0
Trichloroethene	and the second sec	ND		0.055	1.0
Surrogate	land in the	%Rec		Accepta	ance Limits
Fluorobenzene (Surr)		99		80 - 1	20
Toluene-d8		101		80 - 12	20
Ethylbenzene-d10		100		80 - 12	20
4-Bromofluorobenzene (Sur	r)	101		80 - 12	20
Trifluorotoluene (Surr)		113		80 - 11	20

Client: Maul Foster & Alongi Inc

Lab Sample ID:					
Client Matrix:	580-2284-22 Water			Date Sampled: Date Received:	04/18/2006 1430 04/19/2006 1400
	8260B Vol	atile Organic Compound	ds by GC/MS	n de constatute de la referencia de la constatute de la constatute de la constatute de la constatute de la cons	
· · · · · · · · · · · · · · · · · · ·		Analysis Batch: 580-62	218		
Analyte		Result (ug/L)	Qualifi	er MDL	RL
Vinyl chloride trans-1,2-Dichloroethen cis-1,2-Dichloroethene Trichloroethene	e	ND ND ND ND		0.14 0.091 0.062 0.055	1.0 1.0 1.0 1.0
Surrogate		%Rec		Accepta	ance Limits
Fluorobenzene (Surr) Toluene-d8 Ethylbenzene-d10 4-Bromofluorobenzene Trifluorotoluene (Surr)	(Surr)	98 101 106 93 112		80 - 1 80 - 1 80 - 1 80 - 1 80 - 1 80 - 1	20 20 20

Client: Maul Foster & Alongi Inc

Client Sample ID: MW7-041806

eneme eampie in					
Lab Sample ID: Client Matrix:	580-2284-1 Water		, Ann		04/18/2006 1430 04/19/2006 1400
	8270C Semivolatile Organ	ic Compounds by GC/MS (S	elective lon N	lonitoring)	
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	8270C 3510C 1.0 04/20/2006 1503 04/20/2006 0842	Analysis Batch: 580-6034 Prep Batch: 580-5990	Lab Initia Fina	rument ID: 5973 File ID: HPO al Weight/Volume: al Weight/Volume: ction Volume:	3N 1649.D 985 mL 10 mL
Analyte		Result (ug/L)	Qualifier	MDL	RL

Analyte		Result (ug/L)	Qualifier	MDL	RL
Naphthalene	ann an Collan ann an Ann an Ann ann ann ann ann ann	0.023	J	0.0061	0.10
2-Methylnaphthalene		0.014	J	0.0091	0.13
1-Methylnaphthalene		ND		0.032	0.10
Acenaphthylene		0.028	J	0.0041	0.10
Acenaphthene		0.011	J	0.0030	0.10
Fluorene		0.013	J	0.0081	0.10
Phenanthrene		0.022	JB	0.0030	0.10
Anthracene		0.037	J	0.0081	0.10
Fluoranthene		0.036	J	0.0091	0.10
Pyrene		0.037	JB	0.013	0.10
Benzo[a]anthracene		0.035	J	0.0091	0.10
Chrysene		0.013	J	0.0091	0.10
Benzofluoranthene		ND		0.031	0.20
Benzo[a]pyrene		ND		0.061	0.20
Indeno[1,2,3-cd]pyrene		0.039	J	0.015	0.10
Dibenz(a,h)anthracene		0.038	J	0.012	0.10
Benzo[g,h,i]perylene		ND		0.018	0.10
Surrogate		%Rec		Acceptar	nce Limits
Nitrobenzene-d5	nanna a' nan an	83	97992 99 van 10 10 10 1 and 20 militaria (he final de fin	34 - 14	6
2-Fluorobiphenyl		90		35 - 14	3
Terphenyl-d14		89		35 - 16	6

Client: Maul Foster & Alongi Inc

Client Sample ID:	WW4-041806			2.475	
	580-2284-2 Vater		s r	Date Sampled: Date Received:	04/18/2006 1750 04/19/2006 1400
8270	C Semivolatile Organic C	ompounds by GC/M	S (Selective I	on Monitoring)	20 T m 21
Construction of the Antonio Construction of the Party State		nalysis Batch: 580-60 rep Batch: 580-5990		Instrument ID: 597 Lab File ID: HP Initial Weight/Volume: Final Weight/Volume: Injection Volume:	01650.D : 980 mL
Analyte		Result (ug/L)	Qualifie	r MDL	RL
Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzofluoranthene Benzo[a]pyrene Indeno[1,2,3-cd]pyrene Dibenz(a,h)anthracene Benzo[g,h,i]perylene		0.011 ND ND 0.019 ND ND 0.0064 ND 0.029 0.030 ND ND ND ND ND ND ND ND ND ND ND	J J B J B	0.0061 0.0092 0.033 0.0041 0.0031 0.0082 0.0031 0.0082 0.0092 0.013 0.0092 0.0092 0.0092 0.0092 0.0092 0.0092 0.0092 0.0092 0.0032 0.061 0.015 0.012 0.018	0.10 0.13 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.20 0.20 0.20 0.10 0.20 0.20 0.10 0.10 0.20 0.10 0.10 0.20 0.10 0.10 0.10 0.20 0.10 0.10 0.10 0.10 0.20 0.10
Surrogate		%Rec			nce Limits
Nitrobenzene-d5 2-Fluorobiphenyl Terphenyl-d14		90 101 100		34 - 14 35 - 14 35 - 16	.6 .3

Client: Maul Foster & Alongi Inc

Client Sample ID:	MW1-041806	- Nut the			
Lab Sample ID: Client Matrix:	580-2284-3 Water	Date Sampled: Date Received:	04/18/2006 04/19/2006		
82	70C Semivolatile Organic Compounds by GC/MS (Selective Ion	Monitoring)		ka tuznija in Salvana konstruktiva na	illinger og

Method:	8270C	Analysis Batch: 580-6034	Instrument ID:	5973N
Preparation:	3510C	Prep Batch: 580-5990	Lab File ID:	HP01651.D
Dilution:	- 1.0		Initial Weight/Vol	lume: 1050 mL
Date Analyzed:	04/20/2006 1549		Final Weight/Vol	ume: 10 mL
Date Prepared:	04/20/2006 0842		Injection Volume	

Analyte		Result (ug/L)		Qualifier	MDL	RL	
Naphthalene		0.011		J	0.0057	0.095	
2-Methylnaphthalene	i la c	ND			0.0086	0.12	
1-Methylnaphthalene		ND			0.030	0.095	
Acenaphthylene		0.020		J	0.0038	0.095	
Acenaphthene		0.0038		J	0.0029	0.095	
Fluorene	$\sim - \lambda^2 E_{\rm He}$	ND			0.0076	0.095	
Phenanthrene		0.024		JВ	0.0029	0.095	
Anthracene		0.030		J	0.0076	0.095	
Fluoranthene		0.053	÷Ч.,	J	0.0086	0.095	
Pyrene		0.043		JB	0.012	0.095	
Benzo[a]anthracene		0.029		J	0.0086	0.095	
Chrysene		0.014		J	0.0086	0.095	
Benzofluoranthene		ND			0.030	0.19	
Benzo[a]pyrene		ND			0.057	0.19	
Indeno[1,2,3-cd]pyrene		0.034		J	0.014	0.095	
Dibenz(a,h)anthracene		ND			0.011	0.095	
Benzo[g,h,i]perylene		ND			0.017	0.095	
Surrogate		%Rec			Acceptar	ice Limits	
Nitrobenzene-d5	nen e haarmon, werte in die Gebeer waar in die Staar van die Gebeur na Anneae naar van die Bernard van Anneae An	81	and the state of the state	a hayan ya kuta da ka	34 - 146	5	an guna Ny Norona amin'ny faritr'o na di Anerosti e U. Makilany na
2-Fluorobiphenyl		90			35 - 143	3	
Terphenyl-d14		91			35 - 160	3	

Client: Maul Foster & Alongi Inc

- 1. ...

Client Sample ID:	MW2-041906		ti ta ina dyami ji	
Lab Sample ID:	580-2284-10	Date Sampled:	04/19/2006 0815	
Client Matrix:	Water	Date Received:	04/19/2006 1400	1
827	70C Semivolatile Organic Compounds by GC/MS (Selec	ctive Ion Monitoring)	52 F 71	
Method: 8	270C Analysis Batch: 580-6034	Instrument ID: 597	73N	

Methou.	02700	Analysis Balch: 580-6034	Instrument ID: 5973N
Preparation:	3510C	Prep Batch: 580-5990	Lab File ID: HP01652.D
Dilution:	1.0		Initial Weight/Volume: 915 mL
Date Analyzed:	04/20/2006 1612		Final Weight/Volume: 10 mL
Date Prepared:	04/20/2006 0842		Injection Volume:
		s	

