

FOCUSED FEASIBILITY STUDY REPORT

Former Sunset Fuel/Pacific Pride Site
6140 and 6230 SW Macadam Avenue
Tax Lots 100, 200
Portland, Oregon 97239

DEQ ECSI Site No. 4723, 4772

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EXECUTIVE SUMMARY

Feige & Associates, Inc. has completed the Focused Feasibility Study, as requested by the Oregon Department of Environmental Quality, for the Former Sunset Fuel/Pacific Pride Site, located at 6140 and 6230 SW Macadam Avenue, respectively, in Portland, Oregon. The Focused Feasibility Study was conducted according to statutory and administrative rule requirements to identify an appropriate remedial action for the Site.

The site was developed for use by Sunset Fuel Company from about 1950 to about 1967 as a retail fuel distribution facility which included wood, coal, sawdust, fuel oil, and gasoline. From 1967 to present, the Former Sunset Fuel site property has been leased by a number of businesses for the purpose of mainly retail and wholesale sales and warehousing. The adjacent and current Pacific Pride site was developed by Sunset Fuel Company for the purposes of dispensing heating oil and motor fuels from at least 1967 to present. In 1983, the Pacific Pride franchise began leasing the property for the dispensing of motor fuel (gasoline and diesel) from their card lock facility.

Previous work conducted for the Former Sunset Fuel/Pacific Pride Site included a Remedial Investigation, Human Health Risk Assessment, and an Ecological Risk Screening. Results of this work identified that detections of benzo(a)pyrene exceeded screening level risk criteria for groundwater exposure for the construction/excavation worker in a limited number of on-site wells. In addition, light non-aqueous phase liquid, related to historic releases of diesel range hydrocarbons, has been identified at both the Former Sunset Fuel and Pacific Pride Sites.

The sampling methodology assessments of monitoring wells MW-3 and MW-7, completed in December 2012 and May 2013, indicated that previously reported results of diesel range hydrocarbons and polycyclic aromatic hydrocarbons for these wells have been biased high due to samples which contained non-dissolved petroleum and petroleum sorbed to sediment. The results of the sampling methodology assessments also indicated that concentrations of benzo(a)pyrene are below screening level risk criteria for groundwater exposure for the construction/excavation worker, and diesel range hydrocarbons concentrations are not indicative of free product in monitoring wells MW-3 and MW-7.

Analysis of diesel light non-aqueous phase liquid, which has been observed periodically in monitoring well MW-3, located on the Pacific Pride site, and monitoring well MW-7, located on the Former Sunset site, indicates that it is residual and limited in spatial extent. Analysis of diesel light non-aqueous phase liquid also indicates that continued lateral migration in the vicinity of MW-3 and MW-7 is unlikely.

The Focused Feasibility Study presented Remedial Action Objectives, identified and screened General Response Actions, and then developed three remedial action alternatives. The alternatives were evaluated according to Oregon regulations for their ability to (1) protect public health, safety, and welfare and the environment, (2) balance remedy selection factors (effectiveness, long-term reliability, implementability, implementation risk, reasonableness of cost), and (3) treat hot spots of contamination in media other than water by reducing their concentration, volume, or mobility to the extent practical. A numerical scoring system was used to rate each alternative. The alternatives were then compared with each other, using the same three evaluation criteria and the numerical scores.

Based on the evaluation, Alternative 1 (**No Action**) is the recommended remedial action alternative. Alternative 1 meets the Remedial Action Objectives because there are no identified potential risks for human receptors associated with impacted groundwater. Alternative 1 is protective, meets the preference for treating hot spots of contamination criteria (i.e. residual light non-aqueous phase liquid is reliably contained), and has the highest remedy balancing factor average. Alternative 1 also rated highest under the cost reasonableness criteria, indicating that the benefit-to-cost ratio is maximized under this alternative.

1.0 INTRODUCTION

At the request of Sunset Fuel Company (Sunset), Feige & Associates, Inc. (FAI) has completed the Focused Feasibility Study (FFS) for the Former Sunset Fuel/Pacific Pride Site, located at 6140 and 6230 SW Macadam Avenue in Portland, Oregon (Figure 1). This FFS was completed based on discussions with the Oregon Department of Environmental Quality (DEQ) and as formally requested in a letter entitled *DEQ Approval of Remedial Investigation and Risk Assessment, Sunset Fuel/Pacific Pride, ECSI 4723 & 4772*, dated February 12, 2013 (Oregon DEQ, 2013).

A Draft FFS Report, dated February 21, 2013, has been previously submitted to DEQ for review. The DEQ provided comments for the Draft FFS in a letter entitled, *Review Comments on Draft Focused Feasibility Study*, dated April 22, 2013. In the letter, DEQ requested that additional sampling be conducted at the site prior to submitting the revised FFS. FAI completed the requested sampling and submitted the results in a letter and technical memorandum to DEQ dated June 3, 2013 (Appendix B). Following review of the additional sampling results, DEQ requested that the results be incorporated into the Final FFS and submitted for review in a letter entitled, *Methods and Results of Additional Sampling Methodology and Assessment of Groundwater in Monitoring Wells MW-3 and MW-7*, dated July 5, 2013.

It should be noted that the Draft FFS Report, dated February 21, 2013, included an additional remedial action alternative, No Further Action with Institutional Control (Alternative #2). However, based on the results of the additional groundwater sampling completed for the site, this alternative was removed in this report because the institutional control no longer was applicable.

This FFS was developed in general accordance with applicable Oregon Administrative Rules (OAR) for remedy selection (OAR 340-122-0085 and -0090) and DEQ guidance (DEQ, 2006).

1.1 Focused Feasibility Study Objective

This FFS was conducted for the purpose of selecting an appropriate remedial action for the Former Sunset Fuel/Pacific Pride Site. This regulatory-guided process ensures that the statutory and administrative rule requirements are met, offers the public with a foundation on which to provide comments on proposed remedies, and allows the DEQ to select or approve the most appropriate remedy for the site. The most appropriate remedy will be one that achieves protection of human health and the environment, provides a balance of the remedy selection factors (see Section 7), and has a preference for treatment or excavation (with off-site disposal) of hot spots of contamination.

The goals for the FFS were discussed during a meeting between FAI and Mr. Kenneth Thiessen of DEQ on October 22, 2012, a telephone discussion on November 14, 2012, and email correspondence on November 15, 2012. Following these meetings and discussions, the goals for the FFS were formally presented by DEQ in the February 12, 2013 letter (Oregon DEQ, 2013).

The DEQ letter (Oregon DEQ, 2013), requested that an FFS be prepared to “evaluate hot spots and propose remedial options for apparent groundwater hot spots at the MW-3 and MW7/MW-8 area of the Sunset Fuel/Pacific Pride sties.”

The FFS goals, as presented in the February 12, 2013 letter included the following:

1. Bring benzo(a)pyrene into compliance with construction/excavation worker RBC

2. Control or eliminate separate phase hydrocarbons (free product)
3. Demonstrate that plume(s) are stable or decreasing in extent
4. Demonstrate that contaminant concentrations are stable or decreasing

FFS Goal #1 is addressed in Section 4 of this report which presents the evaluation of impacted media at the site and Appendix A and Appendix B which detail the results of sampling methodology assessments completed at the site. FFS Goal #2 is addressed in Section 4 of this report which presents the evaluation of impacted media at the site, and Sections 5 through 7 which present the remedial action objectives, criteria, and alternatives. FFS Goal #2 is also addressed in Section 3.3.3 of this report which presents the evaluation of Hot Spots. FFS goals #3 and #4 are addressed in Appendix A and Appendix B, as well as Section 3.3 of this report within the Hot Spot evaluation, and Section 4 within the evaluation of impacted media at the site.

1.2 Report Organization

This report is organized as follows:

- *Section 1* describes the purpose of this report and report organization.
- *Section 2* provides an overview of the site location, previous and current operations, geology, hydrogeology, and a summary of previous investigations and remedial actions that have been conducted at the site.
- *Section 3* presents a summary of the remedial investigation, the beneficial land and water use, and the human health and ecological risk assessments that have been completed for the site. A hot spot evaluation for groundwater, soil, and media other than water are also presented.
- *Section 4* presents the area, volume, and description of impacted media at the site.
- *Section 5* presents the remedial action objectives (RAOs) and evaluation criteria.
- *Section 6* presents the screening and development of remedial alternatives. This section also presents a description of the retained remedial alternatives for the site.
- *Section 7* presents the criteria and an evaluation of the retained remedial alternatives for the site.
- *Section 8* presents a discussion of the recommended remedial action for the site.
- *Section 9* presents the residual risk assessment for the recommended remedial action for the site.

2.0 BACKGROUND

The purpose of this section is to provide an overview of the site location, previous and current operations, geology, hydrogeology, and a summary of previous investigations and remedial actions that have been conducted at the site.

2.1 Site Location, Description, and History

The site of both the Former Sunset Fuels Site (Former Sunset) (6140 SW Macadam Avenue, ECSI #4723, Tax Lot 100) and Pacific Pride Site (Pac Pride) (6230 SW Macadam Avenue, ECSI #4772, Tax Lot 200) is located at the northeast corner of the intersection of SW Carolina Street and SW Macadam Avenue, Portland, Multnomah County, Oregon (Figure 2).

The Former Sunset Site (Figure 2) consists of a multiple story warehouse and office building within the northeastern portion of the site, and asphalt parking areas to the south and west of the structure. The Former Sunset Site is bounded by SW Carolina Street to the south, the Pac Pride Site to the southwest, SW Macadam Avenue to the west, commercial businesses to the north, and railroad tracks to the east. Sunset Fuel Company (Sunset) owned the Former Sunset site property until July 2011, when it was purchased by Grand & Benedicts for their business offices. Since July 2011, the building and parking areas have undergone significant renovations. Since about 1926 the Former Sunset Site has been developed for a variety of uses. These uses have included brick manufacturing, auto wrecking and parts, boat manufacturing, a retail fuel distribution facility, as well as businesses for retail and wholesale sales and warehousing. Prior to the development of the site in about 1926 it appears to have been vacant land. The site was developed for use by Sunset from about 1950 to about 1967 as a retail fuel distribution facility which included wood, coal, sawdust, fuel oil and gasoline. From 1967 to present, the property has been leased by a number of businesses for the purpose of mainly retail and wholesale sales and warehousing.

The adjacent Pac Pride Site (Figure 2) is currently a commercial card lock petroleum fueling station. The site contains two fueling pump islands, a canopy, and a small maintenance building. The Pac Pride Site is triangular in shape and bounded by SW Macadam Avenue to the west, SW Carolina Street to the south and the asphalt parking area of the adjacent Former Sunset Site to the north and east. There are four underground storage tanks (USTs) on the Pac Pride Site; a 10,000-gallon capacity premium gasoline tank, two 20,000-gallon capacity unleaded gasoline tanks, and a 20,000-gallon capacity diesel fuel tank (Figure 3). Sunset owned the Pac Pride Site property until 2005, when it was sold to Petrocard Systems, Inc. (Petrocard) which franchises the Site. The current Pac Pride site was developed for the purposes of dispensing heating oil and motor fuels from at least 1967 to present. According to records, this site was operated by Sunset Fuel Company for the dispensing of heating oil until about 1983. In 1983, the Pacific Pride franchise began leasing the property for the dispensing of motor fuel (gasoline and diesel) from their card lock facility. The two active 20,000 gallon gasoline USTs and one active 20,000 gallon diesel UST were installed at the site in 1967. However, it is likely that these two active 20,000 gallon gasoline USTs were used for storing diesel prior to 1983. The one active 10,000 gallon gasoline UST was installed in 1983.

An Oregon Department of Transportation (ODOT) right-of-way separates the two sites. The right-of-way location is also presented on Figure 2.

The current site configuration, except for upgrades to the fueling station and structure at the Pac Pride Site and renovations and upgrades to the warehouse and office structure, and paving of the parking areas to south and west of the structure at the Former Sunset Site, has been in place since about 1967.

2.2 Geology and Hydrogeology

The site lies within the Portland Basin, which is underlain by up to 1,300 feet of sediments, which were deposited primarily by the Columbia and Willamette rivers. To depth, the sediments are composed of up to 200 feet of younger alluvium, and up to 1,100 feet of older alluvium, which include the Troutdale and Sandy River Mudstone formations.

Based on soil borings, the lithology at the site consists of silty loam topsoil or asphalt/gravel base rock (depending on location) up to approximately 1-foot thick. This is underlain by a non-native fill material consisting of gravel, various debris material (concrete, brick), and silty sand to about 4 feet below ground surface (bgs), which is underlain by a silty fine sand with trace amounts of clay to about 14 feet bgs. This is underlain by very dense well rounded to sub-rounded cobble gravel with a silt and sand matrix to the bottom of borings completed at the site between 25 and 30 feet bgs.

Near the shoreline of the Willamette River, the lithology consisted of up to 17 feet of non-native fill material containing basalt rip-rap and silt with trace amounts of wood, brick, and concrete. This upper material is underlain by a grey to black silty sand with trace organic debris, which is underlain by a coarse sand with trace amounts of rounded to sub-rounded gravel to the bottom of the deepest boring at 32.5 feet bgs.

Groundwater levels have been observed in site groundwater monitoring wells at depths of about 6 to 23 feet bgs, depending on the location of the well. The shallow water bearing zone beneath the site exists within the very dense cobble gravels which occur at about 14 feet bgs across the site. Based on observations made during the investigation, groundwater levels fluctuate seasonally on the order of about 1 to 5 feet during the calendar year, depending on the location of the monitoring well. A number of the monitoring wells at the site were dewatered several times during development, and have exhibited slow recharge during quarterly monitoring events, which indicates low yields within the shallow aquifer, and may indicate a high variability of localized grading and sorting of materials within the aquifer.

The closest surface water body to the site is the Willamette River, which lies 300 feet east of the site. Based on water levels collected from shoreline monitoring wells, the shallow aquifer at the site as it approaches the river, is mostly influenced by river stage, which is seasonally as well as tidally influenced. The water levels in upgradient monitoring wells at the site appear to be mostly influenced by seasonal groundwater flow however, and do not show variances based on tidal influence. The effect of seasonal groundwater and river influence indicate that water levels in the wells at the shoreline of the river have more fluctuation than the monitoring wells located upgradient and at the site. Evidence of this is indicated in a steeper gradient during low groundwater and a steeper groundwater gradient during high groundwater periods.

2.3 Summary of Previous Investigations

In September 1994, a release was reported to DEQ by Sunset in regards to the discovery of a leaking UST at the Pac Pride site. Since 1994, several investigations, groundwater monitoring

events, and interim remedial actions measures (IRAMs) have been conducted at and in the vicinity of the site. In 2007, it was requested that the site be divided into two sites based on the separate operational history, that investigations indicated two independent problems that needed to be addressed, and the fact that two releases were discovered at different times so the investigations were at different stages. Following a review of this request, the DEQ assigned separate ECSI numbers and legal descriptions for the Former Sunset and Pac Pride sites. A remedial investigation and risk assessments were completed in 2012 (FAI, 2012).

2.4 Summary of Previous Remedial Actions

Previous interim remedial actions at the site have included the excavation of petroleum impacted soils from the Pac Pride site and free-phase petroleum removal in groundwater from monitoring wells located at the Pac Pride and Former Sunset sites. Significant upgrades to the USTs system have also taken place at the Pac Pride site.

2.4.1 Limited Soil Cleanup Activities

In September 1995, during initial site assessment activities at the Pac Pride site, approximately 33 tons of petroleum hydrocarbon (HC) impacted soil was transported off-site for disposal from an excavation trench located just east of the Pac Pride (Figure 3).

2.4.2 Pac Pride Site Upgrades

According to records, upgrades to the USTs system occurred in 1990 and 1995. Upgrades to the USTs system in 1990 included an internal inspection and full lining of all tanks. Upgrades to the USTs system in 1995 included; replacement of steel product piping with double wall fiberglass piping, installation of containment sumps at the turbines and dispensers, automatic tank gauging, installation of stage II vapor recovery, and spill and overflow protection.

2.4.3 Monitoring Well Purging and Hydrophobic Sock Maintenance IRAM

Active remediation activities of free-phase petroleum hydrocarbons in groundwater monitoring well MW-3, which is located on the Pac Pride site, began in about 1996. FAI began additional remediation of free phase petroleum hydrocarbons in monitoring well MW-7, which is located on the Former Sunset site, as of the second quarter 2005. Remedial activities have been performed using hydrophobic/hydrocarbon-absorbent socks placed within the top of the water column to collect any free-floating petroleum hydrocarbons (light non-aqueous phase liquid (LNAPL)). FAI has checked the absorbent socks on a regular basis, and replaced them as needed since that time. In a letter dated January 26, 2006, the DEQ requested continued maintenance of hydrophobic socks in monitoring wells MW-3 and MW-7, as well as additional purging of groundwater from monitoring wells MW-3, MW-7 and MW-8. The DEQs request was based on the observed concentrations of diesel range petroleum hydrocarbons in monitoring well MW-7. FAI began bi-monthly purging and maintenance activities, as requested, beginning on February 7, 2006. At the request of DEQ, FAI followed with weekly purging and sock maintenance in these wells on August 29, 2006.

As of November 6, 2006, a total of approximately 770 gallons of water had been purged from monitoring wells MW-7 and MW-8, and 279 gallons had been purged from monitoring MW-3.

Since December 26, 2006, FAI has ceased active purging activities in wells MW-3, MW-7 and MW-8. In February 2007, FAI submitted a technical letter to DEQ requesting the elimination of weekly purging from the remediation activities. The request was due to the apparent mobilizing of contaminants from the Pac Pride site onto the Former Sunset site, the likelihood of mobilizing the tetrachloroethylene/trichloroethene (PCE/TCE) plume of unknown origin onto the Pac Pride site, and the low benefit/high cost of the ability of purging to remove LNAPL from the monitoring wells.

FAI continued the sock maintenance activities in monitoring well MW-3 until about 2010, when it was determined that the sock was not removing any LNAPL from the well. The sock maintenance has continued in MW-7 on a weekly to bi-weekly basis during low groundwater, and is checked periodically during periods of high groundwater. Seasonal variations in the water table have indicated that LNAPL is only recoverable in monitoring well MW-7 during times of low groundwater.

Since beginning the hydrophobic sock maintenance in 2006, the sock in monitoring well MW-3 was considered soiled but never saturated. Because the hydrophobic sock was never observed as being saturated, an approximate volume of product removed from the well cannot be calculated, although it is quite small.

Field observations collected during maintenance activities and calculations utilizing manufactures specifications related to the capacity of the hydrophobic socks indicate that up to 11.34 gallons of LNAPL has been recovered since the start of IRAM activities in MW-7. The actual recovery, however, is likely much smaller, since the socks were never saturated.

3.0 SUMMARY OF REMEDIAL INVESTIGATION AND RISK ASSESSMENTS

The purpose of this section is to present a summary of the remedial investigation, the beneficial land and water use, and the human health and ecological risk assessments that have been completed for the site. A hot spot evaluation for groundwater, soil, and media other than water are also presented.

3.1 Remedial Investigation

A Remedial Investigation (RI) was previously completed for the Site. The results of the RI are detailed in a report prepared by FAI entitled, *Remedial Investigation Report*, dated August 22, 2012 (FAI, 2012). The RI identified that separate petroleum hydrocarbon releases have impacted soil and groundwater at both the Former Sunset and Pac Pride sites.

3.1.1 Former Sunset Site

Up to two separate releases of diesel range hydrocarbons were identified to have occurred at the Former Sunset site. The releases have impacted shallow soil and groundwater in the areas along the east property line and groundwater downgradient and east of the Pacific Pride Site. Historic operations at the site suggest that the contaminants were sourced from the historic storage and loading of stove oil. The co-mingling diesel plumes in groundwater have been delineated to areas near the apparent sources, and appear to have migrated only a short distance off-site. The investigation indicated that LNAPL is observed within monitoring well MW-7 only during periods of low groundwater. However, the considerable amount of soil borings completed within the area of MW-7 never located the source of LNAPL found in MW-7.

3.1.2 Pac Pride Site

Historic releases of both gasoline and diesel, which are sourced from the area of the UST system or product piping at the Pac Pride site, have impacted soil and groundwater in the site vicinity. Soil impacts from the releases appear to be limited to on-site areas in the vicinity of the USTs, and along the east property line.

The dissolved phase groundwater plume, associated with the gasoline release from the Pac Pride, has migrated off-site. The plume has been delineated by detections of benzene, identified in groundwater monitoring wells in the area of the railroad tracks east of the Former Sunset Fuels site (MW-8, MW-9), and detections of MTBE, identified in groundwater monitoring wells near the shoreline of the Willamette River (MW-12). The diesel release has impacted groundwater in the vicinity of Pac Pride site, and appears to have migrated onto the Former Sunset Fuels site, where it may co-mingle with the on-site diesel plume sourced from that site.

3.1.3 Land and Water Use

A Beneficial Land and Water Use Determination (BLWUD) was completed as part of the RI (FAI, 2012). The BLWUD evaluated existing and future likely uses of land and water within a one-half mile radius of the site. The results of the BLWUD are summarized as follows.

- The site property is zoned General Commercial (GC) and is planned to continue this zoning designation for the foreseeable future. The site is also located within the Macadam Plan District which restricts auto-oriented uses and development, limits signs,

allows for future light rail, and is intended to provide view corridors to the Willamette River.

- The beneficial use of groundwater was evaluated within a one-half mile radius of the site. As summarized below, there are no beneficial uses of groundwater within the Locality of the Facility (LOF).
 - The site is supplied with potable water by the City of Portland municipal water supply. Groundwater in the general vicinity of the site is not now used, or anticipated to be used as a source of drinking water at, or near the site.
 - A review of the Oregon Water Resources Department (OWRD) Well Log Database within a one-half mile radius of the site indicated one industrial water well, located 0.45 miles south of the site. Based upon the given location and elevation, this well is located hydraulically cross- and slightly up-gradient from the site. No other water wells on the west side of the Willamette River were listed within a one-half mile radius of the site.
- The Willamette River is located approximately 300 feet east of the site and is the only surface water body within the LOF. The beneficial uses of Willamette River water (without treatment) are non-consumptive. The beneficial uses of the Willamette River include aesthetic quality, recreation, transportation, wetland areas, fishing and hunting, anadromous fish passage, and fish and wildlife habitat.

3.2 Risk Assessment

Human health and ecological risk assessments (K/J, 2012a/2012b) were completed for the site as part of the RI. The results of these are summarized below.

3.2.1 Human Health Risk Assessment

The Human Health Risk Assessment (HHRA) (K/J, 2012b) considered the potential exposures by human receptors within the LOF under current and reasonably likely future uses. These exposure scenarios were quantitatively evaluated using the risk-based decision making (RBDM) approach (DEQ, 2003). Potentially complete and significant exposure pathways included exposure to groundwater by excavation or construction workers, and multi-media exposure to subsurface soil and groundwater by excavation and construction workers.

Site data were screened against risk based concentrations (RBCs) to select chemicals of potential concern (COPCs). Three chemicals of interest (COIs) were selected for direct contact with subsurface soil by a construction or excavation workers and five COIs were selected as COPCs for direct contact with groundwater by a construction or excavation workers. The COPCs included gasoline range hydrocarbons, diesel range hydrocarbons, heavy oil range hydrocarbons, benzene, and benzo(a)pyrene. Additionally, COIs were screened for COPC selection based on exposure to multiple media (subsurface soil and groundwater). COPCs selected for multi-media exposure were diesel range hydrocarbons and heavy oil range hydrocarbons.

Exposure point concentrations (EPCs) were calculated for each COPC, for both reasonable maximum exposure (RME), and central tendency exposure (CTE) scenarios. The 12 wells within the Site vicinity (MW1 through MW-9, and MW13 through MW-15) (Figure 2) were evaluated as one exposure area, because a construction or excavation worker would likely be

exposed to groundwater throughout the localized area during construction activities. In addition, the three off site shoreline wells (MW10 through MW12) were evaluated as a separate exposure area. Soil EPCs were calculated on a site-wide basis for the purpose of the multimedia risk assessment.

Risk estimates were compared with a target Hazard Index (HI) of 1.0, a target cancer risk of 1×10^{-6} for individual chemicals, and a target total cancer risk of 1×10^{-5} .

The results of the human health risk characterization indicated the following:

- For both RME and CTE scenarios, there are no cumulative risk exceedences of the target cancer risk level for construction or excavation worker exposures to groundwater within the Site vicinity. Benzo(a)pyrene exceeds the target risk level for individual chemicals from RME and CTE scenarios for groundwater in the Site vicinity. There are no HIs exceeding 1.0 for groundwater in the Site vicinity. Offsite groundwater at the shoreline does not result in exceedences of target cancer or noncancer levels.
- Risks from construction or excavation worker exposure to subsurface soil at the Site are below the target HI for both the RME and CTE scenarios. The COPCs evaluated for subsurface soil exposure are not carcinogens, so there were no exceedences of target cancer risk levels.
- The RME and CTE HIs from multi-media exposure are equal to or below the target HI for both site vicinity and shoreline exposure areas. Because there were no carcinogenic COPCs for multi-media exposure, the cumulative cancer risks from exposure to subsurface soil and groundwater are the same as those for groundwater alone, and there are no exceedences of the target cumulative cancer risk.
- The groundwater EPCs for diesel range hydrocarbons and heavy oil range hydrocarbons in the Site vicinity are greater than the water solubility limits, which indicate the potential presence of free product.
- Highly concentrated hot spot levels are not present in soil samples.

3.2.2 Ecological Risk Assessment

The Ecological Risk Screening (K/J, 2012a) (ERS) developed a Conceptual Site Model (CSM) focusing on site-specific exposure pathways, exposure routes, and receptors. Current and reasonably likely future land use conditions were also considered in the development of the ecological CSM.

