April 2024
SeaPort Seattle Terminal
(Former ARCO/BP Harbor Island Terminal)
Cleanup Site ID 4426
Consent Decree No. 00-2-05714-8SEA

2023 ANNUAL SITE REPORT

Submitted to
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2023 Annual Report

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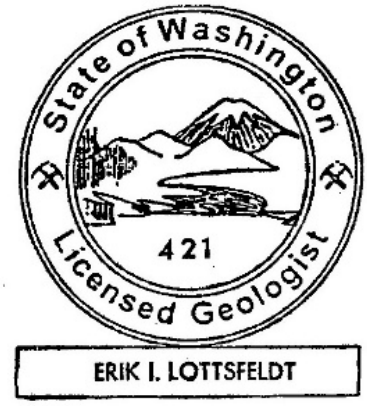

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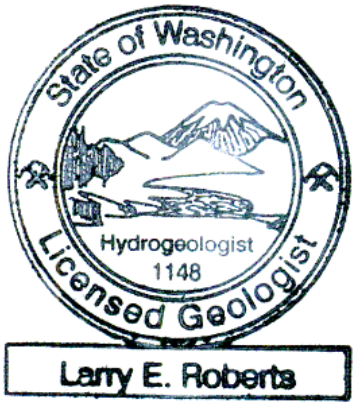

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ACRONYMS AND ABBREVIATIONS

AG&M	ARCADIS Geraghty & Miller
ARCO	Atlantic Richfield Company
BP	British Petroleum West Coast Products Company
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Cleanup Action Plan
CCR	Construction Completion Report
cPAHs	carcinogenic polycyclic aromatic hydrocarbons
DAS	diffused air stripper
Ecology	Washington State Department of Ecology
EDR	Engineering Design Report
EPA	United States Environmental Protection Agency
ft./ft.	feet per foot
GPM	gallons per minute
GWCMCP	Groundwater Compliance Monitoring and Contingency Plan
HASP	health and safety plan
IHS	indicator hazardous substance
KCDNRP	King County Department of Natural Resources and Parks
LNAPL	light non-aqueous phase liquid
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
MNA	monitored natural attenuation
MTCA	Model Toxics Control Act
O&M	operation and maintenance
OU	Operable Unit
OWS	oil water separator
POC	Point of Compliance
PSCAA	Puget Sound Clean Air Agency
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
SeaPort	SeaPort Midstream Partners LLC
SVE	soil vapor extraction
TechSolv	TechSolv Consulting Group, Inc. (predecessor of TechSolve Environmental, Inc.)
TechSolve	TechSolve Environmental, Inc.
TMS	TLP Management Services LLC
TPH	total petroleum hydrocarbons
TPH-D	total petroleum hydrocarbons as diesel
TPH-G	total petroleum hydrocarbons as gasoline
TPH-O	total petroleum hydrocarbons as oil

EXECUTIVE SUMMARY

This report summarizes remedial actions conducted in 2023 at the SeaPort Seattle Terminal (the Site). The Site is located on Harbor Island at 1652 SW Lander Street, in Seattle, Washington, and is the former Atlantic Richfield Company (ARCO)/British Petroleum West Coast Products Company (BP) Terminal site. For additional context, the report also presents summaries of previous investigations and remedial actions, recent changes that affect the Site, and the current status of the Site. This includes first quarter 2024 LNAPL monitoring and recovery. The terminal is currently owned by SeaPort Midstream Partners LLC (SeaPort) and managed by TLP Management Services LLC (TMS).

Remedial actions have been conducted per Consent Decree No. 00-2-05714-8SEA. The Consent Decree, which was entered into in 2000, requires implementation of remedies to address soil and groundwater impacted with petroleum hydrocarbons (light non-aqueous phase liquid [LNAPL]) above cleanup levels. Extensive investigations concluded that LNAPL detected across the Site was primarily highly weathered diesel-range and heavier LNAPL, with minor amounts of gasoline-range LNAPL. The detected LNAPLs are associated with historical operations and releases at the terminal.

The selected remedies included excavation and offsite disposal of accessible soil, and installing and operating active remediation systems to treat groundwater and areas of inaccessible soil that were primarily located along the waterfront beneath the warehouse and truck loading rack areas. Natural attenuation was selected as the remedy for treatment of any remaining residual LNAPL. The effectiveness of the remedies was to be determined through the Groundwater Compliance Monitoring program, which includes Protection Monitoring, Performance Monitoring, and Confirmation Monitoring. The Consent Decree also established restoration timetables for soil and groundwater that have been subsequently revised, as needed, with approval from the Washington State Department of Ecology (Ecology). The monitoring results indicate that the cleanup goals for active remediation have been met and discussions with Ecology are ongoing to move towards Confirmation Monitoring and Site closure.

Activities conducted in 2023 include quarterly groundwater monitoring at the waterfront piezometers and at wells in the northwest corner of the Site (referred to as the NW corner impacted area). Data for these sampling events will be assessed after four quarters of monitoring and presented in upcoming progress reports. The waterfront piezometer results will be used to further the discussion of transitioning away from active remediation to Confirmation Monitoring and Site closure. The NW corner impacted area results will be used to assess potential impacts to groundwater from an area of LNAPL soil staining observed after the king tides in the winter of 2022/2023.

1 INTRODUCTION

TechSolve Environmental, Inc. (TechSolve, formerly TechSolv Consulting Group, Inc. [TechSolv]) has prepared this report on behalf of TLP Management Services LLC (TMS) to summarize remedial investigation (RI) and cleanup activities conducted through 2023 at the SeaPort Seattle Terminal (the Site) (Figure 1). The Site is located on Harbor Island at 1652 SW Lander Street, in Seattle, Washington, and is the former Atlantic Richfield Company (ARCO)/British Petroleum West Coast Products Company (BP) Terminal site. This report was prepared to satisfy Annual Reporting Requirements of Consent Decree No. 00-2-05714-8SEA, cooperatively entered into between ARCO and the Washington State Department of Ecology (Ecology). The Consent Decree was entered into court on March 24, 2000 (Ecology 2000b) by the Washington State Attorney General.

This report is organized into seven sections and includes four appendices. Many of the required background and general discussion components summarized in this Annual Site Report have been further explained in previous documents submitted to Ecology and are referenced in the appropriate sections. The report is organized as follows:

- Section 1 – Provides a summary of the project, describes Site reporting requirements, and summarizes the organization of this report.
- Section 2 – Provides descriptions of the Site history, regulatory status, historical investigations, selection of remedial actions, Site cleanup action levels, monitoring requirements, and cleanup requirements.
- Section 3 – Summarizes remedial actions that have occurred at the Site and associated monitoring activities.
- Section 4 – Summarizes groundwater monitoring activities conducted at the Site and provides results and findings of these activities.
- Section 5 – Summarizes additional activities conducted in 2023, including groundwater sampling at waterfront piezometers and at wells in the northwest corner of the Site (referred to as the NW corner impacted area).
- Section 6 – Summarizes the activities completed, current Site status, and the conclusions presented in this report.
- Section 7 – Documents the references cited in this report.
- Appendix A: Sanitary Discharge Reports – Provides the two 2023 semi-annual discharge reports provided to the King County Department of Natural Resources and Parks (KCDNRP).
- Appendix B: Sheen Observations – Documents the occurrence of sheens within booms located on the Duwamish Waterway in 2023.

- Appendix C: Groundwater Monitoring Hydrocarbon Results – Presents graphs of hydrocarbon analytical results for active groundwater monitoring wells.
- Appendix D: Seattle Terminal North Bulkhead Replacement Project Typical Sections.

2 SITE DESCRIPTION, HISTORY, AND CLEANUP STANDARDS

The Site is located on Harbor Island and consists of two separate bulk fuel storage plants (Figure 1). Harbor Island is a 455-acre man-made island that lies between the East and West Waterways of the Duwamish River. Plant 1 occupies about 12 acres on the western portion of the island, along the West Waterway of the Duwamish River. Plant 2 occupies about 3.5 acres in the north-central part of the island. Both plants were constructed in the 1930s and have operated as bulk fuel storage and transfer facilities under several owners since that time. In 2017, SeaPort Midstream Partners LLC purchased the facilities and TMS assumed operation and the ongoing environmental responsibility that is within Ecology's jurisdiction.

Harbor Island was created primarily from marine sediments dredged from the Duwamish River. The island was substantially redeveloped in the early 2000s to accommodate additional shipping container off-loading and transportation and distribution. As such, the island is currently about 95 percent covered with industrial buildings, paved roads, and other impervious surfaces. The island's pervious surfaces consist primarily of land located adjacent to aboveground storage tanks and railroad tracks.

In the northern portion of the island, where the Site is located, groundwater flows radially outward from the island center and enters marine surface waters (the East and West Duwamish Waterways, Figure 1) at the island's edge. This flow pattern was reconfirmed in 2023, as discussed in Section 4.1.6. Local groundwater is recharged from precipitation and possibly from leaking underground utilities (e.g., storm sewers and public water supply piping). Recharge of groundwater from precipitation has decreased over past decades due to increases in impermeable surfaces during island redevelopment. Ecology and the United States Environmental Protection Agency (EPA) have determined that groundwater beneath Harbor Island is "non-potable," which is unlikely to change due to the island's extensive industrial land usage.

The subsurface infrastructure installed during the development of Harbor Island and the Site affects the groundwater-to-surface water exchange at the island edge and thus provides substantial protection of the Duwamish Waterway. The island was constructed in approximately 1900 by hydraulic dredging of the Duwamish Waterways, and from the downtown Seattle Denny Hill Regrade project, by creating large multi-acre settling ponds using timber bulkheads. The bulkheads were constructed on top of the native deltaic sediments to heights of approximately 20 feet and ultimately formed the shape and configuration of the island (Fowler 1924). These bulkheads are still in place beneath the Site and still have substantial structural integrity.

When the Site was developed, the western warehouse foundation (consisting of a vertical concrete wall, mostly below grade, with nearly 7-foot-wide concrete footings) was installed on top of, and incorporated with, driven interlocking sheet pilings. The warehouse foundation and

sheet piling were installed inside (landward) of the original island waterfront bulkhead. The sheet piling was driven many feet into the native sediments for structural stability (the exact depth is uncertain). The warehouse foundation, footings, and sheet piling were incorporated into an uninterrupted subsurface wall by continuing the foundation concrete down the several inch-wide spaces on either side of the sheet piling to depths of approximately 10 feet into the native sediments (Figure 8). Based on many hydraulic investigations conducted during and since the RI, and on observations and strain measurements collected for the warehouse western foundation during and following the February 28, 2001, Nisqually Earthquake (magnitude 6.7), the sheet piling/warehouse subsurface wall/barrier was determined to still have sufficient structural integrity.

As determined during the Remedial Investigation/Feasibility Study (RI/FS) and Engineering Design for the groundwater remedy (discussed in Section 3.1), the significance of these subsurface barriers is that both the original bulkhead and sheet piling significantly retard the exchange of groundwater and surface water. These barriers also have contained light non-aqueous phase liquid (LNAPL) along the waterfront and assisted with the success of the groundwater remedies in achieving the Consent Decree cleanup goals.

A new seawall was installed in 2017 and 2018 along the northern half of the waterfront of Plant 1 from the warehouse to the property boundary (Figure 17). The wall was installed based on observations/measurements collected following the Nisqually Earthquake to enhance the seismic stability of the Site. A hydraulic study was conducted in 2021 (Techsolve 2022a) to evaluate potential changes to Site hydrology due to the installation of the new seawall. The study results indicated that localized impacts of the new seawall on Site hydrology, such as attenuation of tidal response and reduction of groundwater to surface water communication have occurred. Some limited changes to overall hydrology, not related to seawall construction (i.e., long-term remedial actions involving pumping of shallow groundwater) may have occurred since the RI was completed in the early 1990s. The results also show that the performance criteria in the Consent Decree and GWCMCP for both recoverable and dissolved LNAPL indicator hazardous substances (IHSs) have been met.

These barriers, including the new seawall, therefore, also serve as part of the “Institutional and Engineering Controls” that provide ongoing protection for the Site, as referenced in Section 5.3.

2.1 Site Regulatory Status

Harbor Island was placed on the National Priorities List in 1983 as a Superfund Site due to elevated levels of hazardous substances in soil, primarily lead. The Harbor Island Superfund Site consists of seven original operable units (OUs). The Former ARCO/BP Harbor Island Terminal Site is part of the Tank Farm OU, which includes the adjacent Shell (formerly Equiva Services, LLC, Equilon,

and Texaco) and Kinder Morgan (formerly GATX and Shell) terminals. Ecology is the lead regulatory agency for the Tank Farm OU.

ARCO and Ecology cooperatively entered into Agreed Order No. DE 92 TC-N158 in 1992 (Ecology 1992) to conduct Site characterization activities and develop remedial actions. An RI/FS was completed in 1997 (Geraghty & Miller, Inc. 1994, 1996, 1997) and indicated that hazardous substances present in groundwater and soil at the Site were primarily highly weathered total petroleum hydrocarbons (TPH) as diesel (TPH-D), with lesser amounts of weathered TPH as gasoline (TPH-G) and heavier TPH as oil (TPH-O). The weathered TPH likely resulted from historical spills at the Site. The RI/FS showed the primary area of impact at the Site was a plume of varying amounts of free-phase and dissolved-phase LNAPL located beneath the warehouse and loading rack areas adjacent to the Duwamish Waterway at Plant 1. Secondary areas of concern included LNAPL-impacted soils located within the Plant 1 and Plant 2 tank farms (Figures 2 and 3). Site-specific cleanup alternatives for groundwater and soil were then developed to protect human health and the environment at the Site.

ARCO entered into Consent Decree No. 00-2-05714-8SEA with Ecology in 2000 for implementing remedial actions at the Site. Separate cleanup actions and compliance monitoring for the Plant 1 waterfront area and for the inland soils in Plant 1 and 2 were developed with Ecology and specified in the Cleanup Action Plan (CAP) (Ecology 1999). These remedial actions were further detailed in the Engineering Design Report (EDR) prepared by TechSolv and ARCADIS Geraghty & Miller (AG&M) (TechSolv and AG&M 2000a). Cleanup actions were selected from site-specific cleanup action alternatives developed as part of the Focused Feasibility Study (Geraghty & Miller 1997). Elements of the selected cleanup actions include:

- Pumping and treatment of groundwater for containment of an LNAPL plume that affected shallow groundwater along the waterfront of Plant 1.
- Excavation of accessible TPH-impacted soil “hot spots” in the inland portions of Plant 1 and Plant 2.
- Intrinsic bioremediation/natural attenuation of residual LNAPL in inaccessible soils.
- Air sparging and soil vapor extraction (SVE) for accelerated mass removal of residual hydrocarbons in inaccessible soils at Plant 1.
- Groundwater compliance monitoring.
- Deed restrictions.
- Institutional controls.

A target period of 18 months was established for removal of LNAPL beneath the warehouse at Plant 1, and a target period of five years was set for groundwater restoration as measured at the property and surface water boundaries. Due to Site complexities revealed during the RI,

additional contingency actions for the Site were anticipated and discussed with Ecology during the development of the CAP and have been implemented with Ecology's concurrence. These actions have included continuing operation of the waterfront recovery system beyond five years, and operation of an SVE system to address inaccessible hot spot soils inland from the waterfront at Plant 1, as further discussed in Section 3.

2.2 Cleanup Levels

Cleanup levels for IHSs) at the Site were identified and defined in the CAP and are summarized below.

The TPH cleanup action level for subsurface soil at the primary area of concern (Plant 1) was established to meet remedial objectives for protecting surface water at property boundaries and shorelines of the Duwamish Waterway. The Total TPH (TPH-G+TPH-D+TPH-O) cleanup level is also protective for other chemical constituents in petroleum product (i.e., benzene, toluene, ethylbenzene, and xylenes [BTEX]) and is:

Total TPH	10,000 milligrams per kilogram (mg/kg)

The TPH cleanup action level for subsurface soil at the second area of concern (Plant 2) was set to meet remedial objectives of protecting surface water at property boundaries by improving general groundwater conditions at the source. This cleanup level was also set to enhance the timely restoration of impacted areas through natural attenuation, and is:

Total TPH	20,000 mg/kg

Site groundwater cleanup levels established by Ecology were based on surface water standards, to be protective of aquatic organisms in the Duwamish River. These standards were based on adopted ambient water quality criteria (Washington Administrative Code 173-201A and Section 304 of the Federal Clean Water Act). Surface water standards were not established for TPH when the CAP was approved; therefore, groundwater cleanup levels for TPH-G, TPH-D, and TPH-O were selected by Ecology as protective cleanup goals. Site groundwater cleanup levels are:

Product (LNAPL)	No sheen
Benzene	71 micrograms per liter (µg/L)
Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs)	0.031 µg/L

Copper	2.9 µg/L
TPH-G	1,000 µg/L
TPH-D	10,000 µg/L
TPH-O	10,000 µg/L

2.3 Points of Compliance

The cleanup criteria are to be met at points of compliance (POCs), which were established in the Groundwater Compliance Monitoring and Contingency Program (GWCMCP) (TechSolv 1999b), which is Exhibit F of the Consent Decree.

The soil cleanup standards for TPH are intended to protect the beneficial use of groundwater (surface water quality and associated ecosystem). The cleanup actions conducted per the Consent Decree have resulted in substantive compliance with the soil cleanup standards by reducing concentrations of contaminants in soils to levels that support and maintain compliance with groundwater quality standards.

The achievement of cleanup levels in groundwater is measured at performance and confirmation POCs located within LNAPL plume areas, at the downgradient edge of the Site, and where groundwater primarily discharges to surface water. The groundwater to surface water discharge was identified during the RI as occurring through a narrow, roughly 10-foot-thick zone of groundwater located between the base of the bulkheads and the underlying saltwater (the typical subsurface water stratification for an island in a saltwater setting). These conditions were consistent along the entire waterfront but have been markedly improved north of the warehouse with the installation of the new seawall.

2.4 Compliance Monitoring Categories and Criteria

Three types of compliance monitoring are required to be performed at the Site, as specified in the GWCMCP to meet the monitoring program objectives, and include the following:

- **Protection Monitoring**. Protection monitoring is performed to confirm that human health and the environment are protected during all phases of the cleanup actions. Protection monitoring is addressed in the health and safety plan (HASP) that was prepared in conjunction with the EDR, construction plans and specifications, and operation and maintenance (O&M) plans. The HASP is a working field document and is maintained onsite. The HASP is updated as system operations or procedures change. Evaluation of the results of the Protection Monitoring is conducted concurrent with the Performance Monitoring.

- **Performance Monitoring**. Performance monitoring is performed to confirm that the cleanup actions are attaining cleanup standards and other performance standards.
- **Confirmation Monitoring**. Confirmation monitoring is performed to confirm the long-term effectiveness of the cleanup action once cleanup actions and other performance standards have been attained.

Details regarding performance monitoring and confirmation monitoring at the Site are presented in the following sections.

2.4.1 Performance Monitoring

The objective of performance monitoring is to confirm that the cleanup actions are attaining or have attained the cleanup standards and other performance criteria, as appropriate. Performance monitoring requires monitoring of LNAPL presence/thickness in the recovery wells during LNAPL recovery activities. Groundwater sampling is also part of performance monitoring to evaluate the effectiveness of the soil and groundwater cleanup actions and natural attenuation for meeting the Site cleanup goals and to achieve Site closure.

The results of performance monitoring are discussed in Sections 3 and 4. The criteria established in the GWCMCP to be used to determine if compliance performance standards have been met include the following:

- Plant 1 Free-Phase LNAPL: Removal to the maximum extent practicable or a lack of measurable LNAPL thickness in compliance monitoring wells LNAPL recovery systems, and until a persistent sheen is no longer observed on the waterway. A measurable thickness of free LNAPL is defined as greater than or equal to 0.01 feet thick.
- Plant 1 Dissolved TPH Constituents (dissolved phase LNAPL): Groundwater cleanup levels (Section 2.2) are based on protection of aquatic organisms located in the adjacent surface water and on human ingestion of such organisms. The Points of Compliance (POCs) established by Ecology for the Site groundwater are the property boundaries and along the waterfront as detailed in Section 2.3 and are represented by the Confirmation Monitoring Wells (Section 2.4.2).
- Plant 1 Intrinsic Biodegradation/Natural Attenuation: To demonstrate that natural attenuation is occurring to reduce contaminant concentrations, the performance criterion is periodic monitoring of constituent plume data (i.e., benzene and TPH) and other indicators of natural attenuation processes. Evaluations will focus primarily on documenting loss of contaminant mass in groundwater and monitoring trends in biogeochemical parameters.
- Plant 1 SVE System Performance Criteria: Operation of an SVE system will continue until volatile petroleum hydrocarbons are recovered and residual hydrocarbons are degraded to

a level that ensures continued compliance with cleanup criteria in waterfront POCs. Operation duration of the waterfront system, or potential needs for expansion/revisions to the SVE, will be evaluated as part of the evaluation of the Performance Monitoring.

- Plant 1 Air Sparging Performance Criteria: An air sparging system will be operated along the waterfront until the effect on LNAPL recovery becomes negligible (i.e., no measurable LNAPL thickness), and residual hydrocarbons are degraded to a level that ensures continued compliance with Site cleanup criteria in the warehouse area Confirmation Wells.
- Plant 1 Surface Water Boom Monitoring: The presence of sheens on the waterway will be monitored by visual observation. The results of sheen monitoring will be used to determine the effectiveness of remedial actions on reducing sheen and evaluate whether adjustments to remedial actions are necessary along the waterfront. Booms will be maintained until no persistent sheens associated with the terminal are detected.
- Plant 2 Performance Criteria: The performance criteria are removal of free LNAPL to the maximum extent practicable or a lack of measurable LNAPL thickness in Compliance Monitoring Well(s). A measurable thickness of free LNAPL is defined as greater than or equal to 0.01 feet thick. Additionally, the effectiveness of continued natural attenuation at the Site will be evaluated as part of the performance monitoring program. This evaluation will focus primarily on documenting the loss of contaminant mass and monitoring trends in biogeochemical parameters in groundwater.

2.4.2 Confirmation Monitoring

The objective of confirmation monitoring is to confirm the long-term effectiveness of the cleanup actions once performance standards have been met. Confirmation Monitoring Wells at Plant 1 consist of six wells, including five waterfront wells (AMW-01, AMW-02, AMW-03, AMW-04, and AMW-05) and one inland “Sentry Well” (AR-03) located at the southern property boundary. Confirmation Monitoring Wells at Plant 2 consist of five wells (GM-19S, GM-19D, GM-21S, GM-22S, and MW-03R).

The results of confirmation monitoring are discussed in Sections 3 and 4. The compliance criteria for confirmation monitoring established in the GWCMCP to be used to determine the long-term effectiveness of cleanup actions include the following:

- Plant 1 and Plant 2 Separate Phase Hydrocarbons: To demonstrate that free LNAPL removal has been accomplished, the confirmation criterion will be a lack of sheen in compliance monitoring wells for a period of one year.
- Plant 1 and Plant 2 Groundwater: The POC where cleanup levels (Section 2.2) will be met is at the property boundary of the Site and is represented by the Confirmation Monitoring Wells listed above. Groundwater samples shall be collected from the Confirmation

Monitoring Wells for a maximum of five years following attainment of cleanup levels or until the concentrations are determined as no longer being affected by onsite sources. Indications of that criterion are groundwater concentrations below cleanup levels for four quarters or concentrations of analytes have stabilized and reached equilibrium. Groundwater quality is evaluated based on trends and not based on a single event or cleanup exceedance in a single well. Equilibrium concentrations of each analyte may be determined using statistical methods or another method approved by Ecology. If groundwater quality data indicate that at least 95 percent of the wells are below cleanup levels for four or more consecutive quarters, Ecology can be petitioned for Site closure.

3 SUMMARY OF SELECTED REMEDIAL ACTIONS AND IMPLEMENTATION

The following sections summarize remedial actions selected for the Site based on the RI/FS and subsequent investigations, and their implementation status and compliance with the cleanup goals of the Consent Decree. The active remedial actions for soil and groundwater have been completed, as detailed in the following summaries of compliance monitoring results, and per referenced documents. The passive remedies for inaccessible soil and groundwater (intrinsic bioremediation/natural attenuation of residual LNAPL) are ongoing and, therefore, discussed at greater length than completed remedies. The remedial actions are broadly separated into two areas of discussion, for soil and groundwater located along the waterfront, and for soil and groundwater located inland from the waterfront. Each of these areas have separate designated IHS cleanup levels, as discussed in Section 2.2.

3.1 Waterfront Remedial Actions

Groundwater remedial actions have been conducted along the waterfront at Plant 1 (Figure 2) since 1992. An interim groundwater/LNAPL recovery system operated from 1992 through 2002, and an interim SVE system operated from 1996 through 2002. Final remediation systems were installed in 2002, as described in the EDR, and are summarized below.

Final remediation system designs were based upon the success of interim systems that exploited the containment benefits of the subsurface waterfront barriers, and consisted of a combination of SVE, groundwater/LNAPL recovery, and air sparging. The groundwater/LNAPL recovery system was designed to capture LNAPL and dissolved hydrocarbons in groundwater and provide partial hydraulic control along the waterfront. The air sparging system was designed to mobilize LNAPL to aid in its capture, to enhance in-situ biodegradation of residual hydrocarbons, and to strip volatile hydrocarbons from groundwater. The SVE system was designed to capture volatile hydrocarbon vapors and enhance in-situ biodegradation of residual hydrocarbons in the vadose zone. System components are located along the waterfront, in the warehouse, and by the truck loading rack areas of Plant 1 (Figure 4) and are further discussed in the following subsections.

The 2001 Nisqually Earthquake (magnitude 6.7) damaged the warehouse, delaying installation of final remediation systems until repairs were completed (TechSolv 2002). System construction activities were completed in 2003 and were detailed in the Construction Completion Report (CCR) (TechSolv 2003c). The CCR was prepared following system testing and startup and documented that requirements of the Consent Decree and EDR were followed during system construction. The CCR was approved by Ecology in 2004 (Ecology 2004a).

The O&M requirements for the final remediation system were presented in the Final O&M Manual (TechSolv 2003d), which was approved by Ecology in 2004 (Ecology 2004a). The O&M

Manual presents system descriptions, startup and shutdown procedures, alarm conditions and remedies, normal operating conditions, system safety features, waste handling, and vendor-supplied literature. The O&M Manual is a working field document, maintained onsite, and updated as system operations or procedures change or as equipment is replaced.

3.1.1 Waterfront Groundwater/LNAPL Recovery System

The waterfront groundwater/LNAPL recovery system depresses groundwater and captures LNAPL and shallow groundwater containing dissolved hydrocarbons. The system utilizes total-fluid pumps in recovery wells to pump LNAPL and groundwater to the remediation system treatment area. The system currently consists of nine recovery wells (RW-1, RW-2, RW-4, RW-5, RW-6, RW-7, RW-8, RW-9 and RW-10) located along the waterfront at Plant 1 (Figure 4). Recovered LNAPL and groundwater are pumped into an oil water separator (OWS), which separates LNAPL from groundwater. Recovered LNAPL was historically recycled offsite; however, LNAPL had not been recovered since 2008, as detailed in the following sections. Separated groundwater enters a diffused air stripper (DAS), which strips dissolved volatile hydrocarbons from wastewater. Treated groundwater flows through a totalizing flowmeter prior to discharge to the sanitary sewer. The OWS, DAS, and flowmeter are utilized to comply with KCDNRP sanitary sewer discharge requirements, as detailed in Table 1 and Appendix A.

3.1.1.1 Recovery System History

Recovery Well RW-1 has been utilized for groundwater recovery since the startup of the interim system in 1992. Recovery Well RW-4 was brought online as part of the interim system in 1998. Recovery Wells RW-2, RW-5, and RW-6 have operated since 2001, following system installation activities north of the warehouse. Recovery Wells RW-7, RW-8, RW-9, and RW-10 were completed during final system construction and brought online in 2002. Recovery system data included the first quarter of 2024.

Well GM-11S was converted from a monitoring well to a recovery well in 2000 after LNAPL was observed in the well. Well GM-11S was taken offline in May 2013 and has remained offline through 2023 as conveyance line blockages prevent operation of this well. Due to measured improvements in groundwater quality at Well GM-11S, groundwater pumping is no longer performed. LNAPL is no longer measurable in Well GM-11S. Observed sheen in Well GM-11S is infrequent, however, a slight sheen was detected in January 2024, as well as a slight sheen observed once in 2021 and a sheen previously observed in August 2018 (Section 4.1.5).

In 2003, decreased LNAPL recovery triggered a soil investigation at Plant 1 (TechSolv 2003b). Soil cores evaluated for LNAPL presence showed no LNAPL existing outside the capture zone of the recovery wells, supporting data that indicate most of the LNAPL has been recovered from the warehouse area.

A probing investigation was completed in 2019 (TechSolve 2020a) that involved collecting and analyzing soil and groundwater samples along the waterfront to further evaluate the success of the LNAPL remedial actions. The investigation results further support the conclusion that the groundwater/LNAPL recovery system has recovered LNAPL to the maximum extent practicable and has met the performance criterion listed in the GWCMCP for the discontinuation of the system operation (discussed above in Section 2.4.1).

3.1.1.2 Recovery System Permit Compliance

The groundwater/LNAPL recovery system has been operated and monitored weekly, and maintenance is performed as needed to maintain system operation in accordance with permit requirements. Groundwater testing of influent and effluent streams (Table 1) is conducted monthly to ensure compliance with groundwater discharge requirements under a sanitary sewer permit (KCDNRP Permit 7592-05 for Sample Site A43262) and an air discharge permit (Puget Sound Clean Air Agency [PSCAA] Discharge Authorization No. 9817).

PSCAA Notice of Construction No. 9817 secured for the remedial actions at the Site allows for continued air discharge from the DAS portion of the groundwater/LNAPL recovery system, with appropriate monitoring. Air monitoring data are collected to verify compliance with PSCAA's air discharge limits and are provided to PSCAA upon request. In 2023, air discharges from the DAS were below permitted levels and below PSCAA's exemption thresholds for soil and groundwater remediation projects listed in PSCAA Regulation 1, Article 6, Section 6.03(c)(94), indicating air permitting is no longer required. Permits and air data are retained by TechSolve and are available upon request.

In 2023, the sanitary sewer discharge permit (KCDNRP Permit 7592-06) required semi-annual submittal of monitoring data and monthly submittal of total gallons of processed groundwater discharged to the sanitary sewer. The two 2023 semi-annual KCDNRP Waste Discharge Self-Monitoring Reports are included in Appendix A. Results from testing (Table 1 and Figures 5 through 7) demonstrate that the treatment system effectively met discharge permit requirements. Should discharges exceed permit guidelines, recovery systems will be shut down and KCDNRP contacted regarding the exceedance.

The 2023 through first quarter 2024 monitoring results from testing recovered and treated groundwater (Table 1) show that concentrations of benzene and TPH in both influent (recovered groundwater that has not been treated with the DAS) and effluent (wastewater sampled following OWS and DAS treatment and prior to sanitary discharge) water were below both the permitted discharge limits and the IHS cleanup levels (Section 2.2) during all monitoring periods throughout the year. These data provide an additional line of evidence that the groundwater/LNAPL recovery system has recovered LNAPL to the maximum extent practicable. The results also show the

effects of conducting the remediation activities at the site on the potential risks associated with concentrations of residual hydrocarbons in soils range from being reduced to a minimum in some areas and eliminated in others. The results also show that progressing forward towards Site closure based on inactive remedial actions, (i.e. intrinsic bioremediation and groundwater monitoring) is applicable and warranted.

3.1.1.3 Recovery System Drawdown and Capture

The groundwater/LNAPL recovery system pumps shallow groundwater, with water table drawdown at recovery wells designed not to extend deeper than the bottom of the LNAPL smear zone (approximately 4 feet in total thickness). As detailed in the RI, this smear zone was created by seasonal and tidal fluctuations in water table elevation. Pumping tests (TechSolv 1999a) showed that an appropriate capture zone could be achieved with pumping rates from 0.7 to 0.9 gallons per minute (GPM) per well. Recovery system startup testing confirmed these pumping rates achieved desired groundwater drawdown and capture.

Performance monitoring data for the groundwater/LNAPL recovery system collected through 2023 (Table 1) show that desired hydraulic capture/control continues to have been achieved. During the first 5 years of system operation following startup (2002 to 2006), the average annual system flow rates ranged from 4 to 11 GPM, which represents the combined total pumping rate from operating all the recovery wells. From 2007 through 2010, average annual flow rates ranged from 2.2 to 3.2 GPM. The average annual flow rates have ranged from 1.0 to 1.9 GPM since 2011. While some of the reduction in recovery rates is attributable to system downtime for O&M and the elimination of pumping well GM-11S, as discussed in the previous section, these data and observations indicate fouling in soil formations surrounding the recovery wells has decreased recovery over time. The fouling is mainly from biological and mineral deposits generated by high iron and manganese concentrations in groundwater. Deposits are routinely cleaned from wells, pumps, and piping to prevent fouling and blockages. Preventative maintenance and redevelopment activities are performed as needed on groundwater recovery wells to remove fouling and attempt to improve pumping rates, as further discussed in Section 3.1.1.6. While fouling may affect the individual well pumping rates, the desired system recovery rates appear to have achieved the performance criterion for the system, which is to recover LNAPL to the maximum extent practicable.

Groundwater elevations vary daily in groundwater/LNAPL recovery wells due to tidal fluctuations in the adjacent Duwamish Waterway. Testing has shown that, while the Duwamish Waterway fluctuates up to 16 feet during a daily tidal cycle, shallow groundwater only fluctuates about 1 foot over the same period (TechSolv 2004). The RI determined that the difference in tidal response for shallow groundwater versus deeper groundwater is due to the dampening effect of the western warehouse foundation (driven interlocking sheet piling underlying the warehouse foundation), bulkheads at the island edge, and decreased seepage through silty/clay layers that

partially separate upper and lower water table elevations observed in some areas along the waterfront during the RI (Figure 8). A hydraulic investigation conducted in 2021 re-evaluated site hydrologic conditions following installation of the new seawall along the waterfront north of the warehouse. The results of the investigation confirmed that current hydrologic conditions at the site are generally consistent with those observed during the RI.

The pumping rate data for the recovery system, collected multiple times daily during various tidal stages, have shown that fluctuations in tidal and seasonal elevations and flows of the adjacent surface water strongly affect the average system pumping rates. The Performance monitoring data show a strong correlation between tidal and seasonal surface water elevations and the system groundwater recovery rates. These results indicate that groundwater/LNAPL recovery system operation affects deeper groundwater and that the desired capture is achieved without adjustment to account for daily tidal fluctuations (i.e., total fluid pumps automatically pump faster during high tides).

3.1.1.4 LNAPL/Groundwater Recovery

Performance monitoring results collected from operation of the groundwater/LNAPL recovery system (Table 1) support the conclusion that free phase LNAPL has been recovered to the maximum extent practicable from the waterfront area. Details of the quantities of the LNAPL by classification (e.g., TPH as oil, diesel, or gasoline) are included in Table 1, and for the dissolved phase LNAPL concentrations recovered since final groundwater/LNAPL recovery system startup in 2002. The LNAPL characterization data are recorded when enough LNAPL has been generated to warrant offsite recycling, which has not occurred since 2008. Table 1 data is also used to support the KCDNRP semi-annual discharge reporting as well as Puget Sound Clean Air Agency data requests as described in Section 3.1.1.2.

Low free phase and dissolved phase LNAPL recovery rates (Section 3.1.1.3) over the past decade of system operation indicate that little to no recoverable LNAPL remains within the capture zone of the groundwater/LNAPL recovery system (the warehouse and truck loading rack areas). Additional lines of evidence provided in the 2019 Plant 1 Probing Investigation Report (TechSolve 2020a) support this assertion.

The cumulative amount of LNAPL recovered by both the interim and final groundwater/LNAPL recovery systems is approximately 10,125 gallons (Table 3 and Figure 9). The final system has recovered 395 gallons of free phase LNAPL from October 2002 through March 2024, and 419 gallons of dissolved LNAPL (Tables 1 and 3).

The total combined recovery, including liquid phase and dissolved phase LNAPL, and LNAPL recovered by the SVE system (discussed in Section 3.1.2) to date is about 29,783 gallons (Tables 1 and 3). Influent concentrations of IHSs in recovered groundwater through March 2024 are included in Table 1 and shown on Figures 5 through 7.

Influent concentrations of dissolved phase LNAPL recovered by the groundwater remediation system have decreased over time (Section 3.1.1.3), which is consistent with decreasing LNAPL concentrations in individual recovery wells. Groundwater samples are voluntarily collected semi-annually from the individual recovery wells to evaluate trends in dissolved phase LNAPL concentrations in shallow groundwater (Table 2). This voluntary monitoring is intended to assist with evaluating the attainment of the performance criterion for the groundwater/LNAPL recovery system. The criterion for operating the groundwater remediation system is removal of free phase LNAPL to the maximum extent practicable (Section 2.4.1). The dissolved phase LNAPL cleanup levels for groundwater, listed in Section 2.2 and Table 2, are applicable at the POCs established for the Site. The cleanup levels apply to the deeper groundwater where groundwater and surface water exchange occurs and where Confirmation Monitoring Wells located along the waterfront (Section 2.4.2) are screened. These groundwater cleanup levels are not applicable to recovery wells, as detailed in the GWCMCP, but are included in Table 2 for reference purposes only.

Results of the LNAPL sampling/characterization conducted for the recovery wells in 2023 show that the LNAPL impacting the wells continues to be primarily highly weathered and mostly diesel with lesser amounts of heavier oil and gasoline. No new LNAPL sources have been detected. A sample from one recovery well (RW-2) exceeded the benzene cleanup level. Samples from three recovery wells (RW-2, RW-4, and GM-11S) exceeded the gasoline (TPH-G) cleanup level. Samples from three recovery wells (RW-2, RW-4, and RW-8) exceeded the diesel (TPH-D) cleanup level. TPH and benzene concentrations detected in samples from six active recovery wells (RW-1, RW-5, RW-6, RW-7, RW-9, and RW-10) were below all IHS cleanup levels in 2023. These results show that recovery wells with groundwater concentrations of dissolved IHSs above cleanup levels appear to be limited to the northern end of the recovery system located south of the truck loading rack area (Wells RW-2 and RW-4) and in the southern portion of the warehouse area (Well RW-8). These data have been consistent over the past several years and are also consistent with the results of the Waterfront Probing Investigation (Techsolve, 2020a), which demonstrates a marked improvement in groundwater quality along the waterfront and that recoverable LNAPL is no longer present.

3.1.1.5 Recovery System Maintenance and Repairs

Since startup in 2002, the groundwater/LNAPL recovery system has remained operational. Only minor shutdowns occurred in 2023, mainly due to power fluctuations during storm events. Other shutdowns related to routine O&M activities that occur periodically throughout the year, such as to address sediment, scale, and biofouling buildup on pumps and in groundwater piping. The biofouling is attributed to high concentrations of iron and manganese in groundwater.

Independent corrosion engineers have performed annual integrity inspections on the steel total fluids piping since 2003. Piping is also inspected as part of routine system O&M activities.

Inspections evaluate piping at recovery wellheads, along the waterway, and at other accessible areas. Corrosion inspections monitor potential losses in pipe wall thickness and serve to confirm that systems can safely continue operation and to identify portions of the system that may need replacement. Annual reports, prepared by corrosion engineers, summarize the inspections. Reports are kept on file at TechSolve's office and are available for review upon request.