Analyte	1 m. L.	Result (ug/L)	Qualifier	MDL	RL
Naphthalene		0.93		0.0066	0.11
2-Methylnaphthalene		ND		0.0098	0.14
1-Methylnaphthalene		ND	÷	0.035	0.11
Acenaphthylene		ND		0.0044	0.11
Acenaphthene		0.015	J	0.0033	0.11
Fluorene		ND		0.0087	0.11
Phenanthrene		0.0052	JB	0.0033	0.11
Anthracene		0.035	J	0.0087	0.11
Fluoranthene		0.032	J	0.0098	0.11
Pyrene		ND		0.014	0.11
Benzo[a]anthracene		0.031	J	0.0098	0.11
Chrysene		ND		0.0098	0.11
Benzofluoranthene		ND		0.034	0.22
Benzo[a]pyrene		ND		0.066	0.22
Indeno[1,2,3-cd]pyrene		ND		0.016	0.11
Dibenz(a,h)anthracene		ND	· *	0.013	0.11
Benzo[g,h,i]perylene		ND		0.020	0.11
Surrogate	tage in the	%Rec		Acceptanc	e Limits
Nitrobenzene-d5		86	an de manuel de la cantante de la constantion de la constante de la constante de la constante de la constante e La constante de la constante de	34 - 146	Handle Print, "An International Conference on April To Annual State and April 2018 (2018).
2-Fluorobiphenyl		91		35 - 143	
Terphenyl-d14		89		35 - 166	

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

Client Sample ID:	MW6-04	1906						
Lab Sample ID: Client Matrix:	580-228 Water	4-11	, " 		white become	i i a	and a second	4/19/2006 1015 4/19/2006 1400
NGT HTT MAALAN ET LIJK ON DE FRANK VERSTE DE LEI DE BENKE KEN DE SKELEN DE BENKE KEN DE BENKE KEN DE BENKE KEN	8270C Semi	volatile Orga	nic Comp	ounds by GC/M	/IS (Sel	ective l	on Monitoring)	10° Co.
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	8270C 3510C 1.0 04/20/2006 04/20/2006			is Batch: 580-6 atch: 580-5990	034		Instrument ID: 5973N Lab File ID: HP016 Initial Weight/Volume: Final Weight/Volume: Injection Volume:	
Analyte				Result (ug/L)		Qualifie	er MDL	RL
Naphthalene	a y net stand a few data se y net se statistic and an a se	**************************************		0.013		J	0.0062	0.10
2-Methylnaphthale	ne			0.012		J	0.0093	0.13
1-Methylnaphthale				ND			0.033	0.10
Acenaphthylene				ND			0.0041	0.10
Acenaphthene				ND			0.0031	0.10
Fluorene	х. Х. П.			ND			0.0083	0.10
Phenanthrene				0.011		JB	0.0031	0.10
Anthracene				0.039		J	0.0083	0.10
Fluoranthene				0.033		J	0.0093	0.10
Pyrene				0.034		JB	0.013	0.10
Benzo[a]anthracer	e			ND			0.0093	0.10
Chrysene		v ^a h h		ND			0.0093	0.10
Benzofluoranthene	(<u>,</u>			ND	• *		0.032	0.21
Benzo[a]pyrene				ND			0.062	0.21
Indeno[1,2,3-cd]py	rene			ND		4	0.016	0.10
Dibenz(a,h)anthrac	ene			ND			0.012	0.10
Benzo[g,h,i]peryler	ne			ND			0.019	0.10
Surrogate				%Rec			Acceptance	e Limits
Nitrobenzene-d5		annan an Annai Inail dia 1 Metatan an 1966 Anna		77		111111111111111111111111111111111111111	34 - 146	
2-Fluorobiphenyl				79			35 - 143	
Terphenyl-d14				76			35 - 166	

Page 17 of 60

Client: Maul Foster & Alongi Inc

Client Sample ID	: MW5-04	1906				
Lab Sample ID: Client Matrix:	580-2284 Water	4-12			Date Sampled: Date Received:	04/19/2006 1230 04/19/2006 1400
	8270C Semiv	volatile Organ	ic Compounds by GC/N	IS (Selective	lon Monitoring)	
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	8270C 3510C 1.0 04/20/2006 04/20/2006		Analysis Batch: 580-60 Prep Batch: 580-5990			
Analyte			Result (ug/L)	Qualifi	er MDL	RL
Naphthalene	a la da la falsa da	n an	0.13		0.0057	0.095
2-Methylnaphthale			0.017	J	0.0086	0.12
1-Methylnaphthale	ne		ND		0.030	0.095
Acenaphthylene		1911	0.020	J	0.0038	0.095
Acenaphthene			0.0061	J	0.0029	0.095
Fluorene			ND		0.0076	0.095
Phenanthrene			0.014	JB	0.0029	0.095
Anthracene			0.033	J	0.0076	0.095
Fluoranthene		2 I I I	0.032	J	0.0086	0.095
Pyrene			0.032	JB	0.012	0.095
Benzo[a]anthracen	е		ND		0.0086	0.095
Chrysene			ND		0.0086	0.095
Benzofluoranthene			ND		0.030	0.19
Benzo[a]pyrene		í hol v	ND		0.057	0.19
Indeno[1,2,3-cd]py	rene		ND		0.014	0.095
Dibenz(a,h)anthrac			ND		0.011	0.095
Benzo[g,h,i]peryler			ND		0.017	0.095
Surrogate			%Rec		Accept	ance Limits
Nitrobenzene-d5			81		34 - 1	46
2-Fluorobiphenyl			88		35 - 1	43
Terphenyl-d14			88		35 - 1	66

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

Lab Sample ID: Client Matrix:		580-2284-22 Water	전 마이 마이 			Date Sampled: Date Received:		
	0.01	ZOC Comivolatil	la Organia Comr	aunda by GC/MS	(Salastiva lan	Monitoring)		

8270C Semivolatile Organic Compounds by GC/MS (Selective Ion Monitoring)

Method: Preparation:	8270C 3510C	Analysis Batch: 580-6034 Prep Batch: 580-5990	Instrument ID: 5973N Lab File ID: HP01655.D
Dilution:	1.0	Capita pa	Initial Weight/Volume: 985 mL
Date Analyzed: Date Prepared:	04/20/2006 1720 04/20/2006 0842	ang pang. 1 - ² - Jun - Pang C	Final Weight/Volume: 10 mL Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	0.019	J	0.0061	0.10
2-Methylnaphthalene	ND		0.0091	0.13
1-Methylnaphthalene	ND		0.032	0.10
Acenaphthylene	ND		0.0041	0.10
Acenaphthene	0.0043	J	0.0030	0.10
Fluorene	ND		0.0081	0.10
Phenanthrene	0.0081	JB	0.0030	0.10
Anthracene	0.029	J	0.0081	0.10
Fluoranthene	ND		0.0091	0.10
Pyrene	ND		0.013	0.10
Benzo[a]anthracene	ND		0.0091	0.10
Chrysene	ND		0.0091	0.10
Benzofluoranthene	ND		0.031	0.20
Benzo[a]pyrene	ND		0.061	0.20
Indeno[1,2,3-cd]pyrene	ND		0.015	0.10
Dibenz(a,h)anthracene	ND		0.012	0.10
Benzo[g,h,i]perylene	ND		0.018	0.10
Surrogate	%Rec	, j	Accepta	ince Limits
Nitrobenzene-d5	91	nn daar doortaan doortaan daar ah daar ah daar daar daar daar daa	34 - 14	16
2-Fluorobiphenyl	99		35 - 14	13
Terphenyl-d14	96		35 - 16	66

Client: Maul Foster & Alongi Inc

Client Sample II): MW7-04	1806				* · · · · · · · · · · · · · · · · · · ·		
Lab Sample ID: Client Matrix:	580-228 Water	4-1					ampled: 04/18/200 eceived: 04/19/200	
	NW	TPH-Dx Semi	-Volatile Petr	oleum Product	s by NW	TPH-Dx		
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	NWTPH-D> 3510C 1.0 04/20/2006 04/20/2006	1601	Analysis Ba Prep Batch	atch: 580-6025 : 580-6001		Instrument Lab File ID: Initial Weigl Final Weigh Injection Vo Column ID:	FA26391.D ht/Volume: 975 ht/Volume: 5 m olume:	
Analyte	Бе		Re	esult (mg/L)	Qualif	ier	RL	
Motor Oil (>C24-0 #2 Diesel (C10-0				ND ND			0.51 0.26	
Surrogate	1 J		%	Rec			Acceptance Limits	
o-Terphenyl	an mar an an ann an t-1757 a bhann an saona an	ал табала байна алтан алтан артан сайна алтан br>Сайн алтан	00000000000000000000000000000000000000	102	201944-0000000000000000000000000000000000		50 - 150	

Client: Maul Foster & Alongi Inc

Client Sample ID	: MW4-041806		A. P. M. S. M. M. SARA A. M. MARKAR, M.
Lab Sample ID: Client Matrix:	580-2284-2 Water	· · · · · · · · · · · · · · · · · · ·	Date Sampled: 04/18/2006 1750 Date Received: 04/19/2006 1400
Network (Construction of the Second Second Second Second	NWTPH-Dx Semi	-Volatile Petroleum Products by	NWTPH-Dx
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	NWTPH-Dx 3510C 1.0 04/20/2006 1621 04/20/2006 1118	Analysis Batch: 580-6025 Prep Batch: 580-6001	Instrument ID: HP6890 Lab File ID: FA26392.D Initial Weight/Volume: 925 mL Final Weight/Volume: 5 mL Injection Volume: Column ID: PRIMARY
Analyte		Result (mg/L)	Qualifier RL
Motor Oil (>C24-C #2 Diesel (C10-C		ND ND	0.54 0.27
Surrogate	e d'adde e section e	%Rec	Acceptance Limits
o-Terphenyl	uninality of the second sec	113	50 - 150