Potentially exposed ecological receptors were identified based on a review of the historical site data, and the understanding of habitats present within the area of interest. The potential ecological receptors which were identified represented those receptors that are anticipated to be present and potentially exposed to groundwater migration to surface water containing contaminants under current and reasonably foreseeable future conditions. The identified receptors included Aquatic Ecological Receptors (fish and benthic macroinvertebrates) and Aquatic- Dependent Terrestrial Receptors (birds and mammals). The ecological CSM identified four potentially complete exposure pathways for ecological receptors which included:

- Direct contact and ingestion of site constituents in surface water by aquatic and aquatic dependent terrestrial receptors.

- Ingestion of organisms that may have taken up site constituents from surface water by aquatic and aquatic-dependent terrestrial receptors.
- Direct contact and ingestion of site constituents in surface sediments by aquatic and aquatic dependent terrestrial receptors.
- Ingestion of organisms that may have taken up site constituents from surface sediments by aquatic and aquatic-dependent terrestrial receptors.

Groundwater data were screened against DEQ Freshwater SLVs for aquatic and aquatic-dependent (using the lower of the bird and mammal freshwater SLV) ecological receptors. Based on data collected at shoreline monitoring wells (MW-10 through MW-12), in 2010 and 2011, only PAHs were detected at concentrations above the freshwater aquatic SLVs for aquatic ecological receptors (fish and benthic macroinvertebrates). However, the PAHs observed in groundwater near the shoreline of the Willamette River were determined to be not related to the contaminant plumes originating on either the Former Sunset or Pac Pride sites, and appear to be the result activities unrelated to the subject sites. Exceedance of freshwater aquatic SLVs in groundwater at the non-shoreline wells indicates the potential for risks to aquatic ecological receptors if the chemicals were to migrate to surface water at similar concentrations. However, data collected from the wells that are closest to the point of discharge from groundwater to surface water indicate that the potential for current risks to aquatic ecological receptors is minimal.

3.3. Hot Spot Evaluation

3.3.1 Groundwater and Surface Water

As detailed in OAR 340-122-115(31)(a), for groundwater and surface water, a hot spot exists if contamination results in significant adverse effect on the beneficial uses of that resource and if restoration or protection of the beneficial use can occur within a reasonable amount of time. As summarized in Section 3.1.3, since there are no impacts to beneficial uses of water from the site, there are no groundwater hot spots.

In addition, the HHRA (K/J, 2012b) indicated that the RME and CTE HIs from multi-media exposure are equal to or below the target HI for both site vicinity and shoreline exposure areas. Because there were no carcinogenic COPCs for multi-media exposure, the cumulative cancer risks from exposure to subsurface soil and groundwater are the same as those for groundwater alone, and there are no exceedences of the target cumulative cancer risk.

3.3.2 Soil

The HHRA (K/J, 2012b) indicated that highly concentrated hot spot levels are not present in soil samples.

3.3.3 Non-Aqueous Phase Liquids

The HHRA (K/J, 2012b), indicated that the groundwater EPCs for diesel range hydrocarbons and heavy oil range hydrocarbons in the Site vicinity are greater than the water solubility limits, which indicate the potential presence of NAPL.

In accordance with DEQ Guidance for Identification of Hot Spots (DEQ 1998a), Non-Aqueous Phase Liquids (NAPLs), whether present as “pools” or as areas of residual or somewhat interconnected pockets or zones of free product, are examples of “media other than water” which must be evaluated in the hot spot assessment. It generally can be assumed that NAPLs will produce “highly concentrated”, “highly mobile” and “not reliably containable” hot spots, assuming that the baseline risk exceeds the acceptable risk level (i.e. primary criteria for defining a hot spot in media other than water).

Highly Concentrated

The HHRA (K/J, 2012b) determined that soil and groundwater concentrations within the LOF do not exceed DEQ RBCs for reasonably likely exposures, therefore there are no highly concentrated hot spots for media other than water at the Former Sunset or Pac Pride sites.

Highly Mobile

The highly mobile hot spot evaluation addresses the potential for leaching of the contaminant mass in to groundwater. However, as discussed previously, there are no beneficial uses of groundwater within the LOF. Therefore, leaching of the contaminant mass to groundwater cannot impact beneficial use of the groundwater, so there are no highly mobile hot spots for media other than water at the Former Sunset or Pac Pride sites.

Not Reliably Contained

The HHRA (K/J, 2012b) indicated that the groundwater EPCs for diesel range hydrocarbons and heavy oil range hydrocarbons in the Site vicinity are greater than the water solubility limits, which indicate the potential presence of NAPL. Analysis of historic groundwater monitoring results indicates that the concentrations of diesel range hydrocarbons in monitoring well MW-3, located at the Pac Pride site and monitoring well MW-7 at the Former Sunset site are indicative of NAPL. In the case of diesel range hydrocarbons this would indicate the presence of LNAPL. LNAPL has not been observed recently in monitoring well MW-3, located at the Pac Pride site, and is only observed seasonally in monitoring well MW-7, located at the Former Sunset site (Figure 2).

As required by OAR 340-122-085(6), “the FS shall evaluate the extent to which the hazardous substances are not reliably containable.” This evaluation is conducted in the alternatives analysis section of this report within the analysis of “long term reliability”.

3.4 Remedial Investigation and Risk Assessment Conclusions

The results of the RI and RAs indicated the following:

- A historic release of gasoline range hydrocarbons, sourced from the area of the USTs or product piping at the Pac Pride site, has impacted soil and groundwater. Soil impacts from this release appear to be limited, and have been delineated to the area of the gasoline USTs. The dissolved phase groundwater plume from the gasoline release has migrated off-site.
- Up to three historic releases of diesel range hydrocarbons have been identified on the Former Sunset and Pac Pride sites. The releases include the following:
 - A release may be attributed to the diesel UST or product piping at the Pac Pride site. Soil impacts have been identified as limited in extent. Groundwater impacts

from the release appear to have migrated onto the Former Sunset Fuels site, where it may co-mingle with the on-site diesel plume sourced from that site

- Although only limited evidence has been indicated from soil probe investigations, based on groundwater monitoring results, at least two separate diesel releases have been identified at the Former Sunset site. The releases have impacted groundwater in the areas of monitoring wells MW-7 and former MW-8, and MW-6. The co-mingling diesel plumes in groundwater have been delineated to areas near the sources and appear to have migrated only a short distance off-site to within the area of the railroad tracks east of the site.
- Based on multiple lines of evidence, analysis of total PAHs, gasoline, diesel, and oil identified in Willamette River shoreline monitoring wells indicates that they are not related to releases at the Former Sunset or Pac Pride sites.
- The BLWUD indicated that there are no beneficial uses of groundwater within the LOF.
- The results of the HHRA (K/J, 2012b) indicated that there are no cumulative risk exceedences of the target cancer risk level of for construction or excavation worker exposures to groundwater within the Site vicinity. However, Benzo(a)pyrene exceeded the target risk level for individual chemicals exposure scenarios for groundwater in the Site vicinity. In addition, the HHRA identified that groundwater exposure point concentrations for diesel range hydrocarbons and heavy oil range hydrocarbons in the Site vicinity are greater than the water solubility limits, which indicate the potential presence of free product (i.e. NAPL).
- The ERS (K/J, 2012a) indicated that the potential for current risks to aquatic ecological receptors from the groundwater contaminant plumes sourced from the site is minimal.
- The Hot Spot evaluation for groundwater, soil, and media other than water (i.e. LNAPL) indicated the following:
 - Since there are no impacts to beneficial uses of water from the site, there are no groundwater hot spots.
 - Highly concentrated hot spot levels are not present in soil samples.
 - Since soil and groundwater concentrations within the LOF do not exceed DEQ RBCs for reasonably likely exposures, there are no highly concentrated hot spots for media other than water.
 - Since leaching of the contaminant mass to groundwater cannot impact beneficial use of groundwater, there are no highly mobile hot spots for media other than water.
 - The evaluation, of whether LNAPL is or is not reliably containable, is conducted in the alternatives analysis section of this report within the analysis of “long term reliability”.

4.0 AREA, VOLUME, AND DESCRIPTION OF IMPACTED MEDIA

Based on the results of the RI and RA completed for the site, this section discusses the impacted media of concern at the facility. This information is the basic input used to assess the technologies that make up the remedial action alternatives. This information is also presented to address the FFS Goals, which are presented in Section 1.1 of this report. This section discusses the extent of COCs in groundwater and an assessment of LNAPL that has been identified at the Site.

4.1 Groundwater

The results of the HHRA risk characterization for direct contact with groundwater were that for both RME and CTE scenarios, there are no cumulative risk exceedences of the target cancer risk level for construction or excavation worker exposures to groundwater within the Site vicinity. However, COPC benzo(a)pyrene exceeded the target risk level for individual chemicals from RME and CTE scenarios for groundwater in the Site vicinity.

Historic groundwater analytical results of benzo(a)pyrene, collected since the December 2006 sampling event, have indicated only one detection in monitoring well MW-3 and two detections in monitoring well MW-7 which have exceeded the DEQ RBC for groundwater exposure for the construction/excavation worker. However, the sampling methodology assessment, performed in May 2013 (Appendix B), did not indicate detections of benzo(a)pyrene in monitoring wells MW-3 and MW-7 when they were purged and sampled utilizing low flow techniques. These results, as well as the previous sampling methodology assessment performed in December 2012 (Appendix A), indicate that lower concentrations of diesel range hydrocarbons and Polycyclic Aromatic Hydrocarbons (PAHs) constituents which were observed utilizing this method, are accurate representations of groundwater chemistry in the formation surrounding the well screen. The sampling methodology assessments demonstrated that previously reported higher concentrations of diesel range hydrocarbons and PAHs observed in groundwater were the result of non-dissolved petroleum and/or petroleum sorbed to sediment in groundwater samples.

In addition, previously reported detections of benzo(a)pyrene which did exceed the DEQ RBC for groundwater exposure for the construction/excavation worker were limited to on-site wells, which indicates that groundwater leaving the site also meets acceptable risk criteria.

4.2 Light Non-Aqueous Phase Liquid

The HHRA (K/J, 2012b) indicated that the groundwater EPCs for diesel range hydrocarbons and heavy oil range hydrocarbons in the Site vicinity are greater than the water solubility limits, which indicate the potential presence of NAPL. Analysis of historic groundwater monitoring results indicates that the concentrations of diesel range hydrocarbons in monitoring well MW-3, located at the Pac Pride site and monitoring well MW-7 at the Former Sunset site are indicative of free product. In the case of diesel range hydrocarbons this would indicate the presence of LNAPL. However, during the site investigation and previous IRAMs, LNAPL has only been observed periodically in monitoring well MW-3 located at the Pac Pride site and monitoring well MW-7 at the Former Sunset site. LNAPL has never been observed in any soil borings advanced at the Former Sunset site, Pac Pride site, or off site location.

Results of the sampling methodology assessments (Appendix A and B) indicated that actual groundwater concentrations of diesel range hydrocarbons in MW-3 and MW-7 were not greater than the water solubility limits and therefore not indicative of free product in either well.

4.2.1 LNAPL in Vicinity of MW-3

The known operations at the Pac Pride site (FAI, 2012) indicate that the diesel release occurred sometime between 1983 and 1994 (i.e. 18 to 29 years before present). The release was stopped during upgrades to the UST system which are known to have occurred in 1990 and 1995, respectively. The quantity of diesel fuel that was released at the site is unknown, however soil samples collected during the installation of MW-3 did not indicate the presence of LNAPL. Diesel was detected in a soil sample at the groundwater interface at only 273 milligrams per kilogram (mg/kg) during the MW-3 monitoring well installation in May 1996. Soil sample locations are presented on Figure 4 and soil sample analytical results are presented on Table 1.

Groundwater concentrations of Total Petroleum Hydrocarbons (TPH) diesel in MW-3 have been detected at up to 1,810 mg/L (Table 2). However, recent groundwater sampling utilizing low-flow techniques in December 2012 (Appendix A) and May 2013 (Appendix B), indicated TPH diesel concentrations of 10.8 mg/L and 8.69 mg/L respectively in MW-3. In addition, dissolved concentrations of high solubility Volatile Organic Compounds (VOCs) and the relatively higher range solubility PAHs (i.e. Naphthalene) have not exceeded applicable RBCs in over 15 years (Tables 3 and 4). As discussed in Section 4.1, historic groundwater analytical results of the low solubility PAH benzo(a)pyrene indicates only one detection that exceeded the applicable RBC for groundwater exposure for the construction/excavation worker. The May 2013 sampling methodology assessment (Appendix B) indicated a non-detect for benzo(a)pyrene along with a considerable decrease in all PAH concentrations in MW-3. As discussed previously, the sampling methodology assessments demonstrated that previously reported higher concentrations of diesel range hydrocarbons and PAHs observed in groundwater were the result of non-dissolved petroleum and/or petroleum sorbed to sediment in groundwater samples.

Less than 0.1 inches of product has ever been measured during monitoring well sampling and IRAM activities in MW-3. As discussed in Section 2.4.3, remedial efforts to remove LNAPL from MW-3 were discontinued when it was determined that the hydrophobic sock was not removing any LNAPL from the well. In addition, since beginning the hydrophobic sock maintenance, the sock in monitoring well MW-3 was considered soiled but never saturated with product.

Based on the following: the age of the release is somewhere between 18 to 29 years ago, the release is known to have been stopped at least 17 years ago, higher solubility compounds have not been observed, and LNAPL is not recoverable in the well, it is apparent that LNAPL in the vicinity of MW-3 is residual. *Residual LNAPL* refers to separate phase liquids in the subsurface that are not present in an amount sufficient for them to flow readily into wells or excavations (ITRC, 2009). In addition, residual phase hydrocarbons typically do not extend great lateral distances from the source of the release, and they tend to be relatively non-mobile (ITRC, 2009). This is apparent based on the relatively low diesel concentrations, and the absence of LNAPL in nearby wells MW-1R, MW-4, and MW-5.

The analysis indicates that the area and volume of residual LNAPL in the vicinity of MW-3 is minimal. Considering the observations made during the installation of MW-3, nearby soil

borings (BH-1 and B-10), and monitoring well MW-5, the area of residual LNAPL is estimated at less than 10 square feet (ft²). The location of the diesel UST, which is adjacent and north of MW-3 (Figure 4), indicates that any residual LNAPL is located within the backfill of the tank pit. However, since no significant volume of LNAPL has been recovered from MW-3 during IRAM activities, the estimated volume of residual LNAPL cannot be calculated, but based on previous investigations it is relatively small. The potential residual LNAPL locations in the vicinity of MW-3 are presented on Figure 5.

4.2.2 LNAPL in Vicinity of MW-7

The known operations at the Former Sunset site (FAI, 2012) indicate that the release of diesel range hydrocarbons to groundwater in the vicinity of MW-7 occurred sometime between 1950 and 1967 (i.e. 45 to 62 years before present). Historic operations at the site suggest that the contaminants are sourced from historic storage and loading of stove oil, which occurred from the east side of the building and railroad spur, which was once present in this location. Extensive soil probe investigations in the vicinity of MW-7 have not indicated a source area for the release, however. In addition, soil samples collected during the installation of MW-7 did not indicate the presence of LNAPL. The highest concentration of diesel was detected in a soil sample collected from 9 feet bgs at 988 mg/kg in a soil boring (SBM-1) located adjacent to the MW-7 location. Soil sample locations are presented on Figure 4 and soil sample analytical results are presented on Table 1.

Groundwater concentrations of TPH diesel in MW-7 have been detected at up to 972 mg/L (Table 2). However, recent groundwater sampling utilizing low-flow techniques in December 2012 (Appendix A) and May 2013 (Appendix B), indicated TPH diesel concentrations of 3.5 mg/L and 2.12 mg/L respectively in MW-7. In addition, historic dissolved concentrations of high solubility VOCs and the relatively higher range solubility PAHs (i.e. Naphthalene) have never exceeded applicable RBCs (Tables 3 and 4). As discussed in Section 4.1, historic groundwater analytical results of the low solubility PAH benzo(a)pyrene indicates only two detections which have exceeded the applicable RBC for groundwater exposure for the construction/excavation worker. However, the May 2013 sampling methodology assessment (Appendix B) indicated a non-detect for benzo(a)pyrene along with a considerable decrease in all PAH concentrations in MW-7. As with MW-3, the results of the sampling methodology assessments indicate that previously reported higher concentrations of diesel range hydrocarbons and PAHs observed in this well are not representative of actual groundwater chemistry in the vicinity of the well.

Less than 0.1 inches of product has been measured during monitoring well sampling and IRAM activities in MW-7. As discussed in Section 2.4.3, remedial efforts in MW-7 have also indicated that LNAPL is only recoverable during times of low groundwater which is generally only encountered in late summer/early fall.

Based on the following: the age of the release is somewhere between 45 to 62 years ago, the release is known to have been stopped many years ago, higher solubility VOCs and PAHs have not been observed, and since LNAPL is only periodically recoverable in the well, it is apparent that LNAPL in the vicinity of MW-7 may also be defined as *residual LNAPL*. *Residual LNAPL* is also indicated by situations where LNAPL will not accumulate in a well unless the water table drops and LNAPL trapped below the water table can flow into the well (ITRC, 2009). This is

apparent based on diesel concentrations and the absence of LNAPL in nearby wells MW-13, MW-14, MW-8, MW-9, MW-15, and MW-16.

The analysis indicates that the area and volume of residual LNAPL in the vicinity of MW-7 is minimal. Observations during the installation of numerous soil borings and monitoring wells installed with the intention of locating a source area of the LNAPL, indicate that the area of the residual LNAPL in the vicinity of MW-7 is likely less than 10 ft². Results of IRAM activities indicate that the hydrophobic sock in monitoring well MW-7 was considered saturated with product and replaced a total of 63 times from February 2006 through November 2011. The manufactures specifications indicate that the rated absorption of an individual hydrophobic sock is 0.18 gallons. Based solely on this absorption rate, up to 11.34 gallons of LNAPL may have been recovered since the start of IRAM activities in MW-7, however the actual recovery is likely much smaller. Based on the assumed recovery rates and the estimated area of the remaining residual LNAPL, it is estimated that less than 10 gallons of LNAPL remain in the subsurface in the vicinity of MW-7. The potential residual LNAPL locations in the vicinity of MW-7 are presented on Figure 5.

4.3 Impacted Media of Concern Conclusions

The analysis of impacted media of concern at the site which will be utilized to assess the technologies that make up the remedial action alternatives indicates the following:

- The HHRA (K/J, 2012b) indicated that historic detections of COPC benzo(a)pyrene exceeded risk criteria for groundwater exposure for the construction/excavation worker in only on-site wells MW-3, located on the Pac Pride site, and MW-7, located on the Former Sunset site. However, the May 2013 sampling methodology assessment (Appendix B) indicated non-detect for benzo(a)pyrene in both monitoring wells MW-3 and MW-7. The results of the sampling methodology assessment indicated that actual dissolved concentrations of COPC benzo(a)pyrene are below the applicable RBC in both wells, and demonstrates that previously reported results were biased high due to samples which contained non-dissolved petroleum and petroleum sorbed to sediment. Therefore the conditions for FFS Goal #1, which was developed to bring benzo(a)pyrene into compliance with construction/excavation worker RBC, has been met.
- Analysis of diesel LNAPL, which has been observed periodically in monitoring well MW-3, located on the Pac Pride site, and monitoring well MW-7, located on the Former Sunset site, indicates that LNAPL is residual and based on subsurface investigations in the vicinity of these wells, is very limited in spatial extent.
- Continued lateral migration of the residual LNAPL in the vicinity of MW-3 and MW-7 is unlikely. In the case of residual LNAPL, typically, the “retaining” capillary forces are far greater than the natural horizontal groundwater flow gradients. Significant LNAPL heads can develop during the release event, but dissipate once the source has been eliminated. In addition residual LNAPL in the vadose zone source area under tension does not provide a driving head for lateral LNAPL migration along the smear zone.
- The evaluation of LNAPL in the vicinity of MW-3 and MW-7 indicates that the plumes are not mobile. Therefore the conditions for FFS Goal #3 (Section 1.1), which was developed to demonstrate that the plume(s) are stable or decreasing, has been met.

- The sampling methodology assessments of current groundwater conditions in monitoring wells MW-3 and MW-7 (Appendix A and B), indicates that TPH-Diesel concentrations in these wells are much lower than previously reported. Therefore the conditions for FFS Goal #4 (Section 1.1), which was developed to demonstrate stable or decreasing contaminant concentrations, has been met.
- Since releases in the vicinity of MW-3 and MW-7 have been stopped, FFS Goal #2, which was developed to demonstrate that separate phase hydrocarbons have been controlled, has been addressed. Further evaluation of FFS Goal #2 is presented in Section 5.1, Section 6, and Section 7.2 of this report.

5.0 REMEDIAL ACTION OBJECTIVES AND EVALUATION CRITERIA

Remedial action objectives (RAOs) are media-specific goals for protecting human health and the environment. The results of both the HHRA and ERS prepared for the site (K/J 2012a/2012b) did not indicate any potential exposure pathways of unacceptable risk from site related contaminants in soil and groundwater.

However, LNAPL has been periodically observed and previously reported sampling results have indicated that exposure point concentrations for diesel range hydrocarbons and heavy oil range hydrocarbons in monitoring wells MW-3 and MW-7 are greater than the water solubility limits, which indicate the potential presence of free product.

5.1 Identification of Remedial Action Objectives

RAOs are site- and media-specific goals for protecting human health and the environment. They establish the framework for developing and evaluating remedial action alternatives. The following RAO has been developed for the site:

- **Hot Spots of Contamination:** Treat hot spots of contamination in media other than water by reducing their concentration, volume, or mobility to the extent practical. This RAO was developed to address the control or elimination of separate phase hydrocarbons as indicated by FFS Goal #2 (Section 1.1). Evaluation of this RAO is further addressed in Section 7.2.

5.2 Basis for Evaluation Criteria

In accordance with OAR 340-122-0085(4), the remedial alternatives were evaluated based on protectiveness, feasibility, and the extent to which the alternative addresses hot spots of contamination. Protectiveness was determined using the standards in OAR 340-122-0040. The protective standards include:

- Ability of remedial action to protect present and future public health, safety, and welfare and the environment;
- Ability of remedial action to achieve acceptable risk levels;
- Ability of remedial action to prevent or minimize future releases and migration of contaminants in the environment; and
- Provisions for long-term care and management, as necessary and appropriate, including but not limited to monitoring, operation, maintenance, and periodic review.

Feasibility of a remedial action is evaluated by balancing remedy selection factors contained in OAR 340-122-0090(3) and (4). These balancing factors are summarized as follows:

- Effectiveness: ability and timeframe of remedial action to achieve protection through eliminating and managing risk;
- Long-term reliability: reliability of a remedial action to eliminate or manage risk and associated uncertainties;
- Implementability: ease or difficulty of implementing remedial action, considering technical, mechanical, and regulatory requirements;

- Implementation risk: potential impacts to workers, the community, and the environment during implementation; and
- Reasonableness of cost: includes capital costs, operations and maintenance, and periodic review, and costs are evaluated based on net present value of remedial action.

6.0 SCREENING AND DEVELOPMENT OF REMEDIAL ACTION ALTERNATIVES

This section describes the development of the remedial action alternatives (RAAs) that will be evaluated in detail. The alternative development process includes identifying the general response actions and corresponding technologies; screening technologies to eliminate technologies that are clearly not feasible; and assembling remaining technologies into a list of specific remedial action alternatives.

6.1 Technology Screening

Table 5 provides an initial screening and evaluation of technologies potentially applicable for addressing the RAOs and residual LNAPL.

The technology evaluation was performed utilizing the guidance document entitled, *Evaluating LNAPL Remedial Technologies for Achieving Project Goals*, dated December 2009, and prepared by the Interstate Technology and Regulatory Council LNAPLs Team (ITRC).

As specified by OAR 340-122-0085(2), the following general response actions were identified that will satisfy the RAOs:

- **No action:** A No Action alternative serves as a baseline for comparison with other potential remedial actions.
- **Institutional Controls:** Institutional controls are legal or administrative measures or actions that reduce exposure to hazardous substances.
- **Engineering Controls:** Engineering controls are physical measures that prevent or minimize exposure to hazardous substances or reduce the mobility or migration of hazardous substances.
- **Treatment:** Treatment is the permanent and substantial elimination or reduction in the toxicity, mobility, or volume of hazardous substances by using in-situ or ex-situ remedial technologies.
- **Excavation and off-site disposal**
- **Any combination of the above, as appropriate:** Typically, remedies will include components of several general response actions.

The screening results of each general response action remedy technology are presented on Table 5 along with comments that assess how the remedy may or may not apply at the site. Each screening criteria was given a rating of Low (L), Medium (M) or High (H). This rating is self-explanatory for the criteria of Effectiveness and Cost. For the criteria of Implementability, a Low (L) rating indicates that the potential remedy is difficult to implement while a High (H) rating indicates the potential remedy would be relatively easy to implement. The comments provided on Table 5 indicate why certain remedy technologies were retained while others were not. Retained remedial technologies are described in the next section.

6.3 Retained Remedial Action Alternatives

Following the evaluation and initial technology screening, presented on Table 5, the following remedial action alternatives (RAAs) were retained for the detailed evaluation:

- **Alternative 1 – No Action:** Does not include a remediation technology or institutional control and is retained as a baseline for comparison.
- **Alternative 2 – Surfactant Enhanced Subsurface Remediation (SESR):** A surfactant is injected that increases LNAPL solubilization and LNAPL mobility. The dissolved phase and LNAPL are then recovered via hydraulic recovery.
- **Alternative 3 – Excavation:** Excavation of LNAPL contaminated soils with off-site disposal.

