

**2019 Groundwater Monitoring and Product Recovery Report**

**Pump Station 9 Mainline Turbine Sump**

Prepared for: Alyeska Pipeline Service Company

Client Ref: 105.01288.18013

December 2019



## 2019 Groundwater Monitoring and Product Recovery Report Pump Station 9 Mainline Turbine Sump

Prepared for:

**Alyeska Pipeline Service Company**

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



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## ACRONYMS

%	Percent
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
DL	detection limit
ft	feet
gal	gallons
LOQ	limit of quantitation
MLT	Mainline Turbine
PS09	Pump Station 9
QAR	Quality Assurance Review
SLR	SLR International Corporation

## SUMMARY

SLR International Corporation conducted one groundwater sampling event and multiple separate-phase hydrocarbon recovery events at the Pump Station 9 Mainline Turbine (PS09 MLT) Sump site in 2019 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.

Annual groundwater sampling results indicate that concentrations of dissolved petroleum hydrocarbons in monitoring wells do not exceed Alaska Department of Environmental Conservation groundwater cleanup levels. Analyte detections were limited to diesel range organics at concentrations below the cleanup level. The 2019 sampling event marks the first time since 2003 that benzene, toluene, ethylbenzene and xylenes (BTEX) have not been detected in groundwater samples collected from any well. The last groundwater BTEX exceedance at the PS09 MLT Sump occurred in 2011.

Free product recovery was conducted eleven times from recovery well MW-1 and ten times from MW-5 throughout the 2019 construction season. A total of 3.2 gallons (gal) of product was recovered from MW-1 in 2019. Initial product thickness for well MW-1 was the lowest since before 2011 and final product thickness on the last site visit was comparable to the previous three years and below and near the target final thickness of 0.1 feet or less. A total of 22.5 gal of product was recovered from well MW-5 in 2019; however, the volume recovered is considered biased high due to recovery of separate-phase water (i.e., water not miscible with turbine fuel) along with petroleum product in the absorbent socks used. The initial product thickness measured in well MW-5 was less than the previous three years and the measured product thickness varied throughout the field season, in contrast to prior years. The final product thickness for MW-5 was the same as the previous year, slightly above the target final thickness.

It is estimated that approximately 25.7 gal of free product was recovered in 2019, with a high bias due to water recovered from MW-5. Approximately 1,242 gal of free product have been recovered from this site to date, including the recovery of the product/water mix in 2019. This total accounts for about 62 percent of the estimated 2,000 gal of free product present at the site; however, only 156 gal of the total volume has been recovered since the shutdown of the active recovery system in 2009.

According to SLR's Groundwater Monitoring and Product Recovery Work Plan, SLR will continue to conduct annual product recovery activities in early-summer (June) of 2020 and biennial groundwater monitoring in 2021. An entrained water/product mix added to the total product recovery estimate from MW-5 in 2019. To improve the accuracy of product recovery estimates, an effort will be made in 2020 to quantify the water content of fluids recovered using 4-inch nominal diameter sorbent socks at recovery well MW-5. The recovered product estimate from 2019 will be adjusted to account for the water fraction after the water fraction of recovered liquid is assessed.

# 1. 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 2019. Recovery well product thicknesses were gauged, and product was recovered on eleven site visits. This report summarizes the activities including project approach, methodology, groundwater sampling analytical results, and product recovery results.

## 1.1 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 organic (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 work that has occurred at this site since 1997 is described in the 2018 *Groundwater and Product Recovery Report* (SLR, 2019).

A subsurface investigation conducted in July 1997 confirmed the presence of contamination to at least 65 feet (ft) below ground surface (bgs) near the MLT sump. During this 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 with seven 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 and monitoring well MW-4 was destroyed, leaving the current total of eight monitoring and recovery wells on site (EMCON, 1999).

Recovery well MW-6 was decommissioned in 2017 and is no longer used for product recovery (SLR, 2018).

## 1.2 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 ft above mean sea level. The pump station is built upon 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).

### 1.2.1 GEOLOGY AND HYDROGEOLOGY

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 soil underlying PS09 was found to be predominantly poorly-sorted, well-rounded sand and gravel with cobbles and boulders consistent with glacial outwash deposits (EMCON, 1999). The lithology description 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 bgs. This aquifer appeared to be discontinuous and only a few feet thick, terminating in a dry, dense stratum of gravel and cobbles (EMCON, 1999).

### 1.2.2 FREE PRODUCT RECOVERY

Free product recovery was initiated following the installation of monitoring well MW-1 in 1997, and monitoring wells MW-5 and MW-6 in 1998 and has been performed each subsequent summer. Product recovery events and methods through 2018 are detailed further in the 2018 Groundwater Monitoring and Product Recovery Report (SLR, 2019).

Overall, annual recovery from the product recovery system declined steadily until 2013 when the estimated recovery volume may have increased as a result of the use of sorbent socks deployed during site visits rather than the product recovery canisters. Recovery in 2016 increased only slightly from the previous year despite a greater number of product recovery events than during the previous year. Total product recovered in 2018 increased to near the amount recovered in 2016. The total volume of product recovered through 2018 was approximately 1,216 gallons (gal).

## 1.3 PROJECT OBJECTIVES

The objectives of the project activities completed in 2019 included groundwater monitoring and continued free product recovery from recovery wells MW-1 and MW-5 and installation of heat trace in recovery wells MW-1 and MW-5 at the end of product recovery activities to facilitate recovery activities in early June 2020.



## 2. FIELD ACTIVITIES

This section describes groundwater sampling and product recovery activities conducted during the 2019 construction season. Field activities were conducted in accordance with the *Groundwater Monitoring and Product Recovery Work Plan* (Work Plan; SLR, 2018). Field Activities were documented in the Field Logbook included as Appendix A.

### 2.1 GROUNDWATER SAMPLING

SLR conducted groundwater monitoring on May 30, 2019. 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-33. Recovery wells MW-1 and MW-5 were not part of the groundwater monitoring program because they contain free product.

### 2.2 SAMPLING PROCEDURES

Groundwater sampling was conducted using purge and sample methodology. Depth to water and total well depth were measured prior to sampling and measurements were used to calculate volume of water within each well. The wells were purged with disposable polyethylene bailers and a water sample was collected after three well volumes were evacuated from the casing or until the well casing was evacuated for low yield wells. Water quality parameters were monitored using a YSI® Model 556 multi-parameter meter. Parameters recorded at regular intervals during purging and included pH, temperature, specific conductance, dissolved oxygen, and oxidation-reduction potential. Well Sampling Calculation and Record Sheets 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 no-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.

### 2.3 ANALYTICAL METHODS

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

- DRO by Alaska Method 102; and
- BTEX by U.S. Environmental Protection Agency Method 8021B.

### 2.4 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

Quality Assurance 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. Any discrepancies are described in Section 2.11. The QAR and the completed ADEC Laboratory Data Review Checklist are presented in Appendix C.

## 2.5 PRODUCT GAUGING

Product recovery activities were performed between May 31 and October 30, 2019 and included 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 A).

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, 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.

## 2.6 FREE PRODUCT RECOVERY

SLR visited the site on eleven separate occasions in 2019 to thaw, gauge, and/or conduct product recovery from recovery wells MW-1 and MW-5. Well MW-1 was thawed during initial visit on May 31 and free product recovery was conducted the same day, and then on each subsequent visit. Thawing of well MW-5 was completed and free product recovery was first conducted on June 14, and then 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.

## 2.7 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 31 and June 14 site visits. 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 to occur, which occurred as late as August in previous years.

## 2.8 RECOVERY METHOD

Product recovery was accomplished using product-selective sorbent socks (sorbent socks). The sorbent socks used were New Pig® Monitoring Well Skimming Sock 1.5-inch diameter, and DGSi Geo Slope Indicator SoakEase™ 2- 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 and was not used in 2019 to improve the accuracy of the initial gauging of product thickness prior to product recovery during each site visit.

## **2.9 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 and the vendor's published product absorbing capacity for the sorbent sock used. The assumption was made that the sorbents absorbed only free product. In past years, 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 product-selective sorbent socks is considered to be biased high, but the bias has not been quantified to adjust recovered product volumes.

## **2.10 HEAT TRACE EMPLACEMENT**

SLR placed heat trace wire in the two recovery wells at the conclusion of the product recovery event on October 30, 2019. The heat trace wires were 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.

## **2.11 WORK PLAN DEVIATIONS**

No Work Plan deviations were noted.

## **2.12 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 product-selective sorbent socks and product bailers were placed in double-bagged oily-waste bags and left in the appropriate oily-waste receptacle at PS09 for offsite disposal.
- Purge water from groundwater sampling was transferred to a pipeline sump for injection into the pipeline.

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

### 3. PRODUCT RECOVERY RESULTS

This section describes the results of field activities completed in 2019 which included measurement of groundwater elevations, measurement of free product thickness, and free product recovery. Measurements of groundwater elevations and product thickness at recovery wells are presented on Table 1. The maximum gauged free product thicknesses from 1998 through 2010 and recovery volumes and product thicknesses for 2011 through 2019 for wells MW-1 and MW-5 are presented on Tables 2 and 3, respectively.

#### 3.1 GROUNDWATER ELEVATIONS

Groundwater elevations measured in product recovery wells in 2019 were the highest since 2011 (Table 1). Groundwater elevations measured for groundwater monitoring wells were higher than elevations recorded dating back to 2012, with the exception of MW-7, which had a higher elevation in 2016. 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).

#### 3.2 APPARENT FREE PRODUCT THICKNESS

Initial product thicknesses for both wells were low compared to those measured in 2018 and were followed by variable thicknesses over the course of the summer. Product thicknesses measured on the final recovery event showed a decrease in thickness from post-thaw thicknesses as a result of product recovery efforts. The magnitude of product thickness reduction achieved in each well was smaller than that measured in previous years due to lower post-thaw initial product thicknesses.

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 0.25 ft in 2019 was significantly less than the 1.66 ft measured in 2018. Additionally, the final product thickness of 0.04 ft achieved after eleven recovery events was lower than the final measurement of 0.32 ft in 2018. 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 0.45 ft was only one third of the 1.52 ft pre-recovery thickness measured in 2018 and was the lowest initial thickness measured since 2012. Correspondingly, the apparent product thickness reduction of 0.32 ft achieved over the field season was less than the 1.51 ft reduction achieved in 2018. Additionally, the final product thickness of 0.13 ft was less than the 0.21 to 0.31 ft true thickness determined from the 2015 baildown test.

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

### 3.3 FREE PRODUCT RECOVERY

The total volume of product recovered during eleven visits conducted in 2019 decreased for recovery well MW-1 and may have increased for MW-5 as compared to recovery totals from 2018. The uncertainty in the MW-5 recovery volume is due to the change in primary recovery method, as described below. 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 2019 product recovery activities are summarized as follows:

- **MW-1:** The total free product recovered using sorbent socks was approximately 3.2 gal, a decrease of 2.8 gal from 2018. The reduced product recovery volume is consistent with the lower pre-recovery thickness measured in 2019, as discussed in Section 3.2. The volume recovered in 2019 accounts for 10 percent (%) of the 32.7 gal of product recovered from this well since 2011.
- **MW-5:** The total free product recovered using uniquely 4-inch sorbent socks was measured as approximately 22.5 gal. This represents a potential increase of 11.5 gal from the prior season's recovery total, despite the much lower pre-recovery thickness than in 2018. The high recovery volume is not consistent with the low pre-recovery thickness and the volume is considered biased-high due to observed recovery of separate-phase water in the larger absorbent socks. The measured recovery volume recovered represents 20 % of the 115.4 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. This suggests that the effectiveness of recovery events varies from year to year and may not correlate to pre-recovery product thicknesses.

The total volume of recovered product to date of approximately 1,242 gal represents a substantial portion (62%) of the approximately 2,000 gal thought to have been released. The product recovered in 2019 represents only 2.1 % of the total of approximately 1,242 gal of free product that have been recovered by all methods since discovery of the contamination in 1996 (Table 4). Additionally, the 156.9 gal of product recovered between 2011 and 2019 represents only a small fraction (13 %) of the total volume of product recovered since 1996.

## 4. GROUNDWATER ANALYTICAL RESULTS

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This section describes key findings of groundwater sampling analytical results and SLR's QAR. Groundwater analytical results for the five monitoring wells sampled in 2019 are presented on Table 5 and historical results are shown on Table 6. The laboratory QAR, completed ADEC Laboratory Data Review Checklist, and laboratory analytical report are included as Appendix C.

### 4.1 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.

### 4.2 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. Additionally, the 2019 sampling marks the first time BTEX congeners were not detected in groundwater samples collected from any wells.

Concentrations of DRO above the laboratory limit of quantitation (LOQ) were only detected in the groundwater sample from well MW-7. The concentration of 1.08 mg/L for MW-7 was similar to the value of 1.07 mg/L reported in 2017 and below the most recent high of 1.47 mg/L in 2011. The last exceedance of the 1.5 mg/L cleanup level for MW-7 occurred in 2001 with a concentration of 2.96 mg/L. Estimated concentrations below the LOQ were reported for wells MW-2, MW-3, MW-8, and MW-10, consistent with historical values from 2011 through 2017.

Benzene was not detected in groundwater samples collected from monitoring wells sampled in 2019, including well MW-7 where benzene was detected at 0.0016 mg/L in 2017. The concentration of benzene in MW-7 declined steadily following the 2011 exceedance concentration of 0.0124 mg/L. Benzene concentrations remained below the Method detection limit (DL) in the remaining monitoring wells; exceedances have never been reported in these wells.

## 5. CONCLUSIONS AND RECOMMENDATIONS

Activities completed in 2019 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 2020 product recovery season.

The results of groundwater monitoring at the PS09 MLT Sump site show that the limited quantity of product present in recovery wells is not causing petroleum hydrocarbon cleanup level exceedances in nearby groundwater as indicated by sampling of local monitoring wells. Concentrations of all analytes remain low and well below ADEC cleanup levels for all wells sampled in 2019. Diesel range organics were detected in samples from all wells at estimated concentrations between the LOQ and DL except MW-7 which had a non-qualified detection below the ADEC cleanup level. Sampling of monitoring wells at the PS09 MLT Site have not shown cleanup level exceedances for DRO since 2010. All groundwater monitoring wells were non-detect for BTEX congeners for the first time since 2004. The most recent cleanup level exceedances for any BTEX compound occurred in 2011.

At the start of the 2019 product recovery season, initial product thicknesses were lowest in MW-1 and MW-5 since 2008 and 2011, respectively. 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 increased by 8.7 gal from the recovery total documented for 2018. It is believed that the increase in the volume of product recovered from MW-5 was a result of separate-phase water recovered with free product in the large-diameter absorbent socks; therefore, the volume of product recovered in 2019 is likely biased high.

