



Pump Station 9 Mainline Turbine Sump

2023 Product Recovery and Groundwater Monitoring Report

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This document has been prepared by SLR International Corporation (SLR). The material and data in this report were prepared under the supervision and direction of the individuals below.

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Executive Summary

SLR International Corporation (SLR) conducted one groundwater sampling event and multiple separate-phase hydrocarbon recovery events at the Pump Station 9 Mainline Turbine Sump site in 2023 on behalf of Alyeska Pipeline Service Company. The work was performed to monitor groundwater quality from wells without free product and remove free product from recovery wells.

Free product recovery was conducted seven times from recovery wells MW-1 and MW-5 in 2023. A total of 0.4 gallon (gal) of product was recovered from MW-1. Initial product thickness for well MW-1 was higher than the previous year, and final product thickness on the last site visit was comparable to the previous year, both below the target final thickness of 0.1 foot (ft) or less. A total of 2.7 gal of product was recovered from MW-5. The initial product thickness measured in MW-5 represents a historic low, but the measured product thickness varied throughout the field season. The final product thickness for MW-5 was lower than the previous year but above the target final thickness of 0.1 ft or less.

It is estimated that a total of approximately 3.1 gal of free product was recovered in 2023 from both product recovery wells. Approximately 1,263 gal of free product has been recovered from this site to date. This total accounts for about 63 percent of the estimated 2,000 gal of free product present at the site; however, only 178 gal of the total volume has been recovered since the shutdown of the active recovery system in 2009. In all years prior to 2019, entrained water in the recovered product mix biased the total product recovery measurements. The recovered product estimates from 2019 through 2023 were adjusted to account for the water fraction present in recovered fluid based on measurements of water and product recovered in sorbent socks in 2020.

Groundwater monitoring was conducted at monitoring wells MW-2, MW-3, MW-7, MW-8, and MW-10. Concentrations of diesel range organics (DRO) above the laboratory limit of detection were detected in the groundwater samples from MW-7, MW-8, and MW-10. At MW-7, the DRO concentration of 3.03 mg/L exceeded the ADEC groundwater cleanup level of 1.5 mg/L. This exceedance is comparable to the concentration of 2.96 mg/L that was detected at MW-7 in 2001. Only trace amounts of benzene were detected at MW-7, measuring 0.00173 mg/L, which is below the ADEC groundwater cleanup threshold of 0.0046 mg/L. Benzene, toluene, ethylbenzene, and xylenes have not exceeded ADEC groundwater cleanup levels at any well since 2011.

SLR will continue to conduct annual product recovery activities in early summer (June) of 2024 and 2025 and biennial groundwater monitoring in 2025 per the 2023-2025 *Groundwater Monitoring and Product Recovery Work Plan* (SLR, 2023).



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Acronyms and Abbreviations

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
Alyeska	Alyeska Pipeline Service Company
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
DRO	diesel range organics
ft	foot/feet
gal	gallons
LOD	limit of detection
LOQ	limit of quantitation
mg/L	milligrams per liter
MLT	Mainline Turbine
MW	monitoring well
ND	non-detect
PAH	polynuclear aromatic hydrocarbon
PS09	Pump Station 9
QA	quality assurance
QAR	quality assurance review
QC	quality control
SGS	SGS North America, Inc.
SLR	SLR International Corporation



1.0 Introduction

SLR International Corporation (SLR) conducted groundwater sampling and recovery of separate-phase hydrocarbons (hereafter referred to as free product) at the Mainline Turbine (MLT) Sump site at Pump Station 9 (PS09) for Alyeska Pipeline Service Company (Alyeska) in 2023. Recovery well product thicknesses were gauged, and product was recovered on seven site visits. This report summarizes the project approach, methodology, groundwater sampling analytical results, and product recovery results.

1.1 Physical Setting

PS09 is located approximately 7 miles south of Delta Junction on the Richardson Highway in the Tanana-Kuskokwim lowlands region of interior Alaska (Figure 1). The pump station is situated in an area of relatively flat topography at an elevation of 1,500 feet (ft) above mean sea level. The pump station is built on a gravel pad and consists of several buildings, pipeline infrastructure, and a tank farm (Figure 2). Monitoring and free product recovery wells are situated around, and hydraulically downgradient, of the former MLT Sump (Figure 3).

Soil and sediments at PS09 consist of glacial outwash and Pleistocene surficial deposits of the Tanana River drainage. During subsurface investigations and monitoring well installations conducted in 1998, the underlying soil at PS09 was predominantly poorly sorted, well-rounded sand and gravel with cobbles and boulders consistent with glacial outwash deposits (EMCON, 1999). The lithology recorded on the PS09 drinking water well log indicates that the pump station is underlain by at least 420 ft of unconsolidated, coarse sediments consisting of sand, cobbles, and boulders also indicative of glacial outwash sediments. During the 1998 investigation, groundwater was encountered at approximately 110 ft below ground surface (bgs). This aquifer appeared to be discontinuous and only a few feet thick and terminated in a dry, dense stratum of gravel and cobbles (EMCON, 1999).

1.2 Project Background

Alyeska encountered petroleum-contaminated soil during the removal of the PS09 MLT Sump in October 1996 (Alyeska spill number 1996130). The site was excavated to the extent practical; however, diesel range organics (DRO)-contaminated soil remained in the subsurface at concentrations greater than the Alaska Department of Environmental Conservation (ADEC) soil cleanup level.

Environmental investigations have been ongoing at this site since 1997, when an Alyeska contractor advanced three soil borings to assess the extent of subsurface contamination underlying the former MLT Sump. The site activities from 1997 to 2016 are described in the 2017 *Groundwater and Product Recovery Report* (SLR, 2018), and relevant details are summarized below.

1.2.1 1997 and 1998 Soil Investigations

A subsurface investigation conducted in July 1997 confirmed the presence of contamination to at least 65 ft bgs near the MLT Sump. During drilling, cobbles and boulders prevented boring advancement beyond 65 ft bgs; an additional boring was advanced through the source area using an air rotary drill rig later in 1997 and was completed as monitoring well MW-1. While drilling monitoring well MW-1, petroleum hydrocarbon-impacted soil was noted to extend to a depth of 110 ft bgs, where groundwater was encountered. A thin layer of free product was measured on the top of the groundwater table and was tentatively identified as weathered



turbine fuel. Beginning in 1998, monitoring well MW-1 was used as a product recovery well (Figure 3; EMCON, 1998). Two additional monitoring wells, MW-2 and MW-3, were installed in 1997 to evaluate the direction of groundwater flow and the hydraulic gradient at the site. Monitoring well MW-2 was installed west of the MLT Sump and monitoring well MW-3 was installed approximately 200 ft southwest of the MLT Sump (Figure 3; EMCON, 1998).

In 1998, eight additional soil borings were advanced, seven of which were converted into monitoring wells (MW-4 through MW-10). Soil and groundwater samples were also collected as part of the 1998 investigation. Monitoring well MW-9 was decommissioned in 1998, and monitoring well MW-4 was destroyed in the winter of 2004-2005, leaving the current total of eight monitoring and recovery wells on site (EMCON, 1999). Product recovery began in 1998 and has continued to the present. Recovery well MW-6 was decommissioned in 2017 and is no longer used for product recovery (SLR, 2018).

1.2.2 Free Product Recovery

Free product recovery was initiated following the installation of MW-1 in 1997 and MW-5 and MW-6 in 1998, and recovery was performed each subsequent summer at all three product recovery wells until MW-6 was decommissioned in 2017. Product recovery events continued at the other two wells through 2022 and are included in the *2022 Product Recovery Report* (SLR, 2022).

Overall, annual recovery from the product recovery system declined steadily until 2013, when the estimated recovery volume increased, likely due to using product-selective sorbent socks (hereafter referred to as sorbent socks) during site visits rather than the product recovery canisters. Recovery volumes then decreased until 2016, when they increased slightly from the previous year. The increased recovery may have occurred due to an increase in product recovery events. Recovery has shown an overall decrease since 2013, culminating in the 2020 recovery event, which saw the lowest recovered volume since 2012. The total volume of product recovered through 2020 was approximately 1,241 gallons (gal).

In 2020, SLR recovered fluid from 2-inch and 4-inch sorbents using a wringer and quantified recovered fuel and water using a graduated cylinder and electronic scale. Reduced product capacity in the sorbents was due to water entrained in the hydrophobic sorbent material. Based on the water and product recovery measurements, correction factors of 0.36 and 0.60 were established for 2-inch and 4-inch sorbent socks, respectively. Using these correction factors, volume recovery estimates for 2019 through 2023 were revised to reflect product-only volumes recovered using sorbent socks. Product volume recovery estimates could not be updated for years up to and including 2018 because product bailers were used in addition to sorbents. Using revised product recovery volumes from 2019 to 2022, 2022 represented the lowest recorded volume at the site.

1.3 Groundwater Monitoring

Groundwater sampling at the site has been conducted at various frequencies (quarterly to biennial) since the initial sampling event in 1997. Analytical results show that for the wells sampled, concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) and DRO have remained below ADEC groundwater cleanup levels in the monitoring wells since 2001, except for samples collected from monitoring wells MW-2 and MW-7. Exceedances were reported for DRO in monitoring well MW-2 in 2010 and for benzene in monitoring well MW-7 from 2004 to 2011 (SLR, 2014).



Only a single polynuclear aromatic hydrocarbon (PAH), naphthalene, has been detected at the site, at a concentration approaching ADEC cleanup levels (EMCON, 1998). Following the 2003 sampling event, analysis for PAHs was discontinued, except for naphthalene. Samples continued to be analyzed for naphthalene through 2009. With no detections of naphthalene since 2006, analysis was discontinued after 2009 with ADEC approval (SLR, 2010).

Groundwater monitoring results for the five wells sampled in 2015 and 2016 found that analyte concentrations were below their respective laboratory detection limits at all wells, except for well MW-7, where DRO and benzene concentrations were detected well below ADEC cleanup levels and 2014 concentrations. Detected analyte concentrations at monitoring well MW-7 generally declined from 2011 to 2016 (SLR, 2016).

Groundwater monitoring results in 2017 indicated that low levels of DRO and benzene, well below applicable ADEC cleanup levels, were present at sampled wells. In 2019, petroleum hydrocarbon impacts were limited to low-level detections of DRO well below applicable cleanup levels. In 2019, for the first time at the site, BTEX was not detected above the laboratory limit of detection (LOD). In 2021, DRO was detected in samples from all wells at estimated concentrations between the LOD and limit of quantitation (LOQ) except at MW-7 and MW-10, which both had non-qualified detections below the ADEC cleanup level. Groundwater samples collected from all groundwater monitoring wells were non-detect (ND) for BTEX congeners for the second time since 2004 (SLR, 2021).

1.4 Objectives and Scope of Work

The following scope was completed in 2023 to satisfy the associated project objectives:

- Groundwater monitoring at all five monitoring wells (MW-2, MW-3, MW-7, MW-8, and MW-10);
- Continued free product recovery from recovery wells MW-1 and MW-5; and
- After product recovery activities, installation of heat trace in recovery wells MW-1 and MW-5 to facilitate well thawing and early resumption of product recovery in early June 2024.



2.0 Regulatory Criteria

The current ADEC groundwater cleanup levels for petroleum hydrocarbons are contained in Title 18 of the Alaska Administrative Code, Chapter 75 (18 AAC 75), *Oil and Other Hazardous Substances Pollution Control* (ADEC, 2023). A summary of the groundwater cleanup levels listed in the regulation for constituents detected at the site is provided below:

- DRO, 1.5 milligrams per liter (mg/L);
- Benzene, 0.0046 mg/L;
- Toluene, 1.1 mg/L;
- Ethylbenzene, 0.015 mg/L; and
- Xylenes (total), 0.19 mg/L.



3.0 Field Activities

This section describes groundwater sampling and product recovery activities conducted during the 2023 field season. Field activities were conducted in accordance with the *2023-2025 Groundwater Monitoring and Product Recovery Work Plan* (SLR, 2023) and *ADEC Field Sampling Guidance* (ADEC, 2019). All field sampling was performed by a qualified environmental professional as defined by 18 AAC 75.333. Field activities were documented in the Photograph Log (Appendix A) and in the Field Logbook and Field Forms (Appendix B).

3.1 Groundwater Sampling

SLR conducted groundwater monitoring on May 22, 2023. The monitoring event included sampling of monitoring wells MW-2, MW-3, MW-7, MW-8, and MW-10. A duplicate sample was collected from monitoring well MW-3 and designated as MW-93. Recovery wells MW-1 and MW-5 were not part of the groundwater monitoring program because they contain free product.

3.1.1 Sampling Procedures

Groundwater sampling was conducted using low-flow sampling methodology. At two wells, drawdown was maintained at less than 0.33 ft (MW-3 and MW-10); and at three wells, drawdown slightly exceeded 0.33 ft (MW-2, MW-7, and MW-8). The wells were purged with disposable polyethylene bailers. A water sample was collected after parameters had stabilized. Water quality parameters were monitored using a YSI® Pro Plus multi-parameter meter. Parameters were recorded at regular intervals during purging and included pH, temperature, specific conductance, dissolved oxygen, and oxidation-reduction potential. Groundwater Sampling Forms and the YSI® calibration log are provided in Appendix B.

Groundwater samples were collected directly into laboratory-supplied containers with volatile samples collected first, followed by non-volatile samples. Samples were stored and transported in chilled coolers under chain of custody to SGS North America, Inc. (SGS) in Fairbanks, Alaska, an ADEC-approved laboratory.

3.1.2 Analytical Methods

Groundwater samples were analyzed by SGS using the following analytical methods, consistent with previous sampling events:

- DRO by Method AK102; and
- BTEX by United States Environmental Protection Agency Method 8021B.

3.2 Quality Assurance and Quality Control

Quality assurance/quality control (QA/QC) procedures were maintained throughout the sampling activities. QA procedures include the analysis of a field duplicate and a trip blank, and a laboratory data QA review (QAR) by qualified SLR staff. The QAR included the completion of an ADEC Laboratory Data Review Checklist. QC procedures included adherence to appropriate sample collection methodology as described in the Work Plan (SLR, 2023).

Any discrepancies associated with the samples collected from the site are identified in the QAR and summarized in Section 5.1. The QAR, the completed ADEC Laboratory Data Review Checklist, and laboratory analytical report are presented in Appendix C.



3.3 Product Gauging

Product recovery activities were performed between June 1 and September 23, 2023, and included the measurement of free product thicknesses and product recovery from wells MW-1 and MW-5. Recovery wells MW-1 and MW-5 were gauged for free product and depth to water using an oil/water interface probe. The apparent product thickness in recovery wells was calculated by subtracting the depth to product from the depth to water. The interface probe was decontaminated using a non-ionic detergent solution following gauging activities. Product recovery activities are documented in the project Field Logbook (Appendix B).

The thickness of free product present in a formation (true thickness) is less than the thickness of product observed floating on top of the water in a monitoring well (apparent thickness). Factors affecting the difference between the true thickness and the apparent thickness include the density of the free product, the density of the groundwater, and the characteristics of the formation. All product thicknesses described in this report are presented in terms of apparent thickness, as measured in the product recovery wells.

3.4 Free Product Recovery

SLR visited the site on seven separate occasions in 2023 to thaw, gauge, and/or conduct product recovery from recovery wells MW-1 and MW-5. Both wells were thawed on May 22, and free product recovery was conducted beginning on May 23 and continued on each subsequent visit. Field measurements of depth to free product, depth to water, and free product thickness before and after recovery were recorded in the Field Logbook.

3.4.1 Well Thawing

Heat trace wire installed the previous fall was used to thaw ice in the upper casing of recovery wells MW-1 and MW-5 during the May 22 site visit. Thawing of ice in recovery wells was necessary to facilitate early product measurement and product recovery. This is a significant improvement over waiting for natural thawing, which occurred as late as August in previous years.

3.4.2 Recovery Methods

Product recovery was accomplished using sorbent socks. The sorbent socks used were DGSI Geo Slope Indicator SoakEase™ 2-inch and 4-inch nominal diameter absorbent socks. The sorbent socks used typically reduce product thickness to less than 0.10 ft after one to six deployments.

Passive recovery using sorbent socks deployed between visits was eliminated in 2018 to improve the accuracy of the initial gauging of product thickness before product recovery during each site visit.

3.4.3 Product Volume Measurement

The volume of free product recovered using the sorbent socks was estimated using the percentage of the sock visually wetted with product, the vendor's published product absorbing capacity for the sorbent sock used, and the assumption that only free product was absorbed. Typically, however, a water and turbine fuel mix has been observed in the oily waste bags containing the spent 4-inch absorbent socks, suggesting that the larger-diameter socks entrain water along with oil within their fibrous filling. Therefore, the calculated volume of free product recovered with sorbent socks has been considered biased high, but that bias was not quantified



until 2020. As discussed in the *Pump Station 9 Mainline Turbine Sump 2020 Product Recovery Report* (SLR, 2020), SLR established product recovery correction factors in 2020 for 2-inch and 4-inch sorbent socks and applied those factors to recovery volumes in 2019 and 2020. These same correction factors were used again in 2023.

3.4.4 Heat Trace Emplacement

SLR placed heat trace in the two recovery wells after the product recovery event on October 1, 2021. The heat trace was first installed following the product recovery event in October 2013 to enable thawing of the shallow ice plugs that typically form between 8 ft and 14 ft bgs in the zone of seasonal frost. The heat traces extend to approximately 20 ft bgs in each well and are powered by a portable gasoline-powered generator placed in a rubber drip containment mat.

3.5 Work Plan Deviations

No Work Plan deviations were noted for the sampling activities conducted in 2023.

3.6 Waste Management

Solid and liquid wastes generated during field activities were managed as follows:

- Single-use sampling and product recovery supplies were disposed of as non-oily waste and placed in the appropriate garbage receptacle at PS09;
- Used sorbent socks were placed in double-bagged oily-waste bags and left in the appropriate oily-waste receptacle at PS09 for offsite disposal; and
- Purge water from groundwater sampling was transferred to a pipeline sump for injection into the pipeline.

Prior to each field event, the disposal of waste materials was discussed with the PS09 Waste Single Point of Contact and/or Operations and Maintenance Supervisor.



4.0 Product Recovery Results

This section describes the results of field activities completed in 2023, which included measurement of groundwater elevations, measurement of free product thickness, and recovery of free product. Measurements of groundwater elevations and product thickness at recovery wells are presented in Table 1. The maximum gauged free product thicknesses from 1998 through 2010 and recovery volumes and product thicknesses from 2011 through 2023 for wells MW-1 and MW-5 are presented in Tables 2 and 3, respectively.

4.1 Groundwater Elevations

Groundwater elevations measured in product recovery wells in 2023 were comparable to typical elevations seen since recovery events began (Table 1). Groundwater elevations measured for groundwater monitoring wells were comparable to recorded elevations dating back to 2001 (MW-8), 2006 (MW-2), 2009 (MW-7), 2011 (MW-11), or since records began in 1997 (MW-3). The elevations collected over the life of the project in monitoring and product recovery wells suggest a general north-northwest flow direction. However, the aquifer is perched and discontinuous; therefore, the assumed gradient is subject to uncertainty (SLR, 2018).

4.2 Apparent Free Product Thickness

Initial product thickness in MW-1 was greater than measured in 2022, but less than measured in 2021. Initial product thickness in MW-5 was the lowest on record but was followed by variable thicknesses throughout the summer. Product thicknesses measured on the final recovery event showed a decrease in thickness from post-thaw thicknesses due to product recovery efforts at MW-1. At MW-5, the product thickness of 0.17 inches measured on the final product recovery event exceeded the product thickness of 0.08 inches measured on the initial product recovery event.

Historical product gauging results for MW-1 and MW-5 are shown on Tables 2 and 3, respectively, and are summarized as follows:

- **MW-1:** The apparent pre-recovery product thickness of 0.50 ft in 2023 was greater than the 0.21 ft measured in 2022. Additionally, the final product thickness of 0.05 ft achieved after seven recovery events was comparable to the final measurement of 0.09 ft in 2022. The final product thickness was also lower than the true product thickness of 0.27 to 0.30 ft determined from the 2015 baildown test.
- **MW-5:** The pre-recovery product thickness of 0.08 ft was less than the 0.13 ft pre-recovery thickness measured in 2022 and is the lowest initial thickness recorded. The final product thickness of 0.17 ft achieved after seven recovery events was less than the final measurement of 0.51 ft in 2022. Additionally, the final product thickness of 0.17 ft was lower than the true thickness of 0.21 to 0.31 ft determined from the 2015 baildown test.

Variations in product thickness between years may result from continued product recovery and seasonal changes in groundwater elevations. Overall, the apparent free product thicknesses have decreased since the gauging of recovery wells began in 1997.



4.3 Free Product Recovery

The total volume of product recovered during seven visits conducted in 2023 increased slightly for MW-1 and decreased for MW-5 as compared to recovery totals from 2022. The results of annual product recovery events completed for wells MW-1 and MW-5 are presented in Tables 2 and 3, respectively, and a comparison of annual product recovery periods is provided in Table 4. Results of 2023 product recovery activities are summarized as follows:

- **MW-1:** The total free product recovered using sorbent socks was approximately 0.4 gal, consistent with 0.3 gal in 2022. The volume recovered in 2023 accounts for 1 percent of the 34.2 gal of product recovered from this well since 2011.
- **MW-5:** The total free product recovered using sorbent socks was approximately 2.7 gal, a decrease from the 4.6 gal recovered in 2022. The lower recovery volume is consistent with the lower initial pre-recovery thickness compared to 2022. The measured recovery volume recovered represents 2 percent of the 135.0 gal of product recovered from this well since 2011.

The year-end total product recovery volumes for wells MW-1 and MW-5 are variable and do not correlate directly to the number of recovery events, indicating that the effectiveness of recovery events varies from year to year and may also not correlate to pre-recovery product thicknesses. The total volume of recovered product to date of approximately 1,263 gal represents a substantial portion (63 percent) of the approximately 2,000 gal thought to have been released. The product recovered in 2023 represents only 0.2 percent of the total of approximately 1,263 gal of free product recovered by all methods since discovering the contamination in 1996 (Table 4). Additionally, the 178 gal of product recovered between 2011 and 2023 represents only a small fraction (14 percent) of the total volume recovered since 1996.



5.0 Groundwater Analytical Results

This section describes key findings of groundwater sampling analytical results and SLR's QAR. Groundwater analytical results for the five monitoring wells sampled in 2023 are presented in Table 5, and historical results are shown in Table 6. The laboratory QAR, completed ADEC Laboratory Data Review Checklist, and laboratory analytical report are included in Appendix C.

5.1 Analytical Data Quality

No issues were noted within SLR's QAR with respect to data packages; the data met all precision, accuracy, representativeness, comparability, completeness, and sensitivity goals. The data were deemed acceptable for use without qualification as described in the QAR.

5.2 Groundwater Analytical Results

Analytical results indicate that petroleum hydrocarbon impacts are limited to low-level detections of DRO well below applicable cleanup levels and within historical concentration ranges for all monitoring wells except for MW-7.

At MW-7, the DRO concentration of 3.03 mg/L exceeded the ADEC groundwater cleanup level of 1.5 mg/L. This exceedance for DRO at MW-7 is historically comparable to the concentration of 2.96 mg/L detected in 2001. Estimated concentrations of DRO below the LOQ were reported in samples collected from MW-8 and MW-10. DRO was ND at MW-2 and MW-3.

Additionally, the 2023 sampling results indicate that BTEX congeners were not detected above the laboratory LOD in groundwater samples collected from all sampled wells. Benzene was only detected at 0.00173 mg/L at MW-7, less than the ADEC groundwater cleanup level of 0.0046 mg/L.



6.0 Conclusions and Recommendations

Activities completed in 2023 at the PS09 MLT Sump site included groundwater monitoring at five wells, thawing and product recovery at MW-1 and MW-5, and reinstallation of heat trace in the product recovery wells for the 2024 product recovery season.

At the start of the 2023 product recovery season, initial product thicknesses were consistent with thicknesses recorded in previous years at MW-1 but were the lowest on record at MW-5. Product thickness in both wells varied during the summer but showed an overall decrease by the end of the field season. The total volume of product recovered from wells MW-1 and MW-5 decreased by 1.8 gal from the recovery total documented for 2022.

The results of groundwater monitoring at the PS09 MLT Sump site in 2023 indicate that the remaining quantity of product present in recovery wells does not result in exceedances in nearby groundwater except at downgradient well MW-7. Concentrations of all analytes remain low and well below ADEC cleanup levels for all wells sampled in 2023 except for DRO at MW-7, which exceeded the ADEC cleanup level. At all other wells, DRO was either ND or detected at estimated concentrations between the LOD and LOQ. Only one BTEX compound, benzene, was detected at MW-7 at a concentration well below the ADEC cleanup level. BTEX compounds have not exceeded ADEC groundwater cleanup levels at any well since 2011.

SLR will continue product recovery in 2024 consistent with the approved 2023-2025 *Groundwater Monitoring and Product Recovery Work Plan* (SLR, 2023).



7.0 References

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Limitations

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

Opinions and recommendations contained in this work product are based on conditions that existed at the time the services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. The data reported and the findings, observations, and conclusions expressed are limited by the scope of work. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this work product.

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 into the environmental issues and an appropriate level of analysis for each conceivable issue of potential concern. The following paragraphs discuss the assumptions and parameters under which such an opinion is rendered.

No investigation can be 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 within the scope, practical limitations, and cost of the work performed.

Environmental conditions that are not apparent may exist at the site. Our professional opinions are based in part on interpretation of data from a limited number of discrete sampling locations and therefore may not be representative of the actual overall site environmental conditions.

The passage of time, manifestation of latent conditions, or occurrence of future events may require further study at the site, analysis of the data, and/or reevaluation of the findings, observations, and conclusions in the work product.

This work product presents professional opinions and findings of a scientific and technical nature. The work product shall not be construed to offer legal opinion or representations as to the requirements of, nor the compliance with, environmental laws rules, regulations, or policies of federal, state or local governmental agencies.





Tables

Pump Station 9 Mainline Turbine Sump

2023 Product Recovery and Groundwater Monitoring Report

Alyeska Pipeline Service Company

SLR Project No: 105.01288.23010

December 5, 2023

**Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump**

Well Name	Date	Well Elevation (feet above MSL) ^A	Depth to Groundwater (feet)	Groundwater Elevation ^B (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-1	11/7/1997	1504.98	114.77	1390.21	NM	NM	NM
	4/1/1998	1504.98	114.61	1390.37	NM	NM	NM
	11/22/1998	1504.98	114.73	1390.25	114.54	1390.44	0.19
	12/1/1998	1504.98	114.78	1390.20	114.59	1390.39	0.19
	6/8/1999	1504.98	116.03	1388.95	115.13	1389.85	0.90
	9/16/1999	1504.98	115.93	1389.05	115.58	1389.40	0.35
	10/7/1999	1504.98	116.71	1388.27	115.48	1389.50	1.23
	11/11/1999	1504.98	116.66	1388.32	115.51	1389.47	1.15
	5/17/2000	1504.98	115.52	1389.46	114.52	1390.46	1.00
	12/28/2000	1504.98	112.00	1392.98	104.80	1400.18	7.20
	7/19/2001	1501.23	106.40	1394.83	101.92	1399.31	4.48
	9/19/2001	1501.23	104.25	1396.98	103.65	1397.58	0.60
	6/10/2002	1501.23	108.90	1392.33	108.56	1392.67	0.34
	10/2/2002	1501.23	109.58	1391.65	109.37	1391.86	0.21
	6/3/2003	1501.23	111.07	1390.16	110.12	1391.11	0.95
	6/23/2003	1501.23	110.52	1390.71	110.20	1391.03	0.32
	7/24/2003	1501.23	110.88	1390.35	110.41	1390.82	0.47
	8/28/2003	1501.23	111.36	1389.87	110.71	1390.52	0.65
	9/15/2003	1501.23	111.56	1389.67	110.89	1390.34	0.67
	10/3/2003	1501.23	111.37	1389.86	110.72	1390.51	0.65
	6/2/2004	1501.23	111.89	1389.34	110.99	1390.24	0.90
	6/3/2004	1501.23	111.44	1389.79	111.15	1390.08	0.29
	6/10/2004	1501.23	110.90	1390.33	110.81	1390.42	0.09
	7/8/2004	1501.23	110.46	1390.77	110.44	1390.79	0.02
	7/20/2004	1501.23	110.22	1391.01	110.22	1391.01	0.00
	8/12/2004	1501.23	110.14	1391.09	110.08	1391.15	0.06
	9/2/2004	1501.23	109.83	1391.40	109.82	1391.41	0.01
	10/19/2004	1501.23	109.88	1391.35	109.84	1391.39	0.04
	6/20/2005	1501.23	110.74	1390.49	110.74	1390.49	0.00
	6/28/2005	1501.23	109.52	1391.71	109.52	1391.71	0.00
	10/17/2005	1501.23	109.19	1392.04	109.19	1392.04	0.00
	11/3/2005	1501.23	109.18	1392.05	109.15	1392.08	0.03
	5/31/2006	1501.23	111.41	1389.82	110.70	1390.53	0.71
	7/13/2006	1501.23	111.02	1390.21	110.79	1390.44	0.23
	10/5/2006	1501.23	108.54	1392.69	108.02	1393.21	0.52
	5/30/2007	1501.23	109.54	1391.69	108.78	1392.45	0.76
	7/18/2007	1501.23	109.74	1391.49	109.32	1391.91	0.42
	8/3/2007	1501.23	110.05	1391.18	109.57	1391.66	0.48
	8/17/2007	1501.23	109.51	1391.72	N/A	N/A	0.00
	9/13/2007	1501.23	109.69	1391.54	109.685	1391.55	0.005
	9/21/2007	1501.23	109.67	1391.56	N/A	N/A	0.00
	10/5/2007	1501.23	109.29	1391.94	N/A	N/A	0.00
	10/12/2007	1501.23	109.33	1391.90	N/A	N/A	0.00
	11/2/2007	1501.23	109.25	1391.98	N/A	N/A	0.00
	6/2/2008	1501.23	110.22	1391.01	109.80	1391.43	0.42
	7/1/2008	1501.23	110.35	1390.88	N/A	N/A	0.00
	7/18/2008	1501.23	110.43	1390.80	110.38	1390.85	0.05
	7/23/2008	1501.23	110.59	1390.64	110.50	1390.73	0.09
	7/25/2008	1501.23	110.60	1390.63	110.54	1390.69	0.06
	8/12/2008	1501.23	110.41	1390.82	110.40	1390.83	0.01
	9/3/2008	1501.23	109.70	1391.53	N/A	N/A	0.00
	9/12/2008	1501.23	109.33	1391.90	109.19	1392.04	0.14
	10/8/2008	1501.23	107.67	1393.56	106.68	1394.55	0.99
	7/17/2009	1501.23	108.36	1392.87	104.48	1396.75	3.88
	8/7/2010	1501.23	110.27	1390.96	109.95	1391.28	0.32
	9/25/2010	1501.23	108.28	1392.95	107.63	1393.60	0.65
	10/8/2010	1501.23	108.25	1392.98	107.43	1393.80	0.82
	10/12/2010	1501.23	107.88	1393.35	107.28	1393.95	0.60
	6/24/2011	1501.23	108.94	1392.29	107.94	1393.29	1.00
	7/18/2011	1501.23	109.02	1392.21	108.34	1392.89	0.68
	7/26/2011	1501.23	108.64	1392.59	108.45	1392.78	0.19
	8/8/2011	1501.23	108.75	1392.48	108.69	1392.54	0.06
	8/22/2011	1501.23	108.54	1392.69	108.53	1392.70	0.01
	9/9/2011	1501.23	108.86	1392.37	108.84	1392.39	0.02
	9/19/2011	1501.23	108.61	1392.62	108.6	1392.63	0.01
	10/6/2011	1501.23	108.52	1392.71	108.51	1392.72	0.01

**Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump**

Well Name	Date	Well Elevation (feet above MSL) ^A	Depth to Groundwater (feet)	Groundwater Elevation ^B (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-1 Continued	10/26/2011	1501.23	108.57	1392.66	108.56	1392.67	0.01
	6/5/2012	1501.23	NM	NM	NM	NM	NM
	6/20/2012	1501.23	NM	NM	NM	NM	NM
	7/5/2012	1501.23	NM	NM	NM	NM	NM
	7/20/2012	1501.23	NM	NM	NM	NM	NM
	8/3/2012	1501.23	NM	NM	NM	NM	NM
	8/9/2012	1501.23	110.06	1391.17	109.70	1391.53	0.36
	8/23/2012	1501.23	109.78	1391.45	109.58	1391.65	0.20
	9/6/2012	1501.23	109.90	1391.33	109.75	1391.48	0.15
	9/21/2012	1501.23	109.83	1391.40	109.69	1391.54	0.14
	10/8/2012	1501.23	109.88	1391.35	109.75	1391.48	0.13
	10/22/2012	1501.23	109.89	1391.34	109.78	1391.45	0.11
	6/19/2013	1501.23	NM	NM	NM	NM	NM
	6/27/2013	1501.23	NM	NM	NM	NM	NM
	7/19/2013	1501.23	NM	NM	NM	NM	NM
	8/2/2013	1501.23	NM	NM	NM	NM	NM
	8/14/2013	1501.23	NM	NM	NM	NM	NM
	8/29/2013	1501.23	112.62	1388.61	111.41	1389.82	1.21
	9/12/2013	1501.23	112.39	1388.84	111.60	1389.63	0.79
	10/4/2013	1501.23	112.43	1388.80	111.69	1389.54	0.74
	10/17/2013	1501.23	112.01	1389.22	111.68	1389.55	0.33
	6/3/2014	1501.23	114.28	1386.95	112.57	1388.66	1.71
	7/9/2014	1501.23	114.67	1386.56	112.61	1388.62	2.06
	7/28/2014	1501.23	113.63	1387.60	112.85	1388.38	0.78
	8/7/2014	1501.23	113.35	1387.88	112.74	1388.49	0.61
	8/26/2014	1501.23	113.48	1387.75	112.53	1388.70	0.95
	9/23/2014	1501.23	112.97	1388.26	112.29	1388.94	0.68
	10/9/2014	1501.23	112.43	1388.80	112.00	1389.23	0.43
	7/3/2015	1501.23	111.60	1389.63	111.11	1390.12	0.49
	7/14/2015	1501.23	112.06	1389.17	111.48	1389.75	0.58
	7/21/2015	1501.23	112.00	1389.23	111.51	1389.72	0.49
	8/12/2015	1501.23	112.14	1389.09	111.72	1389.51	0.42
	8/25/2015	1501.23	112.11	1389.12	111.82	1389.41	0.29
	9/13/2015	1501.23	112.09	1389.14	111.86	1389.37	0.23
	10/1/2015	1501.23	112.28	1388.95	112.08	1389.15	0.20
	6/1/2016	1501.23	NM	NM	NM	NM	NM
	6/2/2016	1501.23	112.23	1389.00	111.64	1389.59	0.59
	6/7/2016	1501.23	112.54	1388.69	111.78	1389.45	0.76
	6/11/2016	1501.23	112.27	1388.96	111.78	1389.45	0.49
	6/27/2016	1501.23	112.25	1388.98	111.93	1389.30	0.32
	7/10/2016	1501.23	112.24	1388.99	112.03	1389.20	0.21
	8/5/2016	1501.23	112.26	1388.97	112.19	1389.04	0.07
	8/18/2016	1501.23	112.34	1388.89	112.24	1388.99	0.10
	9/5/2016	1501.23	112.29	1388.94	112.18	1389.05	0.11
	9/16/2016	1501.23	112.33	1388.90	112.22	1389.01	0.11
	10/3/2016	1501.23	112.59	1388.64	112.33	1388.90	0.26
	10/13/2016	1501.23	112.42	1388.81	112.25	1388.98	0.17
	5/25/2017	1501.23	NM	NM	NM	NM	NM
	5/26/2017	1501.23	114.03	1387.20	112.78	1388.45	1.25
	6/7/2017	1501.23	114.17	1387.06	112.76	1388.47	1.41
	6/27/2017	1501.23	113.33	1387.90	112.99	1388.24	0.34
	7/24/2017	1501.23	113.43	1387.80	113.14	1388.09	0.29
	9/14/2017	1501.23	113.61	1387.62	113.20	1388.03	0.41
	9/28/2017	1501.23	113.45	1387.78	113.16	1388.07	0.29
	10/19/2017	1501.23	113.35	1387.88	113.16	1388.07	0.19
	6/4/2018	1501.23	114.97	1386.26	113.31	1387.92	1.66
	6/8/2018	1501.23	113.84	1387.39	113.55	1387.68	0.29
	6/25/2018	1501.23	NM	NM	NM	NM	NM
	7/19/2018	1501.23	113.77	1387.46	113.52	1387.71	0.25
	8/2/2018	1501.23	113.59	1387.64	113.31	1387.92	0.28
	8/16/2018	1501.23	113.71	1387.52	113.21	1388.02	0.50
	9/4/2018	1501.23	113.90	1387.33	113.22	1388.01	0.68
	9/18/2018	1501.23	113.31	1387.92	113.10	1388.13	0.21
	10/1/2018	1501.23	113.14	1388.09	112.82	1388.41	0.32
	5/24/2019	1501.23	110.8	1390.43	110.55	1390.68	0.25
	5/31/2019	1501.23	110.68	1390.55	110.45	1390.78	0.23

**Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump**

Well Name	Date	Well Elevation (feet above MSL) ^A	Depth to Groundwater (feet)	Groundwater Elevation ^B (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-1 Continued	6/14/2019	1501.23	110.67	1390.56	110.55	1390.68	0.12
	6/28/2019	1501.23	110.94	1390.29	110.77	1390.46	0.17
	7/12/2019	1501.23	110.95	1390.28	110.79	1390.44	0.16
	7/31/2019	1501.23	111.1	1390.13	110.94	1390.29	0.16
	8/9/2019	1501.23	111.2	1390.03	111.04	1390.19	0.16
	8/30/2019	1501.23	111.35	1389.88	111.19	1390.04	0.16
	9/13/2019	1501.23	111.1	1390.13	110.98	1390.25	0.12
	9/27/2019	1501.23	111.5	1389.73	111.30	1389.93	0.20
	10/14/2019	1501.23	111	1390.23	110.93	1390.30	0.07
	10/30/2019	1501.23	110.81	1390.42	110.77	1390.46	0.04
	7/1/2020	1501.23	NM	NM	NM	NM	NM
	7/29/2020	1501.23	105.52	1395.71	104.91	1396.32	0.61
	8/11/2020	1501.23	104.88	1396.35	104.58	1396.65	0.30
	8/24/2020	1501.23	104.28	1396.95	104.04	1397.19	0.24
	9/15/2020	1501.23	103.8	1397.43	103.55	1397.68	0.25
	9/29/2020	1501.23	104.2	1397.03	103.91	1397.32	0.29
	10/14/2020	1501.23	103.97	1397.26	103.68	1397.55	0.29
	11/11/2020	1501.23	103.15	1398.08	103.00	1398.23	0.15
	6/15/2021	1501.23	105.55	1395.68	104.58	1396.65	0.97
	7/9/2021	1501.23	105.2	1396.03	104.97	1396.26	0.23
	7/21/2021	1501.23	105.17	1396.06	105.06	1396.17	0.11
	8/12/2021	1501.23	105.56	1395.67	105.43	1395.80	0.13
	8/26/2021	1501.23	105.8	1395.43	105.65	1395.58	0.15
	10/1/2021	1501.23	106.06	1395.17	105.89	1395.34	0.17
	5/19/2022	1501.23	NM	NM	NM	NM	NM
	6/7/2022	1501.23	108.39	1392.84	108.18	1393.05	0.21
	7/8/2022	1501.23	107.11	1394.12	106.96	1394.27	0.15
	7/26/2022	1501.23	107.02	1394.21	106.92	1394.31	0.10
	8/16/2022	1501.23	106.38	1394.85	106.28	1394.95	0.10
	8/25/2022	1501.23	106.45	1394.78	106.31	1394.92	0.14
	9/8/2022	1501.23	106.15	1395.08	106.10	1395.13	0.05
	9/20/2022	1501.23	106.50	1394.73	106.37	1394.86	0.13
	10/17/2022	1501.23	106.25	1394.98	106.16	1395.07	0.09
	5/23/2023	1501.23	109.03	1392.20	108.53	1392.70	0.50
	6/1/2023	1501.23	108.66	1392.57	108.53	1392.70	0.13
	6/22/2023	1501.23	108.38	1392.85	108.32	1392.91	0.06
	7/11/2023	1501.23	108.29	1392.94	108.24	1392.99	0.05
	8/4/2023	1501.23	108.12	1393.11	108.06	1393.17	0.06
	8/29/2023	1501.23	107.90	1393.33	107.89	1393.34	0.01
	9/23/2023	1501.23	108.16	1393.07	108.11	1393.12	0.05
MW-2	11/7/1997	1504.59	NM	NM	N/A	N/A	N/A
	4/1/1998	1504.59	114.76	1389.83	N/A	N/A	0.00
	11/22/1998	1504.59	113.90	1390.69	N/A	N/A	0.00
	12/1/1998	1504.59	114.32	1390.27	N/A	N/A	0.00
	6/9/1999	1504.59	115.40	1389.19	N/A	N/A	0.00
	9/17/1999	1504.59	113.28	1391.31	N/A	N/A	0.00
	11/11/1999	1504.59	114.00	1390.59	N/A	N/A	0.00
	5/17/2000	1504.59	115.31	1389.28	N/A	N/A	0.00
	7/14/2000	1504.59	115.09	1389.50	N/A	N/A	0.00
	10/13/2000	1504.59	112.16	1392.43	N/A	N/A	0.00
	3/27/2001	1504.58	105.95	1398.63	N/A	N/A	0.00
	7/12/2001	1504.58	105.49	1399.09	N/A	N/A	0.00
	9/20/2001	1504.58	106.49	1398.09	N/A	N/A	0.00
	11/16/2001	1504.58	107.48	1397.10	N/A	N/A	0.00
	6/11/2002	1504.58	111.70	1392.88	N/A	N/A	0.00
	10/4/2002	1504.58	112.26	1392.32	N/A	N/A	0.00
	6/24/2003	1504.58	115.46	1389.12	N/A	N/A	0.00
	10/1/2003	1504.58	114.38	1390.20	N/A	N/A	0.00
	6/10/2004	1504.58	115.78	1388.80	N/A	N/A	0.00
	10/18/2004	1504.58	114.87	1389.71	N/A	N/A	0.00
	6/27/2005	1504.58	113.44	1391.14	N/A	N/A	0.00
	10/16/2005	1504.58	113.98	1390.60	N/A	N/A	0.00
	6/1/2006	1504.58	113.36	1391.22	N/A	N/A	0.00
	10/5/2006	1504.58	103.40	1401.18	N/A	N/A	0.00
	7/17/2006	1504.58	114.44	1390.14	N/A	N/A	0.00
	10/4/2007	1504.58	112.82	1391.76	N/A	N/A	0.00

**Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump**

Well Name	Date	Well Elevation (feet above MSL) ^A	Depth to Groundwater (feet)	Groundwater Elevation ^B (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-2 Continued	7/25/2008	1504.58	116.78	1387.80	N/A	N/A	0.00
	7/18/2009	1504.58	107.60	1396.98	N/A	N/A	0.00
	8/11/2010	1504.58	111.89	1392.69	N/A	N/A	0.00
	9/8/2011	1504.58	113.22	1391.36	N/A	N/A	0.00
	7/20/2012	1504.58	113.56	1391.02	N/A	N/A	0.00
	8/22/2013	1504.58	116.18	1388.40	N/A	N/A	0.00
	9/19/2013	1504.58	116.30	1388.28	N/A	N/A	0.00
	6/5/2014	1504.58	116.79	1387.79	N/A	N/A	0.00
	7/15/2015	1504.58	116.51	1388.07	N/A	N/A	0.00
	6/6/2016	1504.58	116.68	1387.90	N/A	N/A	0.00
	6/7/2017	1504.58	121.90	1382.68	N/A	N/A	0.00
	5/30/2019	1504.58	116.15	1388.43	N/A	N/A	0.00
MW-3	6/1/2021	1504.58	107.24	1397.34	N/A	N/A	0.00
	5/22/2023	1504.58	112.75	1391.83	N/A	N/A	0.00
	11/7/1997	1508.38	117.94	1390.44	N/A	N/A	0.00
	4/1/1998	1508.38	117.83	1390.55	N/A	N/A	0.00
	11/21/1998	1508.38	117.89	1390.49	N/A	N/A	0.00
	12/1/1998	1508.38	118.04	1390.34	N/A	N/A	0.00
	6/9/1999	1508.38	116.49	1391.89	N/A	N/A	0.00
	9/16/1999	1508.38	116.88	1391.50	N/A	N/A	0.00
	11/11/1999	1508.38	116.93	1391.45	N/A	N/A	0.00
	5/16/2000	1508.38	115.90	1392.48	N/A	N/A	0.00
	7/16/2000	1508.38	115.54	1392.84	N/A	N/A	0.00
	10/11/2000	1508.38	113.85	1394.53	N/A	N/A	0.00
	3/27/2001	1506.36	106.30	1400.06	N/A	N/A	0.00
	7/11/2001	1506.36	107.87	1398.49	N/A	N/A	0.00
	9/20/2001	1506.36	108.94	1397.42	N/A	N/A	0.00
	11/16/2001	1506.36	110.21	1396.15	N/A	N/A	0.00
	6/10/2002	1506.36	113.63	1392.73	N/A	N/A	0.00
	10/3/2002	1506.36	114.19	1392.17	N/A	N/A	0.00
	6/24/2003	1506.36	115.07	1391.29	N/A	N/A	0.00
	10/2/2003	1506.36	115.73	1390.63	N/A	N/A	0.00
	6/11/2004	1506.36	115.61	1390.75	N/A	N/A	0.00
	10/19/2004	1506.36	114.64	1391.72	N/A	N/A	0.00
	6/28/2005	1506.36	114.32	1392.04	N/A	N/A	0.00
	10/17/2005	1506.36	114.04	1392.32	N/A	N/A	0.00
	6/1/2006	1506.36	115.73	1390.63	N/A	N/A	0.00
	10/5/2006	1506.36	112.82	1393.54	N/A	N/A	0.00
	7/18/2007	1506.36	114.23	1392.13	N/A	N/A	0.00
	10/4/2007	1506.36	114.42	1391.94	N/A	N/A	0.00
	7/24/2008	1506.36	115.54	1390.82	N/A	N/A	0.00
	7/18/2009	1506.36	110.21	1396.15	N/A	N/A	0.00
	8/12/2010	1506.36	114.87	1391.49	N/A	N/A	0.00
	9/8/2011	1506.36	114.04	1392.32	N/A	N/A	0.00
	7/20/2012	1506.36	114.59	1391.77	N/A	N/A	0.00
	8/22/2013	1506.36	116.51	1389.85	N/A	N/A	0.00
	9/19/2013	1506.36	116.63	1389.73	N/A	N/A	0.00
	6/3/2014	1506.36	117.82	1388.54	N/A	N/A	0.00
	7/15/2015	1506.36	112.89	1393.47	N/A	N/A	0.00
	6/7/2016	1506.36	113.16	1393.20	N/A	N/A	0.00
	6/7/2017	1506.36	114.54	1391.82	N/A	N/A	0.00
	5/30/2019	1506.36	111.8	1394.56	N/A	N/A	0.00
	6/1/2021	1506.36	105.95	1400.41	N/A	N/A	0.00
	5/22/2023	1506.36	109.92	1396.44	N/A	N/A	0.00
MW-4	11/21/1998	1497.70	109.38	1388.32	N/A	N/A	0.00
	12/1/1998	1497.70	109.52	1388.18	N/A	N/A	0.00
	6/9/1999	1497.70	110.68	1387.02	N/A	N/A	0.00
	9/16/1999	1497.70	111.24	1386.46	N/A	N/A	0.00
	11/11/1999	1497.70	111.42	1386.28	N/A	N/A	0.00
	5/16/2000	1497.70	111.66	1386.04	N/A	N/A	0.00
	7/14/2000	1497.70	111.59	1386.11	N/A	N/A	0.00
	10/13/2000	1497.70	110.10	1387.60	N/A	N/A	0.00
	3/27/2001	1497.69	107.30	1390.39	N/A	N/A	0.00
	7/12/2001	1497.69	106.58	1391.11	N/A	N/A	0.00
	9/20/2001	1497.69	105.61	1392.08	N/A	N/A	0.00
	11/16/2001	1497.69	105.62	1392.07	N/A	N/A	0.00

**Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump**

Well Name	Date	Well Elevation (feet above MSL) ^A	Depth to Groundwater (feet)	Groundwater Elevation ^B (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-4 Continued	6/10/2002	1497.69	107.48	1390.21	N/A	N/A	0.00
	10/4/2002	1497.69	107.69	1390.00	N/A	N/A	0.00
	6/24/2003	1497.69	110.74	1386.95	N/A	N/A	0.00
	10/2/2003	1497.69	111.90	1385.79	N/A	N/A	0.00
	6/11/2004	1497.69	113.15	1384.54	N/A	N/A	0.00
	10/18/2004	1497.69	112.47	1385.22	N/A	N/A	0.00
	Well Destroyed in 2005		N/A	N/A	N/A	N/A	N/A
MW-5	11/21/1998	1501.22	111.31	1389.91	110.78	1390.44	0.53
	12/1/1998	1501.22	111.62	1389.60	110.83	1390.39	0.79
	9/16/1999	1501.22	113.56	1387.66	111.51	1389.71	2.05
	10/7/1999	1501.22	113.23	1387.99	111.44	1389.78	1.79
	11/11/1999	1501.22	113.52	1387.70	111.55	1389.67	1.97
	5/17/2000	1501.22	111.78	1389.44	111.69	1389.53	0.09
	7/16/2000	1501.22	111.37	1389.85	110.36	1390.86	1.01
	12/29/2000	1501.22	109.20	1392.02	100.90	1400.32	8.30
	7/19/2001	1501.22	109.30	1391.92	101.30	1399.92	8.00
	9/20/2001	1501.22	104.75	1396.47	103.47	1397.75	1.28
	6/10/2002	1501.22	109.60	1391.62	108.53	1392.69	1.07
	10/2/2002	1501.22	109.57	1391.65	109.29	1391.93	0.28
	6/3/2003	1501.22	110.85	1390.37	110.10	1391.12	0.75
	6/23/2003	1501.22	110.40	1390.82	110.14	1391.08	0.26
	7/24/2003	1501.22	110.48	1390.74	110.42	1390.80	0.06
	8/28/2003	1501.22	110.99	1390.23	110.72	1390.50	0.27
	9/15/2003	1501.22	111.12	1390.10	110.92	1390.30	0.20
	10/3/2003	1501.22	110.84	1390.38	110.78	1390.44	0.06
	6/2/2004	1501.22	111.72	1389.50	110.94	1390.28	0.78
	6/3/2004	1501.22	111.34	1389.88	111.09	1390.13	0.25
	6/10/2004	1501.22	110.89	1390.33	110.78	1390.44	0.11
	7/8/2004	1501.22	110.60	1390.62	110.36	1390.86	0.24
	7/20/2004	1501.22	110.26	1390.96	110.16	1391.06	0.10
	8/12/2004	1501.22	110.04	1391.18	110.00	1391.22	0.04
	9/2/2004	1501.22	109.79	1391.43	109.75	1391.47	0.04
	10/19/2004	1501.22	109.85	1391.37	109.76	1391.46	0.09
	6/20/2005	1501.22	111.65	1389.57	109.40	1391.82	2.25
	6/28/2005	1501.22	109.47	1391.75	109.47	1391.75	0.00
	10/17/2005	1501.22	109.12	1392.10	109.12	1392.10	0.00
	11/3/2005	1501.22	109.21	1392.01	109.15	1392.07	0.06
	5/31/2006	1501.22	111.15	1390.07	110.64	1390.58	0.51
	7/13/2006	1501.22	111.02	1390.20	110.70	1390.52	0.32
	10/5/2006	1501.22	108.35	1392.87	107.98	1393.24	0.37
	5/30/2007	1501.22	108.94	1392.28	108.72	1392.50	0.22
	7/18/2007	1501.22	109.52	1391.70	109.30	1391.92	0.22
	8/3/2007	1501.22	109.57	1391.65	109.56	1391.66	0.01
	8/17/2007	1501.22	109.61	1391.61	109.46	1391.76	0.15
	8/24/2007	1501.22	109.63	1391.59	109.51	1391.71	0.12
	9/13/2007	1501.22	109.70	1391.52	109.64	1391.58	0.06
	9/21/2007	1501.22	109.56	1391.66	109.53	1391.69	0.03
	10/5/2007	1501.22	109.25	1391.97	N/A	N/A	0.00
	10/12/2007	1501.22	109.33	1391.89	109.30	1391.92	0.03
	11/2/2007	1501.22	109.20	1392.02	109.14	1392.08	0.06
	6/2/2008	1501.22	109.86	1391.36	109.77	1391.45	0.09
	7/1/2008	1501.22	110.49	1390.73	110.27	1390.95	0.22
	7/18/2008	1501.22	110.49	1390.73	110.31	1390.91	0.18
	7/23/2008	1501.22	110.63	1390.59	110.43	1390.79	0.20
	7/25/2008	1501.22	110.50	1390.72	110.49	1390.73	0.01
	8/12/2008	1501.22	110.49	1390.73	110.37	1390.85	0.12
	9/3/2008	1501.22	109.63	1391.59	109.61	1391.61	0.02
	9/12/2008	1501.22	109.14	1392.08	109.12	1392.10	0.02
	10/8/2008	1501.22	106.58	1394.64	106.56	1394.66	0.02
	7/18/2009	1501.22	108.25	1392.97	104.42	1396.80	3.83
	8/6/2010	1501.22	110.17	1391.05	109.83	1391.39	0.34
	9/25/2010	1501.22	108.20	1393.02	107.57	1393.65	0.63
	10/8/2010	1501.22	108.20	1393.02	107.32	1393.90	0.88
	10/12/2010	1501.22	108.12	1393.10	107.12	1394.10	1.00
	6/24/2011	1501.22	NM	NM	NM	NM	NM
	7/18/2011	1501.22	NM	NM	NM	NM	NM

**Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump**

Well Name	Date	Well Elevation (feet above MSL) ^A	Depth to Groundwater (feet)	Groundwater Elevation ^B (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-5 Continued	7/26/2011	1501.22	NM	NM	NM	NM	NM
	8/8/2011	1501.22	108.80	1392.42	108.61	1392.61	0.19
	8/22/2011	1501.22	108.60	1392.62	108.42	1392.80	0.18
	9/9/2011	1501.22	108.86	1392.36	108.80	1392.42	0.06
	9/19/2011	1501.22	108.61	1392.61	108.54	1392.68	0.07
	10/6/2011	1501.22	108.46	1392.76	108.44	1392.78	0.02
	10/26/2011	1501.22	108.43	1392.79	108.40	1392.82	0.03
	6/5/2012	1501.22	110.05	1391.17	109.68	1391.54	0.37
	6/20/2012	1501.22	110.13	1391.09	109.77	1391.45	0.36
	7/5/2012	1501.22	110.04	1391.18	109.70	1391.52	0.34
	7/20/2012	1501.22	109.94	1391.28	109.67	1391.55	0.27
	8/3/2012	1501.22	110.03	1391.19	109.71	1391.51	0.32
	8/9/2012	1501.22	109.92	1391.30	109.68	1391.54	0.24
	8/23/2012	1501.22	109.71	1391.51	109.51	1391.71	0.20
	9/6/2012	1501.22	109.87	1391.35	109.67	1391.55	0.20
	9/21/2012	1501.22	109.79	1391.43	109.59	1391.63	0.20
	10/8/2012	1501.22	109.85	1391.37	109.66	1391.56	0.19
	10/22/2012	1501.22	109.85	1391.37	109.75	1391.47	0.10
	6/19/2013	1501.22	111.66	1389.56	111.00	1390.22	0.66
	6/27/2013	1501.22	112.07	1389.15	111.10	1390.12	0.97
	7/19/2013	1501.22	NM	NM	NM	NM	NM
	8/2/2013	1501.22	111.94	1389.28	111.22	1390.00	0.72
	8/14/2013	1501.22	112.38	1388.84	111.52	1389.70	0.86
	8/29/2013	1501.22	112.50	1388.72	111.62	1389.60	0.88
	9/12/2013	1501.22	112.48	1388.74	111.55	1389.67	0.93
	10/4/2013	1501.22	112.50	1388.72	111.61	1389.61	0.89
	10/17/2013	1501.22	112.40	1388.82	111.68	1389.54	0.72
	6/3/2014	1501.22	114.43	1386.79	112.48	1388.74	1.95
	7/9/2014	1501.22	114.67	1386.55	112.61	1388.61	2.06
	7/28/2014	1501.22	114.21	1387.01	112.64	1388.58	1.57
	8/7/2014	1501.22	113.87	1387.35	112.59	1388.63	1.28
	8/26/2014	1501.22	113.02	1388.20	112.52	1388.70	0.50
	9/23/2014	1501.22	112.54	1388.68	112.29	1388.93	0.25
	10/9/2014	1501.22	112.23	1388.99	111.94	1389.28	0.29
	6/4/2015	1501.22	NM	NM	NM	NM	NM
	7/3/2015	1501.22	NM	NM	NM	NM	NM
	7/14/2015	1501.22	112.44	1388.78	111.31	1389.91	1.13
	7/21/2015	1501.22	112.26	1388.96	111.38	1389.84	0.88
	8/12/2015	1501.22	112.82	1388.40	111.60	1389.62	1.22
	8/25/2015	1501.22	111.68	1389.54	111.57	1389.65	0.11
	9/13/2015	1501.22	112.98	1388.24	111.58	1389.64	1.40
	10/1/2015	1501.22	113.22	1388.00	111.79	1389.43	1.43
	6/1/2016	1501.22	112.20	1389.02	111.46	1389.76	0.74
	6/2/2016	1501.22	112.23	1388.99	111.64	1389.58	0.59
	6/7/2016	1501.22	113.06	1388.16	111.58	1389.64	1.48
	6/11/2016	1501.22	112.85	1388.37	111.60	1389.62	1.25
	6/27/2016	1501.22	113.05	1388.17	111.81	1389.41	1.24
	7/10/2016	1501.22	113.00	1388.22	111.89	1389.33	1.11
	8/5/2016	1501.22	112.93	1388.29	111.97	1389.25	0.96
	8/18/2016	1501.22	113.09	1388.13	112.12	1389.10	0.97
	9/5/2016	1501.22	112.62	1388.60	112.10	1389.12	0.52
	9/16/2016	1501.22	112.49	1388.73	112.09	1389.13	0.40
	10/3/2016	1501.22	112.56	1388.66	112.25	1388.97	0.31
	10/13/2016	1501.22	112.38	1388.84	112.17	1389.05	0.21
	5/25/2017	1501.22	NM	NM	NM	NM	NM
	5/26/2017	1501.22	113.83	1387.39	112.72	1388.50	1.11
	6/7/2017	1501.22	114.03	1387.19	112.70	1388.52	1.33
	6/27/2017	1501.22	113.75	1387.47	112.84	1388.38	0.91
	7/24/2017	1501.22	113.86	1387.36	113.05	1388.17	0.81
	9/14/2017	1501.22	114.02	1387.20	113.12	1388.10	0.90
	9/28/2017	1501.22	113.38	1387.84	112.93	1388.29	0.45
	10/19/2017	1501.22	113.48	1387.74	113.05	1388.17	0.43
	6/4/2018	1501.22	114.80	1386.42	113.28	1387.94	1.52
	6/8/2018	1501.22	114.29	1386.93	113.49	1387.73	0.80
	6/25/2018	1501.22	NM	NM	NM	NM	NM
	7/19/2018	1501.22	114.15	1387.07	113.33	1387.89	0.82

**Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump**

Well Name	Date	Well Elevation (feet above MSL) ^A	Depth to Groundwater (feet)	Groundwater Elevation ^B (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-5 Continued	8/2/2018	1501.22	113.67	1387.55	113.16	1388.06	0.51
	8/16/2018	1501.22	113.71	1387.51	113.21	1388.01	0.50
	9/4/2018	1501.22	113.55	1387.67	113.11	1388.11	0.44
	9/18/2018	1501.22	113.16	1388.06	112.98	1388.24	0.18
	10/1/2018	1501.22	112.85	1388.37	112.72	1388.50	0.13
	5/24/2019	1501.22	110.78	1390.44	110.45	1390.77	0.33
	5/31/2019	1501.22	NM	NM	NM	NM	NM
	6/14/2019	1501.22	110.78	1390.44	110.46	1390.76	0.32
	6/28/2019	1501.22	111.03	1390.19	110.65	1390.57	0.38
	7/12/2019	1501.22	111.02	1390.20	110.64	1390.58	0.38
	7/31/2019	1501.22	111.20	1390.02	110.80	1390.42	0.40
	8/9/2019	1501.22	111.28	1389.94	110.92	1390.30	0.36
	8/30/2019	1501.22	111.47	1389.75	111.07	1390.15	0.40
	9/13/2019	1501.22	111.15	1390.07	110.89	1390.33	0.26
	9/27/2019	1501.22	111.60	1389.62	111.15	1390.07	0.45
	10/14/2019	1501.22	111.03	1390.19	110.84	1390.38	0.19
	10/30/2019	1501.22	110.75	1390.47	110.62	1390.60	0.13
	7/1/2020	1501.22	106.54	1394.68	106.24	1394.98	0.30
	7/29/2020	1501.22	106.02	1395.20	104.70	1396.52	1.32
	8/11/2020	1501.22	105.10	1396.12	104.42	1396.80	0.68
	8/24/2020	1501.22	104.51	1396.71	103.89	1397.33	0.62
	9/15/2020	1501.22	104.29	1396.93	103.34	1397.88	0.95
	9/29/2020	1501.22	104.41	1396.81	103.83	1397.39	0.58
	10/14/2020	1501.22	104.23	1396.99	103.59	1397.63	0.64
	11/11/2020	1501.01	103.93	1397.08	102.47	1398.54	1.46
	6/1/2021	1501.01	108.10	1392.91	103.50	1397.51	4.60
	6/15/2021	1501.01	108.06	1392.95	103.82	1397.19	4.24
	7/9/2021	1501.01	107.58	1393.43	104.20	1396.81	3.38
	7/1/2021	1501.01	105.56	1395.45	104.66	1396.35	0.90
	8/12/2021	1501.01	106.19	1394.82	104.99	1396.02	1.20
	8/26/2021	1501.01	106.05	1394.96	105.30	1395.71	0.75
	10/1/2021	1501.01	106.94	1394.07	105.35	1395.66	1.59
	5/19/2022	1501.01	108.83	1392.18	108.70	1392.31	0.13
	6/7/2022	1501.01	108.08	1392.93	107.95	1393.06	0.13
	7/8/2022	1501.01	107.90	1393.11	106.48	1394.53	1.42
	7/26/2022	1501.01	107.50	1393.51	106.51	1394.50	0.99
	8/16/2022	1501.01	106.45	1394.56	105.97	1395.04	0.48
	8/25/2022	1501.01	106.25	1394.76	106.05	1394.96	0.20
	9/8/2022	1501.01	106.07	1394.94	105.80	1395.21	0.27
	9/20/2022	1501.01	106.36	1394.65	106.08	1394.93	0.28
	10/17/2022	1501.01	106.32	1394.69	105.81	1395.20	0.51
	5/23/2023	1501.01	108.38	1392.63	108.30	1392.71	0.08
	6/1/2023	1501.01	108.38	1392.63	108.25	1392.76	0.13
	6/22/2023	1501.01	108.11	1392.90	108.04	1392.97	0.07
	7/11/2023	1501.01	108.10	1392.91	107.95	1393.06	0.15
	8/4/2023	1501.01	107.97	1393.04	107.79	1393.22	0.18
	8/29/2023	1501.01	107.94	1393.07	107.54	1393.47	0.40
	9/23/2023	1501.01	108.16	1392.85	108.11	1392.90	0.05
MW-6	11/21/1998	1501.21	112.66	1388.55	110.52	1390.69	2.14
	12/1/1998	1501.21	113.55	1387.66	110.45	1390.76	3.10
	6/9/1999	1501.21	115.92	1385.29	110.59	1390.62	5.33
	9/16/1999	1501.21	111.82	1389.39	111.79	1389.42	0.03
	10/7/1999	1501.21	111.97	1389.24	111.69	1389.52	0.28
	11/11/1999	1501.21	112.53	1388.68	111.73	1389.48	0.80
	5/17/2000	1501.21	110.85	1390.36	NM	NM	NM
	12/29/2000	1501.21	103.00	1398.21	102.15	1399.06	0.85
	7/19/2001	1501.32	104.50	1396.82	102.23	1399.09	2.27
	9/20/2001	1501.32	106.10	1395.22	103.20	1398.12	2.90
	6/11/2002	1501.32	110.49	1390.83	108.45	1392.87	2.04
	10/2/2002	1501.32	109.56	1391.76	109.38	1391.94	0.18
	6/4/2003	1501.32	116.13	1385.19	109.19	1392.13	6.94
	6/23/2003	1501.32	110.33	1390.99	110.18	1391.14	0.15
	7/24/2003	1501.32	110.53	1390.79	110.42	1390.90	0.11
	8/28/2003	1501.32	110.92	1390.40	110.78	1390.54	0.14
	9/15/2003	1501.32	111.12	1390.20	110.97	1390.35	0.15
	10/3/2003	1501.32	110.96	1390.36	110.81	1390.51	0.15

**Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump**

Well Name	Date	Well Elevation (feet above MSL) ^A	Depth to Groundwater (feet)	Groundwater Elevation ^B (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-6 Continued	6/2/2004	1501.32	111.87	1389.45	110.99	1390.33	0.88
	6/3/2004	1501.32	111.20	1390.12	111.18	1390.14	0.02
	6/10/2004	1501.32	110.86	1390.46	NM	NM	NM
	7/8/2004	1501.32	110.47	1390.85	110.43	1390.89	0.04
	7/20/2004	1501.32	110.30	1391.02	110.22	1391.10	0.08
	8/12/2004	1501.32	110.03	1391.29	109.96	1391.36	0.07
	9/2/2004	1501.32	109.94	1391.38	109.86	1391.46	0.08
	10/19/2004	1501.32	110.16	1391.16	109.80	1391.52	0.36
	6/20/2005	1501.32	111.65	1389.67	109.40	1391.92	2.25
	6/28/2005	1501.32	109.51	1391.81	109.51	1391.81	0.00
	10/17/2005	1501.32	109.22	1392.10	109.21	1392.11	0.01
	5/31/2006	1501.32	113.28	1388.04	110.36	1390.96	2.92
	7/13/2006	1501.32	111.23	1390.09	110.77	1390.55	0.46
	10/5/2006	1501.32	110.02	1391.30	107.72	1393.60	2.30
	5/30/2007	1501.32	112.79	1388.53	108.09	1393.23	4.70
	7/18/2007	1501.32	109.81	1391.51	109.28	1392.04	0.53
	8/3/2007	1501.32	109.64	1391.68	109.62	1391.70	0.02
	8/17/2007	1501.32	109.53	1391.79	N/A	N/A	0.00
	9/13/2007	1501.32	109.71	1391.61	N/A	N/A	0.00
	9/21/2007	1501.32	109.65	1391.67	N/A	N/A	0.00
	10/5/2007	1501.32	109.71	1391.61	N/A	N/A	0.00
	10/12/2007	1501.32	109.38	1391.94	109.32	1392.00	0.06
	11/2/2007	1501.32	109.56	1391.76	109.20	1392.12	0.36
	4/16/2008	1501.32	111.79	1389.53	109.10	1392.22	2.69
	6/2/2008	1501.32	112.23	1389.09	109.39	1391.93	2.84
	7/1/2008	1501.32	110.36	1390.96	110.30	1391.02	0.06
	7/18/2008	1501.32	110.42	1390.90	110.38	1390.94	0.04
	7/23/2008	1501.32	110.54	1390.78	110.51	1390.81	0.03
	8/12/2008	1501.32	110.10	1391.22	N/A	N/A	0.00
	9/3/2008	1501.32	110.00	1391.32	109.65	1391.67	0.35
	9/12/2008	1501.32	109.55	1391.77	109.15	1392.17	0.40
	10/8/2008	1501.32	108.43	1392.89	106.25	1395.07	2.18
	7/17/2009	1501.32	108.12	1393.20	104.46	1396.86	3.66
	8/7/2010	1501.32	112.59	1388.73	109.48	1391.84	3.11
	8/23/2010	1501.32	110.10	1391.22	109.44	1391.88	0.66
	9/25/2010	1501.32	108.49	1392.83	107.59	1393.73	0.90
	10/8/2010	1501.32	108.30	1393.02	107.40	1393.92	0.90
	10/12/2010	1501.32	107.78	1393.54	107.29	1394.03	0.49
	6/24/2011	1501.32	NM	NM	N/A	N/A	N/A
	7/18/2011	1501.32	NM	NM	N/A	N/A	N/A
	7/26/2011	1501.32	NM	NM	N/A	N/A	N/A
	8/8/2011	1501.32	NM	NM	N/A	N/A	N/A
	8/22/2011	1501.32	110.90	1390.42	108.09	1393.23	2.81
	9/9/2011	1501.32	108.91	1392.41	108.90	1392.42	0.01
	9/19/2011	1501.32	108.62	1392.70	108.61	1392.71	0.01
	10/6/2011	1501.32	108.53	1392.79	108.52	1392.80	0.01
	10/26/2011	1501.32	108.53	1392.79	108.52	1392.80	0.01
	6/5/2012	1501.32	110.09	1391.23	109.71	1391.61	0.38
	6/20/2012	1501.32	110.20	1391.12	109.82	1391.50	0.38
	7/5/2012	1501.32	110.12	1391.20	109.75	1391.57	0.37
	7/20/2012	1501.32	110.10	1391.22	109.62	1391.70	0.48
	8/3/2012	1501.32	110.15	1391.17	109.77	1391.55	0.38
	8/9/2012	1501.32	110.05	1391.27	109.69	1391.63	0.36
	8/23/2012	1501.32	109.62	1391.70	109.59	1391.73	0.03
	9/6/2012	1501.32	109.77	1391.55	109.75	1391.57	0.02
	9/21/2012	1501.32	109.71	1391.61	109.70	1391.62	0.01
	10/8/2012	1501.32	109.79	1391.53	109.78	1391.54	0.01
	10/22/2012	1501.32	109.83	1391.49	109.82	1391.50	0.01
	6/19/2013	1501.32	112.26	1389.06	110.96	1390.36	1.30
	6/27/2013	1501.32	112.41	1388.91	111.12	1390.20	1.29
	7/19/2013	1501.32	112.51	1388.81	111.20	1390.12	1.31
	8/2/2013	1501.32	111.41	1389.91	111.40	1389.92	0.01
	8/14/2013	1501.32	111.55	1389.77	111.55	1389.77	0.00
	8/29/2013	1501.32	111.62	1389.70	111.60	1389.72	0.02
	9/12/2013	1501.32	111.73	1389.59	111.72	1389.60	0.01
	10/4/2013	1501.32	111.77	1389.55	111.76	1389.56	0.01

**Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump**

Well Name	Date	Well Elevation (feet above MSL) ^A	Depth to Groundwater (feet)	Groundwater Elevation ^B (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-6 Continued	10/17/2013	1501.32	111.79	1389.53	111.78	1389.54	0.01
	6/3/2014	1501.32	113.11	1388.21	112.80	1388.52	0.31
	7/9/2014	1501.32	113.14	1388.18	112.90	1388.42	0.24
	7/28/2014	1501.32	113.07	1388.25	112.94	1388.38	0.13
	8/7/2014	1501.32	112.89	1388.43	112.80	1388.52	0.09
	8/26/2014	1501.32	112.68	1388.64	112.64	1388.68	0.04
	9/23/2014	1501.32	112.41	1388.91	112.40	1388.92	0.01
	10/9/2014	1501.32	112.01	1389.31	N/A	N/A	0.00
	6/4/2015	1501.32	NM	NM	NM	NM	NM
	7/3/2015	1501.32	NM	NM	NM	NM	NM
	7/14/2015	1501.32	111.65	1389.67	111.54	1389.78	0.11
	7/21/2015	1501.32	111.65	1389.67	111.56	1389.76	0.09
	8/12/2015	1501.32	111.94	1389.38	N/A	N/A	0.00
	8/25/2015	1501.32	111.85	1389.47	N/A	N/A	0.00
	9/13/2015	1501.32	111.91	1389.41	N/A	N/A	0.00
	10/1/2015	1501.32	112.07	1389.25	N/A	N/A	0.00
	6/1/2016	1501.32	111.69	1389.63	111.61	1389.71	0.08
	6/2/2016	1501.32	111.74	1389.58	111.66	1389.66	0.08
	6/7/2016	1501.32	NM	NM	NM	NM	NM
	6/11/2016	1501.32	111.95	1389.37	111.85	1389.47	0.10
	6/27/2016	1501.32	112.02	1389.30	112.01	1389.31	0.01
	7/10/2016	1501.32	112.05	1389.27	112.04	1389.28	0.01
	8/5/2016	1501.32	112.20	1389.12	112.18	1389.14	0.02
	8/18/2016	1501.32	112.27	1389.05	112.22	1389.10	0.05
	9/5/2016	1501.32	112.22	1389.10	112.21	1389.11	0.01
	9/16/2016	1501.32	112.21	1389.11	N/A	N/A	0.00
	10/3/2016	1501.32	112.38	1388.94	112.37	1388.95	0.01
	10/13/2016	1501.32	112.26	1389.06	112.25	1389.07	0.01
	Well Decommissioned in 2017		NM	NM	NM	NM	NM
MW-7	11/21/1998	1498.75	112.83	1385.92	N/A	N/A	0.00
	12/1/1998	1498.75	112.95	1385.80	N/A	N/A	0.00
	9/16/1999	1498.75	116.86	1381.89	N/A	N/A	0.00
	11/11/1999	1498.75	116.87	1381.88	N/A	N/A	0.00
	5/17/2000	1498.75	116.55	1382.20	N/A	N/A	0.00
	7/14/2000	1498.75	116.56	1382.19	N/A	N/A	0.00
	3/27/2001	1502.44	NM	NM	N/A	N/A	0.00
	7/12/2001	1502.44	103.82	1398.62	N/A	N/A	0.00
	9/21/2001	1502.44	112.66	1389.78	N/A	N/A	0.00
	11/19/2001	1502.44	113.53	1388.91	N/A	N/A	0.00
	6/12/2002	1502.44	115.12	1387.32	N/A	N/A	0.00
	10/4/2002	1502.44	114.77	1387.67	N/A	N/A	0.00
	6/24/2003	1502.44	114.71	1387.73	N/A	N/A	0.00
	10/1/2003	1502.44	114.99	1387.45	N/A	N/A	0.00
	6/11/2004	1502.44	114.88	1387.56	N/A	N/A	0.00
	10/18/2004	1502.44	114.50	1387.94	N/A	N/A	0.00
	6/27/2005	1502.44	114.26	1388.18	N/A	N/A	0.00
	10/17/2005	1502.44	114.04	1388.40	N/A	N/A	0.00
	6/2/2006	1502.44	114.73	1387.71	N/A	N/A	0.00
	10/5/2006	1502.44	113.52	1388.92	N/A	N/A	0.00
	7/17/2007	1502.44	114.06	1388.38	N/A	N/A	0.00
	10/4/2007	1502.44	114.37	1388.07	N/A	N/A	0.00
	7/24/2008	1502.44	114.76	1387.68	N/A	N/A	0.00
	7/17/2009	1502.44	111.38	1391.06	N/A	N/A	0.00
	8/11/2010	1502.44	115.50	1386.94	N/A	N/A	0.00
	9/8/2011	1502.44	115.18	1387.26	N/A	N/A	0.00
	7/20/2012	1502.44	115.09	1387.35	N/A	N/A	0.00
	8/22/2013	1502.44	115.75	1386.69	N/A	N/A	0.00
	9/19/2013	1502.44	115.69	1386.75	N/A	N/A	0.00
	6/5/2014	1502.44	116.02	1386.42	N/A	N/A	0.00
	7/15/2015	1502.44	115.44	1387.00	N/A	N/A	0.00
	6/6/2016	1502.44	114.00	1388.44	N/A	N/A	0.00
	6/7/2017	1502.44	114.97	1387.47	N/A	N/A	0.00
	5/30/2019	1502.44	114.81	1387.63	N/A	N/A	0.00
	6/1/2021	1502.44	112.57	1389.87	N/A	N/A	0.00
	5/22/2023	1502.44	115.41	1387.03	N/A	N/A	0.00
MW-8	11/22/1998	1498.64	113.34	1385.30	N/A	N/A	0.00

**Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump**

Well Name	Date	Well Elevation (feet above MSL) ^A	Depth to Groundwater (feet)	Groundwater Elevation ^B (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-8 Continued	12/1/1998	1498.64	113.67	1384.97	N/A	N/A	0.00
	6/9/1999	1498.64	113.98	1384.66	N/A	N/A	0.00
	9/17/1999	1498.64	114.52	1384.12	N/A	N/A	0.00
	5/17/2000	1498.64	115.02	1383.62	N/A	N/A	0.00
	7/14/2000	1498.64	115.24	1383.40	N/A	N/A	0.00
	10/13/2000	1498.64	112.60	1386.04	N/A	N/A	0.00
	3/27/2001	1498.37	NM	NM	N/A	N/A	0.00
	7/12/2001	1498.37	99.45	1398.92	N/A	N/A	0.00
	9/21/2001	1498.37	100.39	1397.98	N/A	N/A	0.00
	11/19/2001	1498.37	NM	NM	N/A	N/A	0.00
	6/12/2002	1498.37	106.21	1392.16	N/A	N/A	0.00
	10/4/2002	1498.37	108.68	1389.69	N/A	N/A	0.00
	6/25/2003	1498.37	114.64	1383.73	N/A	N/A	0.00
	10/1/2003	1498.37	114.77	1383.60	N/A	N/A	0.00
	6/11/2004	1498.37	115.16	1383.21	N/A	N/A	0.00
	10/18/2004	1498.37	115.28	1383.09	N/A	N/A	0.00
	6/27/2005	1498.37	114.49	1383.88	N/A	N/A	0.00
	10/16/2005	1498.37	114.77	1383.60	N/A	N/A	0.00
	6/2/2006	1498.37	NM	NM	N/A	N/A	0.00
	10/5/2006	1498.37	113.55	1384.82	N/A	N/A	0.00
	7/17/2007	1498.37	114.67	1383.70	N/A	N/A	0.00
	10/4/2007	1498.37	114.70	1383.67	N/A	N/A	0.00
	7/24/2008	1498.37	114.89	1383.48	N/A	N/A	0.00
	7/18/2009	1498.37	101.56	1396.81	N/A	N/A	0.00
	8/11/2010	1498.37	109.79	1388.58	N/A	N/A	0.00
	9/8/2011	1498.37	110.10	1388.27	N/A	N/A	0.00
	7/20/2012	1498.37	111.38	1386.99	N/A	N/A	0.00
	8/22/2013	1498.37	114.46	1383.91	N/A	N/A	0.00
	9/19/2013	1498.37	114.67	1383.70	N/A	N/A	0.00
	6/5/2014	1498.37	114.89	1383.48	N/A	N/A	0.00
	7/15/2015	1498.37	114.17	1384.20	N/A	N/A	0.00
	6/7/2016	1498.37	114.60	1383.77	N/A	N/A	0.00
	6/7/2017	1498.37	115.31	1383.06	N/A	N/A	0.00
	5/30/2019	1498.37	113.38	1384.99	N/A	N/A	0.00
	6/1/2021	1498.37	101.12	1397.25	N/A	N/A	0.00
	5/22/2023	1498.37	108.49	1389.88	N/A	N/A	0.00
MW-10	12/1/1998	1501.01	110.61	1390.40	N/A	N/A	0.00
	6/9/1999	1501.01	111.12	1389.89	N/A	N/A	0.00
	9/16/1999	1501.01	111.49	1389.52	N/A	N/A	0.00
	11/11/1999	1501.01	111.62	1389.39	N/A	N/A	0.00
	5/17/2000	1501.01	110.53	1390.48	N/A	N/A	0.00
	7/16/2000	1501.01	110.19	1390.82	N/A	N/A	0.00
	10/11/2000	1501.01	108.60	1392.41	N/A	N/A	0.00
	3/27/2001	1501.01	101.05	1399.96	N/A	N/A	0.00
	7/12/2001	1501.01	102.54	1398.47	N/A	N/A	0.00
	9/20/2001	1501.01	103.50	1397.51	N/A	N/A	0.00
	11/19/2001	1501.01	104.71	1396.30	N/A	N/A	0.00
	6/12/2002	1501.01	108.42	1392.59	N/A	N/A	0.00
	10/3/2002	1501.01	108.82	1392.19	N/A	N/A	0.00
	6/24/2003	1501.01	109.67	1391.34	N/A	N/A	0.00
	10/2/2003	1501.01	110.26	1390.75	N/A	N/A	0.00
	6/10/2004	1501.01	110.33	1390.68	N/A	N/A	0.00
	10/19/2004	1501.01	109.21	1391.80	N/A	N/A	0.00
	6/28/2005	1501.01	109.02	1391.99	N/A	N/A	0.00
	10/16/2005	1501.01	108.80	1392.21	N/A	N/A	0.00
	6/1/2006	1501.01	110.41	1390.60	N/A	N/A	0.00
	10/6/2006	1501.01	107.60	1393.41	N/A	N/A	0.00
	7/17/2007	1501.01	108.80	1392.21	N/A	N/A	0.00
	10/4/2007	1501.01	108.70	1392.31	N/A	N/A	0.00
	7/24/2008	1501.01	110.13	1390.88	N/A	N/A	0.00
	7/17/2009	1501.01	104.74	1396.27	N/A	N/A	0.00
	8/12/2010	1501.01	109.47	1391.54	N/A	N/A	0.00
	9/8/2011	1501.01	102.88	1398.13	N/A	N/A	0.00
	7/20/2012	1501.01	109.20	1391.81	N/A	N/A	0.00
	8/22/2013	1501.01	111.10	1389.91	N/A	N/A	0.00
	9/19/2013	1501.01	111.23	1389.78	N/A	N/A	0.00

**Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump**

Well Name	Date	Well Elevation (feet above MSL) ^A	Depth to Groundwater (feet)	Groundwater Elevation ^B (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-10 Continued	6/3/2014	1501.01	112.44	1388.57	N/A	N/A	0.00
	7/15/2015	1501.01	111.30	1389.71	N/A	N/A	0.00
	6/7/2016	1501.01	111.42	1389.59	N/A	N/A	0.00
	6/6/2017	1501.01	112.50	1388.51	N/A	N/A	0.00
	5/30/2019	1501.01	109.89	1391.12	N/A	N/A	0.00
	6/1/2021	1501.01	104.02	1396.99	N/A	N/A	0.00
	5/22/2023	1501.01	107.98	1393.03	N/A	N/A	0.00

Notes:

- ^A 2001 and later elevation data based on December 2001 survey
- ^B Recovery well groundwater elevations have not been corrected to account for presence of free product

Abbreviations:

- MSL mean sea level
- N/A not applicable; no measurable free product
- NM not measured

Table 2 - 1998-2022 MW-1 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal), Unadjusted	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
1998 to 2010 Maximum Apparent Thickness^A	11/22/1998	--	N/A	114.54	114.73	0.19
	10/7/1999	--	N/A	115.48	116.71	1.23
	12/28/2000	--	N/A	104.80	112.00	7.20
	7/19/2001	--	N/A	101.92	106.40	4.48
	6/10/2002	--	N/A	108.56	108.90	0.34
	6/3/2003	--	N/A	110.12	111.07	0.95
	6/2/2004	--	N/A	110.99	111.89	0.90
	5/31/2006	--	N/A	110.70	111.41	0.71
	6/2/2008	--	N/A	109.80	110.22	0.42
2011	7/17/2009	--	N/A	104.48	108.36	3.88
	10/8/2010	--	N/A	107.43	108.25	0.82
	6/24/2011	Initial Measurement	N/A	107.94	108.94	1.00
		Deployment 1	0.1875	108.03	108.3	0.27
		Deployment 2	0.025	108.03	108.25	0.22
		Deployment 3	0.125	108.08	108.1	0.02
	7/18/2011	Initial Measurement	N/A	108.34	109.02	0.68
		Deployment 1	0.0625	108.39	108.61	0.22
		Deployment 2	0.125	108.41	108.44	0.03
	7/26/2011	Initial Measurement	N/A	108.45	108.64	0.19
		Deployment 1	sheen	108.5	108.53	0.03
	8/8/2011	Initial Measurement	0.0825	108.69	108.75	0.06
		Deployment 1	0.0125	108.7	108.71	0.01
	8/22/2011	Initial Measurement	0.0625	108.53	108.54	0.01
	9/9/2011	Initial Measurement	0.0625	108.84	108.86	0.02
	9/19/2011	Initial Measurement	sheen	108.6	108.61	0.01
	10/6/2011	Initial Measurement	sheen	108.51	108.52	0.01
	10/26/2011	Initial Measurement	0.025	108.56	108.57	0.01
2012	8/9/2012	Initial Measurement	N/A	109.70	110.06	0.36
	8/23/2012	Initial Measurement	0.0625	109.58	109.78	0.2
	9/6/2012	Initial Measurement	sheen	109.75	109.90	0.15
		Deploy 2" Rigid Sorbent	0.162	109.75	109.90	0.15
		Deploy 2" Rigid Sorbent	0.162	NM	NM	NM
		Deploy 2" Rigid Sorbent	0.162	109.78	109.80	0.02
	9/21/2012	Initial Measurement	0.031	109.69	109.83	0.14
		Deploy 2" Rigid Sorbent	0.162	NM	NM	NM
		Deploy 2" Rigid Sorbent	0.162	NM	NM	NM
		Deploy 2" Rigid Sorbent	0.081	NM	NM	NM
	10/8/2012	Deploy 2" Rigid Sorbent	0.081	109.70	109.73	0.03
		Initial Measurement	0.005	109.75	109.88	0.13
		Deploy 2" Rigid Sorbent	0.162	NM	NM	NM
		Deploy 2" Rigid Sorbent	0.162	109.78	109.81	0.03
	10/22/2012	Deploy 2" Rigid Sorbent	0.162	109.80	109.81	0.01
		Initial Measurement	0.005	109.78	109.89	0.11
		Deploy 2" Rigid Sorbent	0.162	109.82	109.83	0.01
2013	6/19/2013	Frozen	N/A ^B	NM	NM	NM
	6/27/2013	Frozen	N/A ^B	NM	NM	NM
	7/19/2013	Frozen	N/A ^B	NM	NM	NM
	8/2/2013	Frozen	N/A ^B	NM	NM	NM
	8/14/2013	Frozen	N/A ^B	NM	NM	NM
	8/29/2013	Initial Measurement	N/A	111.41	112.62	1.21
		2" SoakEase deployment 1	0.17	111.44	112.45	1.01
		2" SoakEase deployment 2	0.17	111.45	112.40	0.95
		2" SoakEase deployment 3	0.25	111.49	112.32	0.83
		2" SoakEase deployment 4	0.25	111.50	112.20	0.70
		2" SoakEase (2 socks)	0.12	111.52	112.16	0.64
		1.66" Product bailer	0.06	NM	NM	NM
		2" SoakEase (2 socks)	0.12	111.56	112.04	0.48
		2" SoakEase (2 socks)	0.12	111.55	111.95	0.40
	9/12/2013	Initial Measurement	0.00	111.60	112.39	0.79
		2" SoakEase deployment 1	0.12	111.62	112.24	0.62
		2" SoakEase deployment 2	0.25	111.64	112.15	0.51
		2" SoakEase deployment 3	0.25	111.65	112.10	0.45
		2" SoakEase deployment 4	0.25	111.66	112.04	0.38
		2" SoakEase deployment 5	0.25	111.67	112.04	0.37
	10/4/2013	Initial Measurement	0.25	111.69	112.43	0.74
		2" SoakEase deployments 1-2	0.50	111.73	112.23	0.50
		2" SoakEase deployments 3-4	0.50	111.74	112.15	0.41
		2" SoakEase deployments 5-6	0.50	111.78	111.96	0.18
		2" SoakEase deployments 7-8	0.50	111.79	111.88	0.09
		2" SoakEase deployments 9-10	0.50	111.79	111.80	0.01
	10/17/2013	Initial Measurement	0.12	111.68	112.01	0.33
		2" SoakEase deployment 1	0.12	111.72	111.84	0.12
		2" SoakEase deployment 2	0.25	111.74	111.80	0.06
		2" SoakEase deployment 3	0.06	111.74	111.76	0.02
2014	5/8/2014	Initial Measurement	N/A ^B	112.43	114.15	1.72
	6/3/2014	Initial Measurement	N/A ^B	112.57	114.28	1.71

Table 2 - 1998-2022 MW-1 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal), Unadjusted	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
2014 Continued	6/4/2014 ^D	Initial Measurement	N/A	112.60	114.32	1.72
		Submersible pump	1.50	112.83	112.96	0.13
		2" SoakEase deployment 1	0.20	112.81	113.12	0.31
		2" SoakEase deployment 2	0.13	112.80	113.10	0.30
		2" SoakEase deployment 3	0.07	112.83	113.00	0.17
		2" SoakEase deployment 4	0.03	112.83	112.96	0.13
	6/5/2014 ^D	Final Measurement	N/A	112.73	113.19	0.46
	7/9/2014	Initial Measurement	N/A	112.81	113.80	0.99
		1.66" Product bailer	0.38	112.88	113.35	0.47
		Initial Measurement	N/A	112.85	113.63	0.78
	7/28/2014	1.66" Product bailer	0.38	112.91	113.18	0.27
		2" SoakEase deployment 1	0.15	112.93	113.07	0.14
		2" SoakEase deployment 2	0.15	112.94	112.96	0.02
		Initial Measurement	N/A	112.74	113.55	0.81
	8/7/2014	1.66" Product bailer	0.20	112.80	113.13	0.33
		Initial Measurement	N/A	112.53	113.48	0.95
	8/26/2014	1.66" Product bailer	0.40	112.62	113.05	0.43
		2" SoakEase deployment 1	0.10	112.68	112.69	0.01
		Initial Measurement	N/A	112.29	112.93	0.64
	9/23/2014	1.66" Product bailer	0.25	112.32	112.72	0.40
		2" SoakEase (3 socks)	0.25	112.38	112.39	0.01
		Initial Measurement	N/A	112.00	112.43	0.43
	10/9/2014	Initial Measurement	N/A	112.01	112.43	0.42
		2" SoakEase (3 socks)	0.55 ^C			
2015	6/4/2015	Initial Measurement	N/A ^B	N/A	N/A	N/A
	7/3/2015	Initial Measurement	N/A ^B	N/A	N/A	N/A
	7/14/2015	Initial Measurement	N/A	111.48	112.06	0.58
	7/22/2015 ^D	Initial Measurement	N/A	111.44	111.92	0.48
		1.66" Product bailer	0.26	111.43	111.70	0.27
		2" SoakEase (2 socks)		111.43	111.72	0.29
	8/12/2015	Initial Measurement ^C	N/A	111.72	112.14	0.42
		1.66" Product bailer	0.26	111.76	111.99	0.23
	8/25/2015	Initial Measurement ^C	0.12	111.82	112.11	0.29
		2" SoakEase (2 socks)	0.13	111.82	111.84	0.02
	9/13/2015	Initial Measurement ^C	N/A	111.82	112.11	0.29
		2" SoakEase (2 socks)	0.21	111.82	111.84	0.02
	10/1/2015	Initial Measurement ^C	N/A	112.08	112.28	0.20
		1.66" Product bailer	0.1	NM	NM	NM
		2" SoakEase (2 socks)	0.25	NM	NM	NM
2016	6/1/2016	Frozen	N/A ^B	NM	NM	NM
	6/2/2016	Initial Measurement	N/A	111.64	112.23	0.59
	6/7/2016	1.66" Product bailer	0.14	111.78	112.54	0.76
	6/11/2016	Initial 2" SoakEase Recovery ^C	0.08	111.78	112.27	0.49
		2" SoakEase (4 socks)	0.50	111.85	111.86	0.01
	6/27/2016	Initial 2" SoakEase Recovery ^C	0.13	111.93	112.25	0.32
		2" SoakEase (2 socks)	0.25	112.01	112.14	0.13
	7/10/2016	Initial Measurement	N/A	112.03	112.24	0.21
		2" SoakEase (2 socks)	0.17	112.05	112.09	0.04
	8/5/2016	Initial 2" SoakEase Recovery ^C	0.20	112.19	112.26	0.07
		2" SoakEase (1 sock)	0.06	112.19	112.24	0.05
	8/18/2016	Initial 2" SoakEase Recovery ^C	0.17	112.24	112.34	0.10
		2" SoakEase (1 sock)	0.08	112.25	112.26	0.01
	9/5/2016	Initial 2" SoakEase Recovery ^C	0.13	112.18	112.29	0.11
		1.66" Product bailer	0.09	112.20	112.21	0.01
	9/16/2016	Initial Measurement	N/A	112.22	112.33	0.11
		2" SoakEase (2 socks)	0.15	112.22	112.23	0.01
	10/3/2016	Initial Measurement	N/A	112.33	112.59	0.26
		1.66" Product bailer	0.06	112.36	112.49	0.13
		2" SoakEase (2 socks)	0.17	NM	112.39	0.00
	10/13/2016	Initial Measurement	N/A	112.25	112.42	0.17
		2" SoakEase (2 socks)	0.26	112.28	112.28	0.00
2017	5/25/2017	Frozen	N/A ^B	NM	NM	NM
	5/26/2017	Initial Measurement	N/A	112.78	114.03	1.25
	6/5/2017 to 6/7/2017	Initial Measurement	N/A	112.76	114.17	1.41
		1.66" Product bailer	0.92	NM	NM	0.20
		1.66" Product bailer	0.26	NM	NM	NM
		2" SoakEase (2 socks)	0.25	NM	NM	NM
		2" SoakEase (1 sock)	0.06	112.96	113.11	0.15
	6/27/2017	Initial 2" SoakEase Recovery ^C	0.13	112.99	113.33	0.34
		2" SoakEase (2 socks)	0.38	NM	113.01	NM
	7/24/2017	Initial 2" SoakEase Recovery ^C	0.13	113.14	113.43	0.29
		2" SoakEase (3 socks)	0.44	113.17	113.20	0.03
	9/14/2017	Initial 2" SoakEase Recovery ^C	0.25	113.2	113.61	0.41
		1.66" Product bailer	0.08	NM	NM	NM
		2" SoakEase (3 socks)	0.50	113.24	113.29	0.05
	9/28/2017	Initial 2" SoakEase Recovery ^C	0.25	113.16	113.45	0.29
		2" SoakEase (3 socks)	0.18	113.10	113.14	0.04

