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Remedial Investigation Report

Phillip 66 Facility No. 6880
Geiger Corrections Facility
Spokane, Washington

GHD | 20818 4th Avenue Wet Suite 190 Lynnwood Washington 98036

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1. Introduction

1.1 Site Information

Site Name:	Phillips 66 Company (P66) Facility No. 6880
Site Address:	South Spotted Road and West Will D Alton Drive Spokane, Washington
Voluntary Cleanup Program Number:	EA0263
Project Consultant:	GHD Services Inc.
Project Consultant Contact Information:	Christina McClelland 20818 44th Avenue West, Suite 190 Lynnwood, Washington, 98036 Office – 425.563.6500 Direct – 804.237.0303
Current Owner/Operator:	City of Spokane and Spokane County

1.2 Purpose

GHD Services Inc. (GHD) prepared this Remedial Investigation (RI) report on behalf of Phillips 66 Company (P66) for Facility No. 6880 located northwest of the intersection of South Spotted Road and West Will D Alton Drive, Spokane, Spokane County, Washington (Property; Figure 1).

This RI report was prepared following approximately 22 years of soil investigations and groundwater monitoring to evaluate soil and static groundwater conditions at the Property. This RI report was prepared to satisfy the requirements of the Washington Administrative Code (WAC) 173-340-350 and summarizes remedial investigation findings for the property. A list of all documents reviewed in preparation of this report is included in Section 4.1.

2. Site Identification and Description

2.1 Site Description and Background

The Property consists of a Yellowstone Pipeline (YPL) Company pipeline easement within a minimum security prison, Geiger Corrections Center (Figure 2). The 3-inch YPL pipeline was constructed in 1968 and enters the Property near the intersection of South Spotted Road and West Will D Alton Road. The Property is situated within the Columbia Basalt plateau at approximately 2,360 feet above mean sea level (msl). The local topography is relatively flat with a slight slope to the northeast toward the Spokane River. The nearest surface water bodies are three unnamed ponds, which are located approximately 1,750 feet northeast of the Property.

The Model Toxics Control Act (MTCA) site (Site) is defined as all affected areas from the petroleum release associated with the Property and potentially impacted adjacent parcels. The Site boundary is presented on Figure 2.

Impacted soil and groundwater resulted from a 1979 release of Jet A turbine fuel from the YPL pipeline. In addition, soil contamination was encountered during removal of two heating oil underground storage tanks (USTs) in 1998. Four subsequent subsurface investigations have been performed at the Site, including the installation of 15 permanent groundwater monitoring wells, the decommissioning of 1 permanent groundwater monitoring well, a remedial excavation, and numerous soil and groundwater samples. The investigations identified concentrations of total petroleum hydrocarbons (TPH) as gasoline (TPHg), TPH as diesel (TPHd), TPH as heavy oil (TPHo), benzene, and/or naphthalenes that exceeded the MTCA Method A cleanup levels in soil and/or groundwater. Light non-aqueous phase liquid (LNAPL) has not been detected at the Site.

In June 2014, Oxygen Release Compound (ORC) socks were installed in wells MP-1R, MW-2, MW-5D, and MW-7, in an effort to stimulate aerobic biodegradation. Additionally, in October 2016, an Underground Injection Control (UIC) Well Registration Form was submitted to the Washington Department of Ecology (Ecology) in order to request authorization to inject hydrogen peroxide as a means of rehabilitating wells MP-1, MW-2, and MW-5D by cleaning the filter pack and adjacent soils. The well rehabilitation for MP-1 and MW-2 was conducted in November 2016; however, field notes did not indicate if rehabilitation was conducted on MW-5D.

Groundwater monitoring has been conducted at the Site on a quarterly to semi-annual frequency since 2001. Groundwater monitoring was not performed between June 2014 and April 2017 in order to evaluate site strategy options and also as a result of various consultant changes. Groundwater monitoring was resumed in April 2017; the project was transferred to GHD in July 2017.

The initial investigation that identified impacts to soil and groundwater was reported to Ecology in October 1991. Ecology sent an Early Notice Letter in January 1992 and a Site Hazard Assessment Inspection was completed in February 1992. The Site was subsequently listed on the Hazardous Sites List in August 1992 with a ranking of “5,” where a ranking of “1” represents the highest level of concern and a ranking of “5” represents the lowest level of concern. However, Ecology’s Cleanup Site Details only indicates that soil is impacted with unspecified petroleum products. Ecology’s Cleanup Site Details also indicates that an Opinion on Interim Action (under Voluntary Cleanup Program [VCP] No. EA0070) was issued in August 2001. Subsequently, the Site was issued the VCP number EA0263. The current Site status with Ecology is “Cleanup Started” as of August 2018. A chronological summary of the environmental work completed at the Site is included as Appendix A. Available historical boring logs are included as Appendix B.

2.2 Neighborhood Setting

The Property and adjoining properties are zoned as Light Industrial (LI; Figure 3). Adjoining properties consist of the following:

- North: The Property is bound to the north by vacant land associated with the Geiger Correctional Center and George W Hall Avenue, with vacant land beyond.

- West: The Property is bound to the west by Correctional Center development and vacant land beyond.
- South: The Property is bound to the south by West Will D Alton Drive, with a commercial property and vacant land beyond.
- East: The Property is bound to the east by South Spotted Road, with the Geiger Correctional Center Administration Building beyond.

Past owners of the Site were not identified on the Spokane County Assessor's Office website.

2.3 Utilities and Water Supply

Utilities on and adjacent to the Property include at least subsurface electrical, drinking water, natural gas, and sanitary sewer. Additional subsurface features include the YPL, which is 3-inches in diameter and located approximately 3.5 to 4 feet below ground surface (bgs). A utility survey should be conducted at the Property to identify potential additional subsurface utilities. Given the presence of shallow soil and groundwater impacts, the potential exists that subsurface utilities could act as a preferential pathway for groundwater and soil vapor migration.

Drinking water is supplied to the Property and vicinity by the City of Spokane's Water Department (Water Department). The drinking water is sourced solely from the Spokane Valley-Rathdrum Prairie Aquifer. Annual Water Quality Reports are available through the Water Department.

2.4 Past Property Uses and Facilities

Based on a review of historical reports and county assessor records, the following past Property uses and facilities were determined:

Prior to 1950:	Unknown Property use and facilities.
1950 to 1978:	Buildings and barracks utilized as part of the Geiger Air Force Base.
1979 to present day:	The existing Corrections Center was constructed from former base housing.

2.5 Current Property Use and Facilities

The Property consists of an YPL pipeline easement within a minimum security prison. Facilities include a maintenance garage, kitchen, and dormitory structures, located within a fenced containment area (Figure 2).

2.6 Potential Off-Property Sources of Contamination

GHD searched Ecology's *Facility/Site* and *What's In My Neighborhood* databases and identified 19 facilities with identified releases and/or operational USTs located within a 0.5-mile radius of the Site.

- The Pacific Pride – Spokane Property, at 7109 West Will D Alton Drive in Spokane (Ecology Facility ID 57835887), is located 0.06 mile southeast of the Site. This property has four operational USTs, two diesel and two unleaded gasoline. A historical release of unspecified

petroleum impacts in soil at concentrations above MTCA cleanup levels was reported to Ecology; however, Ecology's Toxic Cleanup Program reports that this historical release received a No Further Action (NFA) determination in August 2011. This facility is located cross-gradient relative to the Site.

- The USAF FAFB PR2 NFA1 Property, located near US Hwy 2 in Spokane (Ecology Facility ID 119), is located approximately 0.26 mile northwest of the Site. This facility historically had suspected halogenated organics impacts in soil at concentrations above MTCA cleanup levels. Ecology's Toxic Cleanup Program reports that this historical suspected release received a NFA determination in October 1992. This facility is located cross-gradient relative to the Site.
- The USAF FAFB PR1 NFA Property, located near US Hwy 2 in Spokane (Ecology Facility ID 124), is located approximately 0.28 mile northwest of the Site. This facility historically had metal impacts in soil at concentrations above MTCA cleanup levels. Ecology's Toxic Cleanup Program reports that this historical release was remediated and received a NFA determination in July 1993. This facility is located cross-gradient relative to the Site.
- The Broadway Truck Service & Grocery Property, located at 3709 South Geiger Boulevard in Spokane (Ecology Facility ID 5579746), is located approximately 0.28 mile east-southeast of the Site. This facility has four operational USTs, two diesel and two unleaded gasoline. This property is located down-gradient of the Site and has not reported a release of petroleum substances from the operational USTs.
- The Upper Columbia Corp of SDA Property, located at South 3715 Grove Road in Spokane (Ecology Facility ID 82421396), is located approximately 0.29-mile east of the Site. This facility has two USTs, one leaded gasoline and one unleaded gasoline that are currently being closed in-place. This property is located down-gradient of the Site and has not reported a release of petroleum substances from the existing USTs.
- The Paffile Truck Lines/Hoovestul Trucking Property, located at 4119 South Geiger Boulevard in Spokane (Ecology Facility ID 4754549), is located approximately 0.32 mile southeast of the Site. Three former USTs were removed from this facility at an unknown date and unspecified petroleum impacts in soil at concentrations above MTCA cleanup levels were identified. Ecology's Toxic Cleanup Program reports that this historical release received a NFA determination in March 2008. This facility is located cross-gradient relative to the Site.
- The USAF FAFB II NFA Property, located near US HWY 2 in Spokane (Ecology Facility ID 117), is located approximately 0.34 mile southwest of the Site. This facility historically had suspected halogenated organic impacts to soil; however, these suspected impacts reportedly received a NFA determination in September 1991. This facility is located up-gradient relative to the Site.
- The USAF FAFB PR3 Property, located near US HWY 2 in Spokane (Ecology Facility ID 116), is located 0.36 mile southwest of the Site. This property has suspected halogenated organics, metals, non-halogenated solvents, inorganic conventional contaminants, organic conventional contaminants, unspecified petroleum products, and polycyclic aromatic hydrocarbon (PAH) impacts to groundwater, soil, and/or surface water. Ecology's Toxic Cleanup Program reports that the release status is 'Cleanup Started.' This facility is located up-gradient relative to the Site.

- The US AF FAIRCHILD AFB Property, located near US HWY 2 in Spokane (Ecology Facility ID 112), is located 0.36 mile southwest of the Site. This property is confirmed to have halogenated organics, metal, non-halogenated solvent, unspecified petroleum products, and PAH products in groundwater and/or soil at concentrations above MTCA cleanup levels. Ecology's Toxic Cleanup Program reports that the release status is 'Cleanup Started.' This facility is located up-gradient relative to the Site.
- The USAAC Geiger Field GF005 Property, located near Electric Avenue in Spokane (Ecology Facility ID 665), is located 0.36 mile west-southwest of the Site. This property is confirmed to have halogenated organics, metal, and non-halogenated solvent products in groundwater and/or soil at concentrations above MTCA cleanup levels. Ecology's Toxic Cleanup Program reports that the release status is 'Awaiting Cleanup.' This facility is located up-gradient relative to the Site.
- The USAAC Geiger Field GF002 Property, located at 2907 South Spotted Road in Spokane (Ecology Facility ID 662), is located 0.36 mile north of the Site. This property historically had unspecified petroleum impacts in soil at concentrations above MTCA cleanup levels. Ecology's Toxic Cleanup Program reports that this historical release was remediated and received a NFA determination in July 1992. This facility is located cross-gradient relative to the Site.
- The Spokane International Airport Building 1525 Property, located at 2929 South Spotted Road in Spokane (Ecology Facility ID 6266), is located 0.37 mile north of the Site. This property historically had unspecified petroleum impacts in soil at concentrations above MTCA cleanup levels. Ecology's Toxic Cleanup Program reports that this historical release was remediated; however, concentrations of the contaminants of concern remain above applicable MTCA cleanup levels. This release received a NFA determination in May 2016. This facility is located cross-gradient relative to the Site.
- The USAAC Geiger Field Property, located at the Spokane Airport Business Park in Spokane (Ecology Facility ID 660), is located 0.38 mile west-southwest of the Site. This property has suspected metal impacts to soil. Ecology's Toxic Cleanup Program reports that the release status is 'Cleanup Started.' This facility is located cross-gradient relative to the Site.
- The Spokane Airways Inc. Property, located at 3727 South Davison Boulevard, Suite 701, in Spokane (Ecology Facility ID 14964367), is located 0.42 mile west-southwest of the Site. Three aviation fuel USTs were historically located at this facility. The USTs were removed and unspecified petroleum impacts were identified in soil at concentrations above MTCA cleanup levels. Ecology's Toxic Cleanup Program reports that this historically release received a NFA determination in December 2011. This facility is located up-gradient relative to the Site.
- The Spokane International Airport/Spokane Airways Property, at 3727 Davison Boulevard in Spokane (Ecology Facility ID 55467481), is located approximately 0.42 mile southwest of the Site. The property is confirmed to have unspecified petroleum products in soil and groundwater at concentrations above MTCA cleanup levels. Ecology's Toxic Cleanup Program reports that the release status is 'Awaiting Cleanup.' This facility is located up-gradient relative to the Site.
- The Spokane City SIA 1 & 2 Water Tanks Property, located at 3726 South Little Street in Spokane (Ecology Facility ID 15426867), is located approximately 0.42 mile northwest of the Site. This facility historically had metal impacts in soil at concentrations above MTCA cleanup

levels. Ecology's Toxic Cleanup Program reports that this historical release received a NFA determination in February 2002. This facility is located cross-gradient relative to the Site.

- The Harper Shell Property, located at 4110 South Fosseen Road in Spokane (Ecology Facility ID 55736256), is located approximately 0.42-mile southeast of the Site. This facility has three operational USTs, two leaded gasoline and one diesel. Releases from these USTs have not been reported and this facility is located cross-gradient to the Site.
- The Maple Leaf Motel and Grocery Property, located at 3411 South Geiger Boulevard in Spokane (Ecology Facility ID 46421315), is located approximately 0.43 mile east-northeast of the Site. Three USTs, one leaded gasoline, one unleaded gasoline, and one of unknown substance, were removed from this property at an unknown date. A release from these former USTs was not reported to Ecology. This facility is located down-gradient to the Site.
- The USAAC Geiger Field GF001 Property, located at the intersection of Park Drive and Spotted Road in Spokane (Ecology Facility ID 661), is located 0.45 mile north of the Site. One UST of unknown substance was removed from this property at an unknown date. This property is confirmed to have benzene, diesel, gasoline, and unspecified petroleum products in groundwater and/or soil at concentrations above MTCA cleanup levels. Ecology's Toxic Cleanup Program reports that the release status is 'Cleanup Started.' This facility is located cross-gradient relative to the Site.
- The USAAC Geiger Field GF006 Property, located at the intersection of Electric Avenue and Geiger Boulevard in Spokane (Ecology Facility ID 666), is located 0.47 mile south-southwest of the Site. This property is confirmed to have unspecified petroleum products in groundwater and soil at concentrations above MTCA cleanup levels. Ecology's Toxic Cleanup Program reports that the release status is 'Cleanup Started.' This facility is located up-gradient relative to the Site.

Based on the distance from the Site, the gradient of these properties relative to the Site, and/or the regulatory status (NFA determination), these facilities are not likely a potential source of contamination to the Site.

3. Natural Conditions

3.1 Geology

The Property is situated within the Columbia Basalt plateau. Regional geology consists of basalt, with the immediate vicinity of the Property consisting mainly of Pleistocene aged glacial flood deposits of boulders, cobbles, pebbles, granules, and sand, containing lenses of sand and silt (Hamilton, 2004).

According to historical subsurface investigations conducted at the Site, soil appears to consist of Aeolian silt and sand, and fluvial deposits of silt, sand, and gravel underlain by basalt to a maximum explored depth of approximately 101 feet bgs. Basalt has been encountered at the Site at depths ranging from 3 to 37 feet bgs. Additionally, a scour channel fill deposit, consisting of fine to coarse sand and gravel lenses, is located on the central portion of the site (Figure 2). The scour channel fill

deposit is underlain by competent to fractured basalt bedrock. Boring logs are included as Appendix B.

Historical soil and groundwater sampling locations are presented on Figure 2. Cross section lines and cross sections describing subsurface soil and groundwater conditions are included as Figures 5 and 6.

3.2 Groundwater

The Property is located in the Hangman (Latah) Creek watershed. The Hangman watershed is part of the greater Spokane River drainage, encompassing the land area in which rainwater drains to the Spokane River (Washington State, Department of Ecology, 2006).

The following is a summary of information obtained from the Ecology Well Report Map (well log database) of potential water supply wells located within 0.5 mile of the Property.

Privately owned wells

Ecology's well log database identifies 17 wells west-southwest, 9 wells west, 1 well north, 3 wells northeast, 3 wells southeast, and 16 wells south of the Site within a 0.5-mile radius. There is an additional well within a 0.5-mile radius of the Site, within the same section-township-range; however, the exact location is unknown. The wells to the west-southwest and west of the Site consist of 14 Department of Defense wells and 12 wells related to other regulated facilities or releases. The three wells to the northeast and well to the north are also related to other subsurface investigations. However, the three wells to the southeast and one well of unknown location are domestic and municipal wells.

The wells to the west-southwest and west are up-gradient, and the wells to the south and southeast are cross-gradient of the shallow water bearing zone present beneath the Site. The remaining wells are down-gradient relative to the shallow water bearing zone present beneath the Site. The up-gradient wells are approximately 0.35 to 0.45 mile from the Site, and the remaining wells are approximately 0.22 to 0.47 mile from the Site.

The groundwater flow direction of the deeper water bearing zone beneath the Site is variable; however, the domestic and municipal wells were reportedly installed to depths ranging from 100 to 145 feet bgs, which is over 50 feet deeper than the on-Site wells. Two of the domestic wells were associated with a motel and mobile home park, which has since been removed. Additionally, based on a review of aerial photographs, residential properties are not located within 0.5 mile of the Site, with the exception of a mobile home park approximately 0.45 mile to the southeast. However, based on the depth of the municipal and residential wells and the absence of residential properties in close proximity to the Site, the distance from, and/or gradient relative to the Site, these wells are not potential receptors.

Site Wells

Based on the results of previous investigations and groundwater monitoring conducted at the Site, shallow groundwater is present between approximately 2 and 6.5 feet bgs, and appears to flow toward the east and northeast. The depth to water in the deeper water bearing zone is typically

measured between 26 and 38.5 feet bgs, and the groundwater flow direction has historically been variable. Historical groundwater elevations for Site wells are presented on Tables 1A and 1B**.**

3.3 Surface Water

The nearest surface water bodies are three unnamed ponds, which are approximately 1,750 feet northeast of the Property.

3.4 Natural Resources and Ecological Receptors

The Site was screened using the criteria presented in the Terrestrial Ecological Evaluation (TEE) to determine whether the contamination at the Site poses a threat to natural resources and ecological receptors. Ecological receptors include terrestrial plans, wildlife, and ecologically important functions of soil biota that affect plants or wildlife. The Property is currently zoned as Light Industrial and future zoning is not anticipated to change. According to WAC 173-340-7490(2)(b), TEE for industrial or commercial use properties need only be evaluated for terrestrial wildlife protection; plants and soil biota need to be considered.

The documents used to complete the TEE screening are presented in Appendix C and include:

- Aerial Map showing a 500-foot radius surrounding the Site
- TEE exposure analysis per Table 749-1 in WAC 173-340-900
- TEE contaminant analysis per Table 749-2 in WAC 173-340-900

The Site does not qualify for a primary exclusion; therefore, a simplified TEE was completed. An exposure analysis was conducted for the Site per Table 749-1. The Site is largely adjoined by undeveloped land to the north, east, and south. Due to the area of the undeveloped land and the likelihood of the land attracting wildlife, the exposure analysis did not exclude the Site from further evaluation. A contaminants analysis was conducted for the Site per Table 749-2. The highest reported TPHg concentration for in-place soil was detected at a concentration of 412 milligrams per kilogram (mg/kg) in the soil sample collected at 4.9 to 5.9 feet bgs from well MW-5D, below the allowable concentration of 12,000 mg/kg listed in Table 749-2. Additionally, the highest reported TPHd concentration from in-place soil was detected a concentration of 8,280 mg/kg in the soil sample collected at 6 feet bgs from test pit GCC29-6, below the allowable concentration of 15,000 mg/kg listed in Table 749-2. In addition, the Site is partially fenced, which acts as a physical barrier to prevent wildlife from potential soil exposure. Therefore, this pathway is incomplete and the Site is excluded from any further TEE.

4. Contaminant Occurrence

The following sections present a discussion of Site characterization work that has occurred at the Site and a summary of current Site conditions for each affected media.

4.1 Summary of Previous Investigations

A total of 15 monitoring wells, 31 test pits, and 56 soil samples have been completed at the Site. The following reports include details of the environmental investigations which have been conducted at the Site:

- 2001, *Subsurface Site Characterization*, Maxim Technologies, Inc. (Maxim)
- 2002, *Remedial Excavation and Assessment Report*, Maxim
- 2002, *Additional Site Characterization*, Maxim
- 2014, *Site Investigation Report*, AECOM

A complete chronological summary of work completed at the Site during the investigations listed above is included as Appendix A. Reports summarized in Appendix A represent all available investigation reports obtained by or provided to GHD. A summary of groundwater monitoring results are summarized in Table 1A for shallow wells and 1B for deep wells, and a summary of historical soil analytical data is presented in Table 2. A summary of the well construction details is presented in Table 3. All available historical boring logs for the previous investigations are included in Appendix B.

4.2 Groundwater

Tables 1A and 1B summarize historical groundwater analytical results for monitoring wells at the Property from 2001 through 2018. Groundwater contour and chemical concentration maps for the first and second quarters 2018 are provided as Figures 10A, 10B, 11A, and 11B.

There are currently 10 groundwater monitoring wells (MP-1R, MW-1, MW-2, MW-3, MW-4, MW-5, MW-5D, MW-6, MW-7, and MW-8) present at the Site. Four additional wells are located southeast of the Site (95-MW-11A, 95-MW-11B, 95-MW-12A, and 95-MW-12B) and are gauged during each groundwater monitoring event. These four wells were installed in 1990 by the US Army Corp of Engineers; however, P66 was given permission to gauge and sample these wells as part of the ongoing Site investigations. Groundwater well MP-1 was installed at the Site in 2001 and was decommissioned in 2013 and replaced with MP-1R. Groundwater monitoring has been conducted at the Site on a quarterly to semi-annual frequency since 2001. Groundwater monitoring was not performed between June 2014 and April 2017 in order to evaluate site strategy options and also, as a result of various consultant changes.

Groundwater occurs beneath the Site as shallow, perched groundwater and within a deeper water bearing zone. Monitoring wells MW-1, MW-5D, MW-6, MW-7, MW-8, MW-11B, and MW-12B are screened within the deeper water bearing zone (approximately 25 to 45 feet bgs), and wells 95-MW-11A and 95-MW-12A are screened within an even deeper water bearing zone than the wells on-Site (approximately 84.5 to 94.5 and 68 to 78 feet bgs, respectively). The remaining wells are screened within the shallow perched groundwater (approximately 3.5 to 14.5 feet bgs). The depth to water is typically measured between 2 and 6.5 feet bgs in the shallow, perched groundwater zone; however, former well MP-1 was dry when measured in 2011. The groundwater gradient in the shallow zone is predominantly to the east to northeast at 0.002 or 0.003 foot per foot.

The depth to water is typically measured between 26 and 38.5 feet bgs in the deeper water bearing zone, and the groundwater flow direction and gradient has historically been variable.

Historically, groundwater samples collected from the wells were analyzed for TPHg, TPHd, TPHo, benzene, toluene, ethylbenzene, and xylenes (BTEX), and naphthalene. Groundwater collected from wells MP-1, MP-1R, MW-1, MW-2, MW-4, MW-5, MW-5D, MW-7, MW-8 has historically contained concentrations of TPHg (up to 5,710 micrograms per liter [ug/L]), TPHd (up to 50,300 ug/L), TPHo (2,400 ug/L), benzene (up to 19.1 ug/L), and/or naphthalene (up to 1,320 ug/L) above their respective MTCA Method A cleanup levels of 800, 500, 500, 5, 160 ug/L, respectively. Wells MW-3, MW-6, and 95-MW-11B have not historically had concentrations of the contaminants of concern (COCs) above their respective MTCA Method A cleanup levels. Well 95-MW-11A has not been sampled since it's installation due to an obstruction in the well at 3.25 feet bgs, and wells 95-MW-12A and 95-MW-12B have only been sampled once in June 2009, at which time the COCs were not detected above their respective laboratory method reporting limits (MRLs). LNAPL has not historically been measured in any of the wells on-Site.

Wells MW-1, MW-3, MW-4, MW-5, MW-6, MW-8, and 95-MW-11B were included in the analytical sampling between 2002 and September 2017; at which time each well had at least four quarters where concentrations of the COCs did not exceed the MTCA Method A cleanup levels. Therefore, since March 2018, analytical sampling has been limited to MP-1R and MW-2, screened in the shallow zone, and MW-5D and MW-7, screened in the deeper water bearing zone. These groundwater samples have been analyzed for TPHg, TPHd and TPHo. Given the absence of BTEX and naphthalenes detections during the groundwater monitoring events prior to 2018, these analytes were removed from the program.

During the quarterly groundwater sampling events completed from March through September 2018, concentrations of one or more analyzed constituents were above MTCA Method A cleanup levels for the following:

- TPHg – Well MW-1R, MW-2
- TPHd – Well MW-1R, MW-2 , MW-5D
- TPHo - Well MW-5D

An ORC sock remains stuck in well MW-7; therefore, samples were not collected during these quarterly sampling events.

Based on the current and historical groundwater data, the shallow groundwater plume is limited to the vicinity of MW-1R and MW-2 and the groundwater plume present in the deeper water bearing zone is limited to at least the vicinity of MW-5D. The groundwater impacts appear to have originated from the 1979 pipeline release and have migrated west and southwest, within the scour deposit identified on the Site.

The current horizontal extent of the shallow groundwater plume is fully defined by wells MW-3 to the west, MW-4 to the southwest, and MW-5 to the south. Historical groundwater impacts were identified in wells MW-4 and MW-5; however, they each have eight quarters of clean groundwater data collected between 2013 and 2018. Additionally, these wells are located in an up-gradient position relative to the location of the historical YLP release. Therefore, additional compliance wells

are not needed in the vicinity of MW-4 and MW-5. Additionally, COCs have not been detected in well MW-3 since its installation. Shallow groundwater is not present in sufficient quantities to provide an adequate potable source given its discontinuous nature. Shallow groundwater at the Site has only been identified within and along the western edge of the scour deposit. In 2013, an attempt to install a shallow groundwater well (MW-9) east of the scour deposit was made; however, groundwater was not encountered in two separate locations. Based on its discontinuous nature, additional groundwater monitoring wells are not needed to delineate the current groundwater impacts in wells MP-1R and MW-2.

The current horizontal extent of the deeper groundwater plume is fully defined by well MW-6 to the south, 95-MW-11B and 95-MW-12B to the southeast, MW-8 to the northeast, and MW-1 to the north. Historical groundwater impacts were identified in wells MW-1 and MW-8; however, they each have at least four quarters of clean groundwater data. Additionally, COCs have not been detected above their respective laboratory MRLs in wells MW-6, 95-MW-11B, and 95-MW-12B since their installation. Groundwater has not been collected from MW-7 since 2014 due to an ORC sock stuck in the well; therefore, the current groundwater conditions in the well are unknown. Slight exceedances of TPHd and TPHo have been historically detected in MW-5D; however, one set of these recent exceedances appears to be an anomaly because the COCs were detected in the field duplicate sample, but not in the normal sample. The COCs were not identified about their respective MTCA Method A screening levels during the latest groundwater monitoring event. Additionally, the shallow groundwater zone does not appear to be continuous to the deeper groundwater zone

4.3 Soil

Table 2 summarizes soil analytical data for the Site. Refer to Figure 4 *Soil Investigation Map*, for a depiction of soil data for the Site, and cross sections A-A' and B-B' as Figures 5 and 6. The majority of soil samples were collected in the vicinity of the YPL and the on-Site scour deposit. The depths of soil sampling range from 2 to 45 feet bgs.

Petroleum impacted soil exceeding MTCA Method A screening levels was identified during several subsurface investigations that began in 1996 to assess the 1979 release of jet fuel from the YPL. Several test pits were advanced in 2001 and ten permanent groundwater monitoring wells (MW-1 through MW-8, MP-1R, and MW-5D) were installed in 2002 and 2013, surrounding the point of release. The installation of an eleventh well (MW-9) was attempted to the east of the YPL; however, groundwater was not encountered in two advancement attempts, therefore a well was not installed. Soil samples collected and analyzed from TP-3, TP-4, YPL #2, YPL #3, GCC3, GCC15, GCC18 through GCC21, GCC25, GCC29, GCC32, MW-2, MW-4, MW-5, MW-7, and MW-5D, at depths ranging from 4 to 10.5 feet bgs, had concentrations of TPHg (117 and 412 mg/kg), TPHd (ranging from 1,510 through 11,600 mg/kg), and naphthalenes (ranging from 9.3 to 27.8 mg/kg) above the MTCA Method A cleanup levels of 100, 2,000, and 5 mg/kg, respectively. TPHo and BTEX were not detected above their respective laboratory MRLs or MTCA Method A cleanup levels during this investigation; however, TPHg was not included in analysis of many samples including those analyzed from MW-1 through MW-8 and GCC3 through GCC32.

Based on the soil analytical results, the soil impacts appear to have originated and are highest in the vicinity of the 1979 point of release from the YPL.

The horizontal extent of the impacted soil is defined to the south and southeast by GCC7, GCC8, GCC22, GCC23, TP-9, and MW-6; to the north and northeast by MW-8, GCC26, GCC14, YPL-1, and GCC17; and to the west by GCC30, MW-3, GCC31, GCC28, and MW-4. A naphthalene exceedance in soil was identified in MW-2 at a concentration of 27.8 mg/kg at the time of collection in 2002. It is likely that this concentration has naturally attenuated since it was collected 16 years ago. TPHd was detected in GCC32 at a concentration of 2,810 mg/kg at the time of collection in 2001. This concentration only slightly exceeds the TPHd cleanup level of 2,000 mg/kg and has likely attenuated naturally. Therefore, based on the available data, the extent of impacted soil if fully defined.

The absence of groundwater impacts in the most recent data collected from MW-4 and in down-gradient well MW-5 empirically demonstrates that the residual soil concentrations above MTCA Method A screening levels surrounding well MW-4 are not adversely affecting groundwater. Therefore, additional remedial action of Site soils does not appear warranted in the vicinity of MW-4.

Because the majority of soil sampling occurred between 2001 and 2002, soil data is approximately 16-17 years old. GHD recommends confirming select historical soil exceedances to determine the degree of natural attenuation that has occurred over time. In addition, if soil impacts are observed, carbon fractions (extractable petroleum hydrocarbons [EPH] and volatile petroleum hydrocarbons [VPH]) can be obtained for the purpose of calculating a Site-specific TPH cleanup level.

5. Interim Remedial Action

When the two heating oil USTs were removed from the Correctional Center Property in 1998, the UST formerly located south of Building A, located southwest of the Site, did not have indications of leaks. However, the subsurface in the vicinity of the UST formerly located northwest of Building C had indications of impacts. Subsequent soil sampling from the Building C UST excavation identified impacts, and approximately 100-tons of petroleum impacted soil was removed from the Site. However, the analytical results of a confirmation soil sample collected from a sidewall of the remedial excavation confirmed that TPHo was present at 10,000 mg/kg, which is above the current MTCA Method A cleanup level of 2,000 mg/kg. The impacted soil was reportedly in contact with groundwater; however, it appears that groundwater samples were not collected during this investigation.

In October 2001, approximately 400 cubic yards of petroleum impacted soil was removed from along an approximately 155 foot section of the YPL, which included the vicinity of the 1979 release. The impacted soil was excavated to the edge of observed impacts and soil from the sidewalls and bottom of the excavation was field screened with PetroFLAG™ soil analyser kits for total extractable hydrocarbons. Based on the results of the 25 PetroFLAG™ samples, confirmation soil samples were collected for analysis; however, the PetroFLAG™ samples were also used as soil confirmation samples for the soil left in-place. Based on the PetroFLAG™ and analytical results, impacted soil was left in-place to the south, east, west, and along the bottom of the excavation. The excavated impacted soil was disposed of at a licensed Class II landfill and the clean overburden was used as backfill material. The excavation was advanced until approximately 8 feet bgs, where bedrock was encountered, and was limited to the east by a fence and an underground natural gas line, to the

north and south by up-sloping bedrock surface, and to the west by landscaping, a driveway, and the Correctional Center.

In June 2014, ORC socks were installed in wells MP-1R, MW-2, MW-5D, and MW-7 in an effort to stimulate aerobic biodegradation. As of September 2018, the ORC sock placed in MW-7 remains stuck in the well.

Additionally, in October 2016, an UIC Well Registration Form was submitted to the Ecology in order to request authorization to inject hydrogen peroxide as a means of rehabilitating wells MP-1R, MW-2, and MW-5D by cleaning the filter pack and adjacent soils. In November 2016, rehabilitation procedures were performed on the wells; however, during retrieval of the ORC sock in MP-1R, the line broke and the sock was unsuccessfully removed from the well. It was noted that organic material, including plant roots, were removed from MP-1R indicated that this well may have been compromised. Well rehabilitation procedures included surging the screened intervals using a surge block and removing approximately 12 gallons of water from each of the wells. Following the surging and removal of groundwater, 5 gallons of hydrogen peroxide were poured into each of the wells. Field notes did not indicate if rehabilitation procedures were conducted on well MW-5D.

6. Site Conceptual Model

Petroleum was initially released into the subsurface at the corrections facility in 1979 from the adjoining YPL, which resulted in a release of approximately 42 gallons. The released fuel and approximately 50-gallons of perched water were removed and the pipeline was patched. Additionally, in 1998 two heating oil USTs were removed from the correction facility and soil contamination was encountered associated with the UST formerly located north of Building C. Approximately 100 tons of petroleum impacted soil was removed from the UST excavation. At the final extent of excavation, impacted soil still remained in exceedance of cleanup levels. A concentration of greater than 10,000 mg/kg of TPHd was detected in soil. Analysis during several subsequent subsurface investigations indicated that the release from the YPL was likely jet fuel, and that the COCs for the Site are TPHg, TPHd, TPHo, and naphthalenes.

The nearest surface water body are three unnamed ponds, which are approximately 1,750 feet northeast of the Site. The Property is currently zoned for light industrial use, and future zoning is not anticipated to change. The Site is covered by several buildings and exterior paved areas; however, the majority of the exterior portions of the Site are unpaved and therefore, have been exposed to infiltrating surface water. Subsurface soils at the Site consist of Aeolian silt and sand, and fluvial deposits of silt, sand, and gravel underlain by basalt to a maximum explored depth of approximately 101 feet bgs. Basalt has been encountered at the Site at depths ranging from 3 to 37 feet bgs. Additionally, a scour channel deposit, consisting of fine to coarse sand and gravel lenses, is located in the central portion of the Site. Historical soil impacts were identified in the vicinity of the 1979 release, and to the west and southwest of the release, in the scour channel. Approximately 400 cubic yards of soil was removed during remedial excavation activities in 2001 to 8 feet bgs. Confirmatory soil samples were collected at the final excavation extents and impacted soil was left in-place to the south, east, west, and along the bottom of the excavation.

Shallow groundwater is present at the Site between approximately 2 and 6.5 feet bgs, and appears to flow toward the east and northeast. The depth to water is typically measured between 26 and 38.5 feet bgs in the deeper water bearing zone, and the groundwater flow direction has historically been variable.

Groundwater impacted with petroleum hydrocarbons concentrations above MTCA Method A cleanup levels is present in the vicinity of the YPL and west and southwest, within the source deposit. The current horizontal extent of the shallow groundwater plume is defined by wells MW-3 to the west, MW-4 to the southwest, and MW-5 to the south. Historical groundwater impacts were identified in wells MW-4 and MW-5; however, they each have eight quarters of clean groundwater data collected between 2013 and 2018. Additionally, these wells are located in an up-gradient position relative to the historical release from the YPL. Additionally, COCs have not been detected in well MW-3 since its installation. The current horizontal extent of the deeper groundwater plume is defined by wells MW-6 to the south, and MW-8 to the northeast, and MW-1 to the north. Historical groundwater impacts were identified in wells MW-1 and MW-8; however, they each have at least four quarters of clean groundwater data. Additionally, COCs have not been detected above their respective laboratory MRLs in well MW-6 since its installation.

The soil vapor intrusion pathway at the Site represents a data gap. Historical soil data collected in the vicinity of the on-Site buildings had exceedances of TPHd and naphthalenes in shallow soils (samples collected from 5.5 to 10 feet bgs) within 80 feet of Buildings C and D, and the Administration Building. Based on the current and proposed future Property use as a correction facility, the soil vapor intrusion pathway at the Site requires further evaluation. Soil samples have not been collected in the vicinity of the Site building in over 17 years; therefore, current soil conditions near the Site buildings need to be assessed in order to properly evaluate the soil vapor intrusion pathway.

In accordance with MTCA, potential exposure pathways for human and environmental receptors based on the current and planned land use identified during this investigation include the following:

- Human health protection from direct soil contact
- Human health protection from soil to groundwater (drinking water)
- Human health protection from soil to groundwater (direct contact)
- Human health protection from soil vapor inhalation
- Human health protection from soil to surface water
- Human health protection from groundwater to surface water
- Terrestrial ecological protection.

Based on information provided in this report, the following conclusions can be made:

- The direct soil contact pathway is potentially complete because the historical release impacted soil within the upper 15 feet

- The soil to groundwater (drinking water) pathway is potentially complete because the deeper water bearing zone contains concentrations exceeding MTCA Method A cleanup levels, and the groundwater has the potential to be sourced for drinking purposes
- The direct groundwater contact pathway is potentially complete because the historical release impacted soil within the upper 15 feet
- The soil vapor inhalation pathway requires further evaluation
- The soil to surface water and groundwater to surface water pathways are incomplete due to the physical distance to the nearest surface water
- The groundwater to surface water pathway is incomplete due to the physical distance separating impacted groundwater and surface water
- The terrestrial ecological pathways are incomplete as demonstrated by the simplified TEE evaluation, which resulted in an exclusion from further evaluation

Potential exposure pathways requiring additional evaluation include the following:

- Direct contact with soil
- Direct contact with groundwater
- Drinking water
- Vapor intrusion

Cleanup standards addressing the aforementioned pathways are discussed below.