6.4 Description of Remedial Action Alternatives

This section presents a detailed description of the retained remedial action alternatives developed above and their estimated cost. Section 7 presents a detailed evaluation of each alternative.

6.4.1 Alternative 1: No Action

Under this alternative no actions would be taken.

Cost. This alternative would have no associated costs.

6.4.2 Alternative 2: Surfactant Enhanced Subsurface Remediation with Institutional Control

Description. Surfactant Enhanced Subsurface Remediation (SESR) was designed to achieve recovery of residual LNAPL and dissolved-phase diesel from the subsurface at the Site. Initially, a pilot study would be conducted to assess the effectiveness of this alternative and collect data to design a full scale approach should the pilot test prove effective.

It should be noted however, that SESR would only be able to be utilized for remediation in the vicinity of MW-7 on the Former Sunset site. Based on the current operations at the Pac Pride site and current location of the USTs, the area needed to install injection wells in addition to the assumed depth of influence from the injected surfactants prevent utilizing this technology for remediation in the vicinity of MW-3. Therefore SESR, as discussed in this section, only applies to contamination found in the vicinity of monitoring well MW-7. However, as noted in Section 8.0 below, it is assumed that some further remediation in the vicinity of MW-3 would take place during any future redevelopment of the Pac Pride site.

- **Pilot Test.** Prior to remediation activities, a pilot test would be conducted to evaluate whether this approach can successfully remove subsurface diesel mass within a localized area at the site in the vicinity of MW-7. The pilot test would involve the injection of 500 to 800 gallons of a 5% to 7% non-ionic surfactant solution into existing monitoring wells MW-7, MW-9, and MW-16. The monitoring wells would be surged at intervals during the surfactant injection to better contact with submerged fuel-saturated soils and better mobilization/capture of sorbed fuel constituents. After 12-24 hours, groundwater would be extracted from the same set of monitoring wells. The total volume of groundwater

extracted from each monitoring well will be greater than the total volume of surfactant solution injected. Extracted groundwater will be disposed of to an appropriate treatment facility.

- **Full Scale Enhanced Subsurface Remediation.** Once pilot testing activities have been conducted full scale enhanced subsurface remedial activities would be designed and implemented. It is anticipated that these activities would consist of the following:
 - **Well Installation.** Injection and extraction wells would need to be installed in order to conduct a full scale enhanced subsurface remedial action. Based on knowledge of similar projects, FAI estimates that 3-4 injection and 3-4 extraction wells would need to be installed. The injection wells would be installed upgradient and to the west of monitoring well MW-7. The extraction wells would be installed downgradient and to the east of monitoring wells MW-9, MW-15, and MW-16. The estimated locations of the injection/extraction wells are presented on Figure 6.
 - **Offsite Access Permitting.** Installation of the offsite extraction wells would necessitate property access permitting from both Riverpoint Condominiums and the City of Portland.
 - **Injection/Extraction Events.** Full scale injection-extraction events would consist of injection of non-ionic surfactant solution into the upgradient injection wells, and extraction of groundwater from the downgradient extraction wells. An injection-extraction event would likely occur over a week long period. Extracted groundwater would be disposed of at a suitable treatment facility. In addition to injection and extraction of the surfactant solution, biological amendments may also be injected at the end of the surfactant extraction period to stimulate biological degradation of residual contaminants.
 - **Groundwater Monitoring.** Following injection/extraction events, groundwater monitoring of wells MW-7, MW-9, MW-15, and MW-16 will be conducted to assess the effectiveness of the enhanced subsurface remedial actions.
 - **Additional Injection/Extraction Events.** FAI anticipates that a total of four to six injection/extraction events will need to be conducted to achieve a reduction in residual LNAPL and reduction of diesel in groundwater for the area around monitoring well MW-7. Injection/extraction events with corresponding groundwater monitoring events would be conducted on a quarterly basis until groundwater sample analytical data indicated a reduction of LNAPL, diesel, and achievement of RAO's.
 - **Post-Remedial Groundwater Monitoring.** Once goals have been achieved following injection/extraction remedial events, groundwater monitoring of monitoring wells MW-7, MW-9, MW-15, and MW-16 would be conducted for a total of four consecutive quarters to monitor the potential for rebound of groundwater contaminants and to insure RAOs are met following termination of SESR.

Cost. An estimated \$394,794 (NPV) would be spent to implement Alternative 2. The estimated cost detail for Alternative 2 is presented on Table 6.

6.4.3 Alternative 3: Excavation

Description. This alternative was designed to utilize excavation to remove residual LNAPL and reduce concentrations of benzo(a)pyrene in groundwater in the areas around monitoring wells MW-3 and MW-7. This alternative assumes that two separate excavations would be conducted in these areas. The following presents a summary of the activities required to complete this alternative

- **Excavation in the Area of Monitoring Well MW-7.**
 - **Monitoring Well Decommissioning.** It is assumed that existing monitoring wells MW-7, MW-13, and MW-14 would need to be decommissioned prior to initiation of excavation activities. Decommissioning would be accomplished via over-drilling.
 - **Excavation.** Based on investigative data collected to date, FAI estimates that a total volume of less than 20 cubic yards (yd³) soil impacted with residual LNAPL are located within the vicinity of MW-7. However, since no heavily impacted soils were encountered during the remedial investigation, this amount is an estimate. Impacted and non-impacted soils will be segregated and stockpiled on Site. The proposed excavation area is presented on Figure 7.
 - **Shoring.** The proposed excavation would be completed to the groundwater interface, which has historically ranged between 16 and 20 feet. Due to the depth to which the proposed excavation would be completed to and the limits imposed by surface features, the excavation would need to be shored. The shoring task would involve engineering design and construction of the shoring during excavation activities.
 - **Soil Disposal.** Waste characterization profiling of impacted soils would be conducted. Impacted soils would then be transported to and disposed of at Subtitle D Landfill.
 - **Confirmation Sampling.** Confirmation sampling of the excavation sidewalls and bottom would be conducted to insure that impacted soils were excavated to the maximum extent practicable.
 - **Excavation Backfill and Site Restoration.** Site restoration activities including backfill and compaction of the excavation, followed by restoration of the excavation work area to its previous state would be completed following all excavation and confirmation sampling activities.
- **Excavation in the Area of Monitoring Well MW-3.**
 - **Monitoring Well Decommissioning.** Existing monitoring wells MW-2R and MW-3 would need to be decommissioned prior to initiation of excavation activities. Decommissioning would be accomplished via over-drilling.
 - **UST System Decommissioning.** Because of the proximity of MW-3 to the existing USTs at the site, it is assumed that the entire existing UST system at the Pacific Pride station would be decommissioned prior to excavation activities. The decommissioning would include the removal of all four USTs, piping, dispenser

islands, canopy, oil-water separator, stormwater catch basins, and any other associated infrastructure.

- **Excavation.** Based on the limited soil investigative data collected to date at the site, FAI estimates that a total volume of about 400 yd³ of impacted soils will require excavation in the area of monitoring well MW-3 and the former UST excavation pit. Since only limited soil data from the area of the USTs and MW-3 is available a conservative estimate based on 25% of the total estimated volume of the excavation (1,600 yd³) was used to determine this quantity. Impacted and non-impacted soils will be segregated and stockpiled on Site. The proposed excavation area is presented on Figure 7.
 - **Shoring.** The proposed excavation would be completed to the groundwater interface, which has historically ranged between 16 and 20 feet. Due to the depth to which the proposed excavation would be completed to and the limits imposed by surface features, the excavation would need to be shored. The shoring task would involve engineering design and construction of the shoring during excavation activities.
- **Soil Disposal.** Waste characterization profiling of impacted soils would be conducted. Impacted soils would then be transported to and disposed of at Subtitle D Landfill.
- **Confirmation Sampling.** Confirmation sampling of the excavation sidewalls and bottom would be conducted to insure that impacted soils were excavated to the maximum extent practicable.
- **UST System Replacement and Site Restoration.** In order to permit continued operations at the Pac Pride site a UST system, similar to the one removed would be installed after excavation activities. Any other areas impacted from excavation activities would also be restored to previously existing conditions.
- **Lost Revenue Costs.** Since the Pac Pride is a currently operating card lock fueling facility which is not owned or operated by Sunset Fuel, the costs presented on Table 8 also include the reimbursement of costs associated with lost revenue due to the period of time which the Pacific Pride station would be non-operational.

Cost. An estimated \$640,686 (NPV) would be spent to implement Alternative 3. The estimated cost detail for Alternative 3 is presented on Table 7.

7.0 EVALUATION OF REMEDIAL ACTION ALTERNATIVES

The criteria discussed in Section 5 were used to evaluate the remedial action alternatives which were identified in Section 6. The review process considered whether an alternative would be protective, evaluated the five remedy-balancing factors and their sub criteria, and then determined whether an alternative would meet the RAO's. Finally, the alternatives were compared against each other to determine their relative ranking for each remedy selection criterion. The alternative that would be protective, that compares most favorably against the remedy balancing factors, and that meets the RAO's is recommended for implementation in Section 8.

7.1 Evaluation Criteria

The criteria identified below were used to evaluate the remedial action alternatives listed in Section 6 and to select the preferred remedial action alternative.

7.2 Evaluation of Protectiveness

As defined in Section 5.2, an alternative will be considered protective if it 1) protects present and future public health, safety, and welfare and the environment; 2) achieves acceptable risk levels; 3) prevents or minimizes future releases and migration of contaminants in the environment; and 4) provides provisions for long-term care and management, as necessary and appropriate, including but not limited to monitoring, operation, maintenance, and periodic review.

Alternative 1 – No Action: the no action alternative would not reduce or control risk at the site in any manner.

As discussed in Section 4.2.2 and 4.2.3, the known age of the releases and the fact that the source of the release in both the vicinity of MW-3 and MW-7 has been stopped, as well the results of recent sampling methodology assessments (Appendix A and B) indicates that LNAPL observed at the site is residual and not mobile. This observation along with the fact that dissolved concentrations of associated VOCs and PAHs are below applicable risk levels indicates that LNAPL in the vicinity of MW-3 and MW-7 has been reduced by previous interim remedial actions to the extent practical.

As presented in Appendix A and Appendix B, the sampling methodology assessments of groundwater in monitoring wells MW-3 and MW-7 indicates that previously reported concentrations of diesel and PAHs (including COPC benzo(a)pyrene) were historically biased high due to samples which contained non-dissolved petroleum and petroleum sorbed to sediment in groundwater samples.

Alternative 1 is protective.

Alternative 2 – Surfactant Enhanced Subsurface Remediation with Institutional Control:

This alternative would attempt to abate LNAPL beyond seasonal hydraulic recovery and reduce groundwater concentrations of TPH-Diesel and associated VOCs and PAHs in the vicinity of MW-7.

As discussed in Section 6, due to access and the current operations at the Pac Pride site, this alternative would not be feasible for remediation in the vicinity of MW-3. However, as presented in the above discussion for Alternative 1, the sampling methodology assessments indicate that LNAPL is residual and that previously reported concentrations of diesel range

hydrocarbons and PAHs (including COPC benzo(a)pyrene) were biased high due to samples which contained non-dissolved petroleum and petroleum sorbed to sediment.

Alternative 2 is protective.

Alternative 4 – Excavation: This alternative would attempt to remove residual LNAPL in the vicinity of MW-3 at the Pac Pride site and MW-7 at the Former Sunset site.

Alternative 4 is protective.

7.3 Evaluation of Remedy Balancing Factors

Each remedial action alternative was evaluated against the remedy balancing factors defined in Section 5.2. A numerical scoring system was developed to facilitate direct alternative comparison. Table 8 presents each remedial action alternative along with a relative rating of the remedy balancing factors (effectiveness, long-term reliability, implementability, implementation risk, and reasonableness of cost). These ratings range from 0 (to no extent meets criterion) to 4 (completely meets criterion). In some cases, because the incremental differences between the various alternatives were quite small, ratings other than whole number integers were applied. In this way, the magnitude of the differences is accurately reflected. The ratings were then summed and averaged. This approach equally weights each criterion.

The rest of this section describe each alternative's ability to meet the remedy balancing factors and presents the reasoning for the scores assigned for comparison.

7.3.1 Alternative 1: No Action

Effectiveness. Alternative 1 was given a rating of 4 for effectiveness. The sampling methodology assessments indicate that residual LNAPL in the vicinity of MW-3 and MW-7 poses no risk and groundwater COPCs (i.e. benzo(a)pyrene) are below applicable RBCs.

- **Magnitude of Residual Risk.** Alternative 1 would have no residual risk because residual LNAPL the vicinity of MW-3 and MW-7 poses no risk and groundwater COPCs are below applicable RBCs for the site.
- **Management of Residual Risk.** There is no residual risk.
- **Ability of Treatment Technologies to Meet Treatment Objectives.** Alternative 1 would not include any treatment technologies.
- **Time to Achieve RAOs.** Alternative 1 would achieve RAOs immediately.

Long-Term Reliability. Alternative 1 was given a rating of 4 for long-term reliability. The RAOs established for the site are met because any residual LNAPL in the vicinity of MW-3 and MW-7 is reliably contained. This is evident based on a number of factors including:

- The age of the releases at both the Pac Pride and Former Sunset sites.
- Both releases have been stopped.
- The lack of measurable product in the wells (i.e. the absence of a significant LNAPL head).

- LNAPL is no longer hydraulically recoverable in MW-3 and only seasonally recoverable in MW-7.
- Dissolved concentrations of VOCs and PAHs are below applicable risk based criteria for groundwater at the site.
- The sampling methodology assessments (Appendix A and Appendix B) indicate that concentrations of diesel range hydrocarbons in these wells are below concentrations which would be indicative of the presence of “free product”.

Based on these factors and as discussed in Section 4.3, there is no lateral migration of residual LNAPL in the vicinity of MW-3 and MW-7. This is based on evidence of retaining capillary forces for residual LNAPL and the lack of driving head since the source has been eliminated.

Implementability. Alternative 1 is easily implementable, therefore it was given a rating of 4 for implementability.

Implementation Risk. Alternative 1 was given a rating of 4 for implementation risk. Alternative 1 has no implementation risk because no work is required to implement this alternative.

Reasonableness of Cost. Alternative 1 meets the threshold criterion of protectiveness. Since there is no cost to implement this alternative and the alternative meets the RAOs, Alternative 1 was given a rating of 4 for reasonableness of cost.

7.3.2 Alternative 2: Surfactant Enhanced Subsurface Remediation with Institutional Control

Effectiveness. Alternative 2 was given a rating of 4 for effectiveness. Since residual LNAPL in the vicinity of MW-3 and MW-7 is reliably contained, Alternative 2 is effective at eliminating the risk from contact with COC benzo(a)pyrene in groundwater during potential excavation and trenching activities through treatment and institutional controls that are used to manage the risk.

- **Magnitude of Residual Risk.** Alternative 2 would have residual risk that meets DEQ guidance for management of risk through procedures which address dermal contact with groundwater during potential excavation and trenching activities.
- **Management of Residual Risk.** Since Alternative 2 is assumed to eliminate risk in the vicinity of MW-7, residual risk in the vicinity of MW-3 would be managed through the use of institutional controls to address potential groundwater exposure during excavation and trenching activities.
- **Ability of Treatment Technologies to Meet Treatment Objectives.** It is assumed that treatment in the vicinity of MW-7 would reduce groundwater concentrations of COC benzo(a)pyrene to below applicable risk levels. However, an institutional control would be needed to address potential groundwater exposure in the vicinity of MW-3.
- **Time to Achieve RAOs.** Alternative 2 would achieve the RAOs immediately in the vicinity of MW-3 at the Pac Pride site through the use of institutional controls which would address dermal contact with groundwater during potential excavation and trenching activities. Since it is assumed that this remedy would reduce groundwater

concentrations of COC benzo(a)pyrene in the vicinity of MW-7 to below applicable risk levels, RAOs would be achieved immediately following application of this remedy.

Long-Term Reliability. Since Alternative 2 meets the RAOs, it was given a rating of 4 for long-term reliability. It should be noted that it is unknown as to the ability of this alternative to eliminate LNAPL in the vicinity of MW-7 since remaining impacts are known to be residual. Also since, this alternative is not applicable to the area in the vicinity of MW-3, any remaining LNAPL would remain in place. However, as previously discussed, any remaining LNAPL left in place following treatment is reliably contained, which is based on the lack of driving head and the absence of dissolved constituents above risk criteria.

Implementability. Alternative 2 was given a rating of 3 for implementability.

For remediation in the vicinity of MW-7, this alternative would disrupt operations for the current property owners (Grand and Benedicts) and off site properties which are the City of Portland and River Point Condominiums. In addition, off site property permits and access would need to be obtained for installation and access to the extraction wells during the multiple injection events.

The institutional control in the vicinity of MW-3 at the Pac Pride site to address dermal contact with groundwater during potential excavation and trenching activities is easily implementable.

Implementation Risk. Alternative 2 was given a rating of 3.5 for implementation risk.

Since this alternative includes injection in the vicinity of MW-7 and extraction at downgradient off site locations, a minor risk associated with this alternative is the mobilization of groundwater contaminants, including residual LNAPL and benzo(a)pyrene, onto off site property. In the absence of any treatment, groundwater leaving the site currently meets acceptable risk levels.

There is no risk of implementing the institutional control to address potential groundwater exposure in the vicinity of MW-3.

Reasonableness of Cost. Alternative 2 meets the threshold criterion of protectiveness and achieves RAO's. However, implementation of this alternative has a very low benefit to high cost relationship.

The limited and infrequent in-well LNAPL thickness observed in MW-7 is indicative that LNAPL is only seasonably recoverable and the majority of remaining impacts are residual. Therefore, this remedy may only be useful at reducing groundwater concentrations of diesel and associated VOC and PAH constituents. Since only concentrations of benzo(a)pyrene in MW-7 exceed applicable risk, and groundwater leaving the site meets all risk criteria, this alternative does not provide any benefits protective of environmental or human health.

In addition, based on current operations and subsurface conditions at the Pac Pride site, the area in the vicinity of MW-3 could not be treated using this alternative. An institutional control would still need to be prepared for the site until the current owners (PetroCard) decide to upgrade or decommission the USTs system.

Because of the low benefit to high cost of this alternative, it was given a rating of 1 for reasonableness of cost.

7.3.3 Alternative 3: Excavation

Effectiveness. Alternative 3 was given a rating of 4 for effectiveness. Alternative 3 would be effective at eliminating residual LNAPL and eliminating the risk from contact with COC benzo(a)pyrene in groundwater during potential excavation and trenching activities in the vicinity of both MW-3 and MW-7. However, residual LNAPL in the vicinity of MW-3 and MW-7 poses no current risk.

- **Magnitude of Residual Risk.** Alternative 3 would have residual risk that meets DEQ guidance for management of risk through procedures which address dermal contact with groundwater during potential excavation and trenching activities. It would also effectively eliminate residual LNAPL in the vicinity of MW-3 and MW-7.
- **Management of Residual Risk.** Alternative 3 manage the residual risk through excavation/removal.
- **Ability of Treatment Technologies to Meet Treatment Objectives.** It is assumed that excavation of residual LNAPL in the vicinity of MW-3 and MW-7 would reduce groundwater concentrations of COC benzo(a)pyrene to below applicable risk levels.
- **Time to Achieve RAOs.** It is assumed that Alternative 3 would achieve the RAOs immediately following implementation.

Long-Term Reliability. Since Alternative 3 meets the RAOs by removing residual LNAPL, it was given a rating of 4 for long-term reliability.

Implementability. Alternative 3 was given a rating of 2.5 for implementability.

For remediation in the vicinity of MW-7, this alternative would disrupt operations for the current property owners (Grand and Benedicts). In addition, excavation in the vicinity of MW-3 would effectively shut down the Pac Pride site for a considerable length of time.

Implementation Risk. Alternative 3 was given a rating of 4 for implementation risk. Alternative 3 has no implementation risk because it would effectively remove residual LNAPL and therefore reduce concentrations of COC's in groundwater.

Reasonableness of Cost. Alternative 3 meets the threshold criterion of protectiveness and achieves RAO's. However, as with Alternative 2, implementation of this alternative has a very low benefit to high cost relationship.

As discussed throughout this FFS, the majority of remaining LNAPL impacts in the vicinity of MW-3 and MW-7 are residual. Even though excavation is generally the preferred and relatively only option for treating residual LNAPL, since only concentrations of benzo(a)pyrene in MW-3 and MW-7 exceed applicable risk, and groundwater leaving the site meets all risk criteria, in addition to the negative impacts this alternative would have to business for both Grand and Benedicts and PetroCard, this alternative also does not provide any benefits protective of environmental or human health.

Because of the low benefit to high cost of Alternative 3, it was given a rating of 1 for reasonableness of cost.

8.0 RECOMMENDED REMEDIAL ACTION ALTERNATIVE

Alternative 1 (No Action) is the recommended remedial action alternative. Alternative 1 meets the RAOs established for the site. As presented in Table 8, Alternative 1 is protective, meets the preference for treating hot spots of contamination criteria (i.e. residual LNAPL is reliably contained), and has the highest remedy balancing factor average. Alternative 1 also rated highest under the cost reasonableness criteria, indicating that the benefit-to-cost ratio is maximized under this alternative.

In comparison:

- Alternative 2 has a very low benefit to high cost relationship. While this alternative would undoubtedly reduce diesel concentrations in the vicinity of MW-7 and likely treat residual LNAPL, since residual LNAPL is not mobile and groundwater COCs at the site are currently within risk criteria, the high cost of this alternative outweighs any potential benefits from its implementation. In addition, based on the current operations and location of the USTs at the Pac Pride site, this alternative would not be able to be implemented in the vicinity of MW-3.
- Alternative 3 also has a very low benefit to high cost relationship. Alternative 3 would treat residual LNAPL in the vicinity of MW-3 and MW-7 through removal, although at a very high cost. As with Alternative 2, since residual LNAPL is not mobile and groundwater COCs at the site are currently within risk criteria, the high cost of Alternative 3 outweighs any potential benefits from its implementation. In addition, this alternative would disrupt operations for a considerable amount of time at both Pac Pride and Grand Benedict's.
- While Alternatives 2 and 3 meet RAO's, these alternatives do not provide any further benefits protective of environmental or human health.

This weight of evidence approach results in Alternative 1 being the most appropriate alternative for the site.

It should also be noted that, based on previous discussions with DEQ, it is assumed that some further remediation at the Pac Pride site (in the vicinity of MW-3) would take place during any future redevelopment of this property. Discussions have indicated that remedial activities at the site would include the excavation of petroleum contaminated soil, in addition to the decommissioning of the USTs system and removal of associated structures.

Since the source of contaminants in groundwater from the Pac Pride site appears to be soil in the area of the USTs, it is anticipated that removal of the USTs and contaminated soil would reduce groundwater contamination within this area.

9.0 RESIDUAL RISK ASSESSMENT

In accordance with OAR 340-122-084(4), a Residual Risk Assessment (RRA) was prepared for the recommended alternative. The purpose of the RRA is to estimate the risks to human health and the environment that may be present after the preferred remedial action alternative is implemented.

Implementation of the recommended remedial action alternative, Alternative 1 (No Action), would not manage risk because there is no risk to human health or the environment at the site. As has been detailed throughout the FFS, the sampling methodology assessments, which were completed in December 2012 and May 2013 (Appendix A and Appendix B), indicate that previous groundwater sampling methodologies utilized at the site were the basis for reported high concentrations of diesel and PAHs historically observed in both monitoring wells MW-3, located at the Pac Pride, and MW-7, located at the Former Sunset site.

The results of the sampling methodology assessments also indicate that groundwater COPCs (i.e. benzo(a)pyrene) are below the applicable RBCs established for the site, and diesel concentrations are not indicative of “free product” in either monitoring well MW-3 or MW-7. In addition, any residual LNAPL in the vicinity of MW-3 and MW-7 is reliably contained and there is no continued lateral migration of residual LNAPL since the source of contaminants in both areas has been eliminated.

Any questions regarding the information presented in this report are welcome and should be referred to the undersigned. Thank you for the opportunity to be of service in this matter.

Feige & Associates, Inc.

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Date: 8/8/13

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LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. FAI is not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services.

FAI does not warrant the accuracy of information supplied by third-parties, nor the use of segregated portions of this report. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

This Feasibility Study report relies on information generated by previous environmental assessments conducted by FAI for the client. The purpose of an environmental assessment is to reasonably evaluate the potential for or actual impact of past practices on a given site area. In performing an environmental assessment, it is understood that a balance must be struck between a reasonable inquiry in the environmental issues and an exhaustive analysis of each conceivable issue of potential concern. The following paragraphs discuss the assumptions and parameters under which such an opinion is rendered.

No investigation is thorough enough to exclude the presence of hazardous materials at a given site. If hazardous conditions have not been identified during the assessment, such a finding should not therefore be construed as a guarantee of the absence of such materials on the site, but rather as the result of the services performed with the scope, limitations, and cost of the work performed.

Environmental conditions may exist at the site that cannot be identified by visual observations or field methods utilized under the environmental assessment scope of work. Where subsurface work was performed, professional opinions were based in part on interpretation of data from discrete sampling locations that may not represent actual conditions at sampled locations.