The most recent corrosion inspection was conducted in August 2023. The results of this inspection are similar to past inspections, which have determined that, while steel total fluids piping is susceptible to corrosion, the thickness of system piping is adequate to continue to safely convey recovered remediation fluids.

3.1.1.6 Recovery Well Redevelopment

Well redevelopment is conducted as needed to maintain recovery well productivity by cleaning and removing sediment, scale, and biofouling from the well screens and surrounding sand packs. Redevelopment activities have been conducted during previous years, as detailed in previous Annual Reports (TechSolve 2012, 2013). The most recent redevelopment activities were conducted in June 2022 (TechSolve, 2023a) and consisted of recovery wells being jetted and pumped to remove sediment and fouling. Redevelopment activities will be conducted if needed in 2024 to maintain productivity from groundwater recovery wells.

3.1.2 Waterfront Soil Vapor Extraction System

Operation of the waterfront SVE system was initiated January 1996, then discontinued in May 2008 as the system had met associated performance criteria (Section 2.4.1). The system shutdown criteria included performance monitoring data that indicated that the system was no longer recovering measurable concentrations of vapor phase hydrocarbons or gases that would indicate that the system was further enhancing biodegradation in inaccessible hot spot soils. SVE system shutdown was approved by Ecology during a five-year review (Ecology 2008).

About 3,582 gallons of TPH-G (as vapor) were recovered by the waterfront SVE system (Table 17 Additionally, enhanced biodegradation from SVE system operation added about 16,075 gallons, for a total of 19,657 gallons of LNAPL recovered by SVE (Table 3 and Figure 9), as calculated from SVE vapor stream monitoring data. Waterfront SVE system operation was discussed in greater detail in previous Annual Reports prepared during system operation (e.g., TechSolv 2009).

3.1.3 Waterfront Air Sparging System

Air sparging along the waterfront was initiated in February 2003 and discontinued in 2008 as the system had met the associated performance criteria (Section 2.4.1). Part of the system shutdown criteria included SVE air monitoring data that indicated air sparging operations no longer

volatilized measurable quantities of LNAPL. Additionally, air sparging operations likely contributed to the biofouling that has been detected in the groundwater/LNAPL recovery system. Information on air sparging system operation was presented in previous Annual Reports prepared during system operation (e.g., TechSolv 2009).

3.2 Surface Water Sheen and Containment Boom Monitoring

Oil sorbent booms have been maintained on the West Duwamish Waterway located adjacent to Plant 1 to contain oil sheens that have occasionally appeared on the surface water. During 2023, the booms were located adjacent to two areas alongside the warehouse (Figure 4). The boom locations were selected to best contain the sheens when they were observed on the West Duwamish Waterway. These sheens have been observed emanating from marine sediments directly adjacent to the Site. The occurrence of these sheens has decreased markedly in frequency and extent over time as the recovery systems have substantially improved the subsurface LNAPL conditions.

Booms and the waterway are monitored weekly, at a minimum, for the presence of oil sheens and boom integrity, and augmented by checks made by Terminal personnel. Booms are replaced as necessary. A Containment Boom Log (Table 4) is maintained to document the presence or absence of sheens within the boomed areas and the adjacent waterway. The extent of observed sheens is recorded on a scale from 0 to 2, with 0 representing no sheen, 1 representing a light sheen visible within a portion of the boom, and 2 representing a heavy sheen visible throughout the boomed area. The Duwamish Waterway tidal stage is also recorded to evaluate whether sheen occurrences correlate with tidal stage. Table 4 includes all sheen observances from 1996 through March 2024. Yearly charts of waterway sheen monitoring from 1996 through 2023 are presented in Appendix B.

Sheens were historically observed in the early- to late-1990s in the waterway adjacent to the loading rack and in the area immediately adjacent to Recovery Well RW-1. This is the oldest recovery well where the majority of free phase LNAPL has been recovered. Sheens next to the loading rack have not been observed since February 2009 so Ecology was petitioned and approved discontinuing the maintenance of recovery booms in this area in 2016 (TechSolve and Ecology 2016). Sheen inspections continue to be conducted in the loading rack area and a recovery boom will be reinstalled if sheens are observed in this area. Sheen monitoring results indicate that sheens observed on the Waterway adjacent to the warehouse have been infrequent and minor since startup of the final system in October 2002. No sheens were observed within the Northern Warehouse Boom during 2023 or to date this year.

During construction of the new Terminal seawall along the northern waterfront in 2017 to 2018 (Figure 17), sheens were detected, contained, and captured in this area using containment and sorbent booms. The sheens were directly attributable to sediment and ground disturbance

activities associated with construction of the new seawall, as detailed in the associated Water Quality Monitoring Summary Report (ERM West and TechSolve 2018). No sheen has been observed on the waterway adjacent to the loading rack area following completion of seawall construction activities. The loading rack area also encompasses the NW corner impacted area (Section 5.2).

The appearance of just two observable sheens on the waterway since October 2020, with one of the sheens appearing to originate from an offsite source, indicates that the performance criterion for there to be no detected persistent sheens associated with the terminal (Section 2.4.1) has been met. Due to the absence of sheen in the Southern Warehouse Boom for over two and one-half years, Ecology was notified that the use of the Southern Warehouse Boom will be discontinued going forward (TechSolve 2022b). The boom was removed in April 2022 and can be reinstalled if a persistent sheen is observed in this area in the future. Shoreline waterway monitoring will continue in 2024 to further evaluate the attainment of this performance criterion.

The West Duwamish Waterway adjacent to the Terminal is also monitored for “orphan” sheens that have been occasionally observed along the shoreline waterfront and have emanated from offsite sources. These sheens have been detected infrequently since the Site RI activities began in 1990. They have been correlated at times with either the Metro storm sewer outfalls located just outside the southern-most or northern-most Terminal property boundaries (the Lander Street and Florida Street stormwater outfalls, respectively [Figure 2]). The Terminal does not connect to storm sewer systems that feed these outfalls. The observed sheens have also occurred concurrent with sediment remedial dredging activities that have been conducted for the northern and southern former property owners. The Duwamish Waterway often has a “back-eddy current” along the Terminal waterfront where these sheens have been observed to collect. They also collect outside the monitored boomed areas established for the waterfront. The Terminal and TechSolve continue to monitor for orphan sheens and, when observed, these sheens are reported to the City of Seattle’s and Ecology’s spill response hotlines. The Terminal and TechSolve have assisted with evaluating the potential sources for some of these sheens, when possible.

3.3 Inland Soil and Groundwater Remedial Actions

Excavation of accessible “hot spot” soils was the primary remedy selected for soils located inland from the waterfront that had LNAPL above the soil cleanup actions levels (Section 2.2). In-situ treatment methods, including natural attenuation and SVE, were also selected to treat inaccessible hot spot soils remaining after the excavation activities due to their location adjacent to or beneath structures, paved driving areas, etc. Areas identified for cleanup actions are shown in Figures 2 and 3. Additionally, a Restrictive Covenant, effective May 30, 2000, restricts the Site to “industrial use” only and imposes restrictions on activities in selected areas of the Site (primarily soil disturbance activities or those that create new exposure routes in identified areas).

Excavation and in-situ soil remedy plans were described in the EDR (TechSolv and AG&M 2000a) and in the Inland Soils Plans and Specifications (TechSolv and AG&M 2000b).

Cleanup actions for inland soils accessible to excavation at Plants 1 and 2 were completed in 2000. Excavations focused on predetermined areas with additional areas excavated as needed. A total of 3,470 cubic yards of contaminated soil was removed from Plant 1 and Plant 2, as detailed in the TPH Hot Spot Soils Excavation Completion Report (TechSolv and AG&M 2001).

Inaccessible hot spot soils were identified at Plant 2 following soil excavation activities (Figure 10). Natural attenuation is treating these remaining soils. Ongoing performance and confirmation groundwater monitoring, conducted following the soil excavation, demonstrated that both the performance and confirmation cleanup criteria (Sections 2.4.1 and 2.4.2) for inland groundwater at Plant 2 had been met. In 2004, Ecology concurred that "remedial actions appear to be complete at Plant 2" (Ecology 2004a).

Inaccessible hot spot soils were identified at Plant 1 following soil excavation activities (Figure 11). At the southern property boundary of Plant 1, groundwater monitoring indicated that excavations had not restored groundwater quality to meet cleanup levels within the 5-year restoration period. Groundwater monitoring showed that detected concentrations of benzene and TPH-G fluctuated and exceeded cleanup levels, most notably in Performance/Confirmation Well AR-03 (Section 4 and Appendix C). The historically fluctuating concentrations of TPH detected in groundwater at Well AR-03 correlated to seasonal fluctuations in water table elevation, indicating the source was in the vadose zone.

A 2005 soil probing investigation indicated that TPH-G and benzene existed within an approximate 1-acre source area (Figure 12), which was responsible for continued groundwater impacts at the southern property boundary (TechSolv 2006). Additional wells were installed in this area to monitor groundwater conditions, as discussed in Section 4.1.2.2, and contingency remedial actions were implemented, as discussed below.

3.3.1 Inland SVE System

Contingency remedial actions for soil and groundwater were evaluated in 2007 to address the hydrocarbon source area at the southern property boundary of Plant 1 described in the previous section. SVE was selected as the preferred remedial alternative. SVE system designs (Figure 13) were submitted to Ecology (TechSolv 2007b) and Ecology subsequently approved system installation (Ecology 2007). Installation, pilot testing, and SVE system startup occurred in 2008 (TechSolv 2009). Pilot testing showed the SVE system had a radius of influence that obtained capture throughout the source zone (Figure 12). The inland SVE system operated from August 2008 through December 2014.

Air samples from the SVE vapor stream showed that the system recovered 1,291 gallons of TPH-G and 2.5 gallons of benzene over six years of operation (Table 5 and Figure 14). Concentrations of TPH-G and benzene in recovered vapor streams decreased rapidly after startup (Figure 15), as anticipated, as soils investigations (TechSolv 2006) showed high levels of homogeneity and porosity of shallow unsaturated soils in the source zone.

SVE-induced airflow within the soils enhanced the biodegradation of residual hydrocarbons. Calculations estimated that an additional 4,355 gallons of hydrocarbons were reduced by enhanced biodegradation, bringing combined biodegradation and vapor recovery of LNAPL to 5,642 gallons (Table 5 and Figure 16). Reductions in biodegradation rates occurred over time as the source zone was recovered and degraded, as shown by decreasing monthly carbon dioxide concentrations (Figure 15). From 2012 to 2014, carbon dioxide concentrations in the recovered SVE vapor stream were not detected above atmospheric levels.

SVE system operation was discontinued in December 2014 as the system had met the associated performance criteria (Section 2.4.1) and capture data indicated the bulk of the LNAPL available to direct capture or enhanced biodegradation had been captured or reduced, respectively. While the SVE system operation was discontinued, the system was maintained in an operative state through 2017. Ecology was petitioned in 2017 to decommission the inland SVE system (TechSolve 2017). Based upon subsequent negotiations, Ecology approved (Ecology 2018) a proposed limited SVE decommissioning (TechSolve 2018) where system operation could be resumed in the future, if warranted. The limited decommissioning was completed in 2018.

Groundwater conditions have improved at the southern property boundary since the inland SVE system began operation. TPH-G and benzene concentrations measured in groundwater are now mainly below IHS cleanup levels listed in Section 2.2, as discussed in the following sections. The remedial actions conducted for the inland soils at Plant 1 have significantly contributed to protection of the Duwamish Waterway and reduced the potential for offsite migration of dissolved LNAPL along the southern property boundary.

4 GROUNDWATER MONITORING ACTIVITIES

Groundwater monitoring activities have been conducted at the Site since 1997 on a network of selected wells. Monitoring activities were conducted voluntarily from 1997 through 1999. Since 2000, groundwater monitoring has been conducted per the requirements of the Consent Decree's GWCMCP, with periodic revisions as noted below, and in accordance with the methods and procedures described in the Sampling and Analysis Plan included with the RI.

Groundwater samples are analyzed for selected IHSs, including TPH-G, TPH-D, TPH-O, benzene, and cPAHs. Monitoring activities also include monthly inspections for the presence of LNAPL in selected wells. Analytes and selected wells have been periodically removed from the monitoring program with Ecology's approval, due to analyte concentrations consistently below cleanup levels. Wells have also been installed and added to the program, as needed, and with Ecology's approval. Compliance groundwater monitoring data and some voluntary data are included in Tables 6 through 9. The results of groundwater monitoring activities are summarized in the following sections.

4.1 Plant 1 Compliance Monitoring

Compliance monitoring at Plant 1 has included quarterly groundwater monitoring for TPH-G, TPH-D, TPH-O, benzene, cPAHs, biochemical parameters, groundwater elevations, and monthly monitoring for the presence of LNAPL. While many of the confirmation compliance monitoring criteria (Section 2.4.2) have been met, Plant 1 is in the performance phase (Section 2.4.1) of compliance monitoring, as remedial actions are ongoing. Monitoring results at Plant 1 (Tables 6 through 9) and revisions to the monitoring program are discussed in the following sections.

4.1.1 Plant 1 Monitoring Well Network

In 2023, the Plant 1 Performance Monitoring Well network (Figure 17) included Wells AMW-01 through AMW-05, GM-14S, GM-15S, GM-16S, GM-17S, GM-24S, AR-03, and MW-1-T9 through MW-3-T9. The monitoring history and rationale for these wells is based on the following:

- Monitoring Wells AMW-01 through AMW-05 are the Performance/Confirmation Monitoring Wells for the Plant 1 waterfront. These wells were installed and first sampled in 2000 as Performance/Confirmation Wells along the waterfront, per requirements of the Consent Decree. These wells are screened to allow representative sampling in the zone of groundwater discharge to the Waterway beneath the existing warehouse foundation and island bulkhead and above brackish groundwater. These wells are screened deeper than other wells in the monitoring well network that are utilized to monitor shallower groundwater conditions.

- Monitoring Well GM-14S is an inland Performance Monitoring Well that was added to the Performance Monitoring Well network in 2007, as requested by Ecology. Well GM-14S was originally utilized to monitor for sheen presence on groundwater. As sheens are no longer being detected in this well, performance monitoring was initiated to monitor water quality in this area of the Site.
- Well GM-15S is a Performance Monitoring Well that is located downgradient from Plant 1 soil remedy excavations (Figure 2) and was within the inland SVE system's capture zone. Based upon limited hydrocarbon detections, the monitoring frequency of Well GM-15S was reduced from quarterly to semi-annually, with concurrence from Ecology (Ecology 2009). Following detections of IHSs (TPH-G and benzene) above cleanup levels in 2013, the monitoring frequency of Well GM-15S was voluntarily increased to quarterly. By the fourth quarter of 2013, concentrations of IHSs fell to historically low levels and below cleanup levels. In 2018, Ecology agreed (Ecology 2018) to a plan (TechSolve 2018) to resume monitoring Well GM-15S on a semi-annual frequency in the first and third quarters, if concentrations of IHSs remain below cleanup levels.
- Wells GM-16S and GM-17S are Performance Monitoring Wells that are hydraulically upgradient of the Site. Monitoring for IHSs was discontinued with Ecology's approval in 2000 (Ecology 2000a), as enough background data had been collected from these wells. Monitoring for IHSs resumed in 2007, as recommended by Ecology, to monitor for IHSs potentially migrating onto the Site from upgradient, offsite sources. The groundwater sampling frequency in these wells was reduced from quarterly to semi-annually in 2009, with concurrence from Ecology (Ecology 2009), as IHS concentrations have been below cleanup levels since resuming sampling.
- Well GM-24S is a Performance Monitoring Well that is located within the Plant 1 soil remedy excavation area.
- Well AR-03 was established as a "Sentry Well" in the GWCMCP as it is located south of the southern property boundary, downgradient from the Plant 1 soil remedy excavations, and is within the inland SVE system's capture zone. Well AR-03 is essentially part of the Performance/Confirmation Well network. In 2018, Ecology agreed (Ecology 2018) to a plan (TechSolve 2018) to monitor Well AR-03 on a semi-annual frequency in the first and third quarters, provided that concentrations of IHSs remain below cleanup levels.
- Wells MW-1-T9 through MW-4-T9 were installed and added to the Performance Monitoring Well network in 2005 to further evaluate groundwater quality downgradient from the Plant 1 soil remedy excavations (TechSolv 2007a). These wells are located within the inland SVE system's capture zone. In 2018, Ecology agreed (Ecology 2018) to a plan (TechSolve 2018) to discontinue monitoring of Well MW-4-T9 and to monitor Wells MW-1-T9, MW-2-T9, and MW-3-T9 on a semi-annual frequency in the first and third quarters, provided that concentrations of IHSs remain below cleanup levels.

4.1.2 Dissolved LNAPL Monitoring

IHS monitoring results for benzene, TPH-G, TPH-D, and TPH-O in groundwater from Plant 1 monitoring wells are documented in Table 6, Figures 18 through 21, and Appendix C. Table 6 provides all monitoring results from all wells since project inception. Figures 18 through 21 provide groundwater concentration maps of LNAPL results for each quarter in 2023 at Plant 1. Appendix C provides graphs of LNAPL concentrations versus time for all Performance and Confirmation Monitoring Wells.

4.1.2.1 Point of Compliance Dissolved LNAPL Monitoring

The GWCMCP identified that IHS cleanup levels are to be met at the POC for the Site, which at Plant 1 are Performance/Confirmation Monitoring Wells AMW-01 through AMW-05 located along the waterfront, and the Sentry Well AR-03 located along the southern property boundary.

Analysis of groundwater samples from Performance/Confirmation Monitoring Wells AMW-01 through AMW-05, located along the waterfront, indicate that concentrations of all LNAPL IHSs were below cleanup levels in 2023. Concentrations in these wells have been below cleanup levels for TPH-G, TPH-D, and TPH-O for all quarterly groundwater monitoring events since installation and have been below the benzene cleanup level since March 2014.

Groundwater samples from Wells AMW-03, AMW-04, and AMW-05 have never exceeded the 71 µg/L cleanup level for benzene (Table 6 and Appendix C). Groundwater at Well AMW-01 has exceeded the benzene cleanup level in 40 of 89 quarters since monitoring began in 2000. However, benzene concentrations have been below the cleanup level in AMW-01 for the last 35 quarters, since June 2014. Groundwater from Well AMW-02 exceeded the benzene cleanup level in 14 of 89 quarters. Benzene levels were again exceeded at Well AMW-02 in the first quarter of 2023; however, benzene concentrations have been below cleanup levels for the last 3 quarters. Remedial actions conducted for soils located upgradient of these wells, through the excavations and operation of the inland SVE system, have been successful in reducing groundwater benzene concentrations in the area of Wells AMW-01 and AMW-02. Additionally, improvements in the quality of groundwater located shallower than these well screens have been observed due to the ongoing waterfront remedial actions (Section 3.1).

At Well AR-03, located along the southern property boundary, concentrations of all IHSs were below the cleanup levels in 2023. Groundwater samples from this well have been below the cleanup levels for benzene, TPH-G, TPH-D, and TPH-O for over a decade, since September 2010 (Table 6 and Appendix C).

4.1.2.2 Performance Dissolved LNAPL Monitoring Results

Performance Monitoring is conducted for dissolved LNAPL at additional wells throughout Plant 1 to evaluate the effectiveness of ongoing remedial actions, in accordance with Performance Monitoring requirements (Section 2.4.1).

In the upgradient area of Plant 1, groundwater concentrations in Performance Wells GM-16S and GM-17S were below cleanup levels for all IHSs in 2023, indicating that potential upgradient sources have not been impacting these wells. IHSs have not been detected at or above cleanup levels in groundwater from Wells GM-16S and GM-17S since monitoring was resumed in 2007. These wells will be monitored semi-annually in the first and third quarters of 2024 to evaluate the potential migration of IHSs onto the Site from upgradient, offsite sources.

In 2023, near the middle of Plant 1, groundwater concentrations detected in Performance Well GM-14S were below cleanup levels for all IHSs except benzene. Monitoring Well GM-14S is located immediately downgradient of the Terminal's OWS in Plant 1. Concentrations of TPH-G have been detected above the cleanup level in 40 of 66 quarters since monitoring resumed at this well in 2007. TPH-G concentrations detected in Well GM-14S appear stable, and this well is located hydraulically upgradient from the groundwater/LNAPL recovery system operating along the waterfront. A benzene exceedance in the third quarter of 2021 was the first benzene exceedance in groundwater from this well since 2007. Benzene was detected above the cleanup levels in all four quarters of 2022 and again in all four quarters of 2023; however, levels have been trending downward. Groundwater concentrations in Well GM-14S have been below cleanup levels for TPH-D and TPH-O since sampling resumed in 2007 (Table 6 and Appendix C).

Results of groundwater monitoring at wells in and downgradient of the former soil hot spot areas in Plant 1 (Performance Wells GM-24S, GM-15S, MW-1-T9, MW-2-T9, MW-3-T9, MW-4-T9, and Performance/Confirmation Well AR-03) show that soil excavations completed in 2000 (Section 3.3) stabilized concentrations of dissolved LNAPL in these areas. Groundwater quality also improved further in these areas due to operation of the inland SVE system from 2008 through 2014 (Section 3.3.1). Groundwater quality improvements due to SVE operation can be seen in the decreasing concentrations of benzene and TPH-G in monitoring wells located within the SVE capture zone (Appendix C: Wells AR-03, GM-15S, MW-1-T9, MW-2-T9, and MW-3-T9). Data presented in Table 6 show concentrations of IHSs detected in groundwater in 2023 were within historic ranges and appear to be stable (Appendix C).

The performance monitoring exceedances of IHSs in groundwater at Plant 1 in 2023 were limited to benzene detected during one quarter of sampling in Well AMW-02 and ongoing benzene detections in Well GM-14S. The single detection in Well AMW-02, and the benzene trend graphs for Well GM-14S included in Appendix C indicate that the sources of IHSs impacting these wells have been stabilized or reduced. Monitoring data will continue to be evaluated in 2024 and trends will be discussed in future reports.

4.1.3 cPAH Monitoring

Groundwater from selected wells at Plant 1 has been monitored for cPAHs. Monitoring for cPAHs was discontinued in 2003, per Ecology's approval (Ecology 2003), as historical monitoring rarely detected these compounds (Table 7). Monitoring for cPAHs was voluntarily resumed in waterfront Performance/Confirmation Wells AMW-01 through AMW-05 in 2004 following a recommendation by Ecology and to assist in determining when cleanup objectives have been met. Since resuming monitoring, concentrations of cPAHs have rarely been detected, and occasional detections have often been associated with laboratory quality control deficiencies that affect the validity of the reported data. These laboratory issues have been discussed in more detail in previous Annual Site Reports. The limited detections of cPAHs in groundwater from these wells have only slightly exceeded laboratory detection limits (typically 0.02 to 0.025 µg/L) for these compounds. Based upon these findings, the cPAH sampling frequency was decreased in 2009 to an annual basis, with concurrence from Ecology (Ecology 2009).

There were exceedances of the cPAH cleanup level for one cPAH compound in Well AMW-02 in 2023 (Table 7). The last prior exceedances of the cPAH cleanup level were in 2022 in Well AMW-01 and in 2017 in Wells AMW-03, AMW-04, and AMW-05. The 2017 exceedances of the cPAH cleanup level established in the Consent Decree, and most of the historical exceedances, have been low concentration exceedances that are below the current Model Toxics Control Act (MTCA) Method A Cleanup Level for Groundwater (WAC-173-340-900, Table 720-1). The current MTCA method A Cleanup Level for cPAH considers the varying toxicities of individual cPAH compounds in determining if a cPAH mixture meets the cleanup level (WAC 173-340-708(8)(e)). The cPAH cleanup level agreed upon in the Consent Decree predated this policy and set a single cleanup level applicable to all cPAH compounds in a cPAH mixture.

Monitoring for cPAHs at Performance/Confirmation Wells AMW-1 through AMW-05 is scheduled to next occur in December 2024.

4.1.4 Biochemical Parameter Monitoring

Performance monitoring for biochemical parameters has been conducted at the Site to determine the effectiveness of natural attenuation in inaccessible soils containing TPH above cleanup levels. Monitoring of biochemical parameters has been suspended. Results of the last biochemical sampling were included in the 2006 Annual Site Report (TechSolv 2007a).

4.1.5 LNAPL Monitoring

The performance monitoring program includes monthly inspection for the presence of LNAPL by visual observation in three monitoring wells in Plant 1 (Wells GM-11S, GM-12S, and GM-13S). The

data (Table 8) include the first quarter of 2024. Monitoring Well GM-14S (located inside the main Plant 1 tank farm) was removed from the monthly LNAPL monitoring program in 2004, with concurrence from Ecology (Ecology 2004b), as this well had been free of LNAPL and sheens since June 1999.

Results of LNAPL monitoring have shown a general reduction in LNAPL occurrence at Plant 1 over time (Table 8). No sheen was observed in Wells GM-11S, GM-12S or GM-13S in 2023. A slight sheen, but no recoverable LNAPL, was observed in well GM-11S in January of 2024.

No sheens or LNAPL have ever been observed in Well GM-12S (located upgradient from the warehouse), indicating no continuing or ongoing sources of LNAPL in this area. Sheens have been periodically observed in Well GM-13S (located inside the southern end of the warehouse). Prior to 2022, a sheen was last observed in Well GM-13S in 2018 and 2021. No sheens were observed in 2023. Measurable LNAPL was historically detected in Well GM-11S (located outside the northeast end of the warehouse) in 1999 and the well was subsequently converted to an LNAPL recovery well in April 2000. Only a sheen was detected in this well after it was converted for recovery. The most recent sheen observed in GM-11S was in January 2024.

4.1.6 Groundwater Elevation Monitoring

Water table elevations were recorded quarterly in 2023 for Plant 1 (Table 9) and corresponding water table elevation maps were prepared to show overall groundwater flow patterns for 2023 (Figures 18 through 21). Plant 2 monitoring has been discontinued as discussed in the following section. Monitoring Well MW-06, located in Plant 1 east of the northeast corner of the warehouse, is not part of the groundwater monitoring program but is used to provide water level data in this area. Wells closest to the waterfront that are part of the monitoring program (Wells GM-13S and AMW-01 through AMW-05) are not used for water table elevation maps due to tidal fluctuations that affect these wells. Additionally, along the waterfront, startup testing indicated that the groundwater elevation is depressed by operation of the groundwater/LNAPL recovery system, affecting wells such as Well GM-13S.

Groundwater contour maps for the four quarters of 2023 (Figures 18 through 21) show that the third and fourth quarters represent the lowest and highest groundwater elevations recorded, respectively. Groundwater elevations, flow patterns, and gradients recorded for 2023, including the seasonal highs and lows, are similar to those observed during the RI and in previous years. Groundwater contour maps are no longer required for this report (Ecology 2009) due to consistent yearly flow patterns and are included voluntarily. Site flow directions can vary seasonally but are generally west towards the waterway, and south to southwest along the southern property boundary. Groundwater gradients are similar each year and in fourth quarter 2023 ranged from approximately 0.0022 feet per foot (ft./ft.) from the main tank farm to the waterfront to approximately 0.0065 ft./ft. at the southern boundary of Plant 1 (Figure 21).

Hydrographs for selected wells in the waterfront area (Figure 22) and in the southern boundary area of Plant 1 (Figure 23) illustrate trends in water table elevations over time for the Site. Data for both areas show similar seasonal fluctuations of the water table and show that all wells respond to these fluctuations (i.e., no wells are screened in groundwater isolated from the groundwater monitored by other wells, such as would occur with "perched" groundwater). Hydrographs show higher water table elevations occur during wetter winter and spring periods, when compared to the drier summer and fall periods. Groundwater elevations appear to have trended upward slightly over the past decade. These variations and trends in water table elevation coincide with precipitation data for the area. Groundwater elevation data will continue to be monitored in 2024 to evaluate ongoing trends.

4.2 Plant 2 Performance and Confirmation Monitoring

At Plant 2, the tank farm is only used for diesel storage and does not store gasoline or lighter hydrocarbon products. Ongoing performance and confirmation groundwater monitoring at Plant 2, conducted following soil excavations, showed that cleanup objectives for diesel-impacted inland soils had been met (see Section 3.3). However, concentrations of TPH-G and benzene in groundwater were detected above cleanup levels at Well GM-19S following excavation activities. A subsequent investigation conducted in 2002 (TechSolv 2003a) concluded that TPH-G and benzene detected in groundwater at Well GM-19S was from an unidentified offsite source of gasoline. The Confirmation Compliance Criteria for Plant 2 (Section 2.4.2) were achieved once the TPH-G and benzene cleanup level exceedances were determined to be from an offsite source. As such, monitoring at Plant 2 was discontinued, except for TPH-G and benzene at Monitoring Well GM-19S (Figure 24), as agreed to by Ecology (Ecology 2004b). This monitoring was considered voluntary and was conducted to evaluate how the offsite gasoline source was affecting the Site. Additional details regarding discontinuing Plant 2 monitoring were included in previous reports (e.g., TechSolv 2009). The voluntary monitoring of Well GM-19S for TPH-G and benzene was discontinued in 2018, as detected concentrations of TPH-G and benzene were below cleanup levels for five years. Benzene concentrations last exceeded the cleanup level in September 2013. TPH-G concentrations last exceeded the cleanup level in March 2007.

4.3 Data Validation

Laboratory analytical results were reported with associated laboratory quality assurance/quality control data. The analytical reports were reviewed, and the data were validated per the requirements of the CAP. Data validation resulted in qualification of some analytical results. Data qualifiers modify the values reported by the laboratory but do not affect the understanding of Site conditions. The data qualifiers are included in Tables 6 and 7. Laboratory reports and additional information regarding the justification for data qualification are retained by TechSolve and are available upon request.

Some data from the four quarters of 2023 were qualified as estimated values or as undetected at an estimated reporting limit, and the qualifiers were detailed in the associated quarterly progress report submitted to Ecology. Qualifiers from 2023 did not affect the interpretation of the data.

5 ADDITIONAL ACTIVITIES

Notable additional activities that occurred in 2023 included:

- Waterfront Piezometer Sampling: sampling of the eleven waterfront piezometers for IHSs and monitored natural attenuation (MNA) parameters.
- NW Corner Impacted Area Sampling: sampling of monitoring wells surrounding the impacted soil area for IHSs.
- Institutional Controls: re-evaluation of Site institutional controls.

These activities are further discussed below.

5.1 Waterfront Piezometer Sampling

Eleven temporary piezometers that were installed and sampled as part of the Hydraulic Evaluation (Figure 26) (TechSolve 2022a) were sampled quarterly in 2023 to monitor the shallow groundwater along the waterfront, as requested by Ecology (Ecology 2023). The monitoring was requested to support continuing evaluation and discussions with Ecology for discontinuing the active remediation along the waterfront and moving forward towards Site closure with groundwater monitoring (Techsolve 2022d). The piezometers were sampled for dissolved-phase IHSs (benzene, TPH-G, TPH-D, and TPH-O), as well as MNA parameters (methane, total sulfate, total nitrate, total chloride, alkalinity, manganese, hardness, and ferrous iron). These results will be presented to Ecology in an upcoming progress report following completion of four quarters of sampling, the last quarter being March 2024.

5.2 NW Corner Impacted Area

Sampling was conducted in three of the existing monitoring wells (B-007, HMW-01S, and GM-10S; Figure 25) located in the vicinity of soil staining observed near the waterfront in the northwest corner of the Site. The soil staining and remedial actions that were conducted in this area in the spring of 2023 were detailed in the 2022 Annual Site Report (TechSolve 2023a) as well as the Second Quarter 2023 Progress Report (TechSolve 2023b). The monitoring was requested by Ecology (Ecology 2023) to further evaluate any potential groundwater impacts that could have occurred due to the soil staining. These wells were sampled for benzene, TPH-G, TPH-D, and TPH-O. No sheens were detected on the adjacent waterway during 2023 or to date. These results will be presented to Ecology following completion of the quarterly sampling (the last sampling is scheduled for April 2024).

5.3 Institutional Controls

Ecology has requested that the institutional controls for the Site be continually re-evaluated to ensure ongoing protection for Site workers and offsite receptors. There are several institutional controls in place for the Site that have been providing added protection during implementation of the remedial actions and will continue to provide protection following completion of the active remedies. These institutional controls will continue to provide protection from any residual, dissolved, or vaporized LNAPL that may remain in place or in the event of discovery of a previously undetected source. These controls will also serve as a primary protection in the event of a new LNAPL release. The institutional controls include the waterfront and inland remediation systems, which will remain onsite after completion of the remedial actions, and the existing monitoring well networks. The institutional controls that were included in the Consent Decree are summarized as follows:

- Access Restrictions: The Site is an active operating facility and has restricted access (fences, signs, work permit requirements, etc.) as part of standard operations. These restrictions are in place 24 hours/day and 7 days/week.

- Deed Restrictions: The Site is currently an "industrial" site and has been zoned for and used as an industrial facility. A Restrictive Covenant for the Site was included in the Consent Decree to restrict the property use to industrial purposes and to prevent property uses from interfering with any remedial actions. Ecology has determined groundwater beneath Harbor Island to be "non-potable" and serves as the "type-example" designated under MTCA.

These Site restrictions are not likely to change in the foreseeable future. There are also Institutional Controls in place at the Site that were not included in the Consent Decree but that continue to provide protection. This includes spill response planning, training, and equipment.

Site spill response plans are maintained by terminal personnel and regular "spill drills" are conducted that include associated agencies (e.g. representatives of Ecology Spill Response and the Coast Guard). Sorbent booms are currently maintained in the Duwamish Waterway as part of the Consent Decree and are regularly monitored for the presence of sheens; the locations have been revised over time with Ecology's approval based on locations of sheens. Sorbent booms and pads are available in the event of an LNAPL spill, as are portable pumps and vacuum trucks, if needed. Existing Health and Safety plans are maintained by terminal personnel and Techsolve and are updated, as needed. Vapor monitoring equipment is also maintained by terminal personnel and Techsolve. In the event of a large spill, the terminal would contact the Coast Guard, Ecology, and their cleanup contractors.

6 SUMMARY OF ACTIVITIES/CONCLUSIONS

Activities completed at the Site during 2023, resulting conclusions, and the current status of the Site are summarized below.

- Operation of the groundwater/LNAPL recovery system along the waterfront, and recovery of residual LNAPL sources inland from the waterfront, have protected the Duwamish Waterway by removing LNAPL from soil and groundwater at the Site. The groundwater/LNAPL pumping and recovery system along the waterfront is the only ongoing active remediation action and appears to have achieved the cleanup goals established in the Consent Decree.

- Maintenance and inspection of the groundwater/LNAPL pumping and recovery system indicate the system operates as designed, is intact, and can continue operation, if needed (e.g. in the event of a new spill at the terminal). Routine inspection and maintenance activities continue to be conducted to ensure the system integrity and that system components are replaced or upgraded, as necessary.

- The groundwater/LNAPL recovery system has removed recoverable LNAPL to the maximum extent practicable from beneath the warehouse and truck loading rack areas. No measurable free LNAPL (>0.01 feet) was detected in any of the wells (monitoring or recovery) in 2023, nor has free LNAPL been detected for many years.

- Monitoring results show that recovery systems have reduced both dissolved LNAPL IHSs in groundwater and the frequency of LNAPL sheens in the Duwamish Waterway. No sheens were observed on surface water during 2023 or to date in 2024. As part of the Consent Decree, sorbent booms have been maintained in the Duwamish Waterway for over 30 years in two areas where very minor, but consistent, LNAPL sheens were once detected. The booms have been moved or discontinued based on the results of regular sheen monitoring, with concurrence from Ecology.

- Groundwater data collected in, and downgradient of, a former soil hot-spot at Plant 1 indicate that remedial actions completed in this area have reduced residual LNAPL and improved groundwater conditions in this area. The soil excavations and SVE operations conducted in this area have captured or reduced the bulk of any remaining residual hydrocarbons and have provided additional protection of the Duwamish Waterway. These actions have also met the cleanup goals of preventing LNAPL from migrating offsite to adjacent properties. Operation of the Inland SVE system was discontinued in December 2014 due to marked decreases in the vapor-phase LNAPL captured and in calculated biodegradation rates. The Sentry Well (AR-03) located immediately downgradient of this area and on the southern property boundary has been below cleanup levels in every quarterly or semi-annual monitoring event since June 2010.

- Voluntary groundwater monitoring at Plant 2 was discontinued in 2018 after Monitoring Well GM-19S, which was impacted by an offsite source of gasoline, was at or below TPH-G and benzene cleanup levels for five years. All other remediation and monitoring activities, required for Plant 2, have been successfully completed and Ecology has previously determined that remedial actions at Plant 2 appear complete.

- Ongoing quarterly monitoring of Wells GM-14S and GM-24S, located within the main Plant 1 tank farm, show that these two wells continue to have gasoline-related IHSs above cleanup levels. Well GM-24S is located in the area of an old, reported gasoline spill summarized in the RI/FS, and the accessible soils with LNAPL above cleanup levels were excavated from this area in 2000. Some inaccessible soils located directly next to the aboveground storage tanks had to be left in place and appear to still be impacting the groundwater around this well. Well GM-14S is located directly adjacent to the downgradient side of the Terminal API OWS. The trends in water quality measured at these wells will continue to be evaluated and discussed with Ecology.

- Discussions are ongoing with Ecology to determine a clear path forward towards discontinuing active remediation, implementing final confirmation monitoring, and achieving Site closure. Shallow groundwater analytical data requested by Ecology was collected quarterly in 2023 from the eleven temporary piezometers that exist in the warehouse and loading rack areas to assess this option. The results of these activities will be presented to Ecology following four quarters of sampling.

- Wells GM-10S, HMW-01S and B-007, located in the vicinity of soil staining observed near the waterfront in the northwest corner of the Site, were sampled quarterly to characterize the nature and extent of potential impacts to groundwater. The results of these activities will be presented to Ecology following four quarters of sampling.