7. Cleanup Standards

In accordance with MTCA, development of cleanup levels includes identifying potential exposure pathways for humans and environmental receptors based on the planned land use. The site is currently zoned for light industrial use and site zoning is not anticipated to change. Potential COCs for this site include the compounds listed in MTCA 173-340-900 Table 830-1 *Required Testing for Petroleum Releases*.

7.1 Groundwater Cleanup Levels

Groundwater in the vicinity of the Site is not classified for drinking water beneficial use for the City of Spokane, but although unlikely, could potentially be classified for future drinking water use. Shallow groundwater is not present in sufficient quantities to provide an adequate potable source given its discontinuous nature. Shallow groundwater at the Site has only been identified within and along the western edge of the scour deposit. In 2013, an attempt to install a shallow groundwater well (MW-9) east of the scour deposit was made; however, groundwater was not encountered in two separate locations. Therefore, the shallow groundwater cleanup level should be based on protection of human health via direct contact. The point of compliance for this Site is defined as the point at

which human contact with groundwater is likely; thus the point of compliance is all groundwater between the ground surface and 15 feet bgs.

MTCA does not establish cleanup levels based on protection of human health via direct contact; therefore, the Oregon Department of Environmental Quality (DEQ) guidance was used to calculate Site-specific cleanup levels. Based on the EPH and VPH fractions analyzed in groundwater from MP-1R and MW-2, the cleanup level exceeds the saturation level (">S"). Site-specific cleanup levels for BTEX were calculated based on protection of human health via direct contact. The Site-specific cleanup levels were calculated using the following equation[1]:

$$RBC_{we}\ (\mu g/L) = \frac{ARL_c * AT_c * 365\ d/yr * BW_a}{ED_e * EF_e * [(IRA_a * VF_{we} * SF_i) + (DA_w * EvF_w * SA_w * SF_o)]} * 10^3\ \mu g/mg$$

Where:

RBCwe = Risk Based Concentration for Excavation or Construction Worker Exposure to Groundwater (in µg/L)
ARLc = AccepTable risk level – carcinogens (unitless)

ATc = Averaging time – carcinogens (yr)
BWa= Body weight (kilograms)
EDe = Exposure duration (yr)
EFe = Exposure frequency (d/yr)

IRAa = Inhalation rate (m3/d)
VFwe = Volatilization factor for water in an excavation (L/m3)
SFi = Cancer slop factor – inhaled (mg/kg d) 1

DAw = Dermal absorption factor for groundwater (L/cm2 event)
EvFw = Event frequency for groundwater contact (event/d)
Saw = Skin surface contact area to groundwater (cm2)
SFo = Cancer slope factor – oral (mg/kg d) 1

An excerpt from the State of Oregon Department of Environmental Quality *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites*, including the cleanup levels for Site COCs and reference tables with data used in the calculation is included as Appendix D.

Although not classified for drinking water currently, the deeper groundwater may be a future beneficial resource. Therefore, MTCA Method A groundwater cleanup levels for COCs at the Site will be used for the deeper groundwater. The point of compliance for this Site is defined as the point at which the groundwater cleanup level must be attained; thus, the point of compliance is the entire Site. The groundwater cleanup levels are presented in Tables 1A and 1B.

[1] State of Oregon, Department of Environmental Quality, *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites,* 2003: p. B-65, eq. B-161.

7.2 Soil Cleanup Levels

Site data has shown that shallow soil impacts are no longer leaching to groundwater and causing adverse groundwater conditions. Therefore, the soil cleanup levels should be based on the protection of complete exposure pathways, which is protection of human health via direct contact. The point of compliance for this Site is all soil between the ground surface and 15 feet bgs. EPH/VPH fractions have not been analyzed in soil; therefore, Site-specific cleanup levels for TPH have not been established at this time. The generic soil TPHg cleanup level of 1,500 mg/kg will be utilized. The soil cleanup levels are presented in Table 2.

8. Areas Requiring Future Management

8.1 Constituents of Concern

TPHg, TPHd, and naphthalenes are the only constituents above the Site-specific cleanup levels for soil. No constituents remain above the Site-specific cleanup levels for groundwater; however, four quarters of compliance have not yet been obtained.

8.2 Groundwater Requiring Future Management

Current groundwater conditions are depicted on Figures 10A, 10B, 11A, and 11B. No constituents exceed the Site-specific cleanup levels for shallow groundwater; therefore, shallow groundwater does not require any future management. TPHd was detected in the deep water bearing zone from well MW-5D in exceedance of the MTCA Method A cleanup level during the June 2018 groundwater monitoring event but no exceedances were detected during the September 2018 event. TPHd and TPHo were detected in exceedance of the MTCA Method A cleanup level in the field duplicate sample from well MW-5D during the March 2018 event, but not in the “parent” sample from the same well collected at the same time. Therefore, the field duplicate sample should be considered anomalous. Groundwater from the vicinity of well MW-5D requires future management to determine compliance with cleanup levels.

8.3 Soil Requiring Future Management

Based on the information included in this RI, soil samples collected from GCC-3, GCC15, GCC18 through GCC21, GCC25, GCC29, GCC32, MW-2, MW-4, MW-5, MW-5D, and MW-7, which are located in the immediate vicinity of the YPL and west throughout the observed scour deposit, historically, and may currently, exceed the generic TPH cleanup level of 1,500 mg/kg. A Site-specific cleanup level needs to be calculated and current soil conditions require evaluation. The majority of the identified impacted soil ranges in depths from 2 to 10.5 feet bgs; however, soil collected from MW-5D was impacted in a soil sample collected from 35 to 35.2 feet bgs. Based on the historical data, the release originated from a punctured portion of the YPL used the scour deposit as a preferential pathway. Therefore, soil requiring further management is present in the YPL easement and to the west of the YPL.

8.4 Soil Vapor Requiring Future Management

Based on a review of previous subsurface investigations at the Site, the soil vapor intrusion pathway at the Site represents a data gap. Historical soil data collected in the vicinity of the on-Site buildings had exceedances of TPHd and naphthalenes in shallow soils (samples collected from 5.5 to 10 feet bgs) within 80 feet of Buildings C and D, and the Administration Building. Based on the current and proposed future Property use as a correction facility, the soil vapor intrusion pathway at the Site requires further evaluation. Soil samples have not been collected in the vicinity of the Site building in over 17 years; therefore, current soil conditions near the Site buildings need to be assessed in order to properly evaluate whether soil vapor sampling is warranted.

9. Conclusions and Recommendations

Petroleum impacted soil has historically been identified in the immediate vicinity of the YPL and west of the YPL, throughout the observed scour deposit. Soil data is 16-17 years old and concentrations have likely attenuated. The current groundwater impacts are also limited to within the observed scour deposit.

GHD recommends continuing quarterly monitoring for well MW-5D only, until four quarters of groundwater cleanup levels are obtained. We recommend reducing the analytical suite to TPHd and TPHo only. GHD also recommends confirming select soil locations to evaluate current concentrations. In addition, EPH/VPH data for calculation of a Site-specific soil cleanup level for TPH for protection of human health via direct contact will be collected. The current soil data will also be used to evaluate whether further consideration of the soil vapor pathway is necessary.

9.1 Path to Closure

GHD anticipates that soil concentrations have attenuated naturally over time. After collecting current representative soil samples, we will calculate an attenuation factor based on a comparison of the historical concentration to the current concentration. The attenuation factor will be applied to all soil throughout the Site to evaluate expected current conditions. We anticipate that this will result in most soil concentrations expected to be below the Site-specific cleanup levels. In addition, if residual contamination is still present in soil, we will analyze EPH/VPH and calculate a Site-specific TPH cleanup level for soil that is protective of the direct contact pathway. Any remaining soil concentrations will be compared to the Site-specific cleanup level. We anticipate all soil will be in compliance, which in turn will demonstrate protection of the vapor intrusion pathway. If soil exceedances remain, the vapor intrusion pathway will be further evaluated, if warranted. All of the aforementioned investigative work will be conducted in 2019.

In addition, GHD anticipates that groundwater from well MW-5D will achieve four quarters of compliance with cleanup levels following three additional groundwater monitoring events. Following completion of four quarters of compliance, no further groundwater management will be required.

Based on the assumptions above, we anticipate a no further action determination within 1 year.

10. References

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All of Which is Respectfully Submitted,

GHD

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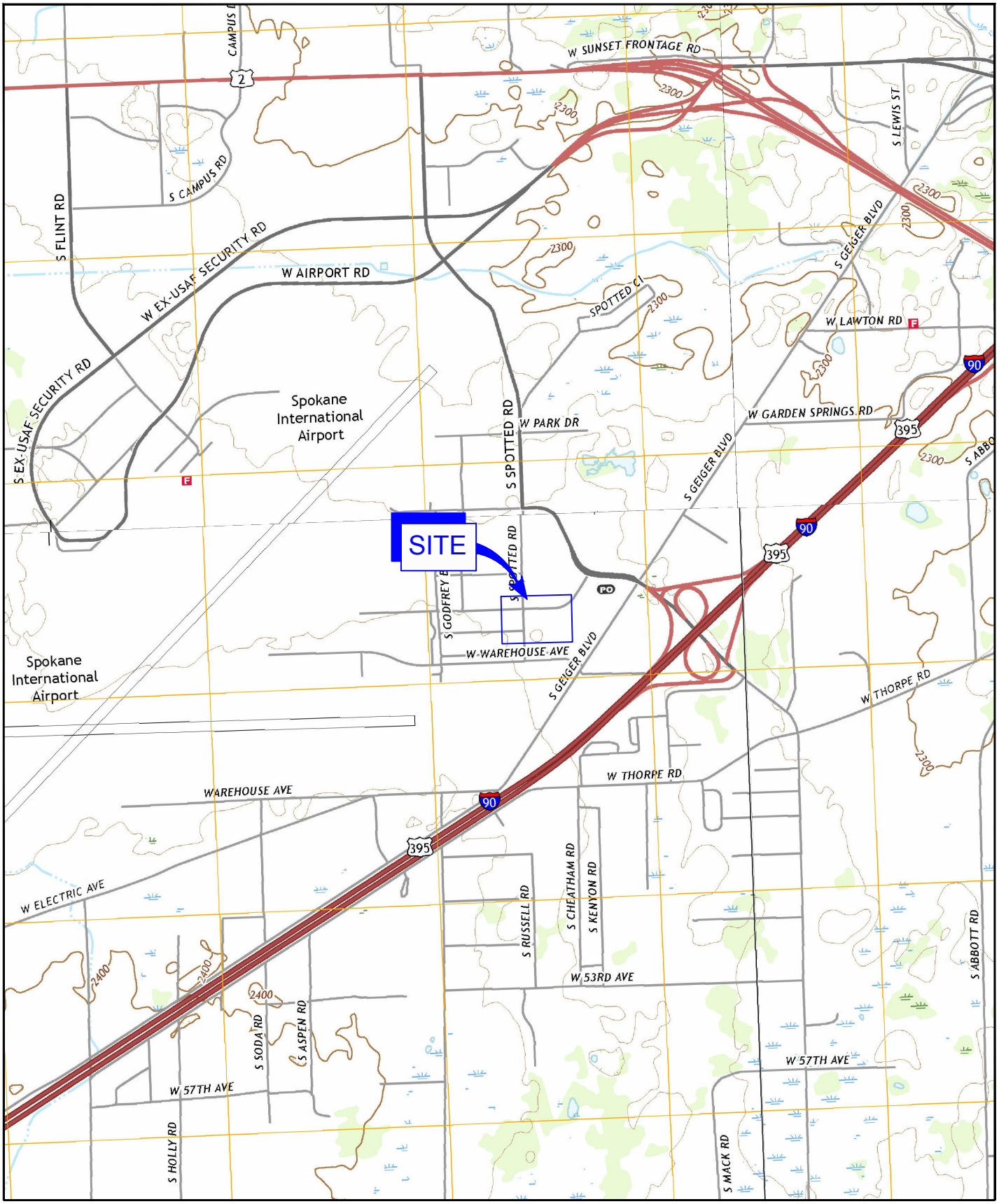
Emily Blakeway

Figures



Source: USGS QUADRANGLE MAPS: SPOKANE NW, WA. (2017)., SPOKANE SW, WA. (2017)., FOUR LAKES, WA. (2017)., & AIRWAY HEIGHTS, WA. (2017).

0 1000 2000ft

Coordinate System:
WASHINGTON NORTH
STATE PLANE NAD83 FEET

PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

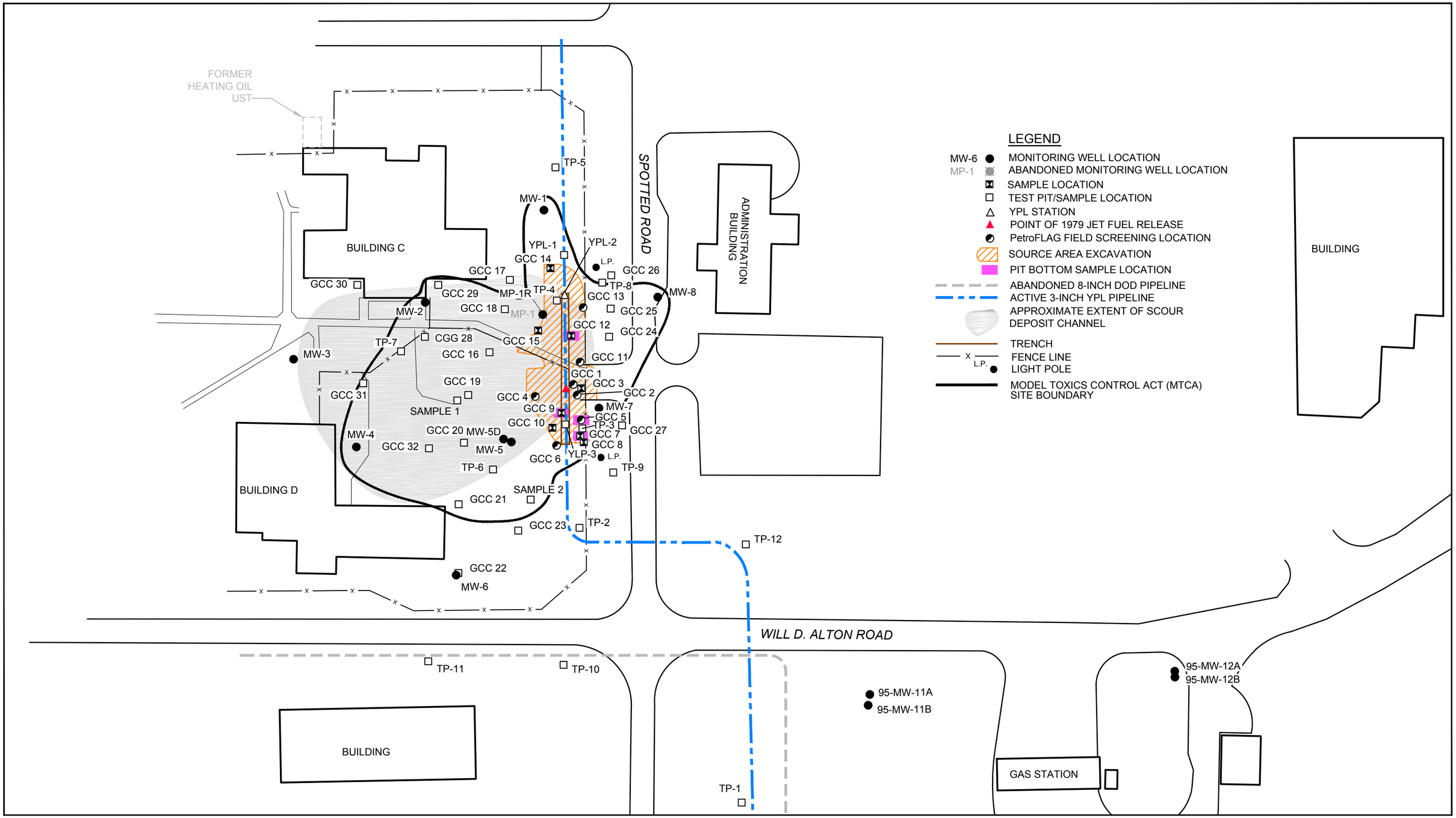
11145847-4MN00

Aug 24, 2018

SITE LOCATION MAP

FIGURE 1

CAD File: I:\Sonoma.Public\CAD\drawings\11140000s\11145847\11145847-REPORTS\11145847-4MN00(003)GN\11145847-4MN00(003)GN-SO001.DWG



Source: Microsoft Product Screen Shot(s) Reprinted with permission from Microsoft Corporation, Acquisition Date Jun/2015 - Sep/2016, Accessed: 2017. Google ©2017 Image. AECOM SITE PLAN AND WELL LOCATIONS DATED 2/7/2014. MAXIM Technologies, Inc. Figures 3 and 4 dated July 2001.

0 40 80ft

PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

SITE PLAN

11145847-4MN00

Nov 7, 2018

FIGURE 2

CAD File: I:\Sonoma.Public\CAD\drawings\11140000s\11145847\11145847-REPORTS\11145847-4MN00(003)GN\11145847-4MN00(003)GN-SO003.DWG

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0 80 160ft

PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

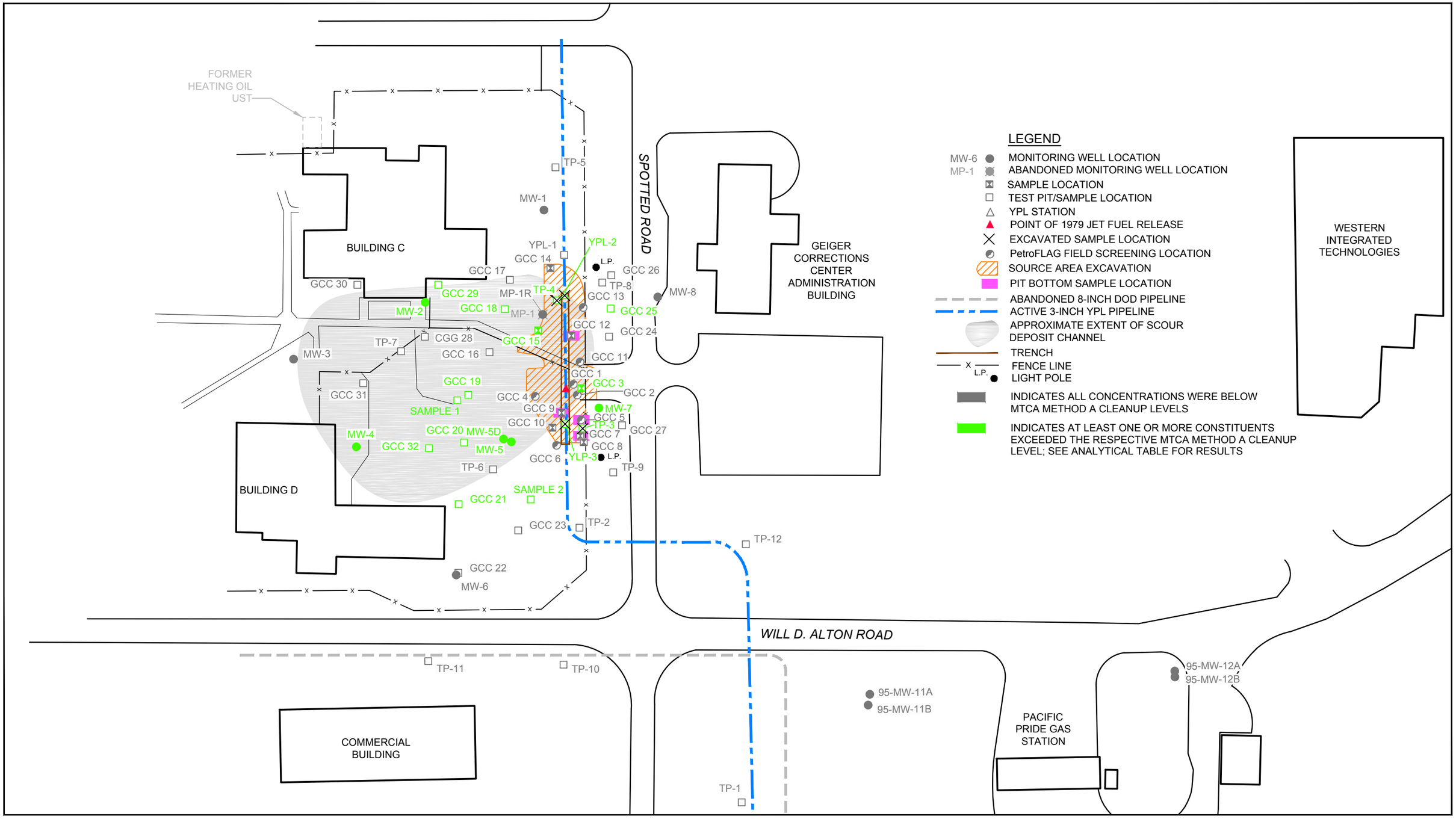
11145847-4MN00

Sep 25, 2018

SURROUNDING PROPERTIES

FIGURE 3

CAD File: I:\Sonoma.Public\CAD\drawings\11140000s\11145847\11145847-REPORTS\11145847-4MN00(003)GN\11145847-4MN00(003)GN-SO004.DWG



Source: Microsoft Product Screen Shot(s) Reprinted with permission from Microsoft Corporation, Acquisition Date Jun/2015 - Sep/2016, Accessed: 2017. Google ©2017 Image. AECOM SITE PLAN AND WELL LOCATIONS DATED 2/7/2014. MAXIM Technologies, Inc. Figures 3 and 4 dated July 2001.

0 40 80ft

PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

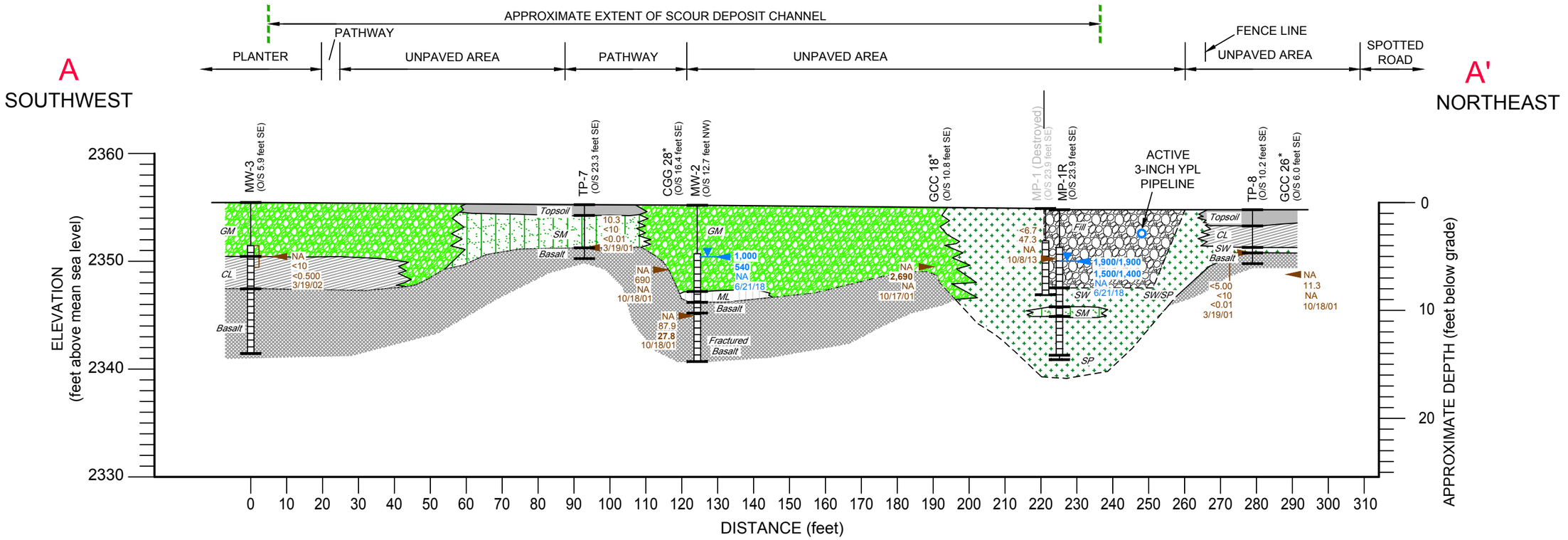
11145847-4MN00

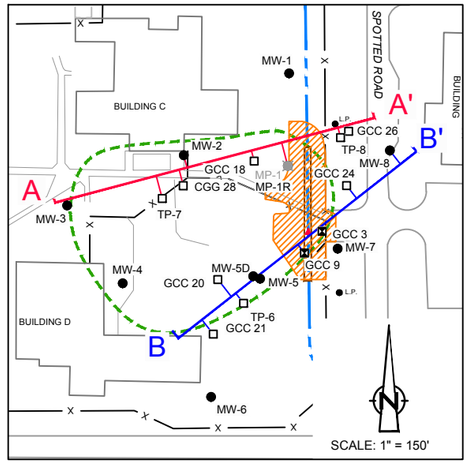
Sep 25, 2018

SOIL INVESTIGATION MAP

FIGURE 4

CAD File: I:\Sonoma.Public\CAD\drawings\11140000s\11145847\11145847-REPORTS\11145847-4MN00(003)GN\11145847-4MN00(003)GN-SO002.DWG





LEGEND

MW-2 — WELL DESIGNATION

GROUND SURFACE (OFFSET)

GROUNDWATER MONITORING WELL

STRATIGRAPHIC BOUNDARY

CL — TYPICAL SOIL CLASSIFICATION

SCREENED INTERVAL

BOTTOM OF BORING

APPROXIMATE SOIL SAMPLE LOCATION

TPHg / TPHd / NAPHTHALENE / DATE — HYDROCARBON CONCENTRATIONS IN SOIL (mg/kg)

APPROXIMATE GROUNDWATER SAMPLE LOCATION

TPHg / TPHd / NAPHTHALENE / DATE — HYDROCARBON CONCENTRATIONS IN GROUNDWATER (µg/L)

NA — NOT ANALYZED

< — NOT DETECTED AT OR ABOVE STATED REPORTING LIMITS

Topsoil

FILL / 2001 EXCAVATION

ML - INORGANIC SILTS, VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, CLAYEY SILTS WITH SLIGHT PLASTICITY

CL - INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS

BR - BASALT AND FRACTURED BASALT

GM - SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES

SM - SILTY SANDS, SAND-SILT MIXTURES

SW/SP - WELL-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES

NOTES:
CONTACT DASHED WHERE INFERRED.
*BORING LOGS WERE NOT AVAILABLE FOR REVIEW, LITHOLOGY INFERRED BASED ON NEARBY BORINGS/WELLS.

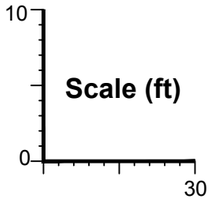


FIGURE 5

GEOLOGIC CROSS SECTION A-A'
PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

B — SOUTHWEST

B' — NORTHEAST

APPROXIMATE EXTENT OF SCOUR DEPOSIT CHANNEL

UNPAVED AREA

FENCE LINE

CORNER OF SPOTTED ROAD AND MAIN ENTRANCE

SPOTTED ROAD

GCC 21* (O/S 18.1 feet SE)
GCC 20* (O/S 21.4 feet NW)
TP-6 (O/S 12.7 feet SE)
MW-5D (O/S 2.5 feet NW)
MW-5 (O/S 3.7 feet SE)
GCC 9* (O/S 10.7 feet SE)
ACTIVE 3-INCH YPL PIPELINE
GCC 3* (O/S 4.4 feet SE)
GCC 24* (O/S 16.2 feet NW)
MW-8 (O/S 17.2 feet NW)

ELEVATION (feet above mean sea level)

2360
2350
2340
2330
2320
2310

APPROXIMATE DEPTH (feet below grade)

0
10
20
30
40
50

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270

DISTANCE (feet)

Topsoil
CL
SM
SW/SM
SW
GM
Basalt
Fractured Basalt
ML

NA
5,780
NA
10/17/01

NA
3,470
NA
10/17/01

412
2,580
NA
10/07/13

44.8
69.9
<0.01
3/19/01

NA
328
16.8
3/19/02

NA
45.4
0.544
3/19/02

NA
25.4
NA
10/16/01

NA
756
11.2
10/15/01

NA
11
NA
10/18/01

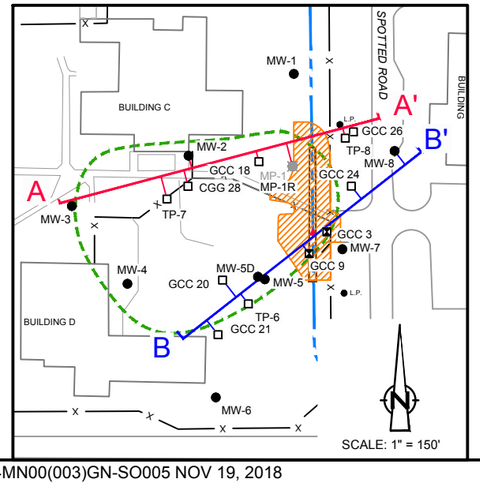
NA
<10
<0.500
3/20/02

<250
670
NA
6/21/18

6/21/18

117
54.9
NA
10/07/13

NA
26.7
<0.500
3/20/02



LEGEND

MW-5 — WELL DESIGNATION

GROUND SURFACE (OFFSET)

GROUNDWATER MONITORING WELL

STRATIGRAPHIC BOUNDARY

CL — TYPICAL SOIL CLASSIFICATION

SCREENED INTERVAL

BOTTOM OF BORING

APPROXIMATE SOIL SAMPLE LOCATION

TPHg
TPHd
NAPHTHALENE
DATE — HYDROCARBON CONCENTRATIONS IN SOIL (mg/kg)

APPROXIMATE GROUNDWATER SAMPLE LOCATION

TPHg
TPHd
NAPHTHALENE
DATE — HYDROCARBON CONCENTRATIONS IN GROUNDWATER (µg/L)

NA NOT ANALYZED

< NOT DETECTED AT OR ABOVE STATED REPORTING LIMITS

Topsoil

ML - INORGANIC SILTS, VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, CLAYEY SILTS WITH SLIGHT PLASTICITY

CL - INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS

BR - BASALT AND FRACTURED BASALT

GM - SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES

SM - SILTY SANDS, SAND-SILT MIXTURES

SW/SM - WELL-GRADED SANDS, GRAVELLY SAND, SILTY SANDS, SAND-SILT, MIXTURES LITTLE OR NO FINES

FILL / 2001 EXCAVATION

NOTES:
CONTACT DASHED WHERE INFERRED.
*BORING LOGS WERE NOT AVAILABLE FOR REVIEW, LITHOLOGY INFERRED BASED ON NEARBY BORINGS/WELLS.

10
Scale (ft)
0
30

FIGURE 6

GEOLOGIC CROSS SECTION B-B'
PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

GHD

11145847-4MN00(003)GN-SO005 NOV 19, 2018

Sample ID	Sample Date	Sample Depth	TPHg	TPHd	Naphthalenes
TP-4-6.0	03/19/01	6	**4,250**	**11,600**	**9.3**

Sample ID	Sample Date	Sample Depth	TPHd
GCC18-5.5	10/17/01	5.5	**2,690**

Sample ID	Sample Date	Sample Depth	TPHd
GCC29-6	10/18/01	6	**8,280**

Sample ID	Sample Date	Sample Depth	TPHd
GCC15-5.5	10/17/01	5.5	**6,180**

Sample ID	Sample Date	Sample Depth	Naphthalenes
GCC19-6	10/17/01	6	**17.3**

Sample ID	Sample Date	Sample Depth	TPHd
GCC20-6	10/17/01	6	**3,470**

Sample ID	Sample Date	Sample Depth	TPHd
GCC32-6	10/18/01	6	**2,810**

Sample ID	Sample Date	Sample Depth	TPHd
GCC21-6	10/17/01	6	**5,780**

Sample ID	Sample Date	Sample Depth	TPHg	TPHd
YPL#2-5.0	03/21/01	5	**1,070**	**5,390**

Sample ID	Sample Date	Sample Depth	TPHd
GCC25-6	10/18/01	6	**3,940**

Sample ID	Sample Date	Sample Depth	Naphthalenes
GCC-3	10/15/01	2-5	**11.2**

Sample ID	Sample Date	Sample Depth	TPHg
TP-3-2.0	03/19/01	2	**1,460**
TP-3-2.0 (DUP)	03/19/01	2	**699**

NOTES:
- ONLY EXCEEDANCES ABOVE CLEANUP LEVEL ARE SHOWN
- ALL CONCENTRATIONS REPORTED IN MILLIGRAMS PER KILOGRAM
- DEPTH = FEET BELOW GROUND SURFACE

BUILDING C
BUILDING D
SPOTTED ROAD
ADMINISTRATION BUILDING
BUILDING
BUILDING
GAS STATION
WILL D. ALTON ROAD
TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
TP-7
TP-8
TP-9
TP-10
TP-11
TP-12
YPL-1
YPL-2 (38+10)
YLP-3
(37+20)
SAMPLE 1
SAMPLE 2
GCC 1
GCC 2
GCC 3
GCC 4
GCC 5
GCC 6
GCC 7
GCC 8
GCC 9
GCC 10
GCC 11
GCC 12
GCC 13
GCC 14
GCC 15
GCC 16
GCC 17
GCC 18
GCC 19
GCC 20
GCC 21
GCC 22
GCC 23
GCC 24
GCC 25
GCC 26
GCC 27
GCC 29
GCC 30
GCC 31
GCC 32
CGG 28
L.P.