Client: Maul Foster & Alongi Inc

Client Sample ID	: MW1-041806							
Lab Sample ID: Client Matrix:	580-2284-3 Water					ampled: eceived:	04/18/2006 04/19/2006	
	NWTPH-Dx S	emi-Volatile I	Petroleum Pro	ducts by NV	WTPH-Dx			naturist - Hondesil Alle De Aneros
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	NWTPH-Dx 3510C 1.0 04/20/2006 1642 04/20/2006 1118		is Batch: 580-6 atch: 580-6001	025	Instrument Lab File ID: Initial Weigh Final Weigh Injection Vo Column ID:	FA ht/Volume ht/Volume lume:		
Analyte			Result (mg/L) Qua	lifier		RL	
Motor Oil (>C24-C #2 Diesel (C10-C		No PARTY FRANK I VERY DE LA VERY D	ND ND		nen andreaden an frankres fan de lander kennen ander ywarde fan de fersenen.	494 - Yanati (Yang)	0.52 0.26	
Surrogate		,	%Rec			Accepta	ance Limits	
o-Terphenyl		a an	115		FROM FOR LL PROCESSING, CAR, NO CAR A CAR A COMPANY	50 - 1	50	9 MII MAI WAR AND AN

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

Client Sample ID	: MW2-041906		
Lab Sample ID: Client Matrix:	580-2284-10 Water		Date Sampled:04/19/20060815Date Received:04/19/20061400
uniter (units converting a construction of a con	NWTPH-Dx Sem	-Volatile Petroleum Products by NW	TPH-Dx
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	NWTPH-Dx 3510C 1.0 04/20/2006 1702 04/20/2006 1118	Analysis Batch: 580-6025 Prep Batch: 580-6001	Instrument ID: HP6890 Lab File ID: FA26394.D Initial Weight/Volume: 865 mL Final Weight/Volume: 5 mL Injection Volume: Column ID: PRIMARY
Analyte	2	Result (mg/L) Quali	fier RL

Motor Oil (>C24-C36)	ND	0.58	
#2 Diesel (C10-C24)	0.41	0.29	
Surrogate	%Rec	Acceptance Limits	
o-Terphenyl	123	50 - 150	******

STL Seattle

Client: Maul Foster & Alongi Inc

Client Sample ID	: MW6-041906				
Lab Sample ID: Client Matrix:	580-2284-11 Water	5 	-	Date Sampled: 04/19/2006 Date Received: 04/19/2006	
	NWTPH-Dx Semi-Volat	ile Petroleum Produc	ts by NWTPH	H-Dx	anta ana ang banang bana
Method: Preparation: Dilution: Date Analyzed: Date Prepared:		alysis Batch: 580-6025 p Batch: 580-6001	Li Ir F Ir	nstrument ID: HP6890 ab File ID: FA26395.D nitial Weight/Volume: 915 m inal Weight/Volume: 5 mL njection Volume: column ID: PRIMARY	eu l 1 no 14 - ge L - Hogel Statut - Statu Statut - Statu
Analyte		Result (mg/L)	Qualifier	RL	
Motor Oil (>C24-C #2 Diesel (C10-C		1.2 0.76		0.55 0.27	
Surrogate	art da contact de la contact	%Rec		Acceptance Limits	1
o-Terphenyl		67	LANNE DE LE SALENCE E NUMERIE ALCONTRA DE LA	50 - 150	

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

Client Sample ID:	MW5-041906			
Lab Sample ID: Client Matrix:	580-2284-12 Water	Date Sampled: Date Received:		
		and the second		

NWTPH-Dx Semi-Volatile Petroleum Products by NWTPH-Dx

			· · ·		
Method:	NWTPH-Dx	Analysis Batch: 580-6025	ise en en el la	nstrument ID: HP6890	
Preparation:	3510C	Prep Batch: 580-6001	യത്തിന്റെ	_ab File ID: FA26396.D	
Dilution:	1.0		. I	nitial Weight/Volume: 980 mL	
Date Analyzed:	04/20/2006 1743		F	Final Weight/Volume: 5 mL	5-, P
Date Prepared:	04/20/2006 1118		I	njection Volume:	
			(Column ID: PRIMARY	
Analyte		Result (mg/L)	Qualifier	RL	
Motor Oil (>C24-0	236)	ND		0.51	
#2 Diesel (C10-0		ND		0.26	
Surrogate		%Rec		Acceptance Limits	n a tha tha in the second s
o-Terphenyl	n an a tha an tha an tha an	116		50 - 150	an an ann an
		*			

Client: Maul Foster & Alongi Inc

Client Sample ID	: MW- DUP-041806					
Lab Sample ID: Client Matrix:	580-2284-22 Water		2 2 2 2	Date Sampled: Date Received:		
	NWTPH-Dx Semi-Vola	atile Petroleum Product	ts by NW1	TPH-Dx		99 E HAUR E VANSIN I VANSKI VANSKI VANSKI
Method: Preparation: Dilution: Date Analyzed: Date Prepared:		nalysis Batch: 580-6025 ep Batch: 580-6001		Lab File ID: F. Initial Weight/Volum Final Weight/Volum Injection Volume:		nL Second
Analyte	40	Result (mg/L)	Qualifi	ier	RL	
Motor Oil (>C24-C #2 Diesel (C10-C		ND ND		na da da kan kan kan kan kan kan kan kan kan ka	0.51 0.26	
Surrogate		%Rec		Accep	tance Limits	
o-Terphenyl	NO TRANSI DI GLAS DI MAS A ATTAL LA SA LA MARANYA DI MAYANYA DI YAYA DA YAYANYA NA MANANYA NA MANANYA WAXANYA M	118		50 -	150	

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

0.0020

Lab Sample ID: Client Matrix:	580-2284-1 Water		Date Sampled: Date Received:	04/18/2006 1430 04/19/2006 1400
ti i fini i na natar da anca gagan i na interna	6010B Inductive	ely Coupled Plasma - Atomic E	Emission Spectrometry-Dissolved	ali de de la contra contra en presenta en la contra parte da contra de la definita de la definita de la definit
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6010B 7195 1.0 04/26/2006 1226 04/19/2006 1603	Analysis Batch: 580-6211 Prep Batch: 580-5974	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume:	PE Optima 3200 DV N/A 10 mL 10 mL
Analyte		Result (mg/L)	Qualifier	RL
Hexavalent chroi	mium			0.020
	6020 Ind	uctively Coupled Plasma - Mas	ss Spectrometry-Dissolved	na fan an swin de a fan se yn ar yn gener yn gan yn gan yn fan yn ar yn gan yn gan yn gan yn gan yn gan yn gan Yn gan gan gan gan gan gan gan gan gan ga
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6020 N/A 5.0 04/24/2006 1105 N/A	Analysis Batch: 580-6111	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume:	PE Sciex Elan 6100 N/A 50 mL 50 mL
Analyte		Result (mg/L)	Qualifier	RL
Arsenic Lead Chromium Copper		0.0071 ND 0.013 0.0024		0.0020 0.0020 0.0020 0.0020

0.0050

Selenium

Client: Maul Foster & Alongi Inc

Client Sample ID:	MW4-041806
-------------------	------------

Lab Sample ID: Client Matrix:	580-2284-2 Water	aCuirle milori:	а		Date Sampled: Date Received:	04/18/2006 04/19/2006	
	6010B Indu	ictively Coupled F	Plasma - Atomic Emiss	ion Spectre	ometry-Dissolve	d	on sense of a sense of the sense
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6010B 7195 1.0 04/26/2006 1244 04/19/2006 1603	Prep Ba	Batch: 580-6211 tch: 580-5974	Lab Initia	ument ID: File ID: al Weight/Volume I Weight/Volume:	N/A : 10 mL	a 3200 DV
Analyte			Result (mg/L)	Qualifier		RL	
Hexavalent chromium		STAR 2.45 LA 9 KARAFINI MENNAMPULAN MENNAMPULAN KANARA SEMUATA	0.023	Sentino Local de Indonetica de Cardona de Car	NERVETY AND A COULD AND MENNESSED AND AND A COURSE AND A CO	0.020	arthrodions frances for any hearing of associations.
They is the Class Child	6020	Inductively Coup	led Plasma - Mass Sp	ectrometry	Dissolved	tandaran Bolokologiakan uga balan kanangan provinsi B	ningan kapili dari karang dari yan kapili kapili kapili kapili k
Method: Preparation: Dilution: Date Analyzed:	6020 N/A 5.0 04/24/2006 1110	Analysis	Batch: 580-6111	Lab Initia	ument ID: File ID: I Weight/Volume: I Weight/Volume:		∃lan 6100
Date Prepared:	N/A					50 IIIL	
Date Prepared:	N/A	а ^с у				50 ML	
Date Prepared: Analyte	N/A	* 1 v 1 a 17	Result (mg/L)	Qualifier		RL	

Client: Maul Foster & Alongi Inc

Client Sample ID: MW1-041806

Job Number: 580-2284-1

0.0020

Lab Sample ID: Client Matrix:	580-2284-3 Water			04/18/2006 1830 04/19/2006 1400
	6010B Inducti	vely Coupled Plasma - Atomic Emis	sion Spectrometry-Dissolved	
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6010B 7195 1.0 04/26/2006 1246 04/19/2006 1603	Analysis Batch: 580-6211 Prep Batch: 580-5974	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume:	PE Optima 3200 D\ N/A 10 mL 10 mL
Analyte	(**) 1	Result (mg/L)	Qualifier	RL
Hexavalent chro	mium	ND		0.020
÷	6020 In	ductively Coupled Plasma - Mass Sp	pectrometry-Dissolved	
Method: Preparation: Dilution:	6020 N/A 5.0 04/24/2006 1115	Analysis Batch: 580-6111	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume:	PE Sciex Elan 6100 N/A 50 mL 50 mL
Date Analyzed: Date Prepared:	N/A			
	N/A	Result (mg/L)	Qualifier	RL