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TABLES

Table 1. Waterfront Groundwater System Petroleum Hydrocarbon Recovery Rates
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

GROUNDWATER SYSTEM EFFICIENCIES

SAMPLE DATE	UNITS	Influent Benzene	Effluent Benzene	% Reduction	Influent Diesel	Effluent Diesel	% Reduction	Influent Ethylbenzene	Effluent Ethylbenzene	% Reduction	Influent Gasoline	Effluent Gasoline	% Reduction	Influent Oil	Effluent Oil	% Reduction	Influent Toluene	Effluent Toluene	% Reduction	Influent Xylenes	Effluent Xylenes	% Reduction
2002 Averages	µg/L	**225.3**	14.3	91%	7,315	7,020	NA	55.2	6.2	75%	**1,770**	336	82%	831	804	NA	17.0	2.5	88%	88.8	9.9	87%
2003 Averages	µg/L	**137.7**	19.5	76%	4,945	4,648	NA	44.5	12.9	69%	**1,854**	678	62%	760	763	NA	42.7	5.4	61%	154.1	50.3	68%
2004 Averages	µg/L	**93.5**	3.2	82%	**10,285**	9,342	NA	76.8	4.7	79%	**4,383**	840	59%	762	1,026	NA	116.6	2.2	82%	356.6	23.0	75%
2005 Averages	µg/L	**76.7**	14.5	84%	4,162	5,987	NA	170.8	45.4	81%	**10,090**	3,229	70%	864	750	NA	566.9	121.0	84%	1,327.7	367.9	78%
2006 Averages	µg/L	38.9	1.2	89%	**11,263**	2,174	NA	42.1	0.9	90%	**4,944**	202	94%	665	666	NA	55.6	0.8	77%	485.1	5.2	96%
2007 Averages	µg/L	8.8	1.5	60%	1,223	906	NA	6.6	0.8	56%	407	115	63%	598	598	NA	1.0	0.5	21%	19.8	1.9	50%
2008 Averages	µg/L	10.0	1.1	70%	540	468	NA	5.5	0.7	39%	279	76	61%	505	504	NA	0.7	0.5	40%	10.6	1.6	65%
2009 Averages	µg/L	5.2	1.0	48%	369	561	NA	4.1	1.6	31%	407	182	46%	497	489	NA	0.8	0.7	44%	15.2	7.4	33%
2010 Averages	µg/L	3.9	0.7	76%		2,193	NA	6.8	1.7	78%	915	336	65%		410	NA	*0.9*	*0.9*	NA	26.3	6.7	69%
2011 Averages	µg/L	3.2	0.5	80%		1,714	NA	2.4	1.0	53%	439	89	69%		492	NA	1.0	1.0	NA	7.1	3.0	29%
2012 Averages	µg/L	3.6	1.3	48%		2,787	NA	1.9	1.2	37%	362	144	61%		636	NA	1.0	1.0	NA	5.7	3.4	48%
2013 Averages	µg/L	1.0	0.5	45%		1,333	NA	1.1	0.5	49%	356	124	57%		433	NA	0.5	0.5	NA	2.4	1.0	78%
2014 Averages	µg/L	1.7	0.3	61%		1,699	NA	0.6	0.3	46%	539	122	79%		236	NA	0.5	0.3	NA	1.5	0.5	61%
2015 Averages	µg/L	2.3	0.4	66%		5,175	NA	1.6	0.4	60%	**1,146**	406	64%		396	NA	0.5	0.4	NA	2.8	0.5	74%
2016 Averages	µg/L	2.2	0.6	76%		2,292	NA	2.3	0.5	81%	**1,282**	582	50%		248	NA	0.4	0.4	NA	2.9	1.0	62%
2017 Averages	µg/L	1.9	0.4	74%		4,325	NA	1.0	0.4	63%	**1,421**	641	56%		349	NA	0.5	0.4	NA	1.0	0.7	55%
2018 Averages	µg/L	1.1	0.7	60%		1,673	NA	0.7	0.7	7%	359	136	62%		346	NA	0.5	0.5	NA	1.3	0.9	30%
2019 Averages	µg/L	0.5	0.4	50%		1,539	NA	0.7	0.7	NA	231	68	60%		584	NA	0.7	0.7	NA	2.0	2.0	NA
2020 Averages	µg/L	0.7	0.5	NA		588	NA	1.0	1.0	NA	100	51	65%		750	NA	1.0	1.0	NA	3.0	3.0	NA
2021 Averages	µg/L	1.6	0.5	NA		756	NA	1.0	1.0	NA	110	50	NA		750	NA	1.0	1.0	NA	3.3	3.0	NA
2022 Averages	µg/L	1.0	0.5	NA		378	NA	1.0	1.0	NA	95	50	NA		750	NA	1.0	1.0	NA	3.0	3.0	NA
1/26/2023	µg/L	2.4	*0.5*	79%		470	NA	*1.0*	*1.0*	NA	120	*50*	58%		750	NA	*1.0*	*1.0*	NA	*3.0*	*3.0*	NA
2/23/2023	µg/L	1.2	*0.5*	58%		450	NA	*1.0*	*1.0*	NA	89	*50*	44%		750	NA	*1.0*	*1.0*	NA	*3.0*	*3.0*	NA
3/23/2023	µg/L	0.7	*0.5*	29%		350	NA	*1.0*	*1.0*	NA	*50*	*50*	NA		750	NA	*1.0*	*1.0*	NA	*3.0*	*3.0*	NA
4/20/2023	µg/L	2.7	*0.5*	81%		330	NA	*1.0*	*1.0*	NA	130	*50*	62%		750	NA	*1.0*	*1.0*	NA	*3.0*	*3.0*	NA
5/25/2023	µg/L	*0.5*	*0.5*	NA		520	NA	*1.0*	*1.0*	NA	*50*	*50*	NA		750	NA	*1.0*	*1.0*	NA	*3.0*	*3.0*	NA
6/22/2023	µg/L	0.6	*0.5*	15%		310	NA	*1.0*	*1.0*	NA	*50*	*50*	NA		750	NA	*1.0*	*1.0*	NA	*3.0*	*3.0*	NA
7/20/2023	µg/L	*0.5*	*0.5*	NA		300	NA	*1.0*	*1.0*	NA	66	*50*	24%		750	NA	*1.0*	*1.0*	NA	*3.0*	*3.0*	NA
8/31/2023	µg/L	*0.5*	*0.5*	NA		*250*	NA	*1.0*	*1.0*	NA	61	*50*	18%		750	NA	*1.0*	*1.0*	NA	*3.0*	*3.0*	NA
9/21/2023	µg/L	*0.5*	*0.5*	NA		1,000	NA	*1.0*	*1.0*	NA	*50*	*50*	NA		750	NA	*1.0*	*1.0*	NA	*3.0*	*3.0*	NA
10/19/2023	µg/L	0.5	*0.5*	NA		450	NA	*1.0*	*1.0*	NA	*50*	*50*	NA		750	NA	*1.0*	*1.0*	NA	*3.0*	*3.0*	NA
11/22/2023	µg/L	*0.5*	*0.5*	NA		480	NA	*1.0*	*1.0*	NA	*60*	*50*	17%		750	NA	*1.0*	*1.0*	NA	*3.0*	*3.0*	NA
12/28/2023	µg/L	0.6	*0.5*	NA		870	NA	*1.0*	*1.0*	NA	260	*50*	81%		750	NA	*1.0*	*1.0*	NA	*3.0*	*3.0*	NA
1/31/2024	µg/L	0.8	*0.5*	35%		1,400	NA	*1.0*	*1.0*	NA	*50*	*50*	NA		750	NA	*1.0*	*1.0*	NA	*3.0*	*3.0*	NA
2/23/2024	µg/L	4.1	*0.5*	88%		1,800	NA	*1.0*	*1.0*	NA	160	*50*	69%		420	NA	*1.0*	*1.0*	NA	*1.0*	*1.0*	NA
3/21/2024	µg/L	4.4	*0.5*	89%		*200*	NA	*1.0*	*1.0*	NA	79	*50*	37%		*200*	NA	*1.0*	*1.0*	NA	*1.0*	*1.0*	NA
2023/2024 Averages	µg/L	1.4	0.5	NA		612	NA	1.0	1.0	NA	88	50	NA		691	NA	1.0	1.0	NA	2.7	2.7	NA
SURFACE WATER CLEANUP LEVELS		71 µg/L			10,000 µg/L			NA			1,000 µg/L			10,000 µg/L			NA			NA		
KCDNR DISCHARGE LIMITS			70 µg/L			100,000 µg/L			1,700 µg/L			NA			100,000 µg/L			1,400 µg/L			2,200 µg/L	

METRO DISCHARGE DATA

Observation Date	Days since last monitoring reading	Average flow (GPM)	Total Flow Between Observation dates (gallons, GW)	Pounds of Benzene Removed	Pounds of Gasoline Removed	Pounds of Diesel Removed	Pounds of Oil Removed	Pounds of Toluene Removed	Pounds of Ethylbenzene Removed	Pounds of Xylenes Recovered	Total Gallons Gas, Diesel, and Oil (dissolved)
2002 Totals and Averages	65	4.18	322,785	0.62	4.99	19.42	2.30	0.05	0.13	0.22	**3.90**
2003 Totals and Averages	361	8.03	4,114,867	4.43	62.20	169.14	26.05	1.18	1.47	5.05	**37.76**
2004 Totals and Averages	338	9.58	4,570,461	3.54	175.70	419.25	28.95	5.35	3.16	14.66	**92.43**
2005 Totals and Averages	359	11.17	5,827,144	3.43	447.43	155.78	41.55	25.29	7.69	59.98	**100.52**
2006 Totals and Averages	365	6.40	3,220,733	0.80	192.72	663.65	19.09	2.85	1.89	20.04	**128.92**
2007 Totals and Averages	360	3.17	1,599,607	0.15	9.08	18.30	8.40	0.02	0.11	0.48	**5.20**
2008 Totals and Averages	363	3.19	1,645,810	0.14	3.95	7.21	6.95	0.01	0.08	0.15	**2.59**
2009 Totals and Averages	369	2.98	1,569,390	0.07	5.75	7.81	6.40	0.01	0.06	0.22	**2.89**
2010 Totals and Averages	372	2.17	1,185,127	0.037	8.62	18.84	4.26	0.01	0.05	0.19	**4.66**
2011 Totals and Averages	356	1.90	949,880	0.026	5.13	17.55	3.54	0.01	0.03	0.13	**3.81**
2012 Totals and Averages	371	1.89	948,600	0.034	3.97	25.92	3.47	0.01	0.02	0.04	**4.81**
2013 Totals and Averages	365	1.33	700,450	0.014	2.26	8.80	3.43	0.003	0.01	0.02	**2.08**
2014 Totals and Averages	332	1.62	761,480	0.010	3.43	10.95	1.55	0.003	0.00	0.01	**2.33**
2015 Totals and Averages	358	1.71	874,680	0.015	6.56	36.53	2.92	0.004	0.01	0.02	**6.68**
2016 Totals and Averages	370	1.90	999,770	0.021	13.12	20.02	1.94	0.004	0.03	0.03	**5.26**
2017 Totals and Averages	364	1.65	866,030	0.014	11.96	33.39	2.62	0.004	0.01	0.01	**7.52**
2018 Totals and Averages	371	1.20	641,740	0.006	2.16	9.61	1.79	0.002	0.004	0.007	**1.96**
2019 Totals and Averages	357	1.26	611,500	0.002	1.30	8.72	2.89	0.003	0.003	0.009	**1.84**
2020 Totals and Averages	378	1.06	572,320	0.003	0.46	2.70	3.58	0.005	0.005	0.014	**0.93**
2021 Totals and Averages	358	1.01	572,321	0.008	0.47	3.72	3.19	0.004	0.004	0.014	**1.03**
2022 Totals and Averages	375	0.90	486,520	0.004	0.37	1.64	3.04	0.004	0.004	0.012	**0.69**
January-23	35	2.20	110,660	0.0018	0.14	0.36	0.69	0.0009	0.0009	0.0028	**0.16**
February-23	28	1.11	44,820	0.0007	0.04	0.17	0.28	0.0004	0.0004	0.0011	**0.07**
March-23	28	0.85	34,270	0.0003	0.02	0.11	0.21	0.0003	0.0003	0.0009	**0.05**
April-23	28	0.95	38,420	0.0005	0.03	0.11	0.24	0.0003	0.0003	0.0010	**0.05**
May-23	35	0.83	41,630	0.0006	0.03	0.15	0.26	0.0003	0.0003	0.0010	**0.06**
June-23	28	0.72	29,060	0.0001	0.01	0.10	0.18	0.0002	0.0002	0.0007	**0.04**
July-23	28	0.54	21,920	0.0001	0.01	0.06	0.14	0.0002	0.0002	0.0005	**0.03**
August-23	42	0.53	31,780	0.0001	0.02	0.07	0.20	0.0003	0.0003	0.0008	**0.04**
September-23	21	0.51	15,530	0.0001	0.01	0.08	0.10	0.0001	0.0001	0.0004	**0.03**
October-23	28	0.55	22,230	0.0001	0.01	0.13	0.14	0.0002	0.0002	0.0006	**0.04**
November-23	34	0.87	42,560	0.0002	0.02	0.17	0.27	0.0004	0.0004	0.0011	**0.06**
December-23	36	1.22	63,020	0.0003	0.08	0.35	0.39	0.0005	0.0005	0.0016	**0.12**
January-24	34	1.35	66,310	0.0003	0.09	0.37	0.41	0.0006	0.0006	0.0017	**0.12**
February-24	23	0.82	27,140	0.0002	0.04	0.26	0.17	0.0002	0.0002	0.0007	**0.06**
March-24	27	1.31	50,810	0.0010	0.04	0.68	0.25	0.0004	0.0004	0.0008	**0.14**
2023/24 Totals and Averages	371	0.91	495,900	0.005	0.417	1.868	3.103	0.004	0.004	0.012	**1.07**
		TOTALS:	**33,537,115 gal**	**13.4**	**962.0**	**1660.8**	**181.0**	**34.8**	**14.8**	**101.3**	
Maximum permitted GPM:		**17.5**	**Gallons Gas, Diesel, & Oil Recovered:**	**156.4**	**237.9**	**23.7**			**Total Gallons Recovered:**		**418.86**

Oil Water Separator Data

Observation Date	Monthly free LNAPL Recovery (gal)
February-03	19.6
April-03	6.9
May-03	2.5
July-03	2
December-03	20
January-04	25
June-04	35
August-04	50
September-04	8
November-04	10
December-04	3.5
January-05	0
February-05	35
July-05	110
February-06	5
March-06	2
December-06	30
March-08	30
Total Gallons free LNAPL Recovered:	**395**

TOTAL PETROLEUM RECOVERY

Total lbs. Dissolved Gas, Diesel, and Oil Recovered in Groundwater (2002-Present)	2,804 lbs
Total Gallons Dissolved Gas, Diesel, and Oil Recovered in Groundwater (2002-Present)*	**419 gal**
Total Gallons LNAPL Recovered by Final Recovery System (2002-Present)	**395 gal**
Total Gallons LNAPL Recovered by Interim Recovery System (1992-2002)	**9,312 gal**
Total Gallons of TPH Vapor Recovered by Final SVE System (2003-2008)**	**2,334 gal**
Total Gallons of TPH Vapor Recovered by Interim SVE System (1996-2002)**	**1,248 gal**
Total Gallons TPH Recovered from Final SVE System due to Biodegradation (2003-2008)***	**11,411 gal**
Total Gallons TPH Recovered from Interim SVE System due to Biodegradation (1996-2002)***	**4,664 gal**
Total Gallons Recovered by Final Recovery Systems (2002-Present)	**14,559 gal**
Total Gallons Recovered by Interim Recovery Systems (1992-2002)	**15,223 gal**
Total Gallons of Petroleum Removed (1992-Present)	**29,782.7**

Definitions:

gal - gallons
GPM - Gallons per minute
NA - Not available or could not be calculated due to non-detection
LNAPL - Light non-aqueous phase liquid (oil)
SVE - Soil vapor extraction
TPH - Total petroleum hydrocarbons
µg/L - micrograms per liter
GW - Groundwater

Notes:

LNAPL recovery is recorded periodically when sufficient product has been accumulated to be transported off-site for disposal.
Influent diesel and oil samples are no longer analyzed. Influent and effluent samples are collected before and after, respectively, a diffused air stripper, which does not remove diesel or oil.
Effluent sample data are representative of the outflow water to King County Metro sanitary sewer.
The average µg/L of the preceding month and the month of reference are used to calculate pounds of compound removed.
Data presented in *italicized text* represent non-detections. The listed *italicized value* is the laboratory reporting limit
If influent concentrations are below the laboratories reporting limit, the percent reduction is calculated using the reporting limit. The actual percent reduction is ≥ the reported value.

* Calculation of lbs. of Recovered Product:
To convert µg/L to lbs./gallon - (µg/L)x(3.785l/gal)=ug/gal, (ug/gal)x(ug/(2.2046x10-9lbs))=lbs./gal
lbs./gal of chemical constituent x total gallons recovered =lbs. of chemical recovered
Density of Gasoline utilized for conversions from pounds to gallons is 6.15 lbs./gal
Density of Diesel utilized for conversions from pounds to gallons 6.98 lbs./gal
Density of Oil utilized for conversions from pounds to gallons 7.63 lbs./gal
Benzene, toluene, ethylbenzene, and xylenes volumes are not included in the Total Gallons calculations, as they are assumed to be included in TPH as gasoline.

** / *** SVE Recovery Calculations for TPH and Biodegradation, which are maintained in separate tables.
C = Average Influent TPH concentration (ppmv)
Q = Influent Flow Rate (SCFM)
Mc = Molecular wt. of Carbon Dioxide = 44
Mg = Molecular wt. of Gasoline = 87
Density of Gasoline for conversions is 6.15 lbs./gal

** TPH recovered by SVE system was calculated in lbs./hr. = C x Q x Mg x 1.583 x 10^{-7}
1.583 x 10^{-7} is a constant and is derived as follows:
10^{-6} ppmv x 60min/1hr x 1 lb. Mole/379 cu.ft.
SVE TPH recovery calculations are based on TPH concentrations in the SVE stream, SVE hrs. of operation, and SVE measured flow rates.

Table 2. Waterfront Groundwater Recovery Wells Petroleum Hydrocarbon History
Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well ID	Date	Gasoline mg/l	Diesel mg/l	Oil mg/l	Benzene µg/l	Toluene ug/l	Ethylbenzene ug/l	Xylenes (total) ug/l
RW-10	Nov-03	0.625			1.2	0.892	2.42	3.07
RW-10	Aug-04	0.661	**36.2**	3.46	0.5	0.5	0.653	1.99
RW-10	Feb-05	0.473	1.21	0.75	0.5	0.5	0.5	1.41
RW-10	Nov-05	0.420	13.3	1.63	0.5	0.5	0.5	1
RW-10	Mar-06	0.066	4.14	0.75	0.5	0.5	0.5	1
RW-10	Nov-06	0.930	3.48	1.09	0.5	0.5	0.5	1
RW-10	May-07	0.073	0.255	*0.5*	0.5	0.5	0.5	1
RW-10	Nov-07	0.246	4.65	0.841	0.5	0.5	0.5	1
RW-10	Apr-08	0.235	1.91	*0.515*	0.5	0.5	0.5	1
RW-10	Nov-08	0.347	8.21	0.946	0.5	0.5	0.5	1
RW-10	Apr-09	0.448	5.95	0.804	0.5	0.5	0.5	1.36
RW-10	Nov-09	0.320	5.2	0.78	*0.5*	*1*	*1*	*2*
RW-10	Apr-10	0.460	2.3	*0.49*	*0.5*	*1*	*1*	*2*
RW-10	Nov-10	0.251	2.4	0.65	*0.5*	*1*	*1*	*3*
RW-10	Apr-11	0.6	1.5	0.68	*0.5*	*1*	*1*	*3*
RW-10	Nov-11	0.171	0.22	*0.39*	*0.5*	*1*	*1*	*3*
RW-10	Apr-12	0.366	0.51	0.46	*0.5*	*1*	*1*	*3*
RW-10	Nov-12	*0.1*	*0.11*	*0.11*	*0.5*	*0.5*	*0.5*	*1.5*
RW-10	Apr-13	0.2	0.36	*0.49*	*0.5*	*0.5*	*0.5*	*0.5*
RW-10	Nov-13	0.13	*0.25*	*0.25*	*0.5*	*0.5*	*0.5*	*1*
RW-10	Apr-14	0.16	1.6	0.73	*0.14*	*0.16*	*0.13*	0.13
RW-10	Nov-14	0.11	0.78	0.36	*1.0*	*1.0*	*1.0*	*3.0*
RW-10	Apr-15	0.091	0.97	0.8	*2.0*	*2.0*	*3.0*	*3.0*
RW-10	Nov-15	0.67	1.5	0.28	4.3	*2.0*	*3.0*	0.73
RW-10	Apr-16	0.28	1.9	1.4	*2.0*	*2.0*	*3.0*	*3.0*
RW-10	Nov-16	0.069	0.77	0.32	*0.2*	*0.2*	*0.2*	*0.5*
RW-10	Apr-17	*0.5*	*0.11*	*0.25*	*2.0*	*2.0*	*3.0*	*3.0*
RW-10	Nov-17	0.069	0.36	*0.25*	*0.2*	*0.2*	*0.2*	*0.5*
RW-10	Apr-18	0.12	0.33	*0.26*	*0.2*	*0.2*	*0.2*	*0.5*
RW-10	Nov-18	0.12	3.4	2.8	*0.2*	*0.2*	*0.2*	*0.5*
RW-10	Apr-19	0.073	1.6	0.96	*0.2*	*0.2*	*0.2*	*0.5*
RW-10	Nov-19	0.053	1.7	0.84	*0.5*	*2.0*	*2.0*	*4.0*
RW-10	Jul-20	0.062	1.8	1.00	*0.5*			
RW-10	Dec-20	*0.05*	0.34	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-10	Jun-21	0.077	1.6	0.79	*0.5*	*1.0*	*1.0*	*3.0*
RW-10	Dec-21	*0.05*	7.30	2.80	*0.5*	*1.0*	*1.0*	*3.0*
RW-10	Jun-22	0.053	0.28	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-10	Jan-23	*0.05*	0.67	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-10	Jun-23	0.072	3.2	2.0	*0.5*	*1.0*	*1.0*	*3.0*
RW-10	Dec-23	*0.05*	0.87	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-10	Average	0.2	3.2	0.9	0.7	0.8	1.0	1.9
RW-9	Nov-03	**13.1**			5	43.2	146	1180
RW-9	Aug-04	**1.24**	**94.9**	2.19	0.5	0.5	1.23	1.64
RW-9	Feb-05	0.907	**22.1**	<15	0.5	0.5	3.64	4.74
RW-9	Nov-05	0.568	4.31	0.708	0.5	0.5	0.968	1.45
RW-9	Mar-06	0.166	1.68	0.75	0.5	0.5	0.5	1
RW-9	Nov-06	0.359	5.98	1.17	0.5	0.5	0.647	1.09
Groundwater Cleanup Level		**1.0**	**10.0**	**10.0**	**71**			
Reporting Limits/Units		0.05 mg/l	0.25 mg/l	.750 mg/l	0.5 ug/l	Varies	Varies	Varies

Table 2. Waterfront Groundwater Recovery Wells Petroleum Hydrocarbon History
Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well ID	Date	Gasoline mg/l	Diesel mg/l	Oil mg/l	Benzene µg/l	Toluene ug/l	Ethylbenzene ug/l	Xylenes (total) ug/l
RW-9	May-07	0.402	2.08	*0.5*	5.43	0.5	1.4	1.49
RW-9	Nov-07	0.184	**70.1**	**11.6**	0.5	*0.5*	*0.5*	*1*
RW-9	Apr-08	0.170	**18.2**	2.94	3.21	*0.5*	*0.5*	*1*
RW-9	Nov-08	0.130	**49.5**	8.21	0.5	*0.5*	*0.5*	*1*
RW-9	Apr-09	0.280	**45.1**	6.71	0.5	*0.5*	*0.5*	*1*
RW-9	Nov-09	0.670	**32**	6.8	1.5	*1*	*1*	*2*
RW-9	Apr-10	**6.0**	**110**	**24**	*0.5*	*1*	*1*	*2*
RW-9	Nov-10	0.207	2.0	0.53	*0.5*	*1*	*1*	*3*
RW-9	Apr-11	**1.12**	**276**	**45.9**	*0.5*	*1*	*1*	*3*
RW-9	Nov-11	0.289	2.3	*0.39*	*0.5*	*1*	*1*	*3*
RW-9	Apr-12	0.113	**33.2**	5.3	0.72	*1*	*1*	*3*
RW-9	Nov-12	*0.1*	8.2	8.4	0.5	*0.5*	*0.5*	*1.5*
RW-9	Apr-13	0.1	**44.0**	8.5	*0.5*	*0.5*	*0.5*	*0.5*
RW-9	Nov-13	0.062	**14.0**	2.6	*0.5*	*0.5*	*0.5*	*1*
RW-9	Apr-14	0.14	**56.0**	**16**	*0.14*	*0.16*	*0.13*	*0.12*
RW-9	Nov-14	0.14	7.1	2.7	*1.0*	*1.0*	*1.0*	*3.0*
RW-9	Apr-15	0.18	**14.0**	4.9	*2.0*	*2.0*	*3.0*	*3.0*
RW-9	Nov-15	0.32	**7.6**	3.0	*2.0*	*2.0*	*3.0*	*3.0*
RW-9	Apr-16	**1.5**	**180.0**	**38.0**	*2.0*	*2.0*	*3.0*	*3.0*
RW-9	Nov-16	0.17	**12.0**	3.8	*0.2*	*0.2*	*0.2*	*0.5*
RW-9	Apr-17	0.5	**64.0**	**17.0**	*2.0*	*2.0*	*3.0*	*3.0*
RW-9	Nov-17	0.14	**14.0**	4.4	*0.2*	*0.2*	*0.2*	*0.5*
RW-9	Apr-18	0.068	**11.0**	3.3	*0.2*	*0.2*	*0.2*	*0.5*
RW-9	Nov-18	0.093	**17.0**	7.2	*0.2*	*0.2*	*0.2*	*0.5*
RW-9	Apr-19	*0.05*	8.7	2.8	*0.2*	*0.2*	*0.2*	*0.5*
RW-9	Nov-19	0.054	7.5	2.4	*0.2*	*2.0*	*2.0*	*4.0*
RW-9	Jul-20	*0.05*	**11.0**	*3.8*	*0.5*	*1.0*	*1.0*	*3.0*
RW-9	Dec-20	*0.05*	**13.0**	*3.8*	*0.5*	*1.0*	*1.0*	*3.0*
RW-9	Jun-21	*0.05*	**66.0**	***19.0***	*0.5*	*1.0*	*1.0*	*3.0*
RW-9	Dec-21	*0.05*	**360.0**	***25.0***	*0.5*	*1.0*	*1.0*	*3.0*
RW-9	Jun-22	*0.05*	3.8	0.99	*0.5*	*1.0*	*1.0*	*3.0*
RW-9	Jan-23	*0.05*	6.8	1.6	*0.5*	*1.0*	*1.0*	*3.0*
RW-9	Jun-23	*0.05*	5.7	*1.5*	*0.5*	*1.0*	*1.0*	*3.0*
RW-9	Dec-23	*0.05*	1.7	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-9	Average	0.8	**42.8**	7.9	2.7	1.9	4.7	31.5
RW-8	Nov-03	0.367			0.5	0.5	0.787	2.23
RW-8	Aug-04	0.181	**19.8**	2.19	0.5	0.5	0.53	2.13
RW-8	Feb-05	0.218	2.58	0.75	0.5	0.5	0.564	3.04
RW-8	Nov-05	0.099	0.575	0.721	0.5	0.5	0.5	1
RW-8	Mar-06	0.050	1.44	0.75	0.5	0.5	0.5	1
RW-8	Nov-06	0.050	3.58	0.762	0.5	0.5	0.5	1
RW-8	May-07	0.068	0.273	*0.5*	0.5	0.5	0.5	1
RW-8	Nov-07	0.065	0.29	0.543	0.5	0.5	0.5	1
RW-8	Apr-08	0.067	0.279	*0.529*	0.5	0.5	0.5	1
RW-8	Nov-08	0.088	3.85	0.492	0.5	0.5	0.5	1
RW-8	Apr-09	0.091	0.255	*0.476*	0.5	0.5	0.5	1
RW-8	Nov-09	0.140	1.3	*0.47*	*0.5*	*1*	*1*	*2*
Groundwater Cleanup Level		**1.0**	**10.0**	**10.0**	**71**			
Reporting Limits/Units		0.05 mg/l	0.25 mg/l	.750 mg/l	0.5 ug/l	Varies	Varies	Varies

Table 2. Waterfront Groundwater Recovery Wells Petroleum Hydrocarbon History
Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well ID	Date	Gasoline mg/l	Diesel mg/l	Oil mg/l	Benzene µg/l	Toluene ug/l	Ethylbenzene ug/l	Xylenes (total) ug/l
RW-8	Apr-10	0.150	1.1	*0.49*	*0.5*	*1*	*1*	*2*
RW-8	Nov-10	0.105	1.0	*0.39*	*0.5*	*1*	*1*	*3*
RW-8	Apr-11	0.0995	2.6	0.59	*0.5*	*1*	*1*	*3*
RW-8	Nov-11	0.183	1.7	*0.39*	*0.5*	*1*	*1*	*3*
RW-8	Apr-12	*0.05*	1.3	*0.39*	*0.5*	*1*	*1*	*3*
RW-8	Nov-12	0.185	4.0	3.6	*0.5*	*0.5*	*0.5*	*1.5*
RW-8	Apr-13	0.062	2.7	0.52	*0.5*	*0.5*	*0.5*	*0.5*
RW-8	Nov-13	0.1	0.82	*0.25*	*0.5*	*0.5*	*0.5*	*1*
RW-8	Apr-14	0.13	3.40	0.91	0.15	*0.16*	*0.13*	0.52
RW-8	Nov-14	0.14	**10.0**	3.2	*1.0*	*1.0*	*1.0*	*3.0*
RW-8	Apr-15	0.13	5.2	2.0	*2.0*	*2.0*	*3.0*	*3.0*
RW-8	Nov-15	0.39	5.5	1.5	0.91	*2.0*	*3.0*	*3.0*
RW-8	Apr-16	0.28	**18.0**	7.7	*2.0*	*2.0*	*3.0*	*3.0*
RW-8	Nov-16	0.25	7.6	0.64	0.64	*0.2*	*0.2*	*0.5*
RW-8	Apr-17	0.5	2.0	0.37	2.00	*2.0*	*3.0*	*3.0*
RW-8	Nov-17	0.12	3.8	1.30	*0.20*	*0.2*	*0.2*	*0.5*
RW-8	Apr-18	0.11	4.0	1.20	*0.20*	*0.2*	*0.2*	*0.5*
RW-8	Nov-18	0.16	3.0	1.10	*0.20*	*0.2*	0.44	2.0
RW-8	Apr-19	0.091	0.95	*0.26*	*0.20*	*0.2*	*0.2*	*0.5*
RW-8	Nov-19	0.081	0.7	*0.75*	*0.50*	*2.0*	*2.00*	*4.0*
RW-8	Jul-20	0.087	1.1	*0.75*	*0.50*	*1.0*	*1.00*	*3.0*
RW-8	Dec-20	0.072	0.78	*0.75*	*0.50*	*1.0*	*1.00*	*3.0*
RW-8	Jun-21	0.11	2.10	*0.75*	*0.50*	*1.0*	*1.00*	*3.0*
RW-8	Dec-21	0.13	2.60	*0.75*	*0.50*	*1.0*	*1.00*	*3.0*
RW-8	Jun-22	0.051	**12.0**	3.80	*0.50*	*1.0*	*1.0*	*3.0*
RW-8	Jan-23	*0.05*	3.0	0.77	*0.50*	*1.0*	*1.0*	*3.0*
RW-8	Jun-23	0.073	**12.0**	*7.5*	*0.50*	*1.0*	*1.0*	*3.0*
RW-8	Dec-23	0.073	3.3	*3.8*	*0.50*	*1.0*	*1.0*	*3.0*
RW-8	Average	0.2	4.0	1.6	2.3	0.8	0.9	2.0
RW-7	Nov-03	0.148			0.5	0.5	0.518	2.87
RW-7	Aug-04	0.050	7.6	1.2	0.5	0.5	0.5	1.09
RW-7	Feb-05	0.050	1.21	0.75	0.5	0.5	0.5	1
RW-7	Nov-05	0.050	0.35	0.728	0.5	0.5	0.5	1
RW-7	Mar-06	0.050	0.25	0.75	0.5	0.5	0.5	1
RW-7	Nov-06	0.063	3.16	1.34	0.5	0.5	0.5	1
RW-7	May-07	0.414	0.49	*0.515*	0.5	0.5	0.5	1
RW-7	Nov-07	0.187	0.25	*0.5*	0.5	0.5	0.5	1
RW-7	Apr-08	0.063	0.25	*0.5*	0.5	0.5	0.5	1
RW-7	Nov-08	0.071	0.236	*0.472*	0.5	0.5	0.5	1
RW-7	Apr-09	0.123	0.238	*0.476*	0.5	0.5	0.5	1
RW-7	Nov-09	0.075	0.69	*0.47*	*0.5*	*1*	*1*	*2*
RW-7	Apr-10	0.140	0.85	*0.49*	*0.5*	*1*	*1*	*2*
RW-7	Nov-10	0.11	0.46	*0.4*	*0.5*	*1*	*1*	*3*
RW-7	Apr-11	0.207	1.1	*0.41*	*0.5*	*1*	*1*	*3*
RW-7	Nov-11	*0.05*	0.13	*0.4*	*0.5*	*1*	*1*	*3*
RW-7	Apr-12	*0.05*	0.21	*0.42*	*0.5*	*1*	*1*	*3*
RW-7	Nov-12	*0.1*	0.32	0.37	*0.5*	*0.5*	*0.5*	*1.5*
Groundwater Cleanup Level		**1.0**	**10.0**	**10.0**	**71**			
Reporting Limits/Units		0.05 mg/l	0.25 mg/l	.750 mg/l	0.5 ug/l	Varies	Varies	Varies

Table 2. Waterfront Groundwater Recovery Wells Petroleum Hydrocarbon History
Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well ID	Date	Gasoline mg/l	Diesel mg/l	Oil mg/l	Benzene µg/l	Toluene ug/l	Ethylbenzene ug/l	Xylenes (total) ug/l
RW-7	Apr-13	0.081	0.63	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*
RW-7	Nov-13	*0.05*	0.45	*0.24*	*0.5*	*0.5*	*0.5*	*1*
RW-7	Apr-14	0.07	2.4	0.6	0.17	*0.16*	0.17	0.23
RW-7	Nov-14	0.064	0.92	*0.25*	*1.0*	*1.0*	*1.0*	*3.0*
RW-7	Apr-15	0.073	5.2	1.6	*2.0*	*2.0*	*3.0*	*3.0*
RW-7	Nov-15	0.11	0.41	0.88	*2.0*	*2.0*	*3.0*	*3.0*
RW-7	Apr-16	0.26	7.9	2.5	*2.0*	*2.0*	*3.0*	*3.0*
RW-7	Nov-16	0.11	0.89	*0.25*	*0.2*	*0.2*	*0.2*	*0.5*
RW-7	Apr-17	0.5	0.75	*0.27*	*2.0*	*2.0*	*3.0*	*3.0*
RW-7	Nov-17	0.05	0.21	*0.26*	*0.2*	*0.2*	*0.2*	*0.5*
RW-7	Apr-18	0.061	1.2	*0.26*	*0.2*	*0.2*	*0.2*	*0.5*
RW-7	Nov-18	0.065	0.48	*0.26*	*0.2*	*0.2*	*0.2*	*0.5*
RW-7	Apr-19	*0.05*	0.25	*0.26*	*0.2*	*0.2*	*0.2*	*0.5*
RW-7	Nov-19	*0.05*	*0.25*	*0.75*	*0.2*	*2.0*	*2.0*	*4.0*
RW-7	Jul-20	*0.05*	0.76	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-7	Dec-20	*0.05*	1.0	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-7	Jun-21	*0.05*	0.67	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-7	Dec-21	*0.05*	2.50	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-7	Jun-22	0.07	0.53	*0.75*	0.65	*1.0*	*1.0*	*3.0*
RW-7	Jan-23	*0.05*	0.46	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-7	Jun-23	*0.05*	1.6	0.76	*0.5*	*1.0*	*1.0*	*3.0*
RW-7	Dec-23	*0.05*	0.74	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-7	Average	0.1	1.4	0.9	2.3	0.8	0.9	1.9
RW-1	Nov-03	0.858	8.73	1.34	1.03	0.758	2.71	3.39
RW-1	Aug-04	**1.00**	**31.6**	2.08	0.685	0.787	2.1	4.18
RW-1	Feb-05	**1.03**	**18.9**	0.75	10.5	4.66	4.06	20.2
RW-1	Nov-05	0.547	2.19	0.708	0.5	0.5	0.5	1.67
RW-1	Mar-06	0.144	4.78	0.802	0.5	0.5	0.5	1
RW-1	Nov-06	0.173	3.28	*0.487*	0.5	0.5	0.5	1
RW-1	May-07	0.081	0.972	*0.526*	0.5	0.5	0.5	1
RW-1	Nov-07	0.056	0.596	*0.505*	0.5	0.5	0.5	1
RW-1	Apr-08	0.068	0.25	*0.5*	0.5	0.5	0.5	1
RW-1	Nov-08	0.050	0.274	*0.472*	0.5	0.5	0.5	1
RW-1	Apr-09	0.074	0.332	*0.481*	0.5	0.5	0.5	1
RW-1	Nov-09	0.073	0.44	*0.47*	*0.5*	*1*	*1*	*2*
RW-1	Apr-10	0.071	0.31	*0.49*	*0.5*	*1*	*1*	*2*
RW-1	Nov-10	0.143	0.32	*0.39*	*0.5*	*1*	*1*	*3*
RW-1	Apr-11	0.0991	0.95	*0.39*	*0.5*	*1*	*1*	*3*
RW-1	Nov-11	0.14	6.9	1.6	*0.5*	*1*	*1*	*3*
RW-1	Apr-12	0.131	0.86	*0.4*	0.53	*1*	*1*	*3*
RW-1	Nov-12	*0.1*	0.23	0.35	*0.5*	*0.5*	*0.5*	*1.5*
RW-1	Apr-13	0.15	0.47	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*
RW-1	Nov-13	0.12	0.4	*0.25*	*0.5*	*0.5*	*0.5*	*1*
RW-1	Apr-14	0.17	0.9	0.34	0.3	*0.16*	0.35	0.44
RW-1	Nov-14	0.19	0.72	*0.25*	*1.0*	*1.0*	*1.0*	*3.0*
RW-1	Apr-15	0.18	5.0	1.2	*2.0*	*2.0*	*3.0*	*3.0*
RW-1	Nov-15	0.52	0.96	0.18	2.6	*2.0*	*3.0*	*3.0*
Groundwater Cleanup Level		**1.0**	**10.0**	**10.0**	**71**			
Reporting Limits/Units		0.05 mg/l	0.25 mg/l	.750 mg/l	0.5 ug/l	Varies	Varies	Varies