Based on the above findings, SLR will submit an updated 2020-2021 Work Plan describing the completion of the following activities:

- **Product recovery:** Thawing and product recovery activities at recovery wells MW-1 and MW-5 to commence in May or June, with continued product recovery if apparent product thicknesses exceed the minimum of 0.1 ft. Recovery activities will include development of improved product recovery volume determination for absorbent socks to quantify the contribution of separate-phase water recovered. If practicable, the 2019 product recovery volume for MW-5 will be re-evaluated and corrected to account for the fraction of recovered separate-phase water.
- **Groundwater monitoring:** Biennial groundwater monitoring to be completed in 2021 at existing monitoring wells.

## 6. REFERENCES

- EMCON Alaska, Inc. (EMCON), 1998. Final Contamination Assessment Report, Former Main Line Turbine Sump, Pump Station 9, Trans Alaska Pipeline, Delta Junction, Alaska. May.
- EMCON, 1999. Final Contamination Assessment Report, Former Main Line Turbine Sump, Pump Station 9, Trans Alaska Pipeline, Delta Junction, Alaska. February.
- SLR, 2018. 2018 Groundwater Monitoring and Product Recovery Work Plan, Pump Station 9 Mainline Turbine Sump. May.
- SLR, 2019. 2018 Groundwater Monitoring and Product Recovery Report, Pump Station 9 Mainline Turbine Sump. March.



## 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.

## FIGURES

Figure 1 Site Location Map

Figure 2 Site Vicinity Map

Figure 3 Groundwater Monitoring Well Locations



#### Legend

- City
- Pump Station
- Trans Alaska Pipeline

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

#### Report

2019 GROUNDWATER MONITORING AND  
PRODUCT RECOVERY REPORT PUMP STATION 9  
MAINLINE TURBINE SUMP

#### Drawing

SITE LOCATION MAP

Drawing December 2019

File Name F1 PS09 MLT RPT \_19.mxd

Scale As Shown

Project No. 105.01288.19013

Fig. No.

1

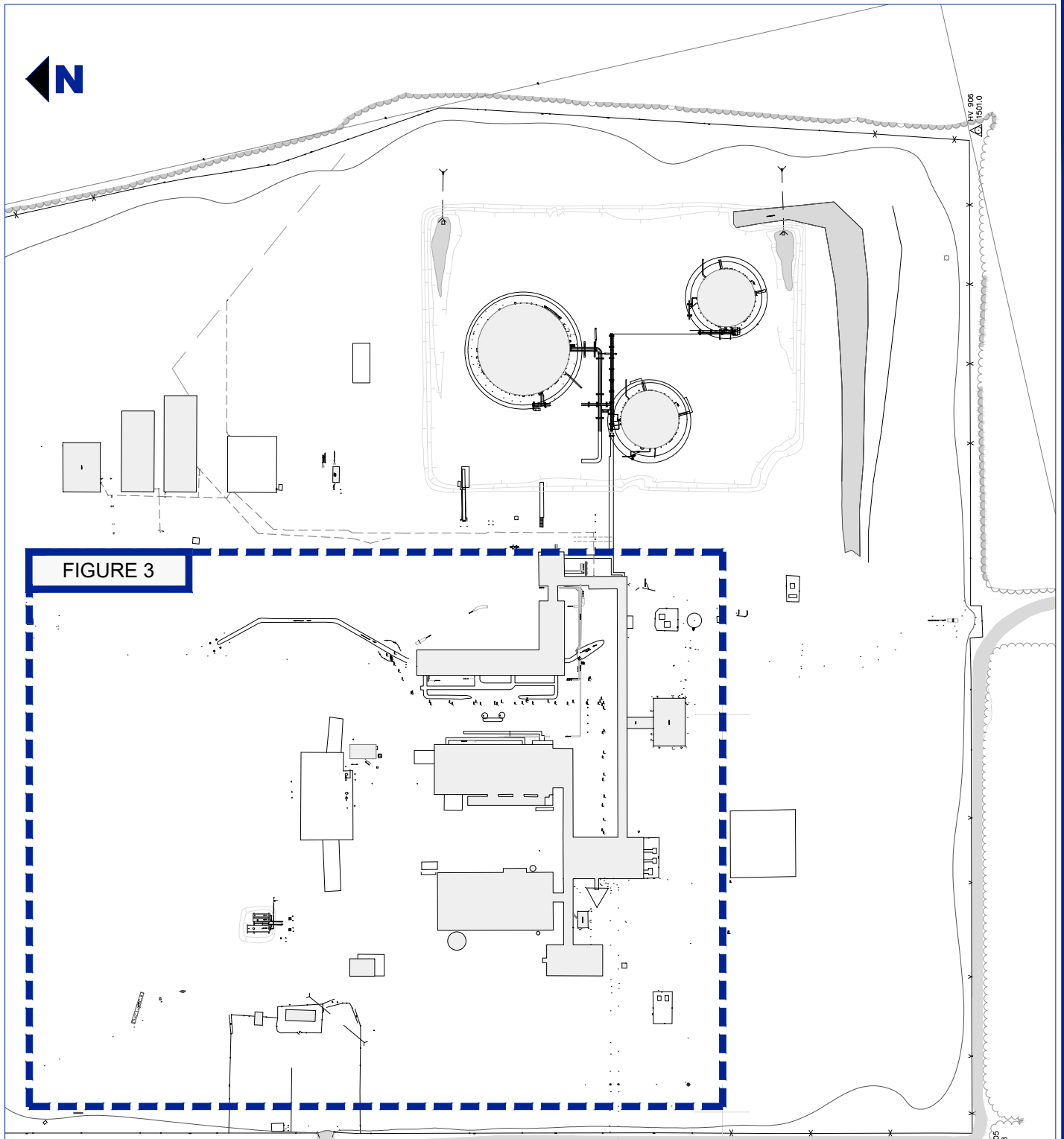


FIGURE 3

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

2019 GROUNDWATER MONITORING AND  
PRODUCT RECOVERY REPORT PUMP  
STATION 9 MAINLINE TURBINE SUMP

Drawing

SITE VICINITY MAP

Date December 2019

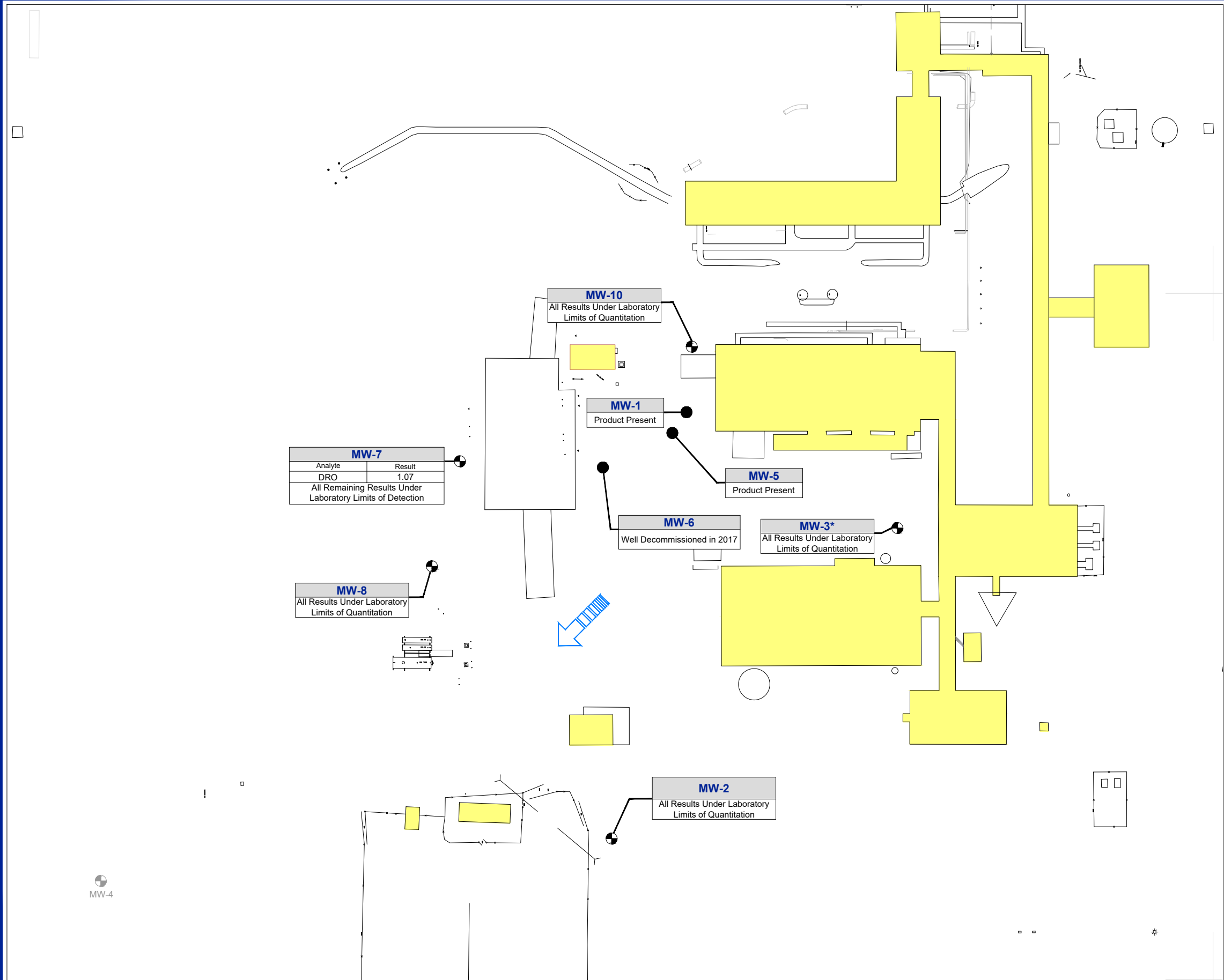
Scale 1" = 100 Feet

Fig. No.

File Name F2 PS09 MLT RPT\_19

Project No. 105.01288.19013

2



LEGEND

- MW-3 MONITORING WELL LOCATION
- MW-4 DESTROYED MONITORING WELL
- MW-1 RECOVERY WELL LOCATION
- ← APPARENT GROUNDWATER FLOW DIRECTION

SAMPLING RESULTS GUIDELINES

ABBREVIATIONS:

ADEC ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
BTEX BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES  
DRO DIESEL RANGE ORGANICS  
mg/L MILLIGRAMS PER LITER

NOTES:

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

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

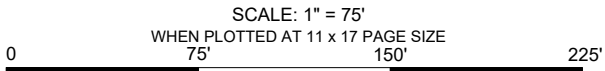
ONLY RESULTS ABOVE THE LABORATORY LIMIT OF QUANTITATION ARE PRESENTED ON THIS FIGURE

BOLD TEXT IN THE RESULT COLUMN INDICATES THE ANALYTE CONCENTRATION IS ABOVE ADEC CLEANUP LEVELS FOR DRO (1.5 mg/L) OR BENZENE (0.005 mg/L)

\* DUPLICATE SAMPLE MW-33 WAS COLLECTED AT THIS LOCATION.

Site	ALYESKA PIPELINE SERVICE COMPANY PUMP STATION 9 PIPELINE MILEPOST 548.7		
Report	2019 GROUNDWATER MONITORING AND PRODUCT RECOVERY REPORT PUMP STATION 9 MAINLINE TURBINE SUMP		
Drawing	GROUNDWATER MONITORING WELL LOCATIONS AND ANALYTICAL RESULTS		
Date	December 2019	Scale	1" = 75 Feet
File Name	F3 PS09 MLT RPT_19	Project No.	105.01288.19013
Fig. No.	3		

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





## TABLES

**Table 1** Groundwater and Free Product Elevations

**Table 2** 1998-2019 MW-1 Summary of Product Gauging and Recovery

**Table 3** 1998-2019 MW-5 Summary of Product Gauging and Recovery

**Table 4** 1998-2019 Annual Product Recovery Summary

**Table 5** 2019 Groundwater Analytical Results

**Table 6** Historic Groundwater Analytical Results

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

Well Name	Date	Well Elevation (feet above MSL) <sup>A</sup>	Depth to Groundwater (feet)	Groundwater Elevation <sup>B</sup> (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	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
	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

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

Well Name	Date	Well Elevation (feet above MSL) <sup>A</sup>	Depth to Groundwater (feet)	Groundwater Elevation <sup>B</sup> (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Free Product Thickness (feet)
<b>MW-1 Continued</b>	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
	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



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

Well Name	Date	Well Elevation (feet above MSL) <sup>A</sup>	Depth to Groundwater (feet)	Groundwater Elevation <sup>B</sup> (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Free Product Thickness (feet)
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
	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	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

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

Well Name	Date	Well Elevation (feet above MSL) <sup>A</sup>	Depth to Groundwater (feet)	Groundwater Elevation <sup>B</sup> (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Free Product Thickness (feet)
<b>MW-3 Continued</b>	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
<b>MW-4</b>	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
	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
<b>MW-5</b>	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

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

Well Name	Date	Well Elevation (feet above MSL) <sup>A</sup>	Depth to Groundwater (feet)	Groundwater Elevation <sup>B</sup> (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Free Product Thickness (feet)
<b>MW-5 Continued</b>	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
	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

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

Well Name	Date	Well Elevation (feet above MSL) <sup>A</sup>	Depth to Groundwater (feet)	Groundwater Elevation <sup>B</sup> (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Free Product Thickness (feet)
<b>MW-5 Continued</b>	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
	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
	10/14/2009	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
<b>MW-6</b>	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
	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

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

Well Name	Date	Well Elevation (feet above MSL) <sup>A</sup>	Depth to Groundwater (feet)	Groundwater Elevation <sup>B</sup> (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Free Product Thickness (feet)
<b>MW-6 Continued</b>	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
	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
<b>MW-7</b>	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

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

Well Name	Date	Well Elevation (feet above MSL) <sup>A</sup>	Depth to Groundwater (feet)	Groundwater Elevation <sup>B</sup> (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Free Product Thickness (feet)
<b>MW-7 Continued</b>	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
<b>MW-8</b>	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
	11/22/1998	1498.64	113.34	1385.30	N/A	N/A	0.00
	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
<b>MW-10</b>	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

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

Well Name	Date	Well Elevation (feet above MSL) <sup>A</sup>	Depth to Groundwater (feet)	Groundwater Elevation <sup>B</sup> (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Free Product Thickness (feet)
<b>MW-10 Continued</b>	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
	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