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TABLES

Table 1 - Historic Soil Analytical Results

Sample ID	Sample Date	Sample Depth (feet)	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx		EPA 6020
			(Gas, Diesel, Oil)	Gasoline Range (mg/kg)	Diesel Range (mg/kg)	Heavy Oil Range (mg/kg)	Lead (mg/kg)
BH-1	9/2/1994	11	Gas, Diesel	-	-	-	-
BH-1	9/2/1994	13	-	2200	-	-	-
BH-2	9/2/1994	2	Gas, Diesel	-	-	-	-
BH-3	9/2/1994	5	-	190	-	-	-
BH-3	9/2/1994	10	-	ND	-	-	-
BH-4	9/2/1994	6	-	ND	-	-	-
BH-4	9/2/1994	12	-	12	-	-	-
South Tank East	9/23/1995	3.5	Diesel	-	1690	-	-
South Tank East	9/23/1995	12	ND	-	-	-	-
South Tank SE	9/23/1995	10	Diesel	-	101	-	-
East Farlot Line	9/23/1995	15	ND	-	-	-	-
Spoil Pile	9/23/1995	NA	Diesel	-	445	-	-
MW-1	5/28/1996	7.5	ND	-	-	-	-
MW-1	5/28/1996	13	ND	-	-	-	-
MW-1	5/28/1996	17.5	Diesel	-	410	-	-
MW-1	5/28/1996	23.5	ND	-	-	-	-
MW-1	5/28/1996	27.5	ND	-	-	-	-
MW-2	5/28/1996	7.5	ND	-	-	-	-
MW-2	5/28/1996	12.5	ND	-	-	-	-
MW-2	5/28/1996	17.5	ND	-	-	-	-
MW-3	5/29/1996	7.5	ND	-	-	-	-
MW-3	5/29/1996	13	ND	-	-	-	-
MW-3	5/29/1996	17.5	Diesel	-	273	-	-
MW-3	5/29/1996	22	ND	-	-	-	-
MW-4	8/25/1997	6	ND	-	-	-	-
MW-4	8/25/1997	11	ND	-	-	-	-
MW-5	8/25/1997	6	ND	-	-	-	-
MW-5	8/25/1997	11	ND	-	-	-	-
MW-5	8/25/1997	15.5	Diesel	-	318	-	-
MW-6	8/25/1997	6	ND	-	-	-	-
MW-6	8/25/1997	10.5	ND	-	-	-	-
MW-6	8/25/1997	14	ND	-	-	-	-
B-7	12/18/2001	15	-	-	<25	<100	-
B-7	12/18/2001	20	-	-	<25	<100	-
B-8	12/18/2001	15	-	-	<25	<100	-
B-8	12/18/2001	25	-	-	<25	<100	-
B-9	12/18/2001	15	-	-	<25	<100	-
B-9	12/18/2001	20	-	-	473	<100	-
B-9	12/18/2001	25	-	-	<25	<100	-
B-10	12/18/2001	10	-	-	<25	<100	-
B-10	12/18/2001	15	-	-	<25	<100	-
B-10	12/18/2001	20	-	-	<25	<100	-
B-11	12/18/2001	15	-	-	<25	<100	-
B-11	12/18/2001	20	-	-	<25	<100	-

Table 1 - Historic Soil Analytical Results

Sample ID	Sample Date	Sample Depth (feet)	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx		EPA 6020
			(Gas, Diesel, Oil)	Gasoline Range (mg/kg)	Diesel Range (mg/kg)	Heavy Oil Range (mg/kg)	Lead (mg/kg)
SBM-1-9	1/15/2006	9	-	-	988	<33.8	-
SBM-1-14	1/15/2006	14	-	-	185	<34.4	-
SBM-1-17	1/15/2006	17	-	-	506	<34.8	-
SBM-2-15	1/15/2006	15	-	-	<17.7	<35.3	-
SBM-2-17	1/15/2006	17	-	-	73.9	<26.5	-
SBM-3-20	1/15/2006	20	-	-	<13.5	<27.0	-
SBM-4-18	1/15/2006	18	-	-	<13.5	<26.9	-
SBM-5-17	1/15/2006	17	-	-	<17.9	<35.9	-
SBM-5-19	1/15/2006	19	-	-	101	<27.0	-
SBM-6-16	1/15/2006	16	-	-	<17.2	<34.4	-
SBM-8-14	1/15/2006	14	-	-	<16.9	<33.8	-
SBM-10-13	1/15/2006	13	-	-	<14.1	120	-
SBM-10-15	1/22/2006	15	-	-	<14.5	124	-
SBM-12-15	1/22/2006	15	-	-	<14.3	<28.6	-
SBM-15-14	1/22/2006	14	-	-	<14.1	<28.1	-
SBM-16-14	1/22/2006	14	-	-	<14.6	<29.2	-
MW-1R-12	4/23/2008	12	-	<4.22	<31.8	<63.5	-
MW-1R-18	4/23/2008	18	-	75.2	270	<62.5	-
MW-2R-8	4/23/2008	8	-	<5.36	<35.4	<70.8	-
MW-2R-10	4/23/2008	10	-	<5.19	<32.9	<65.8	-
MW13-5'	1/25/2011	5	-	<6.93	<37.4	<74.7	-
MW14-3.5'	1/25/2011	3.5	-	22.6	7,920	<5,200	-
MW14-7'	1/25/2011	7	-	<7.42	<39.4	<78.8	-
MW14-20'	1/25/2011	20	-	11.1	138	<67.0	-
MW14-24'	1/25/2011	24	-	<7.73	<42.9	138	-
MW-15b-3'	4/29/2011	3	-	-	39.6	<50.8	-
MW-15b-8'	4/29/2011	8	-	-	<25.0	<50.0	-
MW-15b-13'	4/29/2011	13	-	-	<25.0	<50.0	-
MW-16-8'	4/29/2011	8	-	-	<25.0	<50.0	-
MW-16-17'	4/29/2011	17	-	-	2,090	<179	-
BETANK-9.5'	5/17/2011	9.5	-	<7.79	<27.7	<55.4	-
BWTANK-9.5'	5/17/2011	9.5	-	<7.69	<26.3	<52.6	-
CBTANK-12'	5/17/2011	12	-	<7.61	<28.2	<56.4	-
ETANK-12'	5/17/2011	12	-	17.4	75.4	<55.7	12.6
WTANK-11.5'	5/17/2011	11.5	-	<7.61	<25.0	<50.0	-
GP-1 5-10'	5/26/2011	5-10	ND	-	-	-	-
GP-2 5-10'	5/26/2011	5-10	ND	-	-	-	-
GP-3 5-10'	5/26/2011	5-10	ND	-	-	-	-
GP-4 5-10'	5/26/2011	5-10	Oil	-	<25.0	<50.0	-
GP-5 0-5'	5/26/2011	0-5	-	-	<25.0	207	-
GP-5 5-10'	5/26/2011	5-10	Oil	-	<38.9	696	-
GP-5 10-15'	5/26/2011	10-15	-	-	<25.0	144	-
GP-6 5-10'	5/26/2011	5-10	ND	-	-	-	-
GP-7 5-10'	5/26/2011	5-10	ND	-	-	-	-
GP-8 5-10'	5/26/2011	5-10	ND	-	-	-	-
GP-9 5-10'	5/26/2011	5-10	ND	-	-	-	-
HA-1 3.5'	6/14/2012	3.5	-	-	<25.0	169	-
HA-1 9.0'	6/14/2012	9.0	-	-	<25.0	<50.0	-

Notes:

- mg/kg Milligram per kilogram
- <33.8 Analyte not detected at the method reporting limit indicated
- BOLD** Analyte detected at or above method detection limits
- Not analyzed
- ND Analyte not detected above the method reporting limit

**Table 2 - Historic Groundwater Sample Analytical Results
 Total Petroleum Hydrocarbons**

Well ID	Date Sampled	HCID	NW-TPH-Gx (mg/l)	NW-TPH-Dx (mg/l)	NW-TPH-O (mg/l)	
MW-1	09/18/96	NA	NA	NA	NA	
	06/27/97	NA	NA	NA	NA	
	09/26/97	NA	NA	NA	NA	
	01/15/98	NA	NA	NA	NA	
	05/18/98	NA	NA	NA	NA	
	09/29/98	NA	NA	NA	NA	
	01/06/99	NA	NA	NA	NA	
	01/07/99	NA	NA	NA	NA	
	03/30/99	NA	NA	NA	NA	
	06/30/99	NA	NA	NA	NA	
	09/17/99	NA	NA	NA	NA	
	04/13/00	NA	NA	NA	NA	
	08/01/00	NA	NA	NA	NA	
	09/15/00	NA	NA	NA	NA	
	12/15/00	NA	NA	NA	NA	
	03/07/01	NA	NA	NA	NA	
	09/16/01	ND	NA	NA	NA	
	12/27/01	ND	NA	NA	NA	
	03/15/02	NA	NA	NA	NA	
	06/21/02	NA	NA	NA	NA	
	09/17/02	NA	NA	NA	NA	
	12/18/02	NA	NA	NA	NA	
	03/24/03	NA	NA	NA	NA	
	06/18/03	NA	NA	NA	NA	
	12/29/03	NA	NA	0.508	1.4	<0.50
	12/22/04	NA	NA	NA	NA	NA
	03/25/05	NA	NA	NA	NA	NA
	07/14/05	NA	NA	NA	NA	NA
	10/06/05	NA	NA	NA	NA	NA
	02/08/06	NA	NA	0.0964	2.46	<0.495
09/10/06	NA	NA	0.195	3.65	<0.490	
12/17/06	NA	NA	0.0952	2.7	<0.500	
04/15/07	NA	NA	<0.080	1.84	<0.476	
11/04/07	NA	NA	0.16	1.54	0.955	
MW-1R	08/03/08	NA	0.206	2.91	0.569	
	11/16/08	NA	0.273	2.78	<0.515	
	08/06/10	NA	NA	2.14	<0.500	
	03/24/11	NA	<1.00	3.07	<0.495	

**Table 2 - Historic Groundwater Sample Analytical Results
 Total Petroleum Hydrocarbons**

Well ID	Date Sampled	HCID	NW-TPH-Gx (mg/l)	NW-TPH-Dx (mg/l)	NW-TPH-O (mg/l)	
MW-2	09/18/96	NA	NA	NA	NA	
	06/27/97	NA	NA	NA	NA	
	09/26/97	NA	NA	NA	NA	
	01/15/98	NA	NA	NA	NA	
	05/18/98	NA	NA	NA	NA	
	09/29/98	NA	NA	NA	NA	
	01/06/99	NA	NA	NA	NA	
	01/07/99	NA	NA	NA	NA	
	03/30/99	NA	NA	NA	NA	
	06/30/99	NA	NA	NA	NA	
	09/17/99	NA	NA	NA	NA	
	04/13/00	NA	NA	NA	NA	
	08/01/00	NA	NA	NA	NA	
	09/15/00	NA	NA	NA	NA	
	12/15/00	NA	NA	NA	NA	
	03/07/01	NA	NA	NA	NA	
	09/16/01	ND	NA	NA	NA	
	12/27/01	Gasoline	NA	NA	NA	
	03/15/02	NA	NA	NA	NA	
	06/21/02	NA	NA	NA	NA	
	09/17/02	NA	NA	NA	NA	
	12/18/02	NA	NA	NA	NA	
	03/24/03	NA	NA	NA	NA	
	06/18/03	NA	NA	NA	NA	
	12/29/03	NA	NA	6.6	<0.25	<0.50
	12/22/04	NA	NA	NA	NA	NA
	03/25/05	NA	NA	NA	NA	NA
	07/14/05	NA	NA	NA	NA	NA
	10/06/05	NA	NA	NA	NA	NA
	02/08/06	NA	NA	7.78	1.56	<0.495
09/10/06	NA	NA	3.55	0.741	<0.500	
12/17/06	NA	NA	3.54	0.204	<0.500	
04/15/07	NA	NA	3.2	5.48	0.946	
11/04/07	NA	NA	3.89	1.15	<0.490	
MW-2R	08/03/08	NA	<0.080	<0.272	<0.543	
	11/16/08	NA	0.2	<0.275	<0.549	
	08/06/10	NA	<1.00	NA	NA	
	03/24/11	NA	<1.0	<0.258	<0.515	

**Table 2 - Historic Groundwater Sample Analytical Results
 Total Petroleum Hydrocarbons**

Well ID	Date Sampled	HCID	NW-TPH-Gx (mg/l)	NW-TPH-Dx (mg/l)	NW-TPH-O (mg/l)	
MW-3	09/18/96	NA	NA	NA	NA	
	06/27/97	NA	NA	NA	NA	
	09/26/97	NA	NA	NA	NA	
	01/15/98	NA	NA	NA	NA	
	05/18/98	NA	NA	NA	NA	
	09/29/98	NA	NA	NA	NA	
	01/06/99	NA	NA	NA	NA	
	01/07/99	NA	NA	NA	NA	
	03/30/99	NA	NA	NA	NA	
	06/30/99	NA	NA	NA	NA	
	09/17/99	NA	NA	NA	NA	
	04/13/00	NA	NA	NA	NA	
	08/01/00	NA	NA	NA	NA	
	09/15/00	NA	NA	NA	NA	
	12/15/00	NA	NA	NA	NA	
	03/07/01	NA	NA	NA	NA	
	09/16/01	ND	NA	NA	NA	
	12/27/01	NA	NA	NA	NA	
	03/15/02	NA	NA	NA	NA	
	06/21/02	NA	NA	NA	NA	
	09/17/02	NA	NA	NA	NA	
	12/18/02	NA	NA	NA	NA	
	03/24/03	NA	NA	NA	NA	
	06/18/03	NA	NA	NA	NA	
	12/29/03	NA	NA	15.4	936	<0.50
	12/22/04	NA	NA	NA	NA	NA
	03/25/05	NA	NA	NA	NA	NA
	07/14/05	NA	NA	NA	NA	NA
	10/06/05	NA	NA	NA	NA	NA
	02/08/06	NA	NA	0.777	35.5	<5.0
	09/10/06	NA	NA	1.11	258	10.3
	12/17/06	NA	NA	0.901	13.5	1.12
	04/15/07	NA	NA	0.857	28.8	2.59
	11/04/07	NA	NA	0.69	24.3	3.74
	08/03/08	NA	NA	1.08	412	38
	11/16/08	NA	NA	1.01	273	18.3
10/23/09	NA	NA	NA	560	<50	
04/23/10	NA	NA	NA	360	19.9	
08/06/10	NA	NA	NA	306	14.9	
11/23/10	NA	NA	NA	617	38.2	
03/24/11	NA	NA	1.33	1810	<0.200	
12/14/12**	NA	NA	NA	10.8	1.00	
12/14/12***	NA	NA	NA	7.33	<0.481	
05/10/13	NA	NA	0.936	253	<15.1	
5/10/13**	NA	NA	1.01	8.69	<0.358	

**Table 2 - Historic Groundwater Sample Analytical Results
 Total Petroleum Hydrocarbons**

Well ID	Date Sampled	HCID	NW-TPH-Gx (mg/l)	NW-TPH-Dx (mg/l)	NW-TPH-O (mg/l)	
MW-4	09/18/96	NA	NA	NA	NA	
	09/26/97	NA	NA	NA	NA	
	01/15/98	NA	NA	NA	NA	
	05/18/98	NA	NA	NA	NA	
	09/29/98	NA	NA	NA	NA	
	01/06/99	NA	NA	NA	NA	
	01/07/99	NA	NA	NA	NA	
	03/30/99	NA	NA	NA	NA	
	06/30/99	NA	NA	NA	NA	
	09/17/99	NA	NA	NA	NA	
	04/13/00	NA	NA	NA	NA	
	08/01/00	NA	NA	NA	NA	
	09/15/00	NA	NA	NA	NA	
	12/15/00	NA	NA	NA	NA	
	03/07/01	NA	NA	NA	NA	
	09/16/01	ND	NA	NA	NA	
	12/27/01	ND	NA	NA	NA	
	03/15/02	NA	NA	NA	NA	
	06/21/02	NA	NA	NA	NA	
	09/17/02	NA	NA	NA	NA	
	12/18/02	NA	NA	NA	NA	
	03/24/03	NA	NA	NA	NA	
	06/18/03	NA	NA	NA	NA	
	12/29/03	NA	NA	<0.250	1.7	<0.50
	12/14/04	NA	NA	NA	NA	NA
	03/25/05	NA	NA	NA	NA	NA
	07/14/05	NA	NA	NA	NA	NA
	10/06/05	NA	NA	NA	NA	NA
	02/08/06	NA	NA	0.102	0.992	<0.495
	09/10/06	NA	NA	<0.08	1.63	<0.526
12/17/06	NA	NA	<0.08	1.01	<0.526	
04/15/07	NA	NA	<0.08	1.19	<0.476	
11/04/07	NA	NA	<0.08	6.76	1.26	
08/03/08	NA	NA	<0.08	1.02	<0.500	
11/16/08	NA	NA	<0.08	1.79	<0.510	

**Table 2 - Historic Groundwater Sample Analytical Results
 Total Petroleum Hydrocarbons**

Well ID	Date Sampled	HCID	NW-TPH-Gx (mg/l)	NW-TPH-Dx (mg/l)	NW-TPH-O (mg/l)	
MW-5	09/18/96	NA	NA	NA	NA	
	09/26/97	NA	NA	NA	NA	
	01/15/98	NA	NA	NA	NA	
	05/18/98	NA	NA	NA	NA	
	09/29/98	NA	NA	NA	NA	
	01/06/99	NA	NA	NA	NA	
	01/07/99	NA	NA	NA	NA	
	03/30/99	NA	NA	NA	NA	
	06/30/99	NA	NA	NA	NA	
	09/17/99	NA	NA	NA	NA	
	04/13/00	NA	NA	NA	NA	
	08/01/00	NA	NA	NA	NA	
	09/15/00	NA	NA	NA	NA	
	12/15/00	NA	NA	NA	NA	
	03/07/01	NA	NA	NA	NA	
	09/16/01	ND	NA	NA	NA	
	12/27/01	Diesel	NA	NA	NA	
	03/15/02	NA	NA	NA	NA	
	06/21/02	NA	NA	NA	NA	
	09/17/02	NA	NA	NA	NA	
	12/18/02	NA	NA	NA	NA	
	03/24/03	NA	NA	NA	NA	
	06/18/03	NA	NA	NA	NA	
	12/29/03	NA	NA	<0.250	1.2	<0.50
	12/14/04	NA	NA	NA	NA	NA
	03/25/05	NA	NA	NA	NA	NA
	07/14/05	NA	NA	NA	NA	NA
	10/06/05	NA	NA	NA	NA	NA
	02/08/06	NA	NA	0.0993	2.28	<0.500
	09/10/06	NA	NA	<0.080	1.43	<0.500
12/17/06	NA	NA	0.284	10.8	<0.476	
04/15/07	NA	NA	0.0957	26.7	0.687	
11/04/07	NA	NA	0.122	7.66	1.16	
08/03/08	NA	NA	<0.080	12.6	1.12	
11/16/08	NA	NA	0.089	9.84	0.727	

**Table 2 - Historic Groundwater Sample Analytical Results
 Total Petroleum Hydrocarbons**

Well ID	Date Sampled	HCID	NW-TPH-Gx (mg/l)	NW-TPH-Dx (mg/l)	NW-TPH-O (mg/l)	
MW-6	09/18/96	NA	NA	NA	NA	
	09/26/97	NA	NA	NA	NA	
	01/15/98	NA	NA	NA	NA	
	05/18/98	NA	NA	NA	NA	
	09/29/98	NA	NA	NA	NA	
	01/06/99	NA	NA	NA	NA	
	01/07/99	NA	NA	NA	NA	
	03/30/99	NA	NA	NA	NA	
	06/30/99	NA	NA	NA	NA	
	09/17/99	NA	NA	NA	NA	
	04/13/00	NA	NA	NA	NA	
	08/01/00	NA	NA	NA	NA	
	09/15/00	NA	NA	NA	NA	
	12/15/00	NA	NA	NA	NA	
	03/07/01	NA	NA	NA	NA	
	09/16/01	ND	NA	NA	NA	
	12/27/01	ND	NA	NA	NA	
	03/15/02	NA	NA	NA	NA	
	06/21/02	NA	NA	NA	NA	
	09/17/02	NA	NA	NA	NA	
	12/18/02	NA	NA	NA	NA	
	03/24/03	NA	NA	NA	NA	
	06/18/03	NA	NA	NA	NA	
	12/29/03	NA	NA	<0.25	<0.25	<0.50
	12/14/04	NA	NA	NA	NA	NA
	03/25/05	NA	NA	NA	NA	NA
	07/14/05	NA	NA	NA	NA	NA
	10/06/05	NA	NA	NA	NA	NA
	02/08/06	NA	NA	<0.080	0.48	<0.500
	09/10/06	NA	NA	0.0985	3.83	<0.500
	12/17/06	NA	NA	0.141	36.6	<0.500
	04/15/07	NA	NA	0.0865	4.07	<0.476
11/04/07	NA	NA	<0.080	26.7	<2.48	
08/03/08	NA	NA	<0.080	7.74	<0.505	
11/16/08	NA	NA	<0.080	7.4	<0.521	
03/24/11	NA	NA	<0.100	6.59	0.522	

**Table 2 - Historic Groundwater Sample Analytical Results
 Total Petroleum Hydrocarbons**

Well ID	Date Sampled	HCID	NW-TPH-Gx (mg/l)	NW-TPH-Dx (mg/l)	NW-TPH-O (mg/l)
MW-7	07/26/05	Diesel	NA	807,000*	<0.500
	10/06/05	NA	NA	NA	NA
	02/08/06	NA	0.694	207*	<4.85
	09/10/06	NA	NA	NA*	NA
	12/17/06	NA	1.2	972	<49.5
	04/15/07	NA	1.03	122	<9.52
	11/04/07	NA	1.54	438	29.1
	08/03/08	NA	1.27	481	23.6
	11/16/08	NA	1.31	651	<51.5
	10/23/09	NA	NA	627	<50.0
	04/23/10	NA	NA	1100	<100
	08/06/10	NA	NA	502	<50.0
	11/23/10	NA	NA	903	45.7
	03/24/11	NA	1.2	882	49.3
	12/14/12**	NA	NA	3.50	<0.377
	12/14/12***	NA	NA	3.51	<0.472
05/10/13	NA	0.762	158	<7.62	
5/10/13**	NA	0.187	2.12	<0.377	
MW-8	07/14/05	NA	NA	NA	NA
	10/06/05	NA	NA	NA	NA
	02/08/06	NA	0.455	100	<5.00
	09/10/06	NA	0.865	134	<5.00
	12/17/06	NA	0.693	127	10.5
	04/15/07	NA	0.522	93	6.26
	11/04/07	NA	0.538	41.1	<4.95
	08/03/08	NA	0.758	137	<10.2
	11/16/08	NA	0.983	123	<10.0
	10/23/09	NA	NA	242	11.9
	04/23/10	NA	NA	110	5.85
	08/06/10	NA	NA	198	<50.0
	11/23/10	NA	NA	129	<9.90
03/24/11	NA	0.59	177	11.4	
MW-9	11/16/08	NA	0.41	143	<10.40
	10/23/09	NA	NA	202	7.67
	04/23/10	NA	0.695	20.4	0.918
	08/06/10	NA	0.571	88.2	<9.85
	11/23/10	NA	0.501	144	<9.95
	03/24/11	NA	0.763	173	<10.20

**Table 2 - Historic Groundwater Sample Analytical Results
 Total Petroleum Hydrocarbons**

Well ID	Date Sampled	HCID	NW-TPH-Gx (mg/l)	NW-TPH-Dx (mg/l)	NW-TPH-O (mg/l)
MW-10	04/23/10	NA	0.225	0.477	<0.469
	08/06/10	NA	<0.100	<0.250	<0.500
	11/23/10	NA	<0.100	<0.272	<0.543
	03/24/11	NA	<0.100	0.374	0.863
MW-11	04/23/10	NA	<0.100	<0.236	<0.472
	08/06/10	NA	<0.100	<0.275	<0.549
	11/23/10	NA	<0.100	<0.250	<0.500
	03/24/11	NA	<0.100	<0.250	<0.500
MW-12	04/23/10	NA	<0.100	<0.234	<0.467
	08/06/10	NA	<0.100	<0.255	<0.510
	11/23/10	NA	<0.100	<0.249	<0.498
	03/24/11	NA	<0.100	<0.248	<0.495
MW-13	03/24/11	NA	<0.100	<0.272	<0.543
MW-14	03/24/11	NA	0.749	3.9	<0.694
MW-15	05/05/11	NA	<0.100	0.264	<0.374
MW-16	5/5/2011	NA	1.15	12.5	0.659
RBC _{we} - Construction and Excavation Worker			14	-	-

Notes:

NWTPH-Gx = Total Petroleum Hydrocarbons as Gasoline Range Hydrocarbons by Method NWTPH-Gx

NWTPH-Dx = Total Petroleum Hydrocarbons as Diesel Range Hydrocarbons by Method NWTPH-Dx

NWTPH-O = Total Petroleum Hydrocarbons as Heavy-Oil Range Hydrocarbons by Method NWTPH-Dx

<2.43 = Not detected at the reporting limit indicated

mg/l=milligrams per liter (parts per million (ppm))

NA = sample was not analyzed for this constituent

ND = HCID analysis on this sample indicated no detection of hydrocarbons

BOLD = Analyte detected at or above method detection limits

RBC_{we} = Risk Based Concentration: Groundwater in Excavation (Revised: November 15, 2011)

- = No Risk Based Concentration Listed

* = Free-product present in sample

** = Well was purged and sampled utilizing peristaltic pump and low flow sampling technique.

*** = Sample analyzed for NWTPH-Dx with silica gel cleanup

Table 3 - Historic Groundwater Sample Analytical Results
 Volatile Organic Compounds