Table 2. Waterfront Groundwater Recovery Wells Petroleum Hydrocarbon History
Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well ID	Date	Gasoline mg/l	Diesel mg/l	Oil mg/l	Benzene µg/l	Toluene ug/l	Ethylbenzene ug/l	Xylenes (total) ug/l
RW-1	Apr-16	0.24	2.5	0.69	*2.0*	*2.0*	*3.0*	*3.0*
RW-1	Nov-16	0.16	0.63	0.078	0.22	*0.2*	0.25	*0.5*
RW-1	Apr-17	0.5	0.17	0.26	*2.00*	*2.0*	*3.00*	*3.0*
RW-1	Nov-17	0.086	0.85	0.078	0.26	*0.2*	*0.20*	*0.5*
RW-1	Apr-18	0.2	0.69	*0.26*	0.23	*0.2*	0.31	*0.5*
RW-1	Nov-18	0.16	1.5	0.36	*0.20*	*0.2*	*0.20*	*0.5*
RW-1	Apr-19	0.11	0.73	*0.25*	*0.20*	*0.2*	0.25	*0.5*
RW-1	Nov-19	0.11	*0.25*	*0.75*	*0.50*	*2.0*	*2.00*	*4.0*
RW-1	Jul-20	0.15	1.3	*0.75*	*0.54*	*1.0*	*1.00*	*3.0*
RW-1	Dec-20	0.15	7.9	*1.5*	*0.50*	*1.0*	*1.00*	*3.0*
RW-1	Jun-21	0.11	0.29	*0.75*	*0.50*	*1.0*	*1.00*	*3.0*
RW-1	Dec-21	0.11	0.27	*0.75*	*0.50*	*1.0*	*1.00*	*3.0*
RW-1	Jun-22	*0.05*	1.5	*0.75*	*0.50*	*1.0*	*1.00*	*3.0*
RW-1	Jan-23	0..067	1.1	*0.75*	*0.50*	*1.0*	*1.00*	*3.0*
RW-1	Jun-23	0.12	0.86	*0.75*	*0.50*	*1.0*	*1.00*	*3.0*
RW-1	Dec-23	0.082	0.48	*0.75*	*0.50*	*1.0*	*1.00*	*3.0*
RW-1	Average	0.2	3.0	0.9	2.6	0.9	1.1	2.5
RW-6	Nov-03	**1.81**			**569**	23.1	10	116
RW-6	Aug-04	0.067	0.25	0.75	0.5	0.5	0.5	1
RW-6	Feb-05	0.101	0.25	0.75	0.5	0.5	0.788	1.3
RW-6	Nov-05	**8.19**	**115**	**14.7**	7.62	2.56	53.6	524
RW-6	Mar-06	**31.80**	**560**	**300**	12.7	9.15	96.7	568
RW-6	Nov-06	**1.14**	**26.8**	*1.05*	0.591	0.5	0.636	10
RW-6	May-07	**1.02**	**38.9**	*5.05*	34	1.44	16.6	15.2
RW-6	Nov-07	0.05	1.9	*5.32*	0.5	0.5	0.5	1
RW-6	Apr-08	0.33	5.56	0.542	10.2	1.22	9.56	6.9
RW-6	Nov-08	0.05	0.734	*0.472*	0.5	0.5	0.5	1
RW-6	Apr-09	0.175	1.14	*0.476*	6.93	0.5	3.08	3.32
RW-6	Nov-09	*0.050*	0.73	*0.47*	*0.5*	*1*	*1*	*2*
RW-6	Apr-10	**1.10**	3.2	*0.49*	53	2	9.4	6.7
RW-6	Nov-10	0.266	2.5	*0.39*	*0.5*	*1*	*1*	*3*
RW-6	Apr-11	0.595	*0.37*	*0.41*	15.1	*1*	9.5	6.7
RW-6	Nov-11	*0.05*	0.21	*0.38*	*0.5*	*1*	*1*	*3*
RW-6	Apr-12	*0.05*	0.98	*0.4*	1.1	*1*	*1*	*3*
RW-6	Nov-12	*0.1*	*0.11*	*0.11*	*0.5*	*0.5*	*0.5*	*1.5*
RW-6	Apr-13	0.18	1.1	*0.49*	0.82	*0.5*	*0.5*	0.55
RW-6	Nov-13	0.052	0.29	*0.25*	*0.5*	*0.5*	*0.5*	*1*
RW-6	Apr-14	0.19	1.4	0.36	2.1	0.34	1.3	0.64
RW-6	Nov-14	0.068	0.46	*0.25*	*1.0*	*1.0*	*1.0*	*3.0*
RW-6	Apr-15	0.13	0.46	*0.26*	*2.0*	*2.0*	*3.0*	*3.0*
RW-6	Nov-15	0.097	0.6	0.14	*2.0*	*2.0*	*3.0*	*3.0*
RW-6	Apr-16	0.21	6.3	2.4	*2.0*	*2.0*	*3.0*	*3.0*
RW-6	Nov-16	0.18	1.3	0.32	*0.2*	*0.2*	*0.2*	*0.5*
RW-6	Apr-17	0.5	0.66	0.51	*2.0*	*2.0*	*3.0*	*3.0*
RW-6	Nov-17	0.05	0.22	0.27	*0.2*	*0.2*	*0.2*	*0.5*
RW-6	Apr-18	0.11	0.54	*0.25*	*0.2*	*0.2*	*0.2*	*0.5*
RW-6	Nov-18	0.086	0.58	*0.25*	*0.2*	*0.2*	*0.2*	*0.5*
Groundwater Cleanup Level		**1.0**	**10.0**	**10.0**	**71**			
Reporting Limits/Units		0.05 mg/l	0.25 mg/l	.750 mg/l	0.5 ug/l	Varies	Varies	Varies

Table 2. Waterfront Groundwater Recovery Wells Petroleum Hydrocarbon History
Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well ID	Date	Gasoline mg/l	Diesel mg/l	Oil mg/l	Benzene µg/l	Toluene ug/l	Ethylbenzene ug/l	Xylenes (total) ug/l
RW-6	Apr-19	0.053	0.14	*0.25*	*0.2*	*0.2*	*0.2*	*0.5*
RW-6	Nov-19	*0.05*	0.46	*0.75*	*0.5*	*2.0*	*2.0*	*4.0*
RW-6	Jul-20	0.081	0.26	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-6	Dec-20	*0.05*	*0.25*	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-6	Jun-21	*0.05*	0.32	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-6	Dec-21	*0.05*	*0.25*	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-6	Jun-22	0.2	*0.25*	0.75	1.3	*1.0*	*1.0*	*3.0*
RW-6	Jan-23	0.08	0.31	*0.75*	0.6	*1.0*	*1.0*	*3.0*
RW-6	Jun-23	*0.05*	0.37	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-6	Dec-23	*0.05*	0.31	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
RW-6	Average	**1.2**	**19.6**	8.9	19.6	1.7	6.1	33.0
RW-5	Nov-03	**2.10**	4.13	0.75	5.21	0.657	83.5	186
RW-5	Aug-04	**7.60**	**14.5**	1.55	1.93	1.67	324	630
RW-5	Feb-05	**3.18**	**17.4**	**15**	**37.8**	40	38.5	287
RW-5	Nov-05	**19.60**	**1240**	**361**	**43.2**	42	66.2	879
RW-5	Mar-06	**1.79**	**13.3**	7.5	1.06	24.2	8.03	129
RW-5	Nov-06	0.741	8	1.67	0.5	0.5	0.732	4.23
RW-5	May-07	**2.920**	**13.9**	2.01	22.1	0.705	16.7	60.1
RW-5	Nov-07	1.430	2.16	0.639	1.08	0.5	1.87	2.07
RW-5	Apr-08	0.240	7.71	2.17	5.64	0.5	1.19	1.48
RW-5	Nov-08	**1.520**	0.916	*0.472*	6.32	0.5	2.85	3.55
RW-5	Apr-09	0.873	**11.7**	2.45	**93.3**	2.42	8.74	16.5
RW-5	Nov-09	0.066	0.4	*0.47*	*0.5*	*1*	*1*	*2*
RW-5	Apr-10	0.570	1.4	*0.49*	7.3	*1*	15	29
RW-5	Nov-10	0.785	0.9	*0.39*	30.5	*1*	2	5.3
RW-5	Apr-11	0.801	1.3	*0.41*	10.3	*1*	3.5	7
RW-5	Nov-11	0.18	1.2	*0.39*	9.2	*1*	5.6	3.9
RW-5	Apr-12	0.746	0.35	*0.41*	14.1	*1*	6.8	26
RW-5	Nov-12	*0.1*	0.38	0.41	1.6	*0.5*	*0.5*	*1.5*
RW-5	Apr-13	0.18	**26**	2.2	0.57	*0.5*	*0.5*	*0.5*
RW-5	Nov-13	0.22	*0.25*	*0.25*	0.83	*0.5*	*0.5*	*1*
RW-5	Apr-14	0.46	2.8	0.79	5.2	0.55	1.9	4.1
RW-5	Nov-14	0.28	1.7	0.56	*1.0*	*1.0*	*1.0*	*3.0*
RW-5	Apr-15	0.45	2.4	0.89	3.2	*2.0*	*3.0*	*3.0*
RW-5	Nov-15	0.39	2.2	0.36	*2.0*	*2.0*	*3.0*	*3.0*
RW-5	Apr-16	0.63	2.4	0.82	*2.0*	*2.0*	*3.0*	3.3
RW-5	Nov-16	0.72	4.4	1.00	0.59	*0.2*	0.40	0.41
RW-5	Apr-17	0.5	0.51	0.26	*2.00*	*2.0*	*3.00*	*3.00*
RW-5	Nov-17	0.32	1	0.26	1.10	*0.3*	2.60	0.74
RW-5	Apr-18	0.45	0.56	0.28	1.30	0.3	1.30	1.20
RW-5	Nov-18	0.25	4.2	2.10	1.40	*0.2*	0.76	4.50
RW-5	Apr-19	0.4	0.62	*0.26*	1.40	0.33	1.10	0.73
RW-5	Nov-19	*0.05*	0.55	*0.75*	0.50	*2.0*	*2.0*	*4.0*
RW-5	Jul-20	0.32	0.59	*0.75*	2.50	*1.0*	3.7	*3.0*
RW-5	Dec-20	0.94	0.31	*0.75*	0.82	*1.0*	*1.0*	*3.0*
RW-5	Jun-21	0.25	0.38	*0.75*	1.50	*1.0*	*1.0*	*3.0*
RW-5	Dec-21	0.23	*0.25*	*0.75*	*0.50*	*1.0*	*1.0*	*3.0*
Groundwater Cleanup Level		**1.0**	**10.0**	**10.0**	**71**			
Reporting Limits/Units		0.05 mg/l	0.25 mg/l	.750 mg/l	0.5 ug/l	Varies	Varies	Varies

Table 2. Waterfront Groundwater Recovery Wells Petroleum Hydrocarbon History
Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well ID	Date	Gasoline mg/l	Diesel mg/l	Oil mg/l	Benzene µg/l	Toluene ug/l	Ethylbenzene ug/l	Xylenes (total) ug/l
RW-5	Jun-22	0.13	*0.25*	*0.75*	1.4	*1.0*	*1.0*	*3.0*
RW-5	Jan-23	0.11	*0.25*	*0.75*	1.1	*1.0*	*1.0*	*3.0*
RW-5	Jun-23	0.32	0.49	*0.75*	0.98	*1.0*	8.0	*3.0*
RW-5	Dec-23	0.19	0.71	*0.75*	1.1	*1.0*	*1.0*	*3.0*
RW-5	Average	**1.3**	**34.2**	**10.4**	9.6	3.6	15.7	58.3
RW-4	Nov-03	**4.89**			36.1	44.3	337	281
RW-4	Aug-04	**182.0**	**681**	**150**	**617**	7740	2750	15,200
RW-4	Feb-05	**49.4**	**2,610**	**765**	**347**	2830	834	7,210
RW-4	Nov-05	**77.5**	**3,650**	**1820**	**341**	6940	1100	8,010
RW-4	Mar-06	**26.1**	**440**	**150**	30.2	654	346	3,340
RW-4	Nov-06	**7.23**	**139**	*5.26*	65.2	157	47	1,090
RW-4	May-07	0.82	8.08	*0.543*	3.97	0.547	3.89	77.5
RW-4	Nov-07	**1.29**	0.553	*0.543*	1.97	0.536	3.5	106
RW-4	Apr-08	0.07	2.91	*0.532*	0.5	0.5	0.5	4.57
RW-4	Nov-08	0.73	6.43	*0.472*	6.86	0.5	3.6	28.2
RW-4	Apr-09	0.565	7.93	*0.481*	8.17	0.5	1.43	18.3
RW-4	Nov-09	**5.5**	**25**	1.2	22	1.9	30	310
RW-4	Apr-10	**4.2**	**10**	*0.49*	46	1.6	24	155
RW-4	Nov-10	**2.61**	**20**	0.86	39.9	*1.0*	15	47.9
RW-4	Apr-11	**5.73**	**29.5**	1.2	67.9	1.2	44.8	158
RW-4	Nov-11	**4.51**	**56.2**	1.4	48.5	*1.0*	43.6	98.3
RW-4	Apr-12	**6.24**	**38.1**	1.4	56.8	*1.2*	45.3	106
RW-4	Nov-12	0.771	**10.7**	9.2	7.5	*0.5*	3.9	10.1
RW-4	Apr-13	**1.1**	7.1	*0.5*	16	*0.5*	5.4	2.32
RW-4	Nov-13	0.77	0.63	*0.25*	12	*0.5*	6.2	12
RW-4	Apr-14	**3.7**	**50**	2.7	14	0.49	14	22
RW-4	Nov-14	**1.9**	8.7	0.57	15	*1.0*	16	23
RW-4	Apr-15	**3.0**	4.1	0.35	13	*2.0*	18	18
RW-4	Nov-15	**2.3**	**18**	0.95	13	0.45	5.3	7.6
RW-4	Apr-16	**3.1**	**22**	1.4	12	*2.0*	7	*3.0*
RW-4	Nov-16	0.86	**50**	2.9	1.9	*0.2*	0.41	*0.5*
RW-4	Apr-17	**2.2**	**22**	0.96	8.4	*2.0*	4	*3.0*
RW-4	Nov-17	**1.3**	**20**	1.2	22	1.2	2.7	1.3
RW-4	Apr-18	**1.3**	**24**	1.2	4.3	0.26	2.3	0.6
RW-4	Nov-18	**1.2**	**33**	1.9	12	0.34	0.45	1.1
RW-4	Apr-19	0.77	**28**	1.1	5.5	*0.20*	2.9	0.74
RW-4	Nov-19	0.48	**35**	*3.8*	10	*2.0*	*2.0*	*4.0*
RW-4	Jul-20	*0.5*	**390**	*4.3*	27	*10.0*	19.0	*30.0*
RW-4	Dec-20	***8.4***	**38**	***10.0***	42	*1.0*	1.0	*3.0*
RW-4	Jun-21	***2.4***	**47**	***15.0***	15.0	16.0	12.0	*30.0*
RW-4	Dec-21	**24.0**	**120**	***25.0***	7.9	*1.0*	*1.0*	*3.0*
RW-4	Jun-22	0.55	**16**	*3.80*	15	*1.0*	7.9	*3.0*
RW-4	Jan-23	0.66	3.5	*0.75*	34	1.6	1.8	*3.0*
RW-4	Jun-23	**1.9**	**91**	*0.50*	46	1.1	5.0	*3.8*
RW-4	Dec-23	**4.6**	**110**	*38*	31	1.4	5.7	*8.2*
RW-4	Average	**11.2**	**228**	**78**	53.1	460.6	144.3	910.9
Groundwater Cleanup Level		**1.0**	**10.0**	**10.0**	**71**			
Reporting Limits/Units		0.05 mg/l	0.25 mg/l	.750 mg/l	0.5 ug/l	Varies	Varies	Varies

Table 2. Waterfront Groundwater Recovery Wells Petroleum Hydrocarbon History
Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well ID	Date	Gasoline mg/l	Diesel mg/l	Oil mg/l	Benzene µg/l	Toluene ug/l	Ethylbenzene ug/l	Xylenes (total) ug/l
RW-2	Nov-03	**2.07**			**820**	369	34.5	124
RW-2	Aug-04	**7.03**	46	1.41	**2,270**	382	354	1,180
RW-2	Feb-05	**4.65**	1.02	0.75	**1,690**	450	296	752
RW-2	Nov-05	**2.82**	0.76	0.708	**1,540**	299	159	353
RW-2	Mar-06	**2.39**	6.84	3.75	**1,120**	112	138	224
RW-2	Nov-06	**13.10**	**14.3**	1.05	**1,830**	516	410	1,810
RW-2	May-07	**8.25**	6.35	*0.505*	**254**	33.1	237	1,150
RW-2	Nov-07	**3.55**	3.32	*0.538*	**895**	5	79.4	172
RW-2	Apr-08	**2.06**	**10.0**	*0.515*	**245**	5	58	190
RW-2	Nov-08	**1.42**	1.1	*0.481*	**360**	4.04	17.6	40
RW-2	Apr-09	0.497	0.864	*0.476*	49	1.78	9.49	22
RW-2	Nov-09	**2.4**	2.6	*0.48*	**400**	23	150	410
RW-2	Apr-10	**1.5**	1.0	*0.49*	**200**	1.5	66	98
RW-2	Nov-10	0.36	8.1	*0.6*	34.9	*1.0*	7.7	23.3
RW-2	Apr-11	**1.0**	1.5	*0.39*	**146**	1.3	27.8	51.7
RW-2	Nov-11	0.96	0.69	*0.39*	**363**	4.7	36.5	63.8
RW-2	Apr-12	0.57	**13.9**	*0.74*	**139**	*1.0*	13.7	17.4
RW-2	Nov-12	0.71	1.0	*0.91*	**196**	1.2	11.2	8.3
RW-2	Apr-13	0.47	3.0	*0.49*	**230**	2.0	20	6.6
RW-2	Nov-13	0.40	4.6	*0.25*	**80**	2.9	6.2	5.5
RW-2	Apr-14	**2.20**	7.2	0.53	**290**	100	84	79
RW-2	Nov-14	**2.30**	3.2	0.29	**460**	10	140	140
RW-2	Apr-15	**2.20**	2.7	0.3	**340**	28	77	55
RW-2	Nov-15	**1.6**	2.4	0.15	**330**	1.9	20	19
RW-2	Apr-16	**4.1**	**50**	2.3	**250**	16	40	31
RW-2	Nov-16	**3.6**	**170**	7.2	**330**	0.98	5.20	1.4
RW-2	Apr-17	**1.7**	7.4	0.28	**150**	130	29	15
RW-2	Nov-17	0.89	4.2	0.25	**390**	2.8	22	9.2
RW-2	Apr-18	**1.1**	**52**	2.2	**130**	6.6	4.9	2.2
RW-2	Nov-18	**2.4**	**16**	0.76	**180**	36	13	59
RW-2	Apr-19	0.66	8.1	0.32	26	0.49	5.4	1.2
RW-2	Nov-19	0.92	**20**	*3.8*	16	*2.0*	*2.0*	*4.0*
RW-2	Jul-20	**1.8**	9.4	*0.75*	**91**	170	16	*3.0*
RW-2	Dec-20	**1.1**	**76**	***20.0***	31	5.1	7.1	*47*
RW-2	Jun-21	**2.5**	**200**	***38.0***	11	*10*	11.0	*40*
RW-2	Dec-21	**4.4**	**220**	***38.0***	**320**	2.1	40	15
RW-2	Jun-22	**2.3**	**59**	*7.5*	65	*10*	89	*30*
RW-2	Jan-23	**4.3**	**120**	*38.0*	**450**	560.0	*76*	41
RW-2	Jun-23	1.0	**15**	*3.8*	16	2.6	5.0	9.6
RW-2	Dec-23	**1.8**	7.9	*7.5*	**130**	1.7	2.3	*3.0*
RW-2	Average	**2.5**	**30.2**	4.8	**422**	82.8	70.5	182.7
GM-11S	Nov-03	**2.28**			**614**	38.3	67.2	141
GM-11S	Aug-04	**2.06**	**57**	3.93	**506**	2.17	49.3	84.1
GM-11S	Feb-05	**2.42**	**25.1**	<15	55.6	0.848	25.5	17.3
GM-11S	Nov-05	**2.15**	**37.4**	<7.14	**124**	3.66	13.7	5.34
GM-11S	Mar-06	**1.41**	**17.8**	7.5	**218**	2.5	24.5	5
GM-11S	Nov-06	0.131	**10.8**	*1.05*	13.5	0.5	2.86	1.59
Groundwater Cleanup Level		**1.0**	**10.0**	**10.0**	**71**			
Reporting Limits/Units		0.05 mg/l	0.25 mg/l	.750 mg/l	0.5 ug/l	Varies	Varies	Varies

Table 2. Waterfront Groundwater Recovery Wells Petroleum Hydrocarbon History
Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well ID	Date	Gasoline mg/l	Diesel mg/l	Oil mg/l	Benzene µg/l	Toluene ug/l	Ethylbenzene ug/l	Xylenes (total) ug/l
GM-11S	May-07	**1.68**	1.1	*0.556*	**175**	2.5	81.2	35.1
GM-11S	Nov-07	**2.20**	2.34	*0.505*	56.2	4.16	48.4	34.3
GM-11S	Apr-08	**1.93**	0.319	*0.532*	65.7	1.76	185	132
GM-11S	Nov-08	**1.66**	1.23	*0.472*	**95.3**	1.76	44.5	14.8
GM-11S	Apr-09	**1.26**	0.942	*0.481*	5.34	0.898	19.1	11.1
GM-11S	Aug-09	**1.90**	1.2	*0.48*	71	2.4	37	6.3
GM-11S	Nov-09	**1.50**	3.6	*0.48*	36	1.1	48	24
GM-11S	Apr-10	**3.00**	5	0.5	46	1.6	93	156
GM-11S	Nov-10	**1.39**	1.8	*0.48*	42	1.9	64.9	37.1
GM-11S	Apr-11	**1.42**	0.52	*0.4*	18.4	*1*	26.5	20.1
GM-11S	Nov-11	**2.28**	0.47	*0.38*	30.9	1.7	22.9	10.3
GM-11S	Apr-12	**2.24**	1.1	*0.38*	33	1.7	59.2	40.4
GM-11S	Nov-12	0.671	0.83	0.62	11.4	0.86	44.6	27.9
GM-11S	Apr-13	0.5	0.35	*0.49*	20	0.52	23	9.1
GM-11S pumping discontinued in May 2013 due to line blockage and concentrations mainly below cleanup levels.								
GM-11S	Nov-13	0.33	0.47	0.58	4.1	0.6	10	1
GM-11S	Apr-14	**1.2**	3.9	1.4	10	0.82	23	2.7
GM-11S	Nov-14	0.72	0.83	0.4	6.5	8.7	*1.0*	*3.0*
GM-11S	Apr-15	0.2	0.51	0.35	*2.0*	*2.0*	*3.0*	*3.0*
GM-11S	Nov-15	0.5	0.77	0.41	1.6	0.54	0.52	0.70
GM-11S	Apr-16	0.52	7.1	1.8	14.0	*2.0*	*3.0*	*3.0*
GM-11S	Nov-16	0.078	0.34	0.21	*0.2*	*0.2*	*0.2*	*0.5*
GM-11S	Apr-17	0.5	0.11	0.25	*2.0*	*2.0*	*3.0*	*3.0*
GM-11S	Nov-17	0.83	1.4	0.37	3.8	2.5	0.4	1.7
GM-11S	Apr-18	0.22	1.4	0.98	*0.2*	0.2	*0.2*	*0.5*
GM-11S	Nov-18	0.48	4.8	4.0	*0.2*	*0.2*	*0.2*	*0.5*
GM-11S	Apr-19	0.3	2.0	0.57	2.0	1.2	0.27	*0.5*
GM-11S	Nov-19	0.66	2.1	*0.75*	*0.5*	*2.0*	*2.0*	*4.0*
GM-11S	Jul-20	0.99	3.0	*0.75*	2.5	1.6	*1.0*	*3.0*
GM-11S	Dec-20	0.84	3.6	1.00	3.5	*1.0*	*1.0*	*3.0*
GM-11S	Jun-21	0.95	2.7	*0.75*	2.9	1.1	*1.0*	*3.0*
GM-11S	Dec-21	0.66	2.4	*0.75*	*0.5*	*1.0*	*1.0*	*3.0*
GM-11S	Jun-22	0.64	3.1	0.79	4.5	*1.0*	*1.0*	*3.0*
GM-11S	Jan-23	0.57	2.3	*0.75*	1.9	*1.0*	*1.0*	*3.0*
GM-11S	Jun-23	0.73	6.1	*1.5*	1.4	*1.0*	*1.0*	*3.0*
GM-11S	Dec-23	**1.3**	6.8	*3.8*	*0.5*	1.0	*1.0*	*3.0*
GM-11S	Average	**1.2**	5.7	1.3	56.5	2.5	25.2	21.0
Groundwater Cleanup Level		**1.0**	**10.0**	**10.0**	**71**			
Reporting Limits/Units		0.05 mg/l	0.25 mg/l	.750 mg/l	0.5 ug/l	Varies	Varies	Varies

Notes:

Detection limits for many of the Oil analyses were raised due to sample dilution for diesel analyses.
These samples are listed with a "<" notation.

Values in italics were not detected at the listed reporting limit.

Values in bold exceed the cleanup level for confirmational wells.

Note that the groundwater cleanup levels are included for reference only.
Cleanup levels are applicable to confirmational wells, which are more deeply screened than the recovery wells included in this table. The deeper groundwater represents the conditional point of compliance for the Site, where groundwater/surface water exchange is occurring.

Table 3. Waterfront Systems Recovered Petroleum Hydrocarbon History
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Total Gallonage of Recovered Petroleum Hydrocarbons

Date	Monthly LNAPL Recovery	Dissolved LNAPL Recovery*	Cumulative LNAPL Recovery	Monthly SVE Recovery (Vapor Phase)	Monthly SVE Recovery (Biodegredation)	Cumulative SVE Recovery	Total Recovery
9-Aug-92	0.0	NA	0	NA	NA	NA	0
10-Aug-92	1.2	NA	1	NA	NA	NA	1
11-Aug-92	27.4	NA	29	NA	NA	NA	29
19-Aug-92	43.6	NA	72	NA	NA	NA	72
25-Aug-92	7.3	NA	80	NA	NA	NA	80
26-Aug-92	19.0	NA	99	NA	NA	NA	99
27-Aug-92	19.4	NA	118	NA	NA	NA	118
11-Sep-92	5.4	NA	123	NA	NA	NA	123
13-Sep-92	31.8	NA	155	NA	NA	NA	155
18-Dec-92	17.8	NA	173	NA	NA	NA	173
4-Jan-93	45.0	NA	218	NA	NA	NA	218
3-Feb-93	120.3	NA	338	NA	NA	NA	338
4-Feb-93	11.1	NA	349	NA	NA	NA	349
5-Feb-93	14.8	NA	364	NA	NA	NA	364
8-Feb-93	38.9	NA	403	NA	NA	NA	403
16-Feb-93	72.7	NA	476	NA	NA	NA	476
18-Feb-93	23.5	NA	499	NA	NA	NA	499
1-Mar-93	89.4	NA	589	NA	NA	NA	589
15-Mar-93	253.8	NA	842	NA	NA	NA	842
16-Mar-93	20.2	NA	863	NA	NA	NA	863
25-Mar-93	98.0	NA	961	NA	NA	NA	961
31-Mar-93	52.1	NA	1,013	NA	NA	NA	1,013
8-Apr-93	108.6	NA	1,121	NA	NA	NA	1,121
12-Apr-93	86.5	NA	1,208	NA	NA	NA	1,208
14-Apr-93	37.5	NA	1,245	NA	NA	NA	1,245
15-Apr-93	21.8	NA	1,267	NA	NA	NA	1,267
29-Apr-93	114.0	NA	1,381	NA	NA	NA	1,381
5-May-93	57.9	NA	1,439	NA	NA	NA	1,439
10-May-93	128.9	NA	1,568	NA	NA	NA	1,568
14-May-93	175.4	NA	1,743	NA	NA	NA	1,743
19-May-93	236.7	NA	1,980	NA	NA	NA	1,980
28-May-93	279.7	NA	2,260	NA	NA	NA	2,260
3-Jun-93	2.4	NA	2,262	NA	NA	NA	2,262
4-Jun-93	78.0	NA	2,340	NA	NA	NA	2,340
11-Jun-93	40.5	NA	2,380	NA	NA	NA	2,380
25-Jun-93	216.6	NA	2,597	NA	NA	NA	2,597
6-Jul-93	167.9	NA	2,765	NA	NA	NA	2,765
9-Jul-93	15.1	NA	2,780	NA	NA	NA	2,780
16-Jul-93	3.3	NA	2,783	NA	NA	NA	2,783
29-Jul-93	9.2	NA	2,792	NA	NA	NA	2,792
30-Oct-93	1007.6	NA	3,800	NA	NA	NA	3,800
15-Mar-94	900.0	NA	4,700	NA	NA	NA	4,700
30-Jun-94	900.0	NA	5,600	NA	NA	NA	5,600
28-Sep-94	300.0	NA	5,900	NA	NA	NA	5,900
27-Dec-94	300.0	NA	6,200	NA	NA	NA	6,200
27-Mar-95	300.0	NA	6,500	NA	NA	NA	6,500
25-Jun-95	300.0	NA	6,800	NA	NA	NA	6,800
23-Sep-95	100.0	NA	6,900	NA	NA	NA	6,900
22-Dec-95	98.0	NA	6,998	NA	NA	NA	6,998
1-Jan-96	103.0	NA	7,101	11.4	24.8	36	7,137
28-Feb-96	140.0	NA	7,241	22.7	49.6	108	7,349
28-Mar-96	229.0	NA	7,470	88.5	155.4	352	7,822
24-Apr-96	60.5	NA	7,531	64.9	126.4	544	8,074
31-May-96	56.0	NA	7,586	54.4	150.8	749	8,335

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Total Gallonage of Recovered Petroleum Hydrocarbons

Date	Monthly LNAPL Recovery	Dissolved LNAPL Recovery*	Cumulative LNAPL Recovery	Monthly SVE Recovery (Vapor Phase)	Monthly SVE Recovery (Biodegredation)	Cumulative SVE Recovery	Total Recovery
26-Jun-96	61.0	NA	7,648	60.7	139.8	949	8,597
17-Jul-96	201.9	NA	7,849	62.9	158.0	1,170	9,020
16-Aug-96	312.9	NA	8,162	85.3	242.3	1,498	9,660
18-Sep-96	216.2	NA	8,379	23.8	74.8	1,596	9,975
16-Oct-96	120.5	NA	8,499	72.9	248.3	1,918	10,417
20-Nov-96	99.3	NA	8,598	30.8	155.2	2,104	10,702
12-Dec-96	17.2	NA	8,615	8.4	79.5	2,192	10,807
16-Jan-97	38.9	NA	8,654	8.3	75.8	2,276	10,930
14-Feb-97	2.3	NA	8,657	6.4	53.8	2,336	10,993
13-Mar-97	23.1	NA	8,680	7.5	42.4	2,386	11,066
14-Apr-97	86.6	NA	8,766	14.3	16.3	2,417	11,183
15-May-97	164.9	NA	8,931	18.2	42.0	2,477	11,408
24-Jun-97	70.2	NA	9,001	0.0	0.0	2,477	11,478
24-Jul-97	41.1	NA	9,043	2.7	13.9	2,493	11,536
24-Aug-97	0.0	NA	9,043	1.9	9.6	2,505	11,547
30-Sep-97	6.26	NA	9,049	2.2	11.4	2,518	11,567
31-Oct-97	23.68	NA	9,072	0.0	0.0	2,518	11,591
30-Nov-97	9.04	NA	9,081	0.0	0.0	2,518	11,600
15-Dec-97	7.19	NA	9,089	0.5	2.5	2,521	11,610
14-Jan-98	10.29	NA	9,099	1.0	5.0	2,527	11,626
13-Feb-98	6.5	NA	9,105	3.4	17.5	2,548	11,654
16-Mar-98	5.72	NA	9,111	2.4	12.2	2,563	11,674
14-Apr-98	0.01	NA	9,111	4.1	20.9	2,588	11,699
19-May-98	0.0	NA	9,111	5.1	25.9	2,619	11,730
15-Jun-98	0.0	NA	9,111	0.6	3.1	2,622	11,734
15-Jul-98	0.0	NA	9,111	0.0	0.0	2,622	11,734
15-Aug-98	0.0	NA	9,111	0.0	0.0	2,622	11,734
15-Sep-98	0.0	NA	9,111	0.0	0.0	2,622	11,734
15-Oct-98	7.7	NA	9,119	2.6	13.1	2,638	11,757
18-Nov-98	0.33	NA	9,119	4.8	24.5	2,667	11,787
13-Dec-98	0.0	NA	9,119	3.5	18.0	2,689	11,808
14-Jan-99	0.08	NA	9,119	3.3	16.9	2,709	11,828
17-Feb-99	0.0	NA	9,119	4.6	23.8	2,737	11,857
15-Mar-99	0.0	NA	9,119	3.8	19.4	2,761	11,880
15-Apr-99	0.0	NA	9,119	4.0	20.6	2,785	11,905
13-May-99	0.0	NA	9,119	3.9	20.2	2,809	11,929
15-Jun-99	0.0	NA	9,119	3.9	19.7	2,833	11,952
15-Jul-99	0.0	NA	9,119	4.1	21.2	2,858	11,978
17-Aug-99	0.0	NA	9,119	4.0	20.6	2,883	12,002
16-Sep-99	0.0	NA	9,119	3.9	19.8	2,907	12,026
20-Oct-99	0.0	NA	9,119	4.1	20.8	2,932	12,051
19-Nov-99	0.0	NA	9,119	3.7	18.8	2,954	12,073
21-Dec-99	0.0	NA	9,119	3.7	18.9	2,977	12,096
21-Jan-00	0.0	NA	9,119	3.5	18.1	2,998	12,118
16-Feb-00	0.0	NA	9,119	3.2	16.6	3,018	12,137
21-Mar-00	0.0	NA	9,119	4.4	22.6	3,045	12,164
14-Apr-00	0.0	NA	9,119	4.5	23.2	3,073	12,192
15-May-00	0.0	NA	9,119	2.6	13.5	3,089	12,208
15-Jun-00	0.1	NA	9,119	4.2	21.3	3,114	12,234
19-Jul-00	0.0	NA	9,119	3.9	20.2	3,138	12,258
18-Aug-00	0.1	NA	9,119	1.5	7.7	3,148	12,267
20-Sep-00	7.3	NA	9,127	2.8	14.1	3,165	12,291
12-Oct-00	0.0	NA	9,127	2.4	12.3	3,179	12,306
14-Nov-00	32.9	NA	9,160	2.9	14.8	3,197	12,357

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Total Gallonage of Recovered Petroleum Hydrocarbons

Date	Monthly LNAPL Recovery	Dissolved LNAPL Recovery*	Cumulative LNAPL Recovery	Monthly SVE Recovery (Vapor Phase)	Monthly SVE Recovery (Biodegredation)	Cumulative SVE Recovery	Total Recovery
14-Dec-00	20.1	NA	9,180	2.6	13.5	3,213	12,393
11-Jan-01	0.9	NA	9,181	2.5	12.6	3,228	12,409
15-Feb-01	0.0	NA	9,181	0.5	2.5	3,231	12,412
15-Mar-01	0.2	NA	9,181	0.0	0.0	3,231	12,412
20-Apr-01	0.0	NA	9,181	0.0	0.1	3,231	12,412
18-May-01	0.0	NA	9,181	6.8	35.0	3,273	12,454
11-Jun-01	0.8	NA	9,182	10.8	55.1	3,339	12,520
24-Jul-01	0.1	NA	9,182	43.9	224.4	3,607	12,789
21-Aug-01	0.3	NA	9,182	0.0	0.0	3,607	12,789
6-Sep-01	0.1	NA	9,182	0.0	0.0	3,607	12,789
19-Oct-01	0.0	NA	9,182	13.5	69.2	3,690	12,872
15-Nov-01	106.9	NA	9,289	33.7	172.2	3,896	13,185
10-Dec-01	17.5	NA	9,306	0.0	0.0	3,896	13,202
16-Jan-02	5.6	NA	9,312	34.6	177.0	4,107	13,419
21-Feb-02	0.0	NA	9,312	39.5	202.1	4,349	13,661
15-Mar-02	0.0	NA	9,312	0.0	0.0	4,349	13,661
15-Apr-02	0.0	NA	9,312	0.0	0.0	4,349	13,661
15-May-02	0.0	NA	9,312	0.0	0.0	4,349	13,661
15-Jun-02	0.0	NA	9,312	0.0	0.0	4,349	13,661
15-Jul-02	0.0	NA	9,312	0.0	0.0	4,349	13,661
15-Aug-02	0.0	NA	9,312	0.0	0.0	4,349	13,661
24-Sep-02	0.0	NA	9,312	0.0	0.0	4,349	13,661
15-Oct-02	0.0	0.0	9,312	68.5	254.2	4,672	13,984
26-Nov-02	0.0	1.2	9,313	137.6	525.5	5,335	14,648
26-Dec-02	0.0	2.7	9,316	94.0	482.8	5,912	15,227
16-Jan-03	19.6	2.6	9,338	49.5	451.8	6,413	15,751
20-Feb-03	0.0	3.7	9,342	33.5	320.1	6,766	16,108
11-Mar-03	0.0	4.6	9,346	27.5	328.1	7,122	16,468
15-Apr-03	6.9	3.9	9,357	15.4	423.1	7,560	16,918
15-May-03	2.5	2.8	9,362	18.3	346.5	7,925	17,288
17-Jun-03	0.0	1.8	9,364	18.6	353.4	8,297	17,661
15-Jul-03	2.0	1.3	9,367	32.4	290.4	8,620	17,987
13-Aug-03	0.0	2.4	9,370	49.2	295.0	8,964	18,334
16-Sep-03	0.0	2.6	9,373	26.5	364.0	9,355	18,727
14-Oct-03	0.0	2.5	9,375	23.0	316.1	9,694	19,069
19-Nov-03	0.0	3.2	9,378	36.6	404.9	10,135	19,514
17-Dec-03	20.0	6.4	9,405	12.0	317.3	10,465	19,869
13-Jan-04	25.0	31.3	9,461	2.8	293.2	10,761	20,222
10-Feb-04	0.0	19.7	9,481	3.8	186.1	10,951	20,431
17-Mar-04	0.0	1.5	9,482	5.2	297.0	11,253	20,735
15-Apr-04	0.0	0.8	9,483	11.0	198.0	11,462	20,945
25-May-04	0.0	3.0	9,486	40.4	356.7	11,859	21,345
17-Jun-04	35.0	2.7	9,524	57.1	103.2	12,019	21,543
13-Jul-04	0.0	8.2	9,532	64.7	260.4	12,344	21,876
13-Aug-04	50.0	11.9	9,594	22.1	233.1	12,599	22,193
16-Sep-04	8.0	6.3	9,608	32.0	147.8	12,779	22,387
13-Oct-04	0.0	1.8	9,610	62.2	117.5	12,959	22,568
19-Nov-04	10.0	3.1	9,623	118.5	156.7	13,234	22,856
15-Dec-04	3.5	2.0	9,629	84.4	124.7	13,443	23,071
13-Jan-05	0.0	3.7	9,632	80.6	90.3	13,614	23,245
15-Feb-05	35.0	5.3	9,673	83.4	128.0	13,825	23,494
15-Mar-05	0.0	2.7	9,675	121.9	162.7	14,110	23,781
15-Apr-05	0.0	6.2	9,681	136.0	170.8	14,417	24,094
20-May-05	0.0	13.6	9,695	83.0	156.7	14,656	24,347

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Total Gallonage of Recovered Petroleum Hydrocarbons