**Notes:**

- <sup>A</sup> 2001 and later elevation data based on December 2001 survey
- <sup>B</sup> 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 - 1998-2019 MW-1 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)
<b>1998 to 2010 Maximum Apparent Thickness<sup>A</sup></b>	11/22/1998	--	N/A	114.54	114.73	<b>0.19</b>
	10/7/1999	--	N/A	115.48	116.71	<b>1.23</b>
	12/28/2000	--	N/A	104.80	112.00	<b>7.20</b>
	7/19/2001	--	N/A	101.92	106.40	<b>4.48</b>
	6/10/2002	--	N/A	108.56	108.90	<b>0.34</b>
	6/3/2003	--	N/A	110.12	111.07	<b>0.95</b>
	6/2/2004	--	N/A	110.99	111.89	<b>0.90</b>
	5/31/2006	--	N/A	110.70	111.41	<b>0.71</b>
	6/2/2008	--	N/A	109.80	110.22	<b>0.42</b>
	7/17/2009	--	N/A	104.48	108.36	<b>3.88</b>
<b>2011</b>	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	<b>0.68</b>
		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
<b>2012</b>	8/9/2012	Initial Measurement	N/A	109.70	110.06	<b>0.36</b>
	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
		Deploy 2" Rigid Sorbent	0.081	109.70	109.73	0.03
	10/8/2012	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
		Deploy 2" Rigid Sorbent	0.162	109.80	109.81	0.01
	10/22/2012	Initial Measurement	0.005	109.78	109.89	0.11
		Deploy 2" Rigid Sorbent	0.162	109.82	109.83	0.01
<b>2013</b>	6/19/2013	Frozen	N/A <sup>B</sup>	NM	NM	NM
	6/27/2013	Frozen	N/A <sup>B</sup>	NM	NM	NM
	7/19/2013	Frozen	N/A <sup>B</sup>	NM	NM	NM
	8/2/2013	Frozen	N/A <sup>B</sup>	NM	NM	NM
	8/14/2013	Frozen	N/A <sup>B</sup>	NM	NM	NM
	8/29/2013	Initial Measurement	N/A	111.41	112.62	<b>1.21</b>
		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
<b>2014</b>	5/8/2014	Initial Measurement	N/A <sup>B</sup>	112.43	114.15	<b>1.72</b>
	6/3/2014	Initial Measurement	N/A <sup>B</sup>	112.57	114.28	1.71



**Table 2 - 1998-2019 MW-1 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)
<b>2014 Continued</b>	6/4/2014 <sup>D</sup>	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 <sup>D</sup>	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
	7/28/2014	Initial Measurement	N/A	112.85	113.63	0.78
		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
	8/7/2014	Initial Measurement	N/A	112.74	113.55	0.81
		1.66" Product bailer	0.20	112.80	113.13	0.33
	8/26/2014	Initial Measurement	N/A	112.53	113.48	0.95
		1.66" Product bailer	0.40	112.62	113.05	0.43
		2" SoakEase deployment 1	0.10	112.68	112.69	0.01
	9/23/2014	Initial Measurement	N/A	112.29	112.93	0.64
		1.66" Product bailer	0.25	112.32	112.72	0.40
		2" SoakEase (3 socks)	0.25	112.38	112.39	0.01
	10/9/2014	Initial Measurement	N/A	112.00	112.43	0.43
		2" SoakEase (3 socks)	0.55 <sup>C</sup>	112.01	112.43	0.42
<b>2015</b>	6/4/2015	Initial Measurement	N/A <sup>B</sup>	N/A	N/A	N/A
	7/3/2015	Initial Measurement	N/A <sup>B</sup>	N/A	N/A	N/A
	7/14/2015	Initial Measurement	N/A	111.48	112.06	0.58
	7/22/2015 <sup>D</sup>	Initial Measurement	N/A	111.44	111.92	0.48
		1.66" Product bailer		111.43	111.70	0.27
		2" SoakEase (2 socks)	0.26	111.43	111.72	0.29
	8/12/2015	Initial Measurement <sup>C</sup>	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 <sup>C</sup>	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 <sup>C</sup>	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 <sup>C</sup>	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
	6/1/2016	Frozen	N/A <sup>B</sup>	NM	NM	NM
<b>2016</b>	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 <sup>C</sup>	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 <sup>C</sup>	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 <sup>C</sup>	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 <sup>C</sup>	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 <sup>C</sup>	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
<b>2017</b>	5/25/2017	Frozen	N/A <sup>B</sup>	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 <sup>C</sup>	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 <sup>C</sup>	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 <sup>C</sup>	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 <sup>C</sup>	0.25	113.16	113.45	0.29
		2" SoakEase (3 socks)	0.18	113.10	113.14	0.04

**Table 2 - 1998-2019 MW-1 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)
<b>2017 Continued</b>	10/19/2017	Initial 2" SoakEase Recovery <sup>C</sup>	0.13	113.16	113.35	0.19
		2" SoakEase (3 socks)	0.25	113.18	113.19	0.01
		Initial Measurement	N/A	113.31	114.97	<b>1.66</b>
<b>2018</b>	6/2/2018 to 6/4/2018	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 <sup>C</sup>	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
		1.66" Product bailer	0.13	NM	NM	NM
	7/19/2018	2" SoakEase (3 socks)	0.11	113.53	113.64	0.11
		Initial Measurement	N/A	113.31	113.59	0.28
		1.66" Product bailer	0.26	NM	NM	NM
	8/2/2018	2" SoakEase (3 socks)	0.25	113.34	113.45	0.11
		Initial Measurement	N/A	113.29	113.99	0.70
		1.66" Product bailer	0.20	NM	NM	NM
	8/16/2018	2" SoakEase (8 socks)	0.96	113.28	113.41	0.13
		Initial Measurement	N/A	113.22	113.90	0.68
		1.66" Product bailer	0.26	NM	NM	NM
	9/4/2018	2" SoakEase (10 socks)	0.78	113.30	113.39	0.09
		Initial Measurement	N/A	113.10	113.31	0.21
		1.66" Product bailer	0.06	NM	NM	NM
	9/18/2018	2" SoakEase (3 socks)	0.12	113.14	113.15	0.01
		Initial Measurement	N/A	112.82	113.14	0.32
		2" SoakEase (2 socks)	0.20	112.88	112.90	0.02
<b>2019</b>	5/24/2019	Initial Measurement	N/A <sup>B</sup>	110.55	110.80	<b>0.25</b>
		Initial Measurement	N/A	110.45	110.68	0.23
	5/31/2019	2" Pig (5 socks)	0.50	ND	110.49	0.00
		Initial Measurement	N/A	110.55	110.67	0.12
	6/14/2019	2" Pig (4 socks)	0.26	110.56	110.57	0.01
		Initial Measurement	N/A	110.77	110.94	0.17
	6/28/2019	2" SoakEase (5 socks)	0.53	ND	110.70	0.00
		Initial Measurement	N/A	110.79	110.95	0.16
	7/12/2019	2" SoakEase (5 socks)	0.38	ND	110.82	0.00
		Initial Measurement	N/A	110.94	111.10	0.16
	7/31/2019	2" SoakEase (4 socks)	0.38	ND	110.95	0.00
		Initial Measurement	N/A	111.04	111.20	0.16
	8/9/2019	2" SoakEase (3 socks)	0.33	ND	111.07	0.00
		Initial Measurement	N/A	111.19	111.35	0.16
	8/30/2019	2" SoakEase (3 socks)	0.25	ND	111.20	0.00
		Initial Measurement	N/A	110.98	111.10	0.12
	9/13/2019	2" SoakEase (2 socks)	0.25	ND	111.03	0.00
		Initial Measurement	N/A	111.30	111.50	0.20
	9/27/2019	2" SoakEase (2 socks)	0.19	ND	111.33	0.00
		Initial Measurement	N/A	110.93	111.00	0.07
	10/14/2019	2" SoakEase (2 socks)	0.08	ND	110.94	0.00
		Initial Measurement	N/A	110.77	110.81	0.04
	10/30/2019	2" SoakEase (2 socks)	0.06	ND	110.77	0.00
<b>Product Recovery Summary</b>	<b>Year</b>		<b>Gallons</b>	<b>Percent of 2011-2019 Total Recovered Volume</b>		
	<b>1998-2010<sup>A</sup></b>		<b>N/A</b>	<b>N/A</b>		
	<b>2011</b>		<b>0.8</b>	<b>2%</b>		
	<b>2012</b>		<b>1.7</b>	<b>5%</b>		
	<b>2013</b>		<b>8.2</b>	<b>25%</b>		
	<b>2014</b>		<b>4.7</b>	<b>14%</b>		
	<b>2015</b>		<b>1.3</b>	<b>4%</b>		
	<b>2016</b>		<b>2.6</b>	<b>8%</b>		
	<b>2017</b>		<b>4.2</b>	<b>13%</b>		
	<b>2018</b>		<b>6.0</b>	<b>18%</b>		
	<b>2019</b>		<b>3.2</b>	<b>10%</b>		
	<b>Total 2011 to 2019</b>		<b>32.7</b>	<b>--</b>		

**Notes:**

- 0.01** BOLD values indicate the maximum measured product thickness for each year.
- <sup>A</sup> Product recovery canisters were operated for recovery of product during this period, recovery volumes were not noted for individual wells.
- <sup>B</sup> Ice plug above product depth prevented canister from being deployed for recovery.
- <sup>C</sup> Product measurement following removal of sorbent sock.
- <sup>D</sup> Product measurements during baildown test.

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 - 1998-2019 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)
<b>1998 to 2010 Maximum Apparent Thickness<sup>A</sup></b>	12/1/1998	--	--	110.83	111.62	<b>0.79</b>
	9/16/1999	--	--	111.51	113.56	<b>2.05</b>
	12/29/2000	--	--	100.90	109.20	<b>8.30</b>
	7/19/2001	--	--	101.30	109.30	<b>8.00</b>
	6/10/2002	--	--	108.53	109.60	<b>1.07</b>
	6/3/2003	--	--	110.10	110.85	<b>0.75</b>
	6/2/2004	--	--	110.94	111.72	<b>0.78</b>
	6/20/2005	--	--	109.40	111.65	<b>2.25</b>
	5/31/2006	--	--	110.64	111.15	<b>0.51</b>
	5/30/2007	--	--	108.72	108.94	<b>0.22</b>
	7/1/2008	--	--	110.27	110.49	<b>0.22</b>
<b>2011</b>	7/18/2009	--	--	104.42	108.25	<b>3.83</b>
	10/12/2010	--	--	107.12	108.12	<b>1.00</b>
	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	<b>0.19</b>
		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
<b>2012</b>	6/5/2012	Initial Measurement	N/A <sup>B</sup>	109.68	110.05	<b>0.37</b>
	6/20/2012	Initial Measurement	N/A <sup>B</sup>	109.77	110.13	0.36
	7/5/2012	Initial Measurement	N/A <sup>B</sup>	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
	10/22/2012	Initial Measurement	1	109.75	109.85	0.1
<b>2013</b>	6/19/2013	Initial Measurement	N/A <sup>B</sup>	111.00	111.66	0.66
	6/27/2013	Initial Measurement	N/A <sup>B</sup>	111.10	112.07	<b>0.97</b>
	7/19/2013	Frozen	N/A <sup>B</sup>	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 - 1998-2019 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 <sup>B</sup>	112.48	114.43	1.95
	6/4/2014 <sup>D</sup>	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 <sup>D</sup>	Final Measurement	N/A	112.59	113.24	0.65
	7/9/2014	Initial Measurement	N/A <sup>B</sup>	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 <sup>B</sup>	111.04	111.70	0.66
	7/3/2015	Initial Measurement	N/A <sup>B</sup>	N/A	N/A	N/A
	7/14/2015	4" SoakEase (1 sock)	0.16 <sup>C</sup>	N/A	N/A	N/A
		Initial Measurement	N/A	111.31	112.44	1.13
	7/21/2015 <sup>D</sup>	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 <sup>C</sup>	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 <sup>C</sup>	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 <sup>C</sup>	N/A	111.58	112.98	1.40
		3.33" Product bailer, 4" SoakEase	2.1	111.90	112.33	0.43
	10/1/2015	Initial Measurement <sup>C</sup>	N/A	111.79	113.22	1.43
		3.33" Product bailer, 4" SoakEase	4.25	112.11	112.18	0.07
2016	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 <sup>C</sup>	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 <sup>C</sup>	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 <sup>C</sup>	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 <sup>C</sup>	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 <sup>C</sup>	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 <sup>B</sup>	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 <sup>C</sup>	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 <sup>C</sup>	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 - 1998-2019 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 <sup>C</sup>	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 <sup>C</sup>	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	
		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		
2018	6/2/2018 to 6/4/2018	Initial 2" SoakEase Recovery <sup>C</sup>	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	
		4" SoakEase (2 socks)	0.38	112.78	112.79	0.01	
Initial Measurement		N/A <sup>B</sup>	110.45	110.78	0.33		
5/31/2019		Well Thawing Trip	N/A <sup>B</sup>	NM <sup>B</sup>	NM <sup>B</sup>	NM <sup>B</sup>	
2019	5/24/2019	Initial Measurement	N/A	110.46	110.78	0.32	
		4" SoakEase (4 socks)	1.62	110.48	110.62	0.14	
	6/14/2019	Initial Measurement	N/A	110.65	111.03	0.38	
		4" SoakEase (8 socks)	4.56	110.74	110.82	0.08	
	6/28/2019	Initial Measurement	N/A	110.64	111.02	0.38	
		4" SoakEase (7 socks)	3.75	110.78	110.81	0.03	
	7/12/2019	Initial Measurement	N/A	110.80	111.20	0.40	
		4" SoakEase (7 socks)	2.85	110.95	110.96	0.01	
	7/31/2019	Initial Measurement	N/A	110.92	111.28	0.36	
		4" SoakEase (6 socks)	2.63	111.11	111.16	0.05	
	8/9/2019	Initial Measurement	N/A	111.07	111.47	0.40	
		4" SoakEase (6 socks)	2.91	111.20	111.24	0.04	
	8/30/2019	Initial Measurement	N/A	110.89	111.15	0.26	
		4" SoakEase (3 socks)	0.94	ND	111.04	0.00	
	9/13/2019	Initial Measurement	N/A	111.15	111.60	0.45	
		4" SoakEase (4 socks)	2.03	111.39	111.42	0.03	
	9/27/2019	Initial Measurement	N/A	110.84	111.03	0.19	
		4" SoakEase (2 socks)	0.71	110.90	110.93	0.03	
	10/14/2009	Initial Measurement	N/A	110.62	110.75	0.13	
		4" SoakEase (2 socks)	0.56	ND	110.66	0.00	
	Product Recovery Summary	Year		Gallons	Percent of 2011-2019 Total Recovered Volume		
		1998-2010 <sup>D</sup>		N/A	N/A		
2011		6.7	6%				
2012		6.0	5%				
2013		20.1	17%				
2014		10.8	9%				
2015		13.5	12%				
2016		14.6	13%				
2017		10.1	9%				
2018		11.0	10%				
2019 <sup>E</sup>		22.5	20%				
Total 2011 to 2019		115.4	--				

**Notes:**

- 0.01** BOLD values indicate the maximum measured product thickness for each year.
- <sup>A</sup> Product recovery cannisters were operated for recovery of product during this period, recovery volumes were not noted for individual wells.
- <sup>B</sup> Ice plug above product depth prevented canister from being deployed for recovery.
- <sup>C</sup> Product measurement following removal of sorbent sock.
- <sup>D</sup> Product measurements during baildown test.
- <sup>E</sup> Total volume of recovered product is considered biased-high due to separate-phase water recovered with product using 4-inch sorbent socks.