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0 40 80ft

LEGEND
- ABANDONED 8-INCH DOD PIPELINE
- ACTIVE 3-INCH YPL PIPELINE
- APPROXIMATE EXTENT OF SCOUR DEPOSIT CHANNEL
- TRENCH
- FENCE LINE
- LIGHT POLE
- SAMPLE LOCATION
- TEST PIT/SAMPLE LOCATION
- YPL STATION
- PetroFLAG FIELD SCREENING LOCATION
- POINT OF 1979 JET FUEL RELEASE
- EXCAVATED SAMPLE LOCATION
- SOURCE AREA EXCAVATION
- PIT BOTTOM SAMPLE LOCATION

GHD

PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

11145847-4MN00
Sep 25, 2018

SOIL DATA MAP - TEST PITS AND REMEDIAL EXCAVATION

FIGURE 7

CAD File: I:\Sonoma.Public\CAD\drawings\11140000s\11145847\11145847-REPORTS\11145847-4MN00(003)GN\11145847-4MN00(003)GN-SO006.DWG

Sample ID	Sample Date	Sample Depth	Naphthalenes
MW-2-10-10.5	03/19/02	10-10.5	**27.8**

Sample ID	Sample Date	Sample Depth	Naphthalenes
MW-7-4-4.5	03/20/02	4-4.5	**20.3**

Sample ID	Sample Date	Sample Depth	Naphthalenes
MW-4-7-9	03/19/02	7-9	**13.6**

Sample ID	Sample Date	Sample Depth	Naphthalenes
MW-5-4-6	03/19/02	4-6	**16.8**

Sample ID	Sample Date	Sample Depth	TPHg	TPHd
MW-5D-4.9-5.9-1013	03/19/02	4.9	**412**	**2,580**
MW-5D-35-35.2 1013	10/07/13	35-35.2	**117**	--

NOTES:
- ONLY EXCEEDANCES ABOVE CLEANUP LEVEL ARE SHOWN
- ALL CONCENTRATIONS REPORTED IN MILLIGRAMS PER KILOGRAM
- DEPTH = FEET BELOW GROUND SURFACE

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0 40 80ft

LEGEND

- ABANDONED 8-INCH DOD PIPELINE
- ACTIVE 3-INCH YPL PIPELINE
- APPROXIMATE EXTENT OF SCOUR DEPOSIT CHANNEL
- TRENCH
- FENCE LINE
- L.P. LIGHT POLE
- SOURCE AREA EXCAVATION
- MW-6 MONITORING WELL LOCATION
- MP-1 ABANDONED MONITORING WELL LOCATION
- MW-9 ATTEMPTED WELL/BORING LOCATION

GHD

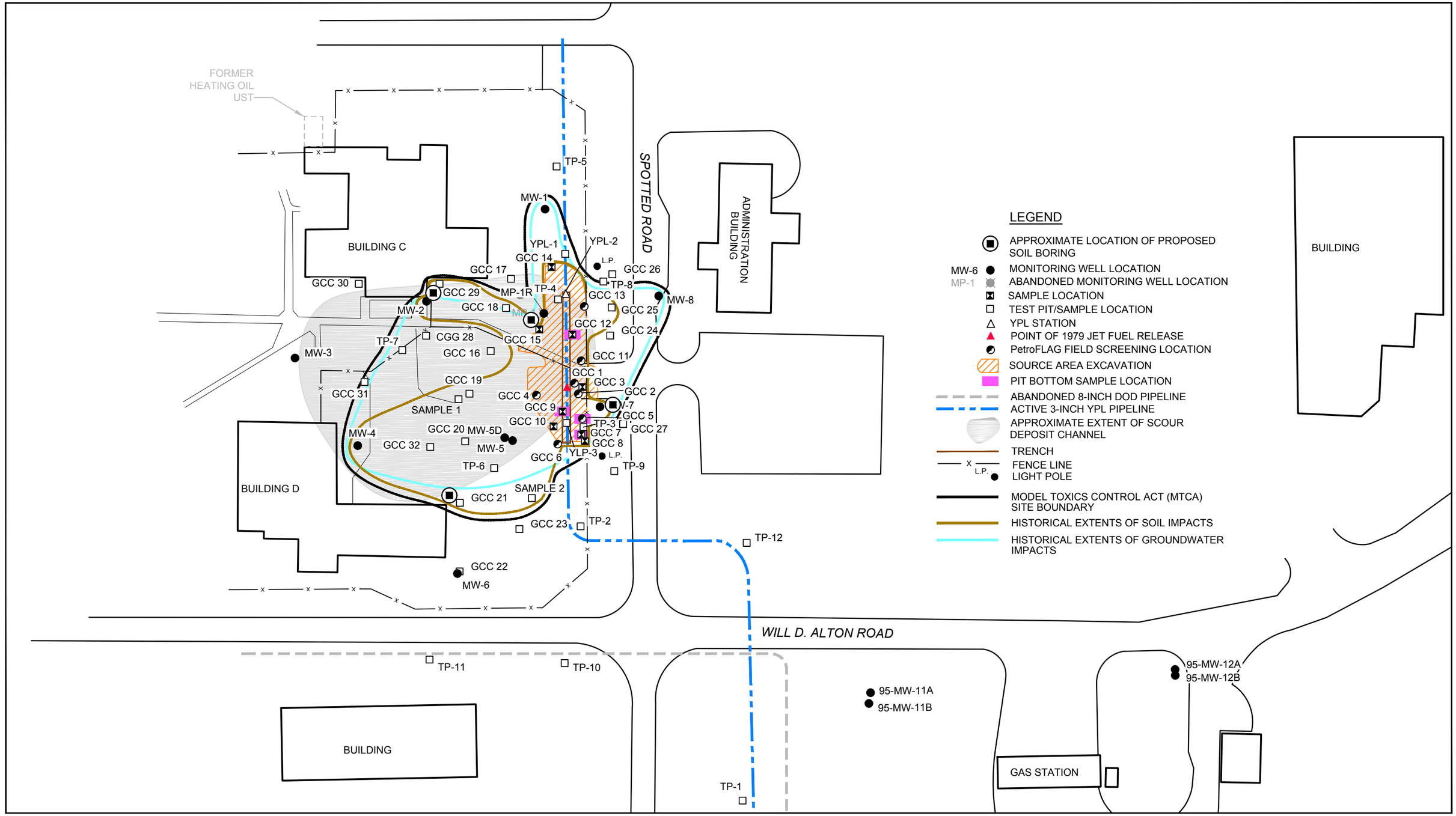
PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

11145847-4MN00
Nov 7, 2018

SOIL DATA MAP - POST EXCAVATION

FIGURE 8

CAD File: I:\Sonoma.Public\CAD\drawings\11140000s\11145847\11145847-REPORTS\11145847-4MN00(003)GN\11145847-4MN00(003)GN-SO007.DWG



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0 40 80ft

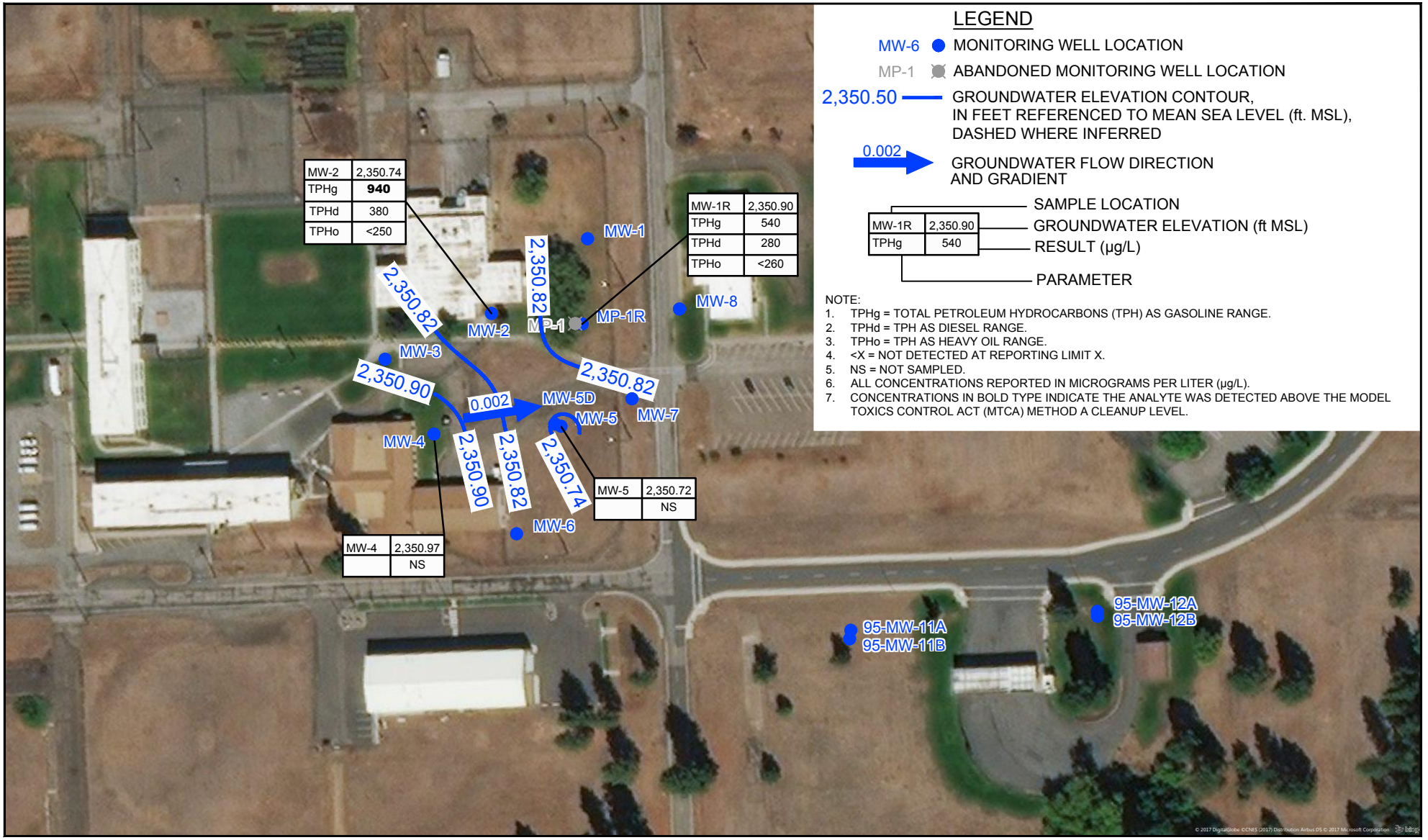
PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

11145847-4MN00
Nov 7, 2018

HISTORICAL SOIL AND GROUNDWATER EXTENTS

FIGURE 9

CAD File: I:\Sonoma.Public\CAD\drawings\11140000s\11145847\11145847-REPORTS\11145847-4MN00(003)GN\11145847-4MN00(003)GN-SO008.DWG



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0 75 150ft

Coordinate System:
WASHINGTON NORTH
STATE PLANE NAD83 FEET

PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

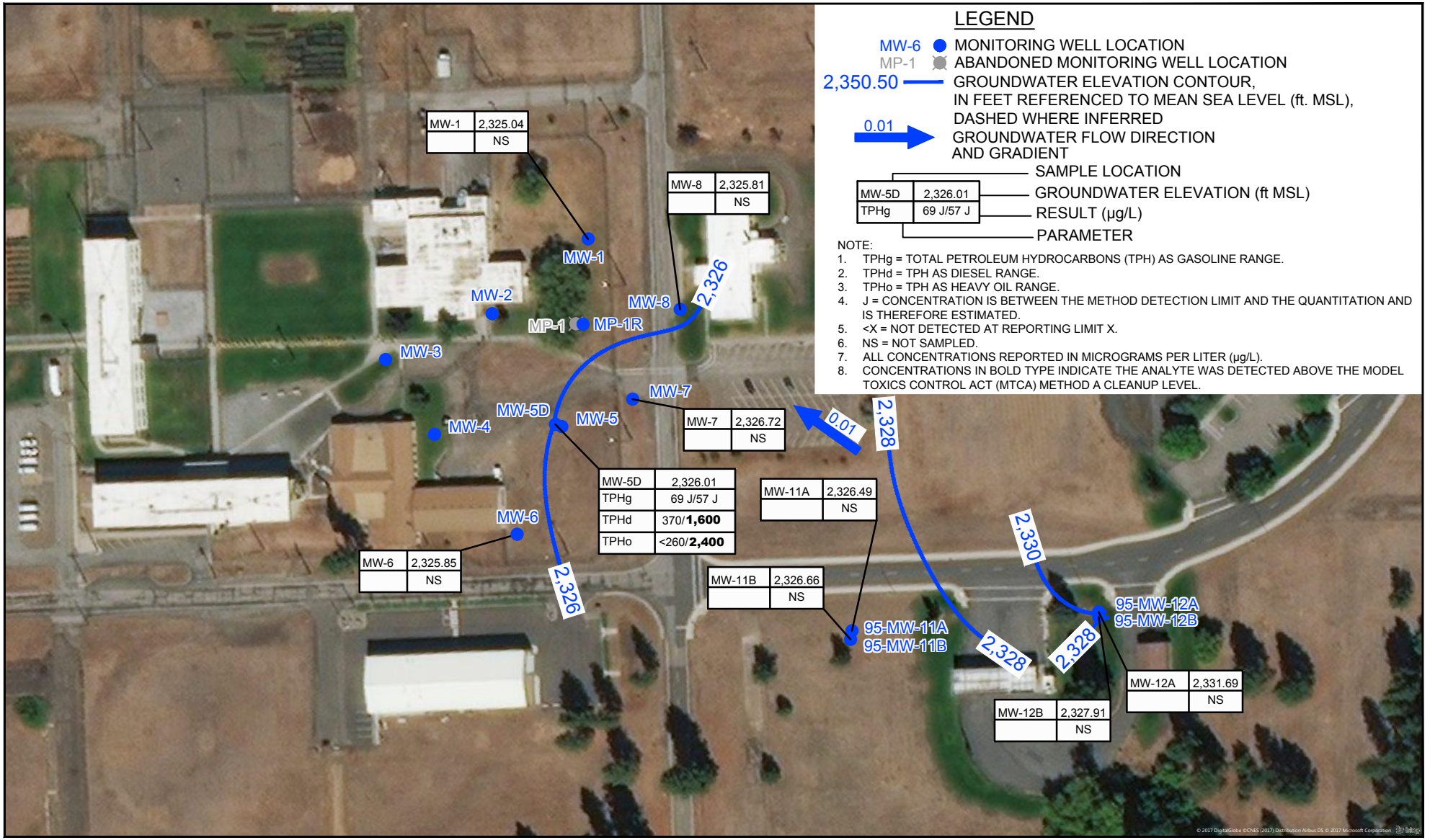
GROUNDWATER CONTOUR AND CHEMICAL CONCENTRATION MAP SHALLOW ZONE - MARCH 21, 2018

11145847-4MN00

Sep 14, 2018

FIGURE 10A

CAD File: I:\Sonoma.Public\CAD\drawings\11140000s\11145847\11145847-REPORTS\11145847-4MN00(003)GN\11145847-4MN00(003)GN-SO009.DWG



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0 75 150ft

Coordinate System:
WASHINGTON NORTH
STATE PLANE NAD83 FEET

PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

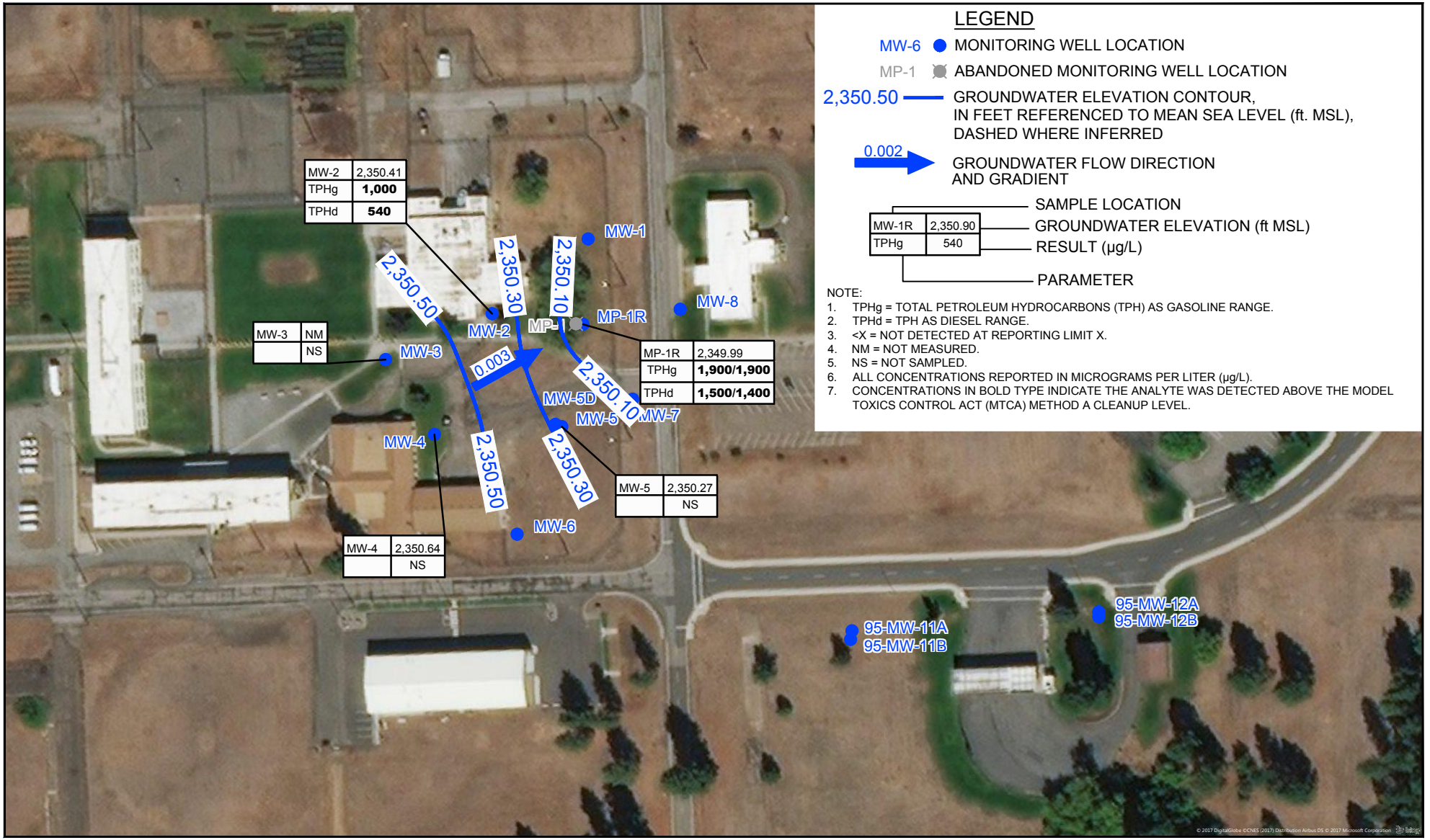
11145847-4MN00

Sep 14, 2018

GROUNDWATER CONTOUR AND CHEMICAL CONCENTRATION MAP DEEP ZONE - MARCH 21, 2018

FIGURE 10B

CAD File: I:\Sonoma.Public\CAD\drawings\11140000s\11145847\11145847-REPORTS\11145847-4MN00(003)GN\11145847-4MN00(003)GN-SO010.DWG



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0 75 150ft

Coordinate System:
WASHINGTON NORTH
STATE PLANE NAD83 FEET

PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

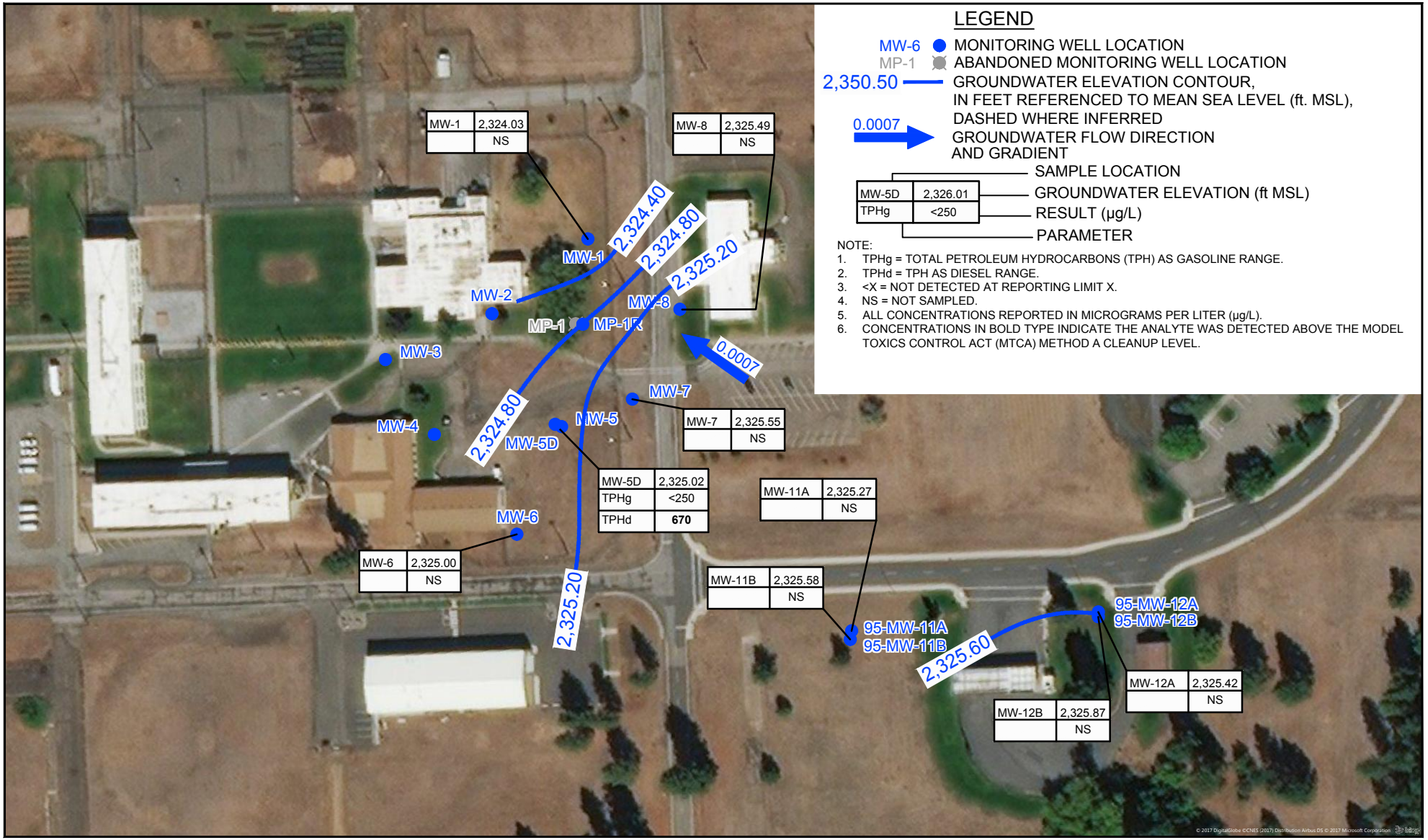
GROUNDWATER CONTOUR AND CHEMICAL CONCENTRATION MAP SHALLOW ZONE - JUNE 21, 2018

11145847-4MN00

Sep 14, 2018

FIGURE 11A

CAD File: I:\Sonoma.Public\CAD\drawings\11140000s\11145847\11145847-REPORTS\11145847-4MN00(003)GN\11145847-4MN00(003)GN-SO011.DWG



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0 75 150ft

Coordinate System:
WASHINGTON NORTH
STATE PLANE NAD83 FEET

PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

11145847-4MN00

Sep 14, 2018

GROUNDWATER CONTOUR AND CHEMICAL CONCENTRATION MAP DEEP ZONE - JUNE 21, 2018

FIGURE 11B

CAD File: I:\Sonoma.Public\CAD\drawings\11140000s\11145847\11145847-REPORTS\11145847-4MN00(003)GN\11145847-4MN00(003)GN-SO012.DWG

Tables

Table 1A

Summary of Groundwater Monitoring Data - Shallow Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			Site-Specific Cleanup Levels (Shallow GW)					>S		1,700	78,000	110,000	22,000	680
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MP-1	08/20/01	NS	---	---	---	---	---	---	---	---	---	---	---	---
MP-1	11/30/01	N	---	---	---	---	---	50,300	<750	<0.50	<2.0	<1.0	<1.5	**990**
MP-1	03/25/02	N	---	---	---	---	---	9,650	<750	<0.50	<2.0	1.9	23	599
MP-1	06/04/02	N	---	---	---	---	---	39,700	<500	<0.50	<2.0	1.9	<1.5	353
MP-1	08/20/02	N	---	---	---	---	---	19,100	<500	<0.50	<2.0	1.1	13	223
MP-1	10/29/02	N	---	---	---	---	---	20,900	<500	<0.50	<2.0	1.2	13	413
MP-1	02/19/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	4.2	62
MP-1	06/05/03	N	---	---	---	---	---	9,950	<500	<0.50	<2.0	<1.0	<1.5	268
MP-1	09/09/03	N	---	---	---	---	---	8,430	<500	<0.50	<2.0	<1.0	17	459
MP-1	12/10/03	N	---	---	---	---	---	13,600	<500	<0.50	<2.0	<1.0	5.9	184
MP-1	06/03/04	N	---	---	---	---	---	16,800	<500	<0.50	<2.0	<1.0	9.5	246
MP-1	12/01/04	N	---	---	---	---	---	14,800	<500	<0.50	<2.0	1.7	16	246
MP-1	06/03/05	N	---	---	---	---	---	17,400	<500	<0.50	<2.0	3.1	29	178
MP-1	11/21/05	N	---	---	---	---	---	9,900	500	<0.50	<2.0	<1.0	17	32
MP-1	06/15/06	N	---	---	---	---	---	11,200	<500	<0.50	<2.0	<1.0	18	<20
MP-1	12/19/06	N	---	---	---	---	---	2,700	<500	<0.50	<2.0	<1.0	7.2	114
MP-1	05/30/07	N	---	---	---	---	---	6,100	<500	<0.50	<2.0	<1.0	19	120
MP-1	10/30/07	removed from sampling schedule due to well obstruction					---	---	---	---	---	---	---	---
MP-1	02/02/11	---	2,354.90	3.96	---	2350.94	---	---	---	---	---	---	---	---
MP-1	04/26/11	---	2,354.90	4.20	---	2350.70	---	---	---	---	---	---	---	---
MP-1	07/12/11	---	2,354.90	DRY	---	---	---	---	---	---	---	---	---	---
MP-1	10/28/11	---	2,354.90	Obstruction in Well at 4.59 Feet				---	---	---	---	---	---	---
MP-1	10/09/13	---	2,354.90	Well Decommissioned			---	---	---	---	---	---	---	---
MP-1R	10/12/13	N	2,354.78	4.86	---	2349.92	3,210	1,200	<400	<1.0	<1.0	<1.0	13.9	16.3
MP-1R	03/11/14	N	2,354.78	2.15	---	2352.63	1,260	500	500	<1.0	<1.0	<1.0	<3.0	<4.0
MP-1R	03/11/14	FD	---	---	---	---	1,300	520	640	<1.0	<1.0	<1.0	<3.0	<4.0

Table 1A

Summary of Groundwater Monitoring Data - Shallow Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			Site-Specific Cleanup Levels (Shallow GW)					>S		1,700	78,000	110,000	22,000	680
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MP-1R	06/03/14	N	2,354.78	4.95	---	2349.83	3,890	1,400	<420	<1.0	<1.0	<1.0	13.5	10.6
MP-1R	04/06/17	N	2,354.78	3.58	---	2351.20	430	290	J110	<0.5	<0.5	<0.5	<0.5	<1.0
MP-1R	04/06/17	FD	---	---	---	---	450	250	J80	<0.5	<0.5	<0.5	<0.5	<1.0
MP-1R	09/14/17	N	2,354.78	4.79	---	2,349.99	2,200	1,400	140 J	<1	<1	<1	<1	5
MP-1R	03/21/18	N	2354.78	3.88	---	2350.90	540	280	<260	---	---	---	---	---
MP-1R	06/21/18	N	2354.78	4.79	---	2349.99	1,900	1,500	<270	---	---	---	---	---
MP-1R	04/06/17	FD	---	---	---	---	1,900	1,400	<260	---	---	---	---	---
MP-1R	09/21/18	N	2354.78	4.91	---	2349.87	1,600	1,400	<270	---	---	---	---	---
MW-2	08/20/01	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-2	03/25/02	N	---	---	---	---	---	19,800	<750	<0.50	<2.0	<1.0	11	216
MW-2	06/04/02	N	---	---	---	---	---	22,100	<500	<0.50	<2.0	<1.0	8.2	**1,320**
MW-2	08/20/02	N	---	---	---	---	---	4,970	<500	<0.50	<2.0	<1.0	6.7	156
MW-2	10/29/02	N	---	---	---	---	---	13,700	<500	<0.50	<2.0	<1.0	6.1	199
MW-2	10/29/02	FD	---	---	---	---	---	15,400	<500	<0.50	<2.0	<1.0	9.3	328
MW-2	02/19/03	N	---	---	---	---	---	10,400	<500	<0.50	<2.0	<1.0	<1.5	140
MW-2	06/05/03	N	---	---	---	---	---	4,570	<500	<0.50	<2.0	<1.0	2.0	134
MW-2	06/05/03	FD	---	---	---	---	---	4,320	<500	<0.50	<2.0	<1.0	2.4	182
MW-2	09/09/03	N	---	---	---	---	---	2,560	<500	<0.50	<2.0	<1.0	<1.5	203
MW-2	09/09/03	FD	---	---	---	---	---	2,440	<500	<0.50	<2.0	<1.0	<1.5	204
MW-2	12/10/03	N	---	---	---	---	---	42,100	<500	<0.50	<2.0	<1.0	<1.5	282
MW-2	06/03/04	N	---	---	---	---	---	6,000	<500	<0.50	2.6	<1.0	6.0	162
MW-2	06/03/04	FD	---	---	---	---	---	6,500	<500	<0.50	2.1	<1.0	5.4	170
MW-2	12/01/04	N	---	---	---	---	---	2,410	<500	<0.50	<2.0	<1.0	5.2	38
MW-2	06/03/05	N	---	---	---	---	---	2,810	<500	<0.50	<2.0	<1.0	<1.5	129
MW-2	06/03/05	FD	---	---	---	---	---	2,910	<500	<0.50	<2.0	<1.0	5.2	129

Table 1A

Summary of Groundwater Monitoring Data - Shallow Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			Site-Specific Cleanup Levels (Shallow GW)					>S		1,700	78,000	110,000	22,000	680
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-2	11/21/05	N	---	---	---	---	---	3,440	<500	<0.50	<2.0	<1.0	<1.5	24
MW-2	11/21/05	FD	---	---	---	---	---	3,680	500	<0.50	<2.0	<1.0	<1.5	23
MW-2	06/15/06	N	---	---	---	---	---	2,750	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-2	06/16/06	FD	---	---	---	---	---	11,200	<500	<0.50	<2.0	<1.0	18	<20
MW-2	12/19/06	N	---	---	---	---	---	2,340	<500	<0.50	<2.0	<1.0	2.6	95
MW-2	05/30/07	N	---	---	---	---	---	2,790	<500	<0.50	<2.0	<1.0	1.7	98
MW-2	10/30/07	N	---	---	---	---	2,600	1,800	140	<0.50	<0.70	<0.80	<0.80	<1.0
MW-2	06/24/08	N	---	---	---	---	1,600	830	<94	<0.50	<0.70	<0.80	<0.80	<1.0
MW-2	12/03/08	N	---	---	---	---	1,800	700	<69	<0.50	<0.70	<0.80	<0.80	<1.0
MW-2	06/03/09	N	---	---	---	---	1,730	620	<58	<0.12	<0.21	<0.20	<0.15	---
MW-2	11/10/09	N	---	---	---	---	2,230	821	<379	<1.0	<1.0	<1.0	<3.0	3.2
MW-2	02/02/10	N	---	---	---	---	1,450	940	<388	<1.0	<1.0	<1.0	<3.0	3.9
MW-2	05/18/10	N	---	---	---	---	1,330	1,870	<392	<1.0	<1.0	<1.0	<3.0	<1.0
MW-2	08/09/10	N	---	---	---	---	1,200	831	<396	<1.0	<1.0	<1.0	<3.0	---
MW-2	11/01/10	N	---	---	---	---	1,680	2,080	<388	<1.0	<1.0	<1.0	<3.0	---
MW-2	02/02/11	N	---	---	---	---	1,700	1,170	<385	<1.0	<1.0	<1.0	<3.0	---
MW-2	04/26/11	N	---	---	---	---	3,280	562	<392	<1.0	<1.0	<1.0	<3.0	---
MW-2	07/12/11	N	---	---	---	---	1,020	700	<408	<1.0	<1.0	<1.0	<3.0	---
MW-2	10/27/11	N	---	---	---	---	2,000	920	<410	<1.0	<1.0	<1.0	<3.0	---
MW-2	07/02/12	N	2,354.55	4.83	---	2349.72	1,960	580	<380	<1.0	<1.0	<1.0	<3.0	<1.0
MW-2	10/10/12	N	2,354.55	5.06	---	2349.49	1,500	680	<840	<1.0	<1.0	<1.0	<3.0	7.4
MW-2	03/13/13	N	2,354.55	4.61	---	2349.94	1,060	620	<420	<1.0	<1.0	<1.0	<3.0	<4.0
MW-2	05/15/13	N	2,354.55	5.09	---	2349.46	1,220	990	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-2	08/06/13	N	2,354.55	4.68	---	2350.51	924	560	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-2	10/11/13	N	2,355.19	5.19	---	2350.00	833	910	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-2	03/11/14	N	2,355.19	3.21	---	2351.98	1,900	910	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-2	06/03/14	N	2,355.19	5.10	---	2350.09	1,870	610	<420	<1.0	<1.0	<1.0	<3.0	<4.0

Table 1A

Summary of Groundwater Monitoring Data - Shallow Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			Site-Specific Cleanup Levels (Shallow GW)					>S		1,700	78,000	110,000	22,000	680
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-2	04/06/17	N	2,355.19	4.18	---	2351.01	1,500	1,200	<73	<0.5	<0.5	<0.5	<0.5	2.0
MW-2	09/14/17	N	2,355.19	4.89	---	2,350.30	1,200	720	<260	<1	<1	<1	<1	<4
MW-2	03/21/18	N	2355.19	4.45	---	2350.74	940	380	<250	---	---	---	---	---
MW-2	06/21/18	N	2355.19	4.78	---	2350.41	1,000	540	<280	---	---	---	---	---
MW-2	09/21/18	N	2355.19	5.02	---	2350.17	810	740	<270	---	---	---	---	---
MW-3	08/20/01	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	03/25/02	N	---	---	---	---	---	<250	<750	<0.50	<2.0	<1.0	<1.5	<20
MW-3	06/04/02	N	---	---	---	---	---	267	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-3	08/02/02	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-3	10/29/02	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-3	02/19/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-3	06/05/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-3	09/09/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-3	12/10/03	N	---	---	---	---	---	<250	<500	<1.5	<2.0	<1.0	<1.5	<20
MW-3	06/03/04	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	12/01/04	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	06/03/05	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-3	11/21/05	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	06/15/06	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-3	12/19/06	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	05/30/07	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-3	10/30/07	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	06/24/08	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	12/03/08	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	06/03/09	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	11/10/09	NS	---	---	---	---	---	---	---	---	---	---	---	---

Table 1A

Summary of Groundwater Monitoring Data - Shallow Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			Site-Specific Cleanup Levels (Shallow GW)					>S		1,700	78,000	110,000	22,000	680
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-3	02/02/10	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	05/18/10	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	08/09/10	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	11/01/10	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	02/02/11	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	04/26/11	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	07/12/11	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	10/27/11	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	07/02/12	N	2,355.18	4.92	---	2350.26	NS	---	---	---	---	---	---	---
MW-3	10/11/12	N	2,355.18	5.17	---	2350.01	<50	<160	<820	<1.0	<1.0	<1.0	<3.0	<1.0
MW-3	03/13/13	NS	2,355.18	4.68	---	2350.50	---	---	---	---	---	---	---	---
MW-3	05/15/13	N	2,355.18	5.16	---	2350.02	<100	<390	<390	<1.0	<1.0	<1.0	<3.0	<4.0
MW-3	08/06/13	NS	2,355.18	4.64	---	2350.80	---	---	---	---	---	---	---	---
MW-3	10/11/13	N	2,355.44	5.28	---	2350.16	<100	<420	<420	<1.0	<1.0	<1.0	<3.0	<4.0
MW-3	03/11/14	NS	2,355.44	3.52	---	2351.92	---	---	---	---	---	---	---	---
MW-3	06/03/14	N	2,355.44	4.98	---	2350.46	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-3	04/06/17	N	2,355.44	4.28	---	2351.16	<50	<28	<66	<0.5	<0.5	<0.5	<0.5	<1.0
MW-3	09/14/17	N	2,355.44	4.89	---	2,350.55	<250	<100	<260	<1	<1	<1	<1	<4
MW-4	08/20/01	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	03/25/02	N	---	---	---	---	---	10,600	<750	1.1	3.2	<1.0	1.9	526
MW-4	03/26/02	N	---	---	---	---	---	5,770	<750	<0.50	<2.0	<1.0	<1.5	344
MW-4	06/04/02	N	---	---	---	---	---	11,400	<500	<0.50	<2.0	<1.0	<1.5	432
MW-4	06/05/02	N	---	---	---	---	---	12,500	<500	<0.50	<2.0	1.1	1.6	278
MW-4	08/20/02	N	---	---	---	---	---	1,500	<500	<0.50	<2.0	<1.0	<1.5	43
MW-4	10/29/02	N	---	---	---	---	---	2,220	<500	<0.50	<2.0	<1.0	<1.5	72
MW-4	02/19/03	N	---	---	---	---	---	1,570	<500	<0.50	<2.0	<1.0	<1.5	22

Table 1A

Summary of Groundwater Monitoring Data - Shallow Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			Site-Specific Cleanup Levels (Shallow GW)					>S		1,700	78,000	110,000	22,000	680
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-4	06/05/03	N	---	---	---	---	---	720	<500	<0.50	<2.0	<1.0	<1.5	40
MW-4	09/09/03	N	---	---	---	---	---	890	<500	<0.50	<2.0	<1.0	<1.5	61
MW-4	12/10/03	N	---	---	---	---	---	2,750	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-4	06/03/04	N	---	---	---	---	---	710	<500	<0.50	<2.0	<1.0	<1.5	41
MW-4	12/01/04	N	---	---	---	---	---	620	<500	0.69	<2.0	<1.0	<1.5	22
MW-4	06/03/05	N	---	---	---	---	---	370	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-4	11/21/05	N	---	---	---	---	---	920	<500	<0.50	<2.0	<1.0	<1.5	27
MW-4	06/15/06	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-4	12/19/06	N	---	---	---	---	---	360	<500	<0.50	<2.0	<1.0	<1.5	31
MW-4	12/19/06	FD	---	---	---	---	---	380	<500	<0.50	<2.0	<1.0	<1.5	27
MW-4	05/30/07	N	---	---	---	---	---	449	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-4	05/30/07	FD	---	---	---	---	---	445	<500	<0.50	<2.0	<1.0	<1.5	27
MW-4	10/30/07	N	---	---	---	---	700	---	---	<0.50	<0.70	<0.80	<0.80	1.0
MW-4	10/30/07	FD	---	---	---	---	660	650	<94	<0.50	<0.70	<0.80	<0.80	<1.0
MW-4	06/24/08	N	---	---	---	---	190	200	<94	<0.50	<0.70	<0.80	<0.80	<1.0
MW-4	12/03/08	N	---	---	---	---	330	200	<66	<0.50	<0.70	<0.80	<0.80	<1.0
MW-4	06/03/09	N	---	---	---	---	193	120	<59	<0.12	<0.21	<0.20	<0.15	---
MW-4	11/10/09	N	---	---	---	---	380	363	<381	<1.0	<1.0	<1.0	<3.0	2.9
MW-4	02/02/10	N	---	---	---	---	162	286	<388	<1.0	<1.0	<1.0	<3.0	2.7
MW-4	05/18/10	N	---	---	---	---	227	650	<392	<1.0	<1.0	<1.0	<3.0	<1.0
MW-4	08/09/10	N	---	---	---	---	156	123	<385	<1.0	<1.0	<1.0	<3.0	---
MW-4	11/01/10	N	---	---	---	---	374	277	<388	<1.0	<1.0	<1.0	<3.0	---
MW-4	02/02/11	N	---	---	---	---	137	201	<392	<1.0	<1.0	<1.0	<3.0	---
MW-4	04/26/11	N	---	---	---	---	1,010	185	<392	<1.0	<1.0	<1.0	<3.0	---
MW-4	07/12/11	N	---	---	---	---	510	210 J	<392	<1.0	<1.0	<1.0	<3.0	---
MW-4	10/27/11	N	---	---	---	---	173	340	<380	<1.0	<1.0	<1.0	<3.0	---
MW-4	07/02/12	N	2,356.37	5.85	---	2350.52	241	180	<380	<1.0	<1.0	<1.0	<3.0	<1.0