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16-Jun-05	0.0	13.6	9,709	61.6	106.7	14,825	24,529
15-Jul-05	110.0	15.9	9,835	86.0	168.1	15,079	24,909
12-Aug-05	0.0	7.9	9,842	100.3	142.0	15,321	25,159
15-Sep-05	0.0	10.2	9,853	96.4	145.9	15,564	25,412
14-Oct-05	0.0	7.7	9,860	66.3	179.5	15,809	25,671
17-Nov-05	0.0	5.8	9,866	92.2	188.9	16,090	25,958
19-Dec-05	0.0	7.8	9,874	49.2	104.0	16,244	26,119
25-Jan-06	0.0	77.0	9,951	83.8	152.8	16,480	26,433
14-Feb-06	5.0	35.5	9,992	40.3	74.2	16,595	26,629
15-Mar-06	2.0	3.1	9,997	59.4	112.3	16,766	26,838
14-Apr-06	0.0	4.0	10,001	47.3	116.2	16,930	27,005
17-May-06	0.0	4.9	10,005	37.9	132.2	17,100	27,179
14-Jun-06	0.0	1.1	10,007	20.7	93.2	17,214	27,298
12-Jul-06	0.0	0.2	10,007	13.8	76.5	17,304	27,389
08-Aug-06	0.0	0.0	10,007	9.2	28.7	17,342	27,427
16-Aug-06	0.0	0.2	10,007	2.4	20.9	17,365	27,451
13-Sep-06	0.0	0.7	10,008	6.4	70.7	17,442	27,528
12-Oct-06	0.0	0.5	10,008	5.2	71.9	17,519	27,606
17-Nov-06	0.0	0.6	10,009	2.8	100.3	17,622	27,710
19-Dec-06	30.0	1.1	10,040	0.6	97.3	17,720	27,839
19-Jan-07	0.0	1.2	10,041	0.0	93.0	17,813	27,933
16-Feb-07	0.0	0.7	10,042	0.8	81.7	17,896	28,016
16-Mar-07	0.0	0.5	10,042	1.8	89.2	17,987	28,108
19-Apr-07	0.0	0.8	10,043	2.8	123.9	18,113	28,235
03-May-07	0.0	0.0	10,043	1.9	52.2	18,168	28,289
17-May-07	0.0	0.7	10,044	2.6	47.2	18,217	28,286
14-Jun-07	0.0	0.4	10,044	7.8	96.2	18,321	28,390
13-Jul-07	0.0	0.3	10,044	7.3	107.5	18,436	28,505
16-Aug-07	0.0	0.2	10,045	5.2	139.9	18,581	28,650
10-Sep-07	0.0	0.1	10,045	4.4	116.7	18,703	28,772
17-Oct-07	0.0	0.1	10,045	6.4	160.4	18,869	28,939
16-Nov-07	0.0	0.2	10,045	5.1	112.7	18,987	29,056
14-Dec-07	0.0	0.1	10,045	12.6	103.2	19,103	29,172
22-Jan-08	0.0	0.4	10,046	22.0	143.0	19,268	29,337
14-Feb-08	0.0	0.4	10,046	5.9	83.5	19,357	29,427
14-Mar-08	30.0	0.3	10,076	5.1	86.1	19,448	29,518
18-Apr-08	0.0	0.2	10,076	5.4	111.5	19,565	29,642
16-May-08	0.0	0.1	10,077	4.1	88.0	19,657	29,734
18-Jun-08	0.0	0.1	10,077	0.0	0.0	19,657	29,734
16-Jul-08	0.0	0.2	10,077	0.0	0.0	19,657	29,734
18-Aug-08	0.0	0.2	10,077	0.0	0.0	19,657	29,735
16-Sep-08	0.0	0.1	10,077	0.0	0.0	19,657	29,735
15-Oct-08	0.0	0.1	10,077	0.0	0.0	19,657	29,735
14-Nov-08	0.0	0.2	10,078	0.0	0.0	19,657	29,735
11-Dec-08	0.0	0.1	10,078	0.0	0.0	19,657	29,735
14-Jan-09	0.0	0.2	10,078	0.0	0.0	19,657	29,735
18-Feb-09	0.0	0.1	10,078	0.0	0.0	19,657	29,736
17-Mar-09	0.0	0.1	10,078	0.0	0.0	19,657	29,736
16-Apr-09	0.0	0.1	10,078	0.0	0.0	19,657	29,736
14-May-09	0.0	0.1	10,078	0.0	0.0	19,657	29,736
16-Jun-09	0.0	0.1	10,079	0.0	0.0	19,657	29,736
22-Jul-09	0.0	0.3	10,079	0.0	0.0	19,657	29,736
17-Aug-09	0.0	0.4	10,079	0.0	0.0	19,657	29,737
14-Sep-09	0.0	0.3	10,080	0.0	0.0	19,657	29,737

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Total Gallonage of Recovered Petroleum Hydrocarbons

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20-Oct-09	0.0	0.2	10,080	0.0	0.0	19,657	29,737
18-Nov-09	0.0	0.6	10,080	0.0	0.0	19,657	29,738
15-Dec-09	0.0	0.3	10,081	0.0	0.0	19,657	29,738
21-Jan-10	0.0	1.7	10,082	0.0	0.0	19,657	29,740
17-Feb-10	0.0	0.8	10,083	0.0	0.0	19,657	29,740
17-Mar-10	0.0	0.4	10,084	0.0	0.0	19,657	29,741
15-Apr-10	0.0	0.3	10,084	0.0	0.0	19,657	29,741
19-May-10	0.0	0.3	10,084	0.0	0.0	19,657	29,741
16-Jun-10	0.0	0.1	10,084	0.0	0.0	19,657	29,742
28-Jul-10	0.0	0.1	10,084	0.0	0.0	19,657	29,742
18-Aug-10	0.0	0.0	10,084	0.0	0.0	19,657	29,742
21-Sep-10	0.0	0.1	10,084	0.0	0.0	19,657	29,742
19-Oct-10	0.0	0.1	10,084	0.0	0.0	19,657	29,742
29-Nov-10	0.0	0.1	10,085	0.0	0.0	19,657	29,742
22-Dec-10	0.0	0.7	10,085	0.0	0.0	19,657	29,743
19-Jan-11	0.0	1.2	10,087	0.0	0.0	19,657	29,744
15-Feb-11	0.0	0.5	10,087	0.0	0.0	19,657	29,744
29-Mar-11	0.0	0.5	10,088	0.0	0.0	19,657	29,745
21-Apr-11	0.0	0.2	10,088	0.0	0.0	19,657	29,745
18-May-11	0.0	0.5	10,088	0.0	0.0	19,657	29,746
14-Jun-11	0.0	0.3	10,088	0.0	0.0	19,657	29,746
20-Jul-11	0.0	0.1	10,089	0.0	0.0	19,657	29,746
17-Aug-11	0.0	0.0	10,089	0.0	0.0	19,657	29,746
14-Sep-11	0.0	0.0	10,089	0.0	0.0	19,657	29,746
11-Oct-11	0.0	0.1	10,089	0.0	0.0	19,657	29,746
22-Nov-11	0.0	0.3	10,089	0.0	0.0	19,657	29,746
13-Dec-11	0.0	0.1	10,089	0.0	0.0	19,657	29,747
23-Jan-12	0.0	1.8	10,091	0.0	0.0	19,657	29,748
14-Feb-12	0.0	0.9	10,092	0.0	0.0	19,657	29,749
13-Mar-12	0.0	0.2	10,092	0.0	0.0	19,657	29,749
16-Apr-12	0.0	0.8	10,093	0.0	0.0	19,657	29,750
16-May-12	0.0	0.5	10,093	0.0	0.0	19,657	29,751
13-Jun-12	0.0	0.1	10,093	0.0	0.0	19,657	29,751
20-Jul-12	0.0	0.1	10,093	0.0	0.0	19,657	29,751
23-Aug-12	0.0	0.2	10,094	0.0	0.0	19,657	29,751
5-Sep-12	0.0	0.1	10,094	0.0	0.0	19,657	29,751
24-Oct-12	0.0	0.2	10,094	0.0	0.0	19,657	29,751
18-Dec-12	0.0	0.0	10,094	0.0	0.0	19,657	29,751
23-Jan-13	0.0	0.5	10,094	0.0	0.0	19,657	29,752
21-Feb-13	0.0	0.1	10,095	0.0	0.0	19,657	29,752
13-Mar-13	0.0	0.1	10,095	0.0	0.0	19,657	29,752
17-Apr-13	0.0	0.2	10,095	0.0	0.0	19,657	29,752
22-May-13	0.0	0.1	10,095	0.0	0.0	19,657	29,752
12-Jun-13	0.0	0.1	10,095	0.0	0.0	19,657	29,752
24-Jul-13	0.0	0.3	10,095	0.0	0.0	19,657	29,753
20-Aug-13	0.0	0.2	10,095	0.0	0.0	19,657	29,753
24-Sep-13	0.0	0.1	10,096	0.0	0.0	19,657	29,753
15-Oct-13	0.0	0.0	10,096	0.0	0.0	19,657	29,753
20-Nov-13	0.0	0.2	10,096	0.0	0.0	19,657	29,753
18-Dec-13	0.0	0.2	10,096	0.0	0.0	19,657	29,753
14-Jan-14	0.0	0.1	10,096	0.0	0.0	19,657	29,754
11-Feb-14	0.0	0.1	10,096	0.0	0.0	19,657	29,754
20-Mar-14	0.0	0.3	10,097	0.0	0.0	19,657	29,754
16-Apr-14	0.0	0.2	10,097	0.0	0.0	19,657	29,754

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Total Gallonage of Recovered Petroleum Hydrocarbons

Date	Monthly LNAPL Recovery	Dissolved LNAPL Recovery*	Cumulative LNAPL Recovery	Monthly SVE Recovery (Vapor Phase)	Monthly SVE Recovery (Biodegredation)	Cumulative SVE Recovery	Total Recovery
21-May-14	0.0	0.2	10,097	0.0	0.0	19,657	29,754
19-Jun-14	0.0	0.1	10,097	0.0	0.0	19,657	29,754
24-Jul-14	0.0	0.0	10,097	0.0	0.0	19,657	29,755
13-Aug-14	0.0	0.2	10,097	0.0	0.0	19,657	29,755
17-Sep-14	0.0	0.4	10,098	0.0	0.0	19,657	29,755
15-Oct-14	0.0	0.2	10,098	0.0	0.0	19,657	29,755
19-Nov-14	0.0	0.2	10,098	0.0	0.0	19,657	29,755
17-Dec-14	0.0	0.4	10,098	0.0	0.0	19,657	29,756
14-Jan-15	0.0	0.8	10,099	0.0	0.0	19,657	29,757
11-Feb-15	0.0	0.7	10,100	0.0	0.0	19,657	29,757
18-Mar-15	0.0	0.3	10,100	0.0	0.0	19,657	29,758
15-Apr-15	0.0	0.3	10,101	0.0	0.0	19,657	29,758
15-May-15	0.0	0.2	10,101	0.0	0.0	19,657	29,758
17-Jun-15	0.0	0.3	10,101	0.0	0.0	19,657	29,758
15-Jul-15	0.0	0.4	10,101	0.0	0.0	19,657	29,759
12-Aug-15	0.0	0.5	10,102	0.0	0.0	19,657	29,759
16-Sep-16	0.0	0.4	10,102	0.0	0.0	19,657	29,760
14-Oct-16	0.0	0.4	10,103	0.0	0.0	19,657	29,760
18-Nov-15	0.0	1.1	10,104	0.0	0.0	19,657	29,761
10-Dec-15	0.0	1.2	10,105	0.0	0.0	19,657	29,762
13-Jan-16	0.0	1.67	10,107	0.0	0.0	19,657	29,764
10-Feb-16	0.0	0.45	10,107	0.0	0.0	19,657	29,765
16-Mar-16	0.0	0.41	10,108	0.0	0.0	19,657	29,765
13-Apr-16	0.0	0.27	10,108	0.0	0.0	19,657	29,765
18-May-16	0.0	0.25	10,108	0.0	0.0	19,657	29,765
16-Jun-16	0.0	0.21	10,108	0.0	0.0	19,657	29,766
12-Jul-16	0.0	0.17	10,108	0.0	0.0	19,657	29,766
18-Aug-16	0.0	0.26	10,109	0.0	0.0	19,657	29,766
21-Sep-16	0.0	0.20	10,109	0.0	0.0	19,657	29,766
19-Oct-16	0.0	0.22	10,109	0.0	0.0	19,657	29,767
16-Nov-16	0.0	0.67	10,110	0.0	0.0	19,657	29,767
14-Dec-16	0.0	0.92	10,111	0.0	0.0	19,657	29,768
18-Jan-17	0.0	1.22	10,112	0.0	0.0	19,657	29,769
15-Feb-17	0.0	1.36	10,113	0.0	0.0	19,657	29,771
15-Mar-17	0.0	1.10	10,114	0.0	0.0	19,657	29,772
12-Apr-17	0.0	0.55	10,115	0.0	0.0	19,657	29,772
17-May-17	0.0	0.49	10,115	0.0	0.0	19,657	29,773
14-Jun-17	0.0	0.35	10,116	0.0	0.0	19,657	29,773
19-Jul-17	0.0	0.39	10,116	0.0	0.0	19,657	29,774
16-Aug-17	0.0	0.31	10,116	0.0	0.0	19,657	29,774
20-Sep-17	0.0	0.35	10,117	0.0	0.0	19,657	29,774
18-Oct-17	0.0	0.28	10,117	0.0	0.0	19,657	29,775
15-Nov-17	0.0	0.35	10,117	0.0	0.0	19,657	29,775
13-Dec-17	0.0	0.32	10,118	0.0	0.0	19,657	29,775
17-Jan-18	0.0	0.45	10,118	0.0	0.0	19,657	29,776
14-Feb-18	0.0	0.33	10,119	0.0	0.0	19,657	29,776
14-Mar-18	0.0	0.10	10,119	0.0	0.0	19,657	29,776
18-Apr-18	0.0	0.12	10,119	0.0	0.0	19,657	29,776
16-May-18	0.0	0.09	10,119	0.0	0.0	19,657	29,776
13-Jun-18	0.0	0.09	10,119	0.0	0.0	19,657	29,776
18-Jul-18	0.0	0.10	10,119	0.0	0.0	19,657	29,776
15-Aug-18	0.0	0.07	10,119	0.0	0.0	19,657	29,777
19-Sep-18	0.0	0.16	10,119	0.0	0.0	19,657	29,777
17-Oct-18	0.0	0.14	10,119	0.0	0.0	19,657	29,777

Note: NA - The soil vapor extraction system was not brought online until January of 1996
* - Dissolved LNAPL recovery was not recorded until completion of the final remediation system in Oct 2002.

Total Gallonage of Recovered Petroleum Hydrocarbons

Date	Monthly LNAPL Recovery	Dissolved LNAPL Recovery*	Cumulative LNAPL Recovery	Monthly SVE Recovery (Vapor Phase)	Monthly SVE Recovery (Biodegredation)	Cumulative SVE Recovery	Total Recovery
14-Nov-18	0.0	0.07	10,120	0.0	0.0	19,657	29,777
19-Dec-18	0.0	0.25	10,120	0.0	0.0	19,657	29,777
16-Jan-19	0.0	0.23	10,120	0.0	0.0	19657.4	29,777
13-Feb-19	0.0	0.21	10,120	0.0	0.0	19657.4	29,778
20-Mar-19	0.0	0.16	10,120	0.0	0.0	19657.4	29,778
24-Apr-19	0.0	0.11	10,120	0.0	0.0	19657.4	29,778
15-May-19	0.0	0.04	10,121	0.0	0.0	19657.4	29,778
11-Jun-19	0.0	0.09	10,121	0.0	0.0	19657.4	29,778
10-Jul-19	0.0	0.22	10,121	0.0	0.0	19657.4	29,778
14-Aug-19	0.0	0.23	10,121	0.0	0.0	19657.4	29,778
11-Sep-19	0.0	0.10	10,121	0.0	0.0	19657.4	29,779
17-Oct-19	0.0	0.15	10,121	0.0	0.0	19657.4	29,779
21-Nov-19	0.0	0.18	10,121	0.0	0.0	19657.4	29,779
11-Dec-19	0.0	0.12	10,122	0.0	0.0	19657.4	29,779
23-Jan-20	0.0	0.09	10,122	0.0	0.0	19657.4	29,779
20-Feb-20	0.0	0.08	10,122	0.0	0.0	19657.4	29,779
24-Mar-20	0.0	0.07	10,122	0.0	0.0	19657.4	29,779
23-Apr-20	0.0	0.06	10,122	0.0	0.0	19657.4	29,779
28-May-20	0.0	0.11	10,122	0.0	0.0	19657.4	29,779
18-Jun-20	0.0	0.06	10,122	0.0	0.0	19657.4	29,779
23-Jul-20	0.0	0.08	10,122	0.0	0.0	19657.4	29,780
20-Aug-20	0.0	0.07	10,122	0.0	0.0	19657.4	29,780
24-Sep-20	0.0	0.08	10,122	0.0	0.0	19657.4	29,780
22-Oct-20	0.0	0.04	10,122	0.0	0.0	19657.4	29,780
19-Nov-20	0.0	0.07	10,122	0.0	0.0	19657.4	29,780
23-Dec-20	0.0	0.12	10,123	0.0	0.0	19657.4	29,780
21-Jan-21	0.0	0.23	10,123	0.0	0.0	19657.4	29,780
18-Feb-21	0.0	0.20	10,123	0.0	0.0	19657.4	29,780
18-Mar-21	0.0	0.08	10,123	0.0	0.0	19657.4	29,780
15-Apr-21	0.0	0.06	10,123	0.0	0.0	19657.4	29,780
20-May-21	0.0	0.03	10,123	0.0	0.0	19657.4	29,781
24-Jun-21	0.0	0.05	10,123	0.0	0.0	19657.4	29,781
22-Jul-21	0.0	0.05	10,123	0.0	0.0	19657.4	29,781
26-Aug-21	0.0	0.06	10,123	0.0	0.0	19657.4	29,781
16-Sep-21	0.0	0.03	10,123	0.0	0.0	19657.4	29,781
21-Oct-21	0.0	0.06	10,123	0.0	0.0	19657.4	29,781
18-Nov-21	0.0	0.08	10,123	0.0	0.0	19657.4	29,781
16-Dec-21	0.0	0.10	10,124	0.0	0.0	19657.4	29,781
20-Jan-22	0.0	0.10	10,124	0.0	0.0	19657.4	29,781
17-Feb-22	0.0	0.07	10,124	0.0	0.0	19657.4	29,781
17-Mar-22	0.0	0.04	10,124	0.0	0.0	19657.4	29,781
21-Apr-22	0.0	0.05	10,124	0.0	0.0	19657.4	29,781
19-May-22	0.0	0.03	10,124	0.0	0.0	19657.4	29,781
16-Jun-22	0.0	0.04	10,124	0.0	0.0	19657.4	29,781
21-Jul-22	0.0	0.06	10,124	0.0	0.0	19657.4	29,781
18-Aug-22	0.0	0.05	10,124	0.0	0.0	19657.4	29,781
29-Sep-22	0.0	0.07	10,124	0.0	0.0	19657.4	29,781
26-Oct-22	0.0	0.05	10,124	0.0	0.0	19657.4	29,781
22-Nov-22	0.0	0.06	10,124	0.0	0.0	19657.4	29,781
22-Dec-22	0.0	0.07	10,124	0.0	0.0	19657.4	29,782
26-Jan-23	0.0	0.16	10,124	0.0	0.0	19657.4	29,782
23-Feb-23	0.0	0.07	10,124	0.0	0.0	19657.4	29,782
23-Mar-23	0.0	0.05	10,124	0.0	0.0	19657.4	29,782
20-Apr-23	0.0	0.05	10,125	0.0	0.0	19657.4	29,782

Note: NA - The soil vapor extraction system was not brought online until January of 1996
* - Dissolved LNAPL recovery was not recorded until completion of the final remediation system in Oct 2002.

Total Gallonage of Recovered Petroleum Hydrocarbons

Date	Monthly LNAPL Recovery	Dissolved LNAPL Recovery*	Cumulative LNAPL Recovery	Monthly SVE Recovery (Vapor Phase)	Monthly SVE Recovery (Biodegredation)	Cumulative SVE Recovery	Total Recovery
25-May-23	0.0	0.06	10,125	0.0	0.0	19657.4	29,782
22-Jun-23	0.0	0.04	10,125	0.0	0.0	19657.4	29,782
20-Jul-23	0.0	0.03	10,125	0.0	0.0	19657.4	29,782
31-Aug-23	0.0	0.04	10,125	0.0	0.0	19657.4	29,782
21-Sep-23	0.0	0.03	10,125	0.0	0.0	19657.4	29,782
19-Oct-23	0.0	0.04	10,125	0.0	0.0	19657.4	29,782
22-Nov-23	0.0	0.06	10,125	0.0	0.0	19657.4	29,782
28-Dec-23	0.0	0.09	10,125	0.0	0.0	19657.4	29,782
31-Jan-24	0.0	0.12	10,125	0.0	0.0	19657.4	29,782
23-Feb-24	0.0	0.06	10,125	0.0	0.0	19657.4	29,783
21-Mar-24	0.0	0.14	10,125	0.0	0.0	19657.4	29,783

Total LNAPL Recovery (gal)	Total Dissolved LNAPL Recovery* (gal)	Total LNAPL Recovery (gal)	Total SVE Recovery (vapor phase) (gal)	Total SVE Recovery (biodegredation) (gal)	Total SVE Recovery (gal)	Total Recovery (gal)
9,706	419	10,125	3,582	16,075	19,657	29,783

Note: NA - The soil vapor extraction system was not brought online until January of 1996
* - Dissolved LNAPL recovery was not recorded until completion of the final remediation system in Oct 2002.