ND

Selenium

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

Client Sample ID: HA6-0.5

Lab Sample ID: Client Matrix:	580-2 Solid	284-4 % Moisture:	9.5			Sampled: Received:	04/18/2006 04/19/2006	
		6010B Inductively Cou	upled Plasma - A	tomic Er	nission Spectro	ometry		k telenoritik prostikaj movel stanka politik
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6010B 7195 1.0 04/28/200 04/28/200	Prep B 06 2112	is Batch: 580-633 atch: 580-6303	9	2 A A A A A A A A A A A A A A A A A A A		N/A 5.2167	na 3200 DV g
Analyte	i.)	DryWt Corrected: Y	Result (mg/Kg	3)	Qualifier	MDL	RL	
Hexavalent chro	mium		2.8		ne kon to kan do yan yan yang kan bar yang kan	0.0025	0.24	

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

Client Sample ID: HA7-0.5

Lab Sample ID:	580-2284-6			Date	e Sampled:	04/18/2006 180	5
Client Matrix:	Solid	% Moisture: 14	1.9	Date	e Received:	04/19/2006 140	0
	601	10B Inductively Coup	oled Plasma - Atomic B	Emission Spect	rometry		
Method:	6010B	Analysis	Batch: 580-6339	Instrume	ent ID:	PE Optima 3	200 DV
Preparation:	7195	Prep Ba	tch: 580-6303	Lab File	ID:	N/A	
Dilution:	1.0			Initial We	eight/Volume:	5.0782 g	
Date Analyzed:	04/28/2006 21	31		Final We	eight/Volume:	50 mL	
Date Prepared:	04/28/2006 09	30					
Analyte	DryV	Vt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL	
Hexavalent chro	mium	SECENTRI PLE MICHANNELY MARKE STAL YAN WELLTY KICH KALLET KALLET KALLET SALLET SALLET SALLET SALLET SALLET SAL	0.22	J	0.0025	0.23	1999-9993 (9999-9993) (9997-993 -

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

Client Sample ID: HA8-0.5

Lab Sample ID: Client Matrix:	580-2284-8 Solid	% Moisture: 15.6			e Sampled: e Received:	04/18/2006 04/19/2006	
	6010	B Inductively Coupled	Plasma - Atomic Er	nission Spect	rometry		
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6010B 7195 1.0 04/28/2006 2134 04/28/2006 0930	Prep Batch:	tch: 580-6339 580-6303			N/A 5.1002	na 3200 DV g
Analyte	DryWt	Corrected: Y R	esult (mg/Kg)	Qualifier	MDL	RL	
Hexavalent chro	mium		26	I NA AMARANG INA GUNARAN SANANA INA AM	0.0025	0.23	entering of the second s

Client: Maul Foster & Alongi Inc

Client Sample I	D: MW2-041906			
Lab Sample ID: Client Matrix:	580-2284-10 Water			04/19/2006 0815 04/19/2006 1400
	6010B Induct	tively Coupled Plasma - Atomic E	mission Spectrometry-Dissolved	
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6010B 7195 1.0 04/26/2006 1248 04/19/2006 1603	Analysis Batch: 580-6211 Prep Batch: 580-5974	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume:	PE Optima 3200 DV N/A 10 mL 10 mL
Analyte		Result (mg/L)	Qualifier	RL
Hexavalent chro	mium			0.020
аналан такаларын какалар райжын такалар	6020 I	nductively Coupled Plasma - Mas	s Spectrometry-Dissolved	
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6020 N/A 5.0 04/24/2006 1120 N/A	Analysis Batch: 580-6111	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume:	PE Sciex Elan 6100 N/A 50 mL 50 mL
Analyte		Result (mg/L)	Qualifier	RL
Arsenic Lead Chromium Copper Selenium		0.0038 ND 0.021 0.0025 0.010		0.0020 0.0020 0.0020 0.0020 0.0020 0.0020

Client: Maul Foster & Alongi Inc

Client Sample ID: MW6-041906

Job Number: 580-2284-1

0.0020

Lab Sample ID: Client Matrix:	580-2284-11 Water	Date Sampled: Date Received	
	6010B Inductive	Coupled Plasma - Atomic Emission Spectrometry-Dissol	red
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6010B 7195 1.0 04/26/2006 1250 04/19/2006 1603	Analysis Batch: 580-6211 Instrument ID: Prep Batch: 580-5974 Lab File ID: Initial Weight/Volum Final Weight/Volum	
Analyte	£5	Result (mg/L) Qualifier	RL
Hexavalent chro	mium		0.020
	6020 Indu	vely Coupled Plasma - Mass Spectrometry-Dissolved	nin Malary South party and a south a souther name of a contract of the souther souther souther souther souther
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6020 N/A 5.0 04/24/2006 1125 N/A	Analysis Batch: 580-6111 Lab File ID: Initial Weight/Volum Final Weight/Volum	
Analyte		Result (mg/L) Qualifier	RL
Arsenic Lead Chromium Copper		0.024 ND 0.047 0.0051	0.0020 0.0020 0.0020 0.0020 0.0020

0.019

Selenium

Client: Maul Foster & Alongi Inc

Client Sample II	D: MW5-04190	6		· · · ·	, 정신 : , 날 한 것 622 원 : 27 12
Lab Sample ID: Client Matrix:	580-2284-12 Water	2			4/19/2006 1230 4/19/2006 1400
ng marang ng mga mga ng	6010B lr	nductively C	oupled Plasma - Atomic Emiss	ion Spectrometry-Dissolved	
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6010B 7195 100 04/26/2006 12 04/19/2006 16		Analysis Batch: 580-6211 Prep Batch: 580-5974	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume:	PE Optima 3200 DV N/A 10 mL 10 mL
Analyte			Result (mg/L)	Qualifier	RL
Hexavalent chro	mium	and a second second second second	350	n na sana na kana kana na kana na kana kana kana na kana kana Na kana na kana kana kana kana na kana kana kana	2.0
i sa se gonze con si se recita di ci i menero parado	6	020 Inductiv	rely Coupled Plasma - Mass Sp	ectrometry-Dissolved	an ta shi dan ka nga ya kan na ta
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6020 N/A 5.0 04/24/2006 11 N/A	30	Analysis Batch: 580-6111	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume:	PE Sciex Elan 6100 N/A 50 mL 50 mL
Preparation: Dilution:	N/A 5.0	30	Analysis Batch: 580-6111	Lab File ID: Initial Weight/Volume:	N/A 50 mL
Preparation: Dilution: Date Analyzed:	N/A 5.0 04/24/2006 11	30	Analysis Batch: 580-6111 Result (mg/L)	Lab File ID: Initial Weight/Volume:	N/A 50 mL

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

Client Sample ID: HA9-0.5

Lab Sample ID: Client Matrix:	580-2284-13 Solid	% Moisture: 35.4	×	Date Sampled: Date Received:	04/19/2006 0820 04/19/2006 1400
a sea superiora a	6010B	Inductively Coupled Plasma	- Atomic Emissi	ion Spectrometry	72. [•]
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6010B 7195 1.0 04/28/2006 2136 04/28/2006 0930	Analysis Batch: 580- Prep Batch: 580-630		Instrument ID: Lab File ID: Initial Weight/Volume Final Weight/Volume:	U
Analyte	DryWt C	orrected: Y Result (mg	/Kg) Qua	alifier MDL	RL
Hexavalent chror	nium	3.4		0.0033	0.31

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

Client Sample ID: HA10.05

Lab Sample ID: 580- Client Matrix: Solid	2284-15 9 % Moisture:	25.1	n San Andrea San San Andrea	Date Sampled: Date Received:	04/19/2006 0950 04/19/2006 1400
2	6010B Inductively Co	oupled Plasma - Ate	omic Emissio	n Spectrometry	
	It is for a discussion of the second second	rsis Batch: 580-6339 Batch: 580-6303	j - A Buccher's I I	nstrument ID: .ab File ID: nitial Weight/Volume inal Weight/Volume:	0
Analyte	DryWt Corrected: Y	Result (mg/Kg)	Quali	fier MDL	RL
Hexavalent chromium	на Самију и катан силини силини и Станисти и Станисти андария и ката такат ката такат катан ката т	0.074	J	0.0029	0.27

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

Client Sample ID: HA11-0.5

Lab Sample ID:	580-2284-17	Date Sampled:	04/19/2006 1030
Client Matrix:	Solid % Moisture: 22.9	Date Received:	04/19/2006 1400
	6010B Inductively Coupled Plasma - Atomic Emis	ssion Spectrometry	
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6010BAnalysis Batch: 580-63397195Prep Batch: 580-63031.004/28/2006 214004/28/2006 09300930	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume:	PE Optima 3200 DV N/A 5.0515 g 50 mL
Analyte	DryWt Corrected: Y Result (mg/Kg) C	Qualifier MDL	RL
Hexavalent chro	mium 0.45	0.0027	0.26