Table 1A

Summary of Groundwater Monitoring Data - Shallow Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			Site-Specific Cleanup Levels (Shallow GW)					>S		1,700	78,000	110,000	22,000	680
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-4	10/09/12	N	2,356.37	6.15	---	2350.22	113	<160	<810	<1.0	<1.0	<1.0	<3.0	5.1
MW-4	03/13/13	N	2,356.37	5.62	---	2350.75	<100	<410	<410	<1.0	<1.0	<1.0	<3.0	<4.0
MW-4	05/15/13	N	2,356.37	6.05	---	2350.32	136	<390	<390	<1.0	<1.0	<1.0	<3.0	<4.0
MW-4	08/06/13	N	2,356.37	5.68	---	2350.76	120	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-4	10/09/13	N	2,356.44	6.17	---	2350.27	<100	<410	<410	<1.0	<1.0	<1.0	<3.0	<4.0
MW-4	03/11/14	N	2,356.44	4.70	---	2351.74	192	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-4	06/03/14	N	2,356.44	5.93	---	2350.51	277	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-4	04/03/17	N	2,356.44	5.09	---	2351.35	J200	190	<75	<0.5	<0.5	<0.5	<0.5	<1.0
MW-4	09/14/17	N	2,356.44	6.27	---	2,350.17	270	260	<260	<1	<1	<1	<1	<4
MW-4	03/21/18	NS	2356.44	5.47	---	2350.97	---	---	---	---	---	---	---	---
MW-4	06/21/18	NS	2356.44	5.80	---	2350.64	---	---	---	---	---	---	---	---
MW-4	09/21/18	NS	2356.44	6.07	---	2350.37	---	---	---	---	---	---	---	---
MW-5	08/20/01	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	03/25/02	N	---	---	---	---	---	1,360	<750	19.1	121	16	123	27
MW-5	06/04/02	N	---	---	---	---	---	2,720	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-5	08/20/02	N	---	---	---	---	---	774	<500	<0.50	<2.0	<1.0	1.6	<20
MW-5	10/29/02	N	---	---	---	---	---	2,580	<500	<0.50	<2.0	<1.0	<1.5	56
MW-5	02/19/03	N	---	---	---	---	---	1,510	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-5	06/05/03	N	---	---	---	---	---	596	<500	<0.50	<2.0	<1.0	<1.5	28
MW-5	09/09/03	N	---	---	---	---	---	---	---	<0.50	<2.0	<1.0	<1.5	40
MW-5	12/10/03	N	---	---	---	---	---	5,040	800	<0.50	<2.0	<1.0	<1.5	<20
MW-5	06/03/04	N	---	---	---	---	---	360	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-5	12/01/04	N	---	---	---	---	---	4,600	<500	1.8	<2.0	<1.0	<1.5	28
MW-5	06/03/05	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-5	11/21/05	N	---	---	---	---	---	2,150	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-5	06/15/06	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20

Table 1A

Summary of Groundwater Monitoring Data - Shallow Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			Site-Specific Cleanup Levels (Shallow GW)					>S		1,700	78,000	110,000	22,000	680
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-5	12/19/06	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-5	05/30/07	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-5	10/30/07	N	---	---	---	---	250	2,500	<94	<0.50	<0.70	<0.80	<0.80	<1.0
MW-5	06/24/08	N	---	---	---	---	<50	170	<94	<0.50	<0.70	<0.80	<0.80	<1.0
MW-5	12/03/08	N	---	---	---	---	240	73	<68	<0.50	<0.70	<0.80	<0.80	<1.0
MW-5	06/03/09	N	---	---	---	---	<13	<36	<59	<0.12	<0.21	<0.20	<0.15	------
MW-5	11/10/09	N	---	---	---	---	<50	315	<381	<1.0	<1.0	<1.0	<3.0	<1.0
MW-5	02/02/10	N	---	---	---	---	<50	81	<388	<1.0	<1.0	<1.0	<3.0	<1.0
MW-5	05/18/10	N	---	---	---	---	<50	126	<396	<1.0	<1.0	<1.0	<3.0	<1.0
MW-5	08/09/10	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	11/01/10	N	---	---	---	---	<50	<78	<388	<1.0	<1.0	<1.0	<3.0	---
MW-5	02/02/11	N	---	---	---	---	<50	<78	<388	<1.0	<1.0	<1.0	<3.0	---
MW-5	04/26/11	N	---	---	---	---	<50	<77	<385	<1.0	<1.0	<1.0	<3.0	---
MW-5	07/12/11	N	---	---	---	---	<50	<78	<392	<1.0 UJ	<1.0 UJ	<1.0 UJ	<3.0 UJ	---
MW-5	10/27/11	N	---	---	---	---	<50	990	<400	<1.0	<1.0	<1.0	<3.0	---
MW-5	07/02/12	N	2,354.81	4.73	---	2350.08	<50	<78	<390	<1.0	<1.0	<1.0	<3.0	<1.0
MW-5	10/09/12	N	2,354.81	5.06	---	2349.75	<50	<170	<830	<1.0	<1.0	<1.0	<3.0	<1.0
MW-5	03/13/13	N	2,354.81	4.51	---	2350.30	<100	<420	<420	<1.0	<1.0	<1.0	<3.0	<4.0
MW-5	05/15/13	N	2,354.81	5.01	---	2349.80	<100	<390	<390	<1.0	<1.0	<1.0	<3.0	<4.0
MW-5	08/06/13	N	2,354.81	4.67	---	2350.44	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-5	10/09/13	N	2,355.11	5.05	---	2350.06	<100	<380	<380	<1.0	<1.0	<1.0	<3.0	<4.0
MW-5	03/11/14	N	2,355.11	3.40	---	2351.71	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-5	06/03/14	N	2,355.11	5.05	---	2350.06	<100	<420	<420	<1.0	<1.0	<1.0	<3.0	<4.0
MW-5	04/03/17	N	2,355.11	3.95	---	2351.16	<50	<30	<69	<0.5	<0.5	<0.5	<0.5	<1.0
MW-5	09/14/17	N	2,355.11	4.89	---	2,350.22	<250	<100	<260	<1	<1	<1	<1	<4
MW-5	03/21/18	NS	2355.11	4.39	---	2350.72	---	---	---	---	---	---	---	---
MW-5	06/21/18	NS	2355.11	4.84	---	2350.27	---	---	---	---	---	---	---	---

Table 1A

Summary of Groundwater Monitoring Data - Shallow Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			*PRIMARY VOCs*				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			Site-Specific Cleanup Levels (Shallow GW)					>S		1,700	78,000	110,000	22,000	680
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-5	09/21/18	NS	2355.11	4.97	---	2350.14	---	---	---	---	---	---	---	---

Notes:

DTW = Depth to Water in feet

GWE = Groundwater Elevation in feet above mean sea level; before August 13, 2009, relative to arbitrary benchmarks

TOC = Top of Casing in feet above mean sea level; before August 13, 2009, relative to arbitrary benchmarks

All results are in micrograms per liter (µg/L) unless otherwise indicated

TPHg = Total petroleum hydrocarbons as gasoline analyzed by NWTPH---Gx unless otherwise noted. The higher value is based on the assumption that no benzene is present in the groundwater sample. If any detectable amount of benzene is present in the groundwater sample, then the lower TPHg cleanup level is applicable

TPHd = Total petroleum hydrocarbons as diesel, analyzed by NWTPH---Dx with silica gel cleanup unless otherwise noted.

TPHo = Total petroleum hydrocarbons as oil, analyzed by NWTPH---Dx with silica gel cleanup unless otherwise noted.

VOCs = Volatile organic compounds

BTEX = Benzene, toluene, ethylbenzene, and xylenes analyzed by EPA Method 8260B unless otherwise noted.

Total Xylenes = o---xylene + m,p---xylene

<x = Not detected at laboratory reporting limit x

FD = Field duplicate

N = Normal

NS = Not sampled

NM = Not measured

--------- = Not analyzed

Concentrations in bold type indicate the analyte was detected above the Site-specific cleanup level.

J = Concentration is between the method detection limit (MDL) and the limit of quantitation (LOQ) and is therefore estimated.

>S = The cleanup level exceeds the saturation level; therefore, the absense of separate phase hydrocarbons (SPH) indicates compliance with the TPH cleanup level.

Table 1B

Summary of Groundwater Monitoring Data - Deep Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
		MTCA Method A Cleanup Levels (Deep GW)					800	500	500	5	1000	700	1000	160
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-1	08/20/01	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-1	03/25/02	N	---	---	---	---	---	274	<750	<0.50	<2.0	<1.0	<1.5	<20
MW-1	06/04/02	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-1	08/20/02	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-1	10/29/02	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-1	02/19/03	N	---	---	---	---	---	**9,310**	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-1	02/19/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-1	06/05/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-1	09/09/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-1	12/10/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-1	06/03/04	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-1	12/01/04	N	---	---	---	---	---	<250	<500	3.6	<2.0	1.5	2.0	<20
MW-1	06/03/05	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-1	11/21/05	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-1	06/15/06	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-1	12/19/06	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-1	05/30/07	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-1	10/30/07	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-1	06/24/08	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-1	12/03/08	N	---	---	---	---	<50	<29	<68	<0.50	<0.7	<0.80	<0.80	<1.0
MW-1	06/03/09	N	---	---	---	---	<13	<35	<58	<0.12	<0.21	<0.20	<0.15	---
MW-1	11/10/09	N	---	---	---	---	<50	80	<383	<1.0M0	<1.0	<1.0	<3.0	<1.0
MW-1	02/02/10	N	---	---	---	---	<50	<77	<385	<1.0	<1.0	<1.0	<3.0	<1.0
MW-1	05/18/10	N	---	---	---	---	<50	<76	<379	<1.0	<1.0	<1.0	<3.0	<1.0
MW-1	08/09/10	N	---	---	---	---	<50	<78	<392	<1.0	<1.0	<1.0	<3.0	---
MW-1	11/01/10	N	---	---	---	---	<50	<78	<388	<1.0	<1.0	<1.0	<3.0	---
MW-1	02/02/11	N	---	---	---	---	<50	<77	<385	<1.0	<1.0	<1.0	<3.0	---

Table 1B

Summary of Groundwater Monitoring Data - Deep Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			MTCA Method A Cleanup Levels (Deep GW)				800	500	500	5	1000	700	1000	160
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-1	04/26/11	N	---	---	---	---	<50	<78	<388	<1.0	<1.0	<1.0	<3.0	---
MW-1	07/12/11	N	---	---	---	---	<50	<78	<392	<1.0	<1.0	<1.0	<3.0	---
MW-1	10/27/11	N	---	---	---	---	<50	<78	<390	<1.0	< 1.0	<1.0	<3.0	---
MW-1	10/27/11	FD	---	---	---	---	<50	<78	<390	<1.0	<1.0	<1.0	<3.0	---
MW-1	07/02/12	N	2,354.55	31.90	---	2322.65	<50	<86	<430	<1.0	<1.0	<1.0	<3.0	<1.0
MW-1	07/02/12	FD	---	---	---	---	<50	<82	<410	<1.0	<1.0	<1.0	<3.0	<1.0
MW-1	10/10/12	N	2,354.55	36.02	---	2318.53	<50	<160	<810	<1.0	<1.0	<1.0	<3.0	<1.0
MW-1	10/10/12	FD	---	---	---	---	<50	<160	<800	<1.0	<1.0	<1.0	<3.0	<1.0
MW-1	03/13/13	FD	---	---	---	---	<100	<460	<460	<1.0	<1.0	<1.0	<3.0	<4.0
MW-1	05/15/13	N	2,354.55	32.62	---	2321.93	<100	<430	<430	<1.0	<1.0	<1.0	<3.0	<4.0
MW-1	05/15/13	FD	---	---	---	---	<100	<390	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-1	08/06/13	N	2,354.55	34.22	---	2320.38	<100	<380	<380	<1.0	<1.0	<1.0	<3.0	<4.0
MW-1	08/06/13	FD	---	---	---	---	<100	<430	<430	<1.0	<1.0	<1.0	<3.0	<4.0
MW-1	10/11/13	N	2,354.60	35.79	---	2318.81	<100	<430	<430	<1.0	<1.0	<1.0	<3.0	<4.0
MW-1	10/11/13	FD	---	---	---	---	<100	<430	<430	<1.0	<1.0	<1.0	<3.0	<4.0
MW-1	03/11/14	N	2,354.60	35.45	---	2319.15	<100	<400	**500**	<1.0	<1.0	<1.0	<3.0	<4.0
MW-1	06/03/14	N	2,354.60	33.90	---	2320.70	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-1	06/03/14	FD	---	---	---	---	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-1	04/06/17	N	2,354.60	27.10	---	2327.50	<50	<29	<68	<0.5	<0.5	<0.5	<0.5	<1.0
MW-1	09/14/17	N	2,354.60	33.15	---	2,321.45	<250	<110	<270	<1	<1	<1	<1	<4
MW-1	03/21/18	NS	2354.60	29.56	---	2325.04	---	---	---	---	---	---	---	---
MW-1	06/21/18	NS	2354.60	30.57	---	2324.03	---	---	---	---	---	---	---	---
MW-1	09/21/18	NS	2354.60	33.80	---	2320.80	---	---	---	---	---	---	---	---
MW-5D	10/11/13	N	2,355.03	35.57	---	2319.46	614	**1,100**	<450	<1.0	<1.0	<1.0	<3.0	<4.0
MW-5D	03/11/14	N	2,355.03	35.48	---	2319.55	<100	<400	**700**	<1.0	<1.0	<1.0	<3.0	<4.0
MW-5D	06/03/14	N	2,355.03	33.73	---	2321.30	128	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0

Table 1B

Summary of Groundwater Monitoring Data - Deep Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			*PRIMARY VOCs*				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			MTCA Method A Cleanup Levels (Deep GW)				800	500	500	5	1000	700	1000	160
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-5D	09/14/17	N	2,355.03	32.48	---	2,322.55	<250	560	<250	<1	<1	<1	<1	<4
MW-5D	03/21/18	N	2355.03	29.02	---	2326.01	69 J	370	<260	---	---	---	---	---
MW-5D	03/21/18	FD	2355.03	29.02	---	2326.01	57 J	**1,600 ***	**2,400 ***	---	---	---	---	---
MW-5D	06/21/18	N	2355.03	30.01	---	2325.02	<250	**670**	<260	---	---	---	---	---
MW-5D	09/21/18	N	2355.03	33.51	---	2321.52	81 J	160	<280	---	---	---	---	---
MW-5D	09/21/18	FD	2355.03	33.51	---	2321.52	<250	220	<270	---	---	---	---	---
MW-6	08/20/01	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-6	03/25/02	N	---	---	---	---	---	<250	<750	<0.50	<2.0	<1.0	<1.5	<20
MW-6	06/04/02	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-6	08/20/02	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-6	10/29/02	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-6	02/19/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-6	06/05/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-6	09/09/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-6	12/10/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-6	06/03/04	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-6	12/01/04	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-6	06/03/05	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-6	11/21/05	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-6	06/15/06	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-6	12/19/06	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-6	05/30/07	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-6	10/30/07	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-6	06/24/08	N	---	---	---	---	<50	<75	<94	<0.50	<0.70	<0.80	<0.80	<1.0
MW-6	12/03/08	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-6	06/03/09	N	---	---	---	---	<13	<35	<58	<0.12	<0.21	<0.20	<0.15	---

Table 1B

Summary of Groundwater Monitoring Data - Deep Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			MTCA Method A Cleanup Levels (Deep GW)				800	500	500	5	1000	700	1000	160
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-6	11/10/09	N	---	---	---	---	<50	135	<396	<1.0	<1.0	<1.0	<3.0	<1.0
MW-6	02/02/10	N	---	---	---	---	<50	<78	<392	<1.0	<1.0	<1.0	<3.0	<1.0
MW-6	05/18/10	N	---	---	---	---	<50	<78	<388	<1.0	<1.0	<1.0	<3.0	<1.0
MW-6	08/09/10	N	---	---	---	---	<50	<78	<392	<1.0	<1.0	<1.0	<3.0	---
MW-6	11/01/10	N	---	---	---	---	<50	<78	<388	<1.0	<1.0	<1.0	<3.0	---
MW-6	02/02/11	N	---	---	---	---	<50	<78	<392	<1.0	<1.0	<1.0	<3.0	---
MW-6	04/26/11	N	---	---	---	---	<50	<78	<388	<1.0	<1.0	<1.0	<3.0	---
MW-6	07/12/11	N	---	---	---	---	<50	<78	<392	<1.0	<1.0	<1.0	<3.0	---
MW-6	10/27/11	N	---	---	---	---	<50	<78	<390	<1.0	<1.0	<1.0	<3.0	---
MW-6	07/02/12	N	2,355.87	32.83	---	2323.04	<50	<82	<410	<1.0	<1.0	<1.0	<3.0	<1.0
MW-6	10/09/12	N	2,355.87	35.71	---	2320.16	<50	<160	<800	<1.0	<1.0	<1.0	<3.0	<1.0
MW-6	03/13/13	N	2,355.87	32.45	---	2323.42	<100	<420	<420	<1.0	<1.0	<1.0	<3.0	<4.0
MW-6	05/15/13	N	2,355.87	33.07	---	2322.80	<100	<420	<420	<1.0	<1.0	<1.0	<3.0	<4.0 UJ
MW-6	08/06/13	N	2,355.87	34.91	---	2321.02	<100	<380	<380	<1.0	<1.0	<1.0	<3.0	<4.0
MW-6	10/11/13	N	2,355.93	38.50	---	2317.43	<100	<380	<380	<1.0	<1.0	<1.0	<3.0	<4.0
MW-6	03/11/14	N	2,355.93	36.59	---	2319.34	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-6	06/03/14	N	2,355.93	34.65	---	2321.28	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-6	04/03/17	N	2,355.93	27.98	---	2327.95	<50	<30	<70	<0.5	<0..5	<0.5	<0.5	<1.0
MW-6	09/14/17	N	2,355.93	33.26	---	2,322.67	<250	<110	<260	<1	<1	<1	<1	<4
MW-6	03/21/18	NS	2355.93	30.08	---	2325.85	---	---	---	---	---	---	---	---
MW-6	06/21/18	NS	2355.93	30.93	---	2325.00	---	---	---	---	---	---	---	---
MW-6	09/21/18		2355.93	34.40	---	2321.53	---	---	---	---	---	---	---	---
MW-7	08/20/01	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-7	03/25/02	N	---	---	---	---	---	**6,280**	<750	<0.50	<2.0	<1.0	25	154
MW-7	06/04/02	N	---	---	---	---	---	**13,100**	<500	<0.50	<2.0	<1.0	**14**	**221**
MW-7	08/21/02	N	---	---	---	---	---	**6,850**	<500	<0.50	<2.0	<1.0	<1.5	65

Table 1B

Summary of Groundwater Monitoring Data - Deep Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			MTCA Method A Cleanup Levels (Deep GW)				800	500	500	5	1000	700	1000	160
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-7	08/21/02	N	---	---	---	---	---	**6,100**	<500	0.82	4.0	1.9	13	92
MW-7	10/29/02	N	---	---	---	---	---	**5,460**	<500	0.70	<2.0	<1.0	**9**	**172**
MW-7	02/19/03	N	---	---	---	---	---	**7,390**	<500	<0.50	<2.0	<1.0	6	<20
MW-7	06/05/03	N	---	---	---	---	---	**770**	<500	0.99	<2.0	<1.0	<1.5	<20
MW-7	09/09/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-7	09/11/03	N	---	---	---	---	---	**1,250**	<500	<0.50	<2.0	4.7	30	81
MW-7	12/10/03	N	---	---	---	---	---	**7,120**	<500	<0.50	<2.0	1.2	15	114
MW-7	06/03/04	N	---	---	---	---	---	**1,000**	<500	<0.50	<2.0	<1.0	<1.5	48
MW-7	12/01/04	N	---	---	---	---	---	**1540**	<500	<0.50	<2.0	<1.0	<1.5	21
MW-7	06/03/05	N	---	---	---	---	---	**830**	<500	<0.50	<2.0	<1.0	<1.5	24
MW-7	11/21/05	N	---	---	---	---	---	**2,970**	<500	<0.50	<2.0	<1.0	<1.5	48
MW-7	06/15/06	N	---	---	---	---	---	**1,410**	<500	<0.50	<2.0	<1.0	<1.5	23
MW-7	12/19/06	N	---	---	---	---	---	**1,300**	<500	<0.50	6.42	2.74	9.43	24
MW-7	05/30/07	N	---	---	---	---	---	**961**	<500	0.71	<2.0	<1.0	<1.5	<20
MW-7	10/30/07	N	---	---	---	---	**2,700**	**14,000**	<4,700	<0.50	<0.70	<0.80	<0.80	<1.0
MW-7	06/24/08	N	---	---	---	---	**1,600**	**1,200**	<95	<0.50	<0.70	<0.80	<0.80	<1.0
MW-7	12/04/08	N	---	---	---	---	**1,400**	<29	<68	<0.50	<0.70	<0.80	<0.80	<1.0
MW-7	06/04/09	N	---	---	---	---	155	**560**	<58	<0.12	<0.21	<0.20	<0.15	---
MW-7	11/10/09	N	---	---	---	---	577	**7,600**	<388	<1.0	<1.0	<1.0	<3.0	2.7
MW-7	02/02/10	N	---	---	---	---	214	**2,000**	<377	<1.0	<1.0	<1.0	<3.0	2.4
MW-7	05/18/10	N	---	---	---	---	717	**16,900**	<400	<1.0	<1.0	<1.0	<3.0	<1.0
MW-7	08/09/10	N	---	---	---	---	928	**22,100**	<388	<1.0	<1.0	<1.0	<3.0	---
MW-7	11/01/10	N	---	---	---	---	**3,130**	**28,300**	<388	<1.0	<1.0	<1.0	<3.0	---
MW-7	02/02/11	N	---	---	---	---	704	**10,700**	<392	<1.0	<1.0	<1.0	<3.0	---
MW-7	04/26/11	N	---	---	---	---	**5,710**	**3,690**	<400	<1.0	<1.0	<1.0	<3.0	---
MW-7	07/12/11	N	---	---	---	---	278	**2,540**	<392	<1.0	<1.0	<1.0	<3.0	---
MW-7	10/26/11	N	---	---	---	---	**2,420**	**37,200**	<380	<1.0	<1.0	<1.0	<3.0	---

Table 1B

Summary of Groundwater Monitoring Data - Deep Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			*PRIMARY VOCs*				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			MTCA Method A Cleanup Levels (Deep GW)				800	500	500	5	1000	700	1000	160
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-7	07/02/12	N	2,356.25	31.84	---	2324.41	<50	78	<380	<1.0	<1.0	<1.0	<3.0	<1.0
MW-7	10/10/12	N	2,356.25	35.24	---	2321.01	207	350	<820	<1.0	<1.0	<1.0	<3.0	5.4
MW-7	03/13/13	N	2,356.25	31.94	---	2324.31	104	<440	<440	<1.0	<1.0	<1.0	<3.0	<4.0
MW-7	05/14/13	N	2,356.25	32.74	---	2323.51	< 100	<390	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-7	08/06/13	N	2,356.25	34.54	---	2321.77	250	<420	<420	<1.0	<1.0	<1.0	<3.0	<4.0
MW-7	10/12/13	N	2,356.31	36.11	---	2320.20	410	**600**	< 450	<1.0	<1.0	<1.0	<3.0	<4.0
MW-7	03/11/14	N	2,356.31	35.62	---	2320.69	448	430	**550**	<1.0	<1.0	<1.0	<3.0	<4.0
MW-7	06/04/14	N	2,356.31	34.37	---	2321.94	201	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-7	04/05/17	NS	2,356.31	26.25	---	2330.06	ORC sock stuck in well - unable to sample			---	---	---	---	---
MW-7	09/14/17	NS	2,356.31	33.17	---	2,323.14	ORC sock stuck in well - unable to sample			---	---	---	---	---
MW-7	03/21/18	NS	2356.31	29.59	---	2326.72	ORC sock stuck in well - unable to sample			---	---	---	---	---
MW-7	06/21/18	NS	2356.31	30.76	---	2325.55	ORC sock stuck in well - unable to sample			---	---	---	---	---
MW-7	09/21/18	NS	2356.31	34.13	---	2322.18	ORC sock stuck in well - unable to sample			---	---	---	---	---
MW-8	08/20/01	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-8	03/25/02	N	---	---	---	---	---	<250	<750	<0.50	<2.0	<1.0	<1.5	<20
MW-8	06/04/02	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-8	08/21/02	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-8	10/29/02	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-8	02/19/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-8	06/05/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-8	09/09/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-8	09/11/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-8	12/10/03	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-8	06/03/04	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-8	12/01/04	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-8	06/03/05	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20

Table 1B

Summary of Groundwater Monitoring Data - Deep Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			MTCA Method A Cleanup Levels (Deep GW)				800	500	500	5	1000	700	1000	160
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-8	11/21/05	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-8	06/15/06	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-8	12/19/06	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-8	05/30/07	N	---	---	---	---	---	<250	<500	<0.50	<2.0	<1.0	<1.5	<20
MW-8	10/30/07	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-8	06/24/08	N	---	---	---	---	<50	<75	<94	<0.50	<0.70	<0.80	<0.80	<1.0
MW-8	12/04/08	N	---	---	---	---	<50	**35,000**	<3,500	<0.50	<0.70	<0.80	<0.80	<1.0
MW-8	06/04/09	N	---	---	---	---	<13.4	<36	<59	<0.12	<0.21	<0.20	<0.15	---
MW-8	11/10/09	N	---	---	---	---	<50	<79	<396	<1.0	<1.0	<1.0	<3.0	<1.0
MW-8	02/02/10	N	---	---	---	---	<50	<76	<381	<1.0	<1.0	<1.0	<3.0	<1.0
MW-8	05/18/10	N	---	---	---	---	<50	<78	<388	<1.0	<1.0	<1.0	<3.0	<1.0
MW-8	08/09/10	N	---	---	---	---	<50	<79	<396	<1.0	<1.0	<1.0	<3.0	---
MW-8	11/01/10	N	---	---	---	---	<50	<78	<388	<1.0	<1.0	<1.0	<3.0	---
MW-8	02/02/11	N	---	---	---	---	<50	<78	<388	<1.0	<1.0	<1.0	<3.0	---
MW-8	04/26/11	N	---	---	---	---	<50	<80	<400	<1.0	<1.0	<1.0	<3.0	---
MW-8	07/12/11	N	---	---	---	---	<50	<77	<385	<1.0	<1.0	<1.0	<3.0	---
MW-8	10/26/11	N	---	---	---	---	<50	<76	<380	<1.0	<1.0	<1.0	<3.0	---
MW-8	07/02/12	N	2,356.57	32.36	---	2324.21	<50	<86	<430	<1.0	<1.0	<1.0	<3.0	<1.0
MW-8	10/10/12	N	2,356.57	35.56	---	2321.01	<50	<170	<830	<1.0	<1.0	<1.0	<3.0	<1.0
MW-8	03/13/13	N	2,356.57	32.66	---	2323.91	<100	<440	<440	<1.0	<1.0	<1.0	<3.0	<4.0
MW-8	05/14/13	N	2,356.57	33.12	---	2323.45	<100	<390	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-8	08/06/13	N	2,356.57	34.83	---	2321.77	<100	<410	<410	<1.0	<1.0	<1.0	<3.0	<4.0
MW-8	10/12/13	N	2,356.60	36.36	---	2320.24	<100	<430	<430	<1.0	<1.0	<1.0	<3.0	<4.0
MW-8	03/11/14	N	2,356.60	36.98	---	2319.62	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-8	06/04/14	N	2,356.60	34.75	---	2321.85	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-8	04/05/17	N	2,356.60	29.20	---	2327.40	<50	<30	<69	<0.5	<0.5	<0.5	<0.5	<1.0
MW-8	09/14/17	N	2,356.60	33.04	---	2,323.56	<250	<100	<250	<1	<1	<1	<1	<4

Summary of Groundwater Monitoring Data - Deep Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			*PRIMARY VOCs*				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			MTCA Method A Cleanup Levels (Deep GW)				800	500	500	5	1000	700	1000	160
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-8	03/21/18	NS	2356.60	30.79	---	2325.81	---	---	---	---	---	---	---	---
MW-8	06/21/18	NS	2356.60	31.11	---	2325.49	---	---	---	---	---	---	---	---
MW-8	09/21/18		2356.60	34.24	---	2322.36	---	---	---	---	---	---	---	---
MW-11A							removed from sampling schedule due to well obstruction							
MW-11A	02/02/11	NS	2,357.25	Obstruction in Well at 3.25 Feet				---	---	---	---	---	---	---
MW-11A	04/26/11	NS	2,357.25	Obstruction in Well at 3.25 Feet				---	---	---	---	---	---	---
MW-11A	09/14/17	NS	2,357.25	34.47	---	2,322.78	---	---	---	---	---	---	---	---
MW-11A	03/21/18	NS	2357.25	30.76	---	2326.49	---	---	---	---	---	---	---	---
MW-11A	06/21/18	NS	2357.25	31.98	---	2325.27	---	---	---	---	---	---	---	---
MW-11A	09/21/18		2357.25	35.48	---	2321.77	---	---	---	---	---	---	---	---
MW-11B	08/20/01	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	03/25/02	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	06/04/02	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	10/29/02	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	02/19/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	06/05/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	09/09/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	12/10/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	06/03/04	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	12/01/04	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	06/03/05	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	11/21/05	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	06/15/06	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	12/19/06	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	05/30/07	NS	---	---	---	---	---	---	---	---	---	---	---	---

Table 1B

Summary of Groundwater Monitoring Data - Deep Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			PRIMARY VOCs				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			MTCA Method A Cleanup Levels (Deep GW)				800	500	500	5	1000	700	1000	160
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-11B	10/30/07	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	06/24/08	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	12/03/08	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-11B	06/03/09	N	---	---	---	---	<13	<35	<58	<0.12	<0.21	<0.20	<0.15	---
MW-11B	11/10/09	N	---	---	---	---	<50	144	<381	<1.0	<1.0	<1.0	<3.0	<1.0
MW-11B	02/02/10	N	---	---	---	---	<50	<76	<381	<1.0	<1.0	<1.0	<3.0	<1.0
MW-11B	05/18/10	N	---	---	---	---	<50	<77	<385	<1.0	<1.0	<1.0	<3.0	<1.0
MW-11B	08/09/10	N	---	---	---	---	<50	<78	<392	<1.0	<1.0	<1.0	<3.0	---
MW-11B	11/01/10	N	---	---	---	---	<50	<78	<388	<1.0	<1.0	<1.0	<3.0	---
MW-11B	02/02/11	N	---	---	---	---	<50	<79	<396	<1.0	<1.0	<1.0	<3.0	---
MW-11B	04/26/11	N	---	---	---	---	<50	<80	<400	<1.0	<1.0	<1.0	<3.0	---
MW-11B	07/12/11	N	---	---	---	---	<50	<78	<392	<1.0	<1.0	<1.0	<3.0	---
MW-11B	10/26/11	N	---	---	---	---	<50	<75	<380	<1.0	<1.0	<1.0	<3.0	---
MW-11B	07/02/12	N	2,357.78	33.82	---	2323.96	<50	<77	<380	<1.0	<1.0	<1.0	<3.0	<1.0
MW-11B	10/10/12	N	2,357.78	37.18	---	2320.60	<50	<160	<810	<1.0	<1.0	<1.0	<3.0	<1.0
MW-11B	03/13/13	N	2,357.78	33.67	---	2324.11	<100	<410	<410	<1.0	<1.0	<1.0	<3.0	<4.0
MW-11B	05/14/13	N	2,357.78	34.52	---	2323.26	<100	<450	<450	<1.0	<1.0	<1.0	<3.0	<4.0
MW-11B	08/06/13	N	2,357.78	36.34	---	2321.51	<100	<380	<380	<1.0	<1.0	<1.0	<3.0	<4.0
MW-11B	10/12/13	N	2,357.85	37.96	---	2319.89	<100	<410	<410	<1.0	<1.0	<1.0	<3.0	<4.0
MW-11B	03/12/14	N	2,357.85	38.10	---	2319.75	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-11B	06/04/14	N	2,357.85	35.97	---	2321.88	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<4.0
MW-11B	04/05/17	N	2,357.85	28.38	---	2329.47	<50	<30	<70	<0.5	<0.5	<0.5	<0.5	<1.0
MW-11B	09/14/17	N	2,357.85	34.78	---	2,323.07	<250	<110	<260	<1	<1	<1	<1	<4
MW-11B	03/21/18	NS	2357.85	31.19	---	2326.66	---	---	---	---	---	---	---	---
MW-11B	06/21/18	NS	2357.85	32.27	---	2325.58	---	---	---	---	---	---	---	---
MW-11B	09/21/18	NS	2357.85	34.76	---	2323.09	---	---	---	---	---	---	---	---

Summary of Groundwater Monitoring Data - Deep Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			*PRIMARY VOCs*				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			MTCA Method A Cleanup Levels (Deep GW)				800	500	500	5	1000	700	1000	160
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-12A	08/20/01	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	03/25/02	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	06/04/02	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	10/29/02	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	02/19/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	06/05/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	09/09/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	12/10/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	06/03/04	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	12/01/04	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	06/03/05	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	11/21/05	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	06/15/06	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	12/19/06	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	05/30/07	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	10/30/07	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	06/24/08	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	12/03/08	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12A	06/03/09	N	---	---	---	---	<13	<35	<58	<0.12	<0.21	<0.20	<0.15	---
MW-12A	07/02/12	NS	2,355.12	31.23	---	2323.89	---	---	---	---	---	---	---	---
MW-12A	10/09/12	NS	2,355.12	34.66	---	2320.46	---	---	---	---	---	---	---	---
MW-12A	03/12/13	NS	2,355.12	30.97	---	2324.15	---	---	---	---	---	---	---	---
MW-12A	05/14/13	NS	2,355.12	32.00	---	2323.12	---	---	---	---	---	---	---	---
MW-12A	08/05/13	NS	2,355.12	33.74	---	2321.48	---	---	---	---	---	---	---	---
MW-12A	10/18/13	NS	2,355.22	35.36	---	2319.86	---	---	---	---	---	---	---	---
MW-12A	03/11/14	NS	2,355.22	35.02	---	2320.20	---	---	---	---	---	---	---	---
MW-12A	06/02/14	NS	2,355.22	33.38	---	2321.84	---	---	---	---	---	---	---	---

Table 1B

Summary of Groundwater Monitoring Data - Deep Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			*PRIMARY VOCs*				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			MTCA Method A Cleanup Levels (Deep GW)				800	500	500	5	1000	700	1000	160
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-12A	04/03/17	NS	2,355.22	25.76	---	2329.46	---	---	---	---	---	---	---	---
MW-12A	09/14/17	NS	2,355.22	32.27	---	2,322.95	---	---	---	---	---	---	---	---
MW-12A	03/21/18	NS	2355.22	23.53	---	2331.69	---	---	---	---	---	---	---	---
MW-12A	06/21/18	NS	2355.22	29.80	---	2325.42	---	---	---	---	---	---	---	---
MW-12A	09/21/18	NS	2355.22	33.28	---	2321.94	---	---	---	---	---	---	---	---
MW-12B	08/20/01	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	03/25/02	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	06/04/02	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	10/29/02	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	02/19/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	06/05/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	09/09/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	12/10/03	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	06/03/04	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	12/01/04	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	06/03/05	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	11/21/05	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	06/15/06	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	12/19/06	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	05/30/07	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	10/30/07	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	06/24/08	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	12/03/08	NS	---	---	---	---	---	---	---	---	---	---	---	---
MW-12B	06/03/09	N	---	---	---	---	<13	<35	<58	<0.12	<0.21	<0.20	<0.15	---
MW-12B	07/02/12	NS	2,355.02	30.85	---	2324.17	---	---	---	---	---	---	---	---
MW-12B	10/09/12	NS	2,355.02	34.24	---	2320.78	---	---	---	---	---	---	---	---

Table 1B

Summary of Groundwater Monitoring Data - Deep Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			*PRIMARY VOCs*				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
			MTCA Method A Cleanup Levels (Deep GW)				800	500	500	5	1000	700	1000	160
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-12B	03/12/13	NS	2,355.02	30.72	---	2324.30	---	---	---	---	---	---	---	---
MW-12B	05/14/13	NS	2,355.02	31.56	---	2323.46	---	---	---	---	---	---	---	---
MW-12B	08/05/13	NS	2,355.02	33.36	---	2321.73	---	---	---	---	---	---	---	---
MW-12B	10/18/13	NS	2,355.09	35.00	---	2320.09	---	---	---	---	---	---	---	---
MW-12B	03/11/14	NS	2,355.09	34.99	---	2320.10	---	---	---	---	---	---	---	---
MW-12B	06/02/14	NS	2,355.09	33.03	---	2322.06	---	---	---	---	---	---	---	---
MW-12B	04/03/17	NS	2,355.09	26.35	---	2328.74	---	---	---	---	---	---	---	---
MW-12B	09/14/17	NS	2,355.09	31.76	---	2,323.33	---	---	---	---	---	---	---	---
MW-12B	03/21/18	NS	2355.09	28.18	---	2327.91	---	---	---	---	---	---	---	---
MW-12B	06/21/18	NS	2355.09	29.22	---	2325.87	---	---	---	---	---	---	---	---
MW-12B	09/21/18	NS	2355.09	32.81	---	2322.28	---	---	---	---	---	---	---	---

Notes:

DTW = Depth to Water in feet

GWE = Groundwater Elevation in feet above mean sea level; before August 13, 2009, relative to arbitrary benchmarks

TOC = Top of Casing in feet above mean sea level; before August 13, 2009, relative to arbitrary benchmarks

All results are in micrograms per liter (µg/L) unless otherwise indicated

TPHg = Total petroleum hydrocarbons as gasoline analyzed by NWTPH---Gx unless otherwise noted. The higher value is based on the assumption that no benzene is present in the groundwater sample. If any detectable amount of benzene is present in the groundwater sample, then the lower TPHg cleanup level is applicabl

TPHd = Total petroleum hydrocarbons as diesel, analyzed by NWTPH---Dx with silica gel cleanup unless otherwise noted.

TPHo = Total petroleum hydrocarbons as oil, analyzed by NWTPH---Dx with silica gel cleanup unless otherwise noted.

VOCs = Volatile organic compounds

BTEX = Benzene, toluene, ethylbenzene, and xylenes analyzed by EPA Method 8260B unless otherwise noted.

Total Xylenes = o---xylene + m,p---xylene

<x = Not detected at laboratory reporting limit x

Table 1B

Summary of Groundwater Monitoring Data - Deep Wells
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							HYDROCARBONS			*PRIMARY VOCs*				
Sample ID	*Date*	*Sample Type*	*TOC*	*DTW*	*SPH*	*GWE*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*Naph*
		MTCA Method A Cleanup Levels (Deep GW)					800	500	500	5	1000	700	1000	160
							ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L

FD = Field duplicate
N = Normal
NS = Not sampled
NM = Not measured
--- = Not analyzed
Concentrations in bold type indicate the analyte was detected above the Model Toxics Control Act (MTCA) Method A cleanup level
* = Field duplicate concentration is not consistent with the "parent" sample; therefore, this data is considered anomalous.