Table 2 - 1998-2022 MW-1 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal), Unadjusted	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
2017 Continued	10/19/2017	Initial 2" SoakEase Recovery ^C	0.13	113.16	113.35	0.19
		2" Soakease (3 socks)	0.25	113.18	113.19	0.01
2018	6/2/2018 to 6/4/2018	Initial Measurement	N/A	113.31	114.97	1.66
		1.66" Product bailer	1.45	113.45	113.82	0.37
		2" Soakease (3 socks)	0.31	113.50	113.69	0.19
		Initial 2" SoakEase Recovery ^C	0.17	113.55	113.84	0.29
	6/8/2018	1.66" Product bailer	0.02	NM	NM	NM
		2" Soakease (3 socks)	0.23	113.56	113.64	0.08
		1.66" Product bailer	0.33	NM	NM	NM
	6/25/2018	2" Soakease (3 socks)	0.17	NM	NM	NM
		Initial Measurement	N/A	113.52	113.77	0.25
	7/19/2018	1.66" Product bailer	0.13	NM	NM	NM
		2" Soakease (3 socks)	0.11	113.53	113.64	0.11
		Initial Measurement	N/A	113.31	113.59	0.28
	8/2/2018	1.66" Product bailer	0.26	NM	NM	NM
		2" Soakease (3 socks)	0.25	113.34	113.45	0.11
		Initial Measurement	N/A	113.29	113.99	0.70
	8/16/2018	1.66" Product bailer	0.20	NM	NM	NM
		2" Soakease (8 socks)	0.96	113.28	113.41	0.13
		Initial Measurement	N/A	113.22	113.90	0.68
	9/4/2018	1.66" Product bailer	0.26	NM	NM	NM
		2" Soakease (10 socks)	0.78	113.30	113.39	0.09
		Initial Measurement	N/A	113.10	113.31	0.21
	9/18/2018	1.66" Product bailer	0.06	NM	NM	NM
		2" Soakease (3 socks)	0.12	113.14	113.15	0.01
		Initial Measurement	N/A	112.82	113.14	0.32
	10/1/2018	2" Soakease (2 socks)	0.20	112.88	112.90	0.02
2019	5/24/2019	Initial Measurement	N/A ^B	110.55	110.80	0.25
	5/31/2019	Initial Measurement	N/A	110.45	110.68	0.23
		2" Pig (5 socks)	0.50	ND	110.49	0.00
	6/14/2019	Initial Measurement	N/A	110.55	110.67	0.12
		2" Pig (4 socks)	0.26	110.56	110.57	0.01
	6/28/2019	Initial Measurement	N/A	110.77	110.94	0.17
		2" Soakease (5 socks)	0.53	ND	110.70	0.00
	7/12/2019	Initial Measurement	N/A	110.79	110.95	0.16
		2" Soakease (5 socks)	0.38	ND	110.82	0.00
	7/31/2019	Initial Measurement	N/A	110.94	111.10	0.16
		2" Soakease (4 socks)	0.38	ND	110.95	0.00
	8/9/2019	Initial Measurement	N/A	111.04	111.20	0.16
		2" Soakease (3 socks)	0.33	ND	111.07	0.00
	8/30/2019	Initial Measurement	N/A	111.19	111.35	0.16
		2" Soakease (3 socks)	0.25	ND	111.20	0.00
	9/13/2019	Initial Measurement	N/A	110.98	111.10	0.12
		2" Soakease (2 socks)	0.25	ND	111.03	0.00
	9/27/2019	Initial Measurement	N/A	111.30	111.50	0.20
		2" Soakease (2 socks)	0.19	ND	111.33	0.00
	10/14/2019	Initial Measurement	N/A	110.93	111.00	0.07
		2" Soakease (2 socks)	0.08	ND	110.94	0.00
2020	10/30/2019	Initial Measurement	N/A	110.77	110.81	0.04
		2" Soakease (2 socks)	0.06	ND	110.77	0.00
	7/1/2020	Well Thawing Trip	N/A ^B	NM ^B	NM ^B	NM ^B
	7/29/2020	Initial Measurement	N/A	104.91	105.52	0.61
		2" Soakease (5 socks)	1.09	104.98	105.00	0.02
	8/11/2020	Initial Measurement	N/A	104.58	104.88	0.30
		2" Soakease (4 socks)	0.59	ND	104.60	0.00
	8/24/2020	Initial Measurement	N/A	104.04	104.28	0.24
		2" Soakease (3 socks)	0.44	ND	104.07	0.00
	9/15/2020	Initial Measurement	N/A	103.55	103.80	0.25
		2" Soakease (3 socks)	0.53	ND	103.58	0.00
	9/29/2020	Initial Measurement	N/A	103.91	104.20	0.29
		2" Soakease (3 socks)	0.38	ND	103.99	0.00
	10/14/2020	Initial Measurement	N/A	103.68	103.97	0.29
		2" Soakease (3 socks)	0.40	ND	103.78	0.00
2021	11/11/2020	Initial Measurement	N/A	103.00	103.15	0.15
		2" Soakease (3 socks)	0.50	ND	103.03	0.00
	6/15/2021	Initial Measurement	N/A	104.58	105.55	0.97
		1.66" Product bailer	0.25	NM	NM	NM
		2" Soakease (6 socks)	0.96	104.70	104.71	0.01
	7/9/2021	Initial Measurement	N/A	104.97	105.20	0.23
		2" Soakease (4 socks)	0.50	ND	104.99	0.00
	7/21/2021	Initial Measurement	N/A	105.06	105.17	0.11
		2" Soakease (3 socks)	0.44	ND	105.05	0.00
	8/12/2021	Initial Measurement	N/A	105.43	105.56	0.13
		2" Soakease (2 socks)	0.25	ND	105.45	0.00
	8/26/2021	Initial Measurement	N/A	105.65	105.80	0.15
		2" Soakease (3 socks)	0.31	ND	105.68	0.00
	10/1/2021	Initial Measurement	N/A	105.89	106.06	0.17
		2" Soakease (3 socks)	0.44	105.95	105.96	0.01

Table 2 - 1998-2022 MW-1 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal), Unadjusted	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
2022	5/19/2022	Initial Measurement	N/A	NM	NM	NM
	6/7/2022	Initial Measurement	N/A	108.18	108.39	0.21
		2" Soakease (2 socks)	0.19	108.21	108.21	0.00
	7/8/2022	Initial Measurement	N/A	106.96	107.11	0.15
		2" Soakease (2 socks)	0.19	107.00	107.00	0.00
	7/26/2022	Initial Measurement	N/A	106.92	107.02	0.10
		2" Soakease (2 socks)	0.19	106.93	106.93	0.00
	8/16/2022	Initial Measurement	N/A	106.28	106.38	0.10
		2" Soakease (2 socks)	0.13	106.31	106.31	0.00
	8/25/2022	Initial Measurement	N/A	106.31	106.45	0.14
		2" Soakease (2 socks)	0.13	106.32	106.32	0.00
	9/8/2022	Initial Measurement	N/A	106.10	106.15	0.05
		2" Soakease (2 socks)	0.00	106.12	106.12	0.00
9/20/2022	Initial Measurement	N/A	106.37	106.50	0.13	
	2" Soakease (2 socks)	0.13	106.36	106.38	0.02	
	Initial Measurement	N/A	106.16	106.25	0.09	
	2" Soakease (5 socks)	0.00	106.18	106.18	0.00	
2023	5/23/2023	Initial Measurement	N/A	108.53	109.03	0.50
		2" Soakease (3 socks)	0.45	108.60	108.63	0.03
	6/1/2023	Initial Measurement	N/A	108.53	108.66	0.13
		2" Soakease (5 socks)	0.38	108.50	108.55	0.05
	6/22/2023	Initial Measurement	N/A	108.32	108.38	0.06
		2" Soakease (3 socks)	0.15	108.32	108.33	0.01
	7/11/2023	Initial Measurement	N/A	108.24	108.29	0.05
		2" Soakease (3 socks)	0.10	108.25	108.26	0.01
	8/4/2023	Initial Measurement	N/A	108.06	108.12	0.06
		2" Soakease (3 socks)	0.10	108.11	108.12	0.01
	8/29/2023	Initial Measurement	N/A	107.89	107.90	0.01
		2" Soakease (3 socks)	0.00	107.89	107.89	0.00
	9/23/2023	Initial Measurement	N/A	108.11	108.16	0.05
2" Soakease (2 socks)		0.05	108.10	108.10	0.00	
Product Recovery Summary	Year		Gallons	Percent of 2011-2023 Total Recovered Volume		
	1998-2010 ^A		N/A	N/A		
	2011		0.8	2%		
	2012		1.7	5%		
	2013		8.2	24%		
	2014		4.7	14%		
	2015		1.3	4%		
	2016		2.6	8%		
	2017		4.2	12%		
	2018		6.0	18%		
	2019 (Adjusted) ^E		1.2	3%		
	2020 (Adjusted) ^E		1.4	4%		
	2021 (Adjusted) ^E		1.3	4%		
	2022 (Adjusted) ^E		0.3	1%		
	2023 (Adjusted) ^E		0.4	1%		
Total 2011 to 2023		34.2	--			
Notes:						
0.01	BOLD values indicate the maximum measured product thickness for each year.					
A	Product recovery cannisters were operated for recovery of product during this period, recovery volumes were not noted for individual wells.					
B	Ice plug above product depth prevented canister from being deployed for recovery.					
C	Product measurement following removal of sorbent sock.					
D	Product measurements during baildown test.					
E	Total volume of recovered product from visual assessment of 2" Soak Ease™ 2" socks is corrected using correction factor of 0.36 based on results of wringing 2" socks in 2020.					
Pig @ 2" down-well socks absorb approximately 0.13 gallon of product each						
Soak Ease™ 2" down-well socks absorb approximately 0.25 gallon of product each						
Soak Ease™ 4" down-well socks absorb approximately 0.75 gallon of product each						
Abbreviations:						
ft	feet	N/A	not applicable		ND	non detect
gal	gallons	NM	not measured			

Table 3 - 1998-2023 MW-5 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
1998 to 2010 Maximum Apparent Thickness^A	12/1/1998	--	--	110.83	111.62	0.79
	9/16/1999	--	--	111.51	113.56	2.05
	12/29/2000	--	--	100.90	109.20	8.30
	7/19/2001	--	--	101.30	109.30	8.00
	6/10/2002	--	--	108.53	109.60	1.07
	6/3/2003	--	--	110.10	110.85	0.75
	6/2/2004	--	--	110.94	111.72	0.78
	6/20/2005	--	--	109.40	111.65	2.25
	5/31/2006	--	--	110.64	111.15	0.51
	5/30/2007	--	--	108.72	108.94	0.22
2011	7/1/2008	--	--	110.27	110.49	0.22
	7/18/2009	--	--	104.42	108.25	3.83
	10/12/2010	--	--	107.12	108.12	1.00
	6/24/2011	Frozen	N/A	NM	NM	N/A
	7/18/2011	Frozen	N/A	NM	NM	N/A
	7/26/2011	Frozen	N/A	NM	NM	N/A
	8/8/2011	Initial Measurement	N/A	108.61	108.8	0.19
		Deployment 1	0.75	108.63	108.75	0.12
		Deployment 2	0.75	108.64	108.7	0.06
		Deployment 3	0.25	108.63	108.66	0.03
	8/22/2011	Initial Measurement	N/A	108.42	108.6	0.18
		Deployment 1	0.33	108.45	108.53	0.08
		Deployment 2	0.33	108.46	108.49	0.03
	9/9/2011	Initial Measurement	1	108.8	108.86	0.06
		Deployment 1	0.75	108.84	108.87	0.03
	9/19/2011	Initial Measurement	1	108.54	108.61	0.07
		Deployment 1	0.5	108.55	108.56	0.01
	10/6/2011	Initial Measurement	sheen	108.44	108.46	0.02
	10/26/2011	Initial Measurement	1	108.4	108.43	0.03
2012	6/5/2012	Initial Measurement	N/A ^B	109.68	110.05	0.37
	6/20/2012	Initial Measurement	N/A ^B	109.77	110.13	0.36
	7/5/2012	Initial Measurement	N/A ^B	109.70	110.04	0.34
	7/20/2012	Initial Measurement	N/A	109.67	109.94	0.27
		Deployment 1	0.00	109.63	109.93	0.3
	8/3/2012	Initial Measurement	0.00	109.71	110.03	0.32
		Deployment 1	0.00	109.71	110.03	0.32
	8/9/2012	Initial Measurement	1	109.68	109.92	0.24
		Deployment 1	0.00	109.68	109.92	0.24
	8/23/2012	Initial Measurement	1	109.51	109.71	0.2
	9/6/2012	Initial Measurement	1	109.67	109.87	0.2
	9/21/2012	Initial Measurement	1	109.59	109.79	0.2
	10/8/2012	Initial Measurement	1	109.66	109.85	0.19
2013	10/22/2012	Initial Measurement	1	109.75	109.85	0.1
	6/19/2013	Initial Measurement	N/A ^B	111.00	111.66	0.66
	6/27/2013	Initial Measurement	N/A ^B	111.10	112.07	0.97
	7/19/2013	Frozen	N/A ^B	NM	NM	NM
	8/2/2013	Initial Measurement	N/A	111.22	111.94	0.72
	8/14/2013	Initial Measurement	0.03	111.52	112.38	0.86
		Initial Measurement	0.01	111.62	112.50	0.88
		2" SoakEase (3 socks)	0.75	111.50	112.21	0.71
		2" SoakEase (4 socks)	0.75	111.55	112.02	0.47
		2" SoakEase (3 socks)	0.75	111.56	111.95	0.39
		2" SoakEase (3 socks)	0.75	111.58	111.85	0.27
		2" SoakEase (3 socks)	0.75	111.62	111.77	0.15
		2" SoakEase (2 socks)	0.50	111.60	111.71	0.11
	9/12/2013	Initial Measurement	0.50	111.55	112.48	0.93
		2" SoakEase (3 socks)	0.75	111.57	112.33	0.76
		2" SoakEase (3 socks)	0.75	111.61	112.18	0.57
		2" SoakEase (3 socks)	0.75	111.64	112.01	0.37
		2" SoakEase (3 socks)	0.75	111.67	111.85	0.18
		2" SoakEase (3 socks)	0.75	111.72	111.81	0.09
	10/4/2013	Initial Measurement	0.75	111.61	112.50	0.89
		4" SoakEase (2 socks)	1.50	111.76	112.22	0.46
		4" SoakEase (2 socks)	1.50	111.80	112.11	0.31
		4" SoakEase (2 socks)	1.50	111.75	112.00	0.25
		4" SoakEase (2 socks)	1.50	111.80	111.90	0.10
		4" SoakEase (2 socks)	1.50	111.90	111.92	0.02
	10/17/2013	Initial Measurement	0.75	111.66	112.40	0.74
		4" SoakEase (1 sock)	0.75	111.74	112.36	0.62
		2" SoakEase (3 socks)	0.75	111.79	112.19	0.40
		2" SoakEase (3 socks)	0.75	111.85	112.05	0.20
		2" SoakEase (2 socks)	0.34	111.80	111.95	0.15

Table 3 - 1998-2023 MW-5 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
2014	5/8/2014	Initial Measurement	N/A	112.32	114.30	1.98
	6/3/2014	Initial Measurement	N/A ^B	112.48	114.43	1.95
	6/4/2014 ^D	Initial Measurement	N/A	112.48	114.45	1.97
		Submersible pump	3.49	112.41	113.35	0.94
		4" SoakEase (1 sock)	0.26	112.90	112.92	0.02
	6/5/2014 ^D	Final Measurement	N/A	112.59	113.24	0.65
	7/9/2014	Initial Measurement	N/A ^B	112.61	114.67	2.06
	7/28/2014	Initial Measurement	N/A	112.64	114.21	1.57
		3.33" Product bailer	2.25	112.95	113.52	0.57
		4" SoakEase (1 sock)	0.66	112.92	113.04	0.12
	8/7/2014	Initial Measurement	N/A	112.59	113.87	1.28
		3.33" Product bailer	1.90	112.75	113.04	0.29
		Initial Measurement	N/A	112.52	113.02	0.50
	8/26/2014	3.33" Product bailer	1.00	112.64	112.77	0.13
		4" SoakEase (1 sock)	0.10	112.68	112.70	0.02
		Initial Measurement	N/A	112.29	112.54	0.25
	9/23/2014	3.33" Product bailer	0.33	112.34	112.46	0.12
		4" SoakEase (1 sock)	0.07	112.43	112.44	0.01
		Initial Measurement	N/A	111.94	112.23	0.29
	10/9/2014	3.33" Product bailer	0.5	112.00	112.05	0.05
		Initial Measurement	N/A	112.01	112.01	0.00
		4" SoakEase (2 socks)	0.25	112.02	112.03	0.01
2015	6/4/2015	Initial Measurement	N/A ^B	111.04	111.70	0.66
	7/3/2015	Initial Measurement	N/A ^B	N/A	N/A	N/A
	7/14/2015	4" SoakEase (1 sock)	0.16 ^C	N/A	N/A	N/A
		Initial Measurement	N/A	111.31	112.44	1.13
	7/21/2015 ^D	Initial Measurement	N/A	111.41	112.31	0.90
		Submersible pump	1.9	111.62	111.70	0.08
	8/12/2015	Initial Measurement ^C	0.5	111.60	112.82	1.22
		3.33" Product bailer	2.1	111.71	112.05	0.34
	8/25/2015	Initial Measurement ^C	0.5	111.57	112.68	1.11
		3.33" Product bailer, 4" SoakEase	2.0	111.21	111.84	0.63
	9/13/2015	Initial Measurement ^C	N/A	111.58	112.98	1.40
		3.33" Product bailer, 4" SoakEase	2.1	111.90	112.33	0.43
2016	10/1/2015	Initial Measurement ^C	N/A	111.79	113.22	1.43
		3.33" Product bailer, 4" SoakEase	4.25	112.11	112.18	0.07
	6/1/2016	Initial Measurement	N/A	111.46	112.20	0.74
	6/2/2016	Initial Measurement	N/A	111.50	112.43	0.93
	6/7/2016	Initial Measurement	N/A	111.58	113.06	1.48
	6/11/2016	Initial Measurement	N/A	111.60	112.85	1.25
		1.66" bailer, 4" SoakEase (3 socks)	1.60	NM	NM	NM
	6/27/2016	Initial 4" SoakEase Recovery ^C	0.26	111.81	113.05	1.24
		4" SoakEase (6 sock)	2.00	not recorded	not recorded	0.23
	7/10/2016	Initial 4" SoakEase Recovery ^C	0.26	111.89	113.00	1.11
		3.33" bailer, 4" SoakEase	2.05	111.97	112.38	0.41
	8/5/2016	Initial 4" SoakEase Recovery ^C	0.26	111.97	112.93	0.96
		3.33" bailer	2.20	NM	NM	NM
		4" SoakEase (1 sock)	0.40	111.26	111.49	0.23
	8/18/2016	Initial 4" SoakEase Recovery ^C	0.40	112.12	113.09	0.97
		3.33" bailer	1.50	NM	NM	NM
		4" SoakEase (1 sock)	0.40	112.28	112.48	0.20
	9/5/2016	Initial 4" SoakEase Recovery ^C	0.40	112.10	112.62	0.52
		4" SoakEase (1 sock)	0.40	NM	NM	NM
		3.33" bailer	0.31	112.14	112.33	0.19
	9/16/2016	Initial Measurement	N/A	112.09	112.49	0.40
		3.33" bailer	0.50	112.14	112.36	0.22
		4" SoakEase (2 socks)	0.30	112.22	112.25	0.03
	10/3/2016	Initial Measurement	N/A	112.25	112.56	0.31
		3.33" bailer	0.50	112.33	112.38	0.05
		4" SoakEase (1 sock)	0.10	112.39	112.39	0.00
	10/13/2016	Initial Measurement	N/A	112.17	112.38	0.21
		3.33" bailer	0.50	112.22	112.31	0.09
		4" SoakEase (1 sock)	0.26	112.26	112.26	0.00
2017	5/25/2017	Frozen	N/A ^B	NM	NM	NM
	5/26/2017	Initial Measurement	N/A	112.72	113.83	1.11
	6/5/2017 to 6/7/2017	Initial Measurement	N/A	112.70	114.03	1.33
		3.33" bailer	1.18	112.70	114.02	1.32
		4" SoakEase (1 sock)	0.25	NM	NM	NM
		4" SoakEase (1 sock)	0.25	112.89	113.22	0.33
	6/27/2017	Initial 4" SoakEase Recovery ^C	0.3	112.84	113.75	0.91
		3.33" bailer	1.58	NM	NM	NM
		4" SoakEase (2 socks)	1.50	113.08	113.12	0.04
	7/24/2017	Initial 4" SoakEase Recovery ^C	0.6	113.05	113.86	0.81
		3.33" bailer	0.53	NM	NM	NM
		4" SoakEase (1 sock)	0.56	113.67	113.83	0.16

Table 3 - 1998-2023 MW-5 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
2017 Continued	9/14/2017	Initial 4" SoakEase Recovery ^C	0.38	113.12	114.02	0.90
		3.33" bailer	0.80	NM	NM	NM
		4" SoakEase (1 sock)	0.56	113.24	113.29	0.05
	9/28/2017	Initial Measurement	N/A	112.93	113.38	0.45
		3.33" bailer	0.53	NM	NM	NM
		4" SoakEase (2 socks)	0.50	113.10	113.18	0.08
	10/19/2017	Initial 4" SoakEase Recovery ^C	0.25	113.05	113.48	0.43
		3.33" bailer	0.38	113.12	113.25	0.13
		4" SoakEase (1 sock)	0.06	113.14	113.16	0.02
2018	6/2/2018 to 6/4/2018	Initial Measurement	N/A	113.28	114.80	1.52
		3.33" bailer	1.45	NM	NM	NM
		4" SoakEase (3 socks)	0.56	113.44	113.74	0.30
	6/8/2018	Initial 2" SoakEase Recovery ^C	0.38	113.49	114.29	0.80
		3.33" bailer	0.50	NM	NM	NM
		4" SoakEase (6 socks)	0.93	113.55	113.63	0.08
	6/25/2018	3.33" bailer	1.00	NM	NM	NM
		4" SoakEase (4 socks)	0.50	NM	NM	NM
		Initial Measurement	N/A	113.33	114.15	0.82
	7/19/2018	3.33" bailer	0.86	NM	NM	NM
		4" SoakEase (4 socks)	0.68	113.55	113.63	0.08
		Initial Measurement	N/A	113.16	113.67	0.51
	8/2/2018	3.33" bailer	0.80	NM	NM	NM
		4" SoakEase (2 socks)	0.30	113.32	113.42	0.10
		Initial Measurement	N/A	113.21	113.71	0.50
	8/16/2018	3.33" bailer	0.53	NM	NM	NM
		4" SoakEase (4 socks)	0.55	113.36	113.42	0.06
		Initial Measurement	N/A	113.11	113.55	0.44
	9/4/2018	3.33" bailer	0.46	NM	NM	NM
		4" SoakEase (4 socks)	0.65	113.26	113.32	0.06
		Initial Measurement	N/A	112.98	113.16	0.18
	9/18/2018	3.33" bailer	0.25	NM	NM	NM
		4" SoakEase (2 socks)	0.25	113.04	113.05	0.01
		Initial Measurement	N/A	112.72	112.85	0.13
	10/1/2018	4" SoakEase (2 socks)	0.38	112.78	112.79	0.01
2019	5/24/2019	Initial Measurement	N/A ^B	110.45	110.78	0.33
	5/31/2019	Well Thawing Trip	N/A ^B	NM ^B	NM ^B	NM ^B
	6/14/2019	Initial Measurement	N/A	110.46	110.78	0.32
		4" SoakEase (4 socks)	1.62	110.48	110.62	0.14
	6/28/2019	Initial Measurement	N/A	110.65	111.03	0.38
		4" SoakEase (8 socks)	4.56	110.74	110.82	0.08
	7/12/2019	Initial Measurement	N/A	110.64	111.02	0.38
		4" SoakEase (7 socks)	3.75	110.78	110.81	0.03
	7/31/2019	Initial Measurement	N/A	110.80	111.20	0.40
		4" SoakEase (7 socks)	2.85	110.95	110.96	0.01
	8/9/2019	Initial Measurement	N/A	110.92	111.28	0.36
		4" SoakEase (6 socks)	2.63	111.11	111.16	0.05
	8/30/2019	Initial Measurement	N/A	111.07	111.47	0.40
		4" SoakEase (6 socks)	2.91	111.20	111.24	0.04
	9/13/2019	Initial Measurement	N/A	110.89	111.15	0.26
		4" SoakEase (3 socks)	0.94	ND	111.04	0.00
	9/27/2019	Initial Measurement	N/A	111.15	111.60	0.45
		4" SoakEase (4 socks)	2.03	111.39	111.42	0.03
	10/14/2009	Initial Measurement	N/A	110.84	111.03	0.19
		4" SoakEase (2 socks)	0.71	110.90	110.93	0.03
2020	10/30/2019	Initial Measurement	N/A	110.62	110.75	0.13
		4" SoakEase (2 socks)	0.56	ND	110.66	0.00
	7/1/2020	Initial Measurement	N/A ^B	106.24	106.54	0.30
		Well Thawing Trip	N/A ^B	NM ^B	NM ^B	NM ^B
	7/29/2020	Initial Measurement	N/A	104.70	106.02	1.32
		4" SoakEase (6 socks)	3.69	104.91	104.92	0.01
	8/11/2020	Initial Measurement	N/A	104.42	105.10	0.68
		4" SoakEase (3 socks)	1.69	104.53	104.54	0.01
	8/24/2020	Initial Measurement	N/A	103.98	104.51	0.53
		4" SoakEase (3 socks)	1.73	ND	104.03	0.00
	9/15/2020	Initial Measurement	N/A	103.34	104.29	0.95
		4" SoakEase (3 socks)	1.50	103.50	103.51	0.01
	9/29/2020	Initial Measurement	N/A	103.83	104.41	0.58
		4" SoakEase (3 socks)	1.60	ND	103.97	0.00
	10/14/2020	Initial Measurement	N/A	103.59	104.23	0.64
		4" SoakEase (3 socks)	1.20	ND	103.74	0.00
	11/11/2020	Initial Measurement	N/A	102.47	103.93	1.46
		4" SoakEase (3 socks)	1.88	ND	102.73	0.00

Table 3 - 1998-2023 MW-5 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
2021	6/15/2021	Initial Measurement	N/A	103.82	108.06	4.24
		3.33" Product bailer	5.00	NM	NM	NM
		4" SoakEase (5 socks)	2.25	104.55	104.57	0.02
	7/9/2021	Initial Measurement	N/A	104.20	107.58	3.38
		3.33" Product bailer	3.75	NM	NM	NM
		4" SoakEase (2 socks)	0.75	104.76	104.77	0.01
	7/21/2021	Initial Measurement	N/A	104.66	105.56	0.90
		4" SoakEase (2 socks)	0.75	ND	104.85	0.00
	8/12/2021	Initial Measurement	N/A	104.99	106.19	1.20
		4" SoakEase (4 socks)	1.69	ND	105.22	0.00
	8/26/2021	Initial Measurement	N/A	105.30	106.05	0.75
		4" SoakEase (3 socks)	0.94	105.44	105.45	0.01
2022	5/19/2022	Initial Measurement	N/A	108.70	108.83	0.13
		4" SoakEase (2 socks)	0.38	108.72	108.72	0.00
	6/7/2022	Initial Measurement	N/A	107.95	108.08	0.13
		4" SoakEase (2 socks)	0.38	107.95	107.96	0.01
	7/8/2022	Initial Measurement	N/A	106.48	107.90	1.42
		4" SoakEase (5 socks)	2.25	106.78	106.79	0.01
	7/26/2022	Initial Measurement	N/A	106.51	107.50	0.99
		4" SoakEase (4 socks)	1.50	106.71	106.71	0.00
	8/16/2022	Initial Measurement	N/A	105.97	106.45	0.48
		4" SoakEase (2 socks)	0.56	106.06	106.06	0.00
	8/25/2022	Initial Measurement	N/A	106.05	106.25	0.20
		4" SoakEase (2 socks)	0.75	106.09	106.09	0.00
	9/8/2022	Initial Measurement	N/A	105.80	106.07	0.27
		4" SoakEase (4 socks)	0.30	105.88	105.90	0.02
	9/20/2022	Initial Measurement	N/A	106.08	106.36	0.28
		4" SoakEase (2 socks)	0.75	106.15	106.16	0.01
2023	5/23/2023	Initial Measurement	N/A	108.30	108.38	0.08
		4" SoakEase (2 socks)	0.08	108.31	108.32	0.01
	6/1/2023	Initial Measurement	N/A	108.25	108.38	0.13
		4" SoakEase (2 socks)	0.30	108.27	108.30	0.03
	6/22/2023	Initial Measurement	N/A	108.04	108.11	0.07
		4" SoakEase (3 socks)	0.08	108.06	108.12	0.06
	7/11/2023	Initial Measurement	N/A	107.95	108.10	0.15
		4" SoakEase (4 socks)	0.90	107.96	107.99	0.03
	8/4/2023	Initial Measurement	N/A	107.79	107.97	0.18
		4" SoakEase (4 socks)	0.90	107.85	107.87	0.02
	8/29/2023	Initial Measurement	N/A	107.54	107.94	0.40
		4" SoakEase (5 socks)	1.50	107.65	107.67	0.02
Product Recovery Summary	9/23/2023	Initial Measurement	N/A	107.80	107.97	0.17
		4" SoakEase (3 socks)	0.75	107.85	107.86	0.01
	Year		Gallons	Percent of 2011-2023 Total Recovered Volume		
	1998-2010 ^D		N/A	N/A		
	2011		6.7	5%		
	2012		6.0	4%		
	2013		20.1	15%		
	2014		10.8	8%		
	2015		13.5	10%		
	2016		14.6	11%		
	2017		10.1	8%		
	2018		11.0	8%		
	2019 (Adjusted) ^E		13.5	10%		
	2020 (Adjusted) ^E		8.0	6%		
	2021 (Adjusted) ^E		13.5	10%		
	2022 (Adjusted) ^E		4.6	3%		
	2023 (Adjusted) ^E		2.7	2%		
	Total 2011 to 2023		135.0	--		

**Table 3 - 1998-2023 MW-5 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump**

Year	Date	Description	Amount Recovered (gal)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
Notes:						
0.01		BOLD values indicate the maximum measured product thickness for each year.				
A		Product recovery cannisters were operated for recovery of product during this period, recovery volumes were not noted for individual wells.				
B		Ice plug above product depth prevented canister or sock from being deployed for recovery.				
C		Product measurement following removal of sorbent sock.				
D		Product measurements during baildown test.				
E		Total volume of recovered product from visual assessment of 4" Soak Ease™ socks is corrected using correction factor of 0.60 based on results of wringing 4" socks in 2020.				
Soak Ease™ 2" down-well socks absorb approximately 0.25 gallon of product each						
Soak Ease™ 4" down-well socks absorb approximately 0.75 gallon of product each						
Abbreviations:						
ft	feet	N/A not applicable			ND	non detect
gal	gallons	NM not measured				

**Table 4 - 1998-2023 Annual Product Recovery Summary
PS09 Mainline Turbine Sump**

Product Recovery Summary	Period	Volume Recovered (gallons)	Percent of Total Recovered Volume ^A (gallons)	Number of Recovery Events	Recovery Volume per Event (gallons)
	1998-2010 ^B	1,085	86%	N/A	N/A
	2011 ^C	11.2	0.9%	4	2.8
	2012 ^D	8.7	0.7%	4	2.2
	2013 ^D	30.8	2.4%	4	7.7
	2014 ^{E, F}	16.2	1.3%	7	2.3
	2015 ^{E, F}	15.1	1.2%	5	3.0
	2016 ^{E, F}	17.8	1.4%	10	1.8
	2017 ^{E, F}	14.3	1.1%	6	2.4
	2018 ^{E, F}	17.0	1.3%	9	1.9
	2019 ^{G, H}	14.7	1.2%	11	1.3
	2020 ^{H, I}	9.4	0.7%	7	1.3
	2021 ^{E, H}	14.8	1.2%	6	2.5
	2022 ^{H, I}	4.9	0.4%	9	0.5
	2023 ^{H, I}	3.1	0.2%	7	0.4
	Grand Total	1,263	100%	89	--

Notes:

- Not applicable
- A Total annual recovery for Monitoring wells MW-1, MW-5, and MW-6 1998 through 2016, monitoring wells MW-1 and MW-5 from 2017 to 2023.
- B Product recovery using oil skimmer pump and pneumatically-driven pumps for 1998 through 2009 and product bailers in 2010.
- C Product Recovery using Keck[®] Product Recovery Canisters as an active recovery system.
- D Product Recovery using bailers and Keck[®] Product Recovery Canisters as passive recovery systems.
- E Product recovery using Durham Geo Slope Indicator SoakEase[™] sorbent socks and product-selective bailers.
- F Total volume of recovered product is considered biased-high due to separate-phase water recovered with product using sorbent socks.
- G Product recovery using Durham Geo Slope Indicator SoakEase[™] and Pig[®] sorbent socks.
- H Product and water cut determined through wringing socks and measuring water/product volumes and weighing residual product in wrung socks. Correction factor applied to visually-determined volume.
- I Product recovery using only Durham Geo Slope Indicator SoakEase[™] sorbent socks.