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

Client Sample ID: HA12-.05

Lab Sample ID: Client Matrix:	580-2 Solid	284-19 % Moisture: 3	33.2		e Sampled: e Received:	04/19/2006 1 04/19/2006 1	
		6010B Inductively Cou	upled Plasma - Atomic E	Emission Spec	trometry		
Method: Preparation: Dilution: Date Analyzed: Date Prepared:		Prep B 006 0926 006 1435	is Batch: 580-6305 atch: 580-6275				3200 DV
Analyte		DryWt Corrected: Y	Result (mg/Kg)	Quaimer	and a many part of the second	La deve annual sa tracts a tara tracts anno 199	MINING TRANSPORTATION
Arsenic Lead			9.0 220	В	0.59 0.11	6.7 2.0	
Cadmium			0.48	JB	0.011	0.67	
Chromium			46	В	0.029	1.3	
Copper			39	В	0.072	1.3	

Client: Maul Foster & Alongi Inc

Client Sample ID: MW- DUP-041806

Job Number: 580-2284-1

Lab Sample ID: Client Matrix:	580-2284 Water	4-22			Date Sampled: Date Received:	04/18/2006 04/19/2006	
natio s to citia - manuale	6010	3 Inductively 0	Coupled Plasma - Atomic	Emission S	Spectrometry-Dissolve	∍d	
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6010B 7195 1.0 04/26/2006 04/19/2006		Analysis Batch: 580-621 Prep Batch: 580-5974	1 (age of store 1990) - March	Instrument ID: Lab File ID: Initial Weight/Volume Final Weight/Volume	N/A e: 10 mL	a 3200 DV
Analyte			Result (mg/L)	Qı	Jalifier	RL	
Hexavalent chro	mium	n an grann boart oon to gran boart oo gran board af gran be	ND	H	MET ALL FROM THE THE CONTENT OF THE TRANSPORT AND THE TRANSPORT OF THE TRANSPORT OF THE TRANSPORT OF THE TRANSP	0.020	*****
		6020 Inductiv	vely Coupled Plasma - M	ass Spectro	metry-Dissolved	n felder fra son for an anna anna anna anna anna anna anna	антана рекотори старин скала
Method: Preparation: Dilution: Date Analyzed: Date Prepared:	6020 N/A 5.0 04/24/2006 N/A	1136	Analysis Batch: 580-611	1	Instrument ID: Lab File ID: Initial Weight/Volume Final Weight/Volume		Elan 6100
Analyte			Result (mg/L)	Qı	Jalifier	RL	
Arsenic Lead Chromium Copper Selenium			0.0073 ND 0.013 0.0033 0.0046			0.0020 0.0020 0.0020 0.0020 0.0020	

Client: Maul Foster & Alongi Inc

		General Chemistry	
Client Sample ID:	HA6-0.5	. 8	
Lab Sample ID: Client Matrix:	580-2284-4 Solid	, , , , , , , , , , , , , , , , , , ,	Date Sampled: 04/18/2006 1930 Date Received: 04/19/2006 1400
Analyte	Result	Qual Units	RL Dil Method
Percent Solids	80 Anly Batch: 580-6139	% Date Analyzed 04/25/2006 082	0.10 1.0 PercentMoisture 29
Percent Moisture	20 Anly Batch: 580-6139	% Date Analyzed 04/25/2006 082	0.10 1.0 PercentMoisture
Client Sample ID:	HA7-0.5		
Lab Sample ID: Client Matrix:	580-2284-6 Solid		Date Sampled: 04/18/2006 1805 Date Received: 04/19/2006 1400
Analyte	Result	Qual Units	RL Dil Method
Percent Solids	85 Anly Batch: 580-6139	% Date Analyzed 04/25/2006 082	0.10 1.0 PercentMoisture 29
Percent Moisture	15 Anly Batch: 580-6139	% Date Analyzed 04/25/2006 082	0.10 1.0 PercentMoisture 29
Client Sample ID:	HA8-0.5		
Lab Sample ID: Client Matrix:	580-2284-8 Solid		Date Sampled: 04/18/2006 1730 Date Received: 04/19/2006 1400
Analyte	Result	Qual Units	RL Dil Method
Percent Solids	84 Anly Batch: 580-6139	% Date Analyzed 04/25/2006 082	0.10 1.0 PercentMoisture
Percent Moisture	16 Anly Batch: 580-6139	% Date Analyzed 04/25/2006 082	0.10 1.0 PercentMoisture

Client: Maul Foster & Alongi Inc

		General Che	emistry			
Client Sample ID:	HA9-0.5		5 X			
Lab Sample ID: Client Matrix:	580-2284-13 Solid			Date Sampled: Date Received:		9/2006 0820 9/2006 1400
Analyte	Result	Qual Units		RL	Dil	Method
Percent Solids	65 Anly Batch: 580-6139	% Date Analyzed 0	4/25/2006 0829	0.10	1.0	PercentMoisture
Percent Moisture	35 Anly Batch: 580-6139	% Date Analyzed 0	4/25/2006 0829	0.10	1.0	PercentMoisture
Client Sample ID:	HA10.05					1- 6 1ea (26)
Lab Sample ID: Client Matrix:	580-2284-15 Solid			Date Sampled: Date Received:		9/2006 0950 9/2006 1400
Analyte	Result	Qual Units		RL	Dil	Method
Percent Solids	75 Anly Batch: 580-6139	%	4/25/2006 0829	0.10	1.0	PercentMoisture
Percent Moisture	25 Anly Batch: 580-6139	% Date Analyzed 04	4/25/2006 0829	0.10	1.0	PercentMoisture
Client Sample ID:	HA11-0.5					
Lab Sample ID: Client Matrix:	580-2284-17 Solid			Date Sampled: Date Received:		9/2006 1030 9/2006 1400
Analyte	Result	Qual Units	· .	RL	Dil	Method
Percent Solids	77 Anly Batch: 580-6139	% Date Analyzed 04	4/25/2006 0829	0.10	1.0	PercentMoisture
Percent Moisture	23 Anly Batch: 580-6139	% Date Analyzed 04	4/25/2006 0829	0.10	1.0	PercentMoisture

Client: Maul Foster & Alongi Inc

			General Chemistr	У			
Client Sample ID:	HA1205						
Lab Sample ID: Client Matrix:	580-2284-19 Solid				Date Sampled: Date Received:		9/2006 1130 9/2006 1400
Analyte		Result	Qual Units		RL	Dil	Method
Percent Solids	Anly Batch:	67 580-6139	% Date Analyzed 04/25/2	2006 0829	0.10	1.0	PercentMoisture
Percent Moisture	Anly Batch:	33 580-6139	% Date Analyzed 04/25/2	2006 0829	0.10	1.0	PercentMoisture



Job Number: 580-2284-1

Client: Maul Foster & Alongi Inc

Method Blank - Batch: 580-6218

Lab Sample ID:MB 580-6218/3Client Matrix:WaterDilution:1.0Date Analyzed:04/25/2006 1433Date Prepared:04/25/2006 1433

Analysis Batch: 580-6218 Prep Batch: N/A Units: ug/L

Method: 8260B Preparation: 5030B

Instrument ID: ITS40 Lab File ID: X24010.D Initial Weight/Volume: 5 mL Final Weight/Volume: 5 mL

Analyte		Result	Qual	MDL	RL	
Vinyl chloride	1999 - H. L. H. M. Martines, K. W M. M. L. L. L. L. M. L. M	 ND	 an makala na kanangan	0.14	1.0	10-00-01420-01-1 Landoff T. V. Landoff T. V. Landoff and A. B. Landoff T. V. Landoff T. V. Landoff and A. B. La
trans-1,2-Dichloroethene		ND		0.091	1.0	
cis-1,2-Dichloroethene		ND		0.062	1.0	
Trichloroethene		ND		0.055	1.0	
Surrogate		% Rec		Acceptance Limits		
Fluorobenzene (Surr)		98		80 - 120		
Toluene-d8		100		80 - 120		
Ethylbenzene-d10		101		80 - 120		
4-Bromofluorobenzene (Surr)		98		80 - 120		
Trifluorotoluene (Surr)		118	2 ¹ .	80 - 120		

Calculations are performed before rounding to avoid round-off errors in calculated results.