Well ID	Date Sampled	Acetone (ug/l)	Benzene (ug/l)	2-Butanone (MEK) (ug/l)	n-Butyl benzene (ug/l)	sec-Butyl benzene (ug/l)	tert-Butyl benzene (ug/l)	Chloro ethane (ug/l)	1,2-Dichloro ethane (ug/l)	cis-1,2-Dichloro ethene (ug/l)	trans-1,2-Dichloro ethene (ug/l)	Ethylbenzene (ug/l)	Isopropyl benzene (ug/l)	Methyl tert-butyl ether (ug/l)	Methylene chloride (ug/l)	Naphthalene (ug/l)	n-Propyl benzene (ug/l)	Tetrachloro ethene (ug/l)	Toluene (ug/l)	Trichloro ethene (ug/l)	1,2,4-Trimethyl benzene (ug/l)	1,3,5-Trimethyl benzene (ug/l)	Total Xylenes (m,p and o) (ug/l)	
MW-1	9/18/1996	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	6/27/1997	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	9/26/1997	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	1/15/1998	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	5/18/1998	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	2	NA	NA	NA	NA	NA	NA	NA	2	NA	NA	NA	10
	9/29/1998	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	1/6/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	1/7/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	3/30/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	6/30/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	71	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	9/17/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	4/13/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	8/1/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	9/15/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	12/15/2000	NA	6	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	3/7/2001	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	1,020	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2
	9/17/2001	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	1	NA	1,700	NA	<10	NA	NA	NA	<1	NA	NA	NA	1
	12/27/2001	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	1,190	NA	NA	NA	NA	NA	<1	NA	NA	NA	<1
	3/15/2002	NA	96	NA	NA	NA	NA	NA	NA	NA	NA	1	NA	692	NA	NA	NA	NA	NA	<1	NA	NA	NA	<1
	6/21/2002	<50.0	24.9	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	2.10	<1.00	<1.00	<1.00	<1.00	648	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	9/17/2002	<50.0	27.5	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	2.07	<1.00	<1.00	<1.00	<1.00	870	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	12/18/2002	<50.0	10.8	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	1.72	<1.00	<1.00	<1.00	<1.00	978	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	3/24/2003	<50.0	10.6	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	2.53	<1.00	<1.00	<1.00	<1.00	898	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<2.00
	6/18/2003	NA	12	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	1,147	NA	<2	<2	NA	<2	NA	<2	<2	<2
	12/29/2003	NA	9	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	<2	1,163	NA	3	<2	NA	<2	NA	<2	<2	<2
	12/22/2004	NA	4	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	<2	868	NA	<2	<2	NA	<2	NA	<2	<2	<2
	3/25/2005	<20	48.5	<10	<2	<2	<2	<2	<6	<2	<3	<2	<1	<2	1,310	<10	2	<3	<2	<1	<2	<2	<2	<2
	7/14/2005	<20	20.2	<10	<2	<2	<2	<2	<6	<2	<3	<2	<1	<2	1,260	<2	<2	<3	<2	<1	<2	<2	<2	<2
	10/6/2005	<20	51	<10	<2	<2	<2	<2	<6	<2	<3	<2	<1	<2	1,331	<10	5	<3	<2	<1	<2	<2	<2	<2
	2/8/2006	<250	<10.0	<100	<50.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<20.0	1,260	<50.0	<20.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<30.0
9/10/2006	<250	50.0	<100	<50.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<20.0	1,200	<50.0	<20.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<30.0	
12/17/2006	<250	13.0	<100	<50.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<20.0	895	<50.0	<20.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<30.0	
4/15/2007	<250	50	<100	<50.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<20.0	1,200	<50.0	<20.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<30.0	
11/4/2007	<20.0	44.9	<10.0	<0.500	0.89	<0.500	<0.500	<10.0	0.86	<0.500	<0.500	<0.500	<0.500	0.650	784	<10.0	<5.00	<0.500	<0.500	<2.00	<0.500	<0.500	<1.5	
MW-1R	8/3/2008	<20.0	98.6	<10.0	<1.00	<1.00	<0.500	<2.00	2.55	<0.500	<0.500	<0.500	2.29	747	<5.00	<5.00	5.55	<0.500	<1.00	<0.500	<2.00	<1.00	<1.5	
	11/16/2008	<20.0	88.6	<10.0	<1.00	<1.00	<0.500	<2.00	0.680	<0.500	<0.500	<0.500	2.10	721	<5.00	<5.00	2.43	<0.500	<1.00	<0.500	<1.00	<1.00	<1.5	
	3/24/2011	<200	12.9	<100	<10.0	<10.0	<10.0	<50.0	<5.00	<5.00	<5.00	<5.00	<10.0	629	<50.0	<20.0	<5.00	<5.00	<10.0	<5.00	<10.0	<10.0	<15.0	

Table 3 - Historic Groundwater Sample Analytical Results
 Volatile Organic Compounds

Well ID	Date Sampled	Acetone (ug/l)	Benzene (ug/l)	2-Butanone (MEK) (ug/l)	n-Butyl benzene (ug/l)	sec-Butyl benzene (ug/l)	tert-Butyl benzene (ug/l)	Chloro ethane (ug/l)	1,2-Dichloro ethane (ug/l)	cis-1,2-Dichloro ethene (ug/l)	trans-1,2-Dichloro ethene (ug/l)	Ethylbenzene (ug/l)	Isopropyl benzene (ug/l)	Methyl tert-butyl ether (ug/l)	Methylene chloride (ug/l)	Naphthalene (ug/l)	n-Propyl benzene (ug/l)	Tetrachloro ethene (ug/l)	Toluene (ug/l)	Trichloro ethene (ug/l)	1,2,4-Trimethyl benzene (ug/l)	1,3,5-Trimethyl benzene (ug/l)	Total Xylenes (m,p and o) (ug/l)	
MW-2	9/18/1996	NA	626	NA	NA	NA	NA	NA	NA	NA	NA	33	NA	NA	NA	NA	NA	NA	32	NA	NA	NA	359	
	6/27/1997	NA	234	NA	NA	NA	NA	NA	NA	NA	NA	16	NA	NA	NA	NA	NA	NA	23	NA	NA	NA	11	
	9/26/1997	NA	508	NA	NA	NA	NA	NA	NA	NA	NA	18	NA	NA	NA	NA	NA	NA	17	NA	NA	NA	23	
	1/15/1998	NA	614	NA	NA	NA	NA	NA	NA	NA	NA	44	NA	NA	NA	NA	NA	NA	57	NA	NA	NA	66	
	5/18/1998	NA	216	NA	NA	NA	NA	NA	NA	NA	NA	53	NA	NA	NA	NA	NA	NA	24	NA	NA	NA	82	
	9/29/1998	NA	279	NA	NA	NA	NA	NA	NA	NA	NA	8	NA	NA	NA	NA	NA	NA	13	NA	NA	NA	8	
	1/6/1999	NA	1,620	NA	NA	NA	NA	NA	NA	NA	NA	53	NA	NA	NA	NA	NA	NA	305	NA	NA	NA	88	
	1/7/1999	NA	1,270	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	4,220	NA	NA	NA	NA	86	NA	NA	NA	22	
	3/30/1999	NA	775	NA	NA	NA	NA	NA	NA	NA	NA	23	NA	2,280	NA	NA	NA	NA	96	NA	NA	NA	38	
	6/30/1999	NA	398	NA	NA	NA	NA	NA	NA	NA	NA	6	NA	4,220	NA	NA	NA	NA	26	NA	NA	NA	10	
	9/17/1999	NA	502	NA	NA	NA	NA	NA	NA	NA	NA	6	NA	1,160	NA	NA	NA	NA	21	NA	NA	NA	5	
	4/13/2000	NA	1,010	NA	NA	NA	NA	NA	NA	NA	NA	6	NA	3,290	NA	NA	NA	NA	52	NA	NA	NA	29	
	8/1/2000	NA	628	NA	NA	NA	NA	NA	NA	NA	NA	10	NA	4,650	NA	NA	NA	NA	44	NA	NA	NA	12	
	9/15/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2	
	12/15/2000	NA	1,860	NA	NA	NA	NA	NA	NA	NA	NA	16	NA	6,950	NA	NA	NA	NA	69	NA	NA	NA	16	
	3/7/2001	NA	904	NA	NA	NA	NA	NA	NA	NA	NA	7	NA	4,190	NA	NA	NA	NA	18	NA	NA	NA	4	
	9/17/2001	NA	18	NA	NA	NA	NA	NA	NA	NA	NA	1	NA	122	NA	<10	NA	NA	1	NA	NA	NA	1	
	12/27/2001	NA	1,190	NA	NA	NA	NA	NA	NA	NA	NA	17	NA	2,810	NA	1.4#	NA	NA	510	NA	NA	NA	115	
	3/15/2002	NA	1,140	NA	NA	NA	NA	NA	NA	NA	NA	12	NA	3,180	NA	NA	NA	NA	206	NA	NA	NA	97	
	6/21/2002	<50.0	446	23.8	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1,850	<20.0	<1.00	<1.00	<1.00	26.5	<1.00	<1.00	<1.00	14.84
	9/17/2002	<50.0	830	<10.0	1.03	2.48	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	3.26	2.29	2,910	<20.0	<1.00	3.59	<1.00	23.6	<1.00	<1.00	<1.00	4.63
	12/18/2002	61.5	1,150	74.2	1.33	2.68	1.22	<1.00	<1.00	<1.00	<1.00	15.3	3.31	4,740	<20.0	14.5	6.72	<1.00	89.6	<1.00	6.64	1.48	50.1	
	3/24/2003	<50.0	1,400	50.8	2.66	3.65	<1.00	<1.00	<1.00	<1.00	<1.00	16.6	4.29	1,700	<20.0	7.53	14.2	<1.00	268	<1.00	14.9	2.31	114.1	
	6/18/2003	NA	623	NA	NA	NA	NA	NA	<100	NA	NA	<100	<100	1,653	NA	<100	<100	NA	125	NA	<100	<100	158	
	12/29/2003	NA	379	NA	NA	NA	NA	NA	<2	NA	NA	10	3	947	NA	<2	10	NA	59	NA	8	<2	55	
	12/22/2004	NA	248	NA	NA	NA	NA	NA	<2	NA	NA	5	2	626	NA	2	7	NA	41	NA	2	<2	23	
	3/25/2005	<20	81.3	59	<2	<2	<2	<6	<2	<3	<2	<1	<2	1,130	<10	<2	<3	2	5	<2	<2	<2	3	
	7/14/2005	<20	191	<10	<2	3	<2	<6	<2	<3	<2	4	3	975	<2	<2	8	<2	30	<2	<2	<2	25	
	10/6/2005	<20	548	<10	<2	3	<2	<6	<2	<3	<2	7	4	558	<10	3	11	<2	110	<2	<2	<2	39	
	2/8/2006	<500	2,810	<200	<100	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<40.0	339	<100	<40.0	<20.0	<20.0	1,250	<20.0	<20.0	<20.0	161.8
	9/10/2006	<500	2,140	<200	<100	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<40.0	884	<100	<40.0	<20.0	<20.0	473	<20.0	<20.0	<20.0	105.6
	12/17/2006	<250	1,850	<200	<100	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<40.0	364	<100	<40.0	<20.0	<20.0	343	<20.0	12.7	10.1	176.0
4/15/2007	<500	2,140	<200	<100	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<40.0	884	<100	<40.0	<20.0	<20.0	473	<20.0	<20.0	<20.0	105.6	
11/4/2007	<20.0	1,090	<10.0	3.77	4.65	<0.500	<0.500	<0.500	<0.500	<0.500	5.93	3.82	456	<10.0	<5.00	12.4	<0.500	197	<0.500	5.21	3.12	81.0		
MW-2R	8/3/2008	26.9	80.4	31.5	<1.00	<10.0	<0.500	<2.00	<0.500	<0.500	<0.500	<0.500	<0.500	353	<5.00	<5.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.5	
	11/16/2008	<20.0	134	<10.0	<1.00	<10.0	<0.500	<2.00	<0.500	<0.500	<0.500	0.770	<0.500	1,140	<5.00	<5.00	0.620	<0.500	4.35	<0.500	<1.00	<1.00	4.51	
	8/6/2010	<200	<2.50	<100	<10.0	<10.0	<10.0	<50.0	<5.00	<5.00	<5.00	<5.00	<10.0	658	<50.0	<20.0	<5.00	<5.00	<10.0	<5.00	<10.0	<10.0	<15.0	
	3/24/2011	<200	15.7	<100	<10.0	<10.0	<10.0	<50.0	<5.00	<5.00	<5.00	<5.00	<10.0	406	<50.0	<20.0	<5.00	<5.00	<10.0	<5.00	<10.0	<10.0	<15.0	

Table 3 - Historic Groundwater Sample Analytical Results
 Volatile Organic Compounds

Well ID	Date Sampled	Acetone (ug/l)	Benzene (ug/l)	2-Butanone (MEK) (ug/l)	n-Butyl benzene (ug/l)	sec-Butyl benzene (ug/l)	tert-Butyl benzene (ug/l)	Chloro ethane (ug/l)	1,2-Dichloro ethane (ug/l)	cis-1,2-Dichloro ethene (ug/l)	trans-1,2-Dichloro ethene (ug/l)	Ethylbenzene (ug/l)	Isopropyl benzene (ug/l)	Methyl tert-butyl ether (ug/l)	Methylene chloride (ug/l)	Naphthalene (ug/l)	n-Propyl benzene (ug/l)	Tetrachloro ethene (ug/l)	Toluene (ug/l)	Trichloro ethene (ug/l)	1,2,4-Trimethyl benzene (ug/l)	1,3,5-Trimethyl benzene (ug/l)	Total Xylenes (m,p and o) (ug/l)	
MW-3	9/18/1996	NA	2,550	NA	NA	NA	NA	NA	NA	NA	NA	6	NA	NA	NA	NA	NA	NA	6	NA	NA	NA	8	
	6/27/1997	NA	796	NA	NA	NA	NA	NA	NA	NA	NA	6	NA	NA	NA	NA	NA	NA	3	NA	NA	NA	6	
	9/26/1997	NA	1,800	NA	NA	NA	NA	NA	NA	NA	NA	20	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	32	
	1/15/1998	NA	1,130	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	<2	
	5/18/1998	NA	216	NA	NA	NA	NA	NA	NA	NA	NA	53	NA	NA	NA	NA	NA	NA	24	NA	NA	NA	82	
	9/29/1998	NA	601	NA	NA	NA	NA	NA	NA	NA	NA	6	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	9	
	1/6/1999	NA	385	NA	NA	NA	NA	NA	NA	NA	NA	7	NA	NA	NA	NA	NA	NA	7	NA	NA	NA	21	
	1/7/1999	NA	162	NA	NA	NA	NA	NA	NA	NA	NA	4	NA	<10	NA	NA	NA	NA	3	NA	NA	NA	7	
	3/30/1999	NA	717	NA	NA	NA	NA	NA	NA	NA	NA	12	NA	<10	NA	NA	NA	NA	5	NA	NA	NA	15	
	6/30/1999	NA	465	NA	NA	NA	NA	NA	NA	NA	NA	9	NA	<10	NA	NA	NA	NA	5	NA	NA	NA	12	
	9/17/1999	NA	419	NA	NA	NA	NA	NA	NA	NA	NA	6	NA	1,160	NA	NA	NA	NA	21	NA	NA	NA	5	
	4/13/2000	NA	197	NA	NA	NA	NA	NA	NA	NA	NA	4	NA	<10	NA	NA	NA	NA	3	NA	NA	NA	7	
	8/1/2000	NA	378	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	<10	NA	NA	NA	NA	2	NA	NA	NA	4	
	9/15/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	<10	NA	NA	NA	NA	<2	NA	NA	NA	<2	
	12/15/2000	NA	167	NA	NA	NA	NA	NA	NA	NA	NA	50	NA	<125	NA	NA	NA	NA	3	NA	NA	NA	51	
	3/7/2001	NA	158	NA	NA	NA	NA	NA	NA	NA	NA	2	NA	<10	NA	NA	NA	NA	<2	NA	NA	NA	5	
	9/18/2001	NA	17	NA	NA	NA	NA	NA	NA	NA	NA	6	NA	17	NA	NA	NA	NA	3	NA	NA	NA	7	
	12/27/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/15/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/21/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14	NA	40	NA	NA	NA	NA	5	NA	NA	NA	16
	12/18/2002	<50.0	226	<10.0	3.08	2.79	1.19	<1.00	<1.00	<1.00	<1.00	5.05	5.03	1.37	<20.0	1.53	11.3	<1.00	4.15	<1.00	2.33	<1.00	14.72	
	3/24/2003	<50.0	436	<10.0	8.15	7.63	<1.00	<1.00	<1.00	<1.00	<1.00	8.44	12.9	<1.00	<20.0	<1.00	29.4	<1.00	6.10	<1.00	5.92	3.13	25.27	
	6/18/2003	NA	223	NA	NA	NA	NA	NA	<2	NA	NA	3	6	<5	NA	<2	7	NA	4	NA	10	5	23	
	12/29/2003	NA	207	NA	NA	NA	NA	NA	<100	NA	NA	<100	<100	<250	NA	<100	<100	NA	<100	NA	<100	<100	101	
	12/22/2004	NA	80	NA	NA	NA	NA	NA	<2	NA	NA	<2	5	<5	NA	<2	11	-	3	NA	<2	<2	7	
	3/25/2005	<20	151	<10	5	4	<2	<2	<6	<2	<3	<2	2	7	<4	<10	<2	16	<2	2	<2	<2	7	
	7/14/2005	<20	92.0	<10	<2	<2	<2	<2	<6	<2	<3	<2	<1	3	<4	<3	<2	6	<2	1	<2	<2	3	
	10/6/2005	<20	187	<10	<2	3	<2	<2	<6	<2	<3	<2	1	7	<4	<10	<2	16	<2	3	<2	<2	5	
	2/8/2006	<25.0	159	<10.00	<5.00	1.28	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<2.00	1.32	<5.00	<2.00	3.33	<1.00	1.14	<1.00	<1.00	<3.00	
	9/10/2006	<25.0	19.3	<10.00	<5.00	1.79	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	2.05	1.42	<5.00	<2.00	3.66	<1.00	<1.00	<1.00	1.79	<1.00	5.39
	12/17/2006	<25.0	150	<10.00	<5.00	1.21	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<2.00	1.75	<5.00	<2.00	2.42	<1.00	1.99	<1.00	<1.00	<1.00	1.55
	4/15/2007	<25.0	19	<10.00	<5.00	1.79	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	2.05	1	<5.00	<2.00	3.66	<1.00	<1.00	<1.00	1.79	<1.00	5.39
	11/4/2007	<100	197	<50.0	<2.50	<2.50	<2.50	<2.50	<5.00	<2.50	<2.50	<2.50	<2.50	2.85	<2.50	<5.00	<25.0	4.80	<2.50	<10.0	<2.50	<2.50	<7.50	
	8/3/2008	<20.0	148	<10.0	1.60	<10.0	<0.500	<2.00	<0.500	<0.500	<0.500	<0.500	<0.500	1.52	1.37	<5.00	<5.00	3.17	<5.00	1.12	<0.500	<1.00	<1.00	<1.5
	11/16/2008	<20.0	98.6	<10.0	2.34	<10.0	<0.500	<2.00	<0.500	<0.500	<0.500	<0.500	<0.500	2.69	1.17	<5.00	<5.00	6.29	<5.00	1.50	<0.500	<1.00	<1.00	1.40
	3/24/2011	<20.0	127	<10.0	1.71	1.25	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<0.500	1.70	1.90	<5.00	<2.00	5.10	<0.500	<1.00	<0.500	<1.00	<1.00	<1.50
	5/10/2013	<20	52	<10	1.84	2.06	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<0.500	5.54	1.19	<5.00	<2.00	11.60	<0.500	1.68	<0.500	<1.00	<1.00	2.22
	5/10/2013**	<20	54	<10	2.21	1.78	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<0.500	4.32	1.12	<5.00	<2.00	8.30	<0.500	1.38	<0.500	<1.00	<1.00	2.01

Table 3 - Historic Groundwater Sample Analytical Results
 Volatile Organic Compounds

Well ID	Date Sampled	Acetone (ug/l)	Benzene (ug/l)	2-Butanone (MEK) (ug/l)	n-Butyl benzene (ug/l)	sec-Butyl benzene (ug/l)	tert-Butyl benzene (ug/l)	Chloro ethane (ug/l)	1,2-Dichloro ethane (ug/l)	cis-1,2-Dichloro ethene (ug/l)	trans-1,2-Dichloro ethene (ug/l)	Ethylbenzene (ug/l)	Isopropyl benzene (ug/l)	Methyl tert-butyl ether (ug/l)	Methylene chloride (ug/l)	Naphthalene (ug/l)	n-Propyl benzene (ug/l)	Tetrachloro ethene (ug/l)	Toluene (ug/l)	Trichloro ethene (ug/l)	1,2,4-Trimethyl benzene (ug/l)	1,3,5-Trimethyl benzene (ug/l)	Total Xylenes (m,p and o) (ug/l)	
MW-4	9/18/1996	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/26/1997	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/15/1998	NA	14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/18/1998	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/29/1998	NA	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/6/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/7/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/30/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/30/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4/13/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA
	8/1/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/15/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/15/2000	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/7/2001	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/2001	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	<10	NA	NA	NA	NA	NA	NA	NA
	12/27/2001	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/15/2002	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	1
	6/21/2002	<50.0	<0.400	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	2.40	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	9/17/2002	<50.0	<0.400	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	2.66	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	12/18/2002	<50.0	<0.400	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	3.41	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	3/24/2003	<50.0	<0.400	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	3.90	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	6/18/2003	NA	<0.50	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	<2	<5	NA	<2	<2	NA	<2	NA	<2	<2	<2
	12/29/2003	NA	1	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	<2	6	NA	<2	<2	NA	3	NA	<2	<2	<2
	12/14/2004	NA	1.4	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	<2	3.3	NA	<2	<2	NA	<2	NA	<2	<2	<2
	3/25/2005	<20	<0.5	<10	<2	<2	<2	<2	<6	<2	<3	<2	<1	<2	<4	<2	<2	<3	18	<1	1.8	<2	<2	<2
	7/14/2005	<20	<0.5	<10	<2	<2	<2	<2	<6	<2	<3	<2	<1	<2	<4	<2	<2	<3	28	<1	5	<2	<2	<2
	10/6/2005	<20	<0.5	<10	<2	<2	<2	<2	<6	<2	<3	<2	<1	<2	<4	<2	<2	<3	24	<1	9	<2	<2	<2
	2/8/2006	<25.0	1.23	<10.00	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<2.00	2.29	<5.00	<2.00	<1.00	10.2	<1.00	17.0	<1.00	<1.00	<3.00
	9/10/2006	<25.0	<1.00	<10.00	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<2.00	3.04	<5.00	<2.00	<1.00	5.34	<1.00	3.14	<1.00	<1.00	<3.00
	12/17/2006	<25.0	<1.00	<10.00	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<2.00	2.88	<5.00	<2.00	<1.00	2.13	<1.00	3.76	<1.00	<1.00	<3.00
	4/15/2007	<25.0	<1.00	<10.00	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<2.00	3.04	<5.00	<2.00	<1.00	5.34	<1.00	3.14	<1.00	<1.00	<3.00
11/4/2007	<20.0	1.02	<10.0	<0.500	<0.500	<0.500	<2.00	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	3.31	<5.00	<5.00	<0.500	<0.500	<2.00	0.51	<1.00	<1.00	<1.5	
8/3/2008	<20.0	<0.250	<10.0	<1.00	<10.0	<0.500	<2.00	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	2.92	<5.00	<5.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.5	
11/16/2008	<20.0	<0.250	<10.0	<1.00	<10.0	<0.500	<2.00	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	2.06	<5.00	<5.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.5	

Table 3 - Historic Groundwater Sample Analytical Results
 Volatile Organic Compounds

Well ID	Date Sampled	Acetone (ug/l)	Benzene (ug/l)	2-Butanone (MEK) (ug/l)	n-Butyl benzene (ug/l)	sec-Butyl benzene (ug/l)	tert-Butyl benzene (ug/l)	Chloro ethane (ug/l)	1,2-Dichloro ethane (ug/l)	cis-1,2-Dichloro ethene (ug/l)	trans-1,2-Dichloro ethene (ug/l)	Ethylbenzene (ug/l)	Isopropyl benzene (ug/l)	Methyl tert-butyl ether (ug/l)	Methylene chloride (ug/l)	Naphthalene (ug/l)	n-Propyl benzene (ug/l)	Tetrachloro ethene (ug/l)	Toluene (ug/l)	Trichloro ethene (ug/l)	1,2,4-Trimethyl benzene (ug/l)	1,3,5-Trimethyl benzene (ug/l)	Total Xylenes (m,p and o) (ug/l)	
MW-5	9/18/1996	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/26/1997	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	1/15/1998	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	3
	5/18/1998	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	2
	9/29/1998	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	1/6/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	1/7/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	3/30/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	6/30/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	<10	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	9/17/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	4/13/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	8/1/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	9/15/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	12/15/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	3/7/2001	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	9/17/2001	NA	13	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	<10	NA	<10	NA	NA	1	NA	NA	NA	NA	<1
	12/27/2001	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	<10	NA	NA	NA	NA	<1	NA	NA	NA	NA	<1
	3/15/2002	NA	1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	<10	NA	NA	NA	NA	<1	NA	NA	NA	NA	<1
	6/21/2002	<50.0	0.560	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	9/17/2002	<50.0	<0.400	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	12/18/2002	<50.0	<0.400	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	3/24/2003	<50.0	<0.400	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	6/18/2003	NA	<0.5	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	<2	<5	NA	<2	<2	NA	<2	NA	<2	<2	<2
	12/29/2003	NA	<0.5	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	<2	<5	NA	<2	<2	NA	<2	NA	<2	<2	<2
	12/14/2004	NA	<0.50	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	<2	<5	NA	<2	<2	-	<2	NA	<2	<2	<2
	3/25/2005	<20	<0.5	<10	<2	<2	<2	<2	<6	<2	<3	<2	<1	<2	<4	<2	<2	<3	132	<1	3	<2	<2	<2
	7/14/2005	<20	<0.5	<10	<2	<2	<2	<2	<6	<2	<3	<2	<1	<2	<4	<2	<2	<3	149	<1	4	<2	<2	<2
	10/6/2005	<20	<0.5	<10	<2	<2	<2	<2	<6	<2	<3	<2	<1	<2	<4	<2	<2	<3	135	<1	9	<2	<2	<2
	2/8/2006	<25.0	<1.00	<10.00	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.39	1.39	<1.00	<2.00	<1.00	<5.00	<2.00	<1.00	117	<1.00	24.3	<1.00	<1.00	<3.00
	9/10/2006	<25.0	<1.00	<10.00	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.44	2.44	<1.00	<2.00	<1.00	<5.00	<2.00	<1.00	42.6	<1.00	26.2	<1.00	<1.00	<3.00
	12/17/2006	<25.0	<1.00	<10.00	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.39	3.14	<1.00	<2.00	<1.00	<5.00	<2.00	<1.00	29.2	<1.00	29.4	<1.00	<1.00	<3.00
	4/15/2007	<25.0	<1.00	<10.00	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.44	2.44	<1.00	<2.00	<1.00	<5.00	<2.00	<1.00	42.60	<1.00	26.20	<1.00	<1.00	<3.00
11/4/2007	<20.0	<0.500	<10.00	<0.500	<0.500	<0.500	<0.500	<2.00	<0.500	2.19	6.83	<0.500	<0.500	<0.500	<5.00	<5.00	<0.500	5.80	<2.00	33.20	<1.00	<1.00	<1.5	
8/3/2008	<20.0	<0.250	<10.0	<1.00	<10.0	<0.500	<2.00	<0.500	<0.500	2.93	2.37	<0.500	<0.500	<1.00	<5.00	<5.00	<0.500	2.80	<1.00	13.60	<1.00	<1.00	<1.5	
11/16/2008	<20.0	<0.250	<10.0	<1.00	<10.0	<0.500	<2.00	<0.500	<0.500	2.16	2.06	<0.500	<0.500	<1.00	<5.00	<5.00	<0.500	2.70	<1.00	14.6	<1.00	<1.00	<1.5	