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
4/29/1996	high	2			**Yes**	2.0		
4/30/1996	low	0			**Yes**	1.0		
4/30/1996	flood	1			**Yes**	2.0		
5/15/1996	low	0			No	0.0		
5/20/1996					No	0.0		
5/22/1996	ebb	1			**Yes**	1.0		
5/24/1996					**Yes**	1.0		
6/7/1996	ebb	1			**Yes**	1.0		
6/10/1996					**Yes**	0.5		
6/13/1996					No	0.0		
6/19/1996	high	2			No	0.0		
6/24/1996	medium	1			No	0.0		
7/30/1996	ebb	1			No	0.0		
8/14/1996	medium	1			No	0.0		
8/16/1996	ebb	1			**Yes**	1.0		
8/19/1996	ebb	1			**Yes**	1.0		
8/29/1996	ebb	1			**Yes**	1.0		
10/3/1996	low	0			**Yes**	1.0		
10/4/1996	ebb	1			**Yes**	0.5		
10/7/1996	flood	1	No	0.0	**Yes**	2.0		
10/10/1996	low	0	No	0.0	No	0.0		
10/11/1996	low	0	No	0.0	No	0.0		
10/23/1996	low	0	No	0.0	No	0.0		
10/25/1996	high	2	No	0.0	No	0.0		
10/30/1996	high	2	No	0.0	**Yes**	2.0		
11/1/1996	medium	1	No	0.0	**Yes**	2.0		
11/4/1996	medium	1	No	0.0	No	0.0		
11/5/1996			No	0.0	No	0.0		
11/6/1996	low	0	No	0.0	**Yes**	2.0		
11/7/1996	low	0	No	0.0	**Yes**	2.0		
11/12/1996			No	0.0	**Yes**	0.5		
11/13/1996			No	0.0	No	0.0		
11/14/1996			No	0.0	**Yes**	1.0		
11/18/1996	high	2	No	0.0	No	0.0		
11/19/1996	low	0	No	0.0	**Yes**	1.0		
11/20/1996	low	0	No	0.0	**Yes**	1.0		
11/21/1996	low	0	No	0.0	**Yes**	1.0		
12/6/1996	ebb	1	No	0.0	No	0.0		
12/9/1996	medium	1	No	0.0	No	0.0		
12/10/1996	flood	1	**Yes**	0.5	No	0.0		
12/12/1996	flood	1	No	0.0	No	0.0		
12/13/1996	flood	1	No	0.0	No	0.0		
12/16/1996	flood	1	**Yes**	2.0	**Yes**	1.0		
12/17/1996	flood	1	No	0.0	**Yes**	1.0		
12/18/1996	flood	1	**Yes**	3.0	**Yes**	1.0		
1/2/1997	high	2	**Yes**	1.0	No	0.0		
1/8/1997	high	2	**Yes**	3.0	No	0.0		
1/9/1997			**Yes**	3.0	**Yes**	1.0		
1/9/1997	ebb	1	**Yes**	3.0	**Yes**	1.0		
1/9/1997	high	2	**Yes**	3.0	**Yes**	3.0		
1/14/1997	low	0	**Yes**	1.0	**Yes**	1.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
1/15/1997	low	0	**Yes**	2.0	No	0.0		
1/16/1997	low	0	**Yes**	3.0	**Yes**	1.0		
1/17/1997			**Yes**	2.0	No	0.0		
1/20/1997	low	0	**Yes**	3.0	No	0.0		
1/20/1997	high	2	**Yes**	2.0	**Yes**	1.0		
1/21/1997	high	2	**Yes**	3.0	**Yes**	0.5		
1/22/1997	flood	1	**Yes**	1.0	No	0.0		
1/23/1997	flood	1	**Yes**	1.0	No	0.0		
1/24/1997	flood	1	**Yes**	2.0	**Yes**	0.5		
1/27/1997	low	0	**Yes**	1.0	**Yes**	1.0		
1/27/1997	low	0	**Yes**	3.0	No	0.0		
1/28/1997	low	0	No	0.0	**Yes**	1.0		
1/28/1997	high	2	**Yes**	2.0	No	0.0		
1/30/1997	low	0	**Yes**	0.5	**Yes**	1.0		
1/31/1997	low	0	**Yes**	0.5	**Yes**	0.5		
2/3/1997	flood	1	**Yes**	1.0	**Yes**	0.5		
2/4/1997	flood	1	**Yes**	3.0	**Yes**	3.0		
2/5/1997	high	2	**Yes**	0.5	**Yes**	0.5		
2/6/1997	flood	1	**Yes**	2.0	**Yes**	0.5		
2/7/1997	flood	1	**Yes**	2.0	**Yes**	1.0		
2/10/1997	low	0	No	0.0	No	0.0		
2/11/1997	low	0	No	0.0	No	0.0		
2/12/1997	low	0	No	0.0	No	0.0		
2/14/1997	low	0	**Yes**	0.5	**Yes**	0.5		
2/14/1997	flood	1	**Yes**	0.5	No	0.0		
2/20/1997	ebb	1	**Yes**	2.0	**Yes**	2.0		
12/3/1997	high	2	No	0.0	No	0		
12/4/1997	ebb	1	No	0.0	No	0		
1/11/2000	medium	1	**Yes**	1.0	No	0.0		
1/21/2000	high	2	No	0.0	No	0.0		
2/16/2000	medium	1	No	0.0	No	0.0		
2/22/2000	high	2	No	0.0	No	0.0		
2/23/2000	medium	1	No	0.0	No	0.0		
2/24/2000	low	0	No	0.0	No	0.0		
3/15/2000	medium	1	No	0.0	No	0.0		
3/16/2000	medium	1	No	0.0	No	0.0		
3/21/2000	low	0	**Yes**	**1.0**	No	0.0		
4/14/2000	medium	1	**Yes**	**1.0**	No	0.0		
6/15/2000	low	0	No	0.0	No	0.0		
6/28/2000	low	0	No	0.0	**Yes**	**1.0**		
6/29/2000	low	0	No	0.0	No	0.0		
7/11/2000	high	2	No	0.0	No	0.0		
7/19/2000	low	0	No	0.0	No	0.0		
8/15/2000	low	0	No	0.0	No	0.0		
10/12/2000	low	0	No	0.0	No	0.0		
11/14/2000	medium	1	No	0.0	No	0.0		
12/14/2000	high	2	No	0.0	No	0.0		
1/11/2001	medium	1	No	0.0	No	0.0		
2/15/2001	medium	1	No	0.0	No	0.0		
4/12/2001	medium	1	No	0.0	**Yes**	**1.0**		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
4/13/2001	medium	1	No	0.0	No	0.0		
5/16/2001	low	0	No	0.0	No	0.0		
5/17/2001	low	0	No	0.0	No	0.0		
5/18/2001	low	0	No	0.0	No	0.0		
5/21/2001	low	0	No	0.0	No	0.0		
5/23/2001	low	0	No	0.0	No	0.0		
5/29/2001	low	0	No	0.0	No	0.0		
6/11/2001	medium	1	No	0.0	No	0.0		
7/23/2001	low	0	No	0.0	No	0.0		
8/21/2001	medium	1	No	0.0	No	0.0		
9/6/2001	high	2	No	0.0	No	0.0		
10/16/2001	low	0	No	0.0	No	0.0		
11/15/2001	medium	1	No	0.0	No	0.0		
12/10/2001	medium	1	No	0.0	No	0.0		
1/4/2002	high	2	No	0.0	No	0.0		
1/9/2002	medium	1	**Yes**	**1.0**	No	0.0		
1/11/2002	medium	1	**Yes**	**1.0**	No	0.0		
1/16/2002	high	2	**Yes**	**1.0**	No	0.0		
1/22/2002	medium	1	**Yes**	**1.0**	No	0.0		
1/23/2002	low	0	**Yes**	**1.0**	No	0.0		
2/4/2002	high	2	No	0.0	No	0.0		
2/18/2002	medium	1	No	0.0	**Yes**	**1.0**		
2/21/2002	medium	1	**Yes**	**2.0**	No	0.0		
3/21/2002	medium	1	**Yes**	**1.0**	No	0.0		
3/25/2002	medium	1	No	0.0	No	0.0		
3/26/2002	medium	1	No	0.0	No	0.0		
3/27/2002	medium	1	**Yes**	2.0	No	0.0		
4/4/2002	high	2	No	0.0	No	0.0		
5/3/2002	low	0	No	0.0	No	0.0		
5/7/2002	medium	1	No	0.0	**Yes**	**1.0**		
5/21/2002	medium	1	**Yes**	**1.0**	**Yes**	**1.0**		
6/6/2002	medium	1	No	0.0	**Yes**	**1.0**		
6/18/2002	low	0	No	0.0	No	0.0		
6/27/2002	high	2	**Yes**	**1.0**	**Yes**	**1.0**		
7/10/2002	medium	1	**Yes**	**1.0**	**Yes**	**1.0**		
7/29/2002	medium	1	No	0.0	**Yes**	**1.0**		
8/21/2002	low	0	No	0.0	No	0.0		
9/9/2002	high	2	**Yes**	**1.0**	**Yes**	**1.0**		
9/20/2002	medium	1	No	0.0	**Yes**	**1.0**		
10/9/2002	high	2	No	0.0	No	0.0		
11/25/2002	high	2	No	0.0	No	0.0		
11/27/2002	high	2	No	0.0	No	0.0		
12/19/2002	medium	1	No	0.0	No	0.0		
12/20/2002	high	2	No	0.0	No	0.0		
1/16/2003	medium	1	No	0.0	No	0.0		
2/3/2003	medium	1	No	0.0	No	0.0		
2/10/2003	medium	1	No	0.0	No	0.0		
2/10/2003	low	0	No	0.0	No	0.0		
2/11/2003	medium	1	No	0.0	No	0.0		
2/11/2003	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
2/11/2003	low	0	No	0.0	No	0.0		
2/12/2003	medium	1	No	0.0	No	0.0		
2/13/2003	high	2	No	0.0	No	0.0		
2/13/2003	medium	1	No	0.0	No	0.0		
2/14/2003	high	2	No	0.0	No	0.0		
2/20/2003	high	2	No	0.0	No	0.0		
2/20/2003	medium	1	No	0.0	No	0.0		
2/20/2003	low	0	No	0.0	No	0.0		
2/21/2003	high	2	No	0.0	No	0.0		
2/21/2003	medium	1	No	0.0	No	0.0		
3/3/2003	medium	1	No	0.0	No	0.0		
3/10/2003	medium	1	No	0.0	No	0.0		
3/11/2003	high	2	No	0.0	No	0.0		
3/18/2003	medium	1	No	0.0	No	0.0		
4/1/2003	low	0	No	0.0	No	0.0		
4/8/2003	high	2	**Yes**	**2.0**	No	0.0		
4/15/2003	low	0	**Yes**	**2.0**	No	0.0		
4/21/2003	high	2	No	0.0	No	0.0		
5/15/2003	low	0	No	0.0	No	0.0		
5/20/2003	medium	1	No	0.0	No	0.0		
5/21/2003	medium	1	No	0.0	No	0.0		
5/27/2003	low	0	No	0.0	No	0.0		
6/3/2003	medium	1	No	0.0	No	0.0		
6/17/2003	medium	1	No	0.0	No	0.0		
7/15/2003	medium	1	No	0.0	No	0.0		
7/21/2003	low	0	No	0.0	No	0.0		
8/7/2003	low	0	No	0.0	No	0.0		
8/13/2003	medium	1	No	0.0	No	0.0		
9/15/2003	high	2	No	0.0	No	0.0		
9/16/2003	high	2	No	0.0	No	0.0		
9/17/2003	medium	1	No	0.0	No	0.0		
9/19/2003	medium	1	No	0.0	No	0.0		
10/9/2003	medium	1	No	0.0	**Yes**	**1.0**		
10/14/2003	high	2	No	0.0	No	0.0		
11/12/2003	high	2	No	0.0	No	0.0		
11/19/2003	high	2	No	0.0	No	0.0		
12/17/2003	medium	1	No	0.0	No	0.0		
12/23/2003	medium	1	No	0.0	No	0.0		
1/13/2004	medium	1	**Yes**	**1.0**	No	0.0		
1/24/2004	high	2	No	0.0	No	0.0		
2/10/2004	medium	1	**Yes**	**1.0**	No	0.0		
2/23/2004	medium	1	No	0.0	**Yes**	**1.0**		
3/17/2004	medium	1	No	0.0	No	0.0		
3/19/2004	medium	1	No	0.0	No	0.0		
4/15/2004	medium	1	No	0.0	**Yes**	**1.0**		
4/19/2004	medium	1	No	0.0	No	0.0		
4/22/2004	medium	1	No	0.0	No	0.0		
5/24/2004	medium	1	No	0.0	No	0.0		
5/25/2004	medium	1	No	0.0	No	0.0		
6/14/2004	medium	1	No	0.0	No	0.0		
6/15/2004	low	0	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
6/23/2004	high	2	No	0.0	No	0.0		
6/28/2004	low	0	No	0.0	No	0.0		
6/29/2004	medium	1	No	0.0	No	0.0		
6/30/2004	medium	1	No	0.0	No	0.0		
7/12/2004	low	0	No	0.0	No	0.0		
7/13/2004	low	0	No	0.0	No	0.0		
8/11/2004	high	2	No	0.0	No	0.0		
8/12/2004	low	0	No	0.0	No	0.0		
8/24/2004	medium	1	No	0.0	No	0.0		
9/2/2004	high	2	No	0.0	No	0.0		
9/3/2004	high	2	No	0.0	No	0.0		
9/7/2004	medium	1	No	0.0	No	0.0		
9/10/2004	low	0	No	0.0	No	0.0		
9/16/2004	high	2	No	0.0	No	0.0		
9/21/2004	medium	1	No	0.0	No	0.0		
9/22/2004	medium	1	No	0.0	No	0.0		
9/23/2004	medium	1	No	0.0	No	0.0		
10/5/2004	medium	1	No	0.0	No	0.0		
10/13/2004	medium	1	No	0.0	**Yes**	**1.0**		
10/15/2004	high	2	No	0.0	No	0.0		
10/18/2004	high	2	No	0.0	No	0.0		
10/25/2004	low	0	No	0.0	No	0.0		
11/4/2004	medium	1	No	0.0	No	0.0		
11/18/2004	high	2	No	0.0	No	0.0		
11/23/2004	medium	1	No	0.0	No	0.0		
12/3/2004	low	0	No	0.0	No	0.0		
12/15/2004	high	2	No	0.0	No	0.0		
12/23/2004	medium	1	No	0.0	No	0.0		
1/4/2005	high	2	No	0.0	No	0.0		
1/13/2005	high	2	No	0.0	No	0.0		
1/21/2005	low	0	No	0.0	No	0.0		
2/1/2005	high	**2**	**Yes**	**1.0**	**No**	**0.0**		
2/2/2005	high	**2**	**Yes**	**2.0**	**No**	**0.0**		
2/3/2005	medium	**1**	**Yes**	**1.0**	**No**	**0.0**		
2/4/2005	medium	**1**	**Yes**	**1.0**	**No**	**0.0**		
2/7/2005	low	**0**	**Yes**	**1.0**	**No**	**0.0**		
2/8/2005	low	0	No	0.0	No	0.0		
2/15/2005	high	2	No	0.0	No	0.0		
2/25/2005	high	2	No	0.0	No	0.0		
3/2/2005	high	2	No	0.0	No	0.0		
3/8/2005	low	0	No	0.0	No	0.0		
3/15/2005	high	2	No	0.0	No	0.0		
4/4/2005	low	0	No	0.0	No	0.0		
4/11/2015	high	**2**	**Yes**	**1.0**	**No**	**0.0**		
4/13/2005	medium	**1**	**Yes**	**2.0**	**No**	**0.0**		
4/14/2005	high	**2**	**Yes**	**1.0**	**No**	**0.0**		
4/15/2005	medium	**1**	**Yes**	**2.0**	**No**	**0.0**		
4/18/2005	low	0	No	0.0	No	0.0		
4/25/2005	medium	1	No	0.0	No	0.0		
5/2/2005	low	0	No	0.0	No	0.0		
5/9/2005	medium	1	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
5/16/2005	low	0	No	0.0	No	0.0		
5/20/2005	low	0	No	0.0	No	0.0		
5/23/2005	medium	1	No	0.0	No	0.0		
5/30/2005	medium	1	No	0.0	No	0.0		
6/6/2005	medium	1	No	0.0	No	0.0		
6/10/2005	medium	1	No	0.0	No	0.0		
6/13/2005	high	2	No	0.0	No	0.0		
6/20/2005	low	0	No	0.0	No	0.0		
6/27/2005	high	2	No	0.0	No	0.0		
7/4/2005	medium	1	No	0.0	No	0.0		
7/11/2005	high	**2**	**Yes**	**1.0**	No	0.0		
7/15/2005	medium	1	No	0.0	No	0.0		
7/18/2005	low	0	No	0.0	No	0.0		
7/25/2005	high	2	No	0.0	No	0.0		
8/1/2005	low	0	No	0.0	No	0.0		
8/8/2005	high	2	No	0.0	No	0.0		
8/12/2005	medium	1	No	0.0	No	0.0		
8/15/2005	low	0	No	0.0	No	0.0		
8/22/2005	medium	1	No	0.0	No	0.0		
8/29/2005	low	0	No	0.0	No	0.0		
9/5/2005	medium	1	No	0.0	No	0.0		
9/12/2005	medium	1	No	0.0	No	0.0		
9/14/2005	low	0	No	0.0	No	0.0		
9/19/2005	medium	1	No	0.0	No	0.0		
9/26/2005	low	0	No	0.0	No	0.0		
10/3/2005	medium	1	No	0.0	No	0.0		
10/10/2005	medium	1	No	0.0	No	0.0		
10/14/2005	low	0	No	0.0	No	0.0		
10/17/2005	medium	1	No	0.0	No	0.0		
10/24/2005	medium	1	No	0.0	No	0.0		
10/31/2005	low	0	No	0.0	No	0.0		
11/7/2005	high	2	No	0.0	No	0.0		
11/14/2005	low	0	No	0.0	No	0.0		
11/21/2005	high	2	No	0.0	No	0.0		
11/23/2005	medium	1	No	0.0	No	0.0		
11/28/2005	low	0	No	0.0	No	0.0		
11/29/2005	medium	1	No	0.0	No	0.0		
11/30/2005	medium	1	No	0.0	No	0.0		
12/1/2005	high	2	No	0.0	No	0.0		
12/2/2005	high	2	No	0.0	No	0.0		
12/5/2005	high	2	No	0.0	No	0.0		
12/6/2005	medium	1	No	0.0	No	0.0		
12/7/2005	high	2	No	0.0	No	0.0		
12/9/2005	high	2	No	0.0	No	0.0		
12/15/2005	high	**2**	**Yes**	**1.0**	No	0.0		
12/19/2005	high	**2**	**Yes**	**1.0**	No	0.0		
1/25/2006	low	0	**Yes**	**2.0**	**Yes**	**2.0**		
2/8/2006			**Yes**	**1.0**	No	0.0		
2/9/2006			**Yes**	**1.0**	No	0.0		
2/10/2006			**Yes**	**1.0**	No	0.0		
2/13/2006	medium	1	**Yes**	**1.0**	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
2/14/2006	medium	1	**Yes**	**1.0**	No	0.0		
3/15/2006	low	0	No	0.0	No	0.0		
3/17/2006	low	0	No	0.0	No	0.0		
3/21/2006	high	2	No	0.0	No	0.0		
3/27/2006	low	0	No	0.0	No	0.0		
4/3/2006	high	2	No	0.0	No	0.0		
4/11/2006	medium	1	No	0.0	No	0.0		
4/14/2006	medium	1	No	0.0	No	0.0		
4/17/2006	high	2	No	0.0	No	0.0		
4/24/2006	low	0	No	0.0	No	0.0		
4/25/2006	medium	1	No	0.0	No	0.0		
4/26/2006	medium	1	No	0.0	No	0.0		
4/27/2006	medium	1	No	0.0	No	0.0		
4/28/2006	medium	1	No	0.0	No	0.0		
5/1/2006	medium	1	No	0.0	No	0.0		
5/9/2006	low	0	No	0.0	No	0.0		
5/17/2006	high	2	No	0.0	No	0.0		
5/18/2006	high	2	No	0.0	No	0.0		
5/22/2006	low	0	No	0.0	No	0.0		
5/30/2006	medium	1	No	0.0	No	0.0		
5/31/2006	high	2	No	0.0	No	0.0		
6/1/2006	high	2	No	0.0	No	0.0		
6/5/2006	medium	1	No	0.0	**Yes**	**0.5**		
6/12/2006	low	0	No	0.0	No	0.0		
6/14/2006	medium	1	No	0.0	No	0.0		
7/12/2006	low	0	No	0.0	No	0.0		
7/19/2006	medium	1	No	0.0	**Yes**	**1.0**		
7/24/2006	high	2	No	0.0	No	0.0		
7/25/2006	low	0	No	0.0	**Yes**	**1.0**		
7/31/2006	high	2	**Yes**	**1.0**	No	0.0		
8/2/2006	high	2	No	0.0	No	0.0		
8/8/2006	high	2	No	0.0	No	0.0		
8/14/2006	high	2	**Yes**	**1.0**	**Yes**	**1.0**		
8/16/2006	medium	1	**Yes**	**1.0**	**Yes**	**2.0**		
8/21/2006	low	0	No	0.0	No	0.0		
8/25/2006	high	2	**Yes**	**0.5**	**Yes**	**0.5**		
8/28/2006	high	2	No	0.0	**Yes**	**0.5**		
8/29/2006	high	2	No	0.0	No	0.0		
9/1/2006	medium	1	No	0.0	No	0.0		
9/5/2006	low	0	No	0.0	No	0.0		
9/6/2006	low	0	No	0.0	No	0.0		
9/11/2006	high	2	No	0.0	No	0.0		
9/13/2006	high	2	**Yes**	**1.0**	**Yes**	**1.0**		
9/18/2006	low	0	**Yes**	**1.0**	No	0.0		
9/19/2006	low	0	No	0.0	**Yes**	**2.0**		
9/22/2006	high	2	No	0.0	No	0.0		
9/25/2006	high	2	**Yes**	**1.0**	No	0.0		
9/27/2006	high	2	No	0.0	No	0.0		
10/2/2006	medium	1	No	0.0	No	0.0		
10/5/2006	low	0	No	0.0	No	0.0		
10/6/2006	high	2	No	0.0	No	0.0		
10/9/2006	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
10/12/2006	high	2	No	0.0	No	0.0		
10/16/2006	medium	1	No	0.0	No	0.0		
10/17/2006	high	2	No	0.0	**Yes**	**1.0**		
10/23/2006	high	2	No	0.0	No	0.0		
10/25/2006	high	2	No	0.0	No	0.0		
10/30/2006	high	2	No	0.0	No	0.0		
10/31/2006	high	2	No	0.0	**Yes**	**1.0**		
11/1/2006	medium	1	No	0.0	No	0.0		
11/6/2006	high	2	No	0.0	No	0.0		
11/7/2006	high	2	No	0.0	No	0.0		
11/8/2006	high	2	No	0.0	No	0.0		
11/9/2006	high	2	No	0.0	No	0.0		
11/13/2006	high	2	**Yes**	**1.0**	No	0.0		
11/17/2006	medium	1	No	0.0	No	0.0		
11/20/2006	high	2	No	0.0	No	0.0		
11/27/2006	high	2	No	0.0	No	0.0		
11/30/2006	high	2	No	0.0	No	0.0		
12/4/2006	medium	1	**Yes**	**1.0**	No	0.0		
12/5/2006	high	2	No	0.0	**Yes**	**1.0**		
12/11/2006	high	2	No	0.0	No	0.0		
12/12/2006	medium	1	No	0.0	No	0.0		
12/13/2006	high	2	No	0.0	No	0.0		
12/14/2006	high	2	No	0.0	No	0.0		
12/15/2006	medium	1	No	0.0	**Yes**	**1.0**		
12/16/2006	medium	1	No	0.0	No	0.0		
12/18/2006	medium	1	No	0.0	No	0.0		
12/19/2006	high	2	**Yes**	**1.0**	No	0.0		
12/21/2006	high	2	No	0.0	No	0.0		
12/22/2006	high	2	No	0.0	No	0.0		
1/2/2007	high	2	No	0.0	No	0.0		
1/5/2007	high	2	No	0.0	No	0.0		
1/8/2007	high	2	No	0.0	No	0.0		
1/9/2007	high	2	No	0.0	No	0.0		
1/10/2007	high	2	No	0.0	No	0.0		
1/15/2007	high	2	No	0.0	No	0.0		
1/19/2007	high	2	**Yes**	**1.0**	No	0.0		
1/22/2007	high	2	**Yes**	**0.5**	No	0.0		
1/29/2007	high	2	**Yes**	**1.0**	No	0.0		
1/31/2007	high	2	No	0.0	**Yes**	**1.0**		
2/2/2007	high	2	No	0.0	No	0.0		
2/5/2007	high	2	No	0.0	No	0.0		
2/6/2007	high	2	No	0.0	No	0.0		
2/7/2007	high	2	No	0.0	No	0.0		
2/12/2007	high	2	No	0.0	No	0.0		
2/14/2007	high	2	No	0.0	No	0.0		
2/16/2007	high	2	No	0.0	No	0.0		
2/20/2007	high	2	No	0.0	No	0.0		
2/26/2007	high	2	No	0.0	No	0.0		
3/5/2007	medium	1	No	0.0	No	0.0		
3/7/2007	medium	1	No	0.0	No	0.0		
3/13/2007	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
3/16/2007	medium	1	No	0.0	No	0.0		
3/19/2007	low	0	No	0.0	No	0.0		
3/20/2007	medium	1	No	0.0	No	0.0		
3/21/2007	high	2	No	0.0	No	0.0		
3/22/2007	high	2	No	0.0	No	0.0		
3/26/2007	high	2	No	0.0	No	0.0		
3/30/2007	medium	1	No	0.0	No	0.0		
4/2/2007	high	2	No	0.0	No	0.0		
4/6/2007	high	2	No	0.0	**Yes**	**1.0**		
4/9/2007	high	2	No	0.0	No	0.0		
4/12/2007	high	2	No	0.0	No	0.0		
4/13/2007	medium	1	No	0.0	No	0.0		
4/16/2007	low	0	No	0.0	No	0.0		
4/19/2007	medium	1	No	0.0	No	0.0		
4/23/2007	high	2	No	0.0	No	0.0		
4/24/2007	high	2	No	0.0	**Yes**	**1.0**		
4/26/2007	medium	1	No	0.0	No	0.0		
4/27/2007	high	2	No	0.0	No	0.0		
4/30/2007	low	0	No	0.0	No	0.0		
5/3/2007	medium	1	No	0.0	No	0.0		
5/8/2007	high	2	No	0.0	No	0.0		
5/9/2007	high	2	No	0.0	No	0.0		
5/14/2007	low	0	No	0.0	No	0.0		
5/17/2007	medium	1	No	0.0	No	0.0		
5/21/2007	high	2	No	0.0	No	0.0		
5/23/2007	medium	1	No	0.0	No	0.0		
6/1/2007	medium	1	No	0.0	No	0.0		
6/4/2007	high	2	**Yes**	**1.0**	**Yes**	**1.0**		
6/6/2007	high	2	No	0.0	No	0.0		
6/7/2007	medium	1	No	0.0	**Yes**	**1.0**		
6/11/2007	low	0	No	0.0	No	0.0		
6/13/2007	low	0	No	0.0	No	0.0		
6/14/2007	low	0	No	0.0	No	0.0		
6/18/2007	medium	1	No	0.0	No	0.0		
6/19/2007	high	2	No	0.0	No	0.0		
6/25/2007	low	0	No	0.0	No	0.0		
7/2/2007	high	2	No	0.0	**Yes**	**2.0**		
7/9/2007	low	0	No	0.0	No	0.0		
7/13/2007	low	0	No	0.0	No	0.0		
7/16/2007	low	0	No	0.0	No	0.0		
7/23/2007	low	0	No	0.0	No	0.0		
7/30/2007	medium	1	No	0.0	No	0.0		
7/31/2007	high	2	No	0.0	**Yes**	**1.0**		
8/6/2007	medium	1	No	0.0	No	0.0		
8/8/2007	low	0	No	0.0	No	0.0		
8/13/2007	medium	1	No	0.0	No	0.0		
8/16/2007	high	2	No	0.0	No	0.0		
8/20/2007	high	2	No	0.0	No	0.0		
8/22/2007	medium	1	No	0.0	No	0.0		
8/23/2007	medium	1	No	0.0	No	0.0		
8/24/2007	low	0	No	0.0	No	0.0		
8/27/2007	low	0	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
8/30/2007	low	0	No	0.0	No	0.0		
9/4/2007	medium	1	No	0.0	No	0.0		
9/10/2007	medium	1	No	0.0	No	0.0		
9/13/2007	medium	1	No	0.0	No	0.0		
9/14/2007	high	2	No	0.0	No	0.0		
9/17/2007	high	2	No	0.0	No	0.0		
9/18/2007	high	2	No	0.0	No	0.0		
9/19/2007	high	2	No	0.0	No	0.0		
9/20/2007	medium	1	No	0.0	No	0.0		
9/24/2007	low	0	No	0.0	No	0.0		
10/1/2007	high	2	No	0.0	No	0.0		
10/2/2007	high	2	No	0.0	No	0.0		
10/3/2007	medium	1	No	0.0	No	0.0		
10/5/2007	low	0	No	0.0	No	0.0		
10/8/2007	medium	1	No	0.0	No	0.0		
10/9/2007	high	2	No	0.0	No	0.0		
10/11/2007	high	2	No	0.0	No	0.0		
10/15/2007	high	2	No	0.0	No	0.0		
10/17/2007	medium	1	No	0.0	No	0.0		
10/22/2007	low	0	No	0.0	No	0.0		
10/24/2007	medium	1	No	0.0	No	0.0		
10/25/2007	high	2	No	0.0	No	0.0		
10/29/2007	high	2	No	0.0	No	0.0		
10/31/2007	low	0	No	0.0	No	0.0		
11/1/2007	low	0	No	0.0	No	0.0		
11/2/2007	low	0	No	0.0	No	0.0		
11/5/2007	low	0	No	0.0	No	0.0		
11/6/2007	low	0	No	0.0	No	0.0		
11/12/2007	high	2	No	0.0	No	0.0		
11/13/2007	high	2	No	0.0	No	0.0		
11/15/2007	high	2	No	0.0	No	0.0		
11/16/2007	high	2	No	0.0	No	0.0		
11/19/2007	medium	1	No	0.0	No	0.0		
11/26/2007	high	2	No	0.0	No	0.0		
11/27/2007	high	2	No	0.0	**Yes**	**0.5**		
12/3/2007	high	2	No	0.0	No	0.0		
12/10/2007	high	2	No	0.0	No	0.0		
12/11/2007	high	2	No	0.0	No	0.0		
12/14/2007	high	2	No	0.0	No	0.0		
12/17/2007	high	2	No	0.0	No	0.0		
12/19/2007	high	2	No	0.0	No	0.0		
12/20/2007	high	2	No	0.0	No	0.0		
12/24/2007	medium	1	No	0.0	No	0.0		
1/2/2008	high	2	Yes	1.0	No	0.0		
1/7/2008	high	2	No	0.0	No	0.0		
1/11/2008	high	2	No	0.0	No	0.0		
1/14/2008	high	2	No	0.0	No	0.0		
1/21/2008	high	2	No	0.0	No	0.0		
1/22/2008	high	2	No	0.0	No	0.0		
1/28/2008	high	2	No	0.0	No	0.0		
1/29/2008	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
2/4/2008	high	2	No	0.0	**Yes**	**0.5**		
2/11/2008	medium	1	No	0.0	No	0.0		
2/12/2008	high	2	No	0.0	No	0.0		
2/14/2008	high	2	No	0.0	No	0.0		
2/19/2008	high	2	No	0.0	No	0.0		
2/20/2008	high	2	No	0.0	No	0.0		
2/25/2008	high	2	No	0.0	No	0.0		
2/28/2008	high	2	No	0.0	No	0.0		
3/3/2008	medium	1	No	0.0	No	0.0		
3/4/2008	medium	1	No	0.0	No	0.0		
3/10/2008	high	2	No	0.0	No	0.0		
3/11/2008	high	2	No	0.0	No	0.0		
3/12/2008	high	2	No	0.0	No	0.0		
3/14/2008	high	2	No	0.0	No	0.0		
3/17/2008	medium	1	No	0.0	No	0.0		
3/24/2008	high	2	No	0.0	No	0.0		
3/26/2008	high	2	No	0.0	No	0.0		
3/31/2008	medium	1	No	0.0	No	0.0		
4/1/2008	medium	1	No	0.0	No	0.0		
4/7/2008	high	2	No	0.0	No	0.0		
4/10/2008	medium	1	No	0.0	**Yes**	**0.5**		
4/11/2008	medium	1	No	0.0	No	0.0		
4/15/2008	medium	1	No	0.0	No	0.0		
4/16/2008	low	0	No	0.0	No	0.0		
4/18/2008	low	0	No	0.0	No	0.0		
4/21/2008	medium	1	No	0.0	No	0.0		
4/22/2008	medium	1	No	0.0	No	0.0		
4/28/2008	medium	1	No	0.0	No	0.0		
5/2/2008	low	0	No	0.0	No	0.0		
5/5/2008	medium	1	No	0.0	No	0.0		
5/12/2008	medium	1	No	0.0	No	0.0		
5/16/2008	medium	1	No	0.0	No	0.0		
5/19/2008	low	0	No	0.0	No	0.0		
5/21/2008	low	0	No	0.0	No	0.0		
5/23/2008	high	2	No	0.0	No	0.0		
5/27/2008	medium	1	No	0.0	**Yes**	**0.5**		
5/29/2008	medium	1	No	0.0	No	0.0		
6/2/2008	low	0	No	0.0	No	0.0		
6/9/2008	medium	1	No	0.0	No	0.0		
6/12/2008	medium	1	No	0.0	No	0.0		
6/17/2008	low	0	No	0.0	No	0.0		
6/18/2008	low	0	No	0.0	No	0.0		
6/19/2008	medium	1	No	0.0	No	0.0		
6/23/2008	high	2	No	0.0	Yes	1.0		
6/25/2008	medium	1	No	0.0	No	0.0		
6/26/2008	medium	1	No	0.0	No	0.0		
6/27/2008	low	0	No	0.0	No	0.0		
6/30/2008	low	0	No	0.0	No	0.0		
7/7/2008	high	2	No	0.0	No	0.0		
7/8/2008	high	2	No	0.0	No	0.0		
7/14/2008	low	0	No	0.0	No	0.0		
7/16/2008	medium	1	**Yes**	**1.0**	**Yes**	**1.0**		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
7/21/2008	high	2	No	0.0	No	0.0		
7/22/2008	high	2	No	0.0	No	0.0		
7/23/2008	high	2	No	0.0	No	0.0		
7/28/2008	low	0	No	0.0	No	0.0		
7/30/2008	low	0	No	0.0	No	0.0		
7/31/2008	low	0	No	0.0	No	0.0		
8/4/2008	high	2	No	0.0	No	0.0		
8/5/2008	high	2	No	0.0	No	0.0		
8/6/2008	high	2	No	0.0	No	0.0		
8/7/2008	high	2	No	0.0	No	0.0		
8/8/2008	medium	1	No	0.0	No	0.0		
8/11/2008	low	0	No	0.0	No	0.0		
8/12/2008	low	0	No	0.0	No	0.0		
8/13/2008	low	0	No	0.0	No	0.0		
8/18/2008	medium	1	No	0.0	No	0.0		
8/19/2008	high	2	No	0.0	Yes	1.0		
8/20/2008	high	2	No	0.0	No	0.0		
8/21/2008	high	2	No	0.0	No	0.0		
8/25/2008	medium	1	No	0.0	No	0.0		
8/27/2008	low	0	No	0.0	No	0.0		
9/2/2008	medium	1	No	0.0	No	0.0		
9/8/2008	medium	1	No	0.0	No	0.0		
9/16/2008	medium	1	No	0.0	No	0.0		
9/17/2008	high	2	No	0.0	No	0.0		
9/18/2008	high	2	No	0.0	No	0.0		
9/19/2008	high	2	No	0.0	No	0.0		
9/22/2008	high	2	No	0.0	No	0.0		
9/23/2008	medium	1	No	0.0	No	0.0		
9/24/2008	low	0	No	0.0	No	0.0		
9/29/2008	high	2	No	0.0	No	0.0		
9/30/2008	high	2	No	0.0	No	0.0		
10/1/2008	high	2	No	0.0	No	0.0		
10/2/2008	high	2	No	0.0	No	0.0		
10/6/2008	high	2	No	0.0	No	0.0		
10/13/2008	medium	1	No	0.0	No	0.0		
10/15/2008	medium	1	No	0.0	No	0.0		
10/17/2008	high	2	No	0.0	No	0.0		
10/20/2008	high	2	No	0.0	No	0.0		
10/21/2008	high	2	No	0.0	No	0.0		
10/24/2008	low	0	No	0.0	No	0.0		
10/25/2008	medium	1	No	0.0	No	0.0		
10/27/2008	high	2	No	0.0	No	0.0		
11/3/2008	high	2	No	0.0	No	0.0		
11/6/2008	high	2	No	0.0	No	0.0		
11/10/2008	medium	1	No	0.0	No	0.0		
11/14/2008	high	2	No	0.0	No	0.0		
11/17/2008	high	2	No	0.0	No	0.0		
11/18/2008	high	2	No	0.0	No	0.0		
11/21/2008	medium	1	No	0.0	No	0.0		
11/24/2008	medium	1	No	0.0	No	0.0		
11/25/2008	high	2	No	0.0	No	0.0		
12/1/2008	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
12/2/2008	high	2	No	0.0	No	0.0		
12/3/2008	high	2	No	0.0	No	0.0		
12/8/2008	high	2	No	0.0	No	0.0		
12/11/2008	high	2	No	0.0	No	0.0		
12/12/2008	high	2	No	0.0	No	0.0		
12/15/2008	high	2	No	0.0	No	0.0		
12/16/2008	high	2	No	0.0	No	0.0		
12/17/2008	high	2	No	0.0	No	0.0		
12/23/2008	high	2	No	0.0	No	0.0		
12/29/2008	high	2	No	0.0	No	0.0		
1/5/2009	high	2	No	0.0	No	0.0		
1/12/2009	high	2	No	0.0	No	0.0		
1/14/2009	high	2	No	0.0	No	0.0		
1/15/2009	high	2	No	0.0	No	0.0		
1/16/2009	high	2	No	0.0	No	0.0		
1/20/2009	high	2	No	0.0	No	0.0		
1/22/2009	high	2	No	0.0	No	0.0		
1/26/2009	medium	1	No	0.0	No	0.0		
1/27/2009	high	2	No	0.0	No	0.0		
1/28/2009	medium	1	No	0.0	No	0.0		
1/29/2009	medium	1	No	0.0	No	0.0		
1/30/2009	medium	1	No	0.0	No	0.0		
2/2/2009	high	2	No	0.0	No	0.0		
2/5/2009	high	2	**Yes**	**0.5**	No	0.0		
2/9/2009	high	2	No	0.0	No	0.0		
2/11/2009	medium	1	No	0.0	No	0.0		
2/17/2009	high	2	No	0.0	**Yes**	**0.5**		
2/18/2009	high	2	No	0.0	No	0.0		
2/23/2009	high	2	No	0.0	No	0.0		
2/26/2009	medium	1	No	0.0	No	0.0		
3/3/2009	high	2	No	0.0	No	0.0		
3/9/2009	medium	1	No	0.0	No	0.0		
3/11/2009	medium	1	No	0.0	No	0.0		
3/16/2009	medium	1	No	0.0	No	0.0		
3/17/2009	high	2	No	0.0	No	0.0		
3/18/2009	high	2	No	0.0	No	0.0		
3/23/2009	medium	1	No	0.0	No	0.0		
3/30/2009	high	2	No	0.0	No	0.0		
3/31/2009	high	2	No	0.0	No	0.0		
4/6/2009	medium	1	No	0.0	No	0.0		
4/7/2009	medium	1	No	0.0	No	0.0		
4/13/2009	high	2	No	0.0	No	0.0		
4/15/2009	high	2	No	0.0	No	0.0		
4/16/2009	low	0	No	0.0	No	0.0		
4/21/2009	low	0	No	0.0	No	0.0		
4/27/2009	medium	1	No	0.0	No	0.0		
4/28/2009	high	2	No	0.0	No	0.0		
4/29/2009	high	2	No	0.0	No	0.0		
5/4/2009	low	0	No	0.0	No	0.0		
5/11/2009	medium	1	No	0.0	No	0.0		
5/14/0009	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
5/15/2009	high	2	No	0.0	No	0.0		
5/18/2009	medium	1	No	0.0	No	0.0		
5/26/2009	medium	1	No	0.0	No	0.0		
5/27/2009	medium	1	No	0.0	No	0.0		
6/1/2009	medium	1	No	0.0	No	0.0		
6/2/2009	medium	1	No	0.0	No	0.0		
6/4/2009	low	0	No	0.0	No	0.0		
6/8/2009	medium	1	No	0.0	No	0.0		
6/10/2009	high	2	No	0.0	No	0.0		
6/11/2009	medium	1	No	0.0	No	0.0		
6/15/2009	high	2	No	0.0	No	0.0		
6/16/2009	medium	1	No	0.0	No	0.0		
6/19/2009	high	2	No	0.0	No	0.0		
6/22/2009	low	0	No	0.0	No	0.0		
6/25/2009	high	2	No	0.0	No	0.0		
6/29/2009	high	2	No	0.0	No	0.0		
7/6/2009	low	0	No	0.0	No	0.0		
7/13/2009	high	2	No	0.0	No	0.0		
7/15/2009	high	2	No	0.0	No	0.0		
7/16/2009	low	0	No	0.0	No	0.0		
7/20/2009	low	0	No	0.0	No	0.0		
7/22/2009	low	0	No	0.0	No	0.0		
7/27/2009	high	2	No	0.0	No	0.0		
8/3/2009	low	0	No	0.0	No	0.0		
8/10/2009	high	2	No	0.0	**Yes**	**0.5**		
8/14/2009	low	0	No	0.0	No	0.0		
8/17/2009	low	0	No	0.0	No	0.0		
8/18/2009	low	0	No	0.0	No	0.0		
8/24/2009	high	2	No	0.0	No	0.0		
8/31/2009	low	0	No	0.0	No	0.0		
9/1/2009	medium	1	No	0.0	No	0.0		
9/8/2009	high	2	No	0.0	No	0.0		
9/11/2009	high	2	No	0.0	No	0.0		
9/14/2009	medium	1	No	0.0	No	0.0		
9/16/2009	medium	1	No	0.0	No	0.0		
9/17/2009	medium	1	No	0.0	No	0.0		
9/18/2009	high	2	No	0.0	No	0.0		
9/21/2009	high	2	No	0.0	No	0.0		
9/28/2009	low	0	No	0.0	No	0.0		
10/1/2009	medium	1	No	0.0	No	0.0		
10/7/2009	high	2	No	0.0	No	0.0		
10/12/2009	medium	1	No	0.0	No	0.0		
10/20/2009	high	2	No	0.0	**Yes**	**0.5**		
10/21/2009	high	2	No	0.0	No	0.0		
10/26/2009	medium	1	No	0.0	No	0.0		
10/27/2009	medium	1	No	0.0	No	0.0		
11/2/2009	medium	1	No	0.0	No	0.0		
11/3/2009	high	2	No	0.0	No	0.0		
11/10/2009	medium	1	No	0.0	No	0.0		
11/16/2009	high	2	No	0.0	No	0.0		
11/17/2009	high	2	No	0.0	No	0.0		
11/18/2009	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
11/23/2009	high	2	No	0.0	No	0.0		
11/24/2009	high	2	No	0.0	No	0.0		
11/30/2009	high	2	No	0.0	No	0.0		
12/3/2009	high	2	No	0.0	No	0.0		
12/4/2009	high	2	No	0.0	No	0.0		
12/7/2009	high	2	No	0.0	No	0.0		
12/8/2009	high	2	No	0.0	No	0.0		
12/9/2009	high	2	No	0.0	No	0.0		
12/10/2009	medium	1	No	0.0	No	0.0		
12/11/2009	high	2	No	0.0	No	0.0		
12/14/2009	high	2	No	0.0	**Yes**	**1.0**		
12/15/2009	high	2	No	0.0	No	0.0		
12/16/2009	high	2	No	0.0	No	0.0		
12/17/2009	high	2	No	0.0	No	0.0		
12/21/2009	high	2	No	0.0	No	0.0		
12/28/2009	high	2	No	0.0	No	0.0		
1/4/2010	high	2	No	0.0	No	0.0		
1/5/2010	high	2	No	0.0	No	0.0		
1/6/2010	high	2	No	0.0	No	0.0		
1/7/2010	high	2	No	0.0	No	0.0		
1/11/2010	high	2	No	0.0	No	0.0		
1/14/2010	high	2	No	0.0	No	0.0		
1/19/2010	high	2	No	0.0	No	0.0		
1/20/2010	high	2	No	0.0	No	0.0		
1/21/2010	high	2	No	0.0	No	0.0		
1/25/2010	high	2	No	0.0	No	0.0		
1/27/2010	high	2	No	0.0	No	0.0		
2/1/2010	high	2	No	0.0	No	0.0		
2/2/2010	high	2	No	0.0	No	0.0		
2/8/2010	high	2	No	0.0	No	0.0		
2/9/2010	high	2	No	0.0	No	0.0		
2/16/2010	high	2	No	0.0	No	0.0		
2/17/2010	high	2	No	0.0	No	0.0		
2/18/2010	high	2	No	0.0	No	0.0		
2/19/2010	high	2	No	0.0	No	0.0		
2/22/2010	high	2	No	0.0	No	0.0		
3/1/2010	high	2	No	0.0	**Yes**	**1.0**		
3/8/2010	high	2	No	0.0	No	0.0		
3/12/2010	high	2	No	0.0	No	0.0		
3/16/2010	high	2	No	0.0	No	0.0		
3/17/2010	medium	1	No	0.0	No	0.0		
3/19/2010	high	2	No	0.0	No	0.0		
3/22/2010	high	2	No	0.0	No	0.0		
3/25/2010	high	2	No	0.0	No	0.0		
3/30/2010	high	2	No	0.0	No	0.0		
3/31/2010	high	2	No	0.0	No	0.0		
4/1/2010	high	2	No	0.0	No	0.0		
4/2/2010	high	2	No	0.0	No	0.0		
4/5/2010	high	2	No	0.0	No	0.0		
4/6/2010	high	2	No	0.0	No	0.0		
4/9/2010	medium	1	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
4/12/2010	medium	1	No	0.0	No	0.0		
4/14/2010	medium	1	No	0.0	No	0.0		
4/15/2010	medium	1	No	0.0	No	0.0		
4/16/2010	medium	1	No	0.0	No	0.0		
4/19/2010	high	2	No	0.0	No	0.0		
4/20/2010	high	2	No	0.0	No	0.0		
4/27/2010	high	2	No	0.0	No	0.0		
4/28/2010	high	2	No	0.0	No	0.0		
4/29/2010	high	2	No	0.0	No	0.0		
5/3/2010	high	2	No	0.0	No	0.0		
5/5/2010	medium	1	No	0.0	No	0.0		
5/6/2010	medium	1	No	0.0	No	0.0		
5/7/2010	medium	1	No	0.0	No	0.0		
5/10/2010	medium	1	No	0.0	No	0.0		
5/17/2010	high	2	No	0.0	No	0.0		
5/18/2010	high	2	No	0.0	No	0.0		
5/24/2010	low	0	No	0.0	No	0.0		
6/1/2010	medium	1	No	0.0	No	0.0		
6/7/2010	low	0	No	0.0	No	0.0		
6/9/2010	low	0	No	0.0	No	0.0		
6/10/2010	low	0	No	0.0	No	0.0		
6/14/2010	high	2	No	0.0	No	0.0		
6/16/2010	high	2	No	0.0	No	0.0		
6/17/2010	medium	1	No	0.0	No	0.0		
6/21/2010	low	0	No	0.0	No	0.0		
6/24/2010	low	0	No	0.0	No	0.0		
6/28/2010	high	2	No	0.0	No	0.0		
7/6/2010	low	0	No	0.0	No	0.0		
7/8/2010	low	0	No	0.0	No	0.0		
7/12/2010	medium	1	No	0.0	No	0.0		
7/13/2010	medium	1	No	0.0	No	0.0		
7/14/2010	medium	1	No	0.0	No	0.0		
7/15/2010	high	2	No	0.0	No	0.0		
7/16/2010	high	2	No	0.0	No	0.0		
7/19/2010	low	0	No	0.0	**Yes**	**1.0**		
7/20/2010	medium	1	No	0.0	**Yes**	**1.0**		
7/21/2010	low	0	No	0.0	No	0.0		
7/22/2010	low	0	No	0.0	No	0.0		
7/26/2010	high	1	No	0.0	No	0.0		
7/28/2010	medium	1	No	0.0	No	0.0		
7/29/2010	medium	1	No	0.0	No	0.0		
8/2/2010	medium	1	No	0.0	No	0.0		
8/3/2010	low	0	No	0.0	No	0.0		
8/9/2010	medium	1	No	0.0	No	0.0		
8/11/2010	high	2	No	0.0	No	0.0		
8/16/2010	medium	1	No	0.0	No	0.0		
8/18/2010	low	0	No	0.0	No	0.0		
8/19/2010	low	0	No	0.0	No	0.0		
8/23/2010	medium	1	No	0.0	No	0.0		
8/24/2010	high	2	No	0.0	No	0.0		
8/30/2010	high	2	No	0.0	No	0.0		
8/31/2010	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
9/1/2010	high	2	No	0.0	No	0.0		
9/2/2010	low	0	No	0.0	No	0.0		
9/3/2010	low	0	No	0.0	No	0.0		
9/7/2010	low	0	No	0.0	No	0.0		
9/14/2010	medium	1	No	0.0	No	0.0		
9/15/2010	low	0	No	0.0	No	0.0		
9/16/2010	low	0	No	0.0	No	0.0		
9/20/2010	medium	1	No	0.0	No	0.0		
9/21/2010	medium	1	No	0.0	No	0.0		
9/22/2010	medium	1	No	0.0	No	0.0		
9/27/2010	high	2	No	0.0	No	0.0		
9/30/2010	high	2	No	0.0	No	0.0		
10/4/2010	low	0	No	0.0	No	0.0		
10/7/2010	medium	1	No	0.0	No	0.0		
10/11/2010	high	2	No	0.0	No	0.0		
10/14/2010	medium	1	No	0.0	No	0.0		
10/18/2010	medium	1	No	0.0	No	0.0		
10/19/2010	medium	1	No	0.0	No	0.0		
10/20/2010	medium	1	No	0.0	No	0.0		
10/21/2010	medium	1	No	0.0	No	0.0		
10/25/2010	high	2	No	0.0	No	0.0		
10/29/2010	high	2	No	0.0	No	0.0		
11/1/2010	low	0	No	0.0	No	0.0		
11/2/2010	medium	1	No	0.0	No	0.0		
11/8/2010	high	2	No	0.0	No	0.0		
11/11/2010	high	2	No	0.0	No	0.0		
11/15/2010	medium	1	No	0.0	No	0.0		
11/16/2010	medium	1	No	0.0	No	0.0		
11/17/2010	medium	1	No	0.0	No	0.0		
11/18/2010	medium	1	No	0.0	No	0.0		
11/22/2010	high	2	No	0.0	No	0.0		
11/29/2010	high	2	No	0.0	No	0.0		
11/30/2010	medium	1	No	0.0	No	0.0		
12/1/2010	medium	1	No	0.0	No	0.0		
12/2/2010	medium	1	No	0.0	No	0.0		
12/3/2010	medium	1	No	0.0	No	0.0		
12/6/2010	high	2	No	0.0	No	0.0		
12/7/2010	high	2	No	0.0	No	0.0		
12/8/2010	high	2	No	0.0	No	0.0		
12/13/2010	high	2	No	0.0	No	0.0		
12/14/2010	high	2	No	0.0	No	0.0		
12/15/2010	high	2	No	0.0	No	0.0		
12/16/2010	high	2	No	0.0	No	0.0		
12/20/2010	high	2	No	0.0	No	0.0		
12/22/2010	high	2	No	0.0	No	0.0		
12/23/2010	high	2	No	0.0	No	0.0		
12/24/2010	high	2	No	0.0	No	0.0		
12/27/2010	high	2	No	0.0	No	0.0		
1/3/2011	high	2	No	0.0	No	0.0		
1/10/2011	high	2	No	0.0	No	0.0		
1/17/2011	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
1/18/2011	high	2	No	0.0	No	0.0		
1/19/2011	high	2	No	0.0	No	0.0		
1/24/2011	high	2	No	0.0	No	0.0		
1/27/2011	high	2	No	0.0	No	0.0		
1/31/2011	high	2	No	0.0	No	0.0		
2/4/2011	high	2	No	0.0	No	0.0		
2/7/2011	high	2	No	0.0	No	0.0		
2/8/2011	high	2	No	0.0	No	0.0		
2/14/2011	high	2	No	0.0	No	0.0		
2/15/2011	high	2	No	0.0	No	0.0		
2/16/2011	high	2	No	0.0	No	0.0		
2/22/2011	high	2	No	0.0	No	0.0		
2/25/2011	high	2	No	0.0	No	0.0		
2/28/2011	high	2	No	0.0	No	0.0		
3/2/2011	high	2	No	0.0	No	0.0		
3/9/2011	high	2	No	0.0	No	0.0		
3/10/2011	high	2	No	0.0	No	0.0		
3/11/2011	high	2	No	0.0	No	0.0		
3/14/2011	high	2	No	0.0	No	0.0		
3/21/2011	high	2	No	0.0	No	0.0		
3/22/2011	high	2	No	0.0	No	0.0		
3/23/2011	high	2	No	0.0	No	0.0		
3/24/2011	high	2	No	0.0	No	0.0		
3/28/2011	high	2	No	0.0	No	0.0		
3/29/2011	high	2	No	0.0	No	0.0		
4/4/2011	high	2	No	0.0	No	0.0		
4/5/2011	high	2	No	0.0	No	0.0		
4/11/2011	high	2	No	0.0	No	0.0		
4/12/2011	high	2	No	0.0	No	0.0		
4/13/2011	high	2	No	0.0	No	0.0		
4/19/2011	high	2	No	0.0	No	0.0		
4/20/2011	high	2	No	0.0	No	0.0		
4/21/2011	high	2	No	0.0	No	0.0		
4/22/2011	high	2	No	0.0	No	0.0		
4/25/2011	medium	1	No	0.0	No	0.0		
4/27/2011	medium	1	No	0.0	**Yes**	**1.0**		
5/2/2011	high	2	No	0.0	No	0.0		
5/9/2011	high	2	No	0.0	No	0.0		
5/16/2011	medium	1	No	0.0	No	0.0		
5/18/2011	high	2	No	0.0	No	0.0		
5/19/2011	high	2	No	0.0	No	0.0		
5/23/2011	high	2	No	0.0	No	0.0		
6/1/2011	medium	1	No	0.0	No	0.0		
6/6/2011	high	2	No	0.0	No	0.0		
6/10/2011	medium	1	No	0.0	**Yes**	**1.0**		
6/13/2011	low	0	No	0.0	No	0.0		
6/14/2011	low	0	No	0.0	No	0.0		
6/15/2011	low	0	No	0.0	No	0.0		
6/20/2011	high	2	No	0.0	No	0.0		
6/22/2011	medium	1	No	0.0	**Yes**	**0.5**		
6/23/2011	medium	1	No	0.0	No	0.0		
6/27/2011	low	0	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
6/30/2011	medium	1	No	0.0	No	0.0		
7/6/2011	high	2	No	0.0	No	0.0		
7/11/2011	low	0	No	0.0	No	0.0		
7/18/2011	high	2	No	0.0	No	0.0		
7/19/2011	high	2	No	0.0	No	0.0		
7/20/2011	high	2	No	0.0	No	0.0		
7/25/2011	low	0	No	0.0	No	0.0		
7/29/2011	medium	1	No	0.0	No	0.0		
8/1/2011	high	2	No	0.0	No	0.0		
8/8/2011	low	0	No	0.0	No	0.0		
8/15/2011	high	2	No	0.0	No	0.0		
8/16/2011	high	2	No	0.0	No	0.0		
8/17/2011	high	2	No	0.0	No	0.0		
8/22/2011	low	0	No	0.0	No	0.0		
8/24/2011	high	2	No	0.0	No	0.0		
8/29/2011	medium	1	No	0.0	No	0.0		
8/31/2011	medium	1	No	0.0	No	0.0		
9/6/2011	medium	1	No	0.0	No	0.0		
9/12/2011	high	2	No	0.0	No	0.0		
9/13/2011	high	2	No	0.0	No	0.0		
9/14/2011	high	2	No	0.0	No	0.0		
9/20/2011	medium	1	No	0.0	No	0.0		
9/26/2011	medium	1	No	0.0	No	0.0		
9/27/2011	high	2	No	0.0	No	0.0		
9/28/2011	high	2	No	0.0	No	0.0		
9/29/2011	high	2	No	0.0	No	0.0		
10/3/2011	high	2	No	0.0	No	0.0		
10/10/2011	high	2	No	0.0	No	0.0		
10/11/2011	high	2	No	0.0	No	0.0		
10/12/2011	high	2	No	0.0	No	0.0		
10/17/2011	high	2	No	0.0	No	0.0		
10/18/2011	high	2	No	0.0	No	0.0		
10/19/2011	high	2	No	0.0	No	0.0		
10/20/2011	high	2	No	0.0	No	0.0		
10/24/2011	medium	1	No	0.0	No	0.0		
10/31/2011	high	2	No	0.0	No	0.0		
11/8/2011	medium	1	No	0.0	No	0.0		
11/14/2011	high	2	No	0.0	No	0.0		
11/21/2011	medium	1	No	0.0	No	0.0		
11/22/2011	high	2	No	0.0	No	0.0		
11/23/2011	high	2	No	0.0	No	0.0		
11/28/2011	high	2	No	0.0	No	0.0		
11/29/2011	high	2	No	0.0	No	0.0		
12/5/2011	medium	1	No	0.0	No	0.0		
12/12/2011	high	2	No	0.0	No	0.0		
12/13/2011	high	2	No	0.0	No	0.0		
12/14/2011	high	2	No	0.0	No	0.0		
12/19/2011	high	2	No	0.0	No	0.0		
12/20/2011	high	2	No	0.0	No	0.0		
12/21/2011	high	2	No	0.0	No	0.0		
12/27/2011	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
1/3/2012	high	2	No	0.0	No	0.0		
1/9/2012	high	2	No	0.0	No	0.0		
1/17/2012	high	2	No	0.0	No	0.0		
1/23/2012	high	2	No	0.0	No	0.0		
1/24/2012	high	2	No	0.0	No	0.0		
1/25/2012	high	2	No	0.0	No	0.0		
1/27/2012	high	2	No	0.0	No	0.0		
1/30/2012	high	2	No	0.0	No	0.0		
2/6/2012	high	2	No	0.0	No	0.0		
2/13/2012	high	2	No	0.0	No	0.0		
2/21/2012	medium	1	No	0.0	No	0.0		
2/27/2012	high	2	No	0.0	No	0.0		
2/24/2012	high	2	No	0.0	No	0.0		
3/1/2012	medium	1	No	0.0	No	0.0		
3/2/2012	high	2	No	0.0	No	0.0		
3/5/2012	high	2	No	0.0	No	0.0		
3/12/2012	high	2	No	0.0	No	0.0		
3/13/2012	high	2	No	0.0	No	0.0		
3/14/2012	medium	1	No	0.0	No	0.0		
3/15/2012	high	2	No	0.0	No	0.0		
3/19/2012	high	2	No	0.0	No	0.0		
3/20/2012	high	2	No	0.0	No	0.0		
.3/21/2012	high	2	No	0.0	No	0.0		
3/22/2012	high	2	No	0.0	No	0.0		
3/26/2012	high	2	No	0.0	No	0.0		
3/28/2012	high	2	No	0.0	No	0.0		
4/2/2012	medium	1	No	0.0	No	0.0		
4/5/2012	medium	1	No	0.0	No	0.0		
4/9/2012	high	2	No	0.0	No	0.0		
4/16/2012	medium	1	No	0.0	No	0.0		
4/17/2012	medium	1	No	0.0	No	0.0		
4/18/2012	high	2	No	0.0	No	0.0		
4/19/2012	medium	1	No	0.0	No	0.0		
4/23/2012	medium	1	No	0.0	No	0.0		
4/30/2012	medium	1	No	0.0	No	0.0		
5/2/2012	medium	1	No	0.0	No	0.0		
5/7/2012	high	2	No	0.0	No	0.0		
5/8/2012	high	2	No	0.0	No	0.0		
5/14/2012	medium	1	No	0.0	No	0.0		
5/15/2012	low	0	No	0.0	No	0.0		
5/16/2012	medium	1	No	0.0	No	0.0		
5/21/2012	high	2	No	0.0	No	0.0		
5/22/2012	high	2	No	0.0	No	0.0		
5/23/2012	high	2	No	0.0	No	0.0		
5/24/2012	high	2	No	0.0	No	0.0		
5/29/2012	high	2	No	0.0	No	0.0		
5/31/2012	low	0	No	0.0	No	0.0		
6/4/2012	medium	1	No	0.0	No	0.0		
6/11/2012	medium	1	No	0.0	No	0.0		
6/12/2012	medium	1	No	0.0	No	0.0		
6/13/2012	medium	1	No	0.0	No	0.0		
6/20/2012	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
6/25/2012	medium	1	No	0.0	No	0.0		
7/2/2012	low	0	No	0.0	No	0.0		
7/9/2012	medium	1	No	0.0	**Yes**	**0.5**		
7/10/2012	high	2	No	0.0	No	0.0		
7/11/2012	high	2	No	0.0	No	0.0		
7/12/2012	high	2	No	0.0	**Yes**	**0.5**		
7/16/2012	low	0	No	0.0	No	0.0		
7/17/2012	low	0	No	0.0	No	0.0		
7/19/2012	low	0	No	0.0	No	0.0		
7/20/2012	low	0	No	0.0	No	0.0		
7/23/2012	high	2	No	0.0	No	0.0		
7/30/2012	low	0	No	0.0	No	0.0		
8/6/2012	high	2	No	0.0	No	0.0		
8/7/2012	medium	1	No	0.0	No	0.0		
8/10/2012	medium	1	No	0.0	No	0.0		
8/13/2012	low	0	No	0.0	No	0.0		
8/14/2012	low	0	No	0.0	No	0.0		
8/15/2012	low	0	No	0.0	No	0.0		
8/20/2012	high	2	No	0.0	No	0.0		
8/23/2012	high	2	No	0.0	No	0.0		
8/28/2012	low	0	No	0.0	No	0.0		
8/29/2012	low	0	No	0.0	No	0.0		
9/4/2012	high	2	No	0.0	No	0.0		
9/5/2012	high	2	No	0.0	No	0.0		
9/7/2012	high	2	No	0.0	No	0.0		
9/10/2012	low	0	No	0.0	No	0.0		
9/11/2012	low	0	No	0.0	No	0.0		
9/17/2012	high	2	No	0.0	No	0.0		
9/18/2012	high	2	No	0.0	No	0.0		
9/19/2012	high	2	No	0.0	No	0.0		
9/20/2012	high	2	No	0.0	No	0.0		
9/21/2012	high	2	No	0.0	No	0.0		
9/25/2102	low	0	No	0.0	No	0.0		
9/26/2012	low	0	No	0.0	No	0.0		
9/27/2012	low	0	No	0.0	No	0.0		
10/1/2012	high	2	No	0.0	No	0.0		
10/9/2012	low	0	No	0.0	No	0.0		
10/15/2012	high	2	No	0.0	No	0.0		
10/16/2012	high	2	No	0.0	No	0.0		
10/22/2012	high	2	No	0.0	No	0.0		
10/23/2012	high	2	No	0.0	No	0.0		
10/24/2012	high	2	No	0.0	No	0.0		
10/25/2012	high	2	No	0.0	No	0.0		
10/26/2012	high	2	No	0.0	No	0.0		
10/29/2012	high	2	No	0.0	No	0.0		
11/7/2012	high	2	No	0.0	**Yes**	**0.5**		
11/12/2012	high	2	No	0.0	No	0.0		
11/13/2012	medium	1	No	0.0	No	0.0		
11/19/2012	high	2	No	0.0	No	0.0		
11/27/2012	high	2	No	0.0	**Yes**	**0.5**		
11/28/2012	high	2	No	0.0	No	0.0		
12/5/2012	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
12/6/2012	high	2	No	0.0	**Yes**	**0.5**		
12/7/2012	high	2	No	0.0	No	0.0		
12/12/2012	medium	1	No	0.0	**Yes**	**0.5**		
12/13/2012	medium	1	No	0.0	No	0.0		
12/14/2012	medium	1	No	0.0	No	0.0		
12/17/2012	high	2	No	0.0	No	0.0		
12/18/2012	high	2	No	0.0	No	0.0		
12/19/2012	high	2	No	0.0	No	0.0		
12/20/2012	high	2	No	0.0	No	0.0		
12/24/2012	high	2	No	0.0	No	0.0		
1/2/2013	high	2	No	0.0	No	0.0		
1/3/2013	high	2	No	0.0	No	0.0		
1/7/2013	high	2	No	0.0	No	0.0		
1/14/2013	high	2	No	0.0	No	0.0		
1/22/2013	high	2	No	0.0	No	0.0		
1/23/2013	high	2	No	0.0	No	0.0		
1/28/2013	high	2	No	0.0	No	0.0		
1/30/2013	high	2	No	0.0	No	0.0		
1/31/2013	high	2	No	0.0	No	0.0		
2/1/2013	high	2	No	0.0	No	0.0		
2/4/2013	high	2	No	0.0	No	0.0		
2/11/2013	high	2	No	0.0	No	0.0		
2/19/2013	high	2	No	0.0	No	0.0		
2/20/2013	high	2	No	0.0	No	0.0		
2/21/2013	high	2	No	0.0	No	0.0		
2/25/2013	high	2	No	0.0	No	0.0		
3/5/2013	high	2	No	0.0	No	0.0		
3/6/2013	medium	1	No	0.0	No	0.0		
3/11/2013	medium	1	No	0.0	No	0.0		
3/12/2013	high	2	No	0.0	No	0.0		
3/13/2013	high	2	No	0.0	No	0.0		
3/18/2013	high	2	No	0.0	No	0.0		
3/25/2013	high	2	No	0.0	No	0.0		
4/1/2013	high	2	No	0.0	No	0.0		
4/2/2013	high	2	No	0.0	No	0.0		
4/8/2013	medium	1	No	0.0	No	0.0		
4/9/2013	medium	1	No	0.0	No	0.0		
4/10/2013	high	2	No	0.0	No	0.0		
4/15/2013	high	2	No	0.0	No	0.0		
4/16/2013	high	2	No	0.0	No	0.0		
4/18/2013	high	2	No	0.0	No	0.0		
4/22/2013	medium	1	No	0.0	No	0.0		
4/23/2013	medium	1	No	0.0	No	0.0		
4/24/2013	low	0	No	0.0	No	0.0		
4/25/2013	medium	1	No	0.0	No	0.0		
4/29/2013	high	2	No	0.0	No	0.0		
4/30/2013	high	2	No	0.0	No	0.0		
5/6/2013	low	0	No	0.0	No	0.0		
5/7/2013	medium	1	No	0.0	No	0.0		
5/13/2013	high	2	No	0.0	No	0.0		
5/17/2013	medium	1	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
5/20/2013	medium	1	No	0.0	No	0.0		
5/21/2013	medium	1	No	0.0	No	0.0		
5/22/2013	medium	1	No	0.0	No	0.0		
5/23/2013	medium	1	No	0.0	No	0.0		
5/28/2013	high	2	No	0.0	No	0.0		
6/3/2013	medium	1	No	0.0	No	0.0		
6/5/2013	low	0	No	0.0	No	0.0		
6/10/2013	high	2	No	0.0	No	0.0		
6/11/2013	high	2	No	0.0	No	0.0		
6/12/2013	high	2	No	0.0	No	0.0		
6/17/2013	medium	1	No	0.0	No	0.0		
6/18/2013	medium	1	No	0.0	No	0.0		
6/19/2013	medium	1	No	0.0	No	0.0		
6/24/2013	high	2	No	0.0	No	0.0		
6/25/2013	high	2	No	0.0	No	0.0		
6/26/2013	high	2	No	0.0	No	0.0		
7/1/2013	medium	1	No	0.0	No	0.0		
7/8/2013	medium	1	No	0.0	No	0.0		
7/15/2013	medium	1	No	0.0	No	0.0		
7/18/2013	high	2	No	0.0	No	0.0		
7/22/2013	medium	1	No	0.0	No	0.0		
7/23/2013	medium	1	No	0.0	No	0.0		
7/24/2013	high	2	No	0.0	No	0.0		
7/29/2013	medium	1	No	0.0	No	0.0		
8/5/2013	medium	1	No	0.0	No	0.0		
8/12/2013	high	2	No	0.0	No	0.0		
8/19/2013	low	0	No	0.0	No	0.0		
8/20/2013	medium	1	No	0.0	No	0.0		
8/21/2013	high	2	No	0.0	No	0.0		
8/26/2013	high	2	No	0.0	No	0.0		
8/27/2013	medium	1	No	0.0	No	0.0		
9/3/2013	medium	1	No	0.0	No	0.0		
9/9/2013	high	2	No	0.0	No	0.0		
9/10/2013	high	2	No	0.0	No	0.0		
9/11/2013	medium	1	No	0.0	No	0.0		
9/12/2013	medium	1	No	0.0	No	0.0		
9/16/2013	low	0	No	0.0	No	0.0		
9/17/2013	medium	1	No	0.0	No	0.0		
9/23/2013	high	2	No	0.0	No	0.0		
9/24/2013	high	2	No	0.0	**Yes**	**0.5**		
9/25/2013	high	2	No	0.0	No	0.0		
9/27/2013	high	2	No	0.0	No	0.0		
9/30/2013	medium	1	No	0.0	No	0.0		
10/2/2013	medium	1	No	0.0	No	0.0		
10/7/2013	high	2	No	0.0	No	0.0		
10/9/2013	high	2	No	0.0	No	0.0		
10/14/2013	low	0	No	0.0	No	0.0		
10/15/2013	low	0	No	0.0	No	0.0		
10/21/2013	high	2	No	0.0	No	0.0		
10/28/2013	high	2	No	0.0	No	0.0		
10/29/2013	medium	1	No	0.0	No	0.0		
10/30/2013	medium	1	No	0.0	**Yes**	**0.5**		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
10/31/2013	medium	1	No	0.0	No	0.0		
11/4/2013	high	2	No	0.0	No	0.0		
11/11/2013	high	2	No	0.0	No	0.0		
11/13/2013	medium	1	No	0.0	**Yes**	**0.5**		
11/18/2013	medium	1	No	0.0	No	0.0		
11/19/2013	high	2	No	0.0	No	0.0		
11/20/2013	high	2	No	0.0	No	0.0		
11/25/2013	high	2	No	0.0	No	0.0		
12/2/2013	high	2	No	0.0	No	0.0		
12/3/2013	high	2	No	0.0	No	0.0		
12/9/2013	high	2	No	0.0	No	0.0		
12/16/2013	high	2	No	0.0	No	0.0		
12/17/2013	high	2	No	0.0	No	0.0		
12/18/2013	high	2	No	0.0	No	0.0		
12/23/2013	high	2	No	0.0	No	0.0		
12/30/2013	medium	1	No	0.0	No	0.0		
1/3/2014	high	2	No	0.0	No	0.0		
1/6/2014	high	2	No	0.0	No	0.0		
1/13/2014	high	2	No	0.0	No	0.0		
1/14/2014	high	2	No	0.0	No	0.0		
1/15/2014	high	2	No	0.0	No	0.0		
1/21/2014	high	2	No	0.0	No	0.0		
1/27/2014	high	2	No	0.0	No	0.0		
1/28/2014	high	2	No	0.0	No	0.0		
2/4/2014	high	2	No	0.0	No	0.0		
2/10/2014	high	2	No	0.0	No	0.0		
2/11/2014	high	2	No	0.0	No	0.0		
2/12/2014	high	2	No	0.0	No	0.0		
2/18/2014	high	2	No	0.0	No	0.0		
2/21/2014	high	2	No	0.0	No	0.0		
2/24/2014	high	2	No	0.0	No	0.0		
3/3/2014	high	2	No	0.0	No	0.0		
3/10/2014	high	2	No	0.0	No	0.0		
3/11/2014	high	2	No	0.0	No	0.0		
3/12/2014	high	2	No	0.0	No	0.0		
3/17/2014	high	2	No	0.0	No	0.0		
3/19/2014	high	2	No	0.0	No	0.0		
3/20/2014	high	2	No	0.0	No	0.0		
3/24/2014	high	2	No	0.0	No	0.0		
3/26/2014	high	2	No	0.0	No	0.0		
3/27/2014	high	2	No	0.0	No	0.0		
3/31/2014	high	2	No	0.0	No	0.0		
4/2/2014	high	2	No	0.0	No	0.0		
4/7/2014	high	2	No	0.0	No	0.0		
4/14/2014	medium	1	No	0.0	No	0.0		
4/15/2014	medium	1	No	0.0	No	0.0		
4/16/2014	high	2	No	0.0	No	0.0		
4/17/2014	high	2	No	0.0	No	0.0		
4/21/2014	high	2	No	0.0	No	0.0		
4/22/2014	medium	1	No	0.0	No	0.0		
4/23/2014	medium	1	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
4/28/2014	medium	1	No	0.0	No	0.0		
4/29/2014	high	2	No	0.0	No	0.0		
5/5/2014	high	2	No	0.0	**Yes**	**0.5**		
5/12/2014	medium	1	No	0.0	No	0.0		
5/13/2014	medium	1	No	0.0	No	0.0		
5/14/2014	medium	1	No	0.0	No	0.0		
5/19/2014	high	2	No	0.0	No	0.0		
5/20/2014	high	2	No	0.0	No	0.0		
5/21/2014	medium	1	No	0.0	No	0.0		
5/27/2014	low	0	No	0.0	No	0.0		
6/2/2014	high	2	No	0.0	No	0.0		
6/9/2014	low	0	No	0.0	No	0.0		
6/10/2014	medium	1	No	0.0	No	0.0		
6/16/2014	high	2	No	0.0	No	0.0		
6/17/2014	high	2	No	0.0	No	0.0		
6/18/2014	high	2	No	0.0	No	0.0		
6/23/2014	low	0	No	0.0	No	0.0		
6/24/2014	low	0	No	0.0	**Yes**	**1.0**		
6/30/2014	high	2	No	0.0	No	0.0		
7/72014	medium	1	No	0.0	No	0.0		
7/8/2014	medium	1	No	0.0	No	0.0		
7/14/2014	high	2	No	0.0	No	0.0		
7/15/2014	high	2	No	0.0	No	0.0		
7/21/2014	low	0	No	0.0	No	0.0		
7/25/2014	medium	1	No	0.0	No	0.0		
7/28/2014	high	2	No	0.0	No	0.0		
7/30/2014	low	0	No	0.0	No	0.0		
8/4/2014	medium	1	No	0.0	No	0.0		
8/11/2014	medium	1	No	0.0	No	0.0		
8/12/2014	high	2	No	0.0	No	0.0		
8/13/2014	high	2	No	0.0	No	0.0		
8/18/2014	low	0	No	0.0	No	0.0		
8/20/2014	medium	1	No	0.0	No	0.0		
8/25/2014	high	2	No	0.0	No	0.0		
9/2/2014	low	0	No	0.0	No	0.0		
9/8/2014	medium	1	No	0.0	No	0.0		
9/9/2014	high	2	No	0.0	No	0.0		
9/10/2014	high	2	No	0.0	No	0.0		
9/16/2014	medium	1	No	0.0	No	0.0		
9/17/2014	medium	1	No	0.0	No	0.0		
9/22/2014	medium	1	No	0.0	No	0.0		
9/29/2014	high	2	No	0.0	No	0.0		
10/6/2014	medium	1	No	0.0	No	0.0		
10/9/2014	high	2	No	0.0	No	0.0		
10/14/2014	high	2	No	0.0	No	0.0		
10/15/2014	high	2	No	0.0	No	0.0		
10/20/2014	medium	1	No	0.0	No	0.0		
10/21/2014	medium	1	No	0.0	No	0.0		
10/27/2014	high	2	No	0.0	No	0.0		
10/28/2014	high	2	No	0.0	No	0.0		
11/3/2014	medium	1	No	0.0	No	0.0		
11/10/2014	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
11/17/2014	medium	1	No	0.0	No	0.0		
11/18/2014	medium	1	No	0.0	No	0.0		
11/19/2014	medium	1	No	0.0	No	0.0		
11/24/2014	high	2	No	0.0	No	0.0		
12/1/2014	high	2	No	0.0	No	0.0		
12/2/2014	high	2	No	0.0	No	0.0		
12/3/2014	medium	1	No	0.0	No	0.0		
12/4/2014	high	2	No	0.0	No	0.0		
12/8/2014	high	2	No	0.0	No	0.0		
12/9/2014	high	2	No	0.0	No	0.0		
12/10/2014	high	2	No	0.0	No	0.0		
12/15/2014	high	2	No	0.0	No	0.0		
12/16/2014	high	2	No	0.0	No	0.0		
12/17/2014	high	2	No	0.0	No	0.0		
12/22/2014	high	2	No	0.0	No	0.0		
12/29/2014	high	2	No	0.0	No	0.0		
1/5/2015	high	2	No	0.0	No	0.0		
1/12/2015	high	2	No	0.0	No	0.0		
1/13/2015	high	2	No	0.0	No	0.0		
1/14/2015	high	2	No	0.0	No	0.0		
1/20/2015	high	2	No	0.0	No	0.0		
1/26/2015	high	2	No	0.0	No	0.0		
1/27/2015	high	2	No	0.0	No	0.0		
2/3/2015	high	2	No	0.0	No	0.0		
2/4/2015	medium	1	No	0.0	No	0.0		
2/9/2015	high	2	No	0.0	No	0.0		
2/10/2015	high	2	No	0.0	No	0.0		
2/11/2015	high	2	No	0.0	No	0.0		
2/17/2015	medium	1	No	0.0	No	0.0		
2/18/2015	medium	1	No	0.0	No	0.0		
2/23/2015	high	2	No	0.0	No	0.0		
2/27/2015	high	2	No	0.0	No	0.0		
3/2/2015	medium	1	No	0.0	No	0.0		
3/9/2015	high	2	No	0.0	No	0.0		
3/16/2015	medium	1	No	0.0	No	0.0		
3/17/2015	medium	1	No	0.0	No	0.0		
3/18/2015	high	2	No	0.0	No	0.0		
3/19/2015	high	2	No	0.0	No	0.0		
3/23/2015	high	2	No	0.0	**Yes**	**0.5**		
3/24/2015	high	2	No	0.0	No	0.0		
3/25/2015	high	2	No	0.0	No	0.0		
3/30/2015	medium	1	No	0.0	No	0.0		
4/1/2015	medium	1	No	0.0	No	0.0		
4/6/2015	high	2	No	0.0	No	0.0		
4/7/2015	high	2	No	0.0	No	0.0		
4/13/2015	medium	1	No	0.0	**Yes**	**0.5**		
4/14/2015	low	0	No	0.0	No	0.0		
4/15/2015	low	0	No	0.0	No	0.0		
4/20/2015	high	2	No	0.0	No	0.0		
4/21/2015	high	2	No	0.0	No	0.0		
4/27/2015	medium	1	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
4/28/2015	medium	1	No	0.0	No	0.0		
5/4/2015	medium	1	No	0.0	No	0.0		
5/5/2015	high	2	No	0.0	No	0.0		
5/12/2015	high	2	No	0.0	No	0.0		
5/13/2015	medium	1	No	0.0	No	0.0		
5/14/2015	medium	1	No	0.0	No	0.0		
5/18/2015	high	2	No	0.0	No	0.0		
5/26/2015	low	0	No	0.0	No	0.0		
6/1/2015	low	0	No	0.0	No	0.0		
6/8/2015	high	2	No	0.0	No	0.0		
6/9/2015	high	2	No	0.0	No	0.0		
6/10/2015	high	2	No	0.0	No	0.0		
6/15/2015	medium	1	No	0.0	No	0.0		
6/16/2015	low	0	No	0.0	No	0.0		
6/17/2015	medium	1	No	0.0	No	0.0		
6/22/2015	medium	1	No	0.0	No	0.0		
6/29/2015	low	0	No	0.0	No	0.0		
7/6/2015	high	2	No	0.0	No	0.0		
7/13/2015	low	0	No	0.0	No	0.0		
7/14/2015	low	0	No	0.0	No	0.0		
7/15/2015	low	0	No	0.0	No	0.0		
7/20/2015	high	2	No	0.0	No	0.0		
7/21/2015	high	2	No	0.0	No	0.0		
7/22/2015	medium	1	No	0.0	No	0.0		
7/27/2015	low	0	No	0.0	No	0.0		
7/28/2015	low	0	No	0.0	No	0.0		
7/29/2015	low	0	No	0.0	No	0.0		
8/3/2015	high	2	No	0.0	No	0.0		
8/10/2015	low	0	No	0.0	No	0.0		
8/11/2015	low	0	No	0.0	No	0.0		
8/17/2015	high	2	No	0.0	No	0.0		
8/24/2015	low	0	No	0.0	No	0.0		
8/31/2015	high	2	No	0.0	No	0.0		
9/1/2015	high	2	No	0.0	No	0.0		
9/8/2015	low	0	No	0.0	No	0.0		
9/14/2015	high	2	No	0.0	No	0.0		
9/15/2015	high	2	No	0.0	No	0.0		
9/16/2015	high	2	No	0.0	No	0.0		
9/17/2015	high	2	No	0.0	No	0.0		
9/21/2015	medium	1	No	0.0	**Yes**	**0.5**		
9/28/2015	high	2	No	0.0	No	0.0		
9/29/2015	high	2	No	0.0	No	0.0		
10/5/2015	medium	1	No	0.0	No	0.0		
10/8/2015	low	0	No	0.0	No	0.0		
10/12/2015	high	2	No	0.0	No	0.0		
10/13/2015	high	2	No	0.0	No	0.0		
10/14/2015	high	2	No	0.0	No	0.0		
10/19/2015	high	2	No	0.0	No	0.0		
10/20/2015	high	2	No	0.0	No	0.0		
10/26/2015	high	2	No	0.0	No	0.0		
11/2/2015	high	2	No	0.0	No	0.0		
11/10/2015	medium	1	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
11/11/2015	medium	1	No	0.0	No	0.0		
11/13/2015	high	2	No	0.0	No	0.0		
11/16/2015	high	2	No	0.0	No	0.0		
11/17/2015	high	2	No	0.0	No	0.0		
11/18/2015	high	2	No	0.0	No	0.0		
11/23/2015	medium	1	No	0.0	No	0.0		
11/30/2015	high	2	No	0.0	No	0.0		
12/2/2015	medium	1	No	0.0	No	0.0		
12/3/2015	medium	1	No	0.0	No	0.0		
12/7/2015	high	2	No	0.0	No	0.0		
12/9/2015	high	2	No	0.0	No	0.0		
12/10/2015	high	2	No	0.0	No	0.0		
12/14/2015	high	2	No	0.0	No	0.0		
12/15/2015	high	2	No	0.0	No	0.0		
12/16/2015	high	2	No	0.0	No	0.0		
12/21/2015	high	2	No	0.0	No	0.0		
12/28/2015	high	2	No	0.0	No	0.0		
1/4/2016	high	2	No	0.0	No	0.0		
1/11/2016	high	2	No	0.0	No	0.0		
1/12/2016	high	2	No	0.0	No	0.0		
1/13/2016	high	2	No	0.0	No	0.0		
1/19/2016	high	2	No	0.0	No	0.0		
1/20/2016	medium	2	No	0.0	No	0.0		
1/25/2016	high	2	No	0.0	No	0.0		
2/1/2016	high	2	No	0.0	No	0.0		
2/8/2016	high	2	No	0.0	No	0.0		
2/9/2016	high	2	No	0.0	No	0.0		
2/10/2016	high	2	No	0.0	No	0.0		
2/16/2016	high	2	No	0.0	No	0.0		
2/22/2016	medium	1	No	0.0	No	0.0		
2/23/2016	high	2	No	0.0	No	0.0		
2/29/2016	high	2	No	0.0	**Yes**	**0.5**		
3/7/2016	high	2	No	0.0	No	0.0		
3/8/2016	high	2	No	0.0	No	0.0		
3/9/2016	high	2	No	0.0	No	0.0		
3/10/2016	high	2	No	0.0	No	0.0		
3/14/2016	high	2	No	0.0	No	0.0		
3/15/2016	high	2	No	0.0	No	0.0		
3/16/2016	high	2	No	0.0	No	0.0		
3/21/2016	high	2	No	0.0	No	0.0		
3/22/2016	high	2	No	0.0	No	0.0		
3/29/2016	high	2	No	0.0	No	0.0		
3/30/2016	high	2	No	0.0	No	0.0		
3/31/2016	high	2	No	0.0	No	0.0		
4/4/2016	medium	1	No	0.0	No	0.0		
4/5/2016	medium	1	No	0.0	No	0.0		
4/11/2016	high	2	No	0.0	No	0.0		
4/12/2016	high	2	No	0.0	No	0.0		
4/13/2016	medium	1	No	0.0	No	0.0		
4/18/2016	medium	1	No	0.0	No	0.0		
4/19/2016	medium	1	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
4/20/2016	medium	1	No	0.0	No	0.0		
4/25/2016	high	2	No	0.0	**Yes**	**0.5**		
4/26/2016	high	2	No	0.0	No	0.0		
5/2/2016	medium	1	No	0.0	No	0.0		
5/3/2016	medium	1	No	0.0	No	0.0		
5/4/2016	medium	1	No	0.0	No	0.0		
5/9/2016	high	2	No	0.0	No	0.0		
5/10/2016	high	2	No	0.0	No	0.0		
5/11/2016	high	2	No	0.0	No	0.0		
5/16/2016	medium	1	No	0.0	No	0.0		
5/17/2016	medium	1	No	0.0	No	0.0		
5/18/2016	medium	1	No	0.0	No	0.0		
5/23/2016	high	2	No	0.0	No	0.0		
5/24/2016	high	2	No	0.0	No	0.0		
5/31/2016	low	0	No	0.0	No	0.0		
6/7/2016	high	2	No	0.0	No	0.0		
6/8/2016	high	2	No	0.0	No	0.0		
6/9/2016	high	2	No	0.0	No	0.0		
6/13/2016	low	0	No	0.0	No	0.0		
6/14/2016	low	0	No	0.0	No	0.0		
6/15/2016	medium	1	No	0.0	No	0.0		
6/20/2016	medium	1	No	0.0	No	0.0		
6/26/2016	medium	1	No	0.0	**Yes**	**0.5**		
7/6/2016	medium	1	No	0.0	No	0.0		
7/11/2016	medium	1	No	0.0	No	0.0		
7/12/2016	medium	1	No	0.0	No	0.0		
7/21/2016	high	2	No	0.0	No	0.0		
7/25/2016	high	2	No	0.0	No	0.0		
8/2/2016	low	0	No	0.0	No	0.0		
8/8/2016	high	2	No	0.0	No	0.0		
8/15/2016	low	0	No	0.0	No	0.0		
8/17/2016	medium	1	No	0.0	No	0.0		
8/18/2016	medium	1	No	0.0	No	0.0		
8/22/2016	high	2	No	0.0	No	0.0		
8/23/2016	high	2	No	0.0	No	0.0		
8/24/2016	high	2	No	0.0	No	0.0		
8/25/2016	high	2	No	0.0	No	0.0		
8/29/2016	low	0	No	0.0	No	0.0		
9/6/2016	high	2	No	0.0	No	0.0		
9/8/2016	high	2	No	0.0	No	0.0		
9/9/2016	high	2	No	0.0	No	0.0		
9/12/2016	low	0	No	0.0	No	0.0		
9/19/2016	high	2	No	0.0	No	0.0		
9/20/2016	high	2	No	0.0	No	0.0		
9/21/2016	high	2	No	0.0	No	0.0		
9/26/2016	low	0	No	0.0	No	0.0		
9/28/2016	medium	1	No	0.0	No	0.0		
9/29/2016	medium	1	No	0.0	No	0.0		
10/3/2016	high	2	No	0.0	**Yes**	**0.5**		
10/6/2016	high	2	No	0.0	No	0.0		
10/10/2016	high	2	No	0.0	No	0.0		
10/17/2016	high	2	No	0.0	No	0.0		