**Table 5 - 2023 Groundwater Analytical Results
PS09 Mainline Turbine Sump
(All results in mg/L)**

Analytical Method and Analyte	ADEC 2023 Groundwater Cleanup Level ^A	Sample Locations ^B											
		MW-2 May 22, 2023 1232219006		MW-3 May 22, 2023 1232219001 (Primary)		MW-93 May 22, 2023 1232219002 (Duplicate)		MW-7 May 22, 2023 1232219005		MW-8 May 22, 2023 1232219004		MW-10 May 22, 2023 1232219003	
		Conc. ^C	Flag	Conc. ^C	Flag	Conc. ^C	Flag	Conc. ^C	Flag	Conc. ^C	Flag	Conc. ^C	Flag
DRO by Method AK102													
Diesel Range Organics	1.5	[0.294]	ND	[0.306]	ND	[0.3]	ND	3.03	=	0.202	J	0.228	J
BTEX by Method SW8021B													
Benzene	0.0046	[0.00025]	ND	[0.00025]	ND	[0.00025]	ND	0.00173	=	[0.00025]	ND	[0.00025]	ND
Toluene	1.1	[0.0005]	ND	[0.0005]	ND	[0.0005]	ND	[0.0005]	ND	[0.0005]	ND	[0.0005]	ND
Ethylbenzene	0.015	[0.0005]	ND	[0.0005]	ND	[0.0005]	ND	[0.0005]	ND	[0.0005]	ND	[0.0005]	ND
o-Xylene	--	[0.0005]	ND	[0.0005]	ND	[0.0005]	ND	[0.0005]	ND	[0.0005]	ND	[0.0005]	ND
P & M -Xylene	--	[0.001]	ND	[0.001]	ND	[0.001]	ND	[0.001]	ND	[0.001]	ND	[0.001]	ND
Xylenes (total) ^D	0.19	[0.001]	ND	[0.001]	ND	[0.001]	ND	[0.001]	ND	[0.001]	ND	[0.001]	ND

Shaded yellow indicates an exceedance of ADEC criteria.

Notes

- ^A This cleanup level corresponds to ADEC groundwater cleanup levels, 18 AAC 75.345, Table C, revised as of October 1, 2023.
- ^B The field sample identification number, date collected, and laboratory sample identification number are provided.
- ^C The maximum concentration of a detected analyte is shown. The highest LOD is shown in [brackets] for ND analytes.
- ^D Total values were the summation of detected compounds only. If compounds were ND, then the highest LOD was listed.

Data Flags

- = Analyte listed at concentration listed in column to the left.
- J The analyte was positively identified, but the result was between the LOQ and DL; the quantitation was an estimate.
- ND Nondetect; the limit of detection is presented in brackets to the left.

Abbreviations

-- not applicable or screening criteria does not exist for this compound

AAC Alaska Administrative Code

ADEC Alaska Department of Environmental Conservation

BTEX benzene, toluene, ethylbenzene, total xylenes

DL
DRO
LOD
LOQ

detection limit
diesel range organics
limit of detection
limit of quantitation

mg/L milligrams per liter

Table 6 - Historic Groundwater Analytical Results
PS09 Mainline Turbine Sump
(All results in mg/L)

Well Name	Sample Designation	Date Sampled	AK 102	BTEX USEPA Method 8021B				PAHs USEPA Method 8270SIM																
			Diesel Range Organics	Benzene	Toluene	Ethylbenzene	Total Xylenes	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Anthracene	Benzo(a)-anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Dibenzofuran	Fluoranthene	Fluorene	Indeno(1,2,3)-pyrene	Naphthalene	Phenanthrene	Pyrene
ADEC 2015 Groundwater Cleanup Level ^A			1.5	0.005	1.0	0.7	10	N/A	N/A	2.2	11	0.0012	0.0002	0.0012	0.012	0.12	0.00012	0.073	1.5	1.5	0.0012	0.73	11	1.1
ADEC 2016 Groundwater Cleanup Level ^B			1.5	0.0046	1.1	0.015	0.19	0.036	0.260	0.530	0.043	0.00012	0.000034	0.00034	0.00080	0.0020	0.000034	0.0079	0.260	0.290	0.00019	0.0017	0.170	0.120
ADEC 2018, 2021, and 2023 Groundwater Cleanup Level ^C			1.5	0.0046	1.1	0.015	0.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-1 ^E	PS9-1	11/7/1997	--	0.200	0.72	0.13	1.6	1,000	ND	0.00182	0.002	0.00011	0.00002	0.00006	0.00002	0.00118	ND	0.00366	0.0006	0.00465	0.00003	0.7	0.074	0.00161
MW-2	PS9-2	11/7/1997	--	ND	ND	ND	ND	0.13	0.02	ND	ND	ND	ND	ND	ND	ND	ND	0.00003	0.00003	0.00005	ND	0.0001	0.00008	0.00004
	PS9-4 ^D	11/7/1997	--	ND	ND	ND	ND	0.14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00008	0.00004	0.00003
	MW-2	4/1/1998	--	ND	ND	ND	ND	22	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.037	0.033	ND
	MW-8	4/1/1998	--	ND	ND	ND	ND	23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.037	0.056	ND
	MW-2	11/22/1998	--	ND	ND	ND	ND	0.08	ND	ND	ND	0.00006	ND	ND	ND	0.00005	ND	ND	ND	ND	ND	ND	ND	ND
	MW-11 ^D	11/22/1998	--	ND	ND	ND	ND	ND	ND	ND	ND	0.00006	ND	ND	ND	0.00005	ND	ND	ND	ND	ND	ND	ND	ND
	MW-2	6/9/1999	1.80	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-11 ^D	6/9/1999	2.40	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00012	0.00013	ND
	MW-2	9/17/1999	0.82	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-2	11/11/1999	0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-2	5/17/2000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-2	7/16/2000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-2	10/13/2000	0.58	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-2	3/27/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-2	7/12/2001	0.58	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-20 ^D	7/12/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-2	9/20/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-20 ^D	9/20/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-2	11/16/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-20 ^D	11/16/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-2	6/11/2002	0.576	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-2	10/5/2002	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-2	6/25/2003	ND [0.483]	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-2	10/2/2003	ND	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND [0.0000614]	ND	ND
	MW-2	6/10/2004	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2	10/19/2004	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2	6/28/2005	0.501	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--
	MW-2	10/17/2005	0.0846	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--
	MW-2	6/02/2006	0.586	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-2	10/5/2006	ND [0.313]	ND [0.0004]	ND [0.001]	0.00336	0.00561	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0041	--	--
	MW-2	7/18/2007	0.128 J	ND [0.0004]	0.00031 J	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	DUP-1 ^D	7/18/2007	0.114 J	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2	10/4/2007	ND [0.300]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	DUP-1 ^D	10/4/2007	0.3	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-2	7/25/2008	0.257 J	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-2A ^D	7/25/2008	0.357	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-2	7/18/2009	0.237 J	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-14 ^D	7/18/2009	ND [0.769]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-2	8/11/2010	1.75	ND [0.0005]	ND [0.002]	ND [0.002]	ND [0.002]	--	--	--	ND [0.002]	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2D ^D	8/11/2010	0.389 J	ND [0.0005]	ND [0.002]	ND [0.002]	ND [0.002]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2	9/8/2011	0.218 J	ND [0.0005]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2	7/20/2012	ND [0.36]	ND [0.0003]	ND [0.00062]	ND [0.00062]	ND [0.00186]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2	9/19/2013	0.289 J	ND [0.0003]	ND [0.00062]	ND [0.00062]	ND [0.00186]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-29 ^D	9/19/2013	0.196 J	ND [0.0003]	ND [0.00062]	ND [0.00062]	ND [0.00186]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2	6/5/2014	ND [0.306]	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-29 ^D	6/5/2014	ND [0.33]	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2	7/15/2015	0.511 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-29 ^D	7/15/2015	0.458 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2	6/6/2016	0.297 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		

Table 6 - Historic Groundwater Analytical Results
PS09 Mainline Turbine Sump
(All results in mg/L)

Well Name	Sample Designation	Date Sampled	AK 102	BTEX USEPA Method 8021B				PAHs USEPA Method 8270SIM																	
			Diesel Range Organics	Benzene	Toluene	Ethylbenzene	Total Xylenes	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Anthracene	Benzo(a)-anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Dibenzofuran	Fluoranthene	Fluorene	Indeno(1,2,3)-pyrene	Naphthalene	Phenanthrene	Pyrene	
ADEC 2015 Groundwater Cleanup Level ^A			1.5	0.005	1.0	0.7	10	N/A	N/A	2.2	11	0.0012	0.0002	0.0012	0.012	0.12	0.00012	0.073	1.5	1.5	0.0012	0.73	11	1.1	
ADEC 2016 Groundwater Cleanup Level ^B			1.5	0.0046	1.1	0.015	0.19	0.036	0.260	0.530	0.043	0.00012	0.000034	0.00034	0.00080	0.0020	0.000034	0.0079	0.260	0.290	0.00019	0.0017	0.170	0.120	
ADEC 2018, 2021, and 2023 Groundwater Cleanup Level ^C			1.5	0.0046	1.1	0.015	0.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
MW-3	PS9-3	11/7/1997	--	ND	ND	ND	ND	0.16	ND	ND	ND	0.00033	0.00018	0.00051	0.00048	0.00044	0.00034	ND	0.00011	0.00002	0.0003	0.00008	0.00005	0.00018	
	MW-3	4/1/1998	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	11/21/1998	--	ND	ND	ND	ND	0.06	ND	ND	ND	0.00007	ND	ND	ND	0.00005	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	6/9/1999	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	9/16/1999	0.14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	11/11/1999	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	5/17/2000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	7/16/2000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	10/11/2000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	3/27/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.000065	ND	ND	
	MW-3	7/11/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	9/20/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	11/16/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	6/10/2002	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	10/3/2002	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	6/25/2003	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-3	10/2/2003	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND [0.0000583]	ND	ND	
	MW-3	6/11/2004	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-3	10/19/2004	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-3	6/28/2005	0.514	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	
	MW-3	10/17/2005	0.100	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	
	MW-3	6/01/2006	ND [0.3]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--	
	MW-3	10/6/2006	ND [0.311]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--	
	MW-4	10/6/2006	ND [0.314]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--	
	MW-3	7/18/2007	0.0138 J	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-3	10/4/2007	ND [0.313]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	ND [0.001]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-3	7/24/2008	0.105 J	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-3	7/18/2009	ND [0.769]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-3	8/12/2010	ND [0.714]	ND [0.0005]	ND [0.002]	ND [0.002]	ND [0.002]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-3	9/8/2011	0.275 J	ND [0.0005]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-3	7/20/2012	ND [0.396]	ND [0.0003]	ND [0.00062]	ND [0.00062]	ND [0.00186]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-3	9/19/2013	ND [0.368]	ND [0.0003]	ND [0.00062]	ND [0.00062]	ND [0.00186]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-3	6/3/2014	ND [0.371]	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-3	7/15/2015	0.425 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-3	6/7/2016	ND [0.278]	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-3	6/7/2017	ND [0.273]	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3	5/30/2019	0.304 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
MW-33 ^D	5/30/2019	0.272 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
MW-3	6/1/2021	0.349 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
MW-3	5/22/2023	ND [0.306]	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
MW-93 ^D	5/22/2023	ND [0.3]	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
MW-4 ^F	MW-4	11/21/1998	--	ND	0.007	ND	ND	0.14	ND	0.00002	ND	0.00006	ND	ND	ND	0.00006	ND	ND	ND	0.00006	ND	ND	ND	ND	
	MW-4	6/9/1999	1.10	ND	0.036	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-4	9/16/1999	0.57	ND	0.0014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-4	11/11/1999	0.24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-4	5/17/2000	ND	ND	0.0058	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-4	7/16/2000	0.30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-4	10/13/2000	0.36	ND	0.0028	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-4	3/27/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	
	MW-4	7/12/2001	ND	ND	0.00604	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	
	MW-4	9/20/2001	ND	ND	0.00285	ND	ND																		

Table 6 - Historic Groundwater Analytical Results
PS09 Mainline Turbine Sump
(All results in mg/L)

Well Name	Sample Designation	Date Sampled	AK 102	BTEX USEPA Method 8021B				PAHs USEPA Method 8270SIM																	
			Diesel Range Organics	Benzene	Toluene	Ethylbenzene	Total Xylenes	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Dibenzofuran	Fluoranthene	Fluorene	Indeno(1,2,3)pyrene	Naphthalene	Phenanthrene	Pyrene	
ADEC 2015 Groundwater Cleanup Level ^A			1.5	0.005	1.0	0.7	10	N/A	N/A	2.2	11	0.0012	0.0002	0.0012	0.012	0.12	0.00012	0.073	1.5	1.5	0.0012	0.73	11	1.1	
ADEC 2016 Groundwater Cleanup Level ^B			1.5	0.0046	1.1	0.015	0.19	0.036	0.260	0.530	0.043	0.00012	0.000034	0.00034	0.00080	0.0020	0.000034	0.0079	0.260	0.290	0.00019	0.0017	0.170	0.120	
ADEC 2018, 2021, and 2023 Groundwater Cleanup Level ^C			1.5	0.0046	1.1	0.015	0.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
MW-4 Continued	MW-4	6/11/2004	1.41	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-4	10/18/2004	0.779	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	MW-7	11/21/1998	--	ND	ND	ND	ND	0.26	ND	ND	ND	0.00006	ND	ND	ND	0.00005	ND	ND	ND	0.00005	ND	ND	ND	ND	
	MW-7	11/11/1999	--	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	5/17/2000	2.12	0.00112	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.000113	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-7	7/16/2000	--	0.00154	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-7	10/11/2000	0.385	0.00160	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-7	3/27/2001	ND	0.00125	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-7	7/12/2001	2.96	ND	ND	ND	0.00517	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00002	ND	ND	
	MW-7	9/21/2001	ND	0.00095	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-7	11/19/2001	ND	0.00397	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-7	6/12/2002	ND	0.000974	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-7	10/4/2002	ND	0.00197	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-7	6/25/2003	ND [0.498]	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-7	10/1/2003	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND [0.0828]	ND	ND	
	MW-7	6/11/2004	ND	0.00377	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	10/19/2004	ND	0.0299	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	6/27/2005	0.928	0.0299	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--
	MW-7	10/17/2005	0.627	0.0284	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--
	MW-7	6/02/2006	ND [0.5]	0.0318	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--	
	MW-7	10/5/2006	0.677	0.0218	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--	
	MW-7	7/18/2007	0.686	0.0241	0.000440 J	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	10/4/2007	0.973	0.0231	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--	
	MW-7	7/24/2008	0.564	0.0275	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--	
	MW-7	7/17/2009	0.489 J	0.0634	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--	
	MW-7	8/11/2010	0.909	0.0243	ND [0.002]	ND [0.002]	ND [0.002]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	9/8/2011	1.47	0.0128	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-97 ^D	9/8/2011	1.33	0.0124	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	7/20/2012	1.08	0.00452	ND [0.00062]	ND [0.00062]	0.00039 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	9/19/2013	1.29	0.00494	ND [0.00062]	ND [0.00062]	ND [0.00186]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	6/5/2014	1.03	0.00481	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	7/15/2015	0.867	0.00122	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	6/6/2016	0.887	0.00057	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	6/7/2017	0.987	0.00158	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-27 ^D	6/7/2017	1.07	0.0016	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	5/30/2019	1.08	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	6/1/2021	1.27	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-7	5/22/2023	3.03	0.00173	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	MW-8	11/22/1998	--	ND	0.022	ND	ND	0.45	ND	0.00006	ND	0.00005	ND	ND	ND	ND	ND	ND	ND	0.00009	ND	0.00012	ND	ND	
	MW-8	9/17/1999	--	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-8	5/17/2000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00185	ND	0.00186	0.00246	ND	
	MW-8	7/16/2000	--	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-8	10/13/2000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-8	3/27/2001	1.10	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.000165	ND	ND	
	MW-8	7/12/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-8	9/21/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-8	11/19/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-8	6/12/2002	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-8	10/5/2002	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MW-8	7/3/2003	1.16	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	
	MW-8	10/1/2003	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND [0.0000594]	ND	ND	
	MW-8	6/11/2004	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	
	MW-8	10/19/2004	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	
	MW-8	6/28/2005	0.753	ND	ND	ND	ND	--	--</																

Table 6 - Historic Groundwater Analytical Results
PS09 Mainline Turbine Sump
(All results in mg/L)

Well Name	Sample Designation	Date Sampled	AK 102	BTEX USEPA Method 8021B				PAHs USEPA Method 8270SIM																
			Diesel Range Organics	Benzene	Toluene	Ethylbenzene	Total Xylenes	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Dibenzofuran	Fluoranthene	Fluorene	Indeno(1,2,3)pyrene	Naphthalene	Phenanthrene	Pyrene
ADEC 2015 Groundwater Cleanup Level ^A			1.5	0.005	1.0	0.7	10	N/A	N/A	2.2	11	0.0012	0.0002	0.0012	0.012	0.12	0.00012	0.073	1.5	1.5	0.0012	0.73	11	1.1
ADEC 2016 Groundwater Cleanup Level ^B			1.5	0.0046	1.1	0.015	0.19	0.036	0.260	0.530	0.043	0.00012	0.000034	0.00034	0.00080	0.0020	0.000034	0.0079	0.260	0.290	0.00019	0.0017	0.170	0.120
ADEC 2018, 2021, and 2023 Groundwater Cleanup Level ^C			1.5	0.0046	1.1	0.015	0.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-8 Continued	MW-8	10/5/2006	ND [0.541]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-8	7/18/2007	0.365 J	ND [0.0004]	0.00085 J	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-8	10/4/2007	ND [0.300]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-8	7/24/2008	0.115 J	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-8	7/18/2009	0.909	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-8	8/11/2010	ND [0.714]	ND [0.0005]	ND [0.002]	ND [0.002]	ND [0.002]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-8	9/8/2011	0.218 J	ND [0.0005]	ND[0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-8	7/20/2012	ND [0.392]	ND [0.0003]	ND [0.00062]	ND [0.00062]	ND [0.00186]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-8	9/19/2013	ND [0.368]	ND [0.0003]	ND [0.00062]	ND [0.00062]	ND [0.00186]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-8	6/5/2014	ND [0.361]	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-8	7/15/2015	0.315 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-8	6/7/2016	0.229 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-8	6/7/2017	0.272 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	5/30/2019	0.298 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	6/1/2021	0.393 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-8	5/22/2023	0.202 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-10	MW-10	11/21/1998	94	ND	ND	ND	ND	ND	ND	ND	ND	0.00006	ND	ND	ND	0.00005	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10A	11/23/1998	10.8	ND	0.002	ND	0.001	26	ND	0.00024	0.00005	ND	ND	ND	ND	ND	ND	0.00008	ND	0.00033	ND	0.00033	0.00006	0.00006
	MW-10	6/9/1999	16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00023	0.00039	ND
	MW-10	9/16/1999	1.60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-15	9/16/1999	1.70	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10	11/11/1999	5.40	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-25 ^D	11/11/1999	2.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10	5/17/2000	2.11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-11 ^D	5/17/2000	1.17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10	7/16/2000	1.57	ND	0.0042	0.0026	0.0128	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-11 ^D	7/16/2000	0.69	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10	10/11/2000	ND	0.0007	0.0032	0.0029	0.0142	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-11 ^D	10/11/2000	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10	3/27/2001	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-11 ^D	3/27/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10	7/12/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10	9/20/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10	11/19/2001	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10	6/12/2002	0.533	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-D ^D	6/12/2002	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10	10/4/2002	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-D ^D	10/4/2002	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10	6/24/2003	ND [0.475]	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-D ^D	6/24/2003	ND [0.488]	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10	10/2/2003	ND	0.00174	0.00239	ND	0.00329	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND [0.0000544]	ND	ND
	MW-D ^D	10/2/2003	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-10	6/11/2004	0.620	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-D ^D	6/11/2004	0.776	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-10	10/19/2004	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	FD-1 ^D	10/19/2004	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-10	6/28/2005	0.497	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--
	MW-Dup ^D	6/28/2005	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--
	MW-10	10/16/2005	0.141	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--
MW-12 ^D	10/16/2005	0.164	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	
MW-10	6/1/2006	ND [0.3]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--																

Table 6 - Historic Groundwater Analytical Results
PS09 Mainline Turbine Sump
(All results in mg/L)

Well Name	Sample Designation	Date Sampled	AK 102	BTEX USEPA Method 8021B				PAHs USEPA Method 8270SIM																	
			Diesel Range Organics	Benzene	Toluene	Ethylbenzene	Total Xylenes	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Dibenzofuran	Fluoranthene	Fluorene	Indeno(1,2,3)pyrene	Naphthalene	Phenanthrene	Pyrene	
ADEC 2015 Groundwater Cleanup Level ^A			1.5	0.005	1.0	0.7	10	N/A	N/A	2.2	11	0.0012	0.0002	0.0012	0.012	0.12	0.00012	0.073	1.5	1.5	0.0012	0.73	11	1.1	
ADEC 2016 Groundwater Cleanup Level ^B			1.5	0.0046	1.1	0.015	0.19	0.036	0.260	0.530	0.043	0.00012	0.000034	0.00034	0.00080	0.0020	0.000034	0.0079	0.260	0.290	0.00019	0.0017	0.170	0.120	
ADEC 2018, 2021, and 2023 Groundwater Cleanup Level ^C			1.5	0.0046	1.1	0.015	0.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
MW-10 (continued)	MW-10	7/17/2009	ND [0.714]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--	
	MW-10	8/12/2010	ND [0.714]	ND [0.0005]	ND [0.002]	ND [0.002]	ND [0.002]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-10	9/8/2011	0.247 J	ND [0.0005]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-10	7/20/2012	ND [0.372]	ND [0.0003]	ND [0.00062]	ND [0.00062]	ND [0.00186]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-30 ^D	7/20/2012	ND [0.36]	ND [0.0003]	ND [0.00062]	ND [0.00062]	ND [0.00186]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-10	9/19/2013	ND [0.36]	ND [0.0003]	ND [0.00062]	ND [0.00062]	ND [0.00186]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-10	6/3/2014	ND [0.313]	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-10	7/15/2015	0.479 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]																		
	MW-10	6/7/2016	ND [0.283]	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-10	6/7/2017	ND [0.288]	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-10	5/30/2019	0.331 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-10	6/1/2021	0.513 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-90 ^D	6/1/2021	0.545	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-10	5/22/2023	0.228 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Notes:

0.005

Shaded results exceeded ADEC 2015 cleanup levels; see Note ^A below.

1.71

Results in **bold** exceed ADEC 2016, 2018, 2021, or 2023 cleanup levels; see Notes B, C, D, and E below.

^A

Sample results for 2015 and prior years were compared with ADEC 2015 cleanup levels (18 AAC 75), as revised on June 17, 2015

^B

Sample Results for 2016 were compared with ADEC 2016 cleanup levels (18 AAC 75), as revised on November 6, 2016. Concentration units of mg/L are used for consistency with historical data.

^C

Sample Results for 2017 through 2023 were compared with applicable ADEC cleanup levels (18 AAC 75), revised as of October 1, 2023. Concentration units of mg/L are used for consistency with historical data.

^D

Duplicate of preceding sample

^E

Sampling discontinued after 1997 event due to the presence of free product in the well.

^F

Well destroyed in 2005.

ND [0.005]

Analytes that were not detected in 2012-2023 are presented with the limit of detection in brackets. Analytes that were not detected prior to 2012 are presented with the practical quantitation limit or LOQ in brackets.

Abbreviations:

--

not analyzed

AAC

Alaska Administrative Code

ADEC

Alaska Department of Environmental Conservation

AK

Alaska Method

BTEX

benzene, toluene, ethylbenzene, and xylenes

DL

detection limit

mg/L

milligrams per liter

J

The analyte was positively identified, but the result was between the LOQ and DL; the quantitation was an estimate.

LOQ

limit of quantitation

ND

Nondetect; the limit of detection is presented in brackets to the right

N/A

not applicable

PAH

polynuclear aromatic hydrocarbons

USEPA

United States Environmental Protection Agency



Figures

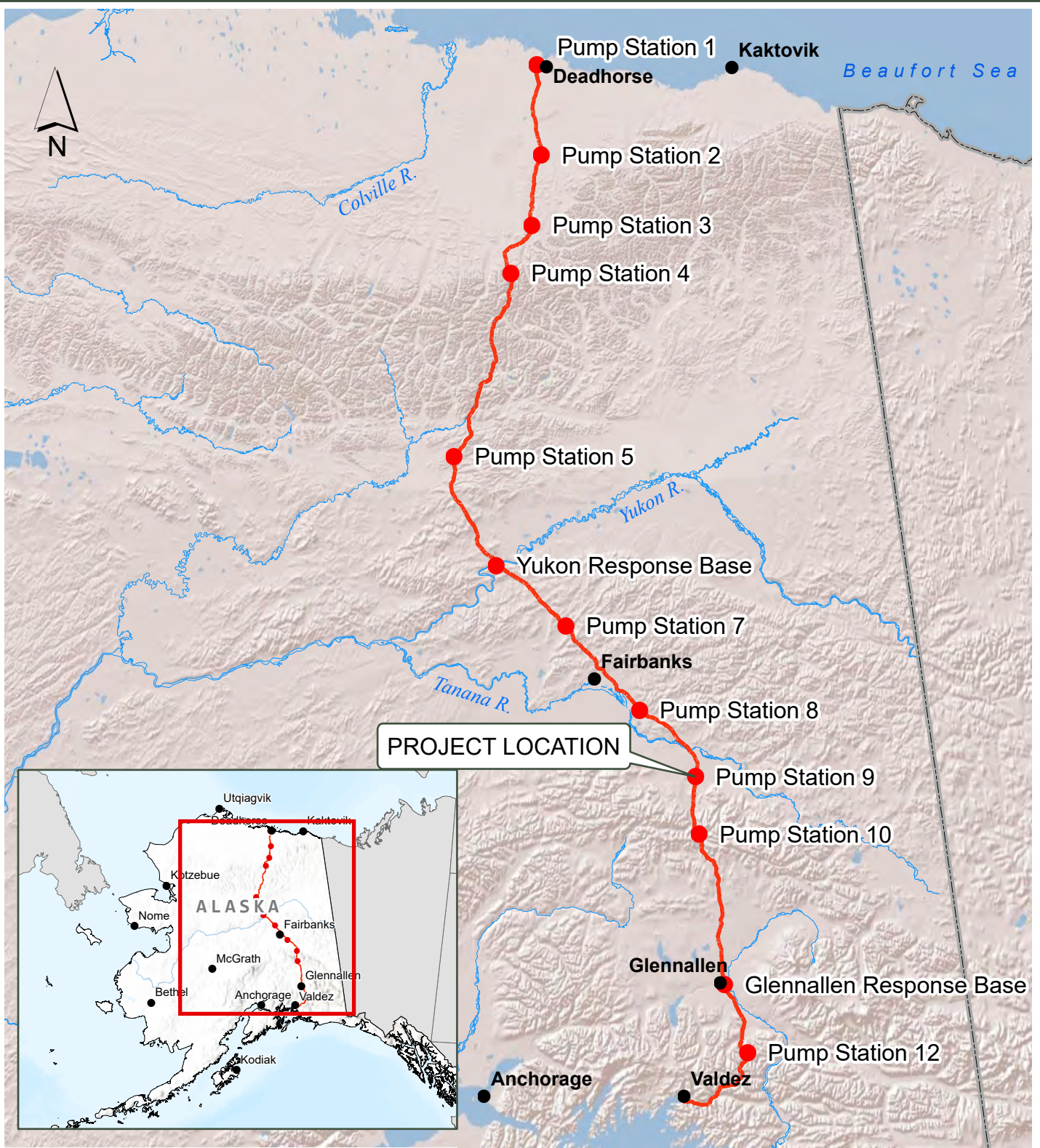
Pump Station 9 Mainline Turbine Sump

2023 Product Recovery and Groundwater Monitoring Report

Alyeska Pipeline Service Company

SLR Project No: 105.01288.23010

December 5, 2023



- Legend**
- City
 - Pump Station
 - Trans-Alaska Pipeline System (TAPS)

0 20 40 80 120 160 Miles

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY.
ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

Site	ALYESKA PIPELINE SERVICE COMPANY PUMP STATION 9 PIPELINE MILEPOST 548.7		
Project	2023 GROUNDWATER MONITORING AND PRODUCT RECOVERY REPORT, PUMP STATION 9 MAINLINE TURBINE SUMP		
Drawing	PROJECT LOCATION MAP		

Date	October 2023	Scale	As Shown	Fig. No.	1
File Name	F:\APSC_PS09_MTS_RPT_23010.aprx	Project No.	105.01288.23010		



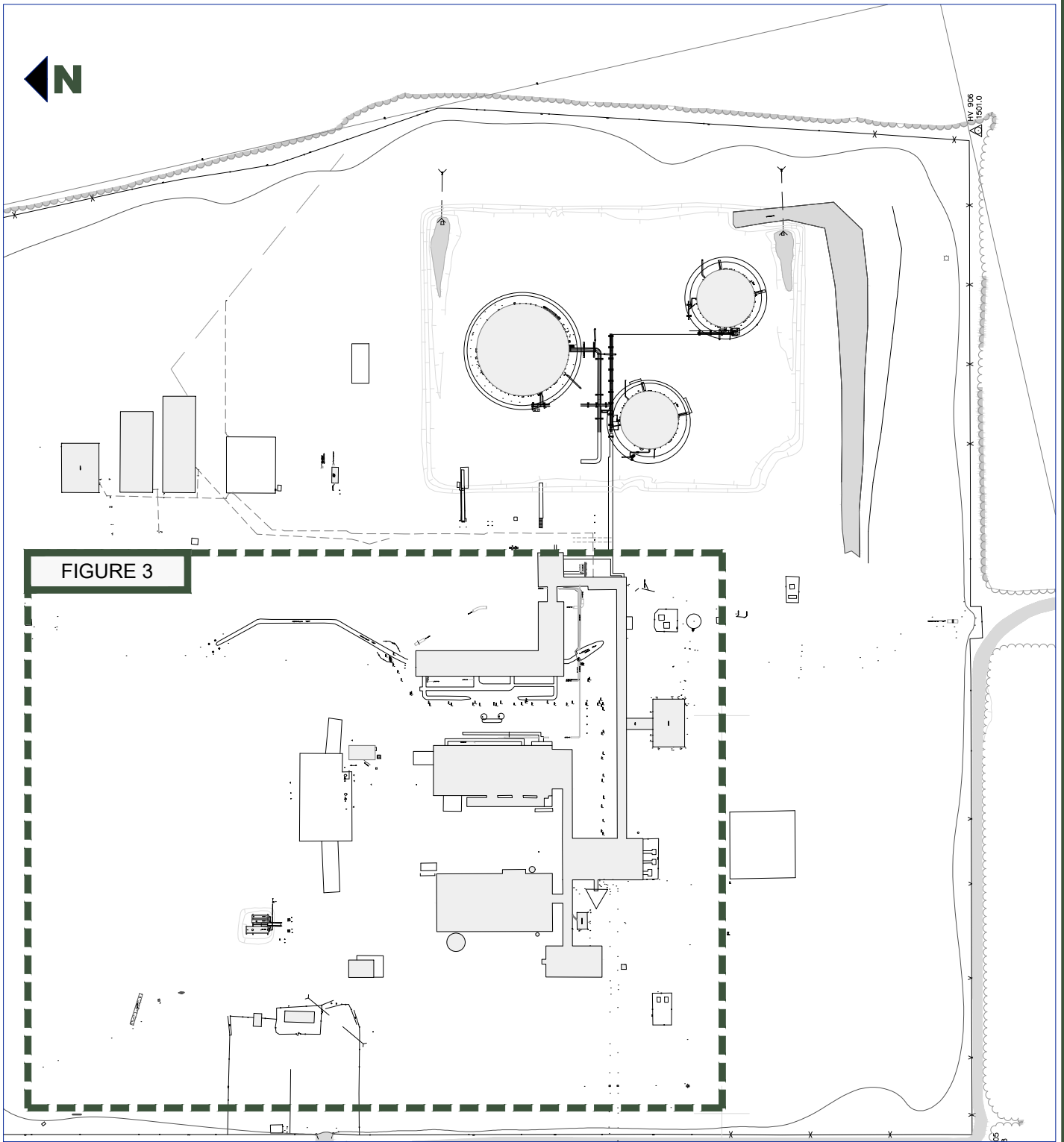


FIGURE 3

SCALE: 1" = 100 FEET
WHEN PLOTTED AT 8.5 x 11 PAGE SIZE

0 100 200 300 FEET

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL
LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.