Table 3 - Historic Groundwater Sample Analytical Results
 Volatile Organic Compounds

Well ID	Date Sampled	Acetone (ug/l)	Benzene (ug/l)	2-Butanone (MEK) (ug/l)	n-Butyl benzene (ug/l)	sec-Butyl benzene (ug/l)	tert-Butyl benzene (ug/l)	Chloro ethane (ug/l)	1,2-Dichloro ethane (ug/l)	cis-1,2-Dichloro ethene (ug/l)	trans-1,2-Dichloro ethene (ug/l)	Ethylbenzene (ug/l)	Isopropyl benzene (ug/l)	Methyl tert-butyl ether (ug/l)	Methylene chloride (ug/l)	Naphthalene (ug/l)	n-Propyl benzene (ug/l)	Tetrachloro ethene (ug/l)	Toluene (ug/l)	Trichloro ethene (ug/l)	1,2,4-Trimethyl benzene (ug/l)	1,3,5-Trimethyl benzene (ug/l)	Total Xylenes (m,p and o) (ug/l)	
MW-6	9/18/1996	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/26/1997	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	1/15/1998	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	5/18/1998	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	9/29/1998	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	1/6/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	1/7/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	3/30/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	6/30/1999	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	<10	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	9/17/1999	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	4/13/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	8/1/2000	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	9/15/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	12/15/2000	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	3/7/2001	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	<2
	9/17/2001	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	70	NA	<10	NA	NA	<1	NA	NA	NA	NA	<1
	12/27/2001	NA	9	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	76	NA	NA	NA	NA	<1	NA	NA	NA	NA	<1
	3/15/2002	NA	4	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	56	NA	NA	NA	NA	<1	NA	NA	NA	NA	<1
	6/21/2002	<50.0	3.96	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	49.8	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	9/17/2002	<50.0	1.31	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	51.4	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	12/18/2002	<50.0	<0.400	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	59.3	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	3/24/2003	<50.0	10.8	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	54.8	<20.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	6/18/2003	NA	7	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	36	NA	<2	NA	<2	NA	<2	NA	<2	<2	<2
	12/29/2003	NA	1	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	35	NA	<2	NA	<2	NA	<2	NA	<2	<2	<2
	12/14/2004	NA	<0.50	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	46	NA	<2	<2	-	<2	NA	<2	<2	<2	<2
	3/25/2005	<20	<0.5	<10	<2	<2	<2	<2	<6	<2	<3	<2	<1	<2	45	<2	4	<3	4	<1	<2	3	<2	4
	7/14/2005	<20	<0.5	<10	<2	<2	<2	<2	<6	<2	<3	<2	<1	<2	48	<2	<3	<3	<2	<1	<2	<2	<2	<2
	10/6/2005	<20	<0.5	<10	<2	<2	<2	<2	<6	<2	<3	<2	<1	<2	52	<2	<3	<3	<2	<1	<2	<2	<2	<2
	1/22/2006	<25.0	6.19	<10.00	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<2.00	75.8	<5.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	9/10/2006	<25.0	5.67	<10.00	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<2.00	58.5	<5.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	12/17/2006	<25.0	2.24	<10.00	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<2.00	74.2	<5.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
	4/15/2007	<25.0	5.67	<10.00	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<2.00	58.5	<5.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
11/4/2007	<20.0	3.80	<10.00	1.14	0.58	<0.500	<2.00	<0.500	<0.500	<0.500	<0.500	<0.500	0.53	71.3	<5.00	<5.00	1.64	<0.500	<2.00	<0.500	<1.00	<1.00	<1.5	
8/3/2008	<20.0	0.27	<10.0	<1.00	<10.0	<0.500	<2.00	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	52.7	<5.00	<5.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.5	
11/16/2008	<20.0	<0.250	<10.0	<1.00	<10.0	<0.500	<2.00	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	53.7	<5.00	<5.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.5	
3/24/2011	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<0.500	<1.00	37.8	<5.00	<2.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.50	

Table 3 - Historic Groundwater Sample Analytical Results
 Volatile Organic Compounds

Well ID	Date Sampled	Acetone (ug/l)	Benzene (ug/l)	2-Butanone (MEK) (ug/l)	n-Butyl benzene (ug/l)	sec-Butyl benzene (ug/l)	tert-Butyl benzene (ug/l)	Chloro ethane (ug/l)	1,2-Dichloro ethane (ug/l)	cis-1,2-Dichloro ethene (ug/l)	trans-1,2-Dichloro ethene (ug/l)	Ethylbenzene (ug/l)	Isopropyl benzene (ug/l)	Methyl tert-butyl ether (ug/l)	Methylene chloride (ug/l)	Naphthalene (ug/l)	n-Propyl benzene (ug/l)	Tetrachloro ethene (ug/l)	Toluene (ug/l)	Trichloro ethene (ug/l)	1,2,4-Trimethyl benzene (ug/l)	1,3,5-Trimethyl benzene (ug/l)	Total Xylenes (m,p and o) (ug/l)	
MW-7	7/26/2005	51	31.2	13	8	6	<2	<6	<2	<3	<2	1	22	86	<2	4	72	<2	2	<2	3	<2	7	
	10/6/2005	<20	46	<10	14	9	<2	<6	<2	<3	<2	<1	24	156	<2	<3	75	<2	<1	<2	<2	<2	<2	
	2/8/2006	<25.0	2.07	<10.00	6.03	4.07	1.15	1.05	<1.00	<1.00	<1.00	<1.00	10.4	15.5	<5.00	<2.00	33.0	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00	
	9/10/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	12/17/2006	<25.0	25.2	<10.00	10.0	6.46	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	20.0	24.9	<5.00	<2.00	65.9	<1.00	<1.00	<1.00	<1.00	<3.00	
	4/15/2007	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11/4/2007	<20.0	53.1	<10.0	10.9	8.19	0.83	<2.00	<0.500	<0.500	<0.500	0.55	20.7	89.7	<5.00	<5.00	67.4	<0.500	<2.00	<0.500	<1.00	<1.00	<1.5	
	8/3/2008	<100	11.0	<50.0	12.8	<50.0	<2.50	<10.0	<2.50	<2.50	<2.50	<2.50	16.2	24.0	<25.0	<25.0	58.9	<2.50	<5.00	<2.50	<5.00	<5.00	<7.5	
	11/16/2008	52.3	69.9	<20.0	9.61	<10.0	0.59	<2.00	<0.500	<0.500	<0.500	<0.500	19	66.5	<5.00	<5.00	66	<0.500	<1.00	<0.500	<1.00	<1.00	<1.5	
	8/6/2010	<20.0	5.20	<27.0	16.5	9.99	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	20.0	18.5	<5.00	<2.00	66.7	<0.500	<1.00	<0.500	<1.00	<1.00	<1.50	
	3/24/2011	<20.0	0.310	<10.0	5.26	4.15	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	6.42	1.58	<5.00	<2.00	23.5	<0.500	<1.00	<0.500	<1.00	<1.00	<1.50	
	5/10/2013	<20	<0.250	<10	3.40	3.50	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	6.08	<1.00	<5.00	<2.00	17.9	<0.500	<1.00	<0.500	<1.00	<1.00	<1.50	
5/10/2013**	<20	<0.250	<10	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	<1.00	<5.00	<2.00	2.6	<0.500	<1.00	<0.500	<1.00	<1.00	<1.50		
MW-8	7/14/2005	<20	0.7	<10	<2	3	<2	<6	<2	<3	<2	<1	13	<2	<2	<2	36	<2	<1	<2	2	<2	<2	
	10/6/2005	<20	<0.5	<10	3	4	<2	<6	<2	<3	<2	<1	15	<2	9	<3	39	<2	<1	<2	2	<2	<2	
	2/8/2006	<25.0	8.00	<10.00	<5.00	3.27	1.12	1.42	<1.00	<1.00	<1.00	<1.00	14.9	35.6	<5.00	<2.00	34.7	<1.00	<1.00	<1.00	4.02	<1.00	<3.00	
	9/10/2006	<25.0	21.20	<10.00	<5.00	3.22	<1.00	1.32	<1.00	<1.00	<1.00	<1.00	17.2	58.7	<5.00	<2.00	38.0	<1.00	<1.00	<1.00	<1.00	<1.00	4.30	
	12/17/2006	<25.0	19.90	<10.00	<5.00	3.65	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	15.7	76.3	<5.00	<2.00	39.9	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00	
	4/15/2007	<25.0	21.20	<10.00	<5.00	3.22	<1.00	1.32	<1.00	<1.00	<1.00	<1.00	17.2	58.7	<5.00	<2.00	38	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00	
	11/4/2007	<20.0	2.12	<10.0	5.48	4.48	0.55	<2.00	<0.500	<0.500	<0.500	<0.500	16.6	4.61	<5.00	<5.00	47.3	<0.500	<2.00	<0.500	<1.00	<1.00	<1.5	
	8/3/2008	<100	53.00	<50.0	5.2	<50.0	<2.50	<10.0	<2.50	<5.00	<2.50	<2.50	15.0	55.10	<25.0	<25.0	39.7	<2.50	<5.00	<2.50	<5.00	<5.00	<7.5	
	11/16/2008	<20.0	0.85	<10.0	4.89	<10.0	<0.500	2.54	<0.500	<0.500	<0.500	<0.500	12.8	2.05	<5.00	<5.00	37	<0.500	<1.00	<0.500	<1.00	<1.00	<1.5	
	8/6/2010	<20.0	21.3	<10.0	3.37	3.18	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	12.8	38.40	<5.00	<2.00	31.6	<0.500	<1.00	<0.500	<1.00	<1.00	<1.50	
	3/24/2011	<20.0	3.04	<10.0	2.48	2.13	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	7.88	7.87	<5.00	<2.00	22.5	<0.500	<1.00	<0.500	<1.00	<1.00	<1.50	
	MW-9	11/16/2008	<20.0	3.33	<10.0	2.52	<10.0	<0.500	<2.00	<0.500	<0.500	<0.500	<0.500	4.36	7.34	<5.00	<5.00	10.7	<0.500	<1.00	<0.500	<1.00	<1.00	<1.5
4/23/2010		<20.0	0.82	<10.0	2.76	3.19	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	7.23	27.80	<5.00	<2.00	16.8	<0.500	<0.500	<0.500	<1.00	<1.00	<1.5	
8/6/2010		<20.0	3.49	<10.0	3.10	3.48	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	8.43	52.00	<5.00	<2.00	18.9	<0.500	<1.00	<0.500	<1.00	<1.00	<1.50	
11/23/2010		<20.0	<0.250	<10.0	2.56	2.77	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	6.64	7.19	<5.00	<2.00	16.3	<0.500	<1.00	<0.500	<1.00	<1.00	<1.50	
3/24/2011		<20.0	0.300	<10.0	1.99	2.50	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	5.05	14.2	<5.00	<2.00	11.8	<0.500	<1.00	<0.500	<1.00	<1.00	<1.50	

Table 3 - Historic Groundwater Sample Analytical Results
 Volatile Organic Compounds

Well ID	Date Sampled	Acetone (ug/l)	Benzene (ug/l)	2-Butanone (MEK) (ug/l)	n-Butyl benzene (ug/l)	sec-Butyl benzene (ug/l)	tert-Butyl benzene (ug/l)	Chloro ethane (ug/l)	1,2-Dichloro ethane (ug/l)	cis-1,2-Dichloro ethene (ug/l)	trans-1,2-Dichloro ethene (ug/l)	Ethylbenzene (ug/l)	Isopropyl benzene (ug/l)	Methyl tert-butyl ether (ug/l)	Methylene chloride (ug/l)	Naphthalene (ug/l)	n-Propyl benzene (ug/l)	Tetrachloro ethene (ug/l)	Toluene (ug/l)	Trichloro ethene (ug/l)	1,2,4-Trimethyl benzene (ug/l)	1,3,5-Trimethyl benzene (ug/l)	Total Xylenes (m,p and o) (ug/l)	
MW-10	4/23/2010	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	<1.00	<5.00	<2.00	<0.500	<0.500	<0.500	<0.500	<1.00	<1.00	<1.00	<1.50
	8/6/2010	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	<1.00	<5.00	<2.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.00	<1.50
	11/23/2010	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	<1.00	<5.00	<2.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.00	<1.50
	3/24/2011	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	<1.00	<5.00	<2.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.00	<1.50
MW-11	4/23/2010	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	<1.00	<5.00	<2.00	<0.500	<0.500	<0.500	<0.500	<1.00	<1.00	<1.00	<1.50
	8/6/2010	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	<1.00	<5.00	<2.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.00	<1.50
	11/23/2010	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	<1.00	<5.00	<2.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.00	<1.50
	3/24/2011	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	<1.00	<5.00	<2.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.00	<1.50
MW-12	4/23/2010	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	6.99	<5.00	<2.00	<0.500	<0.500	<0.500	<0.500	<1.00	<1.00	<1.00	<1.50
	8/6/2010	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	5.34	<5.00	<2.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.00	<1.50
	11/23/2010	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	2.10	<5.00	<2.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.00	<1.50
	3/24/2011	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	2.14	<5.00	<2.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.00	<1.50
MW-13	3/24/2011	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	<1.00	<5.00	<2.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.00	<1.50
MW-14	3/24/2011	<20.0	<0.250	<10.0	6.22	5.46	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	4.87	1.81	<5.00	<2.00	21.4	<0.500	<1.00	<0.500	<1.00	<1.00	<1.00	<1.50
MW-15	5/5/2011	<20.0	<0.250	<10.0	<1.00	<1.00	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	<1.00	2.34	<5.00	<2.00	<0.500	<0.500	<1.00	<0.500	<1.00	<1.00	<1.00	<1.50
MW-16	5/5/2011	<20.0	4.31	<10.0	4.55	5.09	<1.00	<5.00	<0.500	<0.500	<0.500	<0.500	24.2	19.00	<5.00	<2.00	74.8	<0.500	1.08	<0.500	<1.00	<1.00	<1.00	<1.50
RBC _{we} - Construction		-	1,700	-	-	-	-	2,400,000	-	24,000	14,000	4,400	-	62,000	-	500	-	240	210,000	430	1,700	23,000	23,000	

Notes:

Lab analysis prior to 6/21/06 were by EPA method 8020 (BTEX) and or MTBE

Lab analysis from 6/21/06 onward were by EPA method 8260

Reported analytes include all for which detections above Method Detection Limits were found

Additional analytes included in lab report

<2.43 =Not Detected at the Reporting Limit indicated

ug/l=micrograms per liter (parts per billion (ppb))

NA = sample was not analyzed for this constituent

BOLD = Analyte detected at or above method detection limits

RBC_{we} = Risk Based Concentration: Groundwater in Excavation (Revised November 15, 2011)

- = No Risk Based Concentration Listed

= Naphthalene by method Oregon PAH GC/MS-SIM

** = Well was purged and sampled utilizing peristaltic pump and low flow sampling technique.

**Table 4 - Historic Groundwater Sample Analytical Results
 Polycyclic Aromatic Hydrocarbons**

Well ID	Date Sampled	Acenaphthene (ug/l)	Acenaphthylene (ug/l)	Anthracene (ug/l)	Benzo (a) anthracene (ug/l)	Benzo (a) pyrene (ug/l)	Benzo (b) fluoroanthene (ug/l)	Benzo (ghi) perylene (ug/l)	Benzo (k) fluoroanthene (ug/l)	Chrysene (ug/l)	Dibenzo (a,h) anthracene (ug/l)	Fluoroanthene (ug/l)	Fluorene (ug/l)	Indeno (1,2,3-cd) pyrene (ug/l)	Naphthalene (ug/l)	Phenanthrene (ug/l)	Pyrene (ug/l)	Dissolved Lead (ug/l)
MW-1	9/18/1996	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/27/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/26/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/15/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/18/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/29/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/6/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/7/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/30/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/30/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4/13/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	8/1/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/15/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/15/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/7/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/27/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/15/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/21/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/18/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/24/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/18/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/29/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/22/2004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/25/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/14/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/6/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/8/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/10/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
12/17/2006	<0.104	<0.104	<0.104	<0.104	<0.104	<0.104	<0.104	<0.104	<0.104	<0.104	<0.104	<0.104	0.371	<0.104	<0.156	0.109	<0.104	<1.00
4/15/2007	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	<0.190	<0.0952	<0.0952	<0.0952	<0.0952	<1.00
11/4/2007	0.0828	<0.0500	<0.0500	<0.100	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.162	<0.100	0.184	<0.0500	<0.0500	<1.00
MW-1R	8/6/2010	0.0950	<0.0494	<0.0988	<0.0494	<0.0494	<0.0494	<0.0494	<0.0494	<0.0494	<0.0494	<0.0494	0.243	<0.0494	0.159	0.0938	<0.0494	NA
	3/24/2011	<0.147	<0.0784	<0.0490	<0.0392	<0.0392	<0.0392	<0.0392	<0.0392	<0.0392	<0.0392	<0.0392	0.251	<0.0392	<0.137	0.126	0.0644	NA

Table 4 - Historic Groundwater Sample Analytical Results
 Polycyclic Aromatic Hydrocarbons

Well ID	Date Sampled	Acenaphthene (ug/l)	Acenaphthylene (ug/l)	Anthracene (ug/l)	Benzo (a) anthracene (ug/l)	Benzo (a) pyrene (ug/l)	Benzo (b) fluoroanthene (ug/l)	Benzo (ghi) perylene (ug/l)	Benzo (k) fluoroanthene (ug/l)	Chrysene (ug/l)	Dibenzo (a,h) anthracene (ug/l)	Fluoroanthene (ug/l)	Fluorene (ug/l)	Indeno (1,2,3-cd) pyrene (ug/l)	Naphthalene (ug/l)	Phenanthrene (ug/l)	Pyrene (ug/l)	Dissolved Lead (ug/l)	
MW-2	9/18/1996	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	6/27/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	9/26/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	1/15/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	5/18/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	9/29/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	1/6/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	1/7/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	3/30/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	6/30/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	9/17/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	4/13/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	8/1/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	9/15/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	12/15/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	3/7/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	9/17/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	12/27/2001	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	1.4	0.3	<0.1	<0.1
	3/15/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	6/21/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/18/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/24/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/18/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/29/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/22/2004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/25/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/14/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10/6/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2/8/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
9/10/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
12/17/2006	0.208	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.200	<0.100	0.592	<0.100	<1.20	0.447	<0.100	<1.00	
4/15/2007	0.222	<0.190	<0.190	<0.190	<0.190	<0.190	<0.190	<0.190	<0.190	<0.190	<0.381	<0.190	0.847	<0.190	<1.14	0.896	<0.190	<1.00	
11/4/2007	0.114	<0.0500	<0.0500	<0.100	<0.100	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.232	<0.100	1.53	0.101	<0.0500	<1.00	
MW-2R	3/24/2011	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.158	<0.0421	<0.0421	NA	

**Table 4 - Historic Groundwater Sample Analytical Results
 Polycyclic Aromatic Hydrocarbons**

Well ID	Date Sampled	Acenaphthene (ug/l)	Acenaphthylene (ug/l)	Anthracene (ug/l)	Benzo (a) anthracene (ug/l)	Benzo (a) pyrene (ug/l)	Benzo (b) fluoroanthene (ug/l)	Benzo (ghi) perylene (ug/l)	Benzo (k) fluoranthene (ug/l)	Chrysene (ug/l)	Dibenzo (a,h) anthracene (ug/l)	Fluoroanthene (ug/l)	Fluorene (ug/l)	Indeno (1,2,3-cd) pyrene (ug/l)	Naphthalene (ug/l)	Phenanthrene (ug/l)	Pyrene (ug/l)	Dissolved Lead (ug/l)
MW-3	9/18/1996	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/27/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/26/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/15/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/18/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/29/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/6/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/7/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/30/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/30/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4/13/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	8/1/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/15/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/15/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/7/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/18/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/27/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/15/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/21/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/18/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/24/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/18/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/29/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/22/2004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/25/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/14/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/6/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/8/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/10/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/17/2006	21.0	<10.0	8.05	<2.00	<2.00	<2.00	<2.00	<2.00	2.00	<2.00	3.12	67.2	<2.00	<16.0	77.1	5.61	<1.00
4/15/2007	1.53	<0.952	<0.952	<0.952	<0.952	<0.952	<0.952	<0.952	<0.952	<0.190	<0.952	4.87	<0.952	<1.90	4.28	<0.952	<1.00	
11/4/2007	3.12	<0.500	<0.500	<1.00	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	8.28	<1.00	2.39	7.37	<0.500	<1.00	
10/23/2009	<60.0	<40.0	25.7	1.71	0.942	1.79	<0.800	1.79	3.88	<0.800	7.73	152	<0.800	56.7	255	9.65	NA	
4/23/2010	<35.0	<23.4	12.4	<1.87	<1.87	<3.74	<1.87	<3.74	2.56	<1.87	6.79	106	<1.87	6.87	166	6.94	NA	
8/6/2010	<32.3	<16.2	31.8	<2.02	<2.02	<8.08	<2.02	<8.08	<3.03	<2.02	6.34	113	<2.02	12	170	8.46	NA	
11/23/2010	<68.8	<18.8	16.4	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	8	177	<5.00	<40.0	257	9.8	NA	
3/24/2011	<52.5	<22.5	17.1	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	129	<10.0	<20.0	184	<10.0	NA	
5/10/2013	<26.9	16.0	<8.02	<1.89	<1.89	<1.89	<1.89	<1.89	<1.89	<1.89	4.37	79.9	<1.89	<6.60	137	5.45	NA	
5/10/2013**	<1.98	<0.566	<0.377	<0.377	<0.377	<0.377	<0.377	<0.377	<0.377	<0.377	<0.377	5.52	<0.377	<0.755	4.24	<0.377	<1.00	

Table 4 - Historic Groundwater Sample Analytical Results
Polycyclic Aromatic Hydrocarbons

Well ID	Date Sampled	Acenaphthene (ug/l)	Acenaphthylene (ug/l)	Anthracene (ug/l)	Benzo (a) anthracene (ug/l)	Benzo (a) pyrene (ug/l)	Benzo (b) fluoroanthene (ug/l)	Benzo (ghi) perylene (ug/l)	Benzo (k) fluoroanthene (ug/l)	Chrysene (ug/l)	Dibenzo (a,h) anthracene (ug/l)	Fluoroanthene (ug/l)	Fluorene (ug/l)	Indeno (1,2,3-cd) pyrene (ug/l)	Naphthalene (ug/l)	Phenanthrene (ug/l)	Pyrene (ug/l)	Dissolved Lead (ug/l)
MW-4	9/18/1996	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/26/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/15/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/18/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/29/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/6/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/7/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/30/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/30/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4/13/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	8/1/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/15/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/15/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/7/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/27/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/15/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/21/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/18/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/24/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/18/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/29/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/14/2004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/25/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/14/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/6/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2/8/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
9/10/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
12/17/2006	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.200	<0.100	0.358	<0.100	<0.100	0.156	<0.100	<1.00
4/15/2007	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	0.185	<0.0952	<0.0952	<0.0952	<0.0952	<1.00
11/4/2007	0.48	<0.100	0.103	<0.200	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	1.51	<0.200	0.172	0.139	<0.100	<1.00