Table 2

Summary of Soil Analytical Data
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							PRIMARY VOCs				OXYGENATES	PAHs
Sample ID	*Consultant*	*Sample Date*	*Sample Depth*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*MTBE*	*Naphthalenes*
		MTCA Method A Screening Levels		*30/100*	*2,000*	*2,000*	*0.03*	*7*	*6*	*9*	*0.1*	*5*
		Site-specific Cleanup Levels		*1,500 **	*2,000*	*2,000*	*18.2*	*8,000*	*6,400*	*16,000*	*556*	*1,600*
			ft bgs	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*
TP-2-3.5	Maxim	03/19/01	3.5	6.98	<10	<25	<0.050	<0.100	<0.050	0.108	<0.200	<0.01
TP-3-2.0	Maxim	03/19/01	2	1,460	690	<25	<0.250	<0.500	0.488	1.37	<1.00	0.163
TP-3-2.0 (dup)	Maxim	03/19/01	2	699	804	<25	<0.100	<0.200	0.268	0.733	<0.400	0.130
TP-4-6.0	Maxim	03/19/01	6	**4,250**	**11,600**	<275	<0.500	<1.00	1.5	7.06	<2.00	9.30
TP-5-3.5	Maxim	03/19/01	3.5	<5.00	<10	<25	<0.050	<0.100	<0.050	<0.100	<0.200	<0.01
TP-6-5.5	Maxim	03/19/01	5.5	44.8	69.9	<25	<0.050	<0.100	<0.050	<0.100	<0.200	<0.01
TP-7-4.0	Maxim	03/19/01	4	10.3	<10	<25	<0.050	<0.100	<0.050	<0.100	<0.200	<0.01
TP-8-4.0	Maxim	03/19/01	4	<5.00	<10	<25	<0.050	<0.100	<0.050	<0.100	<0.200	<0.01
TP-9-4.0	Maxim	03/19/01	4	<5.00	<10	<25	<0.050	<0.100	<0.050	<0.100	<0.200	<0.01
YPL#2-5.0	Maxim	03/21/01	5	1,070	**5,390**	<250	<0.050	<0.100	0.123	0.716	<0.200	0.0515
YPL#3-5.0	Maxim	03/21/01	5	414	971	<25	<0.050	<0.100	0.130	0.411	<0.200	0.0829
GCC-3	Maxim	10/15/01	2-5	---	756	<25	<0.100	<0.800	<0.800	<0.800	---	11.2
GCC-7	Maxim	10/15/01	4	---	343	<25	<0.0250	<0.200	<0.200	<0.200	---	4.12
GCC8-3.5	Maxim	10/16/01	3.5	---	<10	<25	---	---	---	---	---	---
GCC9-6	Maxim	10/16/01	6	---	25.4	<25	---	---	---	---	---	---
GCC10-4	Maxim	10/16/01	4	---	<10	<25	---	---	---	---	---	---
GCC12-6	Maxim	10/16/01	6	---	190	<25	<0.0250	<0.200	<0.200	<0.200	---	4.48
GCC14-5	Maxim	10/16/01	5	---	808	<25	---	---	---	---	---	---
GCC15-5.5	Maxim	10/17/01	5.5	---	**6,180**	<250	---	---	---	---	---	---
GCC16-6	Maxim	10/17/01	6	---	14.6	<25	---	---	---	---	---	---
GCC17-5.5	Maxim	10/17/01	5.5	---	<10	<25	---	---	---	---	---	---
GCC18-5.5	Maxim	10/17/01	5.5	---	**2,690**	<250	---	---	---	---	---	---
GCC19-6	Maxim	10/17/01	6	---	1,510	<250	<0.0250	<0.200	<0.200	0.702	---	17.3
GCC20-6	Maxim	10/17/01	6	---	**3,470**	<250	---	---	---	---	---	---
GCC21-6	Maxim	10/17/01	6	---	**5,780**	<250	---	---	---	---	---	---
GCC22-6	Maxim	10/17/01	6	---	<10	<25	---	---	---	---	---	---
GCC23-7	Maxim	10/17/01	7	---	57.5	<25	<0.0250	<0.200	<0.200	<0.200	---	<0.500
GCC24-6.5	Maxim	10/18/01	6.5	---	11	29.8	---	---	---	---	---	---
GCC25-6	Maxim	10/18/01	6	---	**3,940**	<250	---	---	---	---	---	---
GCC26-6	Maxim	10/18/01	6	---	11.3	<25	---	---	---	---	---	---
GCC27-6	Maxim	10/18/01	6	---	<10	<25	---	---	---	---	---	---

Table 2

Summary of Soil Analytical Data
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							PRIMARY VOCs				OXYGENATES	PAHs
Sample ID	*Consultant*	*Sample Date*	*Sample Depth*	*TPHg*	*TPHd*	*TPHo*	*B*	*T*	*E*	*X*	*MTBE*	*Naphthalenes*
		MTCA Method A Screening Levels		*30/100*	*2,000*	*2,000*	*0.03*	*7*	*6*	*9*	*0.1*	*5*
		Site-specific Cleanup Levels		*1,500 **	*2,000*	*2,000*	*18.2*	*8,000*	*6,400*	*16,000*	*556*	*1,600*
			ft bgs	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*
GCC28-6	Maxim	10/18/01	6	---	690	<25	---	---	---	---	---	---
GCC29-6	Maxim	10/18/01	6	---	**8,280**	<250	---	---	---	---	---	---
GCC30-6	Maxim	10/18/01	6	---	<10	<25	---	---	---	---	---	---
GCC31-6	Maxim	10/18/01	6	---	<10	<25	---	---	---	---	---	---
GCC32-6	Maxim	10/18/01	6	---	**2,810**	<250	---	---	---	---	---	---
MW-1-45	Maxim	03/18/02	45	---	67.1	98.5	<0.0250	<0.200	<0.200	<0.200	---	<0.500
MW-2-10-10.5	Maxim	03/19/02	10-10.5	---	87.9	27	<0.0250	<0.200	<0.200	<0.200	---	27.8
MW-3-4-6	Maxim	03/19/02	4-6	---	<10	<25	<0.0250	<0.200	<0.200	<0.200	---	<0.500
MW-4-7-9	Maxim	03/19/02	7-9	---	505	40.2	<0.0250	<0.200	<0.200	<0.200	---	13.6
MW-4-12-14	Maxim	03/19/02	12-14	---	15.2	<25	<0.0250	<0.200	<0.200	<0.200	---	<0.500
MW-5-4-6	Maxim	03/19/02	4-6	---	328	<25	<0.0250	<0.200	<0.200	<0.200	---	16.8
MW-5-9.5-11.5	Maxim	03/19/02	9.5-11.5	---	45.4	40.3	<0.0250	<0.200	<0.200	<0.200	---	0.544
MW-6-22-24	Maxim	3/19/2002	22-24	---	68	<25	<0.0250	<0.200	<0.200	<0.200	---	1.6
MW-6-42	Maxim	3/20/2002	42	---	27.9	29.2	<0.0250	<0.200	<0.200	<0.200	---	<0.500
MW-7-4-4.5	Maxim	3/20/2002	4-4.5	---	301	<25	<0.0250	<0.200	<0.200	0.402	---	20.3
MW-7-37	Maxim	3/20/2002	37	---	87.1	47.4	<0.0250	<0.200	<0.200	<0.200	---	<0.500
MW-8-4-6	Maxim	3/20/2002	4-6	---	<10	<25	<0.0250	<0.200	<0.200	<0.200	---	<0.500
MW-8-36	Maxim	3/20/2002	36	---	26.7	35.1	<0.0250	<0.200	<0.200	<0.200	---	<0.500
MP-1R-4.5-4.6-1013	AECOM	10/8/2013	4.5-4.6	<6.7	47.3	<101	<0.0274	<0.0685	<0.0685	<0.205	---	---
MW-5D-4.9-5.9-1013	AECOM	10/7/2013	4.9-5.9	412	**2,580**	<84.9	<0.0237	<0.0592	<0.0592	<0.178	---	---
MW-5D-35-35.2-1013	AECOM	10/7/2013	35-35.2	117	54.9	<87.8	<0.0282	<0.0706	<0.0706	<0.212	---	---
MW-90-4.4-4.5-1013	AECOM	10/15/2013	4.4-4.5	<4.9	<21.2	<84.2	<0.0229	<0.0573	<0.0573	<0.172	---	---
MW-9-4.4-4.5-1013	AECOM	10/15/2013	4.4-4.5	<8.1	<21.1	<84.4	<0.0221	<0.0553	<0.0553	<0.166	---	---

Notes:
MTCA = Model Toxics Control Act
-- = Not analyzed or not reported
All results in milligrams per kilogram (mg/kg) unless otherwise indicated.
Results in bold indicate an exceedance of the MTCA Method A cleanup levels.
ft bgs = feet below ground surface

Table 2

Summary of Soil Analytical Data
Yellowstone Pipeline
Geiger Correctional Facility
Spokane, Washington

							PRIMARY VOCs				OXYGENATES	PAHs
Sample ID	Consultant	Sample Date	Sample Depth	TPHg	TPHd	TPHo	B	T	E	X	MTBE	Naphthalenes
MTCA Method A Screening Levels				30/100	2,000	2,000	0.03	7	6	9	0.1	5
Site-specific Cleanup Levels				1,500 *	2,000	2,000	18.2	8,000	6,400	16,000	556	1,600
			ft bgs	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)

TPHg = Total petroleum hydrocarbons as gasoline range organics analyzed by NWTPH-Gx; before May 20, 2008, analyzed by EPA Method 8015, unless otherwise noted

TPHd = Total petroleum hydrocarbons as diesel range organics analyzed by NWTPH-Dx; before May 20, 2008, analyzed by Method WTPH-HICD; before June 2, 1992, analyzed by EPA Method 8015, unless otherwise noted

TPHo = Total petroleum hydrocarbons as heavy oil range organics analyzed by NWTPH-Dx; before May 20, 2008, analyzed by Method WTPH-HCID, unless otherwise noted

BTEX = Benzene, toluene, ethylbenzene, and xylenes analyzed by EPA Method 8260B; before May 20, 2008, analyzed by EPA Method 8020 unless otherwise noted

VOCs = volatile organic compounds

<x = Not detected at reporting limit x

Shading indicates the soil sample has been overexcavated.

* = Generic direct contact TPHg cleanup level from *Model Remedies for Sites with Petroleum Contaminated Soils*

Table 3

Well Construction Details
Yellowstone Pipeline
Geiger Corrections Facility
Spokane, Washington

Well	*Date Installed*	*Top of Casing Elevation (feet)*	*Top of Screen Depth (feet bgs)*	*Bottom of Screen Depth (feet bgs)*	*Slot Size of the Screen (inches)*	*Diameter of the Well (inches)*	*Sand Pack Top Depth (feet bgs)*	*Sand Pack Bottom Depth (feet bgs)*	*Sand Pack Size*	*Borehole Bottom Depth (feet bgs)*
MP-1	2001	2354.90	3.00	8.00	0.020	2	2.00	8.00	10/20 silica sand	8.00
MP-1R	2013	2354.78	3.50	13.50	0.020	2		Not specified on log		13.90
MW-1	2002	2354.60	25.00	50.00	0.020	2	20.00	50.00	Not specified on log	50.00
MW-2	2002	2355.19	4.50	14.50	0.020	2	4.50	14.50	Not specified on log	14.50
MW-3	2002	2355.44	4.00	14.00	0.020	2	3.00	14.00	Not specified on log	14.00
MW-4	2002	2356.44	4.00	14.00	0.020	2	3.00	14.00	Not specified on log	14.00
MW-5	2002	2355.11	3.50	13.50	0.020	2	3.00	13.50	Not specified on log	13.50
MW-5D	2013	2355.03	25.00	45.00	0.020	2		Not specified on log		45.00
MW-6	2002	2355.93	25.50	45.50	0.020	2	22.00	45.50	Not specified on log	45.50
MW-7	2002	2356.31	25.00	45.00	0.020	2	22.00	45.00	Not specified on log	45.00
MW-8	2002	2356.60	25.00	45.00	0.020	2	22.00	45.00	Not specified on log	45.00
95-MW-11A	1990	2357.32	84.50	94.50	0.010	2	72.50	99.50	20/40 SAND	101.00
95-MW-11B	1990	2357.85	24.70	44.70	0.010	2	17.10	44.70	20/40 SAND	50.00
95-MW-12A	1990	2355.22	68.10	78.10	0.010	2	63.10	78.10	20/40 SAND	97.00
95-MW-12B	1990	2355.09	24.00	45.00	0.020	2	18.00	45.00	20/40 SAND	51.00

Notes:
* Decommissioned in October 2013
bgs = Below Ground Surface

Appendices

Appendix A
Site History

Appendix A Site History

2001 Subsurface Site Characterization: Beginning in March 2001, Maxim Technologies Inc. (Maxim) conducted a subsurface site characterization to investigate whether soil and groundwater impacts on the Geiger Heights Minimum Security Correctional Facility (Geiger Corrections) were caused by a release along the adjacent Yellowstone Pipeline (YPL). According to Maxim, Geiger Corrections was constructed in 1979 from buildings formerly belonging to the Geiger Air Force Base. A small release of aviation fuel was reported along the YPL on March 30, 1979, releasing approximately 42 gallons of fuel. The spilled fuel along with 50 gallons of perched groundwater was recovered and the pipeline was patched. In 1996, petroleum impacted soil and groundwater was encountered on the Geiger Corrections property during excavation for building footings. Building construction was ceased due to the discovery. In 1998, two heating oil underground storage tanks (USTs) with 8,000-10,000 gallon capacity were removed from the Geiger Corrections property. One of the two USTs had leaked from the manway cover; approximately 100 tons of petroleum impacted soil was removed from the UST excavation. At the final extent of excavation, impacted soil still remained in exceedance of cleanup levels. A concentration of greater than 10,000 milligrams per kilogram of total petroleum hydrocarbons as diesel (TPHd) was detected in soil. In 2000, the Spokane Airport Business Park (SABP), which owns the Geiger Corrections property and adjacent YPL right-of-way, informed YPL that they believed the YPL pipeline was the source of significant impacts on the Geiger Corrections property. On March 19 and 20, 2001, Maxim dug 12 test pits. The test pits were advanced until bedrock was encountered at approximately 5 to 6 feet below ground surface (feet bgs). A total of nine soil samples (including one field duplicate) were collected and analyzed for TPH as gasoline (TPHg), TPHd, TPH as oil (TPHo), benzene, toluene, ethylbenzene and total xylenes (BTEX), methyl tertiary butyl ether (MTBE), and polyaromatic hydrocarbons (PAHs) including naphthalenes. In addition, Maxim excavated a portion of the pipeline within the Geiger Corrections property to inspect the pipeline after petroleum impacts were identified in several of the test pits. The pipeline is approximately 4 feet bgs, approximately 1-2 feet above competent bedrock. Two additional test pits were excavated as well. Non aqueous phase liquid (NAPL) was encountered within a 60-foot section of the pipeline. A sample of the NAPL was collected along with two additional soil samples. The NAPL correlated with the section of pipeline that had leaked in 1979 and been patched. The pipeline was cut and removed, and a new section of pipe was welded into place. Line pressure testing was conducted and passed, and the trench was backfilled in March 24, 2001. Results of the NAPL sampling indicated a combination of weathered petroleum, consistent with the 1979 aviation fuel release, with a newer petroleum, consistent with the product in the pipeline at the time of the excavation. Soil analytical results indicated TPHg exceeding the Model Toxics Control Act (MTCA) Method A cleanup level in five of the samples, TPHd exceeding the MTCA Method A cleanup level in two of the samples, and naphthalenes exceeding the MTCA Method A cleanup level in one of the samples. Additional information is available in Maxim's Subsurface Site Characterization Report dated July 23, 2001.

2001 Remedial Excavation: Based on the results of the 2001 subsurface site characterization, a remedial soil excavation was conducted by Maxim in October 2001. Approximately 400 cubic yards of soil was removed and disposed of at a licensed Class II landfill. The excavation was advanced until approximately 8 feet bgs where bedrock was encountered. The excavation revealed a larger area of soil impacts than anticipated and therefore, 17 additional test pits were advanced to the west, south, and east of the excavation. One groundwater monitoring well (MP-1) was installed. The test pits revealed a scour fill deposit within the center of the Geiger Corrections property, which appeared to act as a preferential pathway for petroleum migration. A total of 25 soil samples were collected from the pipeline excavation

and the test pits. Samples were analyzed for TPHd, and TPHo; select samples were analyzed for BTEX and naphthalenes. Results indicated TPHd exceeding the MTCA Method A cleanup level in eight of the samples, and naphthalenes exceeding the MTCA Method A cleanup level in two of the samples. Additional information is available in Maxim's Remedial Excavation and Assessment Report dated January 2002.

2002 Additional Site Characterization: In March 2002, Maxim installed eight groundwater monitoring wells (MW-1 through MW-8). Four of the wells were installed at shallow depths within the scour fill deposit (MW-2, MW-3, MW-4, and MW-5), and four wells were installed within the deeper regional aquifer (MW-1, MW-6, MW-7, and MW-8). Soil samples were collected from each well location at varying depths and analyzed for TPHd, TPHo, BTEX, and naphthalenes. Results indicated naphthalene exceeding MTCA Method A cleanup levels in four of the 13 samples. No other concentrations exceeded cleanup levels. Additional information is available in Maxim's Additional Site Characterization Report dated May 2002.

2013 Site Investigation: In October 2013, AECOM decommissioned groundwater monitoring well MP-1, installed two groundwater monitoring wells (MP-1R and MW-5D) and attempted to install a third well (MW-9) at two different locations, but terminated the locations as borings only. Well MW-1R was installed within the shallow perched groundwater, and MW-5D was installed within the deeper regional aquifer. A total of five soil samples were collected and analyzed for TPHg, TPHd, TPHo, and BTEX. Results indicated that TPHg exceeded the MTCA Method A cleanup level in two of the samples, and TPHd exceeded the MTCA Method A cleanup level in one of the samples. Additional information is available in AECOM's Site Investigation Report dated February 2014.

Appendix B
Boring/Well Logs

AECOM

Client: F-66
Project Number: 60285821
Site Location: Gerber Correctional
Coordinates: N/A Elevation: N/A
Drilling Method: Air Rotary
Sample Type(s): Split spoon Boring Diameter: 8"-AK

BORING ID: MW-5D
Sheet: 1 of 1
Monitoring Well Installed: Y
Screened Interval: 25-45
Depth of Boring: 45'
Water Level: ~5' and 38'

Weather: Cloudy
Logged By: FM MG Date/Time Started: 12/2/13 1130
Drilling Contractor: Environmental West
Ground Elevation: N/A Date/Time Finished:

Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	MATERIALS: Color, size, range, MAIN COMPONENT, minor component(s), moisture content, structure, angularity, maximum grain size, consistancy, odor, and Geologic Unit (If Known)	Lab Sample ID	Lab Sample Depth (Ft.)
1			50/6"	12"/12"	42.9		~~Bottom~~ AIR KNIFE w/ POTABLE WATER TO 5'4".	MW-5D-4.9-5.9 (9:45) 1013	4.9-5.9
2		4.9	50/6"				A+nS' 4.9-5.2' ~~Gravel~~ -strong HC odor brown transition to gray. 25% gravel ¼" SR-SA equant, flat. 75% M-C sand. Trace f sand.		
3									
4							5.2-5.9 brown. 15% gravel SA equant, up to 1" long. ~~60~~ 75% f sand. 10% silt.		
5									
6		10	50/1"	1"/1"			~~10-H~~ 10-10.1' 40% gravel. ½" flat, equat, brown, ~~60~~ 55% f-c sand. 5% silt.		
7									
8									
9		15	70/1"	0"/1"	—		15' No recovery		
10		20	60/3"	3"/3"	0.2		20-20.25" A-SA gravel up to 1" long, brownish gray. ~60%, 30% f-c sand. 10% silt. dry.		
11									
12		25	65/3"	3"/3"	0.0		25-25.25" A-SA gravel up to 1", flat, equant. 60% Appears to be ~~60~~ pulverized gravel from f-c sand & gravel size. ~~30~~ 30% f-M sand. 10% c sand. Dry slight HC odor.		
13									
14		30	60/3"	0"/3"	—		30' No recovery.	MW-5D-35-35.2-1013 @ 1130	35.0-35.2'
15		35	50/2"	2"/2"	3.2		35-35.2" HC odor Appears to be pulverized gravel-drilling agree. 60% gravel SA-A up to 1", flat, elongated, 40% f-c sand. dk brown, dry.		
16									
17		40	50/3"	1"/3"	0.0	140	Wet-water @ ~38' feet bgs- dark brown- pulverized gravel-% is same as above. Iron Staining (moderately) throughout. Slight HC odor		
18									
19		45	11 27 50/1"	13"/13"			45-46.2' Yellow and dark brown w/ orange pockets (Fe) wet. Crumbly silt-like w/ gravel throughout. 20% gravel A-SA, flat,		
20							up to 1" long. 40% silt. 40% F-C sand sized ~~pebbly~~ Bottom 1" is gravel and F-C sand sized basalt. No odor.		

NOTES:

Date	Time	Depth to groundwater while drilling

Checked by Date:

AECOM

Client: Phillips 66
Project Number: 60285821
Site Location: Geiger Corrections
Coordinates: N/A ° Elevation: N/A
Drilling Method: Air Rotary
Sample Type(s): Split Spoon Boring Diameter: 8"
Weather: Cloudy / Rain
Logged By: M. Graddy Date/Time Started: 10/9/13 1440
Drilling Contractor: Environmental West Ground Elevation: N/A Date/Time Finished: 10/8/13

BORING ID: MP-1R
Sheet: 1 of 1
Monitoring Well Installed: Y
Screened Interval: 3.5-13.5
Depth of Boring: 13.9
Water Level: ~5'

Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	MATERIALS: Color, size, range, MAIN COMPONENT, minor component(s), moisture content, structure, angularity, maximum grain size, consistancy, odor, and Geologic Unit (If Known)	Lab Sample ID	Lab Sample Depth (Ft)
1					0.9 @ 4.5-4.6		Air knife to ~6 feet Soil collected from sidewall @ 4.5-4.6 feet	MP-1R-4.5-4.6-1013 @ 1440	4.5-4.6'
2									
3			8 21						
4			50/3"	15"/15"	0.2		6-7.25' Wet - dark gray. Fe staining from 6.5-7.25', 30% gravel SA-A, flat up to 3/4" long. Trace to 5% silt. 65% f-c sand.		
5									
6									
7			29 50/5"	11"/11"	0.0		9-9.9' 30% silt. Wet 9.8-9.9' Iron oxide banding HC odor throughout. 70% f sand. Trace M sand. Trace SA gravel, equant, up to 1/2" @ 9-9.1', Dry @ 9.5		
8									
9									
10			65/4.5"	4.5"/4.5"	0.2		13.5-13.9' Dry Gray. Iron oxide banding and pockets throughout. Gravel packet @ 6.6' 1/4 SA-A flat, equant gravel. 10% silt. 90% f sand. Trace M. sand.		
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

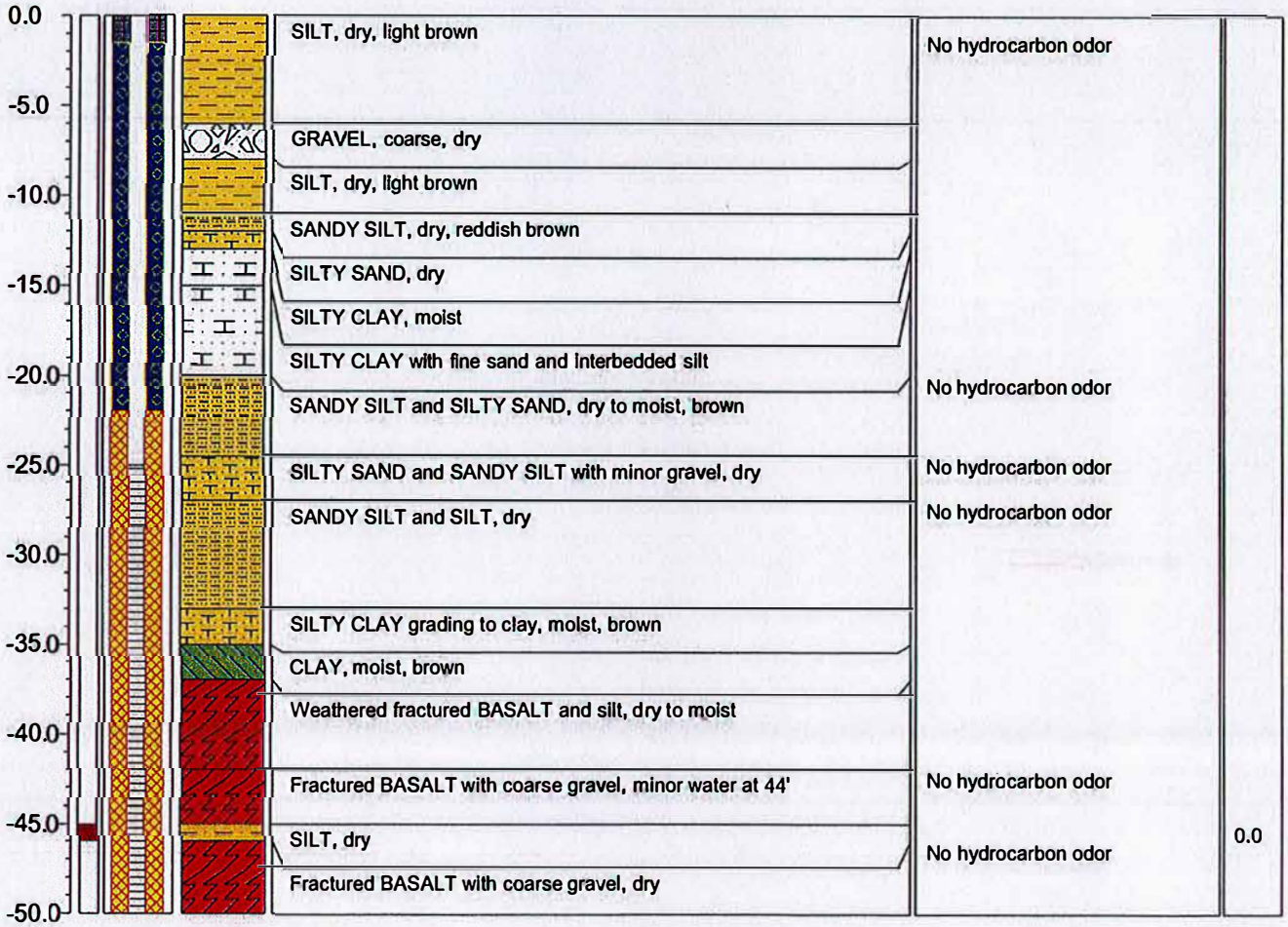
NOTES:

Date	Time	Depth to groundwater while drilling

Checked by Date:

PROJECT NAME: Geiger Corrections Center
SITE LOCATION: Spokane, Washington
DRILL LOCATION: GCC MW-1
DRILL TYPE: Tubex
DRILLED BY: Environmental West, Inc.
LOGGED BY: William Craig
SCREENING METHOD: FID/VISUAL
DESCRIPTIVE LOCATION: In GCC yard, north of spill, west of YPL pipeline

MEASURING POINT ELEVATION (ft): 2354.55
STATIC WATER LEVEL (ft bgs): 31.94
SCREEN (_to_ ft;_SLOT): 25 to 50 ft; 20 slot
BOREHOLE DIA (in): 6
CASING DIA (in): 2.0
MONUMENT: Flush Mount
TOTAL DEPTH (ft bgs): 50
LAB ANALYSIS: 45'
DATE COMPLETED: 3/18/02

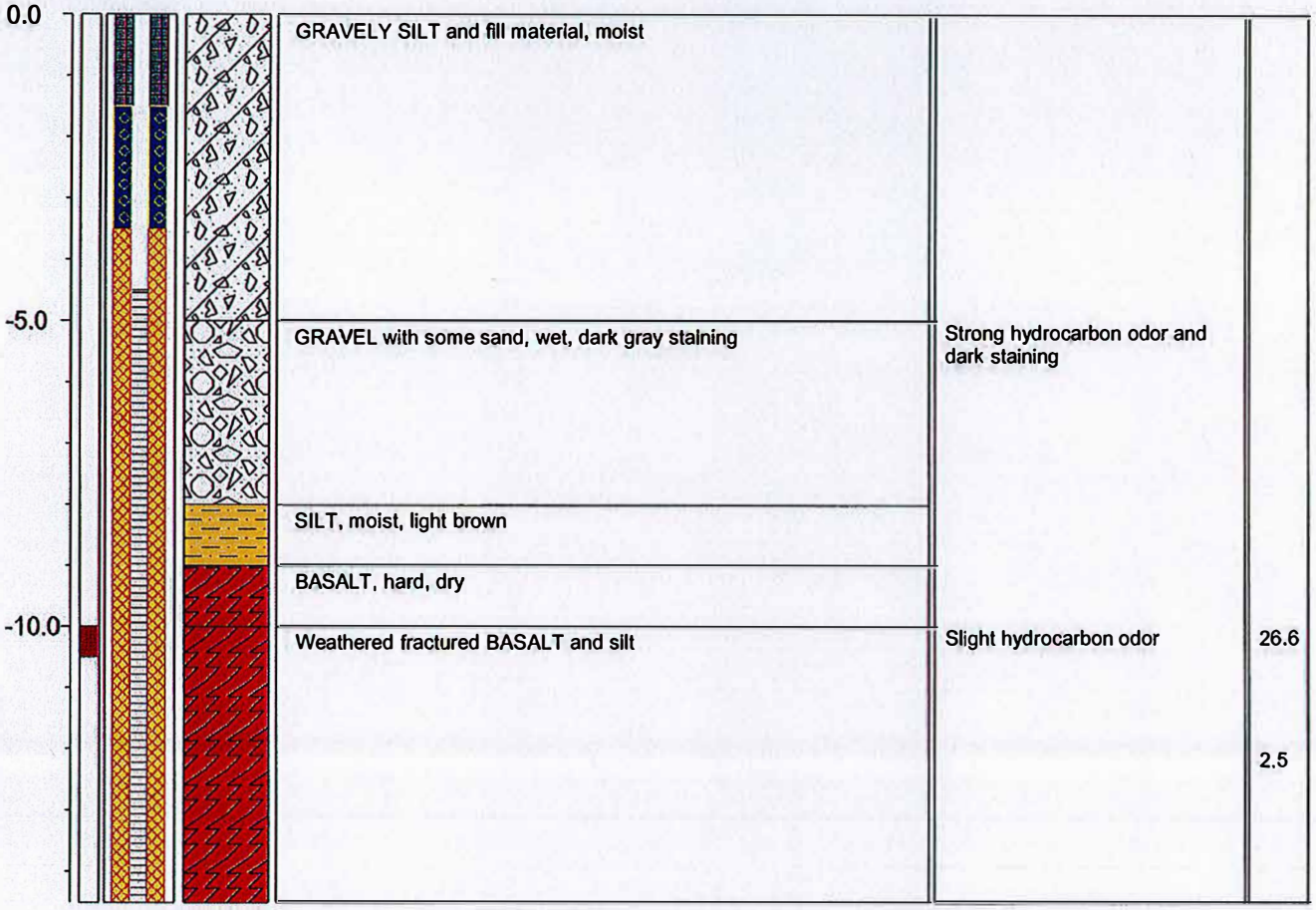


PVC Casing | Screen | Concrete | Sand Pack | Bentonite Plug

2001730.810	MAXIM TECHNOLOGIES INC	WELL CONSTRUCTION SCHEMATIC	GCC MW-1

PROJECT NAME: Geiger Corrections Center
SITE LOCATION: Spokane, Washington
DRILL LOCATION: GCC MW-2
DRILL TYPE: Tubex
DRILLED BY: Environmental West, Inc.
LOGGED BY: William Craig
SCREENING METHOD: FID/VISUAL
DESCRIPTIVE LOCATION: South side of building

MEASURING POINT ELEVATION (ft): 2355.18
STATIC WATER LEVEL (ft bgs): 4.34
SCREEN (_to_ ft; _SLOT): 4.5 to 14.5 ft; 20 slot
BOREHOLE DIA (in): 6
CASING DIA (in): 2.0
MONUMENT: Flush Mount
TOTAL DEPTH (ft bgs): 14.5
LAB ANALYSIS: 10'-10.5'
DATE COMPLETED: 3/19/02

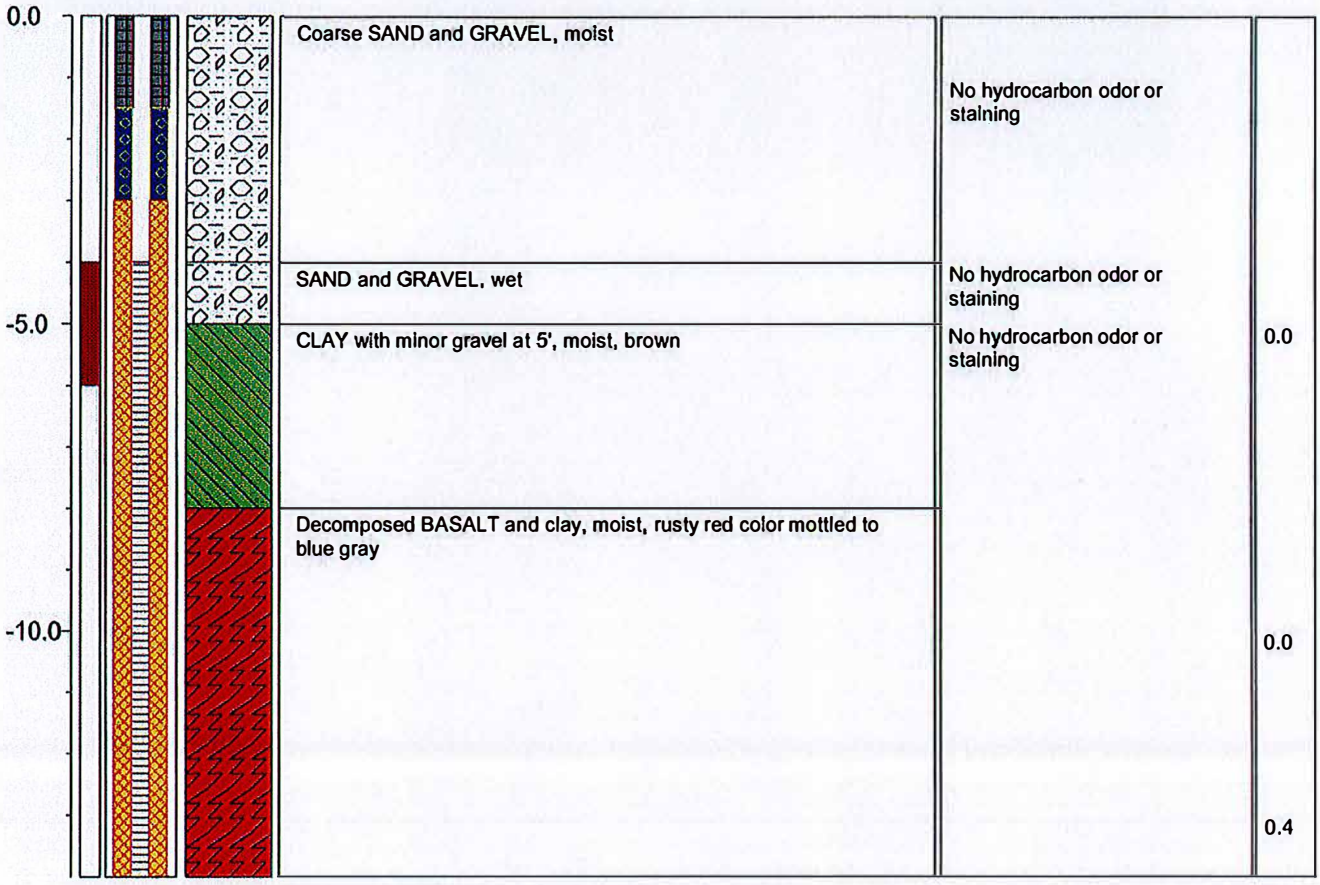


PVC Casing | Screen | Concrete | Sand Pack | Bentonite Plug

2001730.810	MAXIM TECHNOLOGIES INC	WELL CONSTRUCTION SCHEMATIC	GCC MW-2

PROJECT NAME: Geiger Corrections Center
SITE LOCATION: Spokane, Washington
DRILL LOCATION: GCC MW-3
DRILL TYPE: Tubex
DRILLED BY: Environmental West, Inc.
LOGGED BY: William Craig
SCREENING METHOD: FID/VISUAL
DESCRIPTIVE LOCATION: GCC yard In center of walk-way median

MEASURING POINT ELEVATION (ft) 2355.39
STATIC WATER LEVEL (ft bgs) 4.31
SCREEN (_to_ ft; _SLOT): 4 to 14 ft; 20 slot
BOREHOLE DIA (in): 6
CASING DIA (in): 2.0
MONUMENT: Flush Mount
TOTAL DEPTH (ft bgs): 14
LAB ANALYSIS: 4'-6'
DATE COMPLETED: 3/19/02