**Table 3 - 1998-2019 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)
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**Notes Continued:**

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 - 1998-2019 Annual Product Recovery Summary  
PS09 Mainline Turbine Sump**

Product Recovery Summary	Period	Volume Recovered (gallons)	Percent of Total Recovered Volume <sup>A</sup> (gallons)	Number of Recovery Events	Recovery Volume per Event (gallons)
	1998-2010 <sup>B</sup>	1,085	87%	N/A	N/A
	2011 <sup>C</sup>	11.2	0.9%	4	2.8
	2012 <sup>D</sup>	8.7	0.7%	4	2.2
	2013 <sup>D</sup>	30.8	2.5%	4	7.7
	2014 <sup>E</sup>	16.2	1.3%	7	2.3
	2015 <sup>E</sup>	15.1	1.2%	5	3.0
	2016 <sup>E</sup>	17.8	1.4%	10	1.8
	2017 <sup>E</sup>	14.3	1.2%	6	2.4
	2018 <sup>E</sup>	17.0	1.4%	9	1.9
	2019 <sup>F, G</sup>	25.7	2.1%	11	2.3
	<b>Grand Total</b>	<b>1,242</b>	<b>100%</b>	<b>60</b>	<b>--</b>

**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 in 2017.
- 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 Product recovery using Durham Geo Slope Indicator SoakEase™ and Pig® sorbent socks.
- G Total volume of recovered product is considered biased-high due to separate-phase water recovered with product using 4-inch sorbent socks.

**Table 5 - 2019 Groundwater Analytical Results  
PS09 Mainline Turbine Sump  
(All results in mg/L)**

Analytical Method and Analyte	ADEC 2018 Groundwater Cleanup Level <sup>A</sup>	Sample Locations <sup>B</sup>											
		MW-2 30-May-19 1199370006		MW-3 30-May-19 1199370001 (Primary)		MW-33 30-May-19 1199370002 (Duplicate)		MW-7 30-May-19 1199370005		MW-8 30-May-19 1199370004		MW-10 30-May-19 1199370003	
		Conc. <sup>C</sup>	Flag	Conc. <sup>C</sup>	Flag	Conc. <sup>C</sup>	Flag	Conc. <sup>C</sup>	Flag	Conc. <sup>C</sup>	Flag	Conc. <sup>C</sup>	Flag
DRO by Method AK102													
Diesel Range Organics	1.5	0.285	J	0.304	J	0.272	J	1.08	=	0.298	J	0.331	J
BTEX by Method SW8021B													
Benzene	0.0046	[0.00025]	ND	[0.00025]	ND	[0.00025]	ND	[0.00025]	ND	[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) <sup>D</sup>	0.19	[0.001]	ND	[0.001]	ND	[0.001]	ND	[0.001]	ND	[0.001]	ND	[0.001]	ND

**Notes**

- A This cleanup level corresponds to ADEC groundwater cleanup levels, 18 AAC 75.345, Table C, revised as of October 27, 2018.
- 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 right.

**Abbreviations**

--	not applicable or screening criteria does not exist for this compound	DL	detection limit	mg/L	milligrams per liter
AAC	Alaska Administrative Code	DRO	diesel range organics		
ADEC	Alaska Department of Environmental Conservation	LOD	limit of detection		
BTEX	benzene, toluene, ethylbenzene, total xylenes	LOQ	limit of quantitation		



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 <sup>A</sup>			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 <sup>B</sup>			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 Groundwater Cleanup Level <sup>C</sup>			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 <sup>E</sup>	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 <sup>D</sup>	11/7/1997	--	ND	ND	ND	ND	0.14	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	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	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	
	MW-11 <sup>D</sup>	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	
	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	
	MW-11 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2D <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-29 <sup>D</sup>	6/6/2016	0.238 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-2	6/7/2017	0.287 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-2	5/30/2019	0.285 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 <sup>A</sup>			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 <sup>B</sup>			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 Groundwater Cleanup Level <sup>C</sup>			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	--	--	
	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 [0.002]	--	--	
	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 <sup>D</sup>	5/30/2019	0.272 J	ND [0.00025]	ND [0.0005]	ND [0.0005]	ND [0.001]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
MW-4 <sup>F</sup>	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	ND
	MW-4	9/20/2001	ND	ND	0.00285	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND
	MW-4	11/16/2001	0.84	ND	0.00103	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND
	MW-4	6/11/2002	0.649	ND	0.0285	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND
	MW-4	10/5/2002	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	MW-4	6/25/2003	ND [0.422]	ND	0.00223	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND
	MW-4	1><																							

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 <sup>A</sup>			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 <sup>B</sup>			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 Groundwater Cleanup Level <sup>C</sup>			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-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 <sup>D</sup>	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 <sup>D</sup>	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-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	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--
	MW-8	10/17/2005	0.167	0.00091	0.0068	0.00073	0.00316	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--
	N/A	June 2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	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 [0.0.																				

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 <sup>A</sup>			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 <sup>B</sup>			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 Groundwater Cleanup Level <sup>C</sup>			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	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-10	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-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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	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 <sup>D</sup>	6/11/2004	0.776	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-10	10/19/2004	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	FD-1 <sup>D</sup>	10/19/2004	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-10	6/28/2005	0.497	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--
	MW-Dup <sup>D</sup>	6/28/2005	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--
	MW-10	10/16/2005	0.141	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--
	MW-12 <sup>D</sup>	10/16/2005	0.164	ND	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]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-Dup <sup>D</sup>	6/1/2006	ND [0.3]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-10	10/6/2006	ND [0.311]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-10	7/18/2007	0.19 J	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-10	10/5/2007	ND [0.313]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-10	7/24/2008	0.245 J J	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.003]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND [0.002]	--	--
	MW-10	7/17/2009	ND [0.714]	ND [0.0004]	ND [0.001]	ND [0.001]	ND [0.00																		

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 <sup>A</sup>			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 <sup>B</sup>			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 Groundwater Cleanup Level <sup>C</sup>			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	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]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**Notes:**  
0.005 Shaded results exceeded ADEC 2015 cleanup levels; see Note <sup>A</sup> below.  
1.71 Results in **bold** exceed ADEC 2016 or 2018 cleanup levels; see Note <sup>B</sup> below.  
<sup>A</sup> Sample results for 2015 and prior years were compared with ADEC 2015 cleanup levels (18 AAC 75), as revised on June 17, 2015  
<sup>B</sup> 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.  
<sup>C</sup> Sample Results for 2017 and on were compared with ADEC 2018 cleanup levels (18 AAC 75), revised as of October 27, 2018. Concentration units of mg/L are used for consistency with historical data.  
<sup>D</sup> Duplicate of preceding sample  
<sup>E</sup> Sampling discontinued after 1997 event due to the presence of free product in the well.  
<sup>F</sup> Well destroyed in 2005.  
ND [0.005] Analytes that were not detected in 2012-2017 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, ethylbenzen, 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

## APPENDIX A

### FIELD LOGBOOK

# **2019 Groundwater Monitoring and Product Recovery Report Pump Station 9 Mainline Turbine Sump**

**Alyeska Pipeline Service Company**  
P.O. Box 196660  
3700 Centerpoint Drive  
Anchorage, Alaska 99519-6660

December 2019

<sup>2</sup> Carl Benson 17509 well show, 5/24/19, Rain  
0700 leave Fairbanks, Call in departure N  
17509 Security @ 787-4907.

0855 Arrive @ 17517. Sign work permit  
Set up generators @ MW-1 & MW-5 N  
start show.

0930 Thawing started @ MW-1 & MW-5 also  
tailgate Safety form completed.  
Tested well caps prior to starting generators.  
Both heat trace lines were frozen  
in the wells.

1200 Heat trace lines are now free from ice in  
wells.

1630 Testing wells for product:

<u>well</u>	<u>DIW(ft)</u>	<u>DIW(ft)</u>	<u>Product Thickness</u>
MW-1	110.55	110.80	0.25'
MW-5	110.45	110.78	0.33'

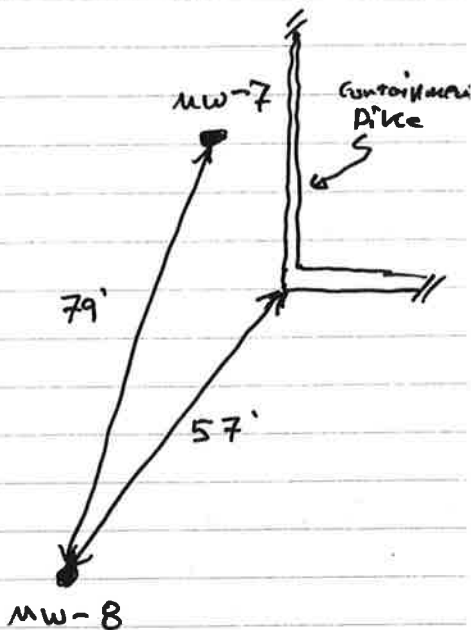
Both wells have ice plugs remaining:  
4' bgs @ MW-1 & 6' bgs @ MW-5. The  
interface probe struck once while  
removing it from MW-5.

1720 Site packed up, monuments closed,  
work permit closed, Returning to  
Fairbanks.

1915 Arrive in Fairbanks & unpack car  
End of Field day — Carl Benson

Carl Benson, Notes update 5/28/2019

0945 - Moving survey ties taken in 2015 for MW-8.



Wells MW-7 and MW-2 are setchip monuments. These were located on Friday, 5/24/19. Wells MW-3 and MW-10 can be located using figure location and metal detector. MW-8 required survey ties to locate.



Carl Sorenson

- 5/30/2019 Ryan Carney with 1309 wells clear  
0600 - gather gear @ office & pack truck  
mileage @ start 2579002
- 0630 - Depart Railbouds for P809
- 0800 Arrive @ P809 & complete work  
permits, Collaborating YSE & Safety Party
- 0930 Setting up to purge @ MW-8
- 1030 well dry, moving to MW-7.
- 1045 Set up @ MW-7 to purge well
- 1130 well dry @ 6.5 gallons, moving to  
MW-2.
- 1145 Setting up @ MW-2.
- 1230 well MW-2 purged dry @ 13  
gallons, moving to MW-3.
- 1300 Brad Rogers had two vehicles  
moved to access MW-3. Purging  
well.
- 1345 well MW-3 Sampled for DRD &  
BTX. Moving to MW-10.  
Duplicate collected @ MW-3 & MW-3  
@ same time. (1345).
- 1445 Well MW-10 Sampled for  
DRD & BTX.
- 1500 Setting up @ MW-8 to sample  
limited recharge. Sample  
@ MW-8 collected @ 1520.

Carl Benson

5/30/2011 Ryan Carsey-willis PS09 wells

5

Well MW-7 Sampled @ 1540.

for DRD & BTEX. Well MW-2

Sampled @ 1600 for DRD & BTEX.

Contracted Brad Gordon to transfer  
Purge water to Sump.

1630 Permit closed & leaving, 1509.  
Arrive in Fairbanks.

Mileage = 59,229

1800 Return to Fairbanks & call in  
Arrival to PS09 security.

1830 Car unloaded & files updated.  
End of field day

Carl Benson

Rite in the Rain.

- 6 5/31/2019 Ryan Courtney works P609 Product Re  
0700 met at office & mobilized gear from  
office and storage unit.
- 0800 Dropped off samples from water  
sampling on 5/31/2019 at SGS
- 0815 Leaving Portland
- 1030 Arrive at P609 and sign work  
permit.
- 1045 Checked wells for ice, both have  
plugs, and started groundwater  
4 heat traces.
- 1240 Checked wells for ice. No ice in  
MW-1, Ice plug in MW-5 @  
6.5' BTOC. Put both heat  
traces in MW-5.
- Product in MW-1 @ 110.45', DTW:  
110.68'. Product layer  $\approx 0.23'$ .
- 1525 Continuing Work @ MW-5  
~~at~~ 4 sorbent socks have been deployed  
in MW-1. Product layer 6.01' @  
110.48' BTOC. Deployed a 5<sup>th</sup>  
sock after measurement taken.
- 1550 5<sup>th</sup> sock removed from MW-1  
~ 1/3 coated w/product. Interface not  
used & no product <sup>CS</sup> detected.  
Water detected @ 110.48' BTOC.  
1<sup>st</sup> 3 socks were full, #4 was 1/2 coated.

5/31/2014 PS09 Product Recovery: 7

Thru stopped @ NW-S. Ice plug  
depth = 8.6' BFOC.

Oiled Surbents taken to Sleep Haulback  
and Lead tech notified to close  
permit Permit Signed out  
1605 Leaving PS09.