**Table 4 - Historic Groundwater Sample Analytical Results
 Polycyclic Aromatic Hydrocarbons**

Well ID	Date Sampled	Acenaphthene (ug/l)	Acenaphthylene (ug/l)	Anthracene (ug/l)	Benzo (a) anthracene (ug/l)	Benzo (a) pyrene (ug/l)	Benzo (b) fluoroanthene (ug/l)	Benzo (ghi) perylene (ug/l)	Benzo (k) fluoroanthene (ug/l)	Chrysene (ug/l)	Dibenzo (a,h) anthracene (ug/l)	Fluoroanthene (ug/l)	Fluorene (ug/l)	Indeno (1,2,3-cd) pyrene (ug/l)	Naphthalene (ug/l)	Phenanthrene (ug/l)	Pyrene (ug/l)	Dissolved Lead (ug/l)
MW-5	9/18/1996	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/26/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/15/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/18/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/29/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/6/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/7/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/30/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/30/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4/13/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	8/1/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/15/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/15/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/7/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/27/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/15/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/21/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/18/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/24/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/18/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/29/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/14/2004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/25/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/14/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/6/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2/8/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
9/10/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
12/17/2006	<0.789	<0.789	<1.05	<0.526	<0.526	<0.526	<0.526	<0.526	<0.526	<0.526	<1.05	<0.526	3.42	<0.526	<0.526	<0.526	<0.526	<1.00
4/15/2007	<0.962	<0.962	<0.962	<0.962	<0.962	<0.962	<0.962	<0.962	<0.962	<0.962	<1.92	<0.962	2.10	<0.962	<0.962	<0.962	<0.962	<1.00
11/4/2007	0.471	<0.0939	0.222	<0.188	<0.0939	<0.0939	<0.0939	<0.0939	<0.0939	<0.0939	<0.0939	<0.0939	1.88	<0.188	0.477	1.00	0.241	<1.00

**Table 4 - Historic Groundwater Sample Analytical Results
 Polycyclic Aromatic Hydrocarbons**

Well ID	Date Sampled	Acenaphthene (ug/l)	Acenaphthylene (ug/l)	Anthracene (ug/l)	Benzo (a) anthracene (ug/l)	Benzo (a) pyrene (ug/l)	Benzo (b) fluoroanthene (ug/l)	Benzo (ghi) perylene (ug/l)	Benzo (k) fluoroanthene (ug/l)	Chrysene (ug/l)	Dibenzo (a,h) anthracene (ug/l)	Fluoroanthene (ug/l)	Fluorene (ug/l)	Indeno (1,2,3-cd) pyrene (ug/l)	Naphthalene (ug/l)	Phenanthrene (ug/l)	Pyrene (ug/l)	Dissolved Lead (ug/l)
MW-6	9/18/1996	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/26/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/15/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/18/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/29/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/6/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/7/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/30/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/30/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4/13/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	8/1/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/15/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/15/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/7/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/27/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/15/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/21/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/17/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/18/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/24/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/18/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/29/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/14/2004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/25/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	7/14/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/6/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/8/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/10/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/17/2006	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.200	<0.100	0.282	<0.100	<0.150	0.186	<0.100	<1.00
4/15/2007	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<1.00
11/4/2007	0.502	<0.486	<0.486	<0.973	<0.486	<0.486	<0.486	<0.486	<0.486	<0.486	<0.486	<0.486	1.42	<0.973	<0.486	0.886	<0.486	<1.00
3/24/2011	<0.160	<0.0700	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	0.0445	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	0.0416	<0.0400	0.0641	<0.0400	NA

**Table 4 - Historic Groundwater Sample Analytical Results
 Polycyclic Aromatic Hydrocarbons**

Well ID	Date Sampled	Acenaphthene (ug/l)	Acenaphthylene (ug/l)	Anthracene (ug/l)	Benzo (a) anthracene (ug/l)	Benzo (a) pyrene (ug/l)	Benzo (b) fluoroanthene (ug/l)	Benzo (ghi) perylene (ug/l)	Benzo (k) fluoranthene (ug/l)	Chrysene (ug/l)	Dibenzo (a,h) anthracene (ug/l)	Fluoroanthene (ug/l)	Fluorene (ug/l)	Indeno (1,2,3-cd) pyrene (ug/l)	Naphthalene (ug/l)	Phenanthrene (ug/l)	Pyrene (ug/l)	Dissolved Lead (ug/l)
MW-7	7/26/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/6/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/8/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/10/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/17/2006	<155	<103	<103	<103	<103	<103	<103	<103	<103	<206	<103	501	<103	<155	456	<103	<1.00
	4/15/2007	<19.0	<19.0	<9.52	<9.52	<9.52	<9.52	<9.52	<9.52	<9.52	<19.0	<9.52	71.4	<9.52	<28.6	70.2	10.2	<1.00
	11/4/2007	53.9	<9.59	27.4	<9.59	<4.79	<4.79	<4.79	<4.79	5.50	<4.79	<9.59	152	<9.59	49.0	122	19.9	<1.00
	8/3/2008	<48.1	<28.8	<19.2	<3.85	<3.85	<3.85	<3.85	<3.85	<3.85	<3.85	7.19	106	<3.85	<19.2	108	9.48	NA
	11/16/2008	49.4	<34.7	32.2	2.13	2.27	<4.08	<2.04	<4.08	3.91	<2.04	7.52	127	<2.04	64.5	140	21.5	NA
	10/23/2009	44.2	153.0	36.4	4.37	3	4.91	2.95	4.91	10.4	<0.800	20.6	1220	2.49	112.0	329	33.1	NA
	4/23/2010	<34	<30.2	10.2	<7.55	<7.55	<7.55	<7.55	<7.55	<7.55	<7.55	8.86	105	<7.55	<15.1	107	10.2	NA
	8/6/2010	<40.8	<28.6	<12.2	<4.08	<4.08	<16.3	<4.08	<16.3	<4.08	<4.08	9.41	127	<4.08	<26.1	117	13.4	NA
	11/23/2010	<51.2	<33.5	18.5	<7.88	<7.88	<7.88	<7.88	<7.88	<7.88	<7.88	13.7	195	<7.88	<7.88	149	24.4	NA
	3/24/2011	<42.0	<21.3	12.9	<2.13	<2.13	<4.26	<2.13	<4.26	<2.13	<2.13	<5.85	77.2	<2.13	<39.4	57.9	10.9	NA
	5/10/2013	<4.85	<3.88	<3.88	<3.88	<3.88	<3.88	<3.88	<3.88	<3.88	<3.88	<3.88	15.9	<3.88	<7.77	7.57	<3.88	NA
5/10/2013**	<0.632	<0.123	<0.113	<0.0377	<0.0377	<0.0377	<0.0377	<0.0377	<0.0377	<0.0377	0.0494	2.02	<0.0377	<0.189	0.216	0.0873	<1.00	
MW-8	7/14/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/6/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/8/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/10/2006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/17/06	18.9	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<20.0	<10.0	59.9	<10.0	<15.0	38.2	<10.0	<1.00
	4/15/2007	7.46	<7.14	<4.76	<4.76	<4.76	<4.76	<4.76	<4.76	<4.76	<9.52	<4.76	27.2	<4.76	<4.76	16.6	<4.76	<1.00
	11/4/2007	7.69	<1.17	1.95	<0.936	<0.468	<0.468	<0.468	<0.468	<0.468	<0.468	<1.17	19.5	<0.936	4.95	8.55	1.26	<1.00
	8/3/2008	<16.5	<7.08	<3.77	<0.943	<0.943	<0.943	<0.943	<0.943	<0.943	<0.943	1.24	28.1	<0.943	<4.72	17.1	1.27	NA
	11/16/2008	19.6	<629	5.68	<2.04	<2.04	<2.04	<2.04	<2.04	<2.04	<2.04	2.29	50.4	<2.04	18.6	32.6	4.29	NA
	10/23/2009	<8.00	<6.00	2.08	<0.800	<0.800	<0.800	<0.800	<0.800	<0.800	<0.800	0.800	22.2	<0.800	4.16	13.2	0.816	NA
	4/23/2010	<12.5	<8.97	3.62	<0.748	<0.748	<0.748	<0.748	<0.748	0.873	<0.748	2.040	35.4	<0.748	3.02	23.5	1.92	NA
	8/6/2010	<16.0	<10.0	<3.00	<2.00	<2.00	<4.00	<2.00	<4.00	<2.00	<2.00	3.380	55.1	<2.00	8.66	33.4	3.4	NA
	11/23/2010	<12.9	<8.82	3.45	<0.784	<0.784	<0.784	<0.784	<0.784	0.991	<0.784	2.49	46.1	<0.784	<10.8	21.6	2.19	NA
	3/24/2011	<6.67	<3.23	<2.37	<0.860	<0.860	<0.860	<0.860	<0.860	<0.860	<0.860	<0.860	15.4	<0.860	<3.87	8.44	<0.860	NA

Table 4 - Historic Groundwater Sample Analytical Results
Polycyclic Aromatic Hydrocarbons

Well ID	Date Sampled	Acenaphthene (ug/l)	Acenaphthylene (ug/l)	Anthracene (ug/l)	Benzo (a) anthracene (ug/l)	Benzo (a) pyrene (ug/l)	Benzo (b) fluoroanthene (ug/l)	Benzo (ghi) perylene (ug/l)	Benzo (k) fluoranthene (ug/l)	Chrysene (ug/l)	Dibenzo (a,h) anthracene (ug/l)	Fluoroanthene (ug/l)	Fluorene (ug/l)	Indeno (1,2,3-cd) pyrene (ug/l)	Naphthalene (ug/l)	Phenanthrene (ug/l)	Pyrene (ug/l)	Dissolved Lead (ug/l)
MW-9	11/16/2008	5.71	<5.00	2.18	<0.408	<0.408	<0.408	<0.408	<0.408	<0.408	<0.408	0.869	18.3	<0.408	7.18	9.62	1.06	NA
	10/23/2009	<14.0	<12.0	4.09	<0.800	<0.800	<0.800	<0.800	<0.800	<0.800	<0.800	1.79	35.9	<0.800	9.61	21.1	1.72	NA
	4/23/2010	<5.37	<3.50	1.25	<0.187	<0.187	<0.374	<0.187	<0.374	0.217	<0.187	0.661	13.6	<0.187	2.89	6.03	0.707	NA
	8/6/2010	24	<14.4	<6.40	<0.800	<0.800	<1.60	<0.800	<1.60	<0.800	<0.800	6.09	78.2	<0.800	45.2	46.6	6.23	NA
	11/23/2010	4.73	<14.9	4.73	0.319	0.332	0.411	0.235	0.411	0.861	<0.196	3.11	47.0	0.204	<13.7	20.1	3.68	NA
	3/24/2011	<12.9	<6.14	4.03	<0.792	<0.792	<0.792	<0.792	<0.792	<0.792	<0.792	1.17	28.6	<0.792	<13.9	13.2	1.36	NA
MW-10 Total	4/23/2010	0.0431	0.0578	0.043	0.237	0.458	0.681	0.441	0.681	0.305	0.0737	0.386	<0.0377	0.374	<0.0755	0.171	0.494	NA
	8/6/2010	0.0396	0.0428	<0.0386	0.147	0.248	0.352	0.244	0.352	0.18	<0.0386	0.266	<0.0386	0.198	<0.0773	0.111	0.344	NA
	11/23/2010	0.0460	0.100	0.136	0.340	0.664	0.799	0.513	0.799	0.407	0.0863	0.626	<0.0400	0.433	<0.0800	0.185	0.796	NA
	3/24/2011	<0.0400	<0.0400	<0.0400	0.0514	0.0787	0.121	0.0764	0.121	0.0674	<0.0400	0.0922	<0.0400	0.0735	<0.0800	0.0588	0.108	NA
MW-10 Dissolved	5/18/2010	<0.0381	<0.0381	<0.0381	<0.0381	<0.0381	<0.0381	<0.0381	<0.0381	<0.0381	<0.0381	<0.0381	<0.0381	<0.0381	<0.0762	<0.0381	<0.0381	NA
	8/6/2010	<0.0435	<0.0435	<0.0435	<0.0435	<0.0435	<0.0435	<0.0435	<0.0435	<0.0435	<0.0435	<0.0435	<0.0435	<0.0435	<0.0435	<0.0435	<0.0435	NA
	11/23/2010	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0889	<0.0444	<0.0444	NA
	3/24/2011	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	<0.0444	0.0999	<0.0444	<0.0444	NA
MW-11 Total	4/23/2010	<0.0392	0.0671	0.0483	0.26	0.501	0.715	0.462	0.715	0.315	0.0767	0.433	<0.0392	0.405	<0.0784	0.167	0.545	NA
	8/6/2010	<0.0412	<0.0412	<0.0412	<0.0412	0.0549	0.0943	0.0627	0.0943	<0.0412	<0.0412	<0.0412	<0.0412	<0.0412	<0.0412	<0.0412	0.0596	NA
	11/23/2010	<0.0396	0.0884	0.0806	0.284	0.574	0.684	0.438	0.684	0.342	0.0733	0.518	<0.0396	0.376	<0.0792	0.147	0.651	NA
	3/24/2011	<0.0412	<0.0412	<0.0412	<0.0412	<0.0412	<0.0825	<0.0412	<0.0825	<0.0412	<0.0412	<0.0412	<0.0412	<0.0412	<0.0412	<0.0412	<0.0412	NA
MW-11 Dissolved	5/18/2010	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0748	<0.0374	<0.0374	NA
	8/6/2010	<0.0667	<0.0667	<0.0667	<0.0667	<0.0667	<0.0667	<0.0667	<0.0667	<0.0667	<0.0667	<0.0667	<0.0667	<0.0667	<0.0667	<0.0667	<0.0667	NA
	11/23/2010	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0941	<0.0471	<0.0471	NA
	3/24/2011	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0471	<0.0941	<0.0471	<0.0471	NA
MW-12 Total	4/23/2010	<0.0374	<0.0374	<0.0374	<0.0374	0.0498	<0.0748	<0.0374	<0.0748	<0.0374	<0.0374	0.0389	<0.0374	<0.0374	<0.0748	0.0531	0.0591	NA
	8/6/2010	<0.0430	<0.0430	<0.0430	<0.0430	<0.0430	<0.0430	<0.0430	<0.0430	<0.0430	<0.0430	0.0456	<0.0430	<0.0430	<0.0430	0.0715	0.0669	NA
	11/23/2010	<0.0400	<0.0400	<0.0400	<0.0400	0.0411	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	0.0446	NA
	3/24/2011	<0.0423	<0.0423	<0.0423	<0.0423	<0.0423	<0.0423	<0.0423	<0.0423	<0.0423	<0.0423	<0.0423	<0.0423	<0.0423	<0.0847	<0.0423	<0.0423	NA
MW-13	3/24/2011	<0.0406	<0.0406	<0.0406	<0.0406	<0.0406	<0.0406	<0.0406	<0.0406	<0.0406	<0.0406	<0.0406	<0.0406	<0.0406	<0.0812	<0.0406	<0.0406	NA
MW-14	3/24/2011	<1.58	<0.474	<0.147	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	4.22	<0.0421	<0.526	1.95	0.0585	NA
MW-15	5/5/2011	0.327	<0.0374	<0.0467	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	0.583	<0.0374	<0.187	<0.0374	<0.0374	NA
MW-16	5/5/2011	<2.52	<0.794	<0.243	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	0.0428	<0.0374	0.0940	5.34	<0.0374	<1.40	1.20	0.116	NA
RBC _{we} - Construction and		-	-	-	9.1	0.53	-	-	-	-	0.21	-	-	-	500	-	-	-

Notes:
BOLD = Analyte detected at or above method detection limits
 <2.43 = Not Detected at the Reporting Limit indicated
 ug/l = micrograms per liter (parts per billion (ppb))
 NA = sample was not analyzed for this constituent
 RBC_{we} = Risk Based Concentration: Groundwater in Excavation (Revised: November 15, 2011)
 - = No Risk Based Concentration Listed
 ** = Well was purged and sampled utilizing peristaltic pump and low flow sampling technique.

**Table 5
 Initial Screening and Evaluation of Technologies for Groundwater and Soil**

General Response Actions	Technology	Description	Screening Criteria				Screening Comments
			Effectiveness (L,M,H)	Implementability (L,M,H)	Relative Cost (L,M,H)	Retained (Y,N)	
NO ACTION	None	No Action	H	H	L	Y	Does not include remediation technology. Retained for comparison to other technologies.
INSTITUTIONAL CONTROLS	Deed Restrictions	Risk management plan for potential on-site groundwater exposure for construction/excavation worker.	L	H	L	N	This technology was not retained since recent sampling methodologies assessment at the site indicates that all groundwater constituents are below RBCs for the construction/excavation worker pathway.
ENGINEERING CONTROLS	Physical or Hydraulic Containment		L	L	H	N	This remedy was not retained since LNAPL is not mobile and dissolved contaminants do not pose a risk. Other disadvantages with this remedy would include high cost/low benefit, associated depth, and geologic subsurface limitations.
TREATMENT	Excavation	Excavate contaminated soils with off-site disposal.	L	M	H	Y	Retained
	In-Situ Soil Mixing	LNAPL body is physically/chemically bound within a stabilized mass to reduce mobility.	L	L	H	N	This remedy was not retained since LNAPL is not mobile and dissolved contaminants do not pose a risk. Other disadvantages associated with this remedy include accessibility and depth of contaminants.
	LNAPL Skimming	LNAPL is hydraulically recovered from the top of the groundwater column.	L	H	L	N	This remedy was not retained since LNAPL is not mobile. The hydrophobic sock maintenance used during the IRAM at the site has shown limited effectiveness because LNAPL is only seasonal in MW-7 and has not been observed in MW-3 for quite some time.
	Bioslurping/Enhanced Fluid Recovery	LNAPL is remediated via a combination of vacuum-enhanced recovery and bioventing processes.	L	M	M	N	This remedy was not retained since LNAPL is not mobile.
	Dual-Pump Liquid Extraction	LNAPL is hydraulically recovered by using two pumps simultaneously to remove LNAPL and groundwater.	L	M	M	N	This remedy was not retained because it is only effective for LNAPL saturation that is greater than residual and also only effective for mobile LNAPL.
	Multiphase Extraction (Dual Pump)	LNAPL and groundwater are removed through the use of two dedicated pumps. Vacuum enhancement is typically added to increase LNAPL hydraulic recovery rates.	L	M	M	N	This remedy was not retained because it is only effective for LNAPL saturation that is greater than residual.
	Multiphase Extraction (Single Pump)	LNAPL is recovered by applying a vacuum to simultaneously remove LNAPL, vapors, and groundwater.	L	M	M	N	This remedy was not retained because it is only effective for LNAPL saturation that is greater than residual.
	Water Flooding	Water is injected to enhance the hydraulic LNAPL gradient toward recovery wells. Hot water may be injected to reduce interfacial tension and viscosity of the LNAPL and further enhance LNAPL removal by hydraulic recovery.	L	M	H	N	This remedy was not retained because it is only effective for LNAPL saturation that is greater than residual. Also a disadvantage is the high cost/low benefit of implementation of this remedy.

Table 5
Initial Screening and Evaluation of Technologies for Groundwater and Soil

General Response Actions	Technology	Description	Screening Criteria				Screening Comments
			Effectiveness (L,M,H)	Implementability (L,M,H)	Relative Cost (L,M,H)	Retained (Y,N)	
TREATMENT	Surfactant-Enhanced Subsurface Remediation	A surfactant is injected that increases LNAPL solubilization and LNAPL mobility. The dissolved phase and LNAPL are then recovered via hydraulic recovery.	L	M	H	Y	Retained
	Steam/Hot-Air Injection	LNAPL is removed by forcing steam into the aquifer to vaporize, solubilize, and introduce LNAPL flow. Vapors, dissolved phase, and LNAPL are recovered via vapor extraction and hydraulic recovery.	L	M	H	N	This remedy was not retained due to the limited effectiveness for remediation of high viscosity/low volatility LNAPL.
	Radio-Frequency Heating	Electromagnetic energy is used to heat soil and groundwater to reduce the viscosity and interfacial tension of LNAPL for enhanced hydraulic recovery. Vapors and dissolved phase may also be recovered via vapor extraction and hydraulic recovery.	L	M	H	N	This remedy was not retained because it is only applicable to fine grained lithologies.
	Three- and Six-Phase Electrical Resistance Heating	Electrical energy is used to heat soil and groundwater to vaporize volatile LNAPLs constituents and reduce the viscosity and interfacial tension of LNAPL for enhanced hydraulic recovery. Vapors and dissolved phase may also be recovered via vapor extraction and hydraulic recovery.	L	L	H	N	This remedy was not retained because it is only applicable to fine grained lithologies.

Table 6
Remedial Alternative #2
Cost Screening

<i>Remedial Action/Activity</i>	<i>Unit Cost</i>	<i>Comments</i>	<i>Units</i>	<i>Unit Type</i>	<i>Item Cost</i>	<i>Total Remedial Action Cost</i>	<i>Cost Reference (see notes)</i>
Alternative 2 - Surfactant Enhanced Subsurface Remediation							
Pilot Study	\$5,000	Lump cost for pilot study and FAI oversight	1	lump	\$4,500	\$4,500	a, b
Project Management	\$8,000	Lump cost for project management activities	1	lump	\$8,000	\$8,000	a
Remedial Workplan Development	\$5,000	Lump cost for developing remedial action workplan	1	lump	\$5,000	\$5,000	a
Access Permitting	\$8,000	Lump cost for offsite access and Underground Injection Control permitting	1	lump	\$8,000	\$8,000	a
Injection/Extraction Well Installation	-	-	-	-	-	\$36,200	c
Utility Clearance	\$200	Estimated lump cost for private utility locate	1	lump	\$200		
Well Installation	\$4,000	Per well cost for 4-inch injection/extraction well installation via Sonic drilling methods	7	Well	\$28,000		
Oversight Personnel	\$1,000	per day cost for oversight personnel	4	Day	\$4,000		a
IDW Disposal	\$4,000	Lump cost for IDW disposal	1	lump	\$4,000		a
Surfactant/Nutrient Injection and Recirculation Event	\$30,000	Subcontractor cost per surfactant/nutrient injection and extraction event	6	Event	\$180,000	\$234,000	b
Oversight Personnel	\$1,000	per day cost for oversight personnel	30	day	\$30,000		a
Water disposal	\$0.50	per gallon cost to dispose of extracted groundwater	48,000	gallons	\$24,000		b, d
Groundwater Monitoring	\$1,000	per event groundwater monitoring labor costs	9	Event	\$9,000	\$11,295	a
Laboratory Costs	\$85	per sample laboratory costs for groundwater analysis	27	sample	\$2,295		e
Reporting	\$8,000	Estimated lump cost for Remedial Action Report	1	lump	\$8,000	\$8,000	a
Injection/Extraction Well Decommissioning	\$2,000	per well cost for decommissioning injection/extraction wells	7	Well	\$14,000	\$14,000	c
Contingency	0.15	15% contingency cost	1	pct	\$65,799	\$65,799	a
Alternative 2 Total Estimated Cost:						\$394,794	

Notes:

- a = FAI Estimate
- b = estimated following discussions with ETEC LLC in Portland, Oregon
- c = estimated following discussions with Cascade Drilling in Clackamas, Oregon
- d = estimated following discussions with ORRCO in Portland, Oregon
- e = based on schedule of fees from Apex Labs in Tigard, Oregon

Table 7
Remedial Alternative #3
Cost Screening

<i>Remedial Action/Activity</i>	<i>Unit Cost</i>	<i>Comments</i>	<i>Units</i>	<i>Unit Type</i>	<i>Item Cost</i>	<i>Total Remedial Action Cost</i>	<i>Cost Reference (see notes)</i>
Alternative 3 - Excavation							
Remedial Workplan Development	\$5,000	Lump cost for developing workplan	1	lump	\$5,000	\$5,000	a
Project Management	\$8,000	Lump cost for project management activities	1	lump	\$8,000	\$8,000	a
Excavation of Soils Around Monitoring Well MW-7	-	-	-	-	-	\$64,680	-
Oversight Personnel	\$1,200	per day cost for oversight personnel	5	day	\$6,000		a
Utility Clearance	\$200	Estimated lump cost for private utility locate	1	lump	\$200		b
Monitoring Well Decommissioning	\$2,000	per well cost to decommission monitoring wells MW-7, MW-13, and MW-14	3	well	\$6,000		
Excavation	\$20	per yard cost to excavate soils	1,150	yds	\$23,000		b
Shoring	\$15,000	Estimated lump cost for excavation shoring	1	lump	\$15,000		b
Soil Disposal	\$70	per ton cost to dispose of impacted soils	26	ton	\$1,820		c
Waste Profile Sampling	\$500	estimated lump cost for waste profile sampling	1	lump	\$500		d
Confirmation Sampling	\$85	per sample costs for confirmation sampling	16	sample	\$1,360		d
Excavation Backfill	\$40	per yard cost for excavation backfill, transportation, and compaction	20	yds	\$800		b
Site Restoration Costs	\$10,000	Estimated lump cost to restore site	1	lump	\$10,000		b
Excavation of Soils Around Monitoring Well MW-3	-	-	-	-	-		\$448,225
Oversight Personnel	\$1,200	per day cost for oversight personnel	10	day	\$12,000	a	
Utility Clearance	\$200	Estimated lump cost for private utility locate	1	lump	\$200	b	
UST System Decommissioning	\$100,000	Estimate lump cost to decommission existing UST system	1	lump	\$100,000	b	
Monitoring Well Decommissioning	\$2,000	per well cost to decommission monitoring wells MW-2R and MW-3	2	well	\$4,000		
Excavation	\$20	per yard cost to excavate additional soils	1,600	yds	\$32,000	b	
Shoring	\$15,000	Estimated lump cost for excavation shoring	1	lump	\$15,000	b	
Soil Disposal	\$70	per ton cost to dispose of impacted soils	520	ton	\$36,400	c	
Waste Profile Sampling	\$500	estimated lump cost for waste profile sampling	1	lump	\$500	d	
Confirmation Sampling	\$85	per sample costs for confirmation sampling	25	sample	\$2,125	d	
Excavation Backfill	\$40	per yard cost for excavation backfill, transportation, and compaction	400	yds	\$16,000	b	
Lost Revenue Costs	\$10,000	per month lost revenue costs for station downtime	2	month	\$20,000	a	
UST System Replacement	\$200,000	Estimated Lump Cost to construct new replacement UST system	1	lump	\$200,000	b	
Site Restoration Costs	\$10,000	Estimated lump cost to restore site	1	lump	\$10,000	b	
Reporting	\$8,000	Estimated lump cost for Remedial Action Report	1	lump	\$8,000	\$8,000	a
Contingency	0.15	15% contingency cost for additional time and work needed for project management, confirmation sampling, excavation, decommissioning, or restoration	1	pct	\$106,781	\$106,781	a
Alternative 2 Total Estimated Cost:						\$640,686	