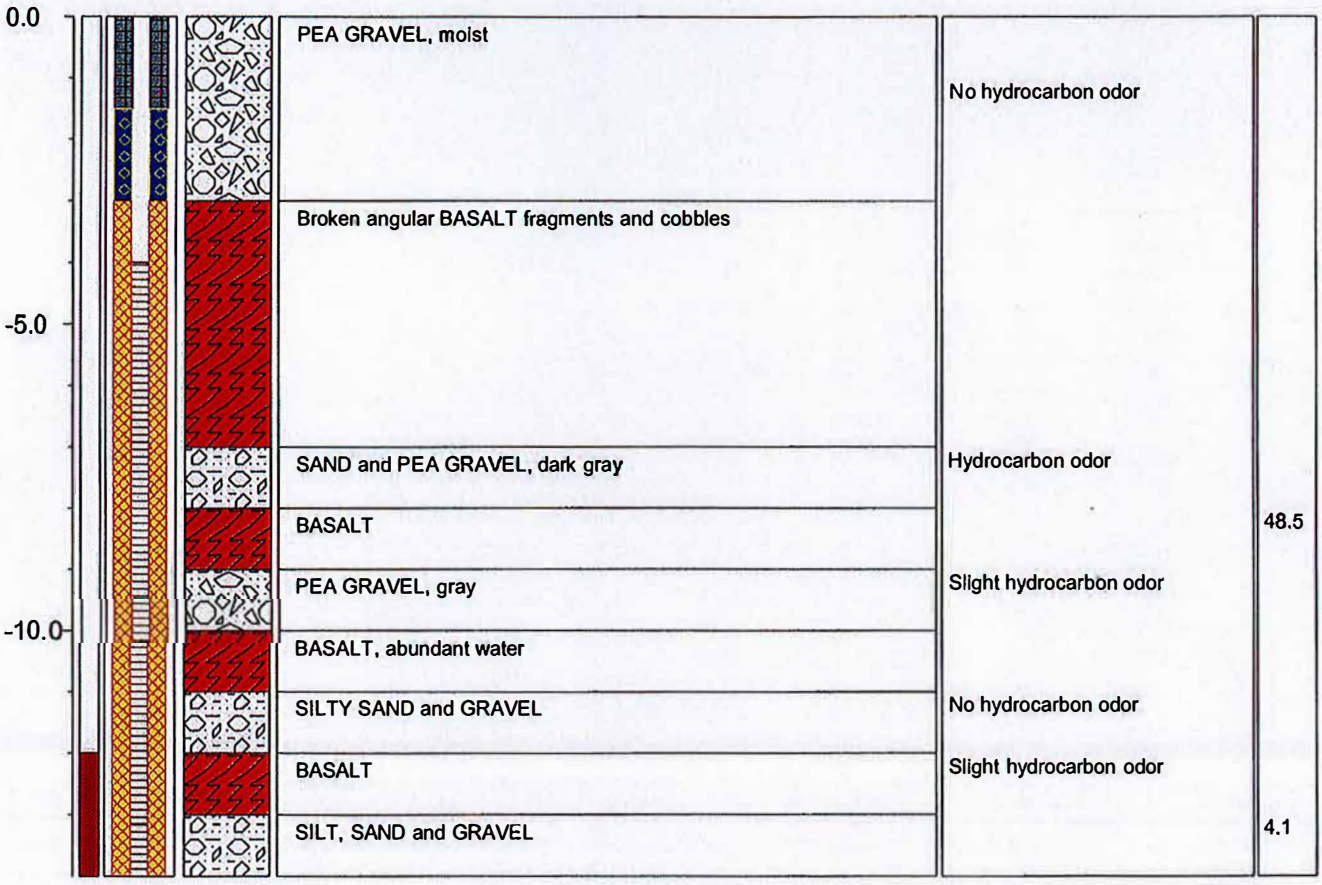


PVC Casing | Screen | Concrete | Sand Pack | Bentonite Plug

2001730.810	MAXIM TECHNOLOGIES INC	WELL CONSTRUCTION SCHEMATIC	GCC MW-3

PROJECT NAME: Geiger Corrections Center
SITE LOCATION: Spokane, Washington
DRILL LOCATION: GCC MW-4
DRILL TYPE: Tubex
DRILLED BY: Environmental West, Inc.
LOGGED BY: William Craig
SCREENING METHOD: FID/VISUAL
DESCRIPTIVE LOCATION: GCC, Maintenance building
lawn by trash bin

MEASURING POINT ELEVATION (ft): 2356.37
STATIC WATER LEVEL (ft bgs): 4.2
SCREEN (_to_ ft; _SLOT): 4 to 14 ft; 20 slot
BOREHOLE DIA (in): 6
CASING DIA (in): 2.0
MONUMENT: Flush Mount
TOTAL DEPTH (ft bgs): 14
LAB ANALYSIS: 12'-14'
DATE COMPLETED: 3/19/02

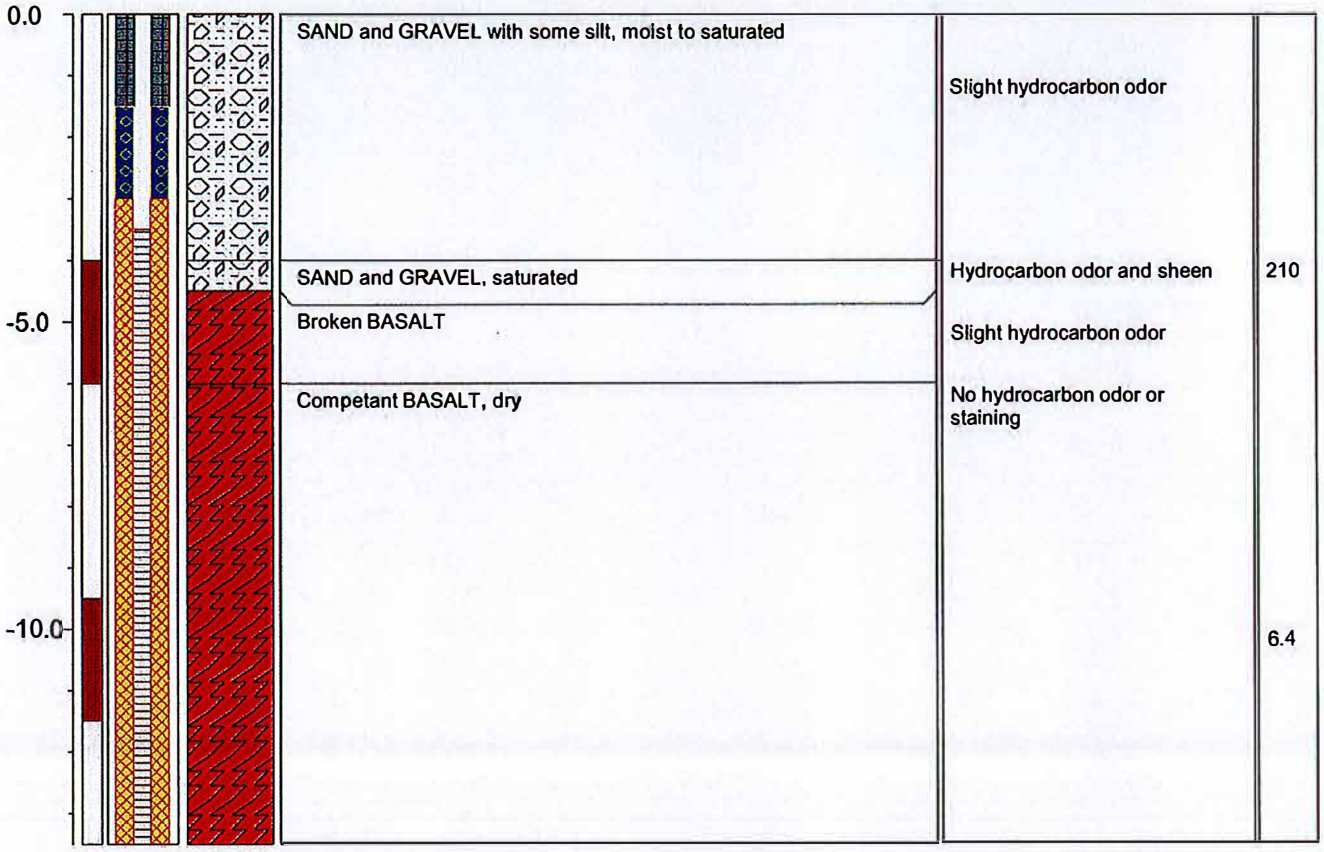


PVC Casing | Screen | Concrete | Sand Pack | Bentonite Plug

2001730.810	MAXIM TECHNOLOGIES INC	WELL CONSTRUCTION SCHEMATIC	GCC MW-4

PROJECT NAME: Geiger Corrections Center
SITE LOCATION: Spokane, Washington
DRILL LOCATION: GCC MW-5
DRILL TYPE: Tubex
DRILLED BY: Environmental West, Inc.
LOGGED BY: William Craig
SCREENING METHOD: FID/VISUAL
DESCRIPTIVE LOCATION: Center of GCC eastern yard, south of driveway

MEASURING POINT ELEVATION (ft): 2354.81
STATIC WATER LEVEL (ft bgs): 4.2
SCREEN (_to_ ft;_SLOT): 3.5 to 13.5 ft; 20 slot
BOREHOLE DIA (in): 6
CASING DIA (in): 2.0
MONUMENT: Flush Mount
TOTAL DEPTH (ft bgs): 13.5
LAB ANALYSIS: 4'-6', 9.5'-11.5'
DATE COMPLETED: 3/19/02

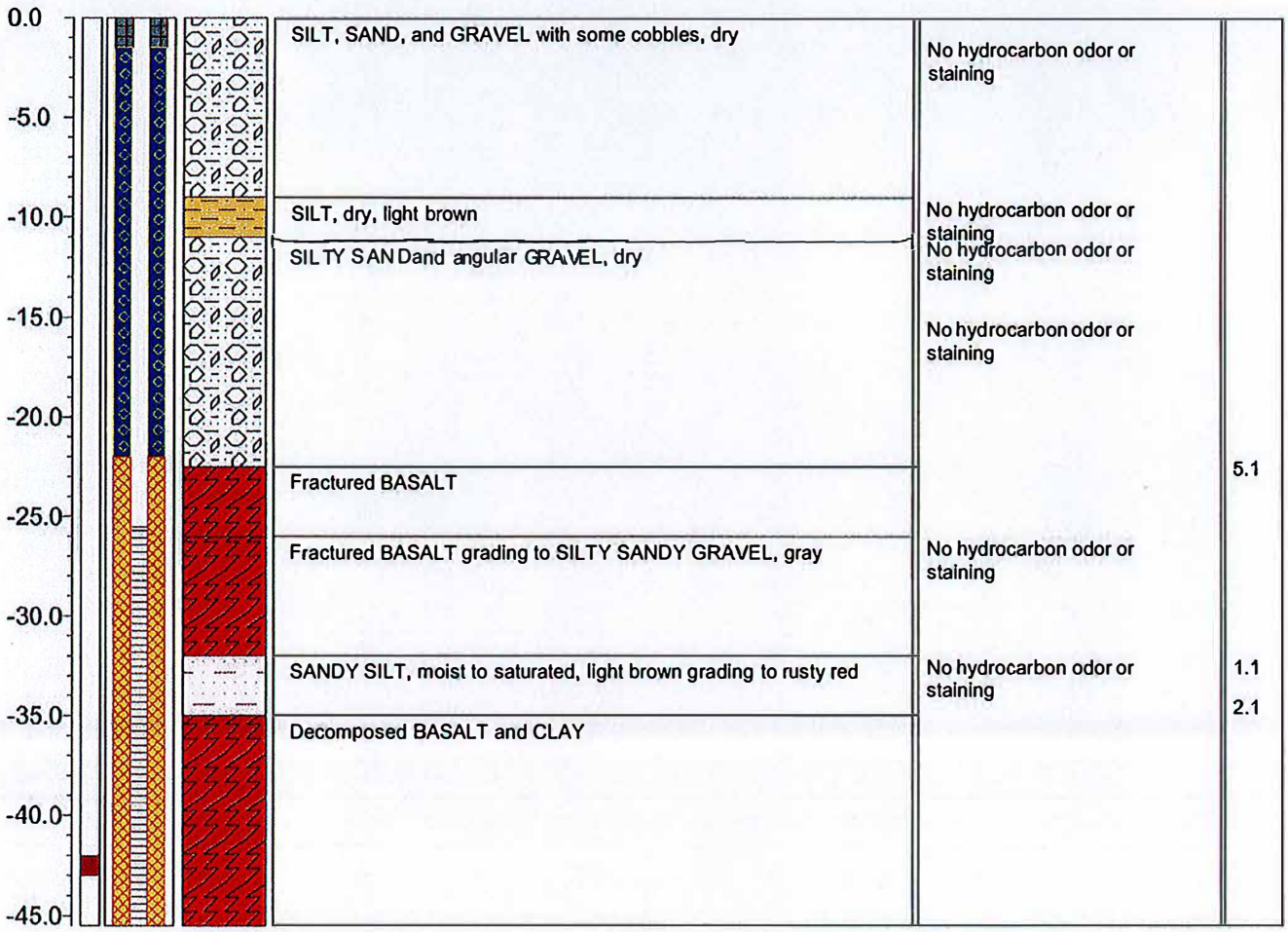


PVC Casing | Screen | Concrete | Sand Pack | Bentonite Plug

2001730.810	MAXIM TECHNOLOGIES INC	WELL CONSTRUCTION SCHEMATIC	GCC MW-5

PROJECT NAME: Geiger Corrections Center
SITE LOCATION: Spokane, Washington
DRILL LOCATION: GCC MW-6
DRILL TYPE: Tubex
DRILLED BY: Environmental West, Inc.
LOGGED BY: William Craig
SCREENING METHOD: FID/VISUAL
DESCRIPTIVE LOCATION: Southwest corner of eastern yard within GCC

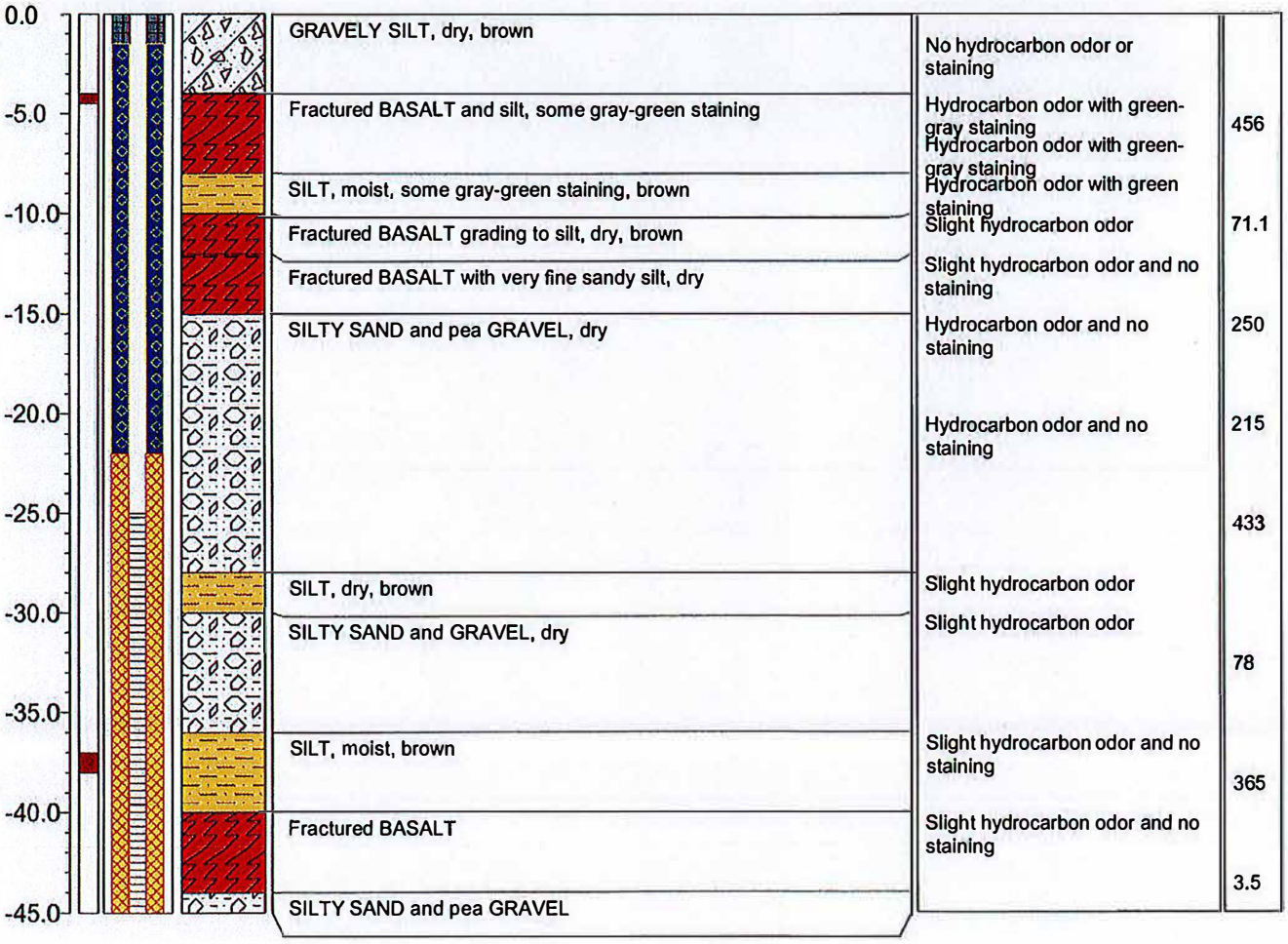
MEASURING POINT ELEVATION (ft) 2355.87
STATIC WATER LEVEL (ft bgs) 35
SCREEN (_to_ ft; _SLOT): 25.5 to 45.5 ft; 20 slot
BOREHOLE DIA (in): 6
CASING DIA (in): 2.0
MONUMENT: Flush Mount
TOTAL DEPTH (ft bgs): 45.5
LAB ANALYSIS: 42'
DATE COMPLETED: 3/20/02



PVC Casing | Screen | Concrete | Sand Pack | Bentonite Plug

2001730.810	MAXIM TECHNOLOGIES INC	WELL CONSTRUCTION SCHEMATIC	GCC MW-6

PROJECT NAME: Geiger Corrections Center	MEASURING POINT ELEVATION (ft): 2356.25
SITE LOCATION: Spokane, Washington	STATIC WATER LEVEL (ft bgs): 37
DRILL LOCATION: GCC MW-7	SCREEN (_to_ ft;_SLOT): 25 to 45 ft; 20 slot
DRILL TYPE: Tubex	BOREHOLE DIA (in): 6
DRILLED BY: Environmental West, Inc.	CASING DIA (in): 2.0
LOGGED BY: William Craig	MONUMENT: Flush Mount
SCREENING METHOD: FID/VISUAL	TOTAL DEPTH (ft bgs): 45
DESCRIPTIVE LOCATION: Due south of firegate #3 driveway entrance, outside gate	LAB ANALYSIS: 4'-4.5', 37'
	DATE COMPLETED: 3/20/02

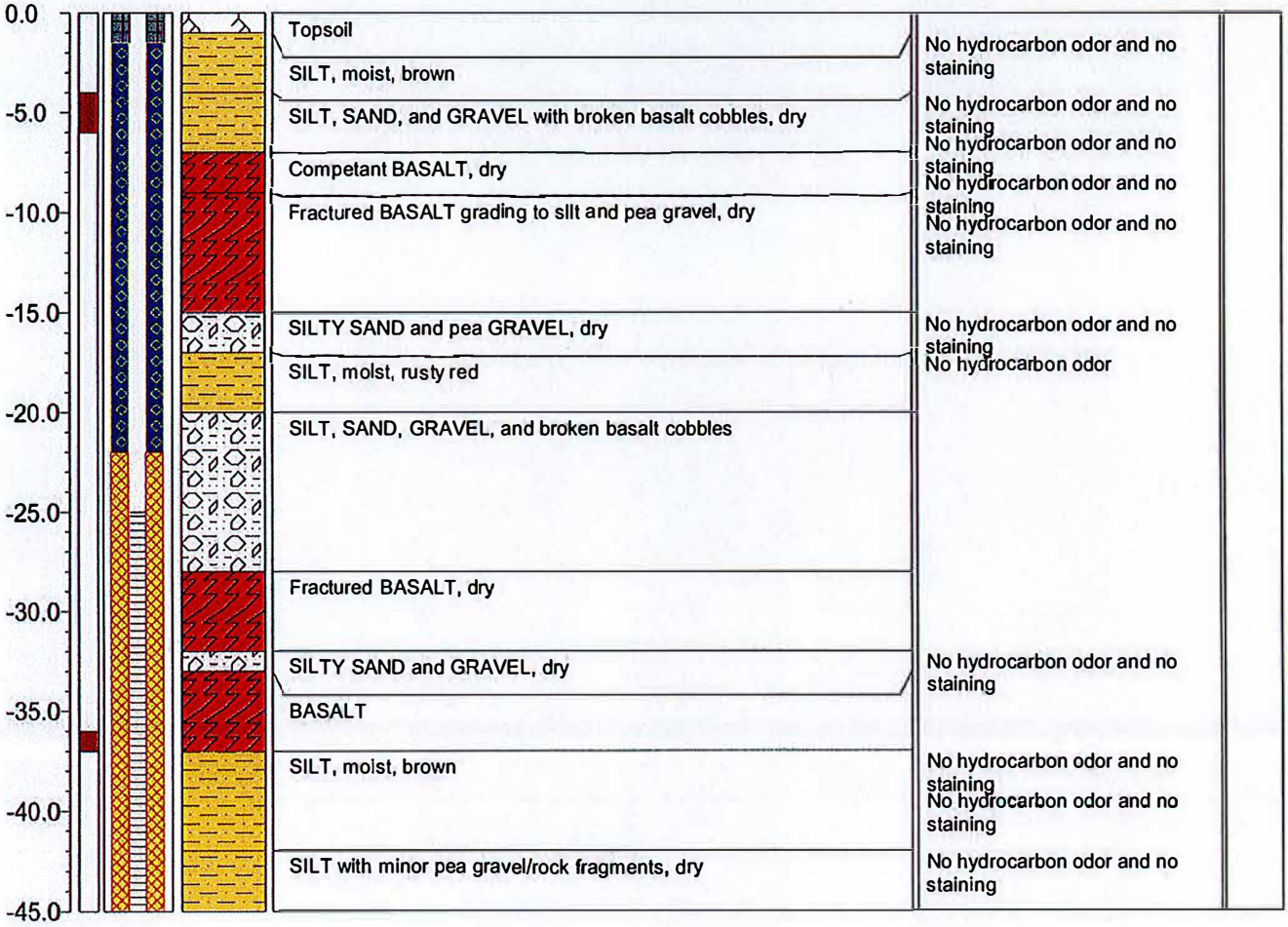


PVC Casing | Screen | Concrete | Sand Pack | Bentonite Plug

2001730.810	MAXIM TECHNOLOGIES INC	WELL CONSTRUCTION SCHEMATIC	GCC MW-7

PROJECT NAME: Geiger Corrections Center
SITE LOCATION: Spokane, Washington
DRILL LOCATION: GCC MW-8
DRILL TYPE: Tubex
DRILLED BY: Environmental West, Inc.
LOGGED BY: William Craig
SCREENING METHOD: FID/VISUAL
DESCRIPTIVE LOCATION: East side of spotted road, just off sidewalk embankment

MEASURING POINT ELEVATION (ft): 2356.57
STATIC WATER LEVEL (ft bgs): 35.12
SCREEN (_to_ ft; _SLOT): 25 to 45 ft; 20 slot
BOREHOLE DIA (in): 6
CASING DIA (in): 2.0
MONUMENT: Flush Mount
TOTAL DEPTH (ft bgs): 45
LAB ANALYSIS: 4'-6', 36'
DATE COMPLETED: 3/21/02



PVC Casing | Screen | Concrete | Sand Pack | Bentonite Plug

2001730.810	MAXIM TECHNOLOGIES INC	WELL CONSTRUCTION SCHEMATIC	GCC MW-8

ECOVA Corporation

Well Installation Log

Well Number MW-11A
Date Drilled 4/9/90 4/10/90
Client Army Corps of Engineers
Drilling Company Eagle Pump & Supply
Coordinates 244180.6684 N
Site Pacific Pride (Task 10)
Boring Method Air Rotary
2459142.5307 E
Job Number 801126
Borehole Depth 101.0 Feet
Casing Elevation 2353.43
Field Geologist K. May
Water Depth 38 feet.
Sheet 1 of 3

General: 20 feet 6" casing.

Depth (Feet)	Blow Counts	Sample No.	Recover	Organic* Vapor (ppm)	% LEL	% O_2	Sample Description	Graphic Log
5							SILTY SAND (SM) – Very fine-grained sand to fine-grained gravel (1/4" basalt), brown to reddish brown, loose, dry	
10								
15							WEATHERED BASALT – Brown-reddish brown.	
20							Minor water inflow at 18 feet (perched). WEATHERED BASALT – Brown.	
25				2				
30								
35							▽ Static water level at 38 feet.	
40								
45							BASALT – Black Harder drilling.	
50								

801126-A-MW11A

* Background = 2.5 ppm (4/10/90)

ECOVA Corporation

Well Installation Log

Well Number MW-11A
Date Drilled 4/9/90 4/10/90
Client Army Corps of Engineers
Drilling Company Eagle Pump & Supply
Coordinates 244130.6684 N
Site Pacific Pride (Task 10)
Boring Method Air Rotary
2452142.5307 E
Job Number 801126
Borehole Depth 101.0 Feet
Casing Elevation 2353.43
Field Geologist K. May
Water Depth 38 feet
Sheet 2 of 3

General: 20 feet 6" casing.

Depth (Feet)	Blow Counts	Sample No	Recover	Organic* Vapor (ppm)	% LEL	% O_2	Sample Description	Graphic Log
55				2			**BASALT** – Light gray, dry.	
60								
65								
70								
75							**Color** change to darker gray. **Water** yielding zone at 74 feet.	
80								
85								
90							**Water** production at ~50 gpm.	
95							**WEATHERED BASALT** – Cuttings are soft, buff **colored**, vesicular.	
100								

801126-A-MW11A

* Background = 2 ppm

6 1991

ECOVA Corporation

Well Installation Log

Well Number MW-11A

Date Drilled 4/9/90 4/10/90

Client Army Corps of Engineers

Drilling Company Fogle Pump & Supply

Coordinates 244180.6684 N 2459142.5307 E

Site Pacific Pride (Task 10)

Boring Method Air Rotary

Job Number 801126

Borehole Depth 101.0 Feet

Casing Elevation 2353.43

Field Geologist K. May

Water Depth 18.0 and 74.0 Feet

Sheet 3 of 3

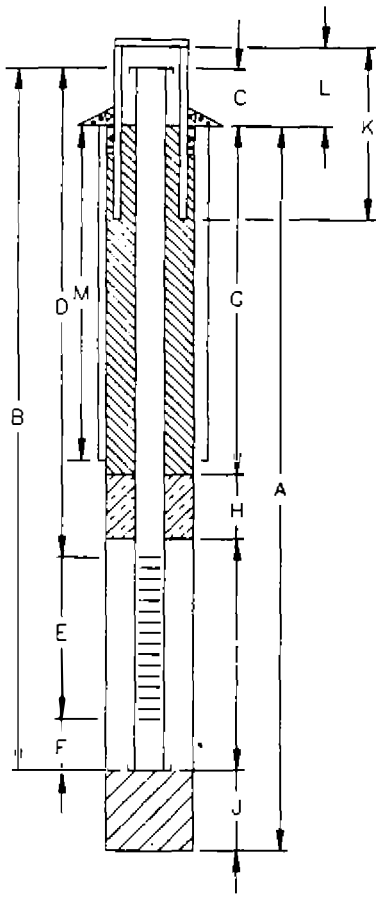
General: 20 feet 6" casing.

Depth (Feet)	Blow Counts	Sample No.	Recover	Organic* Vapor (ppm)	% LEL	% O_2	Sample Description	Graphic Log
							WEATHERED BASALT – Possible gravelly interbed	
							Bottom of Hole = 101 Feet	
105								

801126-A-MW11A

* Background = 2 ppm

WELL COMPLETION MW-11A



TOP OF CASING ELEVATION 2353.43'

A BORING DEPTH 101 FT.
BORING DIAMETER 6 IN.

B WELL DEPTH 99.5 FT.

C WELL STICKUP 0 FT

D BLANK INTERVAL 87 FT.
BLANK DIAMETER 2 IN.

E SCREEN INTERVAL 10 FT.
SCREEN DIAMETER 2 IN.
TYPE/SLOT SIZE 0.01

F SEDIMENT TRAP 5 FT.

G ANNULAR SEAL 64 1/2 FT.
MATERIAL BENT/CEMENT

H BENTONITE SEAL 3'4" FT.

I SANDPACK 27 FT.
TYPE/SIZE: 20/40

J BOTOM SEAL/PACK 2'4" FT.
MATERIAL SAND 20/40

K WELL COVER 6" FT.

L STICKUP 0 FT.

M CONDUCTOR CASING 19 FT.

NOT TO SCALE

DRILLING TIMES:
START 1430 4/9/90 FINISH 1200 4/10/90
STANDBY or DOWN TIME:
SLOW DRILLING IN UPPER 20.0 FEET BECAUSE OF BOULDERS

METHOD OF DECON. PRIOR TO DRILLING.

DEVELOPMENT

METHOD OF DEVELOPMENT:

PUMP TIME 1205 TO 1400 DATE 5/31/90

PUMPED 3 BARRELS IN 2 HOURS.

TURBIDITY AFTER DEVELOPMENT:
_____ CLEAR _____ MOD. TURBID
X SL. TURBID _____ TURBID

ODOR IN WATER ?

WATER DISCHARGED TO:
_____ GROUND SURFACE _____ STORAGE TANK
_____ STORM SEWERS _____ TANK TRUCK
X DRUMS

DEPTH OF WATER AFTER DEVELOPMENT: 37.5'

MATERIALS USED

7 1/2 SACKS of 20/40 SAND
11 SACKS of PORTLAND CEMENT
4 SACKS of PREMIX CONCRETE
_____ GALLONS of GROUT USED
_____ GROUT COMPOSITION #6 BENTONITE
1/2 SACKS of BENTONITE PELLETS
_____ BUCKETS of BENTONITE PELLETS
_____ YARDS CEMENT - SAND USED
4 CENTRALIZERS at EVERY 25' BGS

WELL COVER USED:
_____ Above Grade
X At Grade
_____ Other
X Lockable

801126-A-MW11AW

FEB 6 1991

ECOVA Corporation

Well Installation Log

Well Number MW-11B
Date Drilled 4-10-90
Client Army Corps of Engineers
Drilling Company Fogle Pump & Supply
Coordinates 244171.4770 N
Site Pacific Pride (Task 10)
Boring Method Air Rotary
2459142.0172 E
Job Number 801126
Borehole Depth 38.0 Feet
Casing Elevation 2353.94
Field Geologist K. May
Water Depth Not Encountered
Sheet 1 of 1

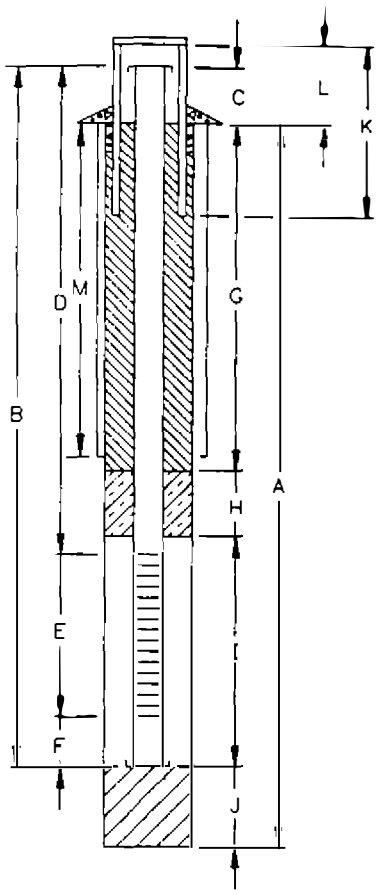
Depth (Feet)	Blow Counts	Sample No.	Recover	Organic* Vapor (ppm)	% LEL	% O_2	Sample Description	Graphic Log
							General: No water observed, but bottom 20' of drill steel was muddy.	
5							**SAND** WITH GRAVEL (SM) – Brown to reddish brown, **medium**–grained sand to fine–grained gravel, **loose**, dry	
10							**Bedrock** at 11 feet. WEATHERED BASALT.	
15								
20								
25							WEATHERED BASALT – Brown.	
30								
35							▽ Static water level at 38 feet.	
40							BASALT – Gray, moist	
45								
50							Bottom of Hole – 50 Feet	

8011B26-A-MW11B

* Background = ____ppm

FEB 8

WELL COMPLETION MW-118



TOP OF CASING ELEVATION 2353.94'

A BORING DEPTH 50.7 FT.
BORING DIAMETER 6 IN.

B WELL DEPTH 50.7 FT.

C WELL STICKUP 1 FT.

D BLANK INTERVAL 29.1' FT.
BLANK DIAMETER 2 IN.

E SCREEN INTERVAL 24.7-44.7' FT.
SCREEN DIAMETER 2 IN.
TYPE/SLOT SIZE 0.01

F SEDIMENT TRAP 5.3' FT.

G ANNULAR SEAL 14 FT.
MATERIAL: BENT/GROUT

H BENTONITE SEAL 4'10" FT.

I SANDPACK 27.2' FT.
TYPE/SIZE: 20/40

J BOTOM SEAL/PACK 1'8" FT.
MATERIAL: SAND 20/40

K WELL COVER FT.

L STICKUP 1 FT.

M CONDUCTOR CASING FT.

NOT TO SCALE

DRILLING TIMES:
START 1545 4/10/90 FINISH
STANDBY or DOWN TIME

METHOD OF DECON. PRIOR TO DRILLING.

DEVELOPMENT

METHOD OF DEVELOPMENT

YIELD 0715 TO 0900 DATE 6/1/90

PUMPED 1 BARREL IN 2 HOURS.

TURBIDITY AFTER DEVELOPMENT: X CLEAR; MOD. TURBID; SL. TURBID; TURBID

ODOR IN WATER ?

WATER DISCHARGED TO: GROUND SURFACE; STORM SEWERS; 1 DRUMS; STORAGE TANK; TANK TRUCK

DEPTH OF WATER AFTER DEVELOPMENT 37.5'

MATERIALS USED

5 SACKS of 20/40 SAND
2 SACKS of PORTLAND CEMENT CEMENT
SACKS of PREMIX CONCRETE
GALLONS of GROUT USED
GROUT COMPOSITION #6 BENTONITE
6 SACKS of BENTONITE PELLETS
BUCKETS of BENTONITE PELLETS
YARDS CEMENT - SAND USED
2 CENTRALIZERS at 25 AND 48 BGS

WELL COVER USED: Above Grade; X At Grade; Other; X Lockable

801126-A-MW118W

ECOVA Corporation

Well Installation Log

Well Number MW-12A

Date Drilled 4/11/90

Client · Army Corps of Engineers

Drilling Company Fogle Pump & Supply

Coordinates 244203.3091 N
2459408.1227 E

Site Pacific Pride (Task 10)

Boring Method Air Rotary

Job Number 801126

Borehole Depth 97.0 Feet

Casing Elevation 2351.30

Field Geologist K. May

Water Depth 35.0 Feet

Sheet 1 of 2

Depth (Feet)	Blow Counts	Sample No.	Recover	Organic* Vapor (ppm)	% LEL	% O_2	General: Sample Description	Graphic Log
5							SILTY SAND (SM) – Fine- to medium-grained sand, brown to reddish brown, cobbles and boulders encountered to 3.5', loose, dry.	
10							WEATHERED BASALT – Basalt cuttings with silty sand.	
15								
20				2			WEATHERED BASALT.	
25								
30								
35							▽ Static water level at 35 feet.	
40								
45								
50							BASALT – Dark Brown. Harder drilling.	

801126-A-MW12A

* Background = 2 ppm

ECOVA Corporation

Well Installation Log

Well Number MW-12A

Date Drilled 4/11/90

Client Army Corps of Engineers

Drilling Company Fogle Pump & Supply

Coordinates 244203.3091 N

Site Pacific Pride (Task 10)

Boring Method Air Rotary

2459408.1227 E

Job Number 801126

Borehole Depth 97.0 Feet

Casing Elevation 2351.30

Field Geologist K. May

Water Depth 35.0 Feet

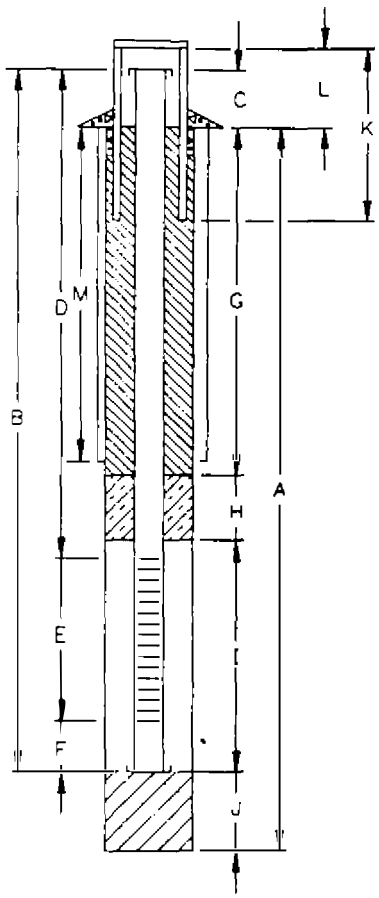
Sheet 2 of 2

Depth (Feet)	Blow Counts	Sample No.	Recover	Organic* Vapor (ppm)	% LEL	% O_2	General: Sample Description	Graphic Log
55							**BASALT** – Gray, dry.	
60								
65								
70							**WEATHERED BASALT** – Strongly weathered vesicular basalt, with medium-grained sand and subrounded gravel (interbed?), orange to yellowish white. Water yielding zone at 71 feet.	
75								
80								
85							**WEATHERED BASALT** – Same as above, yellow-white, gray-rust, black, at 85 feet – 4 foot interval produced abundant water.	
90								
95							Bottom of Hole – 97 FEET	
100								

801126-A-MW12A

* Background = 2 ppm

WELL COMPLETION MW-12A



TOP OF CASING ELEVATION 2351.30'

A BORING DEPTH _____ FT.
BORING DIAMETER 6 IN.
B WELL DEPTH 81 FT.
C WELL STICKUP 1 FT.
D BLANK INTERVAL 69' FT.
BLANK DIAMETER 2 IN.
E SCREEN INTERVAL 68.1-78.1' FT.
SCREEN DIAMETER 2 IN.
TYPE/SLOT SIZE 0.01
F SEDIMENT TRAP 2.3" FT.
G ANNULAR SEAL _____ FT.
MATERIAL GROUT
H BENTONITE SEAL 6 FT.
I SANDPACK 15 FT.
TYPE/SIZE: 20/40
J BOTOM SEAL/PACK 5" FT.
MATERIAL: _____
K WELL COVER _____ FT.
L STICKUP _____ FT.
M CONDUCTOR CASING _____ FT.