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Job Number: 580-2284-1

Client: Maul Foster & Alongi Inc

Laboratory Control/ Laboratory Control Duplicate Recovery Report - Batch: 580-6218

LCS Lab Sample ID: LCS 580-6218/1	Analysis Batch: 580-6218	Instrument ID: ITS40
Client Matrix: Water	Prep Batch: N/A	Lab File ID: X24007.D
Dilution: 1.0	Units: ug/L	Initial Weight/Volume: 5 mL
Date Analyzed: 04/25/2006 1317		Final Weight/Volume: 5 mL
Date Prepared: 04/25/2006 1317		
	en a service same recent	
LCSD Lab Sample ID: LCSD 580-6218/2	Analysis Batch: 580-6218	Instrument ID: ITS40

Client Matrix:	Water
Dilution:	1.0
Date Analyzed:	04/25/2006 1342
Date Prepared:	04/25/2006 1342

Analysis Batch: 580-6218 Prep Batch: N/A Units: ug/L

Instrument ID: ITS40 Lab File ID: X24008.D Initial Weight/Volume: 5 mL Final Weight/Volume: 5 mL

Method: 8260B

Preparation: 5030B

		<u>% Rec.</u>				
Analyte	LCS	LCSD	Limit	RPD	RPD Limit LCS	Qual LCSD Qual
Vinyl chloride	 108	110	50 - 145	2	20	
trans-1,2-Dichloroethene	95	97	60 - 140	2	20	
cis-1,2-Dichloroethene	96	102	70 - 125	6	20	
Trichloroethene	92	95	75 - 125	3	13	
Surrogate		LCS % Rec	LCSD %	Rec	Acceptance L	imits
Fluorobenzene (Surr)		100	102		80 - 120	
Toluene-d8		96	103		80 - 120	
Ethylbenzene-d10		100	107		80 - 120	
4-Bromofluorobenzene (Surr)		94	97		80 - 120	
Trifluorotoluene (Surr)	5	103	104		80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

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Job Number: 580-2284-1

Client: Maul Foster & Alongi Inc

Method Blank - Batch: 580-6377

Lab Sample ID:MB 580-6377/1Client Matrix:WaterDilution:1.0Date Analyzed:05/01/2006 1325Date Prepared:05/01/2006 1325

Analysis Batch: 580-6377 Prep Batch: N/A Units: ug/L

Method: 8260B Preparation: 5030B

Instrument ID: ITS40 Lab File ID: X24092.D Initial Weight/Volume: 5 mL Final Weight/Volume: 5 mL

Analyte		Result	Qual	MDL	RL
Vinyl chloride	an ann anna an an an ann an an ann an an	ND		0.14	1.0
trans-1,2-Dichloroethene		ND		0.091	1.0
cis-1,2-Dichloroethene		ND		0.062	1.0
Trichloroethene		ND		0.055	1.0
Surrogate		% Rec	-	Acceptance Limits	
Fluorobenzene (Surr)		103		80 - 120	
Toluene-d8		99		80 - 120	
Ethylbenzene-d10		99		80 - 120	
4-Bromofluorobenzene (Surr)		104		80 - 120	
Trifluorotoluene (Surr)		113		80 - 120	. : · · · · · · · · · · · · · · · · · ·
· · · · · · · · · · · · · · · · · · ·					 The second s

Calculations are performed before rounding to avoid round-off errors in calculated results.

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Job Number: 580-2284-1

Client: Maul Foster & Alongi Inc

Laboratory Control/ Laboratory Control Duplicate Recovery Report - Batch: 580-6377

LCS Lab Sample I	D: LCS 580-6377/4	Analysis Batch: 580-6377	Instrument ID: ITS40
Client Matrix:	Water	Prep Batch: N/A	Lab File ID: X24087.D
Dilution:	1.0	Units: ug/L	Initial Weight/Volume: 5 mL
Date Analyzed:	05/01/2006 1116		Final Weight/Volume: 5 mL
Date Prepared:	05/01/2006 1116		
	2 . 		

LCSD Lab Sample ID: LCSD 580-6377/5					
Client Matrix:	Water				
Dilution:	1.0				
Date Analyzed:	05/01/2006	1142			
Date Prepared:	05/01/2006	1142			

Analysis Batch:	580-6377
Prep Batch: N/A	
Units:ug/L	

Instrument ID:	ITS4	0	
Lab File ID:	X24088	.D	
Initial Weight/	/olume:	5	mL
Final Weight/V	/olume:	5	mL

Method: 8260B

Preparation: 5030B

			<u>% Rec.</u>				
Analyte		LCS	LCSD	Limit	RPD	RPD Limit LCS Q	ual LCSD Qual
Vinyl chloride	1. The CONTENT OF A THE ATTENDED AND A THE ATT AND AND AND A THE ATT AND A THE ATT AND A THE ATT AND A THE ATT	90	88	50 - 145	2	20	*************************
trans-1,2-Dichloroethene		97	95	60 - 140	2	20	
cis-1,2-Dichloroethene		101	101	70 - 125	0	20	algebra de 193
Trichloroethene		96	97	75 - 125	0	13	
Surrogate			LCS % Rec	LCSD %	Rec	Acceptance Li	mits
Fluorobenzene (Surr)		and the second	106	101		80 - 120	and an experience for a new property of the Source And
Toluene-d8			106	105		80 - 120	
Ethylbenzene-d10			104	107		80 - 120	
4-Bromofluorobenzene (Surr)			107	106		80 - 120	
Trifluorotoluene (Surr)			101	103		80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

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Job Number: 580-2284-1

Client: Maul Foster & Alongi Inc

Method Blank - Batch: 580-5990

Lab Sample ID:MB 580-5990/1-AClient Matrix:WaterDilution:1.0Date Analyzed:04/20/2006Date Prepared:04/20/200604/20/20060842

Analysis Batch: 580-6034 Prep Batch: 580-5990 Units: ug/L

Method: 8270C Preparation: 3510C

Instrument ID: 5973N Lab File ID: HP01646.D Initial Weight/Volume: 1000 mL Final Weight/Volume: 10 mL Injection Volume:

Analyte	Result	Qual	MDL	RL
Naphthalene	 ND	and an all and a second sec	0.0060	0.10
2-Methylnaphthalene	ND		0.0090	0.13
1-Methylnaphthalene	ND		0.032	0.10
Acenaphthylene	ND		0.0040	0.10
Acenaphthene	ND		0.0030	0.10
Fluorene	ND		0.0080	0.10
Phenanthrene	0.0039	J	0.0030	0.10
Anthracene	ND		0.0080	0.10
Fluoranthene	ND		0.0090	0.10
Pyrene	0.028	J	0.013	0.10
Benzo[a]anthracene	ND	•	0.0090	0.10
Chrysene	ND		0.0090	0.10
Benzofluoranthene	ND		0.031	0.20
Benzo[a]pyrene	ND		0.060	0.20
Indeno[1,2,3-cd]pyrene	ND		0.015	0.10
Dibenz(a,h)anthracene	ND		0.012	0.10
Benzo[g,h,i]perylene	ND		0.018	0.10
Surrogate	% Rec		Acceptance Limits	
Nitrobenzene-d5	91		34 - 146	
2-Fluorobiphenyl	98		35 - 143	
Terphenyl-d14	100		35 - 166	

Calculations are performed before rounding to avoid round-off errors in calculated results.

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Client: Maul Foster & Alongi Inc

Laboratory Control/ Laboratory Control Duplicate Recovery Report - Batch: 580-5990

LCS Lab Sample ID: LCS 580-5990/2-A	Analysis Batch: 580-6034	Instrument ID: 5973N
Client Matrix: Water	Prep Batch: 580-5990	Lab File ID: HP01647.D
Dilution: 1.0	Units: ug/L	Initial Weight/Volume: 1000 mL
Date Analyzed: 04/20/2006 1417		Final Weight/Volume: 10 mL
Date Prepared: 04/20/2006 0842		Injection Volume:
	алан ал	
LCSD Lab Sample ID: LCSD 580-5990/3-A	Analysis Batch: 580-6034	Instrument ID: 5973N
Client Matrix: Water	Pren Batch: 580,5000	Lab File ID: HP01648 D

Client Matrix:	Water		
Dilution:	1.0		
Date Analyzed:	04/20/2006	1440	
Date Prepared:	04/20/2006	0842	

Prep Batch: 580-5990 Units:ug/L

Quality Control Results

Job Number: 580-2284-1

Method: 8270C Preparation: 3510C

Lab File ID: HP01648.D Initial Weight/Volume: 1000 mL Final Weight/Volume: 10 mL Injection Volume:

		<u>%</u>	Rec.					
Analyte		LCS	LCSD	Limit	RPD	RPD Li	mit LCS QL	al LCSD Qual
Naphthalene	an a	99	98	42 - 129	1	32	D 44 10 46 - 7 20 20 20 20 20 20 20 20 20 20 20 20 20	
2-Methylnaphthalene		105	103	40 - 141	3	30		
1-Methylnaphthalene		109	108	50 - 150	1	50		
Acenaphthylene		106	106	46 - 128	0	45		
Acenaphthene		103	104	50 - 145	1	27		
Fluorene		114	116	46 - 143	1	29		
Phenanthrene		97	96	55 - 132	1	24		
Anthracene		98	96	51 - 134	2	28		
Fluoranthene		90	91	60 - 131	1	22		
Pyrene		88	90	48 - 157	2	38		
Benzo[a]anthracene		107	107	56 - 138	1	29		
Chrysene		102	103	57 - 139	1	33		
Benzofluoranthene	•	103	105	46 - 153	2	41		
Benzo[a]pyrene		114	114	53 - 137	1	27		
Indeno[1,2,3-cd]pyrene		94	94	49 - 148	1	34		
Dibenz(a,h)anthracene		89	90	49 - 150	1	42		
Benzo[g,h,i]perylene		94	95	52 - 147	1	32		* de * *
Surrogate		LC	CS % Rec	LCSD %	Rec	Ac	ceptance Lin	nits
Nitrobenzene-d5	ale had we have a stranger of any owner of a second strain of a loss of provide strain and any owner of the second s	93	}	92			34 - 146	
2-Fluorobiphenyl		98		95			35 - 143	
Terphenyl-d14		96	1	96			35 - 166	

Calculations are performed before rounding to avoid round-off errors in calculated results.