Site

ALYESKA PIPELINE SERVICE COMPANY
PUMP STATION 9
PIPELINE MILEPOST 548.7

Report

2023 GROUNDWATER MONITORING AND
PRODUCT RECOVERY REPORT,
PUMP STATION 9 MAINLINE TURBINE SUMP

Drawing

SITE VICINITY MAP

Date October 2023

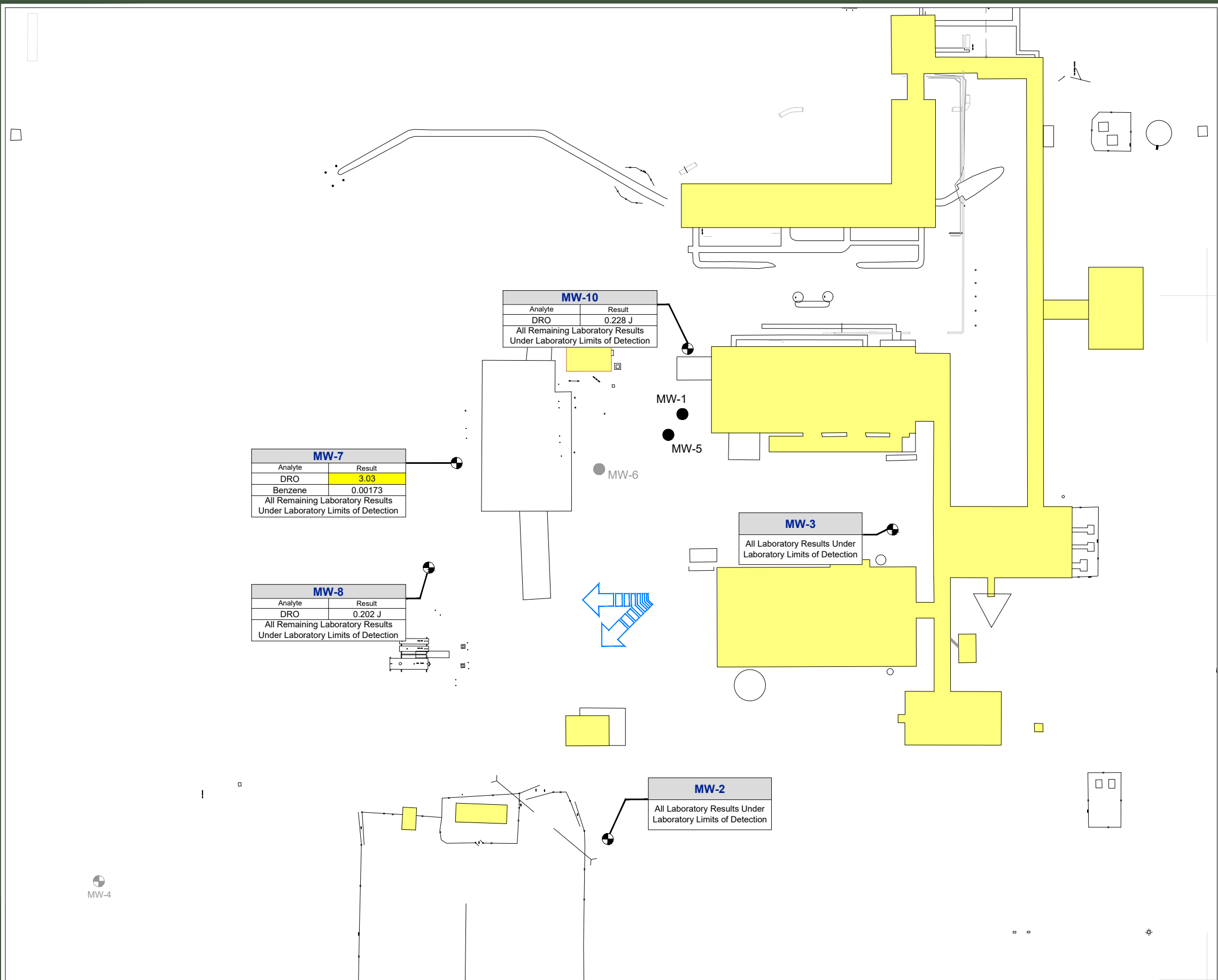
Scale 1" = 100 Feet

Fig. No.

File Name F2 APSC_PS09_MTS_RPT_23010

Project No. 105.01288.23010

2



LEGEND

- MW-3 MONITORING WELL LOCATION
- MW-4 DESTROYED MONITORING WELL
- MW-1 RECOVERY WELL LOCATION
- MW-6 RECOVERY WELL (DECOMMISSIONED)
- APPARENT GROUNDWATER FLOW DIRECTION

SAMPLING RESULTS GUIDELINES

ABBREVIATIONS:

ADEC ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
BTEX BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
DRO DIESEL RANGE ORGANICS
J SAMPLE RESULT IS AN ESTIMATION
mg/L MILLIGRAMS PER LITER

NOTES:

GROUNDWATER SAMPLES COLLECTED FROM ALL MONITORING WELLS WERE ANALYZED FOR DRO AND BTEX.

ALL RESULTS ARE SHOWN IN MILLIGRAMS PER LITER (mg/L).

ONLY RESULTS ABOVE THE LABORATORY LIMIT OF DETECTION ARE PRESENTED ON THIS FIGURE.

SAMPLE RESULTS HIGHLIGHTED IN YELLOW INDICATE EXCEEDANCE OF ADEC GROUNDWATER CLEANUP LEVELS.

Site
ALYESKA PIPELINE SERVICE COMPANY
PUMP STATION 9
PIPELINE MILEPOST 548.7

Report
2023 GROUNDWATER MONITORING AND
PRODUCT RECOVERY REPORT
PUMP STATION 9 MAINLINE TURBINE SUMP

Drawing
GROUNDWATER MONITORING WELL LOCATIONS
AND ANALYTICAL RESULTS

Date October 2023 Scale 1" = 75 Feet Fig. No. 3
File Name F3 APSC_PS09_MTS_RPT_23010 Project No. 105.01288.23010

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL
LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SCALE: 1" = 75'
WHEN PLOTTED AT 11 x 17 PAGE SIZE
0 75' 150' 225'





Appendix A Photograph Log

Pump Station 9 Mainline Turbine Sump

2023 Product Recovery and Groundwater Monitoring Report

Alyeska Pipeline Service Company

SLR Project No: 105.01288.23010

December 5, 2023

2023 PS09 Groundwater Sampling and Product Recovery Report

Photo 1: Groundwater sampling set up at MW-8. Groundwater was sampled at MW-8 with a 2-inch bailer to collect samples (May 22, 2023).

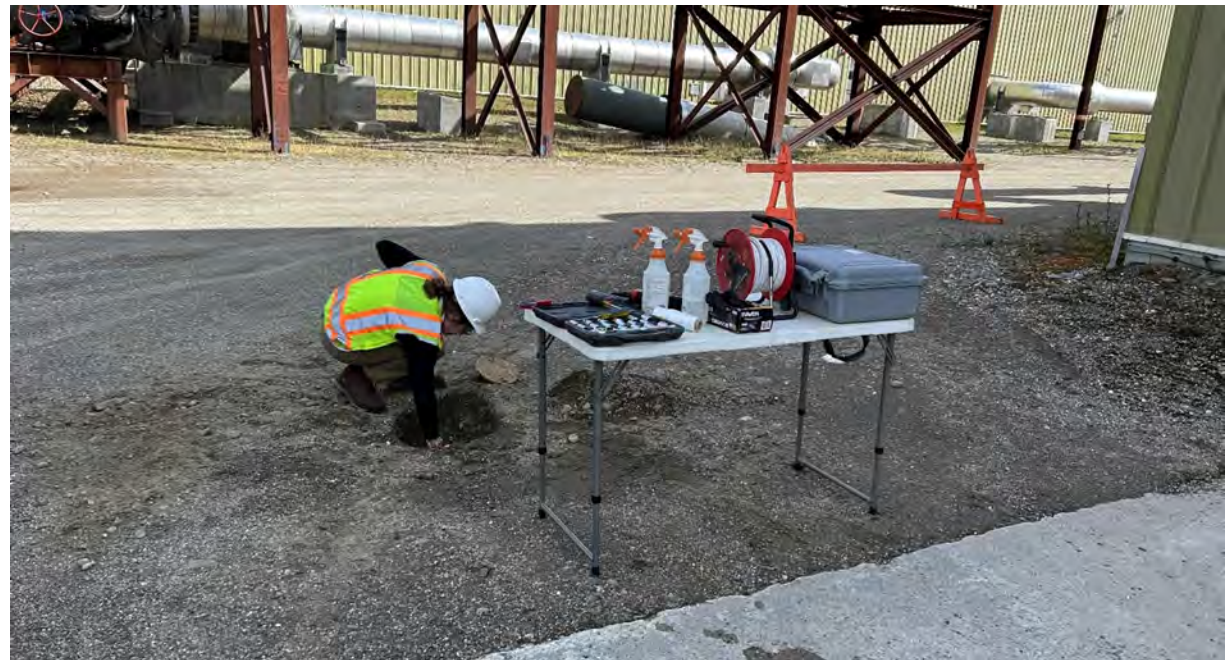


Photo 2: Recovering product at MW-1 with a 2-inch sorbent sock. Sorbent sock saturated with an emulsion of water and product (May 23, 2023).





Appendix B Field Logbook and Field Forms

Pump Station 9 Mainline Turbine Sump

2023 Product Recovery and Groundwater Monitoring Report

Alyeska Pipeline Service Company

SLR Project No: 105.01288.23010

December 5, 2023



14 5/22/2023 PS09 Groundwater B Woelber
C Jennings

0700 Meet at office

0830 Cal 451

0900 Pick up final equipment at SGS

0930 Depart FBX.

1130 Arrive PS09.

1200 Brett has to take expired SAFDRV training. Caroline gauges all wells.

1320 Begin heating MW-1 and MW-5 with heat trace.

1430 Collect sample MW-3. Duplicate sample MW-93.

1520 Collect sample MW-10.

1605 Collect sample MW-8.

1645 Collect sample MW-7.

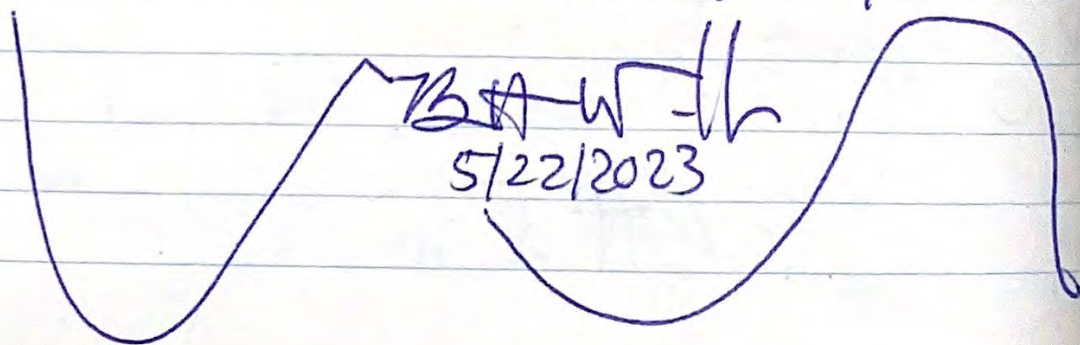
1720 Collect sample MW-2.

1730 Close permit. Put away all equipment in Baseline shop.

1745 Shut down heat trace in MW-1 and MW-5.

1800 Depart PS09.

1815 Arrive Delta. End day.



5/23/2023 PS09 Product Recovery B Woelker
C Jennings¹⁵

0630 Depart hotel.

0640 completed tailgate

0700 Arrived at PS09

0715 completed permit

0720 Set up at MW-5

0740 MW-5 Depth to product 108.30 initial

0741 MW-5 Depth to water 108.38 initial


0744 MW-1 Depth to product 108.53 initial

0745 MW-1 Depth to water 109.03 initial

0753 Deploy 2 SOCKS in MW-5 = $\frac{1}{10}, \frac{0}{10}$.

Final DTP = 108.31

Final DTW = 108.32

0811 Deploy 6 socks in MW-1 = $\frac{10}{10}, \frac{7}{10}, \frac{10}{10}, \frac{10}{10}, \frac{7}{10}, \frac{7}{10}$
(emulsion of water) 

Final DTP = 108.60

Final DTW = 108.63

0850 Disposed oily waste at oily waste dump

0920 Disposed 5 gal of fuel water

0930 Packed up equipment

0950 Signed out permit

1010 Depart PS09.

1230 Arrive FBX. Demobilize all field
equipment. ~~Bring~~

1431 Bring samples to lab.

1500 End field day.

BH W.L.
5/23/23

Right in the Rain

106/01/23 PS09 Product Recovery C. Jennings

0800 Pick up Alyeska Truck/Inspection Form

0815 Pack equipment into truck

0845 Fill out Tailgate form and called

Check in with security

0850 Depart Fairbanks

1052 Arrive at PS09

1100 Sign Permit

1105 Set up at MW-5

1120 MW-5 DTP = 108.25 initial = 0.13

1125 MW-5 DTW = 108.38 initial

1130 MW-1 DTP = 108.53 initial = 0.13

1135 MW-1 DTW = 108.60 initial

1142 Deploy 2 Socks in MW-5 = $\frac{1}{10}, \frac{3}{10}, \frac{0}{10}$

Final DTP = ~~108.26~~^{CS} 108.27 = 0.03

Final DTW = 108.30

1205 Deploy 5 Socks in MW-1 = $\frac{1}{10}, \frac{5}{10}, \frac{3}{10}, \frac{1}{10}, \frac{1}{10}$
(emulsion of water)

Final DTP = 108.50

Final DTW = 108.55 = 0.05

1255 Pack up equipment and pour sand

1315 Dispose of oily waste

1325 Discussed cutting wires in MW-5

and Alyeska rep. said they will do it right away

1340 Fill MW-5 with sand

06/01/23 PS09 Product Recovery C. Jennings

1345 Close out Permit

1352 Depart PS09

1558 Arrive in Fairbanks and
demobilize/drop equipment off
at Storage Unit

1657 Drop Alyeska truck off

Caroline
Jennings

06/01/2023

6/22/23 PS09 Product Recovery C. Jennings

0700 Pickup equipment from Storage Unit

0730 Arrive at Fairbanks office and pack truck / complete tailgate and vehicle inspection form

0800 Had conference call / drop off sampler

0920 Get gas for truck

0930 ~~Arrive~~ Depart Fairbanks

1122 Arrive at PS09

1130 Sign Permit

1136 Set up at MW-5.

1150 MW-5 DTP = ~~108.02~~ 108.04 = 0.07

1151 MW-5 DTW = ~~108.09~~ 108.11

1156 MW-1 DTP = 108.32 = 0.06

1157 MW-1 DTW = 108.38

1205 Deploy 2 socks in MW-5 = $\frac{1}{10}, \frac{1}{10}$ ← Emulsion

Final DTP = 108.06

Final DTW = 108.12 = ~~0.06~~ ^{0.05} 0.06

1234 Deploy 1 more sock in MW-5 = $\frac{2}{10}$

1242 Deploy 3 socks in MW-1 = $\frac{3}{10}, \frac{3}{10}, \frac{1}{10}$ ← Emulsion

Final DTP = 108.32 = 0.01

Final DTW = 108.33

1315 Decon product interface and pack up equipment

1330 Dispose of oily waste

1340 Close out permit

6/22/23 PS09 Product Recovery

19

1345 Depart PS09

1545 Arrive at Fairbanks

1550 Unload equipment at storage unit

1555 Arrive at office, unload equipment

CJ 6/22/23

7/11/23 PS09 Product Recovery

0800 Pickup truck / complete safety form

0810 Pack truck with equipment

0820 FH^{CJ} Get more Sorbent socks

from TTT's.

0830 Fill up truck with diesel

0835 Complete tailgate form

0840 Depart Fairbanks

1028 Arrive at PS09

1034 Sign Permit

1040 Set up at MW-5

1100 Conference call

1205 MW-5 DTP = 107.95 = 0.15

MW-5 DTW = 108.10

1210 MW-1 DTP = 108.24 = 0.05

MW-1 DTW = 108.29

1220 Deploy 4 socks in MW-5 = $\frac{7}{10}, \frac{5}{10}, \frac{3}{10}, \frac{1}{10}$

Final DTP = 107.96

Final DTW = 107.99 = 0.03

emulsion

1250 Deploy 3 socks in MW-1 = $\frac{3}{10}, \frac{1}{10}$

Final DTP = 108.25

Final DTW = 108.26 = 0.01

1320 Decon equipment and pack up

1330 Dispose of oily waste

1340 Close out permit

1429 Depart PS09

1615 Arrive in Fairbanks

Recovery C. Jennings
plete safety form
quipment
bent socks

diesel
rm

0.15

0.05

$\frac{3}{10}$ $\frac{1}{10}$
↑ ↑
emulsion

7/11/23 PS09 Product Recovery C. Jennings
1620 Unload equipment from
Alyeska truck
1640 Drop Alyeska truck off at
the DIF

CJ 7/11/23

8/4/23 PS09 Product Recovery

G. Gansy, E. Tyler

1030: Departing North Pole for PS09

1300: Arrive PS09

1353: Complete Permit with Lead Tech

1405: Set up on MW-5

$$\text{MW-5 DTP} = 107.79' = 0.18'$$

$$\text{DTW} = 107.97'$$

$$\text{MW-1 DTP} = 108.12' = 0.06'$$

$$\text{DTW} = 108.06'$$

Deploy socks in MW-5

7/10 + 5/10 + 2/10 emulsion + 2/10 emulsion 1/10

Deploy socks in MW-1

3/10 + 1/10 emulsion

$$\text{MW-1 DTP} = 108.11' = 0.01'$$

$$\text{MW-1 DTW} = 108.12'$$

$$\text{MW5 DTP} = 107.83' = 0.02'$$

$$\text{MW5 DTW} = 107.87'$$

1525 - Decontaminate equipment

1535 - Bag & tie oily waste

1545 - Put oily waste in connex.

1550 - Close out permit.

1600 - Depart PS09

1815 Finish unloading gear at

8/4/23

1809. Radial Recovery

23

The blue moose storage
area. (Fairbanks)

1830 AT office. Switch to

another job. May be upload

field forms. 8/4/23

8/4/23

24 8/29/23 PS09 PRODUCT Recovery C. Jennings

0730 Pickup equipment and truck

0830 Depart Fairbanks

1020 Arrive at PS09

1025 Complete Permit

1035 Setup at MW-5

$$\text{MW-5 DTP} = 107.54 = 0.40$$

$$\text{MW-5 DTW} = 107.94$$

$$\text{MW-1 DTP} = 107.89 = 0.01$$

$$\text{MW-1 DTW} = 107.90$$

1050 Deploy 5 socks in MW-5: $\frac{7}{10}, \frac{7}{10}, \frac{6}{10}, \frac{5}{10}, \frac{2}{10}$

$$\text{Final DTP} = 107.65$$

$$\text{Final DTW} = 107.67 = 0.02 \quad \text{emulsion} \uparrow$$

1140 Deploy 2 socks in MW-1: $\frac{2}{10}, \frac{0}{10}$

$$\text{Final DTP} = 107.89 \quad \text{emulsion}$$

$$\text{Final DTW} = 107.89 = 0.00$$

1200 Pack up equipment and
decontaminate equipment

1215 Dispose of oily waste

1230 Close out permit

1235 Depart PS09

1430 Arrive in Fairbanks

1435 Unload office equipment

1455 Upload field documents, ^{send} emails

1530 Unload equipment at Storage
unit

1600 Drop of truck at the DIF

9/23/23 PS09 Rodent Recovery ^{G. Gentry} 25

745: Leave Diamond Willow.

810: Arrived PS09, got permitt.

840: MW-1 DTP DTW FP Socks

Initial — 108.11 108.16 .05 2/10

— 108.12 108.13 .01 0/10

Final — ~~108.~~ 108.10 .00 ~~0/10~~ ^{6/10} 9/23/23

9:15 MW-5 DTP DTW FP Socks

Initial — 107.80 107.97 0.17 6/10

— 107.89 107.94 .05 4/10

— 107.86 107.88 .02 4/10 endson

— 107.85 107.86 .01 —

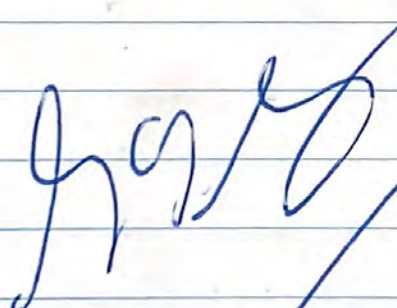
10:01 Close Permitt

10:10 Depart PS09

12:25 Arrive Storage unit in FBX

13:15 Arrive office in FBX

14:15 Complete PS09 Work.

 9/23/23

Water Parameter Meter Calibration Log



Date: 5/22/23

Time: 800

Calibration By: BV/CJ

Meter Manufacturer and Identification #: _____

Parameter	Standard	True Value	Lot #	Date Opened	Expiration Date	PreCalibration Reading	Reading After Calibration	Calibration Acceptance Criteria
pH	7.00	7.03	23D4S	5/22/23	4/19/25	7.05	7.03	± 0.10
	4.00	4.00	23B1R	5/22/23	2/07/25	4.00	No Cal	± 0.10
	10.00	10.09	23D2T	5/22/23	4/05/25	10.16	10.09	± 0.10
Sp Cond (mS/cm)	1.413	1.413	23C100541	5/22/23	9/30/24	1.317	1413	± 10%
ORP (mV)	240	240	8177	5/22/23	09/2027	241.6	240	—
DO*						91.3%	99.6%	± 2%

If parameter not included in sampling event, fill in box with NA (not applicable)

* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

Date: _____

Time: _____

Calibration By: _____

Meter Manufacturer and Identification #: _____

Parameter	Standard	True Value	Lot #	Date Opened	Expiration Date	PreCalibration Reading	Reading After Calibration	Calibration Acceptance Criteria
pH	7.00							± 0.10
	4.00							± 0.10
	10.00							± 0.10
Sp Cond (mS/cm)	1.413	1.413						± 10%
ORP (mV)	240	240						—
DO*								± 2%

If parameter not included in sampling event, fill in box with NA (not applicable)

* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

Date: _____

Time: _____

Calibration By: _____

Meter Manufacturer and Identification #: _____

Parameter	Standard	True Value	Lot #	Date Opened	Expiration Date	PreCalibration Reading	Reading After Calibration	Calibration Acceptance Criteria
pH	7.00							± 0.10
	4.00							± 0.10
	10.00							± 0.10
Sp Cond (mS/cm)	1.413	1.413						± 10%
ORP (mV)	240	240						—
DO*								± 2%

If parameter not included in sampling event, fill in box with NA (not applicable)

* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table



Groundwater Sampling Form

Site/Client Name: <u>PS09 GMI Monitoring</u>		Well ID: <u>MW-2</u>								
Project #: <u>105.1288-23010</u>		Sample ID: <u>MW-2</u>								
Sampled By: <u>BNI, CJ</u>		Sample Time: <u>720</u> Sample Date: <u>5/22/23</u>								
Weather Conditions: <u>partly cloudy</u>		Duplicate ID: _____								
Sampling Method: <input type="checkbox"/> Low Flow <input checked="" type="checkbox"/> Other <u>Bailer</u>		MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Trip Blank Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								
Well Information										
Well Type: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary		Well Diameter: <u>4</u> in. Screen Interval: _____ ft BGS to _____ ft BGS								
Well Condition: <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor (if fair or poor explain in Notes)		Stickup: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No; If yes, _____ ft above ground								
Gauging/Purging Information										
Depth to Water (ft BTOC): <u>112.75</u>		Tubing/Pump Depth (ft. BTOC): _____								
Total Depth (ft. BTOC): _____		Purge Start Time (24-hr) <u>1708</u>								
Depth to Product (ft. BTOC) _____		Purge End Time (24-hr) <u>1725</u>								
Product Thickness (ft) _____		Total Purge Time (min) <u>17</u>								
LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = _____ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft. 1 gal = 3.785L, 1L = 0.264 gal										
Min. purge volume if required: purge volume (gal) = volume of water/ft (gal/ft) X Water column thickness (ft) X # of casing volumes = _____ gal										
Well Diameter - gal/ft 1" - 0.041 gal/ft 2" - 0.163 gal/ft 4" - 0.653 gal/ft 6" - 1.469 gal/ft										
Water Quality Parameters (Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])										
Time (24-hr)	Flow Rate (mL/minute)	Purge Volume (L or gal Circle one)	Temp (°C) (± 3 %)	Specific Conductance (µS/cm²) (± 3 %)	DO (mg/L) (± 10 %)	pH (± 0.1)	ORP (mV) (± 10mV)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max _____ ft)
Bailer 1	1L	1	5.1	382.1	8.77	7.84	89.2			
Bailer 2	1L	2	3.9	368.1	8.11	7.58	87.1			
Bailer 3	1L	3	3.6	375.1	8.44	7.58	86.9			
Bailer 4	1L	4	3.6	378.4	9.30	7.55	87.6			
Bailer 5	1L	5	3.5	368.3	7.76	7.84	85.6		113.30	.55
Parameter Stable (Check applicable)				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Sample Color: <u>Clear</u>		Sample Odor: <u>none</u>		Sheen: <u>none</u>						
Analytical Sampling										
Analyses		Check Applicable		Comments						
<u>DRO</u>		<input checked="" type="checkbox"/>								
<u>BTEX</u>		<input checked="" type="checkbox"/>								
Notes:										
Equipment:										
Tubing: <input type="checkbox"/> Polyethylene <input type="checkbox"/> PTFE-Lined <input checked="" type="checkbox"/> Other <u>Bailer (poly)</u> O.D. <input type="checkbox"/> 1/4" <input type="checkbox"/> 3/8" <input type="checkbox"/> 1/2" Left in well <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No										
Pump/Bailer: <u>Bailer</u> Multi-Parameter Meter make/SN# <u>YSI pro plus 0239</u>										
W.L. Indicator: <u>Solinst</u> Turbidity Meter (Make/SN#) <u>NA</u> Filtered <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Lot # _____										
Purge Water Handling: <input type="checkbox"/> Discharged to surface <input type="checkbox"/> Containerized <input checked="" type="checkbox"/> Treated (how?) <u>booster pump sump</u>										



Groundwater Sampling Form

Site/Client Name: <u>PS09 GW Monitoring</u>		Well ID: <u>MW-3</u>								
Project #: <u>105.01288.23010</u>		Sample ID: <u>MW-3</u>								
Sampled By: <u>BW, CJ</u>		Sample Time: <u>7:15 430</u> Sample Date: <u>5/22/23</u>								
Weather Conditions: <u>overcast</u>		Duplicate ID: <u>MW-93</u>								
Sampling Method: <input type="checkbox"/> Low Flow <input checked="" type="checkbox"/> Other <u>bailer</u>		MS/MSD <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No Trip Blank Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								
Well Information										
Well Type: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary		Well Diameter: <u>2</u> in. Screen Interval: <u>—</u> ft BGS to <u>—</u> ft BGS								
Well Condition: <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor (if fair or poor explain in Notes)		Stickup <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No; if yes, <u>—</u> ft above ground								
Gauging/Purging Information										
Depth to Water (ft BTOC): <u>109.92</u>		Tubing/Pump Depth (ft. BTOC): <u>—</u>								
Total Depth (ft BTOC): <u>—</u>		Purge Start Time (24-hr): <u>2:57 14:15</u>								
Depth to Product (ft. BTOC) <u>—</u>		Purge End Time (24-hr): <u>14:10</u>								
Product Thickness (ft) <u>—</u>		Total Purge Time (min): <u>15</u>								
LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = <u>—</u> (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft. 1 gal = 3.785L, 1L = 0.264 gal										
Min. purge volume if required: purge volume (gal) = volume of water/ft (gal/ft) X Water column thickness (ft) X # of casing volumes = <u>—</u> gal										
Well Diameter - gal/ft		1" - 0.041 gal/ft 2" - 0.163 gal/ft 4" - 0.653 gal/ft 6" - 1.469 gal/ft								
Water Quality Parameters (Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])										
Time (24-hr)	Flow Rate (mL/minute)	Purge Volume (L or gal Circle One)	Temp (°C) (± 3 %)	Specific Conductance (µS/cm²) (± 3%)	DO (mg/L) (± 10%)	pH (± 0.1)	ORP (mV) (± 10mV)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max <u>—</u> ft)
Bailer 1	1L	1	5.6	958.0	6.75	6.95	233.5			
Bailer 2	1L	2	4.8	587.3	9.02	7.17	193.7			
Bailer 3	1L	3	4.4	588.7	8.39	7.21	179.1			
Bailer 4	1L	4	4.5	598.0	8.12	7.21	169.5			
Bailer 5	1L	5	4.6	590.4	7.44	7.31	153.8			
Bailer 6	1L	6	4.5	591.2	6.01	7.29	147.0			
Bailer 7	1L	7	4.6	595.6	8.00	7.28	147.4		110.02	0.10
Parameter Stable (Check applicable)		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Sample Color: <u>light brown</u>		Sample Odor: <u>none</u>		Sheen: <u>none</u>						
Analytical Sampling										
Analyses		Check Applicable		Comments						
<u>DRO</u>		<input checked="" type="checkbox"/>								
<u>BTEX</u>		<input checked="" type="checkbox"/>								
Notes:										
Equipment:										
Tubing: <input type="checkbox"/> Polyethylene <input type="checkbox"/> PTFE-Lined <input checked="" type="checkbox"/> Other <u>poly bailer</u> O.D. <input type="checkbox"/> 1/4" <input type="checkbox"/> 3/8" <input type="checkbox"/> 1/2" Left in well <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No										
Pump/Bailer <u>—</u> Multi-Parameter Meter make/SN# <u>YSI Pro Plus 0239</u>										
W.L. Indicator <u>Solinst 101</u> Turbidity Meter (Make/SN#) <u>—</u> Filtered <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Lot # <u>—</u>										
Purge Water Handling: <input type="checkbox"/> Discharged to surface <input type="checkbox"/> Containerized <input checked="" type="checkbox"/> Treated (how?) <u>booster pump sump</u>										