Notes:

- a = FAI Estimate
- b = estimated sub-contractor cost
- c = estimated disposal costs from Waste Management
- d = based on schedule of fees from Apex Labs in Tigard, Oregon

Table 8
Remedial Action Alternatives Analysis

Alternative	Protectiveness (Y,N)	Effectiveness (0 to 4)	Long-Term Reliability (0 to 4)	Implementability (0 to 4)	Implementation Risk (0 to 4)	Total	Average	Meets Preference for Treatment of Hot Spots (Y,N)	Cost	
									Total Estimated Cost	Reasonableness of Cost (0 to 4)
Alternative 1: No Action	Y	4.0	4.0	4.0	4.0	20.0	4.0	Y	\$0	4.0
Alternative 2: Surfactant Enhanced Subsurface Remediation	Y	4.0	4.0	3.0	3.5	15.5	3.1	Y	\$394,794	1.0
Alternative 3: Excavation	Y	4.0	4.0	2.5	4.0	15.5	3.1	Y	\$640,686	1.0

Notes:

Y = yes

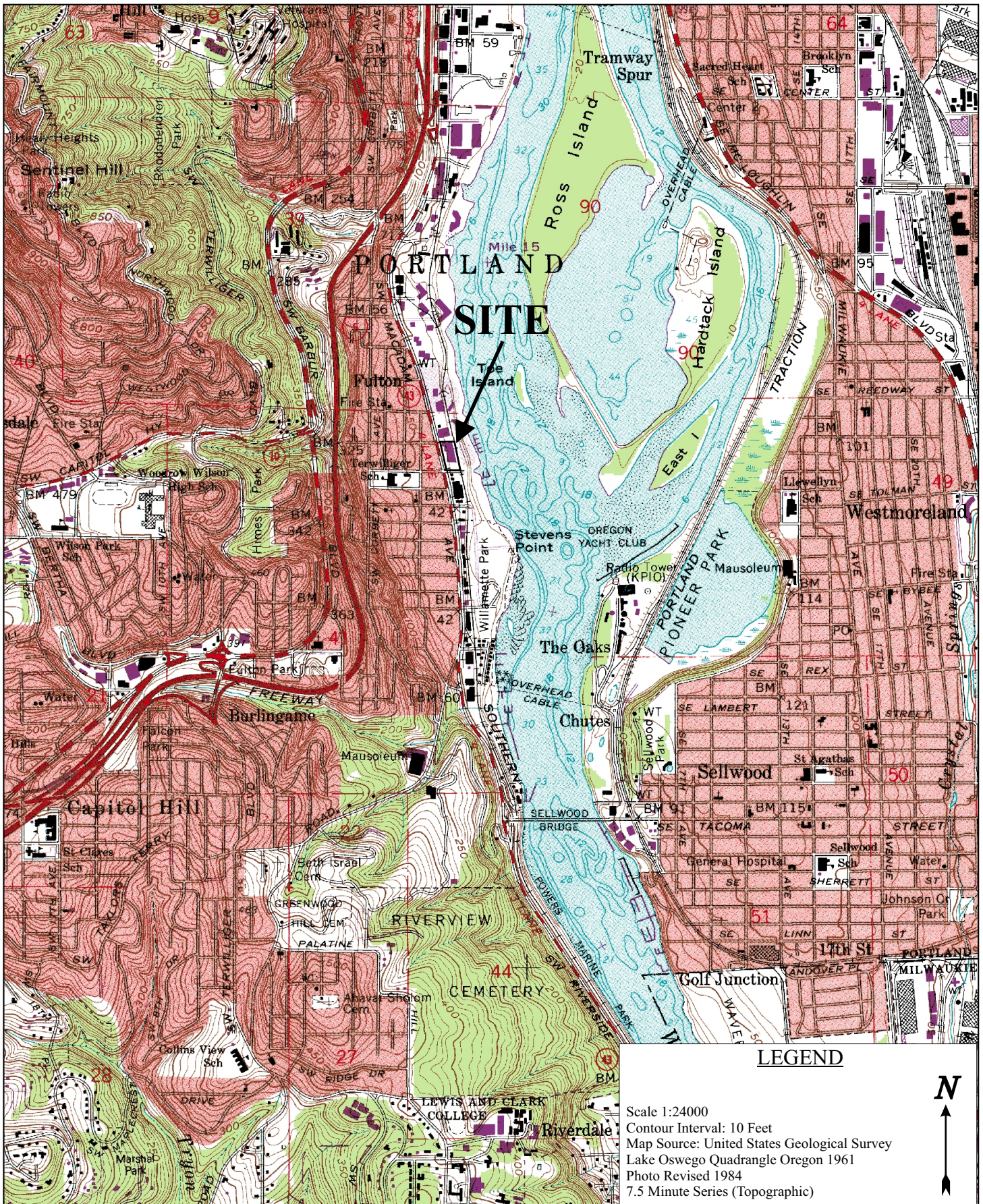
N = no

Subjective Ratings Range - 0 = to no extent meets criterion, 4 = completely meets criterion

Average = Total/number of criteria (5)

*Reasonableness of Cost is subjective and based on how reasonable the specific remedial alternative cost is relative to the costs of other remedial alternatives

FIGURES



Feige & Associates, Inc.
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 Scappoose, Oregon 97056 Fax: (503) 543-8757

Former Sunset Fuel/Pacific Pride
6140 and 6230 SW Macadam Ave.
Portland, Oregon

Site Location Map

Figure 1



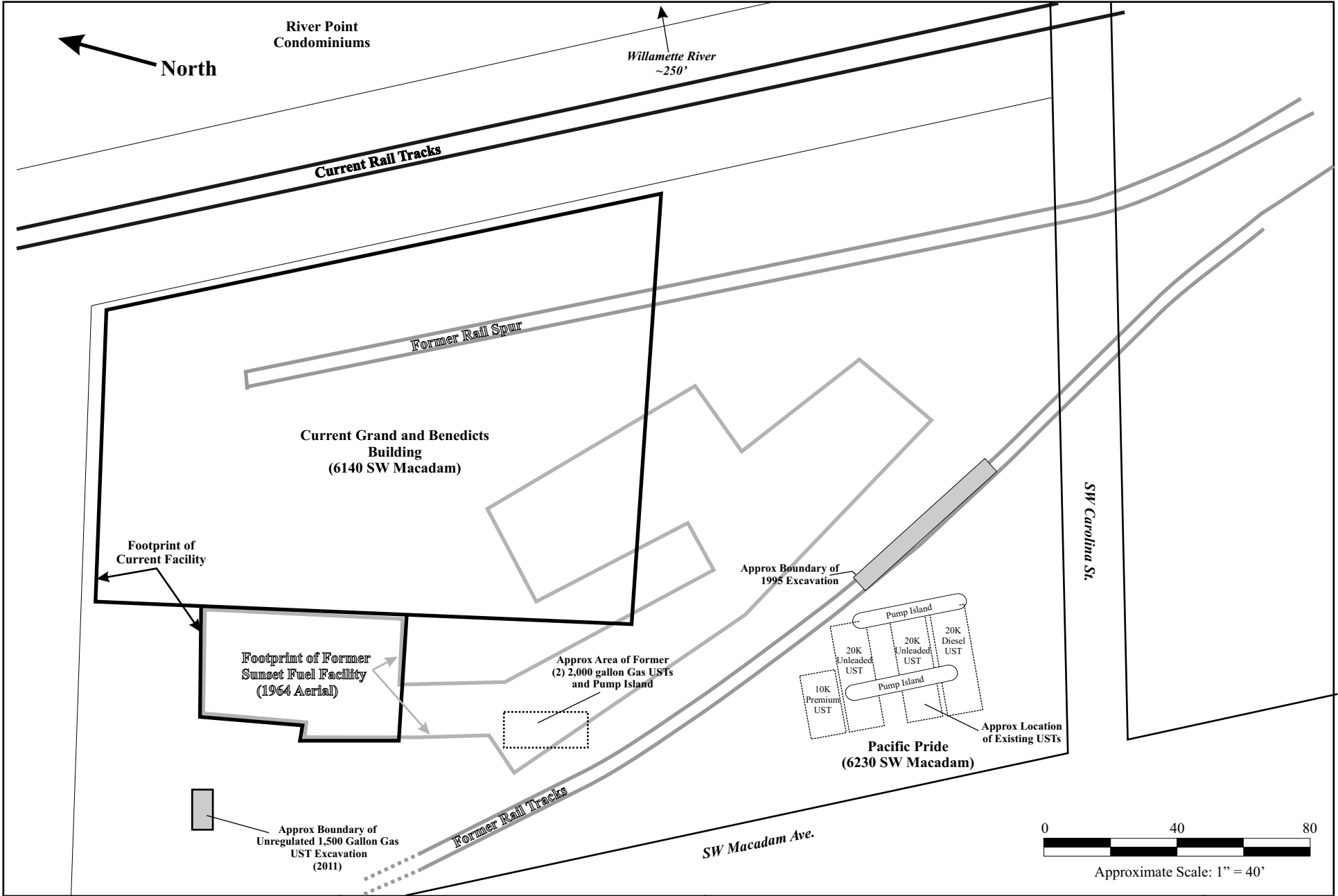
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Site Features and Groundwater Monitoring Well Location Map

Figure

2

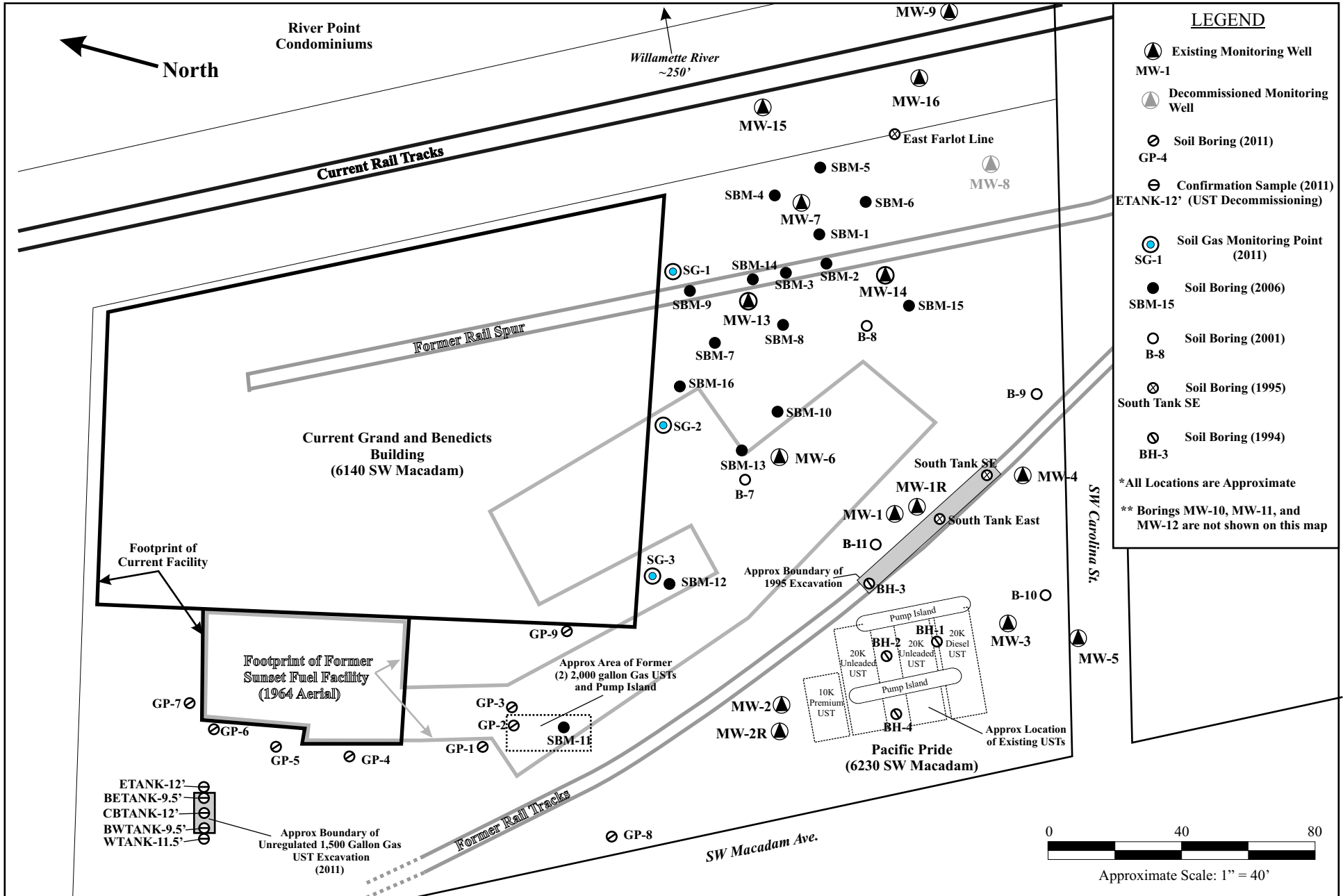


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**Current and Historic UST System
 and Excavations Map**

Figure **3**

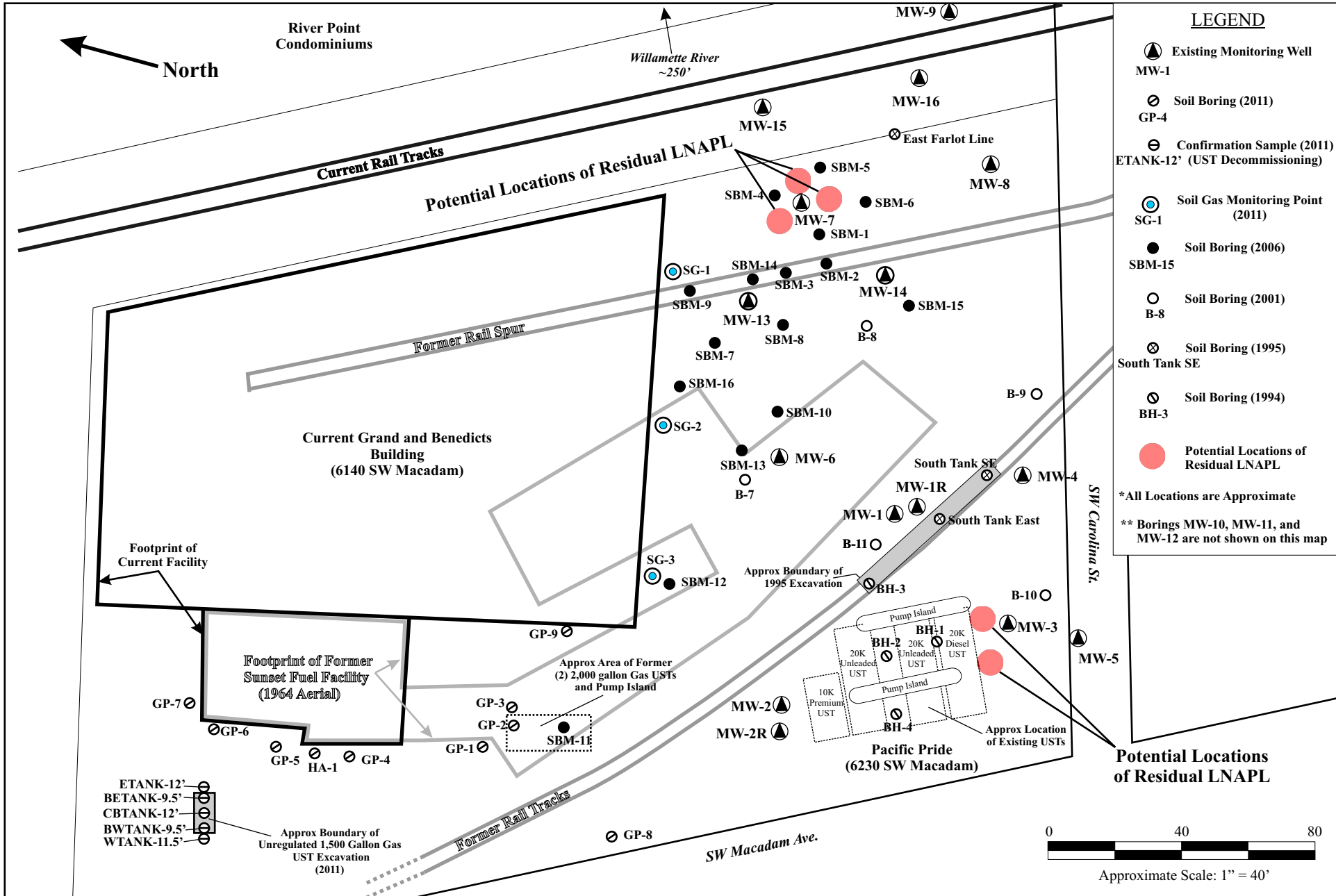


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**Historic Investigation Locations -
 Current Site Map with Overlay
 of 1964 Site Facility Features**

Figure **4**



LEGEND

- ▲ Existing Monitoring Well MW-1
- ⊗ Soil Boring (2011) GP-4
- ⊖ Confirmation Sample (2011) ETANK-12' (UST Decommissioning)
- ⊙ Soil Gas Monitoring Point (2011) SG-1
- Soil Boring (2006) SBM-15
- Soil Boring (2001) B-8
- ⊗ Soil Boring (1995) South Tank SE
- ⊖ Soil Boring (1994) BH-3
- Potential Locations of Residual LNAPL

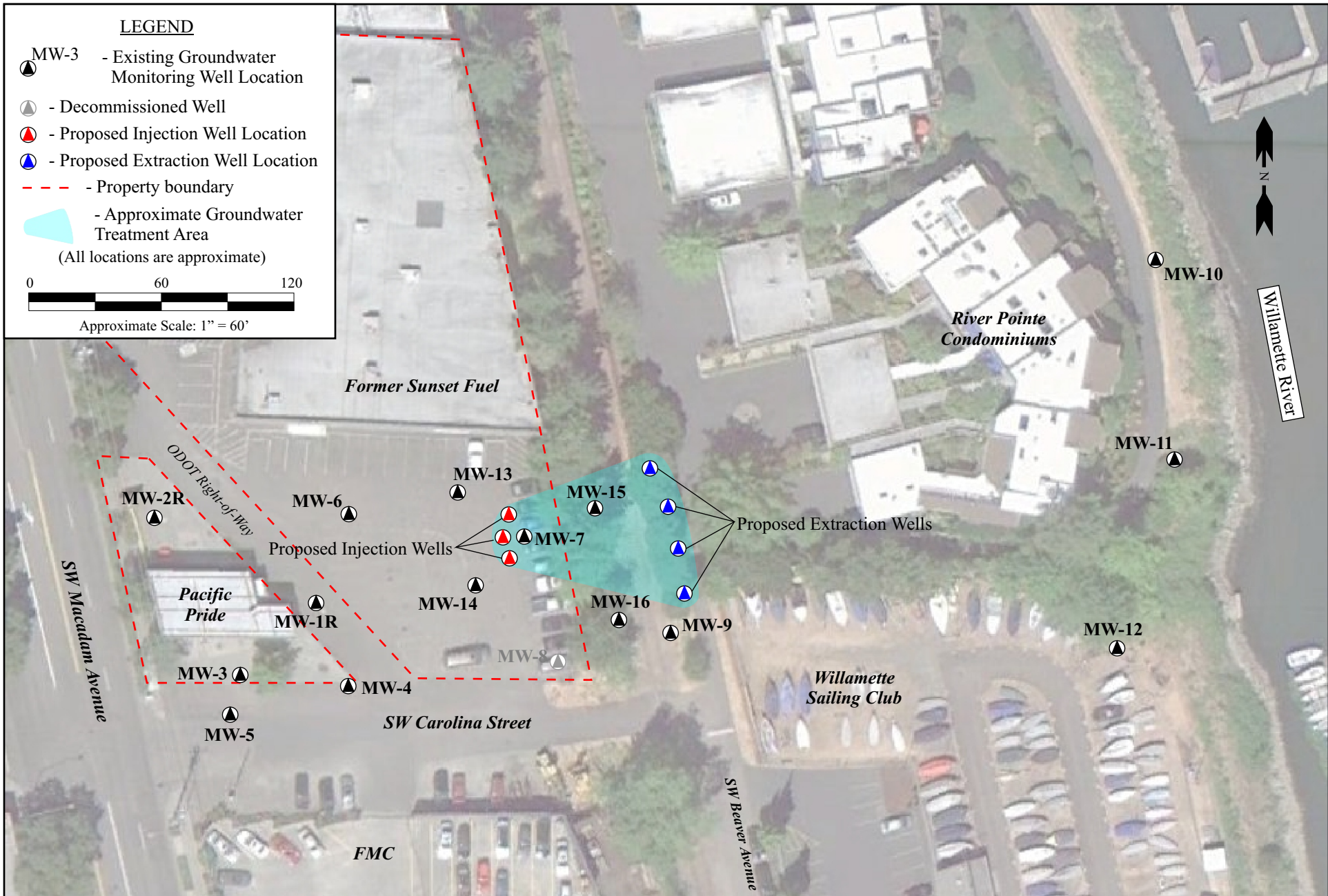
*All Locations are Approximate
 ** Borings MW-10, MW-11, and MW-12 are not shown on this map

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Potential Residual LNAPL Locations Map

Figure **5**



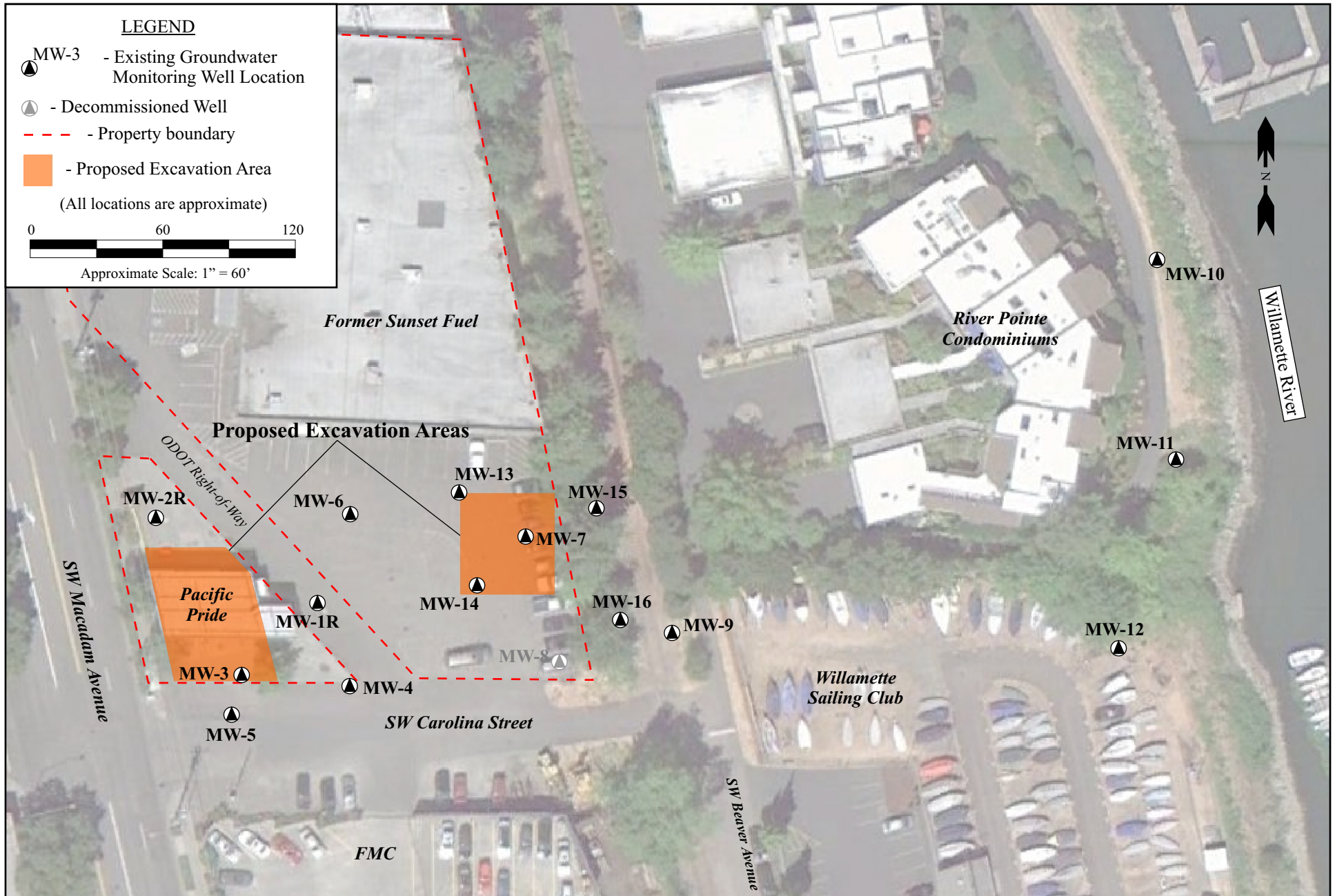
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Alternative 2
Surfactant Enhanced Subsurface
Remediation Map

Figure

6



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Former Sunset Fuel/Pacific Pride
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Alternative 3
Excavation Map

Figure

7