NOT TO SCALE

DRILLING TIMES:
START 1505 4/11/90 FINISH 1720 4/11/90
STANDBY or DOWN TIME:

METHOD OF DECON PRIOR TO DRILLING.

DEVELOPMENT

METHOD OF DEVELOPMENT.

PUMP TIME 1330 TO 1500 DATE

TURBIDITY AFTER DEVELOPMENT: _____ CLEAR _____ MOD. TURBID _____ SL. TURBID _____ TURBID

ODOR IN WATER ?

WATER DISCHARGED TO: _____ GROUND SURFACE _____ STORM SEWERS _____ DRUMS _____ STORAGE TANK _____ TANK TRUCK

DEPTH OF WATER AFTER DEVELOPMENT

MATERIALS USED

8 SACKS of 20/40 SAND
12 1/2 SACKS of PORTLAND CEMENT CEMENT
_____ SACKS of PREMIX CONCRETE
_____ GALLONS of GROUT USED
_____ GROUT COMPOSITION #6 BENTONITE
2 SACKS of BENTONITE PELLETS
_____ BUCKETS of BENTONITE PELLETS
_____ YARDS CEMENT - SAND USED
4 CENTRALIZERS at EVERY 25' BGS

WELL COVER USED:
_____ Above Grade
X At Grade
_____ Other
X Lockable

801126-A-MW12AW

FEB 6 1991

ECOVA Corporation

Well Installation Log

Well Number MW-12B

Client Army Corps of Engineers | Drilling Company Fogle Pump & Supply | Date Drilled 4-12-90

Site Pacific Pride (Task 10) | Boring Method Air Rotary | Coordinates 244197.6254 N, 2459408.9907 E

Job Number 801126 | Borehole Depth 51.0 Feet | Casing Elevation 2351.21

Field Geologist K. May | Water Depth 35 Feet | Sheet 1 of 2

General: 8 feet of 6" casing

Depth (Feet)	Blow Counts	Sample No	Recover	Organic* Vapor (ppm)	% LEL	% O_2	Sample Description	Graphic Log
5							SILTY SAND (SM) – Fine- to medium-grained, brown to reddish brown, loose, dry.	
10							WEATHERED BASALT – Reddish-brown	
15								
20								
25								
30							WEATHERED BASALT – Gray-brown.	
35							Moist cuttings. ▽ Static water level at 35 feet.	
40								
45							BASALT – Block, dry	
50								

801126-A-MW12B

* Background = ____ppm

ECOVA Corporation

Well Installation Log

Well Number MW-12B

Client Army Corps of Engineers | Drilling Company Fogle Pump & Supply | Date Drilled 4-12-90

Site Pacific Pride (Task 10) | Boring Method Air Rotary | Coordinates N

Job Number 801126 | Borehole Depth 51.0 Feet | F

Field Geologist K. May | Water Depth Not Encountered | Casing Elevation 2351.21

Sheet 2 of 2

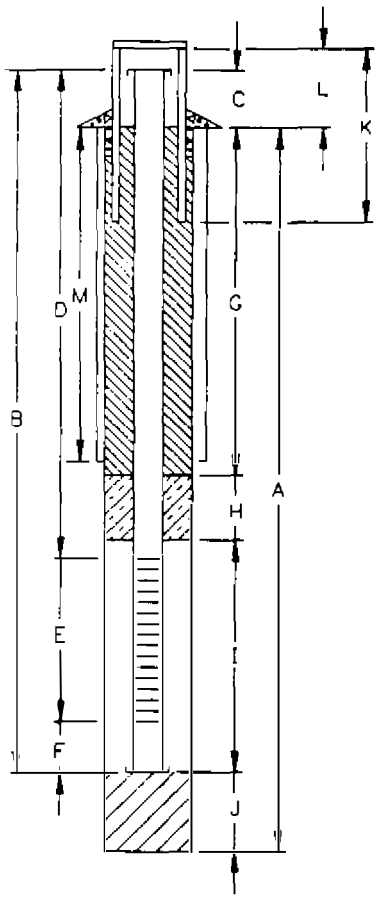
General: 8 feet of 6" casing.

Depth (Feet)	Blow Counts	Sample No	Recover	Organic* Vapor (ppm)	% LEL	% O_2	Sample Description	Graphic Log
							BASALT – Black.	
							Bottom of Hole – 51 Feet	
55								
60								
65								
70								
75								
80								
85								
90								
95								
100								

801126-A-MW12B

* Background = ____ppm

WELL COMPLETION MW-12B



TOP OF CASING ELEVATION 2351.21'

A	BORING DEPTH	51'	FT.
	BORING DIAMETER	6	IN.
B	WELL DEPTH	51	FT.
C	WELL STICKUP	0	FT.
D	BLANK INTERVAL		FT.
	BLANK DIAMETER	2	IN.
E	SCREEN INTERVAL	25-45'	FT.
	SCREEN DIAMETER	2	IN.
	TYPE/SLOT SIZE	01	
F	SEDIMENT TRAP	5'3"	FT.
G	ANNULAR SEAL	11'	FT.
	MATERIAL:	GROUT	
H	BENTONITE SEAL	5	FT.
I	SANDPACK	27	FT.
	TYPE/SIZE:	20/40	
J	BOTOM SEAL/PACK	1	FT.
	MATERIAL	SAND	
K	WELL COVER		
L	STICKUP	0	FT.
M	CONDUCTOR CASING		FT.

NOT TO SCALE

DRILLING TIMES:

START 1420 4/12/90 FINISH 1615 4/12/90

STANDBY or DOWN TIME:

METHOD OF DECON. PRIOR TO DRILLING.

DEVELOPMENT

METHOD OF DEVELOPMENT.

PUMPING TIMES 0930 TO 1200 DATE

TURBIDITY AFTER DEVELOPMENT: ____ CLEAR ____ MOD TURBID ____ SL. TURBID ____ TURBID

ODOR IN WATER ?

WATER DISCHARGED TO: ____ GROUND SURFACE ____ STORAGE TANK ____ STORM SEWERS ____ TANK TRUCK x DRUMS

DEPTH OF WATER AFTER DEVELOPMENT: 37'

MATERIALS USED

8	SACKS of 20/40	SAND
6	SACKS of PORTLAND CEMENT	
	SACKS of PREMIX CONCRETE	
	GALLONS of GROUT USED	
	GROUT COMPOSITION	
2	SACKS of BENTONITE PELLETS	
	BUCKETS of BENTONITE PELLETS	
	YARDS CEMENT - SAND USED	
2	CENTRALIZERS at 25 AND 46 FEET	BGS

WELL COVER USED:

	Above Grade
x	At Grade
	Other
x	Lockable

801126-A-MW12BW

Appendix C
TEE Documentation

Table 749-1

Simplified Terrestrial Ecological Evaluation-Exposure Analysis Procedure

Estimate the area of contiguous (connected) undeveloped land on the site or within 500 feet of any area of the site to the nearest 1/2 acre (1/4 acre if the area is less than 0.5 acre).	
1) From the table below, find the number of points corresponding to the area and enter this number in the field to the right.	
Area (acres) / Points 0.25 or less / 4 0.5 / 5 1.0 / 6 1.5 / 7 2.0 / 8 2.5 / 9 3.0 / 10 3.5 / 11 4.0 or more / 12	12
2) Is this an industrial or commercial property? If yes, enter a score of 3. If no, enter a score of 1	1
3)[a] Enter a score in the box to the right for the habitat quality of the site, using the following rating system[b]. High=1, Intermediate=2, Low=3	3
4) Is the undeveloped land likely to attract wildlife? If yes, enter a score of 1 in the box to the right. If no, enter a score of 2.[c]	2
5) Are there any of the following soil contaminants present: Chlorinated dioxins/furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, pentachlorobenzene? If yes, enter a score of 1 in the box to the right. If no, enter a score of 4.	4
6) Add the numbers in the boxes on lines 2-5 and enter this number in the box to the right. If this number is larger than the number in the box on line 1, the simplified evaluation may be ended.	10

Notes for Table 749-1

[a] It is expected that this habitat evaluation will be undertaken by an experienced field biologist. If this is not the case, enter a conservative score of (1) for questions 3 and 4.

[b] **Habitat rating system.** Rate the quality of the habitat as high, intermediate or low based on your professional judgment as a field biologist. The following are suggested factors to consider in making this evaluation:

> **Low:** Early successional vegetative stands; vegetation predominantly noxious, nonnative, exotic plant species or weeds. Areas severely disturbed by human activity, including intensively cultivated croplands. Areas isolated from other habitat used by wildlife.

High: Area is ecologically significant for one or more of the following reasons: Late-successional native plant communities present; relatively high species diversity; used by an uncommon or rare species; priority habitat (as defined by the Washington Department of fish and Wildlife); part of a larger area of habitat where size or fragmentation may be important for the retention of some species.

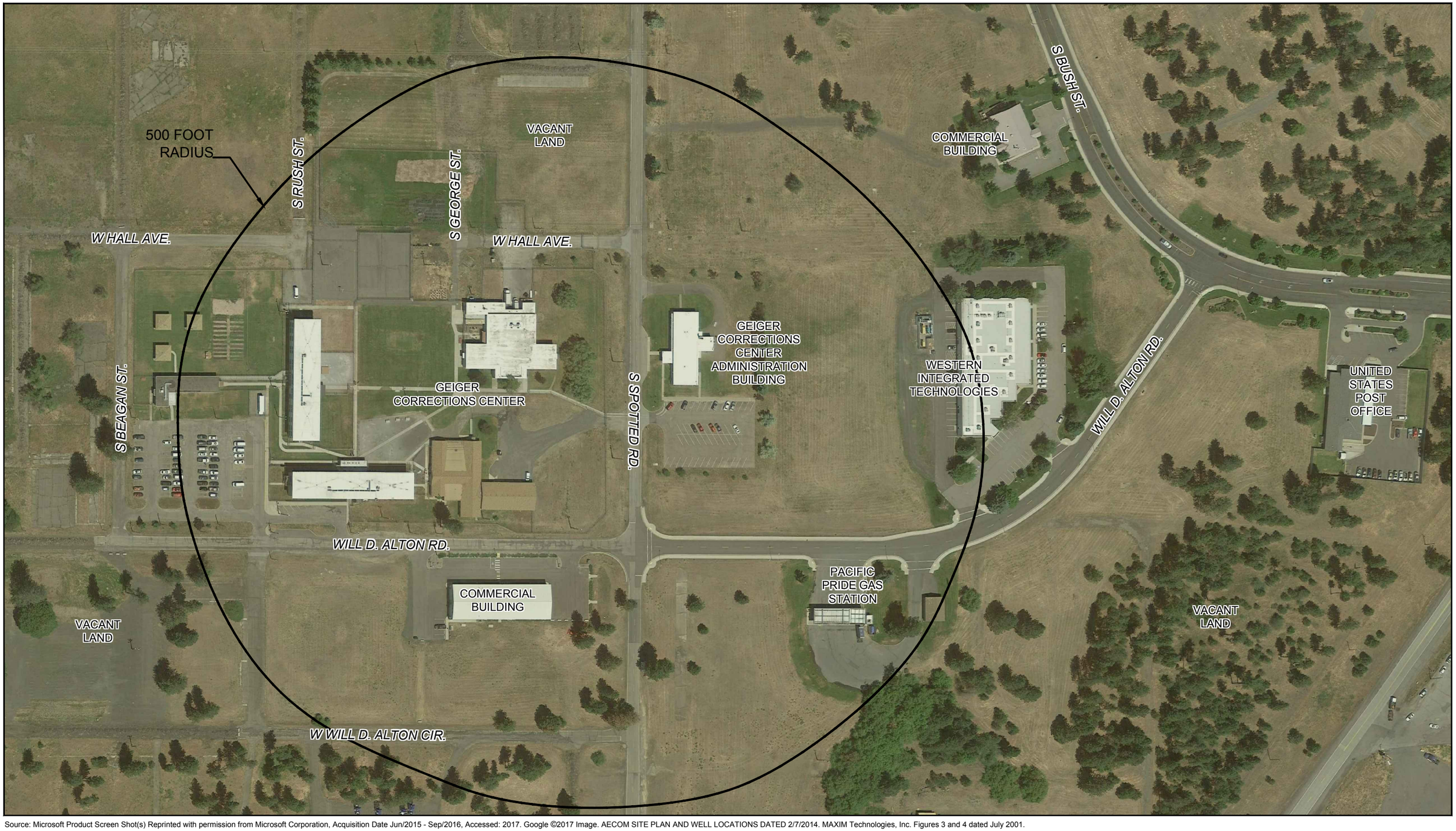
Intermediate: Area does not rate as either high or low.

[c] Indicate "yes" if the area attracts wildlife or is likely to do so. Examples: Birds frequently visit the area to feed; evidence of high use b mammals (tracks, scat, etc.); habitat "island" in an industrial area; unusual features of an area that make it important for feeding animals; heavy use during seasonal migrations.

[Area Calculation Aid] [Aerial Photo with Area Designations] [TEE Table 749-1] [Index of Tables]

[Exclusions Main] [TEE Definitions] [Simplified or Site-Specific?] [Simplified Ecological Evaluation] [Site-Specific Ecological Evaluation] [WAC 173-340-7493]

[TEE Home]



Source: Microsoft Product Screen Shot(s) Reprinted with permission from Microsoft Corporation, Acquisition Date Jun/2015 - Sep/2016, Accessed: 2017. Google ©2017 Image. AECOM SITE PLAN AND WELL LOCATIONS DATED 2/7/2014. MAXIM Technologies, Inc. Figures 3 and 4 dated July 2001.

0 80 160ft

PHILLIPS 66 FACILITY NO. 6880
GEIGER CORRECTIONS FACILITY
SPOKANE, WASHINGTON

11145847-4MN00

Nov 7, 2018

SITE PLAN WITH 500 FOOT RADIUS

APPENDIX C

CAD File: I:\Sonoma.Public\CAD\drawings\11140000s\11145847\11145847-REPORTS\11145847-4MN00(003)GN\11145847-4MN00(003)GN-SO013.DWG

Table 749-2
Priority Contaminants of Ecological Concern for Sites that Qualify for the Simplified Terrestrial Ecological Evaluation Procedure.[a]

**Please Refer to WAC 173-340-7492 and http://www.ecy.wa.gov/programs/tcp/policies/terrestrial/TEEHome.htm for an explanation of the use of this table.

Priority contaminant	Soil concentration (mg/kg)	
	Unrestricted land use[b]	Industrial or commercial site
METALS:[c]		
Antimony	See note d	See note d
Arsenic III	20 mg/kg	20 mg/kg
Arsenic V	95 mg/kg	260 mg/kg
Barium	1,250 mg/kg	1,320 mg/kg
Beryllium	25 mg/kg	See note d
Cadmium	25 mg/kg	36 mg/kg
Chromium (total)	42 mg/kg	135 mg/kg
Cobalt	See note d	See note d
Copper	100 mg/kg	550 mg/kg
Lead	220 mg/kg	220 mg/kg
Magnesium	See note d	See note d
Manganese	See note d	23,500 mg/kg
Mercury, inorganic	9 mg/kg	9 mg/kg
Mercury, organic	0.7 mg/kg	0.7 mg/kg
Molybdenum	See note d	71 mg/kg
Nickel	100 mg/kg	1,850 mg/kg
Selenium	0.8 mg/kg	0.8 mg/kg
Silver	See note d	See note d
Tin	275 mg/kg	See note d
Vanadium	26 mg/kg	See note d
Zinc	270 mg/kg	570 mg/kg
PESTICIDES:		
Aldicarb/aldicarb sulfone (total)	See note d	See note d
Aldrin	0.17 mg/kg	0.17 mg/kg
Benzene hexachloride (including lindane)	10 mg/kg	10 mg/kg
Carbofuran	See note d	See note d
Chlordane	1 mg/kg	7 mg/kg
Chlorpyrifos/chlorpyrifos-methyl (total)	See note d	See note d
DDT/DDD/DDE (total)	1 mg/kg	1 mg/kg
Dieldrin	0.17 mg/kg	0.17 mg/kg
Endosulfan	See note d	See note d
Endrin	0.4 mg/kg	0.4 mg/kg
Heptachlor/heptachlor epoxide (total)	0.6 mg/kg	0.6 mg/kg
Hexachlorobenzene	31 mg/kg	31 mg/kg
Parathion/methyl parathion (total)	See note d	See note d
Pentachlorophenol	11 mg/kg	11 mg/kg
Toxaphene	See note d	See note d
OTHER CHLORINATED ORGANICS:		
Chlorinated dibenzofurans (total)	3E-06 mg/kg	3E-06 mg/kg
Dioxins (total)	5E-06 mg/kg	5E-06 mg/kg
Hexachlorophene	See note d	See note d
PCB mixtures (total)	2 mg/kg	2 mg/kg
Pentachlorobenzene	168 mg/kg	See note d
OTHER NONCHLORINATED ORGANICS:		
Acenaphthene	See note d	See note d
Benzo(a)pyrene	30 mg/kg	300 mg/kg
Bis (2-ethylhexyl) phthalate	See note d	See note d
Di-n-butyl phthalate	200 mg/kg	See note d
PETROLEUM:		
Gasoline Range Organics	200 mg/kg	12,000 mg/kg except that the concentration shall not exceed residual saturation at the soil surface.
Diesel Range Organics	460 mg/kg	15,000 mg/kg except that the concentration shall not exceed residual saturation at the soil surface.

Footnotes:

a Caution on misusing these chemical concentration numbers. These values have been developed for use at sites where a site-specific terrestrial ecological evaluation is not required. They are not intended to be protective of terrestrial ecological receptors at every site. Exceedances of the values in this table do not necessarily trigger requirements for cleanup action under this chapter. The table is not intended for purposes such as evaluating sludges or wastes.
This list does not imply that sampling must be conducted for each of these chemicals at every site. Sampling should be conducted for those chemicals that might be present based on available information, such as current and past uses of chemicals at the site.

b Applies to any site that does not meet the definition of industrial or commercial.

c For arsenic, use the valence state most likely to be appropriate for site conditions, unless laboratory information is available. Where soil conditions alternate between saturated, anaerobic and unsaturated, aerobic states, resulting in the alternating presence of arsenic III and arsenic V, the arsenic III concentrations shall apply.

d Safe concentration has not yet been established. See WAC 173-340-7492(2)(c).

Appendix D
Reference Material for Site-Specific Cleanup Levels Calculation

Appendix A: Table of RBCs (continued)

See Table 2.4 for a description of the pathways. Refer to page A-5 for an explanation of the notes.

Contaminated Medium		GROUNDWATER µg/L (ppb)						GROUNDWATER µg/L (ppb)		AIR (see notes) µg/m^3					
Exposure Pathway		Vapor Intrusion into Buildings RBC_{wi}						GW in Excavation RBC_{we}		Inhalation RBC_{air}					
Receptor Scenario		Residential		Urban Residential		Occupational		Constructionn and Excavation Worker		Residential		Urban Residential		Occupational	
Contaminant of Concern	Note		Note		Note		Note		Note		Note		Note		Note
Benzene	c, v	160		340		2,700		1,700		0.27		0.57		1.5	
Toluene	nc, v	210,000		210,000		-	>S	78,000		400		400		1,600	
Ethylbenzene	nc, v	-	>S	-	>S	-	>S	110,000		1,100		1,100		4,200	
Xylenes	nc, v	59,000		59,000		-	>S	22,000		110		110		420	
iso-propylbenzene	nc, v	-	>S	-	>S	-	>S	-	>S	400		400		1,600	
n-propylbenzene	nc, v	-	>S	-	>S	-	>S	-	>S	150		150		580	
1,2,4-trimethylbenzene	nc, v	4,300		4,300		51,000		1,300		6.2		6.2		25	
1,3,5-trimethylbenzene	nc, v	3,200		3,200		38,000		1,400		6.2		6.2		25	
Acenaphthene	nc, v	-	>S	-	>S	-	>S	-	>S	220		220		880	
Anthracene	nc, v	-	>S	-	>S	-	>S	-	>S	1,100	>Pv	1,100	>Pv	4,400	>Pv
Benz[a]anthracene	c, nv	-	>S	-	>S	-	>S	9.1		0.0098		0.021		0.056	
Benzo[b]fluoranthene	c, nv	-	>S	-	>S	-	>S	-	>S	0.0098		0.021		0.056	
Benzo[k]fluoranthene	c, nv	-	>S	-	>S	-	>S	-	>S	0.098	>Pv	0.21	>Pv	0.56	>Pv
Benzo[a]pyrene	c, nv	-	>S	-	>S	-	>S	0.53		0.00098		0.0021		0.0056	
Chrysene	c, nv	-	>S	-	>S	-	>S	-	>S	0.98		2.1		5.6	
Dibenz[a,h]anthracene	c, nv	-	>S	-	>S	-	>S	0.21		0.00098	>Pv	0.0021	>Pv	0.0056	>Pv
Fluoranthene	nc, nv	-	>S	-	>S	-	>S	-	>S	150	>Pv	150	>Pv	580	>Pv
Fluorene	nc, v	-	>S	-	>S	-	>S	-	>S	150		150		580	
Indeno[1,2,3-cd]pyrene	c, nv	-	>S	-	>S	-	>S	-	>S	0.0098	>Pv	0.021	>Pv	0.056	>Pv
Naphthalene	nc, v	29,000		29,000		-	>S	680		3.1		3.1		13	
Pyrene	nc, nv	-	>S	-	>S	-	>S	-	>S	110	>Pv	110	>Pv	440	>Pv
MTBE	c, v	17,000		36,000		280,000		31,000		4.0		8.5		23	
EDB (1,2-dibromoethane)	c, v	110		230		1,800		20		0.0093		0.020		0.053	
EDC (1,2-dichloroethane)	c, v	210		460		3,600		600		0.079		0.17		0.45	
Lead	NA, NA		NA		NA		NA		NA		NA		NA		NA
Generic Gasoline	nc, v	-	>S	-	>S	-	>S	12,000		650		650		2,600	
Generic Diesel / Heating Oil	nc, nv	-	>S	-	>S	-	>S	-	>S	120		120		490	
Generic Mineral Insulating Oil	nc, nv	-	>S	-	>S	-	>S	-	>S	490		490		2,000	

Notes and References for Table of RBCs:

The numbers in this table will be updated as new information becomes available. The current version of this guidance document can be found on the Department's UST program web site at http://www.deq.state.or.us/wmc/tank/toc-fct.htm or the Environmental Cleanup web site at http://www.deq.state.or.us/wmc/cleanup/guidelst.htm

Although RBC values for air are included in this table, air samples are not routinely required at cleanup sites due to the great temporal and spatial variability in air concentrations that makes it difficult to collect representative samples. The air inhalation pathway is usually taken into account indirectly by considering volatilization from contaminated soils or groundwater. Air monitoring may be applied when soil or groundwater screening levels are exceeded for the indoor air pathway and additional tests are needed to assess exposure. Under these circumstances the air concentrations must meet the air RBCs in Table A, not OSHA or other air standards. We suggest that you discuss such sampling with the Department before implementation.

The symbols in the "Note" columns have the following meanings:

c	This chemical is a known or suspected carcinogen. The RBCs in this row were calculated using equations for carcinogens described in Appendix B.
>C_{sat}	This soil RBC exceeds the limit of three-phase equilibrium partitioning. Refer to Appendix D for the corresponding value of C_{sat}. Soil concentrations in excess of C_{sat} indicate that free product might be present. See Section B.2.1.4 for additional information.
L	The values for lead reported in this table are not derived from the equations developed in Appendix B. See Section B.3.4 for the source of the lead numbers and information on applying them.
>MAX	The constituent RBC for this pathway is greater than 100,000 mg/kg. The TPH RBC is greater than the maximum amount that would be present if all of the initial air space is filled with petroleum product. The Department believes it is highly unlikely that such concentrations will ever be encountered.
NA	This pathway is not applicable to the chemical of interest.
nc	This chemical has non-carcinogenic toxic effects. The RBCs in this row were calculated using equations for noncarcinogens described in Appendix B.
nv	This chemical is classified as "nonvolatile" for purposes of the exposure calculations in this document.
>P	The air concentration reported for the RBC exceeds the vapor pressure of the pure chemical. It can be assumed that this constituent can not create an unacceptable risk by this pathway. See Section B.2.1.4 for additional information.
>S	This groundwater RBC exceeds the solubility limit. Refer to Appendix D for the corresponding value of S. Groundwater concentrations in excess of S indicate that free product may be present. See Section B.2.1.4 for additional information.
v	This chemical is classified as "volatile" for purposes of the exposure calculations in this document.
-	The RBC for this indirect pathway is not printed since it is assumed that it is not physically possible to exceed the unacceptable risk level by this pathway. See Section B.2.1.4 for additional information.

From Oregon Department of Environmental Quality, *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites*, 2003.

Construction and excavation worker – Carcinogens (benzene values for excavation workers as an example):

p. B-65, equation [B-161]

RBC_{we} = Risk-based concentration for excavation or construction worker exposure to Groundwater (µg/L)

$ARL_c = 1.00 \times 10^{-6}$ (unitless)	[p. C-1; Appendix C]
$AT_c = 70$ yr	[p. C-1; Appendix C]
365 days per year	[Calendar]
$BW_a = 70$ kg	[p. C-1; Appendix C]
$ED_e = 1$ yr	[p. C-1; Appendix C]
$EF_e = 9$ day/yr	[p. C-1; Appendix C]
$IRA_a = 7$ m³/d	[p. C-1; Appendix C]
$VF_{we} = 0.5$ L/m³	[p. C-1; Appendix C]
$SF_i = 0.027$ (mg/Kg-day)$^{-1}$	[p. E-1; Appendix E]
$DA_w = 3.68 \times 10^{-5}$ L/cm²-event	[p. E-1; Appendix E]
$EVF_w = 2$ events/day	[p. C-1; Appendix C]
$SA_w = 5700$ cm²	[p. C-1; Appendix C]
$SF_o = 0.055$ (mg/Kg-day)$^{-1}$	[p. E-1; Appendix E]
10^3 µg/mg	[Equation constant; p. B-65]

Construction and Excavation Worker – Carcinogens

$$RBC_{we}\ (\mu g/L) = \frac{ARL_c \cdot AT_c \cdot 365\ d/yr \cdot BW_a}{ED_e \cdot EF_e \cdot [(IRA_a \cdot VF_{we} \cdot SF_i) + (DA_w \cdot EvF_w \cdot SA_w \cdot SF_o)]} \cdot 10^3 \mu g/mg \qquad [B\text{-}161]$$

Construction and Excavation Worker – Noncarcinogens

$$RBC_{we}\ (\mu g/L) = \frac{ARL_n \cdot AT_{ne} \cdot 365\ d/yr \cdot BW_a}{ED_e \cdot EF_e \cdot [(\frac{IRA_a \cdot VF_{we}}{RfD_i}) + (\frac{DA_w \cdot EvF_w \cdot SA_w}{RfD_o})]} \cdot 10^3 \mu g/mg \qquad [B\text{-}162]$$

where:

RBC_{we}	=	Risk-Based Concentration for Excavation or Construction Worker Exposure to Groundwater (µg/L)
ARL_c	=	Acceptable risk level – carcinogens (unitless)
ARL_n	=	Acceptable risk level – noncarcinogens (unitless)
AT_c	=	Averaging time – carcinogens (yr)
$*AT_{ne}$	=	Averaging time – noncarcinogens (yr)
BW_a	=	Body weight (kg)
DA_w	=	Dermal absorption factor for groundwater (L/cm^2-event)
$*ED_e$	=	Exposure duration (yr)
$*EF_e$	=	Exposure frequency (d/yr)
EvF_w	=	Event frequency for groundwater contact (event/d)
IRA_a	=	Inhalation rate (m^3/d)
RfD_i	=	Reference dose – inhaled (mg/kg-d)
RfD_o	=	Reference dose – oral (mg/kg-d)
SA_w	=	Skin surface contact area to groundwater (cm^2)
SF_i	=	Cancer slope factor – inhaled $(mg/kg\text{-}d)^{-1}$
SF_o	=	Cancer slope factor – oral $(mg/kg\text{-}d)^{-1}$
VF_{we}	=	Volatilization factor for water in an excavation (L/m^3)

* In this scenario, the subscript "e" can represent either the excavation OR construction worker depending on the situation being modeled.

Values of DA_w used for the generic RBCs are listed in Appendix E. Note that these values are not only chemical-specific, but they also depend on whether the exposure event time (t_{event}) is less than or greater than the time required for dermal absorption to reach steady state (t*). The exposure event time used for the generic RBCs for excavation worker exposure to groundwater is two hours. In most cases where site-specific RBCs are being calculated it is expected that t_{event} will remain the same. In cases where t_{event} is changed or where values of DA_w are needed for chemicals not included in the Table of RBCs, equations [B-163] and [B-164] can be used to calculate values of DA_w.[54]

[54] Equations [B-163] and [B-164] are only for *organic compounds in water.* Please refer to EPA (2001b) for information about calculating DA_w for inorganics.

Appendix C: Exposure Factors

Parameter (unit)	Symbol	Residential	Note	Urban Residential	Note	Occupational	Note	Construction Worker	Note	Excavation Worker	Note
ACCEPTABLE RISK LEVELS											
Acceptable Risk Level - Carcinogens	ARLc	1.00E-06	1	=		=		=		=	
Acceptable Risk Level - Noncarcinogens	ARLn	1	1	=		=		=		=	
EXPOSURE PARAMETERS											
Averaging Time - Carcinogen (yr)	ATc	70	2	=		=		=		=	
Averaging Time - Noncarcinogen (yr)	ATn	30	2	11	2	25	2	1	2	1	2
Averaging Time - Noncarcinogen, Child (yr)	ATnc	6	2	6	2	NA		NA		NA	
Body Weight - Adult (kg)	BWa	70	3	=		=		=		=	
Body Weight - Child (kg)	BWc	15	3	=		NA		NA		NA	
Exposure Duration - Adult (yr)	ED	30	3	11	4	25	3	1	21	1	6
Exposure Duration - Child (yr)	EDc	6	3	6	4	NA		NA		NA	
Exposure Frequency (day/yr)	EF	350	3	175	3a	250	6	250	6	9	6
Event Frequency - Groundwater (events/day)	EvFwe	NA		NA		NA		2	6	=	
Event Time - Groundwater (hr/event)	t_{event}	NA		NA		NA		2	6	=	
Inhalation Rate - Adult (m^3/day)	IRA	20	4	20	4	7	4a	7	4a	7	4a
Inhalation Rate - Child (m^3/day)	IRAc	8.3	4	=		NA		NA		NA	
Soil Ingestion Rate - Adult (mg/day)	IRS	100	6	100	6	100	6	330	21	330	21
Soil Ingestion Rate - Child (mg/day)	IRSc	200	4	200	4	NA		NA		NA	
Water Ingestion Rate - Adult (L/day)	IRW	2.0	2	2.0	2	0.7	4a	NA		NA	
Water Ingestion Rate - Child (L/day)	IRWc	1.5	2	=		NA		NA		NA	
Skin Surface Area - Adult to Soil (cm^2)	SA	5700	4	5700	4	3300	4	3300	4	3300	4
Skin Surface Area - Child to Soil (cm^2)	SAc	2800	4	=		NA		NA		NA	
Skin Surface Area - Adult to Groundwater (cm^2)	SAw	NA		NA		NA		5700	4	5700	4
Soil to Skin Adherence Factor - Adult (mg/cm^2-day)	AF	0.07	5a	0.07	5a	0.10	5b	0.30	5c	0.30	5c
Soil to Skin Adherence Factor - Child (mg/cm^2-day)	AFc	0.20	5d	=		NA		NA		NA	
AGE-ADJUSTED EXPOSURE FACTORS											
Inhalation Factor - Air (m^3-yr/kg-d)	IFAadj	10.18	7	4.75	7a	NA		NA		NA	
Ingestion Factor - Soil (mg-yr/kg-d)	IFSadj	114	7	87	7a	NA		NA		NA	
Ingestion Factor - Water (L-yr/kg-d)	IFWadj	1.29	7	0.74	7a	NA		NA		NA	
Surface Area Factor - Skin (mg-yr/kg-d)	SFSadj	361	7	253	7a	NA		NA		NA	

Appendix C: Exposure Factors (continued)

Parameter (unit)	Symbol	Residential		Urban Residential		Occupational		Construction Worker		Excavation Worker	
			Note		Note		Note		Note		Note
SITE PARAMETERS											
Soil Bulk Density (g/cm^3)	ρ_b	1.70	8	=		=		=		=	
Soil Particle Density (g/cm^3)	ρ_s	2.74	9	=		=		=		=	
Soil Porosity	n	0.38	8	=		=		=		=	
Air Content - Vadose Zone Soils	n_a	0.26	10	=		=		=		=	
Air Content - Cap. Fringe Soils	n_{acap}	0.038	10	=		=		=		=	
Air Content - Foundation Cracks	n_{acrk}	0.26	10	=		=		=		=	
Water Content - Vadose Zone Soils	n_w	0.12	8	=		=		=		=	
Water Content - Cap. Fringe Soils	n_{wcap}	0.342	8	=		=		=		=	
Water Content - Foundation Cracks	n_{wcrk}	0.12	11	=		=		=		=	
Vadose Zone Thickness (cm)	L_v	295	12	=		=		=		=	
Capillary Fringe Thickness (cm)	L_{cap}	5.00	8	=		=		=		=	
Fraction Organic Carbon (shallow soil)	f_{oc}	0.005	8a	=		=		=		=	
Depth to Groundwater (cm)	L_w	300	8	=		=		=		=	
Groundwater Dilution-Attenuation Factor	DAF	60	19	=		=		=		=	
SOIL CONTAMINATION PARAMETERS											
Thickness of Contaminated Surface Soils (cm)	L_{ss}	100	8	=		=		=		=	
Fraction of Site with Surface Soil Contamination	f_{ss}	0.50	16	=		=		=		=	
Thickness of Clean Surface Soils (cm)	L_c	100	8	=		=		=		=	
Thickness of Subsurface Contamination (cm)	L_s	200	8	=		=		=		=	
Fraction of Site with Subsurface Vol. To Outdoor Air	f_{so}	0.50	17	=		=		=		=	
Thickness of Clean Soils Under Building (cm)	L_{cb}	100	8	=		=		=		=	
Thickness of Contaminated Soils Under Building (cm)	L_{sb}	200	8	=		=		=		=	
Fraction of Contaminated Soils Under Building	f_{sb}	0.50	18	=		=		=		=	
Particulate Emission Factor for Soils (kg/m^3)	PEF	7.58E-10	13	=		=		=		=	

Appendix C: Exposure Factors (continued)

Parameter (unit)	Symbol	Residential	Note	Urban Residential	Note	Occupational	Note	Construction Worker	Note	Excavation Worker	Note
BUILDING PARAMETERS											
Building Air Exchange Rate (1/day)	ER	24	14	=		48	14	NA		NA	
Building Height (indoor air mixing zone) (cm)	L_B	200	8	=		300	8	NA		NA	
Foundation Wall Thickness (cm)	L_{crk}	15	8	=		=		NA		NA	
Foundation Crack Fraction	f_{crk}	0.0010	15	=		=		NA		NA	
VOLATILIZATION FACTORS											
Averaging time for Volatilization -Adults (yr)	t_{vol}	25	16	=		=		=		=	
Averaging time for Volatilization -Children (yr)	t_{volc}	6	16	=		NA		NA		NA	
Max. Soil to Building Vol. Factor (kg/m^3)	$VF_{si}max$	3.88E-03	18	3.88E-03	18	1.29E-03	18	NA		NA	
Max. Surface Soil Vol. Factor - Adult (kg/m^3)	$VF_{ss}max$	1.57E-05	16	1.57E-05	16	1.57E-05	16	1.57E-05	16	1.57E-05	16
Max. Surface Soil Vol. Factor - Child (kg/m^3)	$VF_{ss}max$	6.53E-05	16	=		NA		NA		NA	
Max. Soil to Outdoor Air Vol. Factor - Adult (kg/m^3)	$VF_{so}max$	3.13E-05	17	3.13E-05	17	3.13E-05	17	NA		NA	
Volatile Organics Dispersion Term (g/m^2-s per kg/m^3)	Q/C	6.88E+01	13	=		=		=		=	
MISCELLANEOUS PARAMETERS											
Ideal Gas Law Constant (m^3-atm/K-mol)	R	8.21E-05	20	=		=		=		=	
Absolute Temperature (K)	T	2.93E+02	20	=		=		=		=	

Notes and References for Table of Exposure Factors:

= This exposure parameter is the same as the residential value.

NA This exposure parameter is not required for any of the RBCs.