1825 Arrive @ Port Scales & Snow Gear  
mileage 2

Note - Interface probe could not be  
deployed past ice plug to gauge product  
in NW-S. Approx 3.75 <sup>liters</sup> ~~liters~~ <sup>UNITS</sup> of product removed  
1830 End of Field Day

Carlson

- 8 6/14/19 Ryan Guey-Willis P509 PRODUCT RECOVERY  
0830 TAILGATE + GRAB GEAR FROM FBX OFFICE  
0930 PICKED TRUCK 120-1104 FROM VANHOEN  
SHOP AND HEAD TO STORAGE TO LOAD UP  
1045 LEAVE FBX FOR P509.  
1249 ARRIVE AT P509.  
1300 PERMIT SIGNED.  
1311 ~~WELL~~ WELLS UNCOVERED AND HEAT-  
TRACE REMOVED. PERFORMING BUMP  
CHECK ON PID. PID READS 97.8 ppm WITH  
A BOTTLE OF 100PPM ISOBUTYLENE.  
1315 BREATHING AIR CHECK AROUND MW-1 + MW-2  
0.0 ppm.  
1325 MW-5: SOME ICE IN WELL CASING @ 8.4 FT BTD  
DTP=110.46 FT  
DTW=110.78 FT  
PRODUCT THICKNESS = 0.32 FT  
1335 MW-5 WILL NEED MORE THAWING WITH  
HEAT TRACE  
1342 MW-1 - CHECKING PRODUCT THICKNESS.  
DTP=110.55 FT  
DTW=110.67 FT  
PRODUCT THICKNESS = 0.12 FT  
RECOVERING PRODUCT WITH 2" AIG-BRAND  
ABSORBANT SOCKS.  
PID READING WHILE RECOVERING 1<sup>st</sup> SOCK  
WAS 0.0 PPM

6/14/19 Ryan Conway-WITL PSA PRODUCT RECOVER  
MW-1 RECOVERY  
 $\frac{2}{3} + \frac{1}{2} + \frac{2}{3} + \frac{1}{6}$  SOAK EASE SOLVENT

✓ 6/14/19

1454 ~2 FT ICE PLUG-IN MW-5.  
HOLE IN MIDDLE ~2"

ATTEMPTING TO USE SOCK

1458 SOCK WOULD NOT PASS THROUGH  
ICE HOLE-STUCK - HEAT TRACE BOX IN

1526 MW-1

OTP = 110.56

OTW = 110.57

PRODUCT THICKNESS = 0.01 FT

1630 MW-5 IS ICE-FREE PULLED ICE PLUG  
OUT W/ SOCK

MW-5 RECOVERY W/ 4" SOAK EASE SOCKS  
 $\frac{1}{2} + \frac{2}{3} + \frac{1}{2} + \frac{1}{2}$

1725 PRODUCT THICKNESS

OTP = 110.48 FT

OTW = 110.62 FT

PRODUCT THICKNESS = 0.14 FT

✓ 6/14/19

1730 PACKED UP TO FINISH OUT PERMIT

1740 LEAVE PSA FOR FBX.

1952 ASK TRUCK BACK AT DIFF

6/14/19

*Ret. 6/14/19*

<sup>10</sup> 6/20/19 Ryan Gusey Willis PSQ PRODUCT RECOVERY  
0600 LEAVE TO PICK UP ASB TRUCK & PRODUCT RECOVERY

TOTE

0630 GOT TRUCK #120-1104 FROM DIFF  
START MILEAGE 60221. HEADED TO CASTLE RX  
TO GRAB REST OF GEAR.

0653 LEAVE FOR PSQ.

0850 ARRIVE AT PSQ. SIGNING WORK PERMIT  
0907 ON SITE AT MW-2 & MW-5. UNCOVERING AN  
OPENING UP TO MEASURE PRODUCT THICKNESS.

0920 MW-5

DT P = 110.65 FT

DTW = 111.03 FT

PRODUCT THICKNESS = 0.38"

PLACING 4" SOAK EASE PRODUCT RECOVERY  
SOCK IN WELL.

RECOVERED PRODUCT: 1 + 1 + 1 + 1 + 1 + 1/2

SUB TOTAL = 5.5 SOCKS

0939 MW-2

DT P = 110.77 FT

DTW = 110.94 FT

PRODUCT THICKNESS = 0.17 FT

PLACING 2" SOAK EASE PRODUCT RECOVERY SOCK IN  
WELL

RECOVERED PRODUCT: 7/8 + 1/2 + 3/4 + 7/8 + 1/2  
TOTAL = 2.125 SOCKS

LAST 2 SOCKS  
WATER + SMALL  
COATING OF PRODUCT

6/28/19 Lynn Cursey - with FROM PRODUCT RECOVERY

1113 MEASURE MW-2

DT P = 110A

DTW = 107.7 <sup>ft</sup> 110.70 ft

PRODUCT THICKNESS = 0 ft

1125 MEASURE MW-5

DT P = 110.73 ft

DTW = 110.81 ft

PRODUCT THICKNESS = 0.08 ft

• DEPLOYING ADDITIONAL SOCK

RECOVERED PRODUCT:  $1/2 + 1/3$

1200 MEASURE MW-5

DT P = 110.74 ft

DTW = 110.82

PRODUCT THICKNESS = 0.08 ft

1210 <sup>119</sup> TOTAL SOCKS FROM MW-5 =  $6 \frac{1}{3}$

1210 PACKING UP

1225 PERMIT SIGNED OUT

1230 LEAVE FOR FAIRBANKS

1426 BACK TO FAIRBANKS. AT THE DIP TO DROP OFF TRUCK. END MILEAGE 60434.

1453 BACK AT OFFICE. FINISHING PAPERWORK POST TRIP.

END

6/28/19



7/31/2019 Carl Benson Mt Sup 12509 Prod recovery

0700 Leave Pennbunks for 12509

0910 arrive EPS09 & generating permit

0930 Permit signed & heading to wells.

Well	DTP (ft)	DW (ft)	Product Column
MW-5	110.80	111.20	0.40
MW-1	110.94	111.10	0.16

1020 4" & 2" Socks deployed?

MW-5 Socks deployed =  $\frac{2}{3} + \frac{3}{4} + \frac{2}{3} + \frac{2}{3} + \frac{1}{2} + \frac{1}{3} + \frac{1}{4}$

Total Recovery = 3.8 - 4" Socks

MW-1 Socks deployed =  $\frac{2}{3} + \frac{1}{2} + \frac{1}{4}$  + trace

Total Recovery = 1.5 - 2" Socks

All Socks used = "Sock Base."

Well	DTP (ft)	DW (ft)	Product Column
MW-1	MT	110.95	Ø
MW-5	110.95	110.96	0.01'

1340 packing up site and disposing of 2 oily waste bags in oily waste dumpster.

1350 permit closed out & returning to Pennbunks.

1630 Arrive Pennbunks

1730 unpacked car and returned truck  
End of Day

Carl Benson

Ritterman

50+  
RAIN

148/9/19 Roadway-Water Mkt RPA PROD. Recovery

0700 AT SHED TO PICK UP CEAR FOR RPA

0800 LEAVE FBX FOR RPA

1000 ALHOFAT RPA. GETTING PERMIT.

1010 PERMIT SIGNED. SETTING UP FOR INITIAL MEASUREMENT

1018 MWS

$$\left. \begin{array}{l} DTP = 110.92' \\ DTW = 111.28' \end{array} \right\} \text{PROD. THICKNESS} = 0.36''$$

1030 MW-1

$$\left. \begin{array}{l} DTP = 111.04' \\ DTW = 111.20' \end{array} \right\} \text{PROD. THICKNESS} = 0.16''$$

• DEPLOYING SOAKFAST 4" SOCKS IN MWS AND  
2" SOAKFAST SOCKS IN MW-1.

RECOVERY

MW-5	MW-1
$\frac{3}{4} + 1 + 1 + \frac{1}{2}$	$\frac{5}{6} + \frac{1}{4} + \frac{1}{4}$
$+ \frac{1}{4} + \text{TRAC}$	
3.5 SOCKS	1.33 SOCKS
TOTAL	TOTAL

1136 MW-1

DTP = ~~111.07~~ NON-DETECT

DTW = 111.07'

1204 MW-5 DTP = 111.11', DTW = 111.16 ft,

PRODUCT THICKNESS = 0.05'

• PACKING UP ~~the~~

8/9/19 Roussey-Willis MFT PRODUCT RECOVERY CLOUDY

1230 PERMIT CLOSED OUT

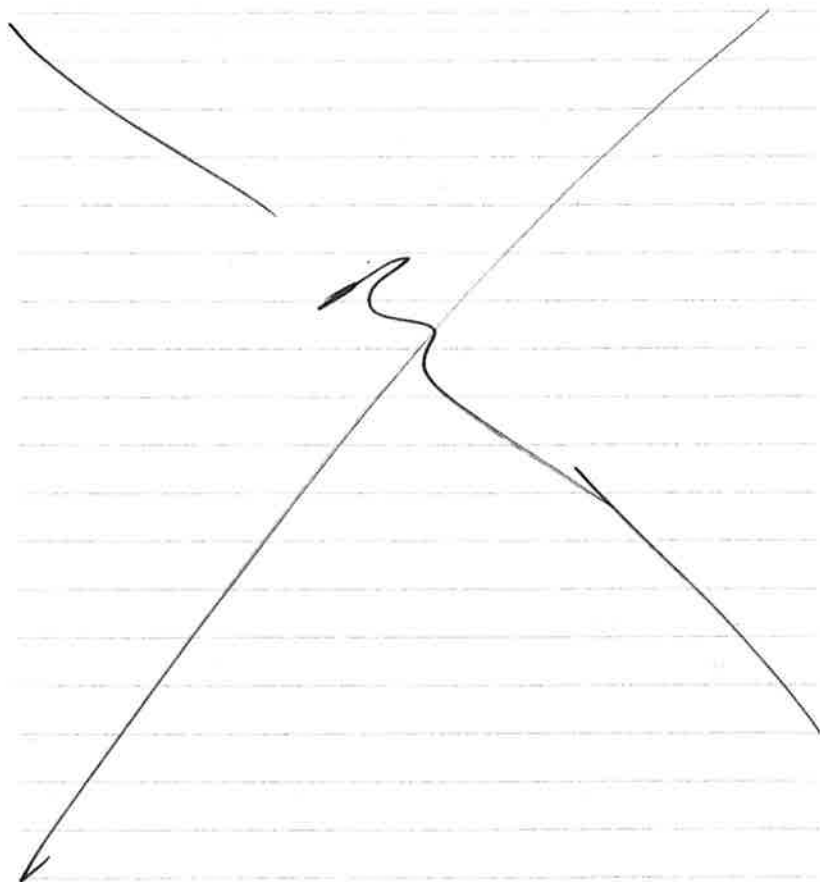
1235 HEAD BACK TO FBX

1448 BACK TO FAIRBANKS

FILL UP TRUCK. + DROP EQUIP @

STLAGS FSHOP.

1515 BACK TO OFFICE / DAY END



16 8/30/19 RUCORRY-WILLIS MLV PRODUCT RECOVERY SUM

0620 LEAVE TO PICK UP TRUCK

0650 CALL INTO RUCORRY TO START TRIP

HEAD TO PSCM

0845 AT PSCM

0850 PERMIT SIGNED + TAILGATE

	MLV	DTP (FE)	DTW (FE)	PRODUCT THICKNESS (F)
2" MW-1		111.19	111.35	0.26
4" MW-5		111.07	111.47	0.47

2" + 4" SOAK EASE SOCKS DEPLOYED

MW-1 SOCKS DEPLOYED:  $0.75 + 0.25 + \text{TRAC}$

(FULL SOCK + TRACE RECOVERED)

MW-5 SOCKS DEPLOYED:  $1 + \frac{3}{4} + \frac{7}{8} + 1 + \frac{1}{4} +$

	DTP (FE)	DTW (FE)	PRODUCT THICK
1014 MW-1	LOW-DETECT	111.20	
1040 MW-5	111.20	111.24	0.04

1042 CLEAN UP.

1115 PERMIT CLOSED OUT. HEADED BACK TO FAIRBANKS

1317 BACK TO DIFF. DROP OFF TRUCK.

1340 BACK TO OFFICE. DAY END.

9/13/19 R. GUNST-WILKS MLV PRODUCT RECOVERY

OVERCAST  
50F

17

0700 LEAVE TO PICK UP TRUCK

0730 NOTIFY BSA SECURITY OF TRUCK TO PSON

0918 AT PSON GETTING PERMIT

0939 PERMIT ISSUED. SETTING UP FOR PRODUCT RECOVERY

DATE	MW	DTP (Ft)	DTW (Ft)	PRODUCT THICKNESS (Ft)
2" MW-1		110.98	111.10	0.12
4" MW-5		110.89	111.12 <sup>plus</sup> 111.15	0.26

2" AND 4" SOAKAGE SACKS DEPLOYED

RECOVERED PRODUCT

MW-1: 1 + TRACE

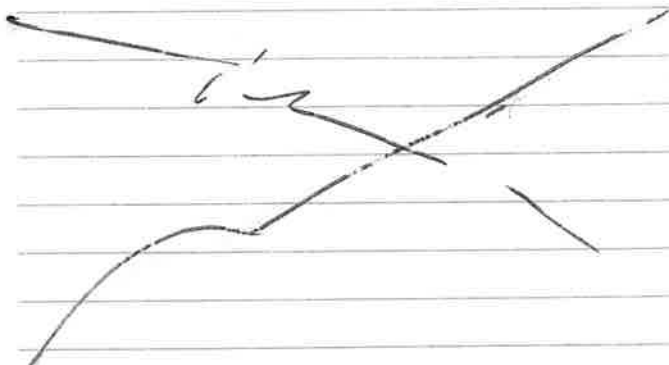
MW-5: 3/4 + 1/2 + TRACE

WELL TIME	DTP	DTW	PRODUCT THICKNESS (Ft)
1035 MW-1	NON DETECT	111.03	—
1043 MW-4	NON DETECT	111.04	—

1045 CLEANING UP.

1115 PERMIT CLOSED HEAD BACK TO FAIRBANKS

1315 BACK TO FAIRBANKS. FILLED TRUCK. PARKED AT ACF



18 01/27/19 L. CANNY-WILLIS RSN PRODUCT RECOVERY 20 P

0630 FINAL GEAR CHECK. HEAD TO PICK UP TRUCK

0700 TRUCK RACKED CALL RSN SECURITY FOR TRAVEL

• HEAD TO RSN

0850 AT RSN

0900 PERMITS SIGNED. SETTING UP FOR RECOVERY

AT MW-1 + MW-5

CR15	MW	DT P (ft)	DTW (ft)	PROD. THICKNESS (ft)
	MW-1	111.30	111.50	0.20
	MW-5	111.65	111.60	0.45

SOAK EASE SOCKS DEPLOYED. 2" FOR MW-1 AND  
4" FOR MW-5

RECOVERED PRODUCT:

MW-1:  $\frac{3}{4}$  + TRACE

MW-5: 1 + 1 +  $\frac{1}{2}$  +  $\frac{1}{8}$  (TRACE)

TIME	MW	DT P (ft)	DTW (ft)	PROD. THICKNESS (ft)
1010	MW-1	NON DETECT	111.33	
1030	MW-5	111.39	111.42	0.03

• CLEAN UP SITE.

1100 SITE CLEANED UP. MOVING ONLY WASTE BAG OVER TO OFFICE  
LOCATION.

1115 PERMIT CLOSED. HEAD BACK TO FAIRBANKS

1210 BACK TO THE D.F. DROP TRUCK OFF. CALL RSN SECURITY.

1330 BACK TO OFFICE.

CHIEF  
#20F

10/14/14 R. QUINN - with PSQ PRODUCT RECOVERY  
0630 FINAL GEAR CHECK. PICK UP TRUCK

~~10:00~~ 0700 LOAD TRUCK. VEHICLE INSPECTION. TAILGATE

0730 CALL PSQ TO NOTIFY TRIP. HEAD TO DELTA

0930 ARRIVE AT PSQ. SIGN ON WORK PERMIT

- SET UP AT MW-1 + MW-5. MW-5 COVERED IN  
2ft SNOW. CLEARED BY PSQ OPERATOR

	DTW (ft)	DTW (ft)	PROD. THICKNESS (ft)
✓ MW-1	110.93	111.00	0.07 ft
✓ MW-5	110.84	111.03	0.19 ft

~~SOAKAGE~~ SOAKS DEPICTED.