Groundwater Sampling Form

Site/Client Name: <u>PSO1 GW Monitoring</u>		Well ID: <u>MW-7</u>								
Project #: <u>105.1288.23010</u>		Sample ID: <u>MW-7</u>								
Sampled By: <u>B.W.CJ</u>		Sample Time: <u>1645</u>	Sample Date: <u>5/22/23</u>							
Weather Conditions: <u>Sunny</u>		Duplicate ID: <u>---</u>								
Sampling Method: <input type="checkbox"/> Low Flow <input checked="" type="checkbox"/> Other <u>Bailer</u>		MS/MSD: <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No Trip Blank Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								
Well Information										
Well Type: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary		Well Diameter: <u>4</u> in.	Screen Interval: <u>---</u> ft BGS to <u>---</u> ft BGS							
Well Condition: <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor (if fair or poor explain in Notes)		Stickup: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No; if yes, <u>---</u> ft above ground								
Gauging/Purging Information										
Depth to Water (ft BTOC): <u>115.41</u>		Tubing/Pump Depth (ft BTOC): <u>---</u>								
Total Depth (ft BTOC): <u>115.41</u>		Purge Start Time (24-hr): <u>1630</u>								
Depth to Product (ft. BTOC): <u>---</u>		Purge End Time (24-hr): <u>1650</u>								
Product Thickness (ft): <u>---</u>		Total Purge Time (min): <u>20</u>								
LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = <u>---</u> (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft. 1 gal = 3.785L, 1L = 0.264 gal										
Min. purge volume if required: purge volume (gal) = volume of water/ft (gal/ft) X Water column thickness (ft) X # of casing volumes = <u>---</u> gal										
Well Diameter - gal/ft: 1" - 0.041 gal/ft 2" - 0.163 gal/ft 4" - 0.653 gal/ft 6" - 1.469 gal/ft										
Water Quality Parameters (Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])										
Time (24-hr)	Flow Rate (mL/minute)	Purge Volume (L or gal Circle one)	Temp (°C) (± 3 %)	Specific Conductance (µS/cm²) (± 3%)	DO (mg/L) (± 10%)	pH (± 0.1)	ORP (mV) (± 10mV)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max <u>---</u> ft)
Bailer 1	1L	1	4.4	657.2	1.35	7.48	98.1			
Bailer 2	1L	2	3.3	661.4	1.71	7.45	95.7			
Bailer 3	1L	3	3.7	658.1	1.80	7.53	94.0			
Bailer 4	1L	4	3.1	651.0	1.29	7.48	93.6			
Bailers	1L	5	3.0	654.1	1.46	7.53	93.5			
Bailer 6	1L	6	3.0	650.1	1.56	7.50	94.5			
Bailer 7	1L	7	3.0	648.1	1.71	7.47	92.6		115.80	0.39
Parameter Stable (Check applicable)			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Sample Color: <u>Clear</u>		Sample Odor: <u>none</u>		Sheen: <u>none</u>						
Analyses		Analytical Sampling								
DRO		Check Applicable		Comments						
BTEX		<input checked="" type="checkbox"/>								
		<input checked="" type="checkbox"/>								
Notes:										
Equipment:										
Tubing: <input type="checkbox"/> Polyethylene <input type="checkbox"/> PTFE-Lined <input checked="" type="checkbox"/> Other <u>Poly Bailer</u> O.D. <input type="checkbox"/> 1/4" <input type="checkbox"/> 3/8" <input type="checkbox"/> 1/2" Left in well <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No										
Pump/Bailer: <u>Bailer</u> Multi-Parameter Meter make/SN# <u>YSI ProPlus 0239</u>										
W.L. Indicator: <u>SOLINST</u> Turbidity Meter (Make/SN#) <u>---</u> Filtered <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Lot # <u>---</u>										
Purge Water Handling: <input type="checkbox"/> Discharged to surface <input type="checkbox"/> Containerized <input checked="" type="checkbox"/> Treated (how?) <u>booster pump sump</u>										

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable

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Groundwater Sampling Form

Site/Client Name: <u>B509 GW Monitoring</u>		Well ID: <u>MW-8</u>								
Project #: <u>105.1288, 23010</u>		Sample ID: <u>MW-8</u>								
Sampled By: <u>BW, CJ</u>		Sample Time: <u>1605</u> Sample Date: <u>5/22/23</u>								
Weather Conditions: <u>partly sunny/cloudy</u>		Duplicate ID: _____								
Sampling Method: <input type="checkbox"/> Low Flow <input checked="" type="checkbox"/> Other <u>Bailer</u>		MS/MSD: <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No Trip Blank Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								
Well Information										
Well Type: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary		Well Diameter: <u>4</u> in. Screen Interval: _____ ft BGS to _____ ft BGS								
Well Condition: <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor (if fair or poor explain in Notes)		Stickup <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No; if yes, _____ ft above ground								
Gauging/Purging Information										
Depth to Water (ft BTOC): <u>108.49</u>		Tubing/Pump Depth (ft. BTOC): _____								
Total Depth (ft. BTOC): _____		Purge Start Time (24-hr) <u>1555</u>								
Depth to Product (ft. BTOC) _____		Purge End Time (24-hr) <u>1613</u>								
Product Thickness (ft) _____		Total Purge Time (min) <u>18</u>								
LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = _____ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft. 1 gal = 3.785L, 1L = 0.264 gal										
Min. purge volume if required: purge volume (gal) = volume of water/ft (gal/ft) X Water column thickness (ft) X # of casing volumes = _____ gal										
Well Diameter - gal/ft		1" - 0.041 gal/ft								
2" - 0.163 gal/ft		4" - 0.653 gal/ft								
6" - 1.469 gal/ft										
Water Quality Parameters (Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])										
Time (24-hr)	Flow Rate (mL/minute)	Purge Volume (L or gal Circle one)	Temp (°C) (± 3 %)	Specific Conductance (µS/cm²) (± 3%)	DO (mg/L) (± 10%)	pH (± 0.1)	ORP (mV) (± 10mV)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max _____ ft)
Bailer 1	1L	1	3.7	528.0	12.87	7.43	103.3			
Bailer 2	1L	2	3.0	525.0	10.57	7.51	100.2			
Bailer 3	1L	3	2.9	526.1	10.84	7.49	102.2			
Bailer 4	1L	4	2.8	526.6	10.66	7.50	100.0			
Bailer 5	1L	5	2.7	524.3	10.79	7.52	99.3		109.14	0.65
Parameter Stable (Check applicable) <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>										
Sample Color: <u>Clear</u>			Sample Odor: <u>none</u>			Sheen: <u>none</u>				
Analytical Sampling										
Analyses			Check Applicable			Comments				
<u>DRO</u>			<input checked="" type="checkbox"/>							
<u>BTEX</u>			<input checked="" type="checkbox"/>							
Notes:										
Equipment:										
Tubing: <input type="checkbox"/> Polyethylene <input type="checkbox"/> PTFE-Lined <input checked="" type="checkbox"/> Other <u>Poly Bailer</u> O.D. <input type="checkbox"/> 1/4" <input type="checkbox"/> 3/8" <input type="checkbox"/> 1/2" Left in well <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No										
Pump/Bailer: <u>Bailer</u> Multi-Parameter Meter make/SN# <u>YSI PRO Plus 0239</u>										
W.L. Indicator: <u>Solis 101</u> Turbidity Meter (Make/SN#) <u>NA</u> Filtered <input type="checkbox"/> Yes <input type="checkbox"/> No Lot # _____										
Purge Water Handling: <input type="checkbox"/> Discharged to surface <input type="checkbox"/> Containerized <input checked="" type="checkbox"/> Treated (how?) <u>booster pump sump</u>										



Groundwater Sampling Form

Site/Client Name: <u>PS09 Gw Monitoring</u>		Well ID: <u>MW-10</u>								
Project #: <u>105.01288.23010</u>		Sample ID: <u>MW-10</u>								
Sampled By: <u>BW, CJ</u>		Sample Time: <u>1520</u>	Sample Date: <u>5/22/23</u>							
Weather Conditions: <u>cloudy</u>		Duplicate ID: _____								
Sampling Method: <input type="checkbox"/> Low Flow <input checked="" type="checkbox"/> Other <u>Bailer</u>		MS/MSD <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No Trip Blank Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								
Well Information										
Well Type: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary		Well Diameter <u>4</u> in.								
Well Condition: <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor (if fair or poor explain in Notes)		Screen Interval: _____ ft BGS to _____ ft BGS								
		Stickup <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No; if yes, _____ ft above ground								
Gauging/Purging Information										
Depth to Water (ft BTOC): <u>107.98</u>		Tubing/Pump Depth (ft BTOC): _____								
Total Depth (ft BTOC): _____		Purge Start Time (24-hr) <u>1510</u>								
Depth to Product (ft BTOC) _____		Purge End Time (24-hr) <u>1530</u>								
Product Thickness (ft) _____		Total Purge Time (min) <u>20</u>								
LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) _____ X 0.25 = _____ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft. 1 gal = 3.785L, 1L = 0.264 gal										
Min. purge volume if required: purge volume (gal) = volume of water/ft _____ (gal/ft) X Water column thickness _____ (ft) X # of casing volumes _____ = _____ gal										
Well Diameter - gal/ft		1" - 0.041 gal/ft								
		2" - 0.163 gal/ft								
		4" - 0.653 gal/ft								
		6" - 1.469 gal/ft								
Water Quality Parameters										
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])										
Time (24-hr)	Flow Rate (mL/minute)	Purge Volume (L or gal Circle one)	Temp (°C) (± 3%)	Specific Conductance (µS/cm²) (± 3%)	DO (mg/L) (± 10%)	pH (± 0.1)	ORP (mV) (± 10mV)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max _____ ft)
Bailer 1	1 L	1	5.0	204.1	13.04	7.45	107.3			
Bailer 2	1 L	2	3.5	454.8	11.13	7.27	103.7			
Bailer 3	1 L	3	3.4	449.1	11.08	7.41	100.4			
Bailer 4	1 L	4	3.3	450.1	10.03	7.38	104.8			
Bailer 5	1 L	5	3.3	451.0	10.77	7.36	108.3			
Bailer 6	1 L	6	3.2	455.1	10.50	7.38	108.3		107.97	- .01
Parameter Stable (Check applicable) <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>										
Sample Color: <u>clear</u>			Sample Odor: <u>none</u>			Sheen: <u>none</u>				
Analytical Sampling										
Analyses			Check Applicable			Comments				
DRO			<input checked="" type="checkbox"/>							
BTEX			<input checked="" type="checkbox"/>							
Notes:										
Equipment:										
Tubing: <input type="checkbox"/> Polyethylene <input type="checkbox"/> PTFE-Lined <input checked="" type="checkbox"/> Other <u>Bailer (poly)</u> O.D. <input type="checkbox"/> 1/4" <input type="checkbox"/> 3/8" <input type="checkbox"/> 1/2" Left in well <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No										
Pump/Bailer <u>Bailer</u> Multi-Parameter Meter make/SN# <u>YSI Pro Plus 0239</u>										
W.L. Indicator <u>Solinst</u> Turbidity Meter (Make/SN#) _____ Filtered <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Lot # _____										
Purge Water Handling: <input type="checkbox"/> Discharged to surface <input type="checkbox"/> Containerized <input checked="" type="checkbox"/> Treated (how?) <u>booster pump samp</u>										

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable

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Appendix C Quality Assurance Review, ADEC Data Review Checklists, and Laboratory Analytical Results

Pump Station 9 Mainline Turbine Sump

2023 Product Recovery and Groundwater Monitoring Report

Alyeska Pipeline Service Company

SLR Project No: 105.01288.23010

December 5, 2023



Report

LABORATORY DATA QUALITY ASSURANCE REVIEW

PUMP STATION 9 MAINLINE TURBINE SUMP
GROUNDWATER MONITORING
ALYESKA PIPELINE SERVICE COMPANY

September 2023

Prepared by: Jennifer Poppe

SLR International Corporation
2700 Gambell Street, Suite 200
Anchorage, AK 99503

SLR Project Number 105.01288.23010
ADEC File Number 330.38.065
Hazard ID: 2681

ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
AK	Alaska Method
ADEC	Alaska Department of Environmental Conservation
BTEX	benzene, toluene, ethylbenzene, and xylenes
°C	degrees Celsius
CCV	continuing calibration verification
COC	chain of custody
DL	detection limit
DRO	diesel range organics
EDD	electronic data deliverable
ID	identification
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LOD	limit of detection
LOQ	limit of quantitation
MS	matrix spike
MSD	matrix spike duplicate
ND	not detected
NFG	National Functional Guidelines for Superfund Organic Methods Data Review
QA	quality assurance
QAR	quality assurance review
QC	quality control
RPD	relative percent difference
SDG	sample delivery group
SGS	SGS North America, Inc.
SLR	SLR International Corporation
USEPA	United States Environmental Protection Agency

Introduction

This report summarizes a review of analytical data for groundwater samples collected on May 22, 2023, at Pump Station 9 Mainline Turbine Sump of the Alyeska Pipeline. Samples were collected by SLR International Corporation (SLR). SGS North America, Inc. (SGS) provided analytical support to the project. SGS maintains a current Alaska Department of Environmental Conservation (ADEC) Contaminated Sites approval number (17-021) for analytical methods of interest, as applicable. Table 1 provides a summary of the work order, sample receipt, analytical methods, and analytes.

Table 1 Sample Receipt, Method, and Analyte Summary

SDG	Date Collected	Date Received by Laboratory	Temperature Blank	Matrix	Analytical Method	Analyte
1232219	05/22/2023	SGS, Fairbanks 05/23/2023	0.5°C Anchorage	Groundwater	SW8021B	BTEX
		SGS, Anchorage 05/24/2023			AK102	DRO

Acronyms:

°C – degrees Celsius

AK - Alaska

BTEX – benzene, toluene, ethylbenzene, and xylenes

DRO – diesel range organics

SDG – sample delivery group

The laboratory final report was provided as a Level II deliverable and included documentation of the delivery group chain of custody (COC) and sample receipt condition. A Microsoft Access compatible electronic data deliverable (EDD) for the report was also provided. The laboratory report is provided electronically as Attachment 2.

Quality Assurance Program

A quality assurance (QA) program was followed for this project that addressed project administration, sampling, quality control (QC), and data review. SLR adhered to required and established sampling and COC protocols. The select laboratory maintains an internal QA program and standard operating procedures.

The analytical data was reviewed for consistency with any project specific requirements, ADEC Technical Memorandum *Guidelines for Data Reporting* (ADEC, 2022) requirements, National Functional Guidelines (NFG, United States Environmental Protection Agency [USEPA], 2020), analytical method criteria, and laboratory criteria. An ADEC Laboratory Data Review Checklist was completed for the SDG and was included as Attachment 1 to this Quality Assurance Review (QAR). A review for any anomalies to the project requirements for precision, accuracy, bias, representativeness, comparability, and sensitivity are noted in this QAR, and any data qualifications discussed.

The data review included the following, as applicable:

- Reviewing COC records for completeness, signatures, and dates;
- Identifying any sample receipt or preservation anomalies that could impact data quality;
- Verifying that QC blanks (e.g., field blanks, equipment blanks, trip blanks, etc.); were properly prepared, identified, and analyzed;
- Evaluating whether laboratory reporting limits met project goals;
- Reviewing calibration verification recoveries, to include confirming that the laboratory did not identify any Continuing Calibration Verification (CCV) recoveries or other calibration related criteria as being outside applicable acceptance limits;
- Reviewing the case narrative for any discussion of any internal standard recoveries outside of acceptance limits. Internal standard performance was not otherwise presented in the report or in the electronic data deliverable and was reviewed only from the case narrative;
- Verifying that surrogate analyses were within recovery acceptance limits;
- Verifying that Laboratory Control Samples (LCS) and Laboratory Control Sample Duplicates (LCSD) recoveries were within acceptance limits;
- Evaluating the result relative percent difference (RPD) between primary and duplicate field samples and LCS/LCSD; and
- Providing an overall assessment of laboratory data quality and qualifying sample results as necessary.

Data Qualifications

As part of this QAR, qualifiers (i.e., flags) were applied to data as determined necessary based on specified criteria, or professional judgement. In all cases, the basis for qualification and the applied data flag are discussed in this QAR. Table 2 provides a list of potential qualifiers (i.e., flags). These data flags were appended to the data as appropriate.

Table 2 Data Qualifiers

Lab Qualifier (Flag)	NFG Qualifier (Flag)	Equivalent Project Qualifier (Flag) ^{1,2,3}	Definition
U	U	ND	The analyte was analyzed for, but was not detected above the detection limit (DL).
J	NJ	J	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample between the limit of quantitation (LOQ) and the DL. This qualifier is appended by the laboratory.
--	J	Q	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample, due to one or more laboratory quality control criteria (e.g., LCS recovery, surrogate spike recovery) failed or matrix effect. Where applicable, a "+" or "-" was appended to indicate a high bias, or a low bias respectively.
--	UJ	UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
--	R	R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
--	--	B	Blank contamination: The analyte was positively identified in the blank (e.g., trip blank and/or method blank) associated with the sample and the concentration reported for the sample was less than five times that of the blank (ten times for metals and common laboratory contaminants methylene chloride and acetone). Where applicable, "U" was appended prior to the "B" to indicate the blank detection is greater than the sample detection and the result is likely a false positive. The greater of the sample detection or the limit of detection (LOD) was reported in brackets.

Notes:

1 - Flags were appended to the data where applicable. The table presents laboratory, NFG and project equivalent qualifiers.

2 - Only flags in bold were applicable and appended to data for this project.

3 - For historical purposes, ND was used in place of "U."

A discussion of the project data quality relative to PARCS goals and summary of any anomalies or failures requiring data qualifiers follows.

Data Validation

Data Packages

The data package was checked for transcription errors, omissions, or other anomalies. No issues were noted with respect to the data package.

Sample Receipt

The sample receipt documentation was checked for anomalies. No issues were noted with regard to sample receipt.

Preservation (Chemical and Temperature)

Samples were appropriately preserved and were submitted to SGS within the acceptable temperature range.

- Samples were received at SGS in Fairbanks on May 23rd, 2023, where the receipt temperature was not recorded. Because it was verified with the sampler that samples were chilled from the time of collection until delivery to the laboratory, and the receipt temperature was not noted as out of compliance, data was considered not impacted. Samples were then shipped by SGS, Fairbanks, on May 23rd, 2023, to SGS, Anchorage, where samples were received on May 24th, 2023, with a temperature of 0.5 °C. The Anchorage receipt temperature was recorded on the COC, but the Sample Receipt Form did not note that samples were received within the acceptable 0 to 6 °C. Data was considered not impacted, and all data were usable without qualification.

Holding Times

All sample analysis was conducted within method holding time criteria.

Laboratory Method Blanks

Laboratory method blanks were analyzed at the appropriate frequencies. Analytes were not detected (ND) in any method blanks at or above the LOD or detection limit (DL).

Trip Blanks

One trip blank was submitted for BTEX by Method SW8021B. Analytes were not detected in the trip blank at or above the LOD or DL.

Reporting Limits

For non-detect results, LODs were compared to applicable cleanup levels for the site. For groundwater samples, LODs were compared to 18 Alaska Administration Code (AAC) 75, *Oil and Other Hazardous Substances Pollution Control*, section 75.345 Table C, Groundwater Cleanup Levels (ADEC, 2023). All results of non-detect had LODs at or below applicable cleanup levels.

Continuous Calibration Verifications (CCVs)

CCVs were analyzed at the appropriate frequencies. CCV data was included only in the EDD, not in the case narrative. All CCV recoveries were within acceptable limits, as reviewed in the EDD.

Internal Standards

No internal standards were noted in the case narrative as outside of acceptance limits. Internal standard performance criteria were considered met.

Surrogate Recovery Results

Surrogate analyses were performed at the required frequencies. All surrogate recoveries were within analytical method and SGS percent recovery acceptance limits.

Laboratory Control Samples and Laboratory Control Duplicate Samples

LCS and LCSDs were analyzed at the appropriate frequencies. All LCS and LCSD RPDs were within acceptable limits. LCS and LCSD recovery exceedances were limited to that noted below.

- The LCSD for batch VXX39907 recovered outside acceptable limits for benzene by Method SW8021B. Sample MW-7 was included in this batch and was re-extracted and re-analyzed for benzene in batch VXX39914, which had acceptable recoveries. The MW-7 benzene result from the re-extraction was reported, therefore, data was not affected, and all data were usable without qualification.

Matrix Spike and Matrix Spike Duplicate Samples

No matrix spikes (MS) or matrix spike duplicates (MSD) were analyzed with this work order.

Field Duplicates

The field duplicate sample frequency is presented in Table 3. The parent sample and field duplicate pair is presented in Table 4. The parent sample and field duplicate RPD was within criteria. The frequency satisfied the requirement of one per 10 samples or less per matrix and analyte. Field duplicates were submitted blind to the laboratory.

Samples with both results below the LOQ (J flagged or ND) were considered acceptable without qualification.

Table 3 Field Duplicate Frequency, Methods, and Analyses

Matrix	Analytical Method	Analyte	Number of Primary Samples	Number of Field Duplicates
Groundwater	SW8021B	BTEX	5	1
	AK102	DRO	5	1

Table 4 Field Duplicate Identification

Sample Type	Parent Sample ID	Duplicate Sample ID	All RPDs acceptable (Y/N)
Groundwater	MW-3	MW-93	Y

Acronyms:

ID – identification

Laboratory Duplicate Samples

No laboratory duplicates were analyzed with these samples.

Overall Assessment

Precision, Accuracy, Bias, Representativeness, Comparability, and Sensitivity Summary

- Precision: Precision goals were met.
- Accuracy/Bias: Accuracy goals were met.
- Representativeness: Representativeness goals were met. The samples were collected from usual locations in accordance with applicable requirements and guidance documents.
- Comparability: Comparability goals were met. SGS laboratory provided analytical support for all methods.
- Sensitivity: Sensitivity goals were met.

This data were considered of good quality and acceptable for use with no additional qualifications. The data were 100% complete with respect to analysis. No data were rejected.

References

Alaska Department of Environmental Conservation (ADEC). 2023. 18 AAC 75, Oil and Other Hazardous Substances Pollution Control. February 5.

-----, 2022. ADEC Technical Memorandum, Guidelines for Data Reporting. August 15.

United States Environmental Protection Agency (USEPA). 2020. National Functional Guidelines for Superfund Organic Methods Data Review. November.

Attachments

Attachment 1 – ADEC Laboratory Data Review Checklist

Attachment 2 – Laboratory Deliverable

Attachment 1

ADEC Laboratory Data Review Checklist

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Jennifer Poppe	CS Site Name:	Pump Station 9 Mainline Turbine Sump	Lab Name:	SGS North America, Inc., Anchorage
Title:	Senior Chemist	ADEC File No.:	330.38.065	Lab Report No.:	1232219
Consulting Firm:	SLR International Corporation	Hazard ID No.:	2681	Lab Report Date:	June 2, 2023

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
Yes ☒ No ☐ N/A ☐
Comments: SGS, Anchorage, provided analytical support to the project. SGS maintains a current ADEC CS approval number 17-021 for analytical methods of interest, as applicable.
- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.
- b. Were the correct analyses requested?
Yes ☒ No ☐ N/A ☐
Analyses requested: Click or tap here to enter text.
Comments: Click or tap here to enter text.

3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
Yes ☐ No ☒ N/A ☐

CS Site Name: Pump Station 9 Mainline Turbine Sump

Lab Report No.: 1232219

Cooler temperature(s): Samples were received at SGS in Fairbanks on May 23rd, 2023, where the receipt temperature was not recorded. Samples were then shipped by SGS, Fairbanks, on May 23rd, 2023, to SGS, Anchorage, where samples were received on May 24th, 2023, with a temperature of 0.5 °C. The Anchorage receipt temperature was recorded on the COC, but the Sample Receipt Form did not note that samples were received within the acceptable 0 to 6 °C. Data was considered not impacted, and all data were usable without qualification.

Sample temperature(s): Click or tap here to enter text.

Comments: Click or tap here to enter text.

- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?

Yes ☒ No ☐ N/A ☐

Comments: Click or tap here to enter text.

- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?

Yes ☒ No ☐ N/A ☐

Comments: No issues were noted.

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?

Yes ☐ No ☐ N/A ☒

Comments: No discrepancies were noted.

- e. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: Regarding the Fairbanks receipt temperature, because it was verified with the sampler that samples were chilled from the time of collection until delivery to the laboratory, and the receipt temperature was not noted as out of compliance, data was considered not impacted.

4. Case Narrative

- a. Is the case narrative present and understandable?

Yes ☒ No ☐ N/A ☐

Comments: Click or tap here to enter text.

- b. Are there discrepancies, errors, or QC failures identified by the lab?

Yes ☒ No ☐ N/A ☐

Comments: An LCSD recovery failed for benzene. Associated sample MW-7 was re-extracted and re-analyzed. Refer to 5.b.iii and 5.b.v of this checklist.

CS Site Name: Pump Station 9 Mainline Turbine Sump

Lab Report No.: 1232219

- c. Were all the corrective actions documented?

Yes ☒ No ☐ N/A ☐

Comments: Refer to 5.b.iii and 5.b.v of this checklist.

- d. What is the effect on data quality/usability according to the case narrative?

Comments: No impact. Refer to 5.b.v of this checklist.

5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes ☒ No ☐ N/A ☐

Comments: Click or tap here to enter text.

- b. Are all applicable holding times met?

Yes ☒ No ☐ N/A ☐

Comments: Click or tap here to enter text.

- c. Are all soils reported on a dry weight basis?

Yes ☐ No ☐ N/A ☒

Comments: Only waters were analyzed.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes ☒ No ☐ N/A ☐

Comments: LODs were compared to 18 AAC 75.345 Table C, Groundwater Cleanup Levels.

- e. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: Click or tap here to enter text.

6. QC Samples

- a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes ☒ No ☐ N/A ☐

Comments: Click or tap here to enter text.

- ii. Are all method blank results less than LOQ (or RL)?

Yes ☒ No ☐

Comments: Click or tap here to enter text.

- iii. If above LoQ or RL, what samples are affected?

Comments: NA

CS Site Name: Pump Station 9 Mainline Turbine Sump

Lab Report No.: 1232219

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes ☐ No ☐ N/A ☒

Comments: Click or tap here to enter text.

- v. Data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: Click or tap here to enter text.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes ☒ No ☐ N/A ☐

Comments: Click or tap here to enter text.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes ☐ No ☐ N/A ☒

Comments: No inorganics were analyzed.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes ☐ No ☒ N/A ☐

Comments: The LCSD for batch VXX39907 recovered outside acceptable limits for benzene by Method SW8021B.

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes ☒ No ☐ N/A ☐

Comments: Click or tap here to enter text.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: Sample MW-7 was included in this batch and was affected.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes ☐ No ☒ N/A ☐

Comments: Sample MW-7 was re-extracted and re-analyzed for benzene in batch VXX39914, which had acceptable recoveries. The MW-7

benzene result from the re-extraction was reported, therefore, data was not affected, and all data were usable without qualification.

- vii. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: Click or tap here to enter text.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes ☐ No ☒ N/A ☐

Comments: Precision was established by an LCS/LCSD for all methods and samples.

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes ☐ No ☐ N/A ☒

Comments: No inorganics were analyzed.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes ☐ No ☐ N/A ☒

Comments: Click or tap here to enter text.

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes ☐ No ☐ N/A ☒

Comments: Click or tap here to enter text.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: NA

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes ☐ No ☐ N/A ☒

Comments: Click or tap here to enter text.

- vii. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: Click or tap here to enter text.

CS Site Name: Pump Station 9 Mainline Turbine Sump

Lab Report No.: 1232219

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes ☒ No ☐ N/A ☐

Comments: Click or tap here to enter text.

- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes ☒ No ☐ N/A ☐

Comments: Click or tap here to enter text.

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes ☐ No ☐ N/A ☒

Comments: Click or tap here to enter text.

- iv. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: Click or tap here to enter text.

e. Trip Blanks

- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☒ No ☐ N/A ☐

Comments: Click or tap here to enter text.

- ii. Are all results less than LoQ or RL?

Yes ☒ No ☐ N/A ☐

Comments: Click or tap here to enter text.

- iii. If above LoQ or RL, what samples are affected?

Comments: NA

- iv. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: Click or tap here to enter text.

f. Field Duplicate

- i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes ☒ No ☐ N/A ☐

CS Site Name: Pump Station 9 Mainline Turbine Sump

Lab Report No.: 1232219

Comments: Click or tap here to enter text.

- ii. Was the duplicate submitted blind to lab?

Yes ☒ No ☐ N/A ☐

Comments: The duplicate pair was MW-3/MW-93.

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes.

- iv. Is the data quality or usability affected? (Explain)

Yes ☐ No ☒ N/A ☐

Comments: Click or tap here to enter text.

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes ☐ No ☒ N/A ☐

Comments: Dedicated or disposable equipment was used for the collection of all samples.

- ii. Are all results less than LoQ or RL?

Yes ☐ No ☐ N/A ☒

Comments: Click or tap here to enter text.

- iii. If above LoQ or RL, specify what samples are affected.

Comments: NA

- iv. Are data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: Click or tap here to enter text.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a. Are they defined and appropriate?

Yes ☒ No ☐ N/A ☐

Comments: Click or tap here to enter text.

Attachment 2

Laboratory Deliverable

(Data package)

Laboratory Report of Analysis

To: Alyeska Pipeline Srv Co.
543 3rd Ave Suite 235
Fairbanks, AK 99701
(907)452-2252

Report Number: **1232219**

Client Project: **PS09 GW Mntrg Product Recovery**

Dear Carl Benson,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.



Justin Nelson
2023.06.02
17:01:51 -08'00'

Justin Nelson
Project Manager
Justin.Nelson@sgs.com

Date

Case Narrative

SGS Client: **Alyeska Pipeline Srv Co.**
SGS Project: **1232219**
Project Name/Site: **PS09 GW Mntrg Product Recovery**
Project Contact: **Carl Benson**

Refer to sample receipt form for information on sample condition.