1. Acceptable risk levels are specified in statute (ORS 465.315) and defined in rule (OAR 340-122-0115).
2. EPA (1989)
3. EPA (1991b)
   3a. Professional judgment: EF for urban resident = 1/2 residential EF
4. EPA (1997c)
   4a. Incorporates time spent at work (8 hr/24 hr day)
5. EPA (2001a)
   5a. Mean for residential adult gardener
   5b. Mean for commercial gardener used to represent upper end commercial exposure
   5c. 95th percentile construction worker
   5d. 95th percentile daycare child
6. DEQ (1998b)
7. Calculated from equations given in EPA (1998a).
   7a. Modified for urban scenario by analogy to equations given in EPA (1998a).
8. ASTM (1995b)
   8a. f_{oc} is an average of ASTM (1995b) and EPA (1996b) defaults.
9. Calculated from $\rho_s = \rho_b/(1-n)$.
10. Calculated from $n_a=n-n_w$; $n_{acap}=n-n_{wcap}$; $n_{acrk}=n-n_{wcrk}$.
11. nw_{crk} assumed = n_w.
12. Calculated from $L_v = L_w - L_{cap}$
13. EPA (1996b)
14. Estimated from data reported in Michigan DEQ (1998).
15. Derived from range of floor-wall seem gaps given in EPA (1997b).
16. Refer to Section B.3.2.1 in RBDM (DEQ, 2003).
17. Refer to Section B.3.2.2 in RBDM (DEQ, 2003).
18. Refer to Section B.3.2.3 in RBDM (DEQ, 2003).
19. Refer to Section B.3.2.4 in RBDM (DEQ, 2003).
20. Refer to discussion of Henry's Law Constants in Section B.2.1.2 in RBDM (DEQ, 2003).
21. EPA (2002c)

Appendix D: Chemical Data

Data used for Constituent RBC Calculations

Chemical	Vol Class	Mol. Wt. (g/mol)	S (mg/L)		P ($\mu g/m^3$)	C_{sat} (mg/kg)	K_{oc} (cm^3/g)		K_H (m^3-atm/mol)		H	D_{air} (cm^2/s)		D_w (cm^2/s)	
	Note 1	Note 2		Note	Note 4a	Note 4b		Note		Note	Note 6		Note		Note
Benzene	v	78	1.75E+03	3	4.04E+08	7.01E+02	5.89E+01	5	5.55E-03	3	2.31E-01	8.80E-02	3	9.80E-06	3
Toluene	v	92	5.26E+02	3	1.45E+08	5.38E+02	1.82E+02	5	6.64E-03	3	2.76E-01	8.70E-02	3	8.60E-06	3
Ethylbenzene	v	106	1.69E+02	3	5.54E+07	3.27E+02	3.63E+02	5	7.88E-03	3	3.28E-01	7.50E-02	3	7.80E-06	3
Xylenes	v	106	1.75E+02	3a	4.90E+07	3.58E+02	3.86E+02	5a	6.73E-03	3a	2.80E-01	7.80E-02	3a	8.75E-06	3a
iso-propylbenzene	v	120	3.00E+01	9	1.62E+07	3.35E+02	2.20E+03	9	1.30E-02	9	5.41E-01	7.50E-02	9	7.80E-06	9
n-propylbenzene	v	120	1.40E+01	9	7.57E+06	1.98E+02	2.80E+03	9	1.30E-02	9	5.41E-01	7.50E-02	9	7.80E-06	9
1,2,4-trimethylbenzene	v	120	5.70E+01	9	1.35E+07	1.06E+03	3.70E+03	9	5.70E-03	9	2.37E-01	7.50E-02	9	7.10E-06	9
1,3,5-trimethylbenzene	v	120	5.00E+01	9	1.60E+07	2.11E+02	8.20E+02	9	7.70E-03	9	3.20E-01	7.50E-02	9	7.10E-06	9
Acenaphthene	v	154	4.24E+00	3	2.73E+04	1.04E+02	4.90E+03	5	1.55E-04	3	6.45E-03	4.21E-02	3	7.69E-06	3
Anthracene	v	178	4.34E-02	3	1.17E+02	6.40E+00	2.95E+04	5	6.50E-05	3	2.70E-03	3.24E-02	3	7.74E-06	3
Benz[a]anthracene	nv	228	9.40E-03	3	1.31E+00	1.87E+01	3.98E+05	5	3.35E-06	3	1.39E-04	5.10E-02	3	9.00E-06	3
Benzo[b]fluoranthene	nv	252	1.50E-03	3	6.93E+00	9.23E+00	1.23E+06	5	1.11E-04	3	4.62E-03	2.26E-02	3	5.56E-06	3
Benzo[k]fluoranthene	nv	252	8.00E-04	3	2.76E-02	4.92E+00	1.23E+06	5	8.29E-07	3	3.45E-05	2.26E-02	3	5.56E-06	3
Benzo[a]pyrene	nv	252	1.62E-03	3	7.61E-02	8.26E+00	1.02E+06	5	1.13E-06	3	4.70E-05	4.30E-02	3	9.00E-06	3
Chrysene	nv	228	1.60E-03	3	6.30E+00	3.18E+00	3.98E+05	5	9.46E-05	3	3.93E-03	2.48E-02	3	6.21E-06	3
Dibenz[a,h]anthracene	nv	278	2.49E-04	3	1.52E-04	4.73E+00	3.80E+06	5	1.47E-08	3	6.11E-07	2.02E-02	3	5.18E-06	3
Fluoranthene	nv	202	2.06E-01	3	1.38E+02	1.10E+02	1.07E+05	5	1.61E-05	3	6.70E-04	3.02E-02	3	6.35E-06	3
Fluorene	v	166	1.98E+00	3	5.23E+03	1.37E+02	1.38E+04	5	6.35E-05	3	2.64E-03	3.63E-02	3	7.88E-06	3
Indeno[1,2,3-cd]pyrene	nv	276	2.20E-05	3	1.46E-03	3.82E-01	3.47E+06	5	1.60E-06	3	6.65E-05	1.90E-02	3	5.66E-06	3
Naphthalene	v	128	3.10E+01	3	6.23E+05	3.12E+02	2.00E+03	5	4.83E-04	3	2.01E-02	5.90E-02	3	7.50E-06	3
Pyrene	nv	202	1.35E-01	3	6.18E+01	7.09E+01	1.05E+05	5	1.10E-05	3	4.58E-04	2.72E-02	3	7.24E-06	3
MTBE	v	88	5.10E+04	7	1.25E+09	6.65E+03	1.12E+01	7	5.87E-04	7	2.44E-02	1.10E-01	8	1.05E-05	8
EDB (1,2-dibromoethane)	v	188	3.40E+03	9	4.53E+07	7.25E+02	2.81E+01	9	3.20E-04	9	1.33E-02	7.33E-02	9	8.06E-06	9
EDC (1,2-dichloroethane)	v	99	8.52E+03	3	3.45E+08	1.40E+03	1.74E+01	5	9.74E-04	3	4.05E-02	1.04E-01	3	9.90E-06	3
Lead	NA	207	NA	10	NA	NA	NA	10	NA	10	NA	NA	10	NA	10

Appendix D: Chemical Data (continued)

Data used for TPH RBC

Fuel Fraction or Constituent	Vol Class	MW (g/mol)	Density (g/cm^3)	S (mg/L)	P (ug/m^3)	K_H (m^3-atm/mol)	H'	Log K_{oc}	K_{oc} (cm^3/g)	D_{air} (cm^2/s)	D_w (cm^2/s)
Aliphatic C5-C6	v	81	0.68	3.6E+01	1.2E+09	7.94E-01	33	2.9	7.9E+02	1.0E-01	1.0E-05
Aliphatic >C6-C8	v	100	0.73	5.4E+00	2.7E+08	1.20E+00	50	3.6	4.0E+03	1.0E-01	1.0E-05
Aliphatic >C8-C10	v	130	0.73	4.3E-01	3.4E+07	1.92E+00	80	4.5	3.2E+04	1.0E-01	1.0E-05
Aliphatic >C10-C12	v	160	0.76	3.4E-02	4.1E+06	2.89E+00	120	5.4	2.5E+05	1.0E-01	1.0E-05
Aliphatic >C12-C16	nv	200	0.77	7.6E-04	4.0E+05	1.25E+01	520	6.7	5.0E+06	1.0E-01	1.0E-05
Aliphatic >C16-C21	nv	270	0.78	2.5E-06	1.2E+04	1.18E+02	4900	8.8	6.3E+08	1.0E-01	1.0E-05
Aliphatic >C21-C34	nv	400	0.78	1.5E-11	1.5E+00	2.41E+03	100000	10.0	1.1E+10	1.0E-01	1.0E-05
Aromatic >C8-C10	v	120	0.87	6.5E+01	3.1E+07	1.15E-02	0.48	3.2	1.6E+03	1.0E-01	1.0E-05
Aromatic >C10-C12	v	130	0.90	2.5E+01	3.5E+06	3.37E-03	0.14	3.4	2.5E+03	1.0E-01	1.0E-05
Aromatic >C12-C16	v	150	1.02	5.8E+00	3.1E+05	1.27E-03	0.053	3.7	5.0E+03	1.0E-01	1.0E-05
Aromatic >C16-C21	v	190	1.23	6.5E-01	8.5E+03	3.13E-04	0.013	4.2	1.6E+04	1.0E-01	1.0E-05
Aromatic >C21-C34	nv	240	1.28	6.6E-03	4.4E+00	1.61E-05	0.00067	5.1	1.3E+05	1.0E-01	1.0E-05
n-Hexane	v	86	0.70	1.8E+01	9.0E+07	1.20E-01	5.0	2.9	8.9E+02	2.0E-01	7.8E-06
Benzene	v	78	0.88	1.8E+03	4.0E+08	5.55E-03	0.23	1.8	5.9E+01	8.8E-02	9.8E-06
Toluene	v	92	0.87	5.3E+02	1.5E+08	6.64E-03	0.28	2.3	1.8E+02	8.7E-02	8.6E-06
Ethylbenzene	v	106	0.87	1.7E+02	5.5E+07	7.88E-03	0.33	2.6	3.6E+02	7.5E-02	7.8E-06
Total Xylenes	v	106	0.88	1.8E+02	4.9E+07	6.73E-03	0.28	2.6	3.9E+02	7.8E-02	8.8E-06
1,2,4-trimethylbenzene	v	120	0.88	5.7E+01	6.2E+04	5.70E-03	0.24	3.6	3.7E+03	7.5E-02	7.1E-06
1,3,5-trimethylbenzene	v	120	0.87	5.0E+01	1.6E+07	7.70E-03	0.32	2.9	8.2E+02	7.5E-02	7.1E-06
Naphthalene	v	128	1.15	3.1E+01	6.2E+05	4.83E-04	0.02	3.3	2.0E+03	5.9E-02	7.5E-06

Notes and References for Table of Chemical Data:

nv This chemical is classified as "nonvolatile" for purposes of the exposure calculations in this document.

v This chemical is classified as "volatile" for purposes of the exposure calculations in this document.

1. Volatility is based on EPA (1991a). A "volatile" constituent has a Henry's constant > 10^{-5} m^3-atm/mol and a molecular weight < 200 g/mol.
2. Molecular weights can be obtained from many common chemical handbooks and chemistry texts. No specific reference was used here.
3. Values from Table 36 (S and H) and Table 37 (D_{air} and D_w) in EPA (1996b).
   a. These are the average values for the three xylene isomers.
4. a. Vapor pressure is calculated from the relationship P = H * S * 1000000, where H is the dimensionless Henry's constant, S is the solubility in mg/L, and 1000000 is a conversion factor yielding units of $\mu g/m^3$ for direct comparison to RBC_{air} values.
   b. C_{sat} is calculated using equation [B-21]. See Section B.2.1.4.
5. K_{oc}s are the "Calculated Values" from Table 39 in EPA (1996b).
   a. This is the average Koc value for the three xylene isomers.
6. Dimensionless Henry's constants are calculated from the relationship H = K_H / R * T where K_H is the Henry's constant in m^3-atm/mol, R is the ideal gas law constant (8.21×10^{-5} m^3-atm/K-mol), and T is the absolute temperature (293 K).
7. Howard (1993)
8. D_{air} and D_w estimated using equation [B-57]. See Section B.2.3.2.
9. EPA (2002a)
10. NA : These data are not applicable since the lead RBCs are not calculated by the Department. See Section B.3.4.

Appendix E: Toxicological Data

Data used for Constituent RBC Calculations

Chemical	Risk Type	SF_o (mg/Kg-day)$^{-1}$	Note	SF_i (mg/Kg-day)$^{-1}$	Note	Chronic RfD_o (mg/Kg-day)	Note	Chronic RfD_i (mg/Kg-day)	Note	Subchronic RfD_o (mg/Kg-day)	Note	Subchronic RfD_i (mg/Kg-day)	Note	RAF_d	K_p (cm/hr)	τ (hr)	t^* (hr)	B	Note	DA_w (L/cm^2-event)	Note
Benzene	c	0.055	1j	0.027	1j	0.004	2	0.0086	1k,2	-		-		0.00E+00	1.50E-02	2.90E-01	7.00E-01	1.00E-01	6	3.68E-05	
Toluene	nc	NA		NA		0.2	1f	0.11	1d,2	2	12	0.26	12	0.00E+00	3.10E-02	3.50E-01	8.40E-01	1.00E-01	6	8.02E-05	
Ethylbenzene	nc	NA		NA		0.1	1c	0.29	1c,2	0.11	12	-		0.00E+00	4.90E-02	4.20E-01	1.01E+00	2.00E-01	6	1.31E-04	
Xylenes	nc	NA		NA		0.2	1k	0.029	1k,2	-		-		0.00E+00	5.30E-02	4.20E-01	1.01E+00	2.00E-01	6	1.42E-04	
iso-propylbenzene	nc	NA		NA		0.1	1g	0.11	1g,2	-		-		0.00E+00	7.46E-02	4.93E-01	1.18E+00	3.14E-01	7	2.09E-04	
n-propylbenzene	nc	NA		NA		0.04	4	0.04	3	-		-		0.00E+00	8.74E-02	4.93E-01	1.18E+00	3.68E-01	7	2.44E-04	
1,2,4-trimethylbenzene	nc	NA		NA		0.05	4	0.0017	4	-		-		0.00E+00	1.10E-01	4.93E-01	1.18E+00	4.65E-01	7	3.05E-04	
1,3,5-trimethylbenzene	nc	NA		NA		0.05	4	0.0017	4	0.5	12	-		0.00E+00	3.81E-02	4.93E-01	1.18E+00	1.60E-01	7	1.09E-04	
Acenaphthene	nc	NA		NA		0.06	1f	0.06	3	-		-		0.00E+00	8.41E-02	7.65E-01	1.84E+00	4.01E-01	7	2.96E-04	
Anthracene	nc	NA		NA		0.3	1e	0.3	3	-		-		0.00E+00	1.61E-01	1.04E+00	4.00E+00	8.25E-01	7	6.42E-04	
Benz[a]anthracene	c	0.73	4	0.73	3	NA		NA		-		-		1.30E-01	4.70E-01	2.03E+00	8.53E+00	2.80E+00	6	2.62E-03	
Benzo[b]fluoranthene	c	0.73	4	0.73	3	NA		NA		-		-		1.30E-01	7.00E-01	2.77E+00	1.20E+01	4.30E+00	6	4.55E-03	
Benzo[k]fluoranthene	c	0.073	4	0.073	3	NA		NA		-		-		1.30E-01	7.60E-01	2.71E+00	1.18E+01	4.64E+00	7	4.89E-03	
Benzo[a]pyrene	c	7.3	4	7.3	3	NA		NA		-		-		1.30E-01	7.00E-01	2.69E+00	1.17E+01	4.30E+00	6	4.49E-03	
Chrysene	c	0.0073	4	0.0073	3	NA		NA		-		-		1.30E-01	4.70E-01	2.03E+00	8.53E+00	2.80E+00	6	2.62E-03	
Dibenz[a,h]anthracene	c	7.3	4	7.3	3	NA		NA		-		-		1.30E-01	1.50E+00	3.88E+00	1.76E+01	9.70E+00	6	1.15E-02	
Fluoranthene	nc	NA		NA		0.04	1e	0.04	3	0.4	12	-		1.30E-01	2.20E-01	1.45E+00	5.68E+00	1.20E+00	6	1.04E-03	
Fluorene	nc	NA		NA		0.04	1b	0.04	3	0.4	12	-		0.00E+00	1.12E-01	8.93E-01	2.14E+00	5.55E-01	7	4.13E-04	
Indeno[1,2,3-cd]pyrene	c	0.73	4	0.73	3	NA		NA		-		-		1.30E-01	1.11E+00	3.69E+00	1.65E+01	7.06E+00	6	8.30E-03	
Naphthalene	nc	NA		NA		0.02	1l	0.00086	1l,2	-		-		0.00E+00	4.70E-02	5.60E-01	1.34E+00	2.00E-01	6	1.41E-04	
Pyrene	nc	NA		NA		0.03	1e	0.03	3	-		-		1.30E-01	2.76E-01	1.42E+00	5.64E+00	1.51E+00	7	1.29E-03	
MTBE (methyl t-butyl ether)	c	0.0018	13	0.0018	13	0.86	2	0.86	1e,2	-		-		0.00E+00	3.45E-03	3.27E-01	7.84E-01	1.25E-02	6	9.11E-06	
EDB (1,2-dibromoethane)	c	85	1g	0.77	1g	0.000057	10	0.000057	10	-		-		0.00E+00	1.75E-03	1.19E+00	2.85E+00	9.21E-03	6	7.43E-06	
EDC (1,2-dichloroethane)	c	0.091	1c	0.091	3	0.03	4	0.0014	4	-		-		0.00E+00	4.01E-03	3.76E-01	9.03E-01	1.53E-02	6	1.10E-05	
Lead	NA	NA	9	NA	9	NA	9	NA	9	NA	9	NA	9	NA	NA	NA	NA	NA	9	NA	

Appendix E: Toxicological Data (continued)

Data used for TPH RBC Calculations

Chemical	Risk Type	SF_o $(mg/Kg\text{-}day)^{-1}$	SF_i $(mg/Kg\text{-}day)^{-1}$	Chronic RfD_o (mg/Kg-day)	Chronic RfD_i (mg/Kg-day)	Subchronic RfD_o (mg/Kg-day)	Subchronic RfD_i (mg/Kg-day)	RAF_d	K_p (cm/hr)	τ (hr)	t^* (hr)	B	DA_w (L/cm^2-event)
		Note 11	Note 11	Note 11	Note 11	Note 11	Note 11	Note 5	Note 14	Note 14	Note 14	Note 14	Note 8
Aliphatic C5-C6	nc	NA	NA	5.7	5.7	-	-	0.00E+00	6.30E-02	2.98E-01	7.16E-01	2.18E-01	1.49E-04
Aliphatic >C6-C8	nc	NA	NA	5.7	5.7	-	-	0.00E+00	1.43E-01	3.81E-01	9.15E-01	5.49E-01	3.45E-04
Aliphatic >C8-C10	nc	NA	NA	0.1	0.3	-	-	0.00E+00	3.81E-01	5.61E-01	2.25E+00	1.67E+00	1.11E-03
Aliphatic >C10-C12	nc	NA	NA	0.1	0.3	-	-	0.00E+00	1.02E+00	8.26E-01	3.62E+00	4.94E+00	3.61E-03
Aliphatic >C12-C16	nc	NA	NA	0.1	0.3	-	-	1.30E-01	4.37E+00	1.38E+00	6.41E+00	2.38E+01	2.01E-02
Aliphatic >C16-C21	nc	NA	NA	2	2	-	-	1.30E-01	4.31E+01	3.41E+00	1.61E+01	2.72E+02	3.11E-01
Aliphatic >C21-C34	nc	NA	NA	2	2	-	-	1.30E-01	5.00E+01	1.82E+01	8.58E+01	3.84E+02	8.34E-01
Aromatic >C8-C10	nc	NA	NA	0.04	0.06	-	-	0.00E+00	6.01E-02	4.93E-01	1.18E+00	2.53E-01	1.70E-04
Aromatic >C10-C12	nc	NA	NA	0.04	0.06	-	-	0.00E+00	7.15E-02	5.61E-01	1.35E+00	3.14E-01	2.13E-04
Aromatic >C12-C16	nc	NA	NA	0.04	0.06	-	-	0.00E+00	8.72E-02	7.26E-01	1.74E+00	4.11E-01	2.98E-04
Aromatic >C16-C21	nc	NA	NA	0.03	0.03	-	-	0.00E+00	1.11E-01	1.22E+00	2.92E+00	5.90E-01	4.80E-04
Aromatic >C21-C34	nc	NA	NA	0.03	0.03	-	-	1.30E-01	2.29E-01	2.32E+00	9.13E+00	1.37E+00	1.37E-03
n-Hexane	nc	NA	NA	0.06	0.057	0.6	0.057	0.00E+00	5.90E-02	3.18E-01	7.64E-01	2.11E-01	1.43E-04
Benzene	nc	0.055	0.027	0.004	0.0086	-	-	0.00E+00	1.50E-02	2.90E-01	7.00E-01	1.00E-01	3.68E-05
Toluene	nc	NA	NA	0.2	0.11	2	0.26	0.00E+00	3.10E-02	3.50E-01	8.40E-01	1.00E-01	8.02E-05
Ethylbenzene	nc	NA	NA	0.1	0.29	0.11	-	0.00E+00	4.90E-02	4.20E-01	1.01E+00	2.00E-01	1.31E-04
Total Xylenes	nc	NA	NA	0.2	0.029	-	-	0.00E+00	5.30E-02	4.20E-01	1.01E+00	2.00E-01	1.42E-04
1,2,4-trimethylbenzene	nc	NA	NA	0.05	0.0017	-	-	0.00E+00	1.10E-01	4.93E-01	1.18E+00	4.65E-01	3.05E-04
1,3,5-trimethylbenzene	nc	NA	NA	0.05	0.0017	0.5	-	0.00E+00	3.81E-02	4.93E-01	1.18E+00	1.60E-01	1.09E-04
Naphthalene	nc	NA	NA	0.02	0.00086	-	-	0.00E+00	4.70E-02	5.60E-01	1.34E+00	2.00E-01	1.41E-04

Notes and References for Table of Toxicological Data:

c This chemical is a known or suspected carcinogen.
nc This chemical is a noncarcinogen.
- There is no subchronic RfD value available for this chemical as of the date of this document.

1. U. S. EPA, Office of Research and Development, Integrated Risk Information System (IRIS)
   1a. IRIS, 1987
   1b. IRIS, 1990
   1c. IRIS, 1991
   1d. IRIS, 1992
   1e. IRIS, 1993
   1f. IRIS, 1994
   1g. IRIS, 1997
   1i. IRIS, 1998
   1j. IRIS, 2000
   1k. IRIS, 2003
2. Converted from inhalation reference concentration (RfC in mg/m^3) by the following relationship: RfDI = RfC * 20 m^3/day / 70 kg.
3. Route extrapolation, RfDI assumed to be equivalent to RfDo, or SFI assumed to be equivalent to SFo.
4. U.S. EPA, Office of Research and Development, National Center for Environmental Assessment (NCEA).
   4a. 1993
   4b. 2002
5. Dermal absorption fraction values are from Exhibit 3-4 in EPA (2001b).
6. Kp, t, t*, and B are from Exhibit B-3 in EPA (2001b).
7. Kp, t, t*, and B were calculated from equations given in Appendix A in EPA (2001b).
8. DAw is calculated from equations given in EPA (2001b). See Section B.3.3.4.
9. NA: These data are not applicable since the lead RBCs are not calculated by the Department. See Section B.3.4.
10. EPA, 1997e.
11. See Appendix G for the toxicity factors for the TPH fractions.
12. ORNL (2003).
13. California Environmental Protection Agency (CalEPA), Office of Environmental Health Hazard Assessment (OEHHA):
    SFo – Public Health Goal for Methyl Tertiary Butyl Ether (MTBE) in Drinking Water, March 1999.
    SFI – Air Toxics Hot Spots Program Risk Assessment Guidelines, Part II, Technical Support Document for Describing Available Cancer Potency Factors, 19 December 2002.
14. For the TPH fractions, Kp, t, t*, and B were calculated from equations given in Appendix A in EPA (2001b). Kp was calculated from Kow using the relationship log(Koc) + 0.21 = log(Kow) from Table 4 in TPHCWG (1997a).

Risk-Based Concentrations for TPH: **Site-Specific Data**

Fuel Fraction	RBCss					RBCso			RBCsi			RBCsw			RBCtw			RBCwo			RBCwi			RBCwe	RBCair			RBCsg		
	Residential	Urban Residential	Occupational	Construction Worker	Excavation Worker	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Construction & Excavation Worker	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)
Aliphatic C5-C6	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E+03	1.5E+03	6.1E+03	6.5E+04	6.5E+04	2.7E+05	2.9E+03	2.9E+03	3.7E+04	1.7E+05	7.3E+02	7.3E+02	3.1E+03	1.5E+05	1.5E+05	3.1E+06
Aliphatic >C6-C8	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E+03	1.5E+03	6.1E+03	4.3E+04	4.3E+04	1.8E+05	1.9E+03	1.9E+03	2.4E+04	1.7E+05	7.3E+02	7.3E+02	3.1E+03	1.5E+05	1.5E+05	3.1E+06
Aliphatic >C8-C10	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E+02	1.3E+02	5.5E+02	3.8E+03	3.8E+03	1.6E+04	1.7E+02	1.7E+02	2.2E+03	2.0E+03	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
Aliphatic >C10-C12	4.7E-01	4.8E-01	5.1E-01	5.4E-01	3.3E-01	7.6E-02	7.6E-02	1.8E-02	6.2E-02	6.2E-02	5.0E-03	7.4E-04	7.4E-04	1.8E-04	1.3E+02	1.3E+02	5.5E+02	2.6E+03	2.6E+03	1.1E+04	1.1E+02	1.1E+02	1.4E+03	6.7E+02	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
Aliphatic >C12-C16	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E+02	3.7E+02	1.5E+03	5.9E+02	5.9E+02	2.5E+03	2.6E+01	2.6E+01	3.3E+02	1.2E+02	1.0E+02	1.0E+02	4.4E+02	-	-	-
Aliphatic >C16-C21	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E+05	1.1E+05	4.4E+05	6.3E+18	6.3E+18	2.6E+19	2.8E+17	2.8E+17	3.5E+18	2.4E+03	1.0E+19	1.0E+19	4.4E+19	-	-	-
Aliphatic >C21-C34	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E+05	1.1E+05	4.4E+05	3.1E+17	3.1E+17	1.3E+18	1.4E+16	1.4E+16	1.7E+17	9.0E+02	1.0E+19	1.0E+19	4.4E+19	-	-	-
Aromatic >C8-C10	3.0E-18	3.4E-18	3.3E-18	1.7E-18	9.2E-19	1.3E-17	1.3E-17	3.0E-18	1.0E-17	1.0E-17	8.3E-19	2.1E-17	2.1E-17	4.9E-18	2.0E+19	2.0E+19	8.3E+19	5.0E+22	5.0E+22	2.1E+23	2.7E+21	2.7E+21	3.4E+22	2.1E+21	1.0E+19	1.0E+19	4.4E+19	-	-	-
Aromatic >C10-C12	4.8E-01	4.7E-01	4.3E-01	4.0E-01	2.1E-01	1.5E-01	1.5E-01	3.6E-02	1.2E-01	1.2E-01	9.8E-03	9.5E-01	9.5E-01	2.3E-01	1.8E+02	1.8E+02	7.3E+02	1.2E+06	1.2E+06	4.9E+06	8.9E+04	8.9E+04	1.1E+06	1.4E+04	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
Aromatic >C12-C16	5.2E-02	5.0E-02	5.5E-02	5.8E-02	3.5E-02	2.0E-03	2.0E-03	4.8E-04	1.6E-03	1.6E-03	1.3E-04	3.3E-02	3.3E-02	8.0E-03	1.8E+02	1.8E+02	7.3E+02	1.9E+06	1.9E+06	7.9E+06	2.3E+05	2.3E+05	2.9E+06	1.2E+04	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
Aromatic >C16-C21	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E+02	1.8E+02	7.3E+02	3.8E+06	3.8E+06	1.6E+07	8.9E+05	8.9E+05	1.1E+07	9.5E+03	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
Aromatic >C21-C34	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E+03	1.5E+03	5.8E+03	4.2E+24	4.2E+24	1.8E+25	1.7E+24	1.7E+24	2.1E+25	7.3E+03	1.0E+19	1.0E+19	4.4E+19	-	-	-
n-Hexane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.8E+02	8.8E+02	3.6E+03	2.1E+05	2.1E+05	9.0E+05	9.5E+03	9.5E+03	1.2E+05	6.5E+04	7.3E+02	7.3E+02	3.1E+03	1.5E+05	1.5E+05	3.1E+06
Benzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E+01	4.4E+01	1.8E+02	2.8E+05	2.8E+05	1.2E+06	1.9E+04	1.9E+04	2.4E+05	5.7E+03	3.1E+01	3.1E+01	1.3E+02	6.3E+03	6.3E+03	1.3E+05
Toluene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E+03	2.3E+03	9.2E+03	4.4E+07	4.4E+07	1.8E+08	2.7E+06	2.7E+06	3.4E+07	2.1E+05	5.2E+03	5.2E+03	2.2E+04	1.0E+06	1.0E+06	2.2E+07
Ethylbenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E+03	1.3E+03	5.5E+03	8.8E+06	8.8E+06	3.7E+07	5.3E+05	5.3E+05	6.6E+06	1.1E+05	1.0E+03	1.0E+03	4.4E+03	2.1E+05	2.1E+05	4.4E+06
Total Xylenes	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E+02	2.0E+02	8.5E+02	9.2E+05	9.2E+05	3.9E+06	5.9E+04	5.9E+04	7.4E+05	2.3E+04	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
1,2,4-trimethylbenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E+01	1.5E+01	6.1E+01	8.0E+04	8.0E+04	3.3E+05	5.0E+03	5.0E+03	6.4E+04	1.7E+03	7.3E+00	7.3E+00	3.1E+01	1.5E+03	1.5E+03	3.1E+04
1,3,5-trimethylbenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E+02	3.7E+02	1.5E+03	9.2E+22	9.2E+22	3.9E+23	5.4E+21	5.4E+21	6.8E+22	2.3E+04	1.0E+19	1.0E+19	4.4E+19	-	-	-
Naphthalene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.2E+00	6.2E+00	2.6E+01	1.4E+05	1.4E+05	5.7E+05	2.9E+04	2.9E+04	3.7E+05	7.2E+02	3.1E+00	3.1E+00	1.3E+01	6.3E+02	6.3E+02	1.3E+04
TPH RBC* ⟶	1,200	2,600	21,000	7,300	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	590	590	2,500	>S	>S	>S	>S	>S	>S	>S	680	680	2,900	140,000	140,000	2,900,000
Generic Gasoline	1,200	2,500	20,000	9,700	>MAX	5,900	5,900	69,000	94	94	>MAX	31	31	130	110	110	450	>S	>S	>S	22,000	22,000	>S	14,000	390	390	1,700	79,000	79,000	1,700,000
Generic Diesel / Heating Oil	1,100	2,200	14,000	4,600	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	9,500	9,500	>MAX	100	100	430	>S	>S	>S	>S	>S	>S	>S	100	100	440	21,000	21,000	440,000
Generic Mineral Insulating Oil	2,800	5,700	36,000	11,000	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	300	300	1,300	>S	>S	>S	>S	>S	>S	>S	150	150	620	30,000	30,000	620,000

Risk-Based Concentrations for TPH: **Site-Specific Data**

Fuel Fraction	RBCss					RBCso			RBCsi			RBCsw			RBCtw			RBCwo			RBCwi			RBCwe	RBCair			RBCsg		
	Residential	Urban Residential	Occupational	Construction Worker	Excavation Worker	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Construction & Excavation Worker	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)
Aliphatic C5-C6	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E+03	1.5E+03	6.1E+03	6.5E+04	6.5E+04	2.7E+05	2.9E+03	2.9E+03	3.7E+04	1.7E+05	7.3E+02	7.3E+02	3.1E+03	1.5E+05	1.5E+05	3.1E+06
Aliphatic >C6-C8	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E+03	1.5E+03	6.1E+03	4.3E+04	4.3E+04	1.8E+05	1.9E+03	1.9E+03	2.4E+04	1.7E+05	7.3E+02	7.3E+02	3.1E+03	1.5E+05	1.5E+05	3.1E+06
Aliphatic >C8-C10	5.9E-02	6.1E-02	7.0E-02	6.7E-02	5.5E-02	1.3E-01	1.3E-01	3.1E-02	1.1E-01	1.1E-01	8.6E-03	3.0E-03	3.0E-03	4.6E-04	1.3E+02	1.3E+02	5.5E+02	3.8E+03	3.8E+03	1.6E+04	1.7E+02	1.7E+02	2.2E+03	2.0E+03	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
Aliphatic >C10-C12	4.6E-01	4.7E-01	4.9E-01	5.3E-01	4.1E-01	9.9E-02	9.9E-02	2.4E-02	8.2E-02	8.2E-02	6.5E-03	1.8E-03	1.8E-03	2.3E-04	1.3E+02	1.3E+02	5.5E+02	2.6E+03	2.6E+03	1.1E+04	1.1E+02	1.1E+02	1.4E+03	6.7E+02	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
Aliphatic >C12-C16	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E+02	3.7E+02	1.5E+03	5.9E+02	5.9E+02	2.5E+03	2.6E+01	2.6E+01	3.3E+02	1.2E+02	1.0E+02	1.0E+02	4.4E+02	-	-	-
Aliphatic >C16-C21	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E+05	1.1E+05	4.4E+05	6.3E+18	6.3E+18	2.6E+19	2.8E+17	2.8E+17	3.5E+18	2.4E+03	1.0E+19	1.0E+19	4.4E+19	-	-	-
Aliphatic >C21-C34	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E+05	1.1E+05	4.4E+05	3.1E+17	3.1E+17	1.3E+18	1.4E+16	1.4E+16	1.7E+17	9.0E+02	1.0E+19	1.0E+19	4.4E+19	-	-	-
Aromatic >C8-C10	1.2E-18	1.3E-18	1.3E-18	6.8E-19	4.8E-19	6.8E-18	6.8E-18	1.6E-18	5.6E-18	5.6E-18	4.5E-19	5.2E-18	5.2E-18	2.7E-18	2.0E+19	2.0E+19	8.3E+19	5.0E+22	5.0E+22	2.1E+23	2.7E+21	2.7E+21	3.4E+22	2.1E+21	1.0E+19	1.0E+19	4.4E+19	-	-	-
Aromatic >C10-C12	4.4E-01	4.4E-01	4.0E-01	3.7E-01	2.5E-01	1.8E-01	1.8E-01	4.4E-02	1.5E-01	1.5E-01	1.2E-02	8.4E-01	8.4E-01	2.8E-01	1.8E+02	1.8E+02	7.3E+02	1.2E+06	1.2E+06	4.9E+06	8.9E+04	8.9E+04	1.1E+06	1.4E+04	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
Aromatic >C12-C16	3.1E-02	2.8E-02	3.1E-02	3.4E-02	2.6E-02	1.5E-03	1.5E-03	3.7E-04	1.3E-03	1.3E-03	1.0E-04	3.2E-02	3.2E-02	6.1E-03	1.8E+02	1.8E+02	7.3E+02	1.9E+06	1.9E+06	7.9E+06	2.3E+05	2.3E+05	2.9E+06	1.2E+04	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
Aromatic >C16-C21	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E+02	1.8E+02	7.3E+02	3.8E+06	3.8E+06	1.6E+07	8.9E+05	8.9E+05	1.1E+07	9.5E+03	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
Aromatic >C21-C34	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E+03	1.5E+03	5.8E+03	4.2E+24	4.2E+24	1.8E+25	1.7E+24	1.7E+24	2.1E+25	7.3E+03	1.0E+19	1.0E+19	4.4E+19	-	-	-
n-Hexane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.8E+02	8.8E+02	3.6E+03	2.1E+05	2.1E+05	9.0E+05	9.5E+03	9.5E+03	1.2E+05	6.5E+04	7.3E+02	7.3E+02	3.1E+03	1.5E+05	1.5E+05	3.1E+06
Benzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E+01	4.4E+01	1.8E+02	2.8E+05	2.8E+05	1.2E+06	1.9E+04	1.9E+04	2.4E+05	5.7E+03	3.1E+01	3.1E+01	1.3E+02	6.3E+03	6.3E+03	1.3E+05
Toluene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E+03	2.3E+03	9.2E+03	4.4E+07	4.4E+07	1.8E+08	2.7E+06	2.7E+06	3.4E+07	2.1E+05	5.2E+03	5.2E+03	2.2E+04	1.0E+06	1.0E+06	2.2E+07
Ethylbenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E+03	1.3E+03	5.5E+03	8.8E+06	8.8E+06	3.7E+07	5.3E+05	5.3E+05	6.6E+06	1.1E+05	1.0E+03	1.0E+03	4.4E+03	2.1E+05	2.1E+05	4.4E+06
Total Xylenes	7.0E-03	7.2E-03	7.0E-03	3.2E-03	2.4E-03	5.9E-02	5.9E-02	1.4E-02	4.8E-02	4.8E-02	3.8E-03	1.2E-01	1.2E-01	4.9E-02	2.0E+02	2.0E+02	8.5E+02	9.2E+05	9.2E+05	3.9E+06	5.9E+04	5.9E+04	7.4E+05	2.3E+04	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
1,2,4-trimethylbenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E+01	1.5E+01	6.1E+01	8.0E+04	8.0E+04	3.3E+05	5.0E+03	5.0E+03	6.4E+04	1.7E+03	7.3E+00	7.3E+00	3.1E+01	1.5E+03	1.5E+03	3.1E+04
1,3,5-trimethylbenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E+02	3.7E+02	1.5E+03	9.2E+22	9.2E+22	3.9E+23	5.4E+21	5.4E+21	6.8E+22	2.3E+04	1.0E+19	1.0E+19	4.4E+19	-	-	-
Naphthalene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.2E+00	6.2E+00	2.6E+01	1.4E+05	1.4E+05	5.7E+05	2.9E+04	2.9E+04	3.7E+05	7.2E+02	3.1E+00	3.1E+00	1.3E+01	6.3E+02	6.3E+02	1.3E+04
TPH RBC* ⟶	910	1,900	15,000	5,600	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	350	350	>MAX	340	340	1,400	>S	>S	>S	>S	>S	>S	>S	250	250	1,000	50,000	50,000	1,000,000
Generic Gasoline	1,200	2,500	20,000	9,700	>MAX	5,900	5,900	69,000	94	94	>MAX	31	31	130	110	110	450	>S	>S	>S	22,000	22,000	>S	14,000	390	390	1,700	79,000	79,000	1,700,000
Generic Diesel / Heating Oil	1,100	2,200	14,000	4,600	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	9,500	9,500	>MAX	100	100	430	>S	>S	>S	>S	>S	>S	>S	100	100	440	21,000	21,000	440,000
Generic Mineral Insulating Oil	2,800	5,700	36,000	11,000	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	300	300	1,300	>S	>S	>S	>S	>S	>S	>S	150	150	620	30,000	30,000	620,000