RECOVERED PRODUCT:

MW-1:  $\frac{1}{3}$  + TRACE

MW-5:  $\frac{3}{4}$  +  $\frac{1}{5}$  +

TIME	DTW (ft)	DTW (ft)	PROD. THICKNESS (ft)
11:00 MW-1	—	110.94	—
11:30 MW-5	110.90	110.93	0.03

1200 PERMIT CLOSED. UNLOADED UP. HEAD BACK TO FBX

1430 BACK TO FAIRBANKS. LEAD TO STORAGE. TRUCK WASHED.

ARRIVED AT DIF. HEAD TO OFFICE

1500 BACK TO OFFICE. DAY END

*[Signature]*

20 10/30/19 E. COURT-WILLIS BOON PRODUCT RECOVERY

"RAIN/ISOL" ~30F

0630 LEAVE TO PICKUP GEAR + ASSESS TRUCK

0700 TRUCK LOADED. TAILGATE + UTILITY INSPECTION.

0720 CALL VSOA<sup>SECURITY</sup> TO MAKE AWARE OF TRAVEL.

0910 ARRIVE AT BOON. GET WORK PERMIT.

0930 WORK PERMIT SIGNED. SETTING UP AT MW-1 + MW-5

TIME	MW	DTP (ft)	DTW (ft)	PROD. THICKNESS (ft)	
0945	MW-1	110.77	110.81	0.04	2"
0955	MW-5	110.62	110.75	0.13	4"

0955 DEPLOYING 4" SOAK PEX SOCK IN MW-5 AND 2" SOAK PEX SOCK IN MW-1.

RECOVERED PRODUCT (X/PART OF SOCKS):

MW-1:  $\frac{1}{4}$  + TRACE

MW-5:  $\frac{3}{4}$  (LOTS OF WATER IN SOCK) + TRACE

TIME	WELL	DTP (ft)	DTW (ft)	PROD. THICKNESS (ft)
1021	MW-1	—	110.77	—
1031	MW-5	—	110.66	—

1045 HEAT TRACE PLACED IN WELLS FOR SPRING + HALO CHANGED UP.

1115 WORK PERMIT CLOSED.

1120 LEAVE BOON FOR FAIRBANKS

1130 BACK TO FAIRBANKS. TRUCK PARKED AT DIF.

DROP GEAR OFF AT STORAGE

1415 BACK TO OFFICE. DAY END.

12



11/4/19 ROOSELT - WILLIS ASOR PRODUCT RECOVERY <sup>2-11-17</sup> 052115T  
S 16F<sup>1</sup>

0800 JUMP FOR TRIP TO ASOR

0830 PICKUP TRUCK FROM DIF. CALL ASOR SECURITY.

0845 LEAVE FOR ASOR

1050 ARRIVE AT ASOR. CHECK IN W/ ASOR FACILITY MANAGER

1200 INSTALL NEW WELT CAP + HEAT TACKS FOR MW-05

1115 CHECK OUT OF ASOR. HEAD BACK TO FAIRBANKS.

1345 BACK TO FAIRBANKS.

1400 RETURN TRUCK TO ASOR YARD. DAY END.

## APPENDIX B

### WELL SAMPLING CALCULATION AND RECORD SHEETS

#### **2019 Groundwater Monitoring and Product Recovery Report Pump Station 9 Mainline Turbine Sump**

**Alyeska Pipeline Service Company**  
P.O. Box 196660  
3700 Centerpoint Drive  
Anchorage, Alaska 99519-6660

December 2019

## Groundwater Sampling Form

## Groundwater Sampling Form



## Groundwater Sampling Form



## Groundwater Sampling Form

Site/Client Name: <u>Physician PSC9 MIT Sump</u>		Well ID: <u>11W-7</u>								
Project #: <u>105-01288-19013</u>		Sample ID: <u>MW-7</u>								
Sampled By: <u>Carl Benson / Ryan Conway with</u>		Sample Time: <u>1540</u> Sample Date: <u>5/30/14</u>								
Weather Conditions: <u>Sunny clear</u>		Duplicate ID: <u>---</u>								
Sampling Method: <input type="checkbox"/> Low Flow <input type="checkbox"/> Other <u>Bailer/3-Volume</u>		MS/MSD <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Trip Blank Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								
<b>Well Information</b>										
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								
<b>Gauging/Purging Information</b>										
Depth to Water (ft BTOC): <u>114.81</u>		Tubing/Pump Depth (ft. BTOC): <u>---</u> <u>Bailer</u>								
Total Depth (ft. BTOC): <u>119.00</u>		Purge Start Time (24-hr) <u>1055</u>								
Depth to Product (ft. BTOC): <u>NA</u>		Purge End Time (24-hr) <u>1130</u>								
Product Thickness (ft) <u>4.19 water column</u>		Total Purge Time (min) <u>35</u>								
<b>LOW FLOW:</b> 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.										
Min. purge volume if required: purge volume (gal) = volume of water in _____ (ft) X Water column thickness <u>4.19</u> (ft) X # of casing volumes <u>3</u> = <u>8.2</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										
<b>Water Quality Parameters</b>										
(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)
<u>1105</u>	<u>---</u>	<u>2.75</u>	<u>5.37</u>	<u>690</u>	<u>5.32</u>	<u>5.92</u>	<u>282.3</u>	<u>moderate</u>	<u>---</u>	<u>---</u>
<u>1120</u>	<u>---</u>	<u>5.5</u>	<u>3.85</u>	<u>695</u>	<u>4.12</u>	<u>5.94</u>	<u>282.1</u>	<u>moderate</u>		
<u>1130</u>		<u>6.5</u>	<u>3.65</u>	<u>687</u>	<u>6.25</u>	<u>6.32</u>	<u>252.4</u>	<u>heavy</u>		
<u>well dry @ 6.5 gallons, closed &amp; left to recharge</u>										
<u>Sampled Recharge @ MW-7 @ 1540</u>										
Parameter Stable (Check applicable)										
Sample Color: <u>Gray</u>			Sample Odor: <u>None</u>			Sheen: <u>None</u>				
<b>Analytical Sampling</b>										
Analyses				Check Applicable		Comments				
<b>Notes:</b> <u>D120-AH102, 1378A - 80213 Sample MW-7 @ 1540</u>										
Equipment: Pump Type <u>---</u> Tubing (Type/Length) <u>---</u> Bailer Type <u>4"</u>										
Water Level Meter <u>DGSZ-2001</u> Multi-Parameter Meter (Make/SN#) <u>YSE-556</u>										
Turbidity Meter (Make/SN#) _____ Filter Lot # _____										
Purge Water Handling: <input type="checkbox"/> Discharged to surface <input type="checkbox"/> Containerized <input checked="" type="checkbox"/> Treated (how?) <u>Sump</u>										





# Groundwater Sampling Form

Site/Client Name: <u>Allyshia P509 MLT Sump</u>		Well ID: <u>MW-2</u>								
Project #: <u>105,01208,19013</u>		Sample ID: <u>MW-2</u>								
Sampled By: <u>Carl Benson / Ryan Courney Wilks</u>		Sample Time: <u>1600</u> Sample Date: <u>5/30/2019</u>								
Weather Conditions:		Duplicate ID: <u>N/A</u>								
Sampling Method: <input type="checkbox"/> Low Flow <input type="checkbox"/> Other <u>Bailer / 3-Volume</u>		MS/MSD <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Trip Blank Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								
<b>Well Information</b>										
Well Type: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary		Well Diameter: _____ 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								
<b>Gauging/Purging Information</b>										
Depth to Water (ft BTOC): <u>116.15</u>		Tubing/Pump Depth (ft. BTOC): _____								
Total Depth (ft BTOC): <u>133.80</u>		Purge Start Time (24-hr) <u>1200</u>								
Depth to Product (ft. BTOC): _____		Purge End Time (24-hr) <u>1228</u>								
Product Thickness (ft) <u>17.65' Water Column</u>		Total Purge Time (min) <u>28</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;										
Min. purge volume if required: purge volume (gal) = volume of water / ft <u>26.53</u> (gal/ft) X Water column thickness <u>17.65</u> (ft) X # of casing volumes <u>3</u> = <u>35</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										
<b>Water Quality Parameters</b>										
(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)
1200		<u>9.50</u>	<u>4.84</u>	<u>1121</u>	<u>7.20</u>	<u>5.78</u>	<u>317.2</u>	<u>low</u>		
1220		<u>11.5</u>	<u>4.32</u>	<u>1118</u>	<u>7.50</u>	<u>6.32</u>	<u>282.5</u>	<u>Clear</u>		
1228		<u>13</u>	<u>4.13</u>	<u>1106</u>	<u>7.92</u>	<u>6.75</u>	<u>190.9</u>	<u>Rusky</u>		
<u>Well dry @ 13 gallons, Closed &amp; left to Recharge</u>										
<u>Well MW-2 Sampled @ 1600</u>										
Parameter Stable (Check applicable)										
Sample Color: <u>Clear</u>			Sample Odor: <u>None</u>			Sheen: <u>None</u>				
<b>Analytical Sampling</b>										
Analyses				Check Applicable			Comments			
Notes: <u>MW-2 @ 1600 Collected for 1720-MH102 &amp; 1572X-902113</u>										
Equipment: Pump Type _____ Tubing (Type/Length) _____ Bailer Type <u>4"</u>										
Water Level Meter <u>DGSR-2001</u> Multi-Parameter Meter (Make/SN#) <u>YSR-556</u>										
Turbidity Meter (Make/SN#) _____ Filter Lot # _____										
Purge Water Handling: <input type="checkbox"/> Discharged to surface <input type="checkbox"/> Containerized <input checked="" type="checkbox"/> Treated (how?) <u>Sump</u>										

# Water Parameter Meter Calibration Log



Date: 5/30/19 Time: 0800 Calibration By: C. Benson  
 Meter Manufacturer and Identification #: \_\_\_\_\_

Parameter	Standard	True Value	Lot #	Date Opened	Expiration Date	PreCalibration Reading	Reading After Calibration	Calibration Acceptance Criteria
pH	7.00	7.00	CC546825	3/11/19	3/27/20	7.00	7.01	± 0.10
	4.00	4.01	CC565653	5/29/19	6/18/20	4.01	4.02	± 0.10
	10.00	10.01	VS1	3/11/19	8/20/19	10.03	10.01	± 0.10
Sp Cond (mS/cm)	1.413	1413 µS/cm	CL17456	5/29/19	2/15/19	1410	1406	± 10%
ORP (mV)	240	240	3054	9/24/18	6/20/23	224.3	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							± 10%
ORP (mV)	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							± 10%
ORP (mV)	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



## APPENDIX C

# SLR QUALITY ASSURANCE REVIEW, ADEC LABORATORY DATA REVIEW CHECKLIST, AND LABORATORY ANALYTICAL RESULTS

## 2019 Groundwater Monitoring and Product Recovery Report Pump Station 9 Mainline Turbine Sump

Alyeska Pipeline Service Company  
P.O. Box 196660  
3700 Centerpoint Drive  
Anchorage, Alaska 99519-6660

December 2019

# **Report**

## **LABORATORY DATA QUALITY ASSURANCE REVIEW**

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

**August 2019**

**Prepared by:** Francesca Risse  
**Reviewed by:** Jennifer McLean

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

SLR Project Number 105.01288.19013  
ADEC File Number 330.38.065

## ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
AK	Alaska
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
mm	millimeters
MS	matrix spike
MSD	matrix spike duplicate
ND	not detected
NFG	National Functional Guidelines for Superfund Organic Methods Data Review
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity
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 30, 2019 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 (UST-005) 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
1199370	05/30/2019	SGS, Fairbanks 06/03/2019	3.8°C	Groundwater	SW8021B	BTEX
		SGS, Anchorage 06/04/2019	2.4°C		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 *Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling* (ADEC, 2017) requirements, *National Functional Guidelines for Organic Superfund Methods Data Review* (NFG, United States Environmental Protection Agency [USEPA] 2017), 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, representativeness, comparability, completeness and sensitivity (PARCCS) 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) <sup>1,2,3</sup>	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 PARCCS 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. Issues with the data package was limited to those noted below.

- The laboratory case narrative noted an LCSD recovery outside acceptable criteria for GRO by Method AK101 and a method blank detection for RRO by Method AK103. Neither GRO nor RRO were target analytes for this site. Data were not affected.

### **Sample Receipt**

The sample receipt documentation was checked for anomalies. Issues with regards to sample receipt were limited to that noted below.

- The COC did not indicate the collection date or time for the trip blank. The laboratory correctly assigned the date and time of the first field sample collected to the trip blank. Data was not impacted.

### **Preservation (Chemical and Temperature)**

Samples were appropriately preserved and were submitted to SGS, except as noted below.

- For Method SW8021B, the laboratory sample receipt form noted that one of three volatile organic analysis (VOA) vials for sample MW-7 had headspace greater than six millimeters (mm). Presumably the laboratory used one of the other two VOA vials provided for analysis. Data was not affected.

### **Holding Times**

All sample analysis was conducted within holding time criteria.

### **Laboratory Method Blanks**

Laboratory method blanks were analyzed at the appropriate frequencies and no analytes were detected.

### **Trip Blanks**

One trip blank was submitted and analyzed for BTEX by SW8021B. Analytes were not detected in the trip blank.

### **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, 2018). 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 analysis was 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 recoveries and RPDs were within acceptable limits.

### **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-33	Y

**Acronyms:**

ID – identification

### Laboratory Duplicate Samples

No laboratory duplicates were analyzed with these samples.

## Overall Assessment

### Precision, Accuracy, Representativeness, Comparability, Completeness, and Sensitivity Summary

- Precision: Precision goals were met.
- Accuracy: Accuracy goals were met, except as noted in the Data Packages section.
- 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.
- Completeness: Completeness goals were met. The data were 100% complete with respect to analysis because no data were rejected.
- Sensitivity: Sensitivity goals were met.

This data were considered of good quality and acceptable for use with no additional qualifications. No data were rejected.



## References

- ADEC. 2017. ADEC Technical Memorandum *Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling*. March.
- ADEC, 2018. Alaska Administrative Code (18 AAC 75), Oil and Other Hazardous Substances Pollution Control. As amended through October 27.
- USEPA, 2017. *National Functional Guidelines for Superfund Organic Methods Data Review*. January.

## **Attachments**

Attachment 1 – ADEC Laboratory Data Review Checklist

Attachment 2 – Laboratory Deliverable

## **Attachment 1**

### ADEC Laboratory Data Review Checklist

## **Attachment 2**

Laboratory Deliverable

(Data package)

## **Laboratory Data Review Checklist**

Completed By:

Francesca Risse

Title:

Staff Engineer

Date:

December 19, 2019

Consultant Firm:

SLR International Corporation

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1199370

Laboratory Report Date:

June 21, 2019

CS Site Name:

Alyeska PS 09 Former Mainline Turbine Sump

ADEC File Number:

330.38.065

Hazard Identification Number:

2681

1199370

Laboratory Report Date:

June 21, 2019

CS Site Name:

Alyeska PS 09 Former Mainline Turbine Sump

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

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes ☒ No ☐ N/A ☐ Comments:

SGS in Anchorage, Alaska performed all analyses. SGS maintains a current ADEC CS approval, number 17-021.

- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes ☐ No ☐ N/A ☒ Comments:

SGS Anchorage performed all analyses.

2. Chain of Custody (CoC)

- a. CoC information completed, signed, and dated (including released/received by)?

Yes ☒ No ☐ N/A ☐ Comments:

The only anomaly with regard to the COC is noted below:  
The COC did not indicate the collection date or time for the trip blank. The laboratory correctly assigned the time and date of the first field sample collected to the trip blank. Data was not impacted.

- b. Correct analyses requested?

Yes ☒ No ☐ N/A ☐ Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes ☒ No ☐ N/A ☐ Comments:

- b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes ☒ No ☐ N/A ☐ Comments:

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c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes ☒ No ☐ N/A ☐ Comments:

One VOA vial had headspace.

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, etc.?

Yes ☒ No ☐ N/A ☐ Comments:

One of three BTEX VOA vials for sample MW-7 arrived at the laboratory with headspace. Presumably the laboratory used one of the other two VOA vials provided for analysis.

e. Data quality or usability affected?

Comments:

No impact.

4. Case Narrative

a. Present and understandable?

Yes ☒ No ☐ N/A ☐ Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes ☒ No ☐ N/A ☐ Comments:

The laboratory case narrative noted an LCSD recovery outside acceptable criteria for GRO by Method AK101, and a method blank detection for RRO by Method AK103.

c. Were all corrective actions documented?

Yes ☒ No ☐ N/A ☐ Comments:

Neither GRO nor RRO were target analytes for this site. Data were not affected. No corrective actions were necessary.

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

Comments:

Data was not affected.

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Alyeska PS 09 Former Mainline Turbine Sump

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes ☒ No ☐ N/A ☐ Comments:

b. All applicable holding times met?

Yes ☒ No ☐ N/A ☐ Comments:

c. All soils reported on a dry weight basis?

Yes ☐ No ☐ N/A ☒ Comments:

No soils were analyzed.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes ☒ No ☐ N/A ☐ Comments:

e. Data quality or usability affected?

No impact.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes ☒ No ☐ N/A ☐ Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes ☒ No ☐ N/A ☐ Comments:



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CS Site Name:

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iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A

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

Yes ☐ No ☐ N/A ☒ Comments:

No samples were affected.

v. Data quality or usability affected?

Comments:

No impact.

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

i. Organics – 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:

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

Yes ☐ No ☐ N/A ☒ Comments:

No metals or inorganics were analyzed.

iii. Accuracy – 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:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? 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:

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

Comments:

N/A

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

Yes ☐ No ☐ N/A ☒ Comments:

No samples were affected.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

No impact.

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

**Note: Leave blank if not required for project**

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

Yes ☐ No ☐ N/A ☐ Comments:

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

Yes ☐ No ☐ N/A ☐ Comments:

iii. Accuracy – 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:

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Laboratory Report Date:

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Alyeska PS 09 Former Mainline Turbine Sump

- iv. Precision – 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. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes ☐ No ☐ N/A ☐ Comments:

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

Comments:

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

Yes ☐ No ☐ N/A ☐ Comments:

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

- 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:

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

Yes ☒ No ☐ N/A ☐ Comments:

- 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:

All surrogate recoveries were acceptable.

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iv. Data quality or usability affected?

Comments:

No impact.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?  
(If not, enter explanation below.)

Yes ☒ No ☐ N/A ☐

Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
(If not, a comment explaining why must be entered below)

Yes ☒ No ☐ N/A ☐

Comments:

All samples were included in one cooler from the time of collection until arrival at the laboratory.

iii. All results less than LOQ and project specified objectives?

Yes ☒ No ☐ N/A ☐

Comments:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A

v. Data quality or usability affected?

Comments:

No impact.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes ☒ No ☐ N/A ☐

Comments:

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ii. Submitted blind to lab?

Yes ☒ No ☐ N/A ☐ Comments:

Sample MW-33 was a duplicate of MW-3.

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

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes ☒ No ☐ N/A ☐ Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No impact.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes ☐ No ☐ N/A ☒ Comments:

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

i. All results less than LOQ and project specified objectives?

Yes ☐ No ☐ N/A ☒ Comments:

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

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected?

Comments:

N/A

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

a. Defined and appropriate?

Yes ☒ No ☐ N/A ☐

Comments:

## Laboratory Report of Analysis

To: Alyeska Pipeline Srv Co.  
4601 Business Park Blvd K42  
Anchorage, AK 99503  
(907)222-1112

Report Number: **1199370**

Client Project: **PS09**

Dear Scott Rose,

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.



SGS North America Inc.  
Environmental Services – Alaska Division  
Project Manager

**Justin Nelson**

**2019.06.21**

**08:53:23 -08'00'**

Justin Nelson  
Project Manager  
Justin.Nelson@sgs.com

Date

## Case Narrative

SGS Client: **Alyeska Pipeline Srv Co.**

SGS Project: **1199370**

Project Name/Site: **PS09**

Project Contact: **Scott Rose**

Refer to sample receipt form for information on sample condition.

### **LCSD for HBN 1794599 [VXX/3418 (1511249) LCSD**

AK101 – LCSD recovery for Gasoline Range Organics does not meet QC criteria. This analyte was not detected above the LOQ in the associated samples.

### **MB for HBN 1794767 [XXX/41559] (1511963) MB**

AK102/103 - RRO is detect in the MB greater than one half the LOQ, but less than the LOQ.

\*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: 06/20/2019 1:27:27PM



## 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, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). 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
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	1199370001	05/30/2019	06/04/2019	Water (Surface, Eff., Ground)
MW-33	1199370002	05/30/2019	06/04/2019	Water (Surface, Eff., Ground)
MW-10	1199370003	05/30/2019	06/04/2019	Water (Surface, Eff., Ground)
MW-8	1199370004	05/30/2019	06/04/2019	Water (Surface, Eff., Ground)
MW-7	1199370005	05/30/2019	06/04/2019	Water (Surface, Eff., Ground)
MW-2	1199370006	05/30/2019	06/04/2019	Water (Surface, Eff., Ground)
Trip Blank	1199370007	05/30/2019	06/04/2019	Water (Surface, Eff., Ground)
<u>Method</u>	<u>Method Description</u>			
SW8021B	BTEX 8021			
AK102	DRO Low Volume (W)			

Print Date: 06/20/2019 1:27:30PM

## Detectable Results Summary

Client Sample ID: **MW-3**  
 Lab Sample ID: 1199370001  
**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.304J	mg/L

Client Sample ID: **MW-33**  
 Lab Sample ID: 1199370002  
**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.272J	mg/L

Client Sample ID: **MW-10**  
 Lab Sample ID: 1199370003  
**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.331J	mg/L

Client Sample ID: **MW-8**  
 Lab Sample ID: 1199370004  
**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.298J	mg/L

Client Sample ID: **MW-7**  
 Lab Sample ID: 1199370005  
**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	1.08	mg/L

Client Sample ID: **MW-2**  
 Lab Sample ID: 1199370006  
**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.285J	mg/L



#### Results of MW-3

Client Sample ID: **MW-3**  
Client Project ID: **PS09**  
Lab Sample ID: 1199370001  
Lab Project ID: 1199370

Collection Date: 05/30/19 13:45  
Received Date: 06/04/19 11:40  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.304 J	0.588	0.176	mg/L	1		06/19/19 12:26
<b>Surrogates</b>							
5a Androstane (surr)	79.1	50-150		%	1		06/19/19 12:26

#### Batch Information

Analytical Batch: XFC15064  
Analytical Method: AK102  
Analyst: CMS  
Analytical Date/Time: 06/19/19 12:26  
Container ID: 1199370001-A

Prep Batch: XXX41559  
Prep Method: SW3520C  
Prep Date/Time: 06/11/19 08:55  
Prep Initial Wt./Vol.: 255 mL  
Prep Extract Vol: 1 mL

Print Date: 06/20/2019 1:27:32PM

J flagging is activated



#### Results of MW-3

Client Sample ID: **MW-3**  
Client Project ID: **PS09**  
Lab Sample ID: 1199370001  
Lab Project ID: 1199370

Collection Date: 05/30/19 13:45  
Received Date: 06/04/19 11:40  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		06/05/19 17:04
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/05/19 17:04
o-Xylene	0.500 U	1.00	0.310	ug/L	1		06/05/19 17:04
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		06/05/19 17:04
Toluene	0.500 U	1.00	0.310	ug/L	1		06/05/19 17:04
Xylenes (total)	1.50 U	3.00	0.930	ug/L	1		06/05/19 17:04
<b>Surrogates</b>							
1,4-Difluorobenzene (surr)	95.5	77-115		%	1		06/05/19 17:04

#### Batch Information

Analytical Batch: VFC14757  
Analytical Method: SW8021B  
Analyst: ST  
Analytical Date/Time: 06/05/19 17:04  
Container ID: 1199370001-C

Prep Batch: VXX34186  
Prep Method: SW5030B  
Prep Date/Time: 06/05/19 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



#### Results of MW-33

Client Sample ID: **MW-33**  
Client Project ID: **PS09**  
Lab Sample ID: 1199370002  
Lab Project ID: 1199370

Collection Date: 05/30/19 13:45  
Received Date: 06/04/19 11:40  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.272 J	0.615	0.184	mg/L	1		06/19/19 12:36
<b>Surrogates</b>							
5a Androstane (surr)	87.6	50-150		%	1		06/19/19 12:36

#### Batch Information

Analytical Batch: XFC15064  
Analytical Method: AK102  
Analyst: CMS  
Analytical Date/Time: 06/19/19 12:36  
Container ID: 1199370002-A

Prep Batch: XXX41559  
Prep Method: SW3520C  
Prep Date/Time: 06/11/19 08:55  
Prep Initial Wt./Vol.: 244 mL  
Prep Extract Vol: 1 mL

Print Date: 06/20/2019 1:27:32PM

J flagging is activated



#### Results of MW-33

Client Sample ID: **MW-33**  
Client Project ID: **PS09**  
Lab Sample ID: 1199370002  
Lab Project ID: 1199370

Collection Date: 05/30/19 13:45  
Received Date: 06/04/19 11:40  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		06/05/19 17:21
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/05/19 17:21
o-Xylene	0.500 U	1.00	0.310	ug/L	1		06/05/19 17:21
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		06/05/19 17:21
Toluene	0.500 U	1.00	0.310	ug/L	1		06/05/19 17:21
Xylenes (total)	1.50 U	3.00	0.930	ug/L	1		06/05/19 17:21
<b>Surrogates</b>							
1,4-Difluorobenzene (surr)	95.5	77-115		%	1		06/05/19 17:21

#### Batch Information

Analytical Batch: VFC14757  
Analytical Method: SW8021B  
Analyst: ST  
Analytical Date/Time: 06/05/19 17:21  
Container ID: 1199370002-C

Prep Batch: VXX34186  
Prep Method: SW5030B  
Prep Date/Time: 06/05/19 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



#### Results of MW-10

Client Sample ID: **MW-10**  
Client Project ID: **PS09**  
Lab Sample ID: 1199370003  
Lab Project ID: 1199370

Collection Date: 05/30/19 14:45  
Received Date: 06/04/19 11:40  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.331 J	0.577	0.173	mg/L	1		06/19/19 12:46
<b>Surrogates</b>							
5a Androstane (surr)	74.8	50-150		%	1		06/19/19 12:46

#### Batch Information

Analytical Batch: XFC15064  
Analytical Method: AK102  
Analyst: CMS  
Analytical Date/Time: 06/19/19 12:46  
Container ID: 1199370003-A

Prep Batch: XXX41559  
Prep Method: SW3520C  
Prep Date/Time: 06/11/19 08:55  
Prep Initial Wt./Vol.: 260 mL  
Prep Extract Vol: 1 mL

Print Date: 06/20/2019 1:27:32PM

J flagging is activated





#### Results of MW-10

Client Sample ID: **MW-10**  
Client Project ID: **PS09**  
Lab Sample ID: 1199370003  
Lab Project ID: 1199370

Collection Date: 05/30/19 14:45  
Received Date: 06/04/19 11:40  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		06/05/19 17:39
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/05/19 17:39
o-Xylene	0.500 U	1.00	0.310	ug/L	1		06/05/19 17:39
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		06/05/19 17:39
Toluene	0.500 U	1.00	0.310	ug/L	1		06/05/19 17:39
Xylenes (total)	1.50 U	3.00	0.930	ug/L	1		06/05/19 17:39
<b>Surrogates</b>							
1,4-Difluorobenzene (surr)	96.5	77-115		%	1		06/05/19 17:39

#### Batch Information

Analytical Batch: VFC14757  
Analytical Method: SW8021B  
Analyst: ST  
Analytical Date/Time: 06/05/19 17:39  
Container ID: 1199370003-C

Prep Batch: VXX34186  
Prep Method: SW5030B  
Prep Date/Time: 06/05/19 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



#### Results of **MW-8**

Client Sample ID: **MW-8**  
Client Project ID: **PS09**  
Lab Sample ID: 1199370004  
Lab Project ID: 1199370

Collection Date: 05/30/19 15:20  
Received Date: 06/04/19 11:40  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.298 J	0.588	0.176	mg/L	1		06/19/19 12:55
<b>Surrogates</b>							
5a Androstane (surr)	73.8	50-150		%	1		06/19/19 12:55

#### Batch Information

Analytical Batch: XFC15064  
Analytical Method: AK102  
Analyst: CMS  
Analytical Date/Time: 06/19/19 12:55  
Container ID: 1199370004-A

Prep Batch: XXX41559  
Prep Method: SW3520C  
Prep Date/Time: 06/11/19 08:55  
Prep Initial Wt./Vol.: 255 mL  
Prep Extract Vol: 1 mL

Print Date: 06/20/2019 1:27:32PM

J flagging is activated



#### Results of MW-8

Client Sample ID: **MW-8**  
Client Project ID: **PS09**  
Lab Sample ID: 1199370004  
Lab Project ID: 1199370

Collection Date: 05/30/19 15:20  
Received Date: 06/04/19 11:40  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		06/05/19 17:57
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/05/19 17:57
o-Xylene	0.500 U	1.00	0.310	ug/L	1		06/05/19 17:57
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		06/05/19 17:57
Toluene	0.500 U	1.00	0.310	ug/L	1		06/05/19 17:57
Xylenes (total)	1.50 U	3.00	0.930	ug/L	1		06/05/19 17:57
<b>Surrogates</b>							
1,4-Difluorobenzene (surr)	95.8	77-115		%	1		06/05/19 17:57