LCSD for HBN 1856478 [VXX/3990 (1715001) LCSD

8021B - LCSD recovery for Benzene does not meet QC criteria. This analyte was not reported above LOQ in all associated samples.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 06/02/2023 4:46:55PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
MW-3	1232219001	05/22/2023	05/23/2023	Water (Surface, Eff., Ground)
MW-93	1232219002	05/22/2023	05/23/2023	Water (Surface, Eff., Ground)
MW-10	1232219003	05/22/2023	05/23/2023	Water (Surface, Eff., Ground)
MW-8	1232219004	05/22/2023	05/23/2023	Water (Surface, Eff., Ground)
MW-7	1232219005	05/22/2023	05/23/2023	Water (Surface, Eff., Ground)
MW-2	1232219006	05/22/2023	05/23/2023	Water (Surface, Eff., Ground)
Trip Blank 1	1232219007	05/22/2023	05/23/2023	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
SW8021B	BTEX 8021
AK102	DRO Low Volume (W)

Print Date: 06/02/2023 4:46:59PM

Detectable Results Summary

Client Sample ID: **MW-10**

Lab Sample ID: 1232219003

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.228J	mg/L

Client Sample ID: **MW-8**

Lab Sample ID: 1232219004

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.202J	mg/L

Client Sample ID: **MW-7**

Lab Sample ID: 1232219005

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	3.03	mg/L

Volatile Fuels

Benzene	1.73	ug/L
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Results of MW-3

Client Sample ID: **MW-3**
Client Project ID: **PS09 GW Mntrg Product Recovery**
Lab Sample ID: 1232219001
Lab Project ID: 1232219

Collection Date: 05/22/23 14:30
Received Date: 05/23/23 15:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.306	U	0.612	0.204	0.306	mg/L	1		06/02/23 01:27
Surrogates									
5a Androstane (surr)	78.3		50-150			%	1		06/02/23 01:27

Batch Information

Analytical Batch: XFC16523
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 06/02/23 01:27
Container ID: 1232219001-A

Prep Batch: XXX47918
Prep Method: SW3520C
Prep Date/Time: 05/30/23 18:20
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Print Date: 06/02/2023 4:47:02PM

J flagging is activated



Results of MW-3

Client Sample ID: **MW-3**
Client Project ID: **PS09 GW Mntrg Product Recovery**
Lab Sample ID: 1232219001
Lab Project ID: 1232219

Collection Date: 05/22/23 14:30
Received Date: 05/23/23 15:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Benzene	0.250	U	0.500	0.150	0.250	ug/L	1		05/25/23 20:17
Ethylbenzene	0.500	U	1.00	0.500	0.500	ug/L	1		05/25/23 20:17
o-Xylene	0.500	U	1.00	0.500	0.500	ug/L	1		05/25/23 20:17
P & M -Xylene	1.00	U	2.00	0.900	1.00	ug/L	1		05/25/23 20:17
Toluene	0.500	U	1.00	0.500	0.500	ug/L	1		05/25/23 20:17
Xylenes (total)	1.50	U	3.00	1.40	1.50	ug/L	1		05/25/23 20:17
Surrogates									
1,4-Difluorobenzene (surr)	89.7		77-115			%	1		05/25/23 20:17

Batch Information

Analytical Batch: VFC16466
Analytical Method: SW8021B
Analyst: JY
Analytical Date/Time: 05/25/23 20:17
Container ID: 1232219001-C

Prep Batch: VXX39897
Prep Method: SW5030B
Prep Date/Time: 05/25/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW-93

Client Sample ID: **MW-93**
Client Project ID: **PS09 GW Mntrg Product Recovery**
Lab Sample ID: 1232219002
Lab Project ID: 1232219

Collection Date: 05/22/23 14:30
Received Date: 05/23/23 15:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.300	U	0.600	0.200	0.300	mg/L	1		06/02/23 01:37
Surrogates									
5a Androstane (surr)	88.1		50-150			%	1		06/02/23 01:37

Batch Information

Analytical Batch: XFC16523
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 06/02/23 01:37
Container ID: 1232219002-A

Prep Batch: XXX47918
Prep Method: SW3520C
Prep Date/Time: 05/30/23 18:20
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 06/02/2023 4:47:02PM

J flagging is activated



Results of MW-93

Client Sample ID: **MW-93**
Client Project ID: **PS09 GW Mntrg Product Recovery**
Lab Sample ID: 1232219002
Lab Project ID: 1232219

Collection Date: 05/22/23 14:30
Received Date: 05/23/23 15:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Benzene	0.250	U	0.500	0.150	0.250	ug/L	1		05/25/23 20:36
Ethylbenzene	0.500	U	1.00	0.500	0.500	ug/L	1		05/25/23 20:36
o-Xylene	0.500	U	1.00	0.500	0.500	ug/L	1		05/25/23 20:36
P & M -Xylene	1.00	U	2.00	0.900	1.00	ug/L	1		05/25/23 20:36
Toluene	0.500	U	1.00	0.500	0.500	ug/L	1		05/25/23 20:36
Xylenes (total)	1.50	U	3.00	1.40	1.50	ug/L	1		05/25/23 20:36
Surrogates									
1,4-Difluorobenzene (surr)	90		77-115			%	1		05/25/23 20:36

Batch Information

Analytical Batch: VFC16466
Analytical Method: SW8021B
Analyst: JY
Analytical Date/Time: 05/25/23 20:36
Container ID: 1232219002-C

Prep Batch: VXX39897
Prep Method: SW5030B
Prep Date/Time: 05/25/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW-10

Client Sample ID: **MW-10**
Client Project ID: **PS09 GW Mntrg Product Recovery**
Lab Sample ID: 1232219003
Lab Project ID: 1232219

Collection Date: 05/22/23 15:20
Received Date: 05/23/23 15:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.228	J	0.600	0.200	0.300	mg/L	1		06/02/23 01:47
Surrogates									
5a Androstane (surr)	91.2		50-150			%	1		06/02/23 01:47

Batch Information

Analytical Batch: XFC16523
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 06/02/23 01:47
Container ID: 1232219003-A

Prep Batch: XXX47918
Prep Method: SW3520C
Prep Date/Time: 05/30/23 18:20
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 06/02/2023 4:47:02PM

J flagging is activated



Results of MW-10

Client Sample ID: **MW-10**
Client Project ID: **PS09 GW Mntrg Product Recovery**
Lab Sample ID: 1232219003
Lab Project ID: 1232219

Collection Date: 05/22/23 15:20
Received Date: 05/23/23 15:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Benzene	0.250	U	0.500	0.150	0.250	ug/L	1		05/25/23 20:54
Ethylbenzene	0.500	U	1.00	0.500	0.500	ug/L	1		05/25/23 20:54
o-Xylene	0.500	U	1.00	0.500	0.500	ug/L	1		05/25/23 20:54
P & M -Xylene	1.00	U	2.00	0.900	1.00	ug/L	1		05/25/23 20:54
Toluene	0.500	U	1.00	0.500	0.500	ug/L	1		05/25/23 20:54
Xylenes (total)	1.50	U	3.00	1.40	1.50	ug/L	1		05/25/23 20:54
Surrogates									
1,4-Difluorobenzene (surr)	90		77-115			%	1		05/25/23 20:54

Batch Information

Analytical Batch: VFC16466
Analytical Method: SW8021B
Analyst: JY
Analytical Date/Time: 05/25/23 20:54
Container ID: 1232219003-C

Prep Batch: VXX39897
Prep Method: SW5030B
Prep Date/Time: 05/25/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW-8

Client Sample ID: **MW-8**
Client Project ID: **PS09 GW Mntrg Product Recovery**
Lab Sample ID: 1232219004
Lab Project ID: 1232219

Collection Date: 05/22/23 16:05
Received Date: 05/23/23 15:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.202	J	0.577	0.192	0.288	mg/L	1		06/02/23 01:57
Surrogates									
5a Androstane (surr)	106		50-150			%	1		06/02/23 01:57

Batch Information

Analytical Batch: XFC16523
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 06/02/23 01:57
Container ID: 1232219004-A

Prep Batch: XXX47918
Prep Method: SW3520C
Prep Date/Time: 05/30/23 18:20
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 06/02/2023 4:47:02PM

J flagging is activated



Results of MW-8

Client Sample ID: **MW-8**
Client Project ID: **PS09 GW Mntrg Product Recovery**
Lab Sample ID: 1232219004
Lab Project ID: 1232219

Collection Date: 05/22/23 16:05
Received Date: 05/23/23 15:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	0.250	ug/L	1		05/25/23 21:13
Ethylbenzene	0.500 U	1.00	0.500	0.500	ug/L	1		05/25/23 21:13
o-Xylene	0.500 U	1.00	0.500	0.500	ug/L	1		05/25/23 21:13
P & M -Xylene	1.00 U	2.00	0.900	1.00	ug/L	1		05/25/23 21:13
Toluene	0.500 U	1.00	0.500	0.500	ug/L	1		05/25/23 21:13
Xylenes (total)	1.50 U	3.00	1.40	1.50	ug/L	1		05/25/23 21:13
Surrogates								
1,4-Difluorobenzene (surr)	89.9	77-115			%	1		05/25/23 21:13

Batch Information

Analytical Batch: VFC16466
Analytical Method: SW8021B
Analyst: JY
Analytical Date/Time: 05/25/23 21:13
Container ID: 1232219004-C

Prep Batch: VXX39897
Prep Method: SW5030B
Prep Date/Time: 05/25/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW-7

Client Sample ID: **MW-7**
Client Project ID: **PS09 GW Mntrg Product Recovery**
Lab Sample ID: 1232219005
Lab Project ID: 1232219

Collection Date: 05/22/23 16:45
Received Date: 05/23/23 15:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	3.03		0.588	0.196	0.294	mg/L	1		06/02/23 02:07
Surrogates									
5a Androstane (surr)	105		50-150			%	1		06/02/23 02:07

Batch Information

Analytical Batch: XFC16523
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 06/02/23 02:07
Container ID: 1232219005-A

Prep Batch: XXX47918
Prep Method: SW3520C
Prep Date/Time: 05/30/23 18:20
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 06/02/2023 4:47:02PM

J flagging is activated



Results of MW-7

Client Sample ID: **MW-7**
Client Project ID: **PS09 GW Mntrg Product Recovery**
Lab Sample ID: 1232219005
Lab Project ID: 1232219

Collection Date: 05/22/23 16:45
Received Date: 05/23/23 15:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Benzene	1.73		0.500	0.150	0.250	ug/L	1		05/31/23 17:12
Ethylbenzene	0.500	U	1.00	0.500	0.500	ug/L	1		05/30/23 18:21
o-Xylene	0.500	U	1.00	0.500	0.500	ug/L	1		05/30/23 18:21
P & M -Xylene	1.00	U	2.00	0.900	1.00	ug/L	1		05/30/23 18:21
Toluene	0.500	U	1.00	0.500	0.500	ug/L	1		05/30/23 18:21
Xylenes (total)	1.50	U	3.00	1.40	1.50	ug/L	1		05/30/23 18:21

Surrogates

1,4-Difluorobenzene (surr)	90		77-115			%	1		05/30/23 18:21
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Batch Information

Analytical Batch: VFC16473
Analytical Method: SW8021B
Analyst: JY
Analytical Date/Time: 05/31/23 17:12
Container ID: 1232219005-E

Prep Batch: VXX39914
Prep Method: SW5030B
Prep Date/Time: 05/31/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VFC16470
Analytical Method: SW8021B
Analyst: JY
Analytical Date/Time: 05/30/23 18:21
Container ID: 1232219005-D

Prep Batch: VXX39907
Prep Method: SW5030B
Prep Date/Time: 05/30/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW-2

Client Sample ID: **MW-2**
Client Project ID: **PS09 GW Mntrg Product Recovery**
Lab Sample ID: 1232219006
Lab Project ID: 1232219

Collection Date: 05/22/23 17:20
Received Date: 05/23/23 15:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.294	U	0.588	0.196	0.294	mg/L	1		06/02/23 02:17
Surrogates									
5a Androstane (surr)	103		50-150			%	1		06/02/23 02:17

Batch Information

Analytical Batch: XFC16523
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 06/02/23 02:17
Container ID: 1232219006-A

Prep Batch: XXX47918
Prep Method: SW3520C
Prep Date/Time: 05/30/23 18:20
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 06/02/2023 4:47:02PM

J flagging is activated



Results of MW-2

Client Sample ID: **MW-2**
Client Project ID: **PS09 GW Mntrg Product Recovery**
Lab Sample ID: 1232219006
Lab Project ID: 1232219

Collection Date: 05/22/23 17:20
Received Date: 05/23/23 15:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Benzene	0.250	U	0.500	0.150	0.250	ug/L	1		05/25/23 22:08
Ethylbenzene	0.500	U	1.00	0.500	0.500	ug/L	1		05/25/23 22:08
o-Xylene	0.500	U	1.00	0.500	0.500	ug/L	1		05/25/23 22:08
P & M -Xylene	1.00	U	2.00	0.900	1.00	ug/L	1		05/25/23 22:08
Toluene	0.500	U	1.00	0.500	0.500	ug/L	1		05/25/23 22:08
Xylenes (total)	1.50	U	3.00	1.40	1.50	ug/L	1		05/25/23 22:08
Surrogates									
1,4-Difluorobenzene (surr)	89.7		77-115			%	1		05/25/23 22:08

Batch Information

Analytical Batch: VFC16466
Analytical Method: SW8021B
Analyst: JY
Analytical Date/Time: 05/25/23 22:08
Container ID: 1232219006-C

Prep Batch: VXX39897
Prep Method: SW5030B
Prep Date/Time: 05/25/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of Trip Blank 1

Client Sample ID: **Trip Blank 1**
Client Project ID: **PS09 GW Mntrg Product Recovery**
Lab Sample ID: 1232219007
Lab Project ID: 1232219

Collection Date: 05/22/23 06:00
Received Date: 05/23/23 15:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	0.250	ug/L	1		05/25/23 19:59
Ethylbenzene	0.500 U	1.00	0.500	0.500	ug/L	1		05/25/23 19:59
o-Xylene	0.500 U	1.00	0.500	0.500	ug/L	1		05/25/23 19:59
P & M -Xylene	1.00 U	2.00	0.900	1.00	ug/L	1		05/25/23 19:59
Toluene	0.500 U	1.00	0.500	0.500	ug/L	1		05/25/23 19:59
Xylenes (total)	1.50 U	3.00	1.40	1.50	ug/L	1		05/25/23 19:59
Surrogates								
1,4-Difluorobenzene (surr)	90.2	77-115			%	1		05/25/23 19:59

Batch Information

Analytical Batch: VFC16466
Analytical Method: SW8021B
Analyst: JY
Analytical Date/Time: 05/25/23 19:59
Container ID: 1232219007-A

Prep Batch: VXX39897
Prep Method: SW5030B
Prep Date/Time: 05/25/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1856411 [VXX/39897]
Blank Lab ID: 1714722

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1232219001, 1232219002, 1232219003, 1232219004, 1232219006, 1232219007

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>
Benzene	0.250U	0.500	0.150	0.250	ug/L
Ethylbenzene	0.500U	1.00	0.500	0.500	ug/L
o-Xylene	0.500U	1.00	0.500	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.900	1.00	ug/L
Toluene	0.500U	1.00	0.500	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.40	1.50	ug/L

Surrogates

1,4-Difluorobenzene (surr)	90.5	77-115		0	%
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Batch Information

Analytical Batch: VFC16466
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: JY
Analytical Date/Time: 5/25/2023 10:35:00AM

Prep Batch: VXX39897
Prep Method: SW5030B
Prep Date/Time: 5/25/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 06/02/2023 4:47:04PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232219 [VXX39897]
 Blank Spike Lab ID: 1714725
 Date Analyzed: 05/25/2023 12:25

Spike Duplicate ID: LCSD for HBN 1232219 [VXX39897]
 Spike Duplicate Lab ID: 1714726
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232219001, 1232219002, 1232219003, 1232219004, 1232219006, 1232219007

Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	114	114	100	113	113	(80-120)	1.20	(< 20)
Ethylbenzene	100	109	109	100	106	106	(75-125)	2.60	(< 20)
o-Xylene	100	101	101	100	98.9	99	(80-120)	2.30	(< 20)
P & M -Xylene	200	213	106	200	208	104	(75-130)	2.50	(< 20)
Toluene	100	111	111	100	109	109	(75-120)	1.80	(< 20)
Xylenes (total)	300	314	105	300	307	102	(79-121)	2.40	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50		105	50		105	(77-115)	0.02	

Batch Information

Analytical Batch: VFC16466
 Analytical Method: SW8021B
 Instrument: Agilent 7890 PID/FID
 Analyst: JY

Prep Batch: VXX39897
 Prep Method: SW5030B
 Prep Date/Time: 05/25/2023 06:00
 Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

Print Date: 06/02/2023 4:47:07PM

Method Blank

Blank ID: MB for HBN 1856478 [VXX/39907]
Blank Lab ID: 1714997

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232219005

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>
Ethylbenzene	0.500U	1.00	0.500	0.500	ug/L
o-Xylene	0.500U	1.00	0.500	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.900	1.00	ug/L
Toluene	0.500U	1.00	0.500	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.40	1.50	ug/L

Surrogates

1,4-Difluorobenzene (surr)	90.9	77-115		0	%
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Batch Information

Analytical Batch: VFC16470
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: JY
Analytical Date/Time: 5/30/2023 3:03:00PM

Prep Batch: VXX39907
Prep Method: SW5030B
Prep Date/Time: 5/30/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 06/02/2023 4:47:09PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232219 [VXX39907]
 Blank Spike Lab ID: 1715000
 Date Analyzed: 05/30/2023 15:57

Spike Duplicate ID: LCSD for HBN 1232219 [VXX39907]
 Spike Duplicate Lab ID: 1715001
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232219005

Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Ethylbenzene	100	106	106	100	115	115	(75-125)	8.40	(< 20)
o-Xylene	100	98.9	99	100	106	106	(80-120)	6.70	(< 20)
P & M -Xylene	200	207	104	200	223	112	(75-130)	7.30	(< 20)
Toluene	100	109	109	100	120	120	(75-120)	9.90	(< 20)
Xylenes (total)	300	306	102	300	329	110	(79-121)	7.10	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50		105	50		105	(77-115)	0.08	

Batch Information

Analytical Batch: VFC16470
 Analytical Method: SW8021B
 Instrument: Agilent 7890 PID/FID
 Analyst: JY

Prep Batch: VXX39907
 Prep Method: SW5030B
 Prep Date/Time: 05/30/2023 06:00
 Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

Print Date: 06/02/2023 4:47:12PM



Method Blank

Blank ID: MB for HBN 1856531 [VXX/39914]

Blank Lab ID: 1715235

QC for Samples:

1232219005

Matrix: Water (Surface, Eff., Ground)

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>
Benzene	0.250U	0.500	0.150	0.250	ug/L
Surrogates					
1,4-Difluorobenzene (surr)	98.2	77-115		0	%

Batch Information

Analytical Batch: VFC16473

Analytical Method: SW8021B

Instrument: Agilent 7890A PID/FID

Analyst: JY

Analytical Date/Time: 5/31/2023 10:20:00AM

Prep Batch: VXX39914

Prep Method: SW5030B

Prep Date/Time: 5/31/2023 6:00:00AM

Prep Initial Wt./Vol.: 5 mL

Prep Extract Vol: 5 mL

Print Date: 06/02/2023 4:47:14PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1232219 [VXX39914]
Blank Spike Lab ID: 1715236
Date Analyzed: 05/31/2023 13:13

Spike Duplicate ID: LCSD for HBN 1232219 [VXX39914]
Spike Duplicate Lab ID: 1715237
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232219005

Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	104	104	100	101	101	(80-120)	3.00	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50		106	50		104	(77-115)	1.60	

Batch Information

Analytical Batch: VFC16473
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: JY

Prep Batch: VXX39914
Prep Method: SW5030B
Prep Date/Time: 05/31/2023 06:00
Spike Init Wt./Vol.: 50 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 50 ug/L Extract Vol: 5 mL

Print Date: 06/02/2023 4:47:17PM



Method Blank

Blank ID: MB for HBN 1856466 [XXX/47918]
Blank Lab ID: 1714953

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1232219001, 1232219002, 1232219003, 1232219004, 1232219005, 1232219006

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>
Diesel Range Organics	0.0750U	0.150	0.0500	0.0750	mg/L
Surrogates					
5a Androstane (surr)	88.2	60-120		0	%

Batch Information

Analytical Batch: XFC16523

Analytical Method: AK102

Instrument: Agilent 7890B R

Analyst: T.L

Analytical Date/Time: 6/1/2023 4:19:00PM

Prep Batch: XXX47918

Prep Method: SW3520C

Prep Date/Time: 5/30/2023 6:20:48PM

Prep Initial Wt./Vol.: 1000 mL

Prep Extract Vol: 1 mL

Print Date: 06/02/2023 4:47:19PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1232219 [XXX47918]
Blank Spike Lab ID: 1714954
Date Analyzed: 06/01/2023 16:29

Spike Duplicate ID: LCSD for HBN 1232219
[XXX47918]
Spike Duplicate Lab ID: 1714955
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232219001, 1232219002, 1232219003, 1232219004, 1232219005, 1232219006

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	5	4.19	84	5	4.55	91	(75-125)	8.30	(< 20)
Surrogates									
5a Androstane (surr)	0.1		110	0.1		118	(60-120)	6.80	

Batch Information

Analytical Batch: **XFC16523**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **T.L**

Prep Batch: **XXX47918**
Prep Method: **SW3520C**
Prep Date/Time: **05/30/2023 18:20**
Spike Init Wt./Vol.: 0.1 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 0.1 mg/L Extract Vol: 1 mL

Print Date: 06/02/2023 4:47:21PM



CLIENT: Alyeska Pipeline Service Company					Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.										Page <u>1</u> of <u>1</u>										
CONTACT: Brett Woelber					PHONE #: 907 242 3097					Section 3		Preservative													
PROJECT NAME: PS09 GW Monitoring and Product Recovery					PROJECT/ PWSID/ PERMIT#: 105.01288.23010					# CONTAINERS		Analysis*										NOTE: *The following analyses require specific method and/or compound list: BTEX, Metals, PFAS			
REPORTS TO: Brett Woelber					E-MAIL: Bwoelber@slrconsulting.com							Comp Grab MI (Multi-incremental)													
INVOICE TO: APSC					QUOTE #: P.O. #: SPOT# 22300370							HCl HCl													
RESERVED for lab use		SAMPLE IDENTIFICATION		DATE mm/dd/yy		TIME HH:MM		MATRIX/ MATRIX CODE																REMARKS/LOC ID	
① AE		MW-3		05/22/23		1430		W		5		Grab		✓		✓									
② AE		MW-93		05/22/23		1430		W		5		Grab		✓		✓									
③ AE		MW-10		05/22/23		1520		W		5		Grab		✓		✓									
④ AE		MW-8		05/22/23		1605		W		5		Grab		✓		✓									
⑤ AE		MW-7		05/22/23		1645		W		5		Grab		✓		✓									
⑥ AE		MW-2		05/22/23		1720		W		5		Grab		✓		✓									
⑦ AC		Trip Blank 1		05/22/23		0600		W		—		—				✓								trip blank	

Relinquished By: (1) [Signature]				Date 5/23/23		Time [Signature]		Received By: [Signature]				Section 4		DOD Project? Yes <input checked="" type="radio"/> No <input type="radio"/>		Data Deliverable Requirements:			
Relinquished By: (2) [Signature]				Date [Signature]		Time [Signature]		Received By: Fairbanks				Cooler ID:		Level 2 + DV					
Relinquished By: (3) [Signature]				Date [Signature]		Time 1431		Received By: [Signature]				Requested Turnaround Time and/or Special Instructions:							
Relinquished By: (4) [Signature]				Date 5/23/23		Time 1500		Received For Laboratory By: [Signature]				Standard TAT				Chain of Custody Seal: (Circle) INTACT BROKEN <u>ABSENT</u>			
Temp Blank °C: 0.5 or Ambient []										Delivery Method: Hand Delivery [] Commerical Delivery []									

ANR 5/24/23



SAMPLE RECEIPT FORM

1232219

Project Manager Completion				
Was all necessary information recorded on the COC upon receipt? (temperature, COC seals, etc.?)	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A	
Was temperature between 0-6° C?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A	If "No", are the samples either exempt* or sampled <8 hours prior to receipt?
Were all analyses received within holding time*?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A	
Was a method specified for each analysis, where applicable? If no, please note correct methods.	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A	
Are compound lists specified, where applicable? For project specific or special compound lists please note correct analysis code.	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A	
If rush was requested by the client, was the requested TAT approved?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A	If "NO", what is the approved TAT?
If SEDD Deliverables are required, were Location ID's and an NPD Number provided?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A	If "NO", contact client for information.
Sample Login Completion				
Do ID's on sample containers match COC?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A	
If provided on containers, do dates/times collected match COC?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A	Note: If times differ <1 hr., record details below and login per COC.
Were all sample containers received in good condition?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A	
Were proper containers (type/mass/volume/preservative) received for all samples? *See form F-083 "Sample Guide"	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A	Note: If 200.8/6020 Total Metals are received unpreserved, preserve and note HNO3 lot here: If 200.8/6020 Dissolved Metals are received unpreserved, log in for LABFILTER and do not preserve. For all non-metals methods, inform Project Manager.
Were Trip Blanks (VOC, GRO, Low-Level Hg, etc.) received with samples, where applicable*?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A	
Were all VOA vials free of headspace >6mm?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A	
Were all soil VOA samples received field extracted with Methanol?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A	
Did all soil VOA samples have an accompanying unpreserved container for % solids?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A	
If special handling is required, were containers labelled appropriately? e.g. MI/ISM, foreign soils, lab filter, Ref Lab, limited volume	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A	
For Rush/Short Holding time, was the lab notified?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A	
For any question answered "NO", was the Project Manager notified?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A	PM Initials:
Was Peer Review of sample numbering/labelling completed?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A	Reviewer Initials: APS
Additional Notes/Clarification where Applicable, including resolution of "No" answers when a change order is not attached:				



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1232219001-A	HCL to pH < 2	OK			
1232219001-B	HCL to pH < 2	OK			
1232219001-C	HCL to pH < 2	OK			
1232219001-D	HCL to pH < 2	OK			
1232219001-E	HCL to pH < 2	OK			
1232219002-A	HCL to pH < 2	OK			
1232219002-B	HCL to pH < 2	OK			
1232219002-C	HCL to pH < 2	OK			
1232219002-D	HCL to pH < 2	OK			
1232219002-E	HCL to pH < 2	OK			
1232219003-A	HCL to pH < 2	OK			
1232219003-B	HCL to pH < 2	OK			
1232219003-C	HCL to pH < 2	OK			
1232219003-D	HCL to pH < 2	OK			
1232219003-E	HCL to pH < 2	OK			
1232219004-A	HCL to pH < 2	OK			
1232219004-B	HCL to pH < 2	OK			
1232219004-C	HCL to pH < 2	OK			
1232219004-D	HCL to pH < 2	OK			
1232219004-E	HCL to pH < 2	OK			
1232219005-A	HCL to pH < 2	OK			
1232219005-B	HCL to pH < 2	OK			
1232219005-C	HCL to pH < 2	OK			
1232219005-D	HCL to pH < 2	OK			
1232219005-E	HCL to pH < 2	OK			
1232219006-A	HCL to pH < 2	OK			
1232219006-B	HCL to pH < 2	OK			
1232219006-C	HCL to pH < 2	OK			
1232219006-D	HCL to pH < 2	OK			
1232219006-E	HCL to pH < 2	OK			
1232219007-A	HCL to pH < 2	OK			
1232219007-B	HCL to pH < 2	OK			
1232219007-C	HCL to pH < 2	OK			

Container Id

Preservative

Container
Condition

Container Id

Preservative

Container
Condition

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

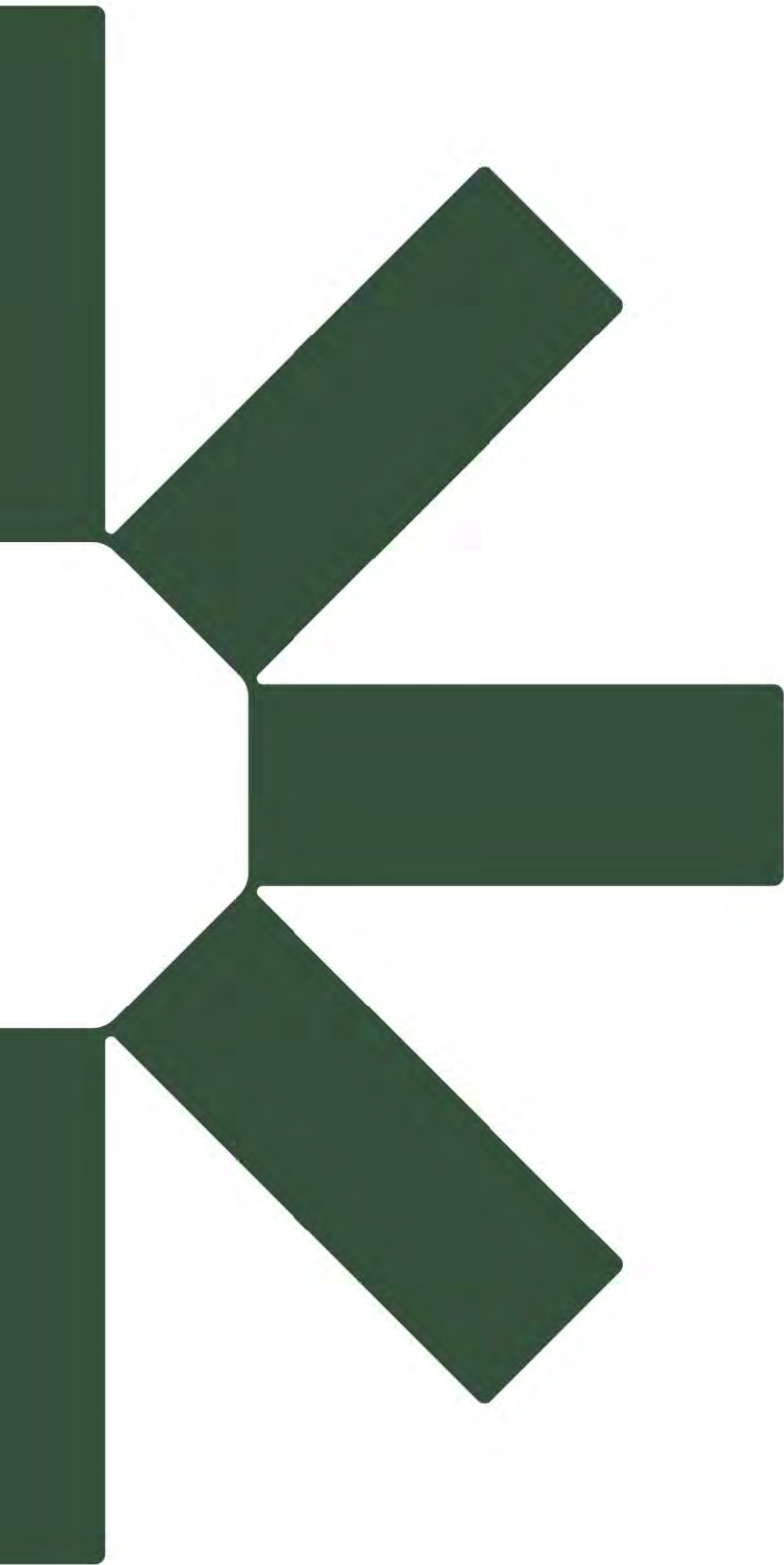
IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



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