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Job Number: 580-2284-1

Client: Maul Foster & Alongi Inc

Method Blank - Batch: 580-6001

Lab Sample ID: MB 580-6001/1-A Client Matrix: Water Dilution: 1.0 Date Analyzed: 04/20/2006 1449 Date Prepared: 04/20/2006 1118 Analysis Batch: 580-6025 Prep Batch: 580-6001 Units: mg/L

Method: NWTPH-Dx Preparation: 3510C

Instrument ID: HP6890 Lab File ID: FA26388.D Initial Weight/Volume: 1000 mL Final Weight/Volume: 5 mL Injection Volume:

Analyte	100	Result		Qual		RL
Motor Oil (>C24-C36) #2 Diesel (C10-C24)		ND ND	945. * A. 443. 443. 544. 544. 447. 447. 447. 447. 447. 447			0.50 0.25
Surrogate		% Rec	41.55	upsi.	Acceptance Limits	
o-Terphenyl	na hanya da juga kana kana kana kana kana kana kana ka	111			50 - 150	

Laboratory Control/ Laboratory Control Duplicate Recovery Report - Batch: 580-6001

LCS Lab Sample ID: LCS 580-6001/2-A Client Matrix: Water Dilution: 1.0 Date Analyzed: 04/20/2006 1509 04/20/2006 1118 Date Prepared:

LCSD Lab Sample ID: LCSD 580-6001/3-A

Water

04/20/2006 1535

04/20/2006 1118

1.0

Analysis Batch: 580-6025 Prep Batch: 580-6001 Units: mg/L

> Analysis Batch: 580-6025 Prep Batch: 580-6001 Units: mg/L

Method: NWTPH-Dx Preparation: 3510C

Instrument ID: HP6890 FA26389.D Lab File ID: Initial Weight/Volume: 1000 mL Final Weight/Volume: 5 mL Injection Volume:

Instrument ID: HP6890 Lab File ID: FA26390.D Initial Weight/Volume: 1000 mL Final Weight/Volume: 5 mL Injection Volume:

Analyte	<u>%</u> LCS	<u>Rec.</u> LCSD	Limit	RPD	RPD Limit LCS Qual LCSD Qual
Motor Oil (>C24-C36) #2 Diesel (C10-C24)	98 105	99 104	66 - 125 70 - 140	1 2	27 27
Surrogate	L	CS % Rec	LCSD %	Rec	Acceptance Limits
o-Terphenyl	1	12	112		50 - 150

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client Matrix:

Date Analyzed:

Date Prepared:

Dilution:

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Method: 6010B

Job Number: 580-2284-1

				Preparation: 7195 Dissolved	
and the second sec	/ater 0 4/26/2006 1216	Analysis Batch: 58 Prep Batch: 580-59 Units: mg/L		Instrument ID: PE Op Lab File ID: N/A Initial Weight/Volume Final Weight/Volume:	:10 mL
Analyte	· · ·	Result	Qual		RL
Hexavalent chrom	ium	ND	**************************************	ου παι ματο το δια μαίο το με ματοποιού τη του στο στο μαλαγού το το το του το το το το το το το πολογια το πο Το ποι το	0.020
Laboratory Co Laboratory Co	ntrol/ ntrol Duplicate Recover	y Report - Batch: 5	80-5974	Method: 6010B Preparation: 7195 Dissolved	
LCS Lab Sample I Client Matrix: Dilution: Date Analyzed: Date Prepared:	D: LCS 580-5974/12-A Water 1.0 04/26/2006 1218 04/19/2006 1603	Analysis Batch: 5 Prep Batch: 580-{ Units: mg/L		Instrument ID: PE Op Lab File ID: N/A Initial Weight/Volume: Final Weight/Volume:	otima 3200 DV 10 mL 10 mL
LCSD Lab Sample Client Matrix: Dilution: Date Analyzed: Date Prepared:	ID: LCSD 580-5974/13-A Water 1.0 04/26/2006 1221 04/19/2006 1603	Analysis Batch: 56 Prep Batch: 580-5 Units:mg/L		Instrument ID: PE C Lab File ID: N/A Initial Weight/Volume: Final Weight/Volume:	0ptima 3200 DV 10 mL 10 mL
Analyte		<u>% Rec.</u> LCS LCSD	Limit RPI	D RPD Limit LC	S Qual LCSD Qual
Hexavalent chromi	um	98 96	80 - 120 2	20	tenere naar maar om werden en een skrive meer werden op de skrive skrive skrive skrive skrive skrive en een sk S

Client: Maul Foster & Alongi Inc

Method Blank - Batch: 580-5974

Calculations are performed before rounding to avoid round-off errors in calculated results.

STL Seattle

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Method: 6010B

Dissolved

Preparation: 7195

Method: 6010B

Dissolved

Preparation: 7195

Job Number: 580-2284-1

Client: Maul Foster & Alongi Inc

Matrix Spike/ Matrix Spike Duplicate Recovery Report - Batch: 580-5974

MS Lab Sample ID: Client Matrix: Dilution: Date Analyzed: Date Prepared:	580-2284-1 Water 1.0 04/26/2006 1230 04/19/2006 1603	Analysis Batch: 580-6211 Prep Batch: 580-5974	Instrument ID: PE Optima 3200 DV Lab File ID: N/A Initial Weight/Volume: 10 mL Final Weight/Volume: 10 mL
MSD Lab Sample ID: Client Matrix: Dilution: Date Analyzed: Date Prepared:	580-2284-1 Water 1.0 04/26/2006 1232 04/19/2006 1603	Analysis Batch: 580-6211 Prep Batch: 580-5974	Instrument ID: PE Optima 3200 DV Lab File ID: N/A Initial Weight/Volume: 10 mL Final Weight/Volume: 10 mL

Analyte	<u>% F</u> MS	<u>Rec.</u> MSD	Limit	RPD	RPD Limit	MS Qual MSD Qual
Hexavalent chromium	95	92	75 - 125	4	20	

Matrix Duplicate - Batch: 580-5974

Dilution: Date Analyzed:	Water 1.0 04/26/2006 1228		Batch: 580-6211 htch: 580-5974 mg/L	Instrument ID: PE Optima 3200 DV Lab File ID: N/A Initial Weight/Volume: 10 mL Final Weight/Volume: 10 mL
Date Prepared:	04/19/2006 1603			

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Hexavalent chromium	0.00954	0.00526	58	20	*

Calculations are performed before rounding to avoid round-off errors in calculated results.

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Job Number: 580-2284-1

Client: Maul Foster & Alongi Inc

Method Blank - Batch: 580-6275

Lab Sample ID:MB 580-6275/8-AClient Matrix:SolidDilution:1.0Date Analyzed:04/28/2006 0843Date Prepared:04/27/2006 1435

LCS Lab Sample ID: LCS 580-6275/9-A

Solid

04/28/2006 0933

04/27/2006 1435

1.0

Client Matrix:

Date Analyzed:

Date Prepared:

Dilution:

Analysis Batch: 580-6305 Prep Batch: 580-6275 Units: mg/Kg

Method: 6010B Preparation: 3050B

Instrument ID: PE Optima 3200 DV Lab File ID: N/A Initial Weight/Volume: 0.5 g Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	RL	
Arsenic	ND	******	0.45	5.0	
Lead	0.43	J	0.079	1.5	
Cadmium	0.0084	J	0.0082	0.50	
Chromium	0.029	J	0.021	1.0	
Copper	0.81	J	0.054	1.0	

Analysis Batch: 580-6305

Prep Batch: 580-6275

Units: mg/Kg

Laboratory Control/ Laboratory Control Duplicate Recovery Report - Batch: 580-6275

Method: 6010B Preparation: 3050B

Instrument ID: PE Optima 3200 DV Lab File ID: N/A Initial Weight/Volume: 0.5 g Final Weight/Volume: 50 mL

LCSD Lab Sample	ID: LCSD 580-6275/10-A	Analysis Batch: 580-6305	Instrument ID: PE Optima 3200 DV
Client Matrix:	Solid	Prep Batch: 580-6275	Lab File ID: N/A
Dilution:	1.0	Units: mg/Kg	Initial Weight/Volume: 0.5 g
Date Analyzed:	04/28/2006 0936		Final Weight/Volume: 50 mL
Date Prepared:	04/27/2006 1435		

	2	6 Rec.					
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Arsenic	99	99	80 - 120	0	35		
Lead	100	101	80 - 120	1	35		
Cadmium	95	95	80 - 120	0	35		
Chromium	98	98	80 - 120	0	35		
Copper	99	99	80 - 120	0	35		ñ

Calculations are performed before rounding to avoid round-off errors in calculated results.