#### Batch Information

Analytical Batch: VFC14757  
Analytical Method: SW8021B  
Analyst: ST  
Analytical Date/Time: 06/05/19 17:57  
Container ID: 1199370004-C

Prep Batch: VXX34186  
Prep Method: SW5030B  
Prep Date/Time: 06/05/19 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



#### Results of MW-7

Client Sample ID: **MW-7**  
Client Project ID: **PS09**  
Lab Sample ID: 1199370005  
Lab Project ID: 1199370

Collection Date: 05/30/19 15:40  
Received Date: 06/04/19 11:40  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	1.08	0.577	0.173	mg/L	1		06/19/19 13:05
<b>Surrogates</b>							
5a Androstane (surr)	75.6	50-150		%	1		06/19/19 13:05

#### Batch Information

Analytical Batch: XFC15064  
Analytical Method: AK102  
Analyst: CMS  
Analytical Date/Time: 06/19/19 13:05  
Container ID: 1199370005-A

Prep Batch: XXX41559  
Prep Method: SW3520C  
Prep Date/Time: 06/11/19 08:55  
Prep Initial Wt./Vol.: 260 mL  
Prep Extract Vol: 1 mL

Print Date: 06/20/2019 1:27:32PM

J flagging is activated



#### Results of MW-7

Client Sample ID: **MW-7**  
Client Project ID: **PS09**  
Lab Sample ID: 1199370005  
Lab Project ID: 1199370

Collection Date: 05/30/19 15:40  
Received Date: 06/04/19 11:40  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		06/05/19 16:46
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/05/19 16:46
o-Xylene	0.500 U	1.00	0.310	ug/L	1		06/05/19 16:46
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		06/05/19 16:46
Toluene	0.500 U	1.00	0.310	ug/L	1		06/05/19 16:46
Xylenes (total)	1.50 U	3.00	0.930	ug/L	1		06/05/19 16:46
<b>Surrogates</b>							
1,4-Difluorobenzene (surr)	95.4	77-115		%	1		06/05/19 16:46

#### Batch Information

Analytical Batch: VFC14757  
Analytical Method: SW8021B  
Analyst: ST  
Analytical Date/Time: 06/05/19 16:46  
Container ID: 1199370005-C

Prep Batch: VXX34186  
Prep Method: SW5030B  
Prep Date/Time: 06/05/19 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



#### Results of MW-2

Client Sample ID: **MW-2**  
Client Project ID: **PS09**  
Lab Sample ID: 1199370006  
Lab Project ID: 1199370

Collection Date: 05/30/19 16:00  
Received Date: 06/04/19 11:40  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.285 J	0.588	0.176	mg/L	1		06/19/19 13:15
<b>Surrogates</b>							
5a Androstane (surr)	77	50-150		%	1		06/19/19 13:15

#### Batch Information

Analytical Batch: XFC15064  
Analytical Method: AK102  
Analyst: CMS  
Analytical Date/Time: 06/19/19 13:15  
Container ID: 1199370006-A

Prep Batch: XXX41559  
Prep Method: SW3520C  
Prep Date/Time: 06/11/19 08:55  
Prep Initial Wt./Vol.: 255 mL  
Prep Extract Vol: 1 mL

Print Date: 06/20/2019 1:27:32PM

J flagging is activated



#### Results of MW-2

Client Sample ID: **MW-2**  
Client Project ID: **PS09**  
Lab Sample ID: 1199370006  
Lab Project ID: 1199370

Collection Date: 05/30/19 16:00  
Received Date: 06/04/19 11:40  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		06/05/19 18:14
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/05/19 18:14
o-Xylene	0.500 U	1.00	0.310	ug/L	1		06/05/19 18:14
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		06/05/19 18:14
Toluene	0.500 U	1.00	0.310	ug/L	1		06/05/19 18:14
Xylenes (total)	1.50 U	3.00	0.930	ug/L	1		06/05/19 18:14
<b>Surrogates</b>							
1,4-Difluorobenzene (surr)	96.5	77-115		%	1		06/05/19 18:14

#### Batch Information

Analytical Batch: VFC14757  
Analytical Method: SW8021B  
Analyst: ST  
Analytical Date/Time: 06/05/19 18:14  
Container ID: 1199370006-C

Prep Batch: VXX34186  
Prep Method: SW5030B  
Prep Date/Time: 06/05/19 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



### Results of Trip Blank

Client Sample ID: **Trip Blank**  
Client Project ID: **PS09**  
Lab Sample ID: 1199370007  
Lab Project ID: 1199370

Collection Date: 05/30/19 13:45  
Received Date: 06/04/19 11:40  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.250 U	0.500	0.150	ug/L	1		06/05/19 15:01
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/05/19 15:01
o-Xylene	0.500 U	1.00	0.310	ug/L	1		06/05/19 15:01
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		06/05/19 15:01
Toluene	0.500 U	1.00	0.310	ug/L	1		06/05/19 15:01
Xylenes (total)	1.50 U	3.00	0.930	ug/L	1		06/05/19 15:01
<b>Surrogates</b>							
1,4-Difluorobenzene (surr)	95.1	77-115		%	1		06/05/19 15:01

### Batch Information

Analytical Batch: VFC14757  
Analytical Method: SW8021B  
Analyst: ST  
Analytical Date/Time: 06/05/19 15:01  
Container ID: 1199370007-A

Prep Batch: VXX34186  
Prep Method: SW5030B  
Prep Date/Time: 06/05/19 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



## Method Blank

Blank ID: MB for HBN 1794599 [VXX/34186]  
Blank Lab ID: 1511245

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1199370001, 1199370002, 1199370003, 1199370004, 1199370005, 1199370006, 1199370007

## Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Xylenes (total)	1.50U	3.00	0.930	ug/L

## Surrogates

1,4-Difluorobenzene (surr)	95.8	77-115	%
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## Batch Information

Analytical Batch: VFC14757  
Analytical Method: SW8021B  
Instrument: Agilent 7890A PID/FID  
Analyst: ST  
Analytical Date/Time: 6/5/2019 11:01:00AM

Prep Batch: VXX34186  
Prep Method: SW5030B  
Prep Date/Time: 6/5/2019 8:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1199370 [VXX34186]  
Blank Spike Lab ID: 1511246  
Date Analyzed: 06/05/2019 11:36

Spike Duplicate ID: LCSD for HBN 1199370  
[VXX34186]  
Spike Duplicate Lab ID: 1511247  
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199370001, 1199370002, 1199370003, 1199370004, 1199370005, 1199370006, 1199370007

### Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	101	101	100	106	106	( 80-120 )	4.60	(< 20 )
Ethylbenzene	100	91.8	92	100	97.4	97	( 75-125 )	5.90	(< 20 )
o-Xylene	100	88.2	88	100	92.3	92	( 80-120 )	4.50	(< 20 )
P & M -Xylene	200	180	90	200	190	95	( 75-130 )	5.40	(< 20 )
Toluene	100	93.0	93	100	98.0	98	( 75-120 )	5.20	(< 20 )
Xylenes (total)	300	268	90	300	283	94	( 79-121 )	5.10	(< 20 )
<b>Surrogates</b>									
1,4-Difluorobenzene (surr)	50	98	98	50	98.6	99	( 77-115 )	0.57	

### Batch Information

Analytical Batch: VFC14757  
Analytical Method: SW8021B  
Instrument: Agilent 7890A PID/FID  
Analyst: ST

Prep Batch: VXX34186  
Prep Method: SW5030B  
Prep Date/Time: 06/05/2019 08:00  
Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL  
Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

Print Date: 06/20/2019 1:27:36PM



#### Method Blank

Blank ID: MB for HBN 1794767 [XXX/41559]  
Blank Lab ID: 1511963

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1199370001, 1199370002, 1199370003, 1199370004, 1199370005, 1199370006

#### Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.180	mg/L
<b>Surrogates</b>				
5a Androstane (surr)	82.1	60-120		%

#### Batch Information

Analytical Batch: XFC15046  
Analytical Method: AK102  
Instrument: Agilent 7890B R  
Analyst: VDL  
Analytical Date/Time: 6/12/2019 7:38:00AM

Prep Batch: XXX41559  
Prep Method: SW3520C  
Prep Date/Time: 6/11/2019 8:55:31AM  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL

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### Blank Spike Summary

Blank Spike ID: LCS for HBN 1199370 [XXX41559]  
Blank Spike Lab ID: 1511964  
Date Analyzed: 06/12/2019 07:48

Spike Duplicate ID: LCSD for HBN 1199370  
[XXX41559]  
Spike Duplicate Lab ID: 1511965  
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199370001, 1199370002, 1199370003, 1199370004, 1199370005, 1199370006

### 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	20	19.9	99	20	19.5	98	( 75-125 )	1.70	(< 20 )
<b>Surrogates</b>									
5a Androstane (surr)	0.4	92.9	93	0.4	92.9	93	( 60-120 )	0.00	

### Batch Information

Analytical Batch: **XFC15046**  
Analytical Method: **AK102**  
Instrument: **Agilent 7890B R**  
Analyst: **VDL**

Prep Batch: **XXX41559**  
Prep Method: **SW3520C**  
Prep Date/Time: **06/11/2019 08:55**  
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL  
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 06/20/2019 1:27:40PM



Section 1	<b>CLIENT:</b> SLR / Alyeska					<b>Instructions: Sections 1 - 5 must be filled out.</b> <b>Omissions may delay the onset of analysis.</b>										Page <u>1</u> of <u>1</u>		
	<b>CONTACT:</b> Carl Benson <b>PHONE #:</b> 452-2276					<b>Section 3</b>		<b>Preservative</b>										
	<b>PROJECT NAME:</b> PS09 <b>PROJECT/PWSID/PERMIT#:</b>					<b># C O N T A I N E R S</b>	<b>Comp Grab MI (Multi-incremental)</b>											<b>NOTE:</b> *The following analyses require specific methods and/or compound list: BTEX, Metals, PFAS
	<b>REPORTS TO:</b> Carl Benson <b>E-MAIL:</b> C.benson@slrconsulting.com <b>INVOICE TO:</b> Alyeska <b>QUOTE #:</b> 162313QM <b>P.O. #:</b>																	
Section 2	RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/MATRIX CODE		BTEX 8021	DRO AK102	Analysis*								REMARKS/LOC ID	
	1A-E	MW-3	5/30/2019	1345	W	5	G	✓	✓									
	2A-E	MW-33		1345	W	5	G	✓	✓									
	3A-E	MW-10		1445	W	5	G	✓	✓									
	4A-E	MW-8		1520	W	5	G	✓	✓									
	5A-E	MW-7		1540	W	5	G	✓	✓									
	6A-E	MW-2		1600	W	5	G	✓	✓									
	7A-C	Trip Blank						✓										
Section 5	<b>Relinquished By: (1)</b> 		Date 5/31/19	Time 0812	<b>Received By:</b> 		<b>Section 4</b>		<b>DOD Project?</b> Yes <input checked="" type="radio"/> No <input type="radio"/>		<b>Data Deliverable Requirements:</b> Level II							
	<b>Relinquished By: (2)</b> 		Date 6-3-19	Time 1430	<b>Received By:</b> 		<b>Cooler ID:</b>		<b>Requested Turnaround Time and/or Special Instructions:</b> Standard									
	<b>Relinquished By: (3)</b> 		Date	Time	<b>Received By:</b> 													
	<b>Relinquished By: (4)</b> 		Date 6/4/19	Time 1100	<b>Received For Laboratory By:</b> 				<b>Temp Blank °C:</b> 3.8		<b>Chain of Custody Seal: (Circle)</b> INTACT    BROKEN    ABSENT							
									<b>or Ambient [ ]</b>		<b>Delivery Method:</b> Hand Delivery [ ] Commerical Delivery [ ]							

052 2.4

1F/1B  
23 of 26  
F083-Blank COC 20181228

1199370



# FAIRBANKS SAMPLE RECEIPT FORM

**Note: This form is to be completed by Fairbanks Receiving Staff for all samples**

[illegible]



## e-Sample Receipt Form

SGS Workorder #:

1199370



1 1 9 9 3 7 0

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
<b>Chain of Custody / Temperature Requirements</b>			N/A	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	Yes	1 front, 1 back		
COC accompanied samples?	Yes			
DOD: Were samples received in COC corresponding coolers?	N/A			
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required				
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID:	Cooler 1	@ 3.8 °C Therm. ID: D52
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Cooler ID:		@ °C Therm. ID:
		Cooler ID:		@ °C Therm. ID:
		Cooler ID:		@ °C Therm. ID:
		Cooler ID:		@ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?		N/A		
If <0°C, were sample containers ice free?		N/A		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
<b>Holding Time / Documentation / Sample Condition Requirements</b>		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes			
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes			
**Note: If times differ <1hr, record details & login per COC.				
***Note: If sample information on containers differs from COC, SGS will default to COC information				
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes			
Were proper containers (type/mass/volume/preservative***) used?		N/A	***Exemption permitted for metals (e.g. 200.8/6020A).	
<b>Volatile / LL-Hg Requirements</b>				
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	One MW-7 VOA vial contained a large bubble. Proceed with analysis per PM.		
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	No			
Were all soil VOAs field extracted with MeOH+BFB?	N/A			
<b>Note to Client:</b> Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				

## 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>
1199370001-A	HCL to pH < 2	OK			
1199370001-B	HCL to pH < 2	OK			
1199370001-C	HCL to pH < 2	OK			
1199370001-D	HCL to pH < 2	OK			
1199370001-E	HCL to pH < 2	OK			
1199370002-A	HCL to pH < 2	OK			
1199370002-B	HCL to pH < 2	OK			
1199370002-C	HCL to pH < 2	OK			
1199370002-D	HCL to pH < 2	OK			
1199370002-E	HCL to pH < 2	OK			
1199370003-A	HCL to pH < 2	OK			
1199370003-B	HCL to pH < 2	OK			
1199370003-C	HCL to pH < 2	OK			
1199370003-D	HCL to pH < 2	OK			
1199370003-E	HCL to pH < 2	OK			
1199370004-A	HCL to pH < 2	OK			
1199370004-B	HCL to pH < 2	OK			
1199370004-C	HCL to pH < 2	OK			
1199370004-D	HCL to pH < 2	OK			
1199370004-E	HCL to pH < 2	OK			
1199370005-A	HCL to pH < 2	OK			
1199370005-B	HCL to pH < 2	OK			
1199370005-C	HCL to pH < 2	OK			
1199370005-D	HCL to pH < 2	OK			
1199370005-E	HCL to pH < 2	BU			
1199370006-A	HCL to pH < 2	OK			
1199370006-B	HCL to pH < 2	OK			
1199370006-C	HCL to pH < 2	OK			
1199370006-D	HCL to pH < 2	OK			
1199370006-E	HCL to pH < 2	OK			
1199370007-A	HCL to pH < 2	OK			
1199370007-B	HCL to pH < 2	OK			
1199370007-C	HCL to pH < 2	OK			

### 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.

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.