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
10/18/2016	high	2	No	0.0	No	0.0		
10/19/2016	high	2	No	0.0	**Yes**	**0.5**		
10/24/2016	medium	1	No	0.0	No	0.0		
10/26/2016	medium	1	No	0.0	No	0.0	**Yes**	**1.0**
10/27/2016	medium	1	No	0.0	No	0.0	**Yes**	**1.0**
10/31/2016	high	2	No	0.0	No	0.0	No	0.0
11/1/2016	high	2	No	0.0	No	0.0	No	0.0
11/2/2016	high	2	No	0.0	No	0.0	**Yes**	**1.0**
11/7/2016	high	2	No	0.0	No	0.0	**Yes**	**1.0**
11/9/2016	high	2	No	0.0	No	0.0	**Yes**	**1.0**
11/14/2016	high	2	No	0.0	No	0.0	**Yes**	**1.0**
11/15/2016	high	2	No	0.0	No	0.0	**Yes**	**1.0**
11/16/2016	high	2	No	0.0	No	0.0	**Yes**	**1.0**
11/21/2016	high	2	No	0.0	No	0.0	**Yes**	**1.0**
11/22/2016	high	2	No	0.0	No	0.0	**Yes**	**1.0**
11/28/2016	high	2	No	0.0	No	0.0	No	0.0
12/5/2016	high	2	No	0.0	No	0.0	No	0.0
12/6/2016	high	2	No	0.0	No	0.0	No	0.0
12/7/2016	medium	1	No	0.0	No	0.0	No	0.0
12/12/2016	medium	1	No	0.0	No	0.0	No	0.0
12/13/2016	high	2	No	0.0	No	0.0	No	0.0
12/14/2016	medium	1	No	0.0	No	0.0	No	0.0
12/19/2016	high	2	No	0.0	No	0.0	No	0.0
12/27/2016	high	2	No	0.0	No	0.0	No	0.0
1/2/2017	high	2	No	0.0	No	0.0	No	0.0
1/9/2017	medium	1	No	0.0	No	0.0	No	0.0
1/17/2017	high	2	No	0.0	No	0.0	No	0.0
1/18/2017	high	2	No	0.0	No	0.0	No	0.0
1/23/2017	high	2	No	0.0	No	0.0	No	0.0
1/24/2017	medium	1	No	0.0	**Yes**	**0.5**	**Yes**	**0.5**
1/27/2017	medium	1	No	0.0	No	0.0	No	0.0
1/30/2017	high	2	No	0.0	No	0.0	No	0.0
2/7/2017	medium	1	No	0.0	No	0.0	No	0.0
2/8/2017	medium	1	No	0.0	No	0.0	No	0.0
2/13/2017	high	2	No	0.0	No	0.0	No	0.0
2/14/2017	high	2	No	0.0	No	0.0	No	0.0
2/15/2017	high	2	No	0.0	No	0.0	No	0.0
2/21/2017	medium	1	No	0.0	No	0.0	No	0.0
2/27/2017	high	2	No	0.0	No	0.0	No	0.0
3/6/2017	high	2	No	0.0	No	0.0	No	0.0
3/7/2017	high	2	No	0.0	No	0.0	No	0.0
3/8/2017	high	2	No	0.0	No	0.0	No	0.0
3/13/2017	high	2	No	0.0	**Yes**	**0.5**	**Yes**	**0.5**
3/14/2017	high	2	No	0.0	No	0.0	No	0.0
3/15/2017	high	2	No	0.0	No	0.0	No	0.0
3/20/2017	medium	1	No	0.0	No	0.0	No	0.0
3/22/2017	medium	1	No	0.0	No	0.0	No	0.0
3/27/2017	high	2	No	0.0	No	0.0	No	0.0
4/3/2017	medium	1	No	0.0	No	0.0	No	0.0
4/5/2017	medium	1	No	0.0	No	0.0	No	0.0

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
4/10/2017	high	2	No	0.0	No	0.0	No	0.0
4/11/2017	high	2	No	0.0	No	0.0	No	0.0
4/12/2017	low	0	No	0.0	No	0.0	No	0.0
4/17/2017	medium	1	No	0.0	No	0.0	No	0.0
4/24/2017	medium	1	No	0.0	No	0.0	No	0.0
5/1/2017	high	2	No	0.0	No	0.0	No	0.0
5/8/2017	low	0	No	0.0	No	0.0	No	0.0
5/15/2017	high	2	No	0.0	No	0.0	No	0.0
5/16/2017	high	2	No	0.0	No	0.0	No	0.0
5/17/2017	high	2	No	0.0	No	0.0	No	0.0
5/22/2017	low	0	No	0.0	No	0.0	No	0.0
5/23/2017	low	0	No	0.0	No	0.0	No	0.0
5/30/2017	high	2	No	0.0	No	0.0	No	0.0
6/5/2017	medium	1	No	0.0	No	0.0	No	0.0
6/6/2017	medium	1	No	0.0	No	0.0	No	0.0
6/7/2017	medium	1	No	0.0	No	0.0	No	0.0
6/12/2017	high	2	No	0.0	**Yes**	**0.5**	**Yes**	**0.5**
6/13/2017	high	2	No	0.0	**Yes**	**0.5**	No	0.0
6/14/2017	high	2	No	0.0	No	0.0	No	0.0
6/19/2017	low	0	No	0.0	No	0.0	No	0.0
6/26/2017	high	2	No	0.0	**Yes**	**0.5**	No	0.0
6/27/2017	high	2	No	0.0	No	0.0	No	0.0
7/6/2017	low	0	No	0.0	No	0.0	No	0.0
7/10/2017	medium	1	No	0.0	No	0.0	No	0.0
7/11/2017	medium	1	No	0.0	No	0.0	No	0.0
7/17/2017	low	0	No	0.0	No	0.0	No	0.0
7/18/2017	low	0	No	0.0	No	0.0	No	0.0
7/19/2017	low	0	No	0.0	No	0.0	No	0.0
7/20/2017	low	0	No	0.0	No	0.0	No	0.0
7/24/2017	high	2	No	0.0	No	0.0	No	0.0
7/31/2017	low	0	No	0.0	No	0.0	No	0.0
8/2/2017	medium	1	No	0.0	No	0.0	No	0.0
8/3/2017	low	0	No	0.0	No	0.0	No	0.0
8/4/2017	low	0	No	0.0	No	0.0	No	0.0
8/5/2017	low	0	No	0.0	No	0.0	No	0.0
8/7/2017	medium	1	No	0.0	No	0.0	No	0.0
8/8/2017	high	2	No	0.0	No	0.0	No	0.0
8//9/2017	high	2	No	0.0	No	0.0	No	0.0
8/10/2017	high	2	No	0.0	No	0.0	No	0.0
8/14/2017	medium	1	No	0.0	No	0.0	No	0.0
8/18/2017	medium	1	No	0.0	No	0.0	No	0.0
8/23/2017	high	2	No	0.0	No	0.0	No	0.0
8/24/2017	high	2	No	0.0	No	0.0	No	0.0
8/28/2017	high	2	No	0.0	No	0.0	No	0.0
8/29/2017	high	2	No	0.0	No	0.0	No	0.0
9/5/2017	medium	1	No	0.0	No	0.0	No	0.0
9/11/2017	medium	1	No	0.0	No	0.0	No	0.0
9/12/2017	medium	1	No	0.0	No	0.0	No	0.0
9/13/2017	medium	1	No	0.0	No	0.0	No	0.0
9/18/2017	low	0	No	0.0	No	0.0	No	0.0
9/19/2017	medium	1	No	0.0	No	0.0	No	0.0
9/20/2017	high	2	No	0.0	No	0.0	No	0.0