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Job Number: 580-2284-1

Client: Maul Foster & Alongi Inc

Method Blank - Batch: 580-6303

Lab Sample ID:MB 580-6303/11-AClient Matrix:SolidDilution:1.0Date Analyzed:04/28/2006Date Prepared:04/28/2006

Analysis Batch: 580-6339 Prep Batch: 580-6303 Units: mg/Kg

Method: 6010B Preparation: 7195

Instrument ID: PE Optima 3200 DV Lab File ID: N/A Initial Weight/Volume: 5 g Final Weight/Volume: 50 mL

Analyte		Result	al MDL RL
Hexavalent chromi	um	ND	0.0021 0.20
Laboratory Cor Laboratory Cor	itrol/ itrol Duplicate Recove	ry Report - Batch: 580-6303	Method: 6010B Preparation: 7195
LCS Lab Sample I Client Matrix: Dilution: Date Analyzed: Date Prepared:	D: LCS 580-6303/12-A Solid 1.0 04/28/2006 2101 04/28/2006 0930	Analysis Batch: 580-6339 Prep Batch: 580-6303 Units: mg/Kg	Instrument ID: PE Optima 3200 DV Lab File ID: N/A Initial Weight/Volume: 5 g Final Weight/Volume: 50 mL
		i i a com	
LCSD Lab Sample Client Matrix: Dilution: Date Analyzed: Date Prepared:	ID: LCSD 580-6303/13-A Solid 1.0 04/28/2006 2103 04/28/2006 0930	Analysis Batch: 580-6339 Prep Batch: 580-6303 Units:mg/Kg	Instrument ID: PE Optima 3200 DV Lab File ID: N/A Initial Weight/Volume: 5 g Final Weight/Volume: 50 mL
Analyte		<u>% Rec.</u> LCS LCSD Limit	RPD RPD Limit LCS Qual LCSD Qual
Hexavalent chrom	ium	89 90 80 - 120	1 35

Calculations are performed before rounding to avoid round-off errors in calculated results.

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Client: Maul Foster & Alongi Inc

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 580-6303

Quality Control Results

Job Number: 580-2284-1

Method: 6010B Preparation: 7195

MS Lab Sample ID:	580-2284-4	Analysis Batch: 580-6339	Instrument ID: PE Optima 3200 DV
Client Matrix:	Solid	Prep Batch: 580-6303	Lab File ID: N/A
Dilution:	1.0		Initial Weight/Volume: 5.1119 g
Date Analyzed:	04/28/2006 2126		Final Weight/Volume: 50 mL
Date Prepared:	04/28/2006 0930		
			a ta a sa
MSD Lab Sample ID:	580-2284-4	Analysis Batch: 580-6339	Instrument ID: PE Optima 3200 DV
Client Matrix:	Solid	Prep Batch: 580-6303	Lab File ID: N/A
Dilution:	1.0		Initial Weight/Volume: 5.2012 g
Date Analyzed:	04/28/2006 2128		Final Weight/Volume: 50 mL
Date Prepared:	04/28/2006 0930		- Marcar Statistics

*	<u>% R</u>	ec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD	Qual
Hexavalent chromium	-6	2	75 - 125	86	35	*	*	
Matrix Duplicate - Batch: 580-6303					ethod: 6010B reparation: 71			

Lab Sample ID: 580-2284-4	Analysis Batch: 580-6339	Instrument ID: PE Optima 3200 DV
Client Matrix: Solid	Prep Batch: 580-6303	Lab File ID: N/A
Dilution: 1.0	Units: mg/Kg	Initial Weight/Volume: 5.0621 g
Date Analyzed: 04/28/2006 2116		Final Weight/Volume: 50 mL
Date Prepared: 04/28/2006 0930		

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Hexavalent chromium	2.83	3.33	16	35	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Job Number: 580-2284-1

Client: Maul Foster & Alongi Inc

Method Blank - Batch: 580-6111

Lab Sample ID: MB 580-6111/2 Client Matrix: Water Dilution: 1.0 Date Analyzed: 04/24/2006 1003 Date Prepared: N/A

Analysis Batch: 580-6111 Prep Batch: N/A Units: mg/L

Method: 6020 Preparation: N/A

Instrument ID: PE Sciex Elan 6100 Lab File ID: N/A Initial Weight/Volume: 50 mL Final Weight/Volume: 50 mL

Analyte		Result	Qual	RĹ
Arsenic		ND		0.00040
Lead		ND		0.00040
Chromium	-	ND		0.00040
Copper		ND		0.00040
Selenium		ND	1. j. j	0.00040

Laboratory Control/ Laboratory Control Duplicate Recovery Report - Batch: 580-6111

Method: 6020 Preparation: N/A

LCS Lab Sample ID	LCS 580-6111/7	Analysis Batch: 580-6111	Instrument ID: PE Sciex Elan 6100
Client Matrix:	Water	Prep Batch: N/A	Lab File ID: N/A
Dilution:	50	Units: mg/L	Initial Weight/Volume: 50 mL
Date Analyzed:	04/24/2006 1039		Final Weight/Volume: 54 mL
Date Prepared:	N/A		

LCSD Lab Sample	ID: LCSD 580-6111/8	Analysis Batch: 580-6111	Instrument ID: PE Sciex Elan 6100
Client Matrix:	Water	Prep Batch: N/A	Lab File ID: N/A
Dilution:	50	Units:mg/L	Initial Weight/Volume: 50 mL
Date Analyzed:	04/24/2006 1044		Final Weight/Volume: 54 mL

	%	Rec.					
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Arsenic	101	100	80 - 120	1	20	999 TA SAN BARAN YA WALANA MANA MANA MANA MANA MANA MANA MANA	an an a' na fha fhaille a lleinn an a
Lead	90	92	80 - 120	2	20		
Chromium	91	92	80 - 120	1	20		
Copper	99	98	80 - 120	0	20		
Selenium	104	104	80 - 120	1	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

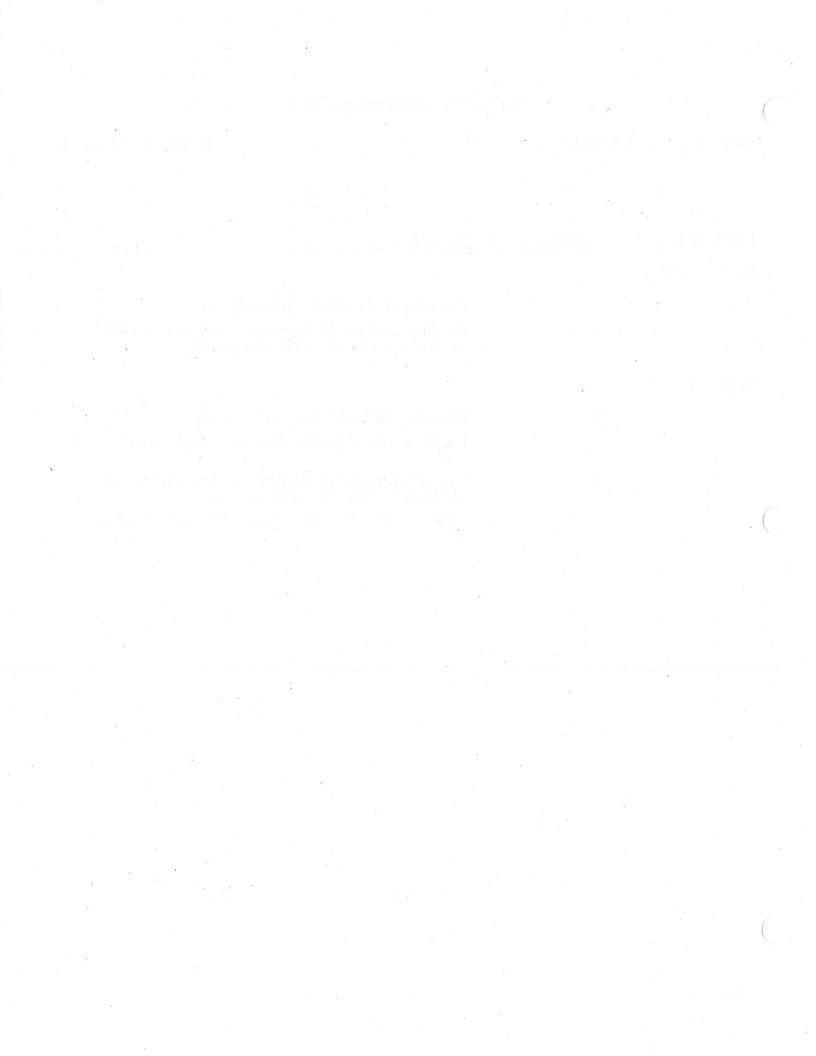
Date Prepared:

N/A



DATA REPORTING QUALIFIERS

Qualifier	Description
В	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
В	Compound was found in the blank and sample.
*	LCS, LCSD, MS, MSD, MD, or Surrogate exceeds the control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
Н	Sample was prepped or analyzed beyond the specified holding time
	B J B * J



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Conditions of Receipt	TPH: HS	leatrix Contaliers & Preservatives	Contract/Purchase Order/Quote No.
Special Instructions/	tals -Dx (limi etals	(W-A) Carrier/Wayauli keumber	Project Name and Location Istatel Precision Engineering
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AT ST	SEVERN TRENT	5755 8th Street E. Taeoma, Water Tel. 253-922-2310 Fax 253-922-5047 Www.stl-Inc.com	Chain of Custody Record

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STL8274565112/02

571,2224599112/02			viet Report: FNVK - Field Copy	- Returned to Client	DISTRIBUTION: WHITE - Stays with the Samples; CAMARY - Returned to Client with Report; Fully - Field Copy
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	TRENT		5755 80 Street E. Tacoma, WA 98424 Tel. 253-922-2310 Fax 253-922-5047 Www.stl-inc.com	ತನಾವರ್ಶ	Chain of Custody Record
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APK-19-2006 WED 04:20 PM MFA

FAX NU. UU1

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LOGIN SAMPLE RECEIPT CHECK LIST

Client: Maul Foster & Alongi Inc

Job Number: 580-2284-1

Login Number: 2284

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	· ·
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