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
9/25/2017	high	2	No	0.0	No	0.0	No	0.0
9/27/2017	high	2	No	0.0	No	0.0	No	0.0
10/2/2017	low	0	No	0.0	No	0.0	No	0.0
10/3/2017	low	0	No	0.0	No	0.0	No	0.0
10/5/2017	low	0	No	0.0	No	0.0	No	0.0
10/9/2017	high	2	No	0.0	No	0.0	No	0.0
10/10/2017	high	2	No	0.0	No	0.0	No	0.0
10/11/2017	high	2	No	0.0	No	0.0	No	0.0
10/12/2017	high	2	No	0.0	No	0.0	No	0.0
10/16/2017	low	0	No	0.0	No	0.0	No	0.0
10/17/2017	low	0	No	0.0	No	0.0	No	0.0
10/18/2017	low	0	No	0.0	No	0.0	No	0.0
10/19/2017	high	2	No	0.0	No	0.0	No	0.0
10/24/2017	high	2	No	0.0	No	0.0	No	0.0
10/25/2017	high	2	No	0.0	No	0.0	No	0.0
10/26/2017	high	2	No	0.0	No	0.0	No	0.0
10/30/2017	medium	1	No	0.0	No	0.0	No	0.0
11/2/2017	medium	1	No	0.0	No	0.0	No	0.0
11/6/2017	high	2	No	0.0	No	0.0	No	0.0
11/13/2017	medium	1	No	0.0	No	0.0	No	0.0
11/14/2017	low	0	No	0.0	No	0.0	No	0.0
11/15/2017	medium	1	No	0.0	No	0.0	**Yes**	**1.0**
11/20/2017	high	2	No	0.0	**Yes**	**0.5**	No	0.0
11/21/2017	high	2	No	0.0	No	0.0	No	0.0
11/22/2017	medium	1	No	0.0	No	0.0	No	0.0
11/27/2017	medium	1	No	0.0	No	0.0	**Yes**	**0.5**
11/30/2017	medium	1	No	0.0	No	0.0	**Yes**	**0.5**
12/4/2017	high	2	No	0.0	No	0.0	No	0.0
12/5/2017	high	2	No	0.0	No	0.0	No	0.0
12/11/2017	medium	1	No	0.0	No	0.0	No	0.0
12/12/2017	medium	1	No	0.0	No	0.0	No	0.0
12/13/2017	medium	1	No	0.0	No	0.0	No	0.0
12/15/2017	medium	1	No	0.0	No	0.0	No	0.0
12/18/2017	high	2	No	0.0	No	0.0	No	0.0
12/19/2017	high	2	No	0.0	No	0.0	No	0.0
12/20/2017	high	2	No	0.0	No	0.0	No	0.0
12/26/2017	high	2	No	0.0	No	0.0	No	0.0
1/2/2018	high	2	No	0.0	No	0.0	No	0.0
1/8/2018	high	2	No	0.0	No	0.0	No	0.0
1/9/2018	high	2	No	0.0	No	0.0	No	0.0
1/11/2018	high	2	No	0.0	No	0.0	No	0.0
1/16/2018	high	2	No	0.0	No	0.0	No	0.0
1/17/2018	medium	1	No	0.0	No	0.0	No	0.0
1/18/2018	high	2	No	0.0	No	0.0	No	0.0
1/22/2018	high	2	No	0.0	No	0.0	No	0.0
1/29/2018	high	2	No	0.0	No	0.0	No	0.0
2/5/2018	high	2	No	0.0	No	0.0	No	0.0
2/12/2018	medium	1	No	0.0	No	0.0	No	0.0
2/13/2018	medium	1	No	0.0	No	0.0	No	0.0
2/14/2018	medium	1	No	0.0	No	0.0	No	0.0
2/20/2018	high	2	No	0.0	No	0.0	No	0.0

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
2/21/2018	medium	1	No	0.0	No	0.0	No	0.0
2/22/2018	medium	1	No	0.0	No	0.0	No	0.0
2/26/2018	medium	1	No	0.0	No	0.0	No	0.0
3/1/2018	medium	1	No	0.0	No	0.0	No	0.0
3/5/2018	high	2	No	0.0	No	0.0	No	0.0
3/12/2018	high	2	No	0.0	**Yes**	**0.5**	No	0.0
3/13/2018	high	2	No	0.0	No	0.0	No	0.0
3/14/2018	high	2	No	0.0	No	0.0	No	0.0
3/19/2018	high	2	No	0.0	No	0.0	No	0.0
3/22/2018	high	2	No	0.0	No	0.0	No	0.0
3/23/2018	high	2	No	0.0	No	0.0	No	0.0
3/26/2018	medium	1	No	0.0	No	0.0	No	0.0
3/28/2018	medium	1	No	0.0	No	0.0	No	0.0
4/2/2018	high	2	No	0.0	No	0.0	No	0.0
4/9/2018	high	2	No	0.0	No	0.0	No	0.0
4/10/2018	medium	1	No	0.0	No	0.0	No	0.0
4/16/2018	high	2	No	0.0	No	0.0	No	0.0
4/17/2018	high	2	No	0.0	No	0.0	No	0.0
4/18/2018	high	2	No	0.0	No	0.0	No	0.0
4/23/2018	medium	1	No	0.0	No	0.0	No	0.0
4/25/2018	medium	1	No	0.0	No	0.0	No	0.0
4/26/2018	medium	1	No	0.0	No	0.0	No	0.0
4/27/2018	medium	1	No	0.0	No	0.0	No	0.0
4/30/2018	medium	1	No	0.0	No	0.0	No	0.0
5/2/2018	medium	1	No	0.0	**Yes**	**0.5**	No	0.0
5/7/2018	high	2	No	0.0	No	0.0	No	0.0
5/10/2018	high	2	No	0.0	No	0.0	No	0.0
5/14/2018	medium	1	No	0.0	No	0.0	No	0.0
5/15/2018	high	2	No	0.0	No	0.0	No	0.0
5/16/2018	high	2	No	0.0	No	0.0	No	0.0
5/17/2018	high	2	No	0.0	No	0.0	No	0.0
5/21/2018	medium	1	No	0.0	**Yes**	**0.5**	No	0.0
5/31/2018	high	2	No	0.0	No	0.0	No	0.0
6/4/2018	medium	1	No	0.0	No	0.0	No	0.0
6/5/2018	medium	1	No	0.0	No	0.0	No	0.0
6/11/2018	low	0	No	0.0	No	0.0	No	0.0
6/12/2018	low	0	No	0.0	No	0.0	No	0.0

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
6/13/2018	low	0	No	0.0	No	0.0	No	0.0
6/18/2018	high	2	No	0.0	No	0.0	No	0.0
6/19/2018	high	2	No	0.0	No	0.0	No	0.0
6/20/2018	medium	1	No	0.0	No	0.0	No	0.0
6/25/2018	low	0	No	0.0	No	0.0	No	0.0
7/6/2018	medium	1	No	0.0	No	0.0	No	0.0
7/11/2018	low	0	No	0.0	No	0.0	No	0.0
7/12/2018	medium	1	No	0.0	No	0.0	No	0.0
7/16/2018	high	2	No	0.0	No	0.0	No	0.0
7/17/2018	high	2	No	0.0	No	0.0	No	0.0
7/18/2018	high	2	No	0.0	No	0.0	No	0.0
7/23/2018	low	0	No	0.0	No	0.0	No	0.0
7/26/2018	low	0	No	0.0	No	0.0	No	0.0
7/31/2018	high	2	No	0.0	**Yes**	**0.5**	No	0.0
8/6/2018	low	0	No	0.0	No	0.0	No	0.0
8/14/2018	high	2	No	0.0	No	0.0	No	0.0
8/15/2018	high	2	No	0.0	**Yes**	**0.5**	No	0.0
8/21/2018	low	0	No	0.0	No	0.0	No	0.0
8/27/2018	high	2	No	0.0	No	0.0	No	0.0
8/28/2018	high	2	No	0.0	No	0.0	No	0.0
8/31/2018	medium	1	No	0.0	No	0.0	No	0.0
9/4/2018	low	0	No	0.0	No	0.0	No	0.0
9/10/2018	high	2	No	0.0	**Yes**	**0.5**	**Yes**	**0.5**
9/11/2018	high	2	No	0.0	No	0.0	No	0.0
9/12/2018	high	2	No	0.0	No	0.0	No	0.0
9/17/2018	low	0	No	0.0	No	0.0	No	0.0
9/18/2018	low	0	No	0.0	No	0.0	No	0.0
9/19/2018	low	0	No	0.0	No	0.0	No	0.0
9/24/2018	medium	1	No	0.0	No	0.0	No	0.0
9/26/2018	high	2	No	0.0	No	0.0	No	0.0
9/27/2018	high	2	No	0.0	No	0.0	No	0.0
10/1/2018	medium	1	No	0.0	No	0.0	No	0.0
10/8/2018	medium	1	No	0.0	No	0.0	No	0.0
10/15/2018	high	2	No	0.0	No	0.0	No	0.0
10/16/2018	high	2	No	0.0	No	0.0	No	0.0
10/17/2018	medium	1	No	0.0	No	0.0	No	0.0
10/23/2018	medium	1	No	0.0	No	0.0	No	0.0
10/24/2018	high	2	No	0.0	No	0.0	No	0.0
10/30/2018	high	2	No	0.0	No	0.0	No	0.0
11/5/2018	medium	1	No	0.0	No	0.0	No	0.0
11/8/2018	high	2	No	0.0	No	0.0	No	0.0
11/12/2018	high	2	No	0.0	No	0.0	No	0.0
11/13/2018	high	2	No	0.0	No	0.0	No	0.0
11/14/2018	high	2	No	0.0	No	0.0	No	0.0
11/19/2018	medium	1	No	0.0	No	0.0	No	0.0
11/26/2018	high	2	No	0.0	No	0.0	No	0.0
11/27/2018	high	2	No	0.0	No	0.0	No	0.0
12/5/2018	high	2	No	0.0	No	0.0	No	0.0
12/6/2018	high	2	No	0.0	No	0.0	No	0.0

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
12/10/2018	high	2	No	0.0	No	0.0	No	0.0
12/11/2018	high	2	No	0.0	**Yes**	**0.5**	**Yes**	**0.5**
12/12/2018	high	2	No	0.0	No	0.0	No	0.0
12/17/2018	medium	1	No	0.0	No	0.0	**Yes**	**1.0**
12/18/2018	medium	1	No	0.0	No	0.0	**Yes**	**0.5**
12/19/2018	medium	1	No	0.0	No	0.0	**Yes**	**1.0**
12/21/2018	high	2	No	0.0	No	0.0	No	0.0
12/26/2018	high	2	No	0.0	No	0.0	No	0.0
1/2/2019	medium	1	No	0.0	No	0.0	No	0.0
1/7/2019	high	2	No	0.0	No	0.0	No	0.0
1/14/2019	high	2	No	0.0	No	0.0	No	0.0
1/15/2019	high	2	No	0.0	No	0.0	No	0.0
1/16/2019	high	2	No	0.0	**Yes**	**0.5**	**Yes**	**0.5**
1/22/2019	high	2	No	0.0	No	0.0	No	0.0
1/28/2019	high	2	No	0.0	No	0.0	No	0.0
2/6/2019	high	2	No	0.0	No	0.0	No	0.0
2/13/2019	high	2	No	0.0	No	0.0	No	0.0
2/14/2019	high	2	No	0.0	No	0.0	No	0.0
2/15/2019	high	2	No	0.0	No	0.0	No	0.0
2/18/2019	medium	1	No	0.0	No	0.0	**Yes**	**0.5**
2/19/2019	low	0	No	0.0	No	0.0	No	0.0
2/26/2019	high	2	No	0.0	**Yes**	**0.5**	**Yes**	**0.5**
2/27/2019	high	2	No	0.0	No	0.0	No	0.0
3/4/2019	high	2	No	0.0	No	0.0	No	0.0
3/11/2019	high	2	No	0.0	No	0.0	No	0.0
3/12/2019	high	2	No	0.0	No	0.0	No	0.0
3/13/2019	high	2	No	0.0	No	0.0	No	0.0
3/18/20119	medium	1	No	0.0	No	0.0	No	0.0
3/19/2019	medium	1	No	0.0	**Yes**	**1.0**	No	0.0
3/20/2019	medium	1	No	0.0	No	0.0	No	0.0
3/25/2019	high	2	No	0.0	No	0.0	No	0.0
4/1/2019	medium	1	No	0.0	No	0.0	No	0.0
4/8/2019	high	2	No	0.0	**Yes**	**0.5**	**Yes**	**1.0**
4/10/2019	high	2	No	0.0	No	0.0	No	0.0
4/17/2019	medium	1	No	0.0	No	0.0	No	0.0
4/22/2019	high	2	No	0.0	**Yes**	**0.5**	No	0.0
4/23/2019	high	2	No	0.0	No	0.0	No	0.0
4/24/2019	medium	1	No	0.0	No	0.0	No	0.0
4/29/2019	medium	1	No	0.0	No	0.0	No	0.0
5/3/2019	low	0	No	0.0	No	0.0	No	0.0
5/6/2019	high	2	No	0.0	**Yes**	**0.5**	No	0.0
5/8/2019	high	2	No	0.0	No	0.0	No	0.0
5/13/2019	low	0	No	0.0	No	0.0	No	0.0
5/14/2019	low	0	No	0.0	No	0.0	No	0.0
5/15/2019	low	0	No	0.0	No	0.0	No	0.0
5/20/2019	high	2	No	0.0	**Yes**	**1.0**	**Yes**	**0.5**
5/28/2019	low	0	No	0.0	No	0.0	No	0.0
5/29/2019	low	0	No	0.0	No	0.0	No	0.0
5/30/2019	low	0	No	0.0	No	0.0	No	0.0
6/3/2019	medium	1	No	0.0	No	0.0	No	0.0
6/10/2019	medium	1	No	0.0	No	0.0	No	0.0

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
6/11/2019	low	0	No	0.0	No	0.0	No	0.0
6/17/2019	medium	1	No	0.0	**Yes**	**0.5**	No	0.0
6/18/2019	medium	1	No	0.0	No	0.0	No	0.0
6/19/2019	high	2	No	0.0	No	0.0	No	0.0
6/24/2019	medium	1	No	0.0	No	0.0	No	0.0
7/1/2019	low	0	No	0.0	No	0.0	No	0.0
7/8/2019	high	2	No	0.0	No	0.0	No	0.0
7/9/2019	medium	1	No	0.0	**Yes**	**0.5**	No	0.0
7/10/2019	low	0	No	0.0	No	0.0	No	0.0
7/11/2019	low	0	No	0.0	No	0.0	No	0.0
7/22/2019	high	2	No	0.0	No	0.0	No	0.0
7/23/2019	high	2	No	0.0	No	0.0	No	0.0
7/24/2019	high	2	No	0.0	No	0.0	No	0.0
7/25/2019	high	2	No	0.0	No	0.0	No	0.0
7/26/2019	low	0	No	0.0	No	0.0	No	0.0
7/29/2019	low	0	No	0.0	No	0.0	No	0.0
7/30/2019	low	0	No	0.0	No	0.0	No	0.0
7/31/2019	low	0	No	0.0	No	0.0	No	0.0
8/5/2019	high	2	No	0.0	No	0.0	No	0.0
8/12/2019	low	0	No	0.0	No	0.0	No	0.0
8/13/2019	low	0	No	0.0	No	0.0	No	0.0
8/14/2019	medium	1	No	0.0	**Yes**	**0.5**	No	0.0
8/19/2019	high	2	No	0.0	No	0.0	**Yes**	**0.5**
8/26/2019	low	0	No	0.0	No	0.0	No	0.0
9/3/2019	medium	1	No	0.0	No	0.0	No	0.0
9/9/2019	low	0	No	0.0	No	0.0	No	0.0
9/10/2019	low	0	No	0.0	No	0.0	No	0.0
9/26/2019	medium	1	No	0.0	No	0.0	No	0.0
10/1/2019	high	2	No	0.0	No	0.0	No	0.0
10/8/2019	low	0	No	0.0	No	0.0	No	0.0
10/15/2019	high	2	No	0.0	No	0.0	No	0.0
10/16/2019	high	2	No	0.0	No	0.0	No	0.0
10/17/2019	high	2	No	0.0	No	0.0	No	0.0
10/22/2019	low	0	No	0.0	No	0.0	No	0.0
10/29/2019	high	2	No	0.0	No	0.0	No	0.0
11/5/2019	medium	1	No	0.0	No	0.0	No	0.0
11/12/2019	medium	1	No	0.0	No	0.0	No	0.0
11/20/2019	medium	1	No	0.0	No	0.0	No	0.0
11/25/2019	high	2	No	0.0	No	0.0	No	0.0
11/26/2019	medium	1	No	0.0	No	0.0	No	0.0
12/3/2019	medium	1	No	0.0	No	0.0	No	0.0
12/9/2019	high	2	No	0.0	No	0.0	No	0.0
12/10/2019	medium	1	No	0.0	No	0.0	No	0.0
12/11/2019	high	2	No	0.0	No	0.0	No	0.0
12/19/2019	medium	1	No	0.0	No	0.0	No	0.0
12/23/2019	low	0	No	0.0	No	0.0	No	0.0
12/27/2019	high	2	No	0.0	No	0.0	No	0.0
1/3/2020	medium	1	No	0.0	No	0.0	No	0.0
1/8/2020	medium	1	No	0.0	No	0.0	No	0.0
1/14/2020	high	2	No	0.0	No	0.0	No	0.0
1/17/2020	high	2	No	0.0	No	0.0	No	0.0

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
1/21/2020	low	0	No	0.0	No	0.0	No	0.0
1/23/2020	medium	1	No	0.0	No	0.0	No	0.0
1/28/2020	high	2	No	0.0	No	0.0	No	0.0
2/4/2020	medium	1	No	0.0	No	0.0	No	0.0
2/11/2020	high	2	No	0.0	No	0.0	No	0.0
2/14/2020	low	0	No	0.0	No	0.0	No	0.0
2/18/2020	low	0	No	0.0	No	0.0	No	0.0
2/20/2020	low	0	No	0.0	No	0.0	No	0.0
2/25/2020	high	2	No	0.0	No	0.0	No	0.0
3/3/2020	medium	1	No	0.0	No	0.0	No	0.0
3/10/2020	high	2	No	0.0	No	0.0	No	0.0
3/17/2020	medium	1	No	0.0	No	0.0	No	0.0
3/24/2020	high	2	No	0.0	No	0.0	No	0.0
3/25/2020	high	2	No	0.0	No	0.0	No	0.0
3/31/2020	medium	1	No	0.0	No	0.0	No	0.0
4/7/2020	high	2	No	0.0	No	0.0	No	0.0
4/14/2020	high	2	No	0.0	No	0.0	No	0.0
4/22/2020	medium	1	No	0.0	No	0.0	No	0.0
4/23/2020	high	2	No	0.0	No	0.0	No	0.0
4/28/2020	high	2	No	0.0	No	0.0	No	0.0
5/5/2020	medium	1	No	0.0	No	0.0	No	0.0
5/12/2020	high	2	No	0.0	No	0.0	No	0.0
5/19/2020	medium	1	No	0.0	No	0.0	No	0.0
5/26/2020	high	2	No	0.0	No	0.0	No	0.0
5/27/2020	high	2	No	0.0	No	0.0	No	0.0
5/28/2020	high	2	No	0.0	No	0.0	No	0.0
6/2/2020	low	0	No	0.0	No	0.0	No	0.0
6/9/2020	high	2	No	0.0	No	0.0	No	0.0
6/16/2020	medium	1	No	0.0	No	0.0	No	0.0
6/17/2020	low	0	No	0.0	No	0.0	No	0.0
6/23/2020	low	0	No	0.0	No	0.0	No	0.0
6/30/2020	low	0	No	0.0	No	0.0	No	0.0
7/7/2020	high	2	No	0.0	No	0.0	No	0.0
7/8/2020	medium	1	No	0.0	No	0.0	No	0.0
7/14/2020	low	0	No	0.0	No	0.0	No	0.0
7/21/2020	medium	1	No	0.0	No	0.0	No	0.0
7/22/2020	high	2	No	0.0	No	0.0	No	0.0
7/23/2020	high	2	No	0.0	No	0.0	No	0.0
7/28/2020	low	0	No	0.0	No	0.0	No	0.0
7/31/2020	low	0	No	0.0	No	0.0	No	0.0
8/4/2020	high	2	No	0.0	No	0.0	No	0.0
8/11/2020	medium	1	No	0.0	No	0.0	No	0.0
8/18/2020	low	0	No	0.0	No	0.0	No	0.0
8/20/2020	high	2	No	0.0	No	0.0	No	0.0
8/25/2020	medium	1	No	0.0	No	0.0	No	0.0
9/1/2020	medium	1	No	0.0	No	0.0	No	0.0
9/8/2020	medium	1	No	0.0	No	0.0	No	0.0
9/15/2020	low	0	No	0.0	No	0.0	No	0.0
9/22/2020	high	2	No	0.0	No	0.0	No	0.0
9/24/2020	medium	1	No	0.0	No	0.0	No	0.0
9/29/2020	medium	1	No	0.0	No	0.0	No	0.0
10/6/2020	high	2	No	0.0	No	0.0	No	0.0

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
10/13/2020	low	0	No	0.0	No	0.0	No	0.0
10/20/2020	high	2	No	0.0	No	0.0	No	0.0
10/21/2020	high	2	No	0.0	No	0.0	No	0.0
10/27/2020	low	0	No	0.0	**Yes**	**1.0**	No	0.0
11/3/2020	high	2	No	0.0	No	0.0	No	0.0
11/10/2020	medium	1	No	0.0	No	0.0	No	0.0
11/17/2020	high	2	No	0.0	No	0.0	No	0.0
11/18/2020	high	2	No	0.0	No	0.0	No	0.0
11/19/2020	high	2	No	0.0	No	0.0	No	0.0
11/24/2020	low	0	No	0.0	No	0.0	No	0.0
12/1/2020	high	2	No	0.0	No	0.0	No	0.0
12/8/2020	medium	1	No	0.0	No	0.0	No	0.0
12/15/2020	high	2	No	0.0	No	0.0	No	0.0
12/21/2020	high	2	No	0.0	No	0.0	No	0.0
12/22/2020	high	2	No	0.0	No	0.0	No	0.0
12/29/2020	medium	1	No	0.0	No	0.0	No	0.0
1/5/2021	high	2	No	0.0	No	0.0	No	0.0
1/12/2021	high	2	No	0.0	No	0.0	No	0.0
1/19/2021	high	2	No	0.0	No	0.0	No	0.0
1/20/2021	medium	1	No	0.0	No	0.0	No	0.0
1/26/2021	medium	1	No	0.0	No	0.0	No	0.0
2/2/2021	high	2	No	0.0	No	0.0	No	0.0
2/9/2021	medium	1	No	0.0	No	0.0	No	0.0
2/16/2021	high	2	No	0.0	No	0.0	No	0.0
2/18/2021	high	2	No	0.0	No	0.0	No	0.0
2/23/2021	medium	1	No	0.0	No	0.0	No	0.0
3/2/2021	medium	1	No	0.0	No	0.0	No	0.0
3/9/2021	medium	1	No	0.0	No	0.0	No	0.0
3/16/2021	high	2	No	0.0	No	0.0	No	0.0
3/23/2021	medium	1	No	0.0	No	0.0	No	0.0
3/30/2021	high	2	No	0.0	No	0.0	No	0.0
4/6/2021	medium	1	No	0.0	No	0.0	No	0.0
4/13/2021	high	2	No	0.0	No	0.0	No	0.0
4/20/2021	high	2	No	0.0	No	0.0	No	0.0
4/26/2021	medium	1	No	0.0	No	0.0	No	0.0
5/4/2021	medium	1	No	0.0	No	0.0	No	0.0
5/7/2021	medium	1	No	0.0	No	0.0	No	0.0
5/11/2021	low	0	No	0.0	No	0.0	No	0.0
5/18/2021	high	2	No	0.0	No	0.0	No	0.0
5/25/2021	low	0	No	0.0	No	0.0	No	0.0
6/1/2021	medium	1	No	0.0	No	0.0	No	0.0
6/8/2021	low	0	No	0.0	No	0.0	No	0.0
6/15/2021	high	2	No	0.0	No	0.0	No	0.0
6/22/2021	low	0	No	0.0	No	0.0	No	0.0
6/29/2021	high	2	No	0.0	No	0.0	No	0.0
7/6/2021	low	0	No	0.0	No	0.0	No	0.0
7/13/2021	high	2	No	0.0	No	0.0	No	0.0
7/20/2021	low	0	No	0.0	No	0.0	No	0.0
7/27/2021	high	2	No	0.0	No	0.0	No	0.0
8/3/2021	low	0	No	0.0	No	0.0	No	0.0
8/10/2021	high	2	No	0.0	**Yes**	**0.5**	No	0.0

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
8/17/2021	low	0	No	0.0	No	0.0	No	0.0
8/24/2021	high	2	No	0.0	No	0.0	No	0.0
8/25/2021	high	2	No	0.0	No	0.0	No	0.0
8/26/2021	high	2	No	0.0	No	0.0	No	0.0
9/7/2021	high	2	No	0.0	No	0.0	No	0.0
9/14/2021	low	0	No	0.0	No	0.0	No	0.0
9/15/2021	high	2	No	0.0	No	0.0	No	0.0
9/21/2021	high	2	No	0.0	No	0.0	No	0.0
9/28/2021	medium	1	No	0.0	No	0.0	No	0.0
10/5/2021	medium	1	No	0.0	No	0.0	No	0.0
10/12/2021	high	2	No	0.0	No	0.0	No	0.0
10/19/2021	low	0	No	0.0	No	0.0	No	0.0
10/21/2021	high	2	No	0.0	No	0.0	No	0.0
10/26/2021	high	2	No	0.0	No	0.0	No	0.0
11/2/2021	medium	1	No	0.0	No	0.0	No	0.0
11/5/2021	high	2	No	0.0	No	0.0	No	0.0
11/9/2021	high	2	No	0.0	No	0.0	No	0.0
11/16/2021	medium	1	No	0.0	No	0.0	No	0.0
11/18/2021	medium	1	No	0.0	No	0.0	No	0.0
11/23/2021	high	2	No	0.0	No	0.0	No	0.0
11/30/2021	low	0	No	0.0	No	0.0	No	0.0
12/7/2021	high	2	No	0.0	No	0.0	No	0.0
12/14/2021	medium	1	No	0.0	No	0.0	No	0.0
12/15/2021	medium	1	No	0.0	No	0.0	No	0.0
12/16/2021	medium	1	No	0.0	No	0.0	No	0.0
12/21/2021	high	2	No	0.0	No	0.0	No	0.0
12/28/2021	high	2	No	0.0	No	0.0	No	0.0
1/4/2022	high	2	No	0.0	No	0.0	No	0.0
1/11/2022	high	2	No	0.0	No	0.0	No	0.0
1/18/2022	high	2	No	0.0	No	0.0	No	0.0
1/20/2022	high	2	No	0.0	No	0.0	No	0.0
1/25/2022	high	2	No	0.0	No	0.0	No	0.0
2/8/2022	medium	1	No	0.0	No	0.0	No	0.0
2/15/2000	high	2	No	0.0	No	0.0	No	0.0
2/22/2022	medium	1	No	0.0	No	0.0	No	0.0
3/1/2022	low	0	No	0.0	No	0.0	No	0.0
3/8/2022	high	2	No	0.0	No	0.0	No	0.0
3/15/2022	high	2	No	0.0	No	0.0	No	0.0
3/16/2022	high	2	No	0.0	No	0.0	No	0.0
3/17/2022	high	2	No	0.0	No	0.0	No	0.0
3/22/2022	high	2	No	0.0	No	0.0	No	0.0
3/29/2022	high	2	No	0.0	No	0.0	No	0.0
4/5/2022	medium	1	No	0.0	No	0.0	No	0.0
4/12/2022	medium	1	No	0.0	No	0.0	No	0.0
4/19/2022	high	2	No	0.0	No	0.0	No	0.0
4/21/2022	high	2	No	0.0	No	0.0	No	0.0
4/26/2022	medium	1	No	0.0	No	0.0	No	0.0
5/3/2022	low	0	No	0.0	No	0.0	No	0.0
5/10/2022	medium	1	No	0.0	No	0.0	No	0.0
5/12/2022	high	2	No	0.0	No	0.0	No	0.0
5/18/2022	low	0	No	0.0	No	0.0	No	0.0

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
5/19/2022	high	2	No	0.0	No	0.0	No	0.0
5/24/2022	medium	1	No	0.0	No	0.0	No	0.0
5/31/2022	low	0	No	0.0	No	0.0	No	0.0
6/7/2022	medium	1	No	0.0	No	0.0	No	0.0
6/14/2022	low	0	No	0.0	No	0.0	No	0.0
6/21/2022	high	2	No	0.0	No	0.0	No	0.0
6/28/2022	low	0	No	0.0	No	0.0	No	0.0
7/6/2022	high	2	No	0.0	No	0.0	No	0.0
7/12/2022	low	0	No	0.0	No	0.0	No	0.0
7/19/2022	medium	1	No	0.0	No	0.0	No	0.0
7/26/2022	low	0	No	0.0	No	0.0	No	0.0
8/2/2022	high	2	No	0.0	No	0.0	No	0.0
8/9/2022	low	0	No	0.0	No	0.0	No	0.0
8/16/2022	high	2	No	0.0	No	0.0	No	0.0
8/24/2022	low	0	No	0.0	No	0.0	No	0.0
8/30/2022	high	2	No	0.0	No	0.0	No	0.0
9/6/2022	low	0	No	0.0	No	0.0	No	0.0
9/14/2022	high	2	No	0.0	No	0.0	No	0.0
9/20/2022	low	0	No	0.0	No	0.0	No	0.0
9/27/2022	high	2	No	0.0	No	0.0	No	0.0
10/4/2022	low	0	No	0.0	No	0.0	No	0.0
10/11/2022	high	2	No	0.0	No	0.0	No	0.0
10/18/2022	low	0	No	0.0	No	0.0	No	0.0
10/25/2022	high	2	No	0.0	No	0.0	No	0.0
10/26/2022	high	2	No	0.0	No	0.0	No	0.0
10/27/2022	high	2	No	0.0	No	0.0	No	0.0
11/1/2022	high	2	No	0.0	No	0.0	No	0.0
11/8/2022	high	2	No	0.0	No	0.0	No	0.0
11/15/2022	medium	1	No	0.0	No	0.0	No	0.0
11/21/2022	low	0	No	0.0	No	0.0	No	0.0
11/30/2022	high	2	No	0.0	No	0.0	No	0.0
12/6/2022	high	2	No	0.0	No	0.0	No	0.0
12/13/2022	medium	1	No	0.0	No	0.0	No	0.0
12/20/2022	high	2	No	0.0	No	0.0	No	0.0
12/21/2022	high	2	No	0.0	No	0.0	No	0.0
12/27/2022	high	2	No	0.0	No	0.0	No	0.0
1/3/2023	medium	1	No	0.0	No	0.0	No	0.0
1/10/2023	high	2	No	0.0	No	0.0	No	0.0
1/12/2023	high	2	No	0.0	No	0.0	No	0.0
1/24/2023	high	2	No	0.0	No	0.0	No	0.0
1/31/2023	medium	1	No	0.0	No	0.0	No	0.0
2/7/2023	high	2	No	0.0	No	0.0	No	0.0
2/16/2023	medium	1	No	0.0	No	0.0	No	0.0
2/21/2023	high	2	No	0.0	No	0.0	No	0.0
2/22/2023	low	0	No	0.0	No	0.0	No	0.0
2/23/2023	high	2	No	0.0	No	0.0	No	0.0
2/28/2023	medium	1	No	0.0	No	0.0	No	0.0
3/1/2023	high	2	No	0.0	No	0.0	No	0.0
3/7/2023	low	0	No	0.0	No	0.0	No	0.0
3/14/2023	medium	1	No	0.0	No	0.0	No	0.0
3/21/2023	high	2	No	0.0	No	0.0	No	0.0

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
3/28/2023	high	2	No	0.0	No	0.0	No	0.0
4/7/2023	high	2	No	0.0	No	0.0	No	0.0
4/12/2023	high	2	No	0.0	No	0.0	No	0.0
4/18/2023	low	0	No	0.0	No	0.0	No	0.0
4/25/2023	medium	1	No	0.0	No	0.0	No	0.0
5/2/2023	low	0	No	0.0	No	0.0	No	0.0
5/7/2023	low	0	No	0.0	No	0.0	No	0.0
5/16/2023	low	0	No	0.0	No	0.0	No	0.0
5/23/2023	high	2	No	0.0	No	0.0	No	0.0
5/30/2023	medium	1	No	0.0	No	0.0	No	0.0
6/6/2023	low	0	No	0.0	No	0.0	No	0.0
6/13/2023	medium	1	No	0.0	No	0.0	No	0.0
6/20/2023	medium	1	No	0.0	No	0.0	No	0.0
6/22/2023	low	0	No	0.0	No	0.0	No	0.0
6/27/2023	high	2	No	0.0	No	0.0	No	0.0
7/6/2023	high	2	No	0.0	No	0.0	No	0.0
7/13/2023	medium	1	No	0.0	No	0.0	No	0.0
7/19/2023	low	0	No	0.0	No	0.0	No	0.0
7/26/2023	medium	1	No	0.0	No	0.0	No	0.0
8/1/2023	low	0	No	0.0	No	0.0	No	0.0
8/8/2023	high	2	No	0.0	No	0.0	No	0.0
8/14/2023	low	0	No	0.0	No	0.0	No	0.0
8/21/2023	high	2	No	0.0	No	0.0	No	0.0
8/29/2023	low	0	No	0.0	No	0.0	No	0.0
9/4/2023	high	2	No	0.0	No	0.0	No	0.0
9/15/2023	high	2	No	0.0	No	0.0	No	0.0
9/19/2023	medium	1	No	0.0	No	0.0	No	0.0
9/26/2023	high	2	No	0.0	No	0.0	No	0.0
10/3/2023	high	2	No	0.0	No	0.0	No	0.0
10/12/2023	low	0	No	0.0	No	0.0	No	0.0
10/17/2023	high	2	No	0.0	No	0.0	No	0.0
10/19/2023	high	2	No	0.0	No	0.0	No	0.0
11/7/2023	high	2	No	0.0	No	0.0	No	0.0
11/14/2023	high	2	No	0.0	No	0.0	No	0.0
11/21/2023	high	2	No	0.0	No	0.0	No	0.0
11/28/2023	high	2	No	0.0	No	0.0	No	0.0
12/5/2023	medium	1	No	0.0	No	0.0	No	0.0
12/12/2023	medium	1	No	0.0	No	0.0	No	0.0
12/19/2023	high	2	No	0.0	No	0.0	No	0.0
12/26/2023	high	2	No	0.0	No	0.0	No	0.0
12/28/2023	high	2	No	0.0	No	0.0	No	0.0
1/2/2024	high	2	No	0.0	No	0.0	No	0.0
1/9/2024	high	2	No	0.0	No	0.0	No	0.0
1/16/2024	medium	1	No	0.0	No	0.0	No	0.0
1/26/2024	medium	1	No	0.0	No	0.0	No	0.0
1/31/2024	high	2	No	0.0	No	0.0	No	0.0
2/6/2024	medium	1	No	0.0	No	0.0	No	0.0
2/13/2024	high	2	No	0.0	No	0.0	No	0.0
2/21/2024	high	2	No	0.0	No	0.0	No	0.0
2/28/2024	high	2	No	0.0	No	0.0	No	0.0
3/5/2024	high	2	No	0.0	No	0.0	No	0.0

Table 4. Duwamish Waterway and Containment Boom Surface Water Sheen Monitoring
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Tidal Stage		Loading Rack Area Boom Sheen Observations		Warehouse Area North Boom Sheen Observations		Warehouse Area South Boom Sheen Observations	
	Low, Medium (ebb & flood), High	Tide Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)	Sheen (**Yes**/No)	Sheen Rating (See Notes)
3/13/2024	high	2	No	0.0	No	0.0	No	0.0
3/19/2024	medium	1	No	0.0	No	0.0	No	0.0
3/28/2024	low	0	No	0.0	No	0.0	No	0.0

Notes:
Bold entries represent sheen detections.
Loading Rack Area Boom removed in August 2017 with concurrance from Ecology due to persistent lack of sheens.
Warehouse Area South Boom removed in April 2022 with concurrance from Ecology due to persistent lack of sheens.

* Sheen Appearance is rated from 0.0 to 3.0 using criteria below;
0.0 No sheen present
0.5 Very light , sheen that rapidly dissapates
1.0 Light sheen visible in one location
2.0 Sheen visible in several locations and is brightly colored
3.0 Sheen covers large areas of boom, outside boom, and/or LNAPL floating on surface

Notes Continued:
** Tide Level is rated from 0.0 to 2.0 using the criteria below;
0.0 Low Tide
1.0 Medium Tide (Ebb Tide & Flood Tide)
2.0 High Tide

Table 5. Inland SVE System Petroleum Hydrocarbon Recovery Rates
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Date	Hours of Operation	Hours operated over period	Total HSVE Flow Rate from wells (SCFM)	Influent Gasoline Range Organics (GRO) (mg/m^3)	GRO recovered over period (lbs)	Cumulative GRO recovery (lbs)	GRO avg lbs/day over period	Influent Benzene (mg/m^3)	Benzene recovered over period (lbs)	Cumulative benzene recovery (lbs)	Avg CO2 %- Atmospheric concentration (0.04%)	Pounds GRO Destruction due to Enhanced Biodegredation over period (lbs)	Cumulative GRO Destruction due to Enhanced Biodegredation (gal)
8/22/2008	31	18	45	24,500	68.9	924	93.4	79.4	0.22	1.07	0.66	12	2
8/27/2008	152	50	43	19,500	164.7	1,349	79.7	62.9	0.53	2.45	0.635	78	15
9/2/2008	296	92	39	19,600	290.3	1,807	75.6	57.7	0.90	3.86	0.585	80	28
9/8/2008	440	68	94	13,200	376.6	2,399	133.7	24.2	0.94	5.34	0.41	92	43
9/15/2008	611	71	207	11,700	590.0	3,557	199.5	7.59	0.75	6.82	0.285	171	70
9/22/2008	777	117	239	5,240	905.1	4,825	186.4	0.37	0.43	7.41	0.285	246	110
9/30/2008	965	188	252	3,260	732.7	5,558	93.8	0.154	0.05	7.46	0.285	305	160
10/13/2008	1,277	169	273	1,050	372.6	6,236	53.0	0.154	0.03	7.51	0.26	495	240
10/20/2008	1,445	168	277	746	155.0	6,391	22.2	0.149	0.03	7.53	0.26	278	285
11/17/2008	2,118	169	277	295	96.0	6,773	13.6	*0.129*	0.03	7.63	0.26	283	331
12/11/2008	2,690	572	273	230	154.8	6,928	6.5	*0.5*	0.19	7.82	0.26	951	486
1/16/2009	3,556	866	224	40	108.6	7,036	3.0	*0.1*	0.24	8.06	0.26	1,298	697
2/18/2009	4,347	792	257	59	35.1	7,072	1.1	*0.1*	0.07	8.13	0.26	1,149	884
3/17/2009	4,993	646	270	42	32.2	7,104	1.2	*0.1*	0.06	8.20	0.335	1,324	1,099
4/16/2009	5,709	716	271	59	36.5	7,140	1.2	*0.1*	0.07	8.27	0.055	247	1,139
5/14/2009	6,384	674	263	11	23.4	7,164	0.8	*0.1*	0.07	8.34	0.135	563	1,231
6/16/2009	7,027	643	231	133	42.8	7,207	1.6	*0.1*	0.06	8.40	0.26	959	1,387
7/27/2009	7,864	837	249	190	121.7	7,328	3.5	*0.061*	0.06	8.46	0.36	1,681	1,660
8/18/2009	8,391	527	264	63	64.0	7,392	2.9	*0.14*	0.05	8.51	0.285	894	1,806
9/14/2009	9,065	674	264	30	31.0	7,423	1.1	*0.14*	0.09	8.60	0.235	970	1,963
10/20/2009	9,901	836	262	38	28.0	7,451	0.8	*0.13*	0.11	8.71	0.235	1,198	2,158
11/17/2009	10,577	676	286	17.0	19.1	7,470	0.7	*0.14*	0.09	8.81	0.185	796	2,288
12/15/2009	11,245	668	253	*9.0*	8.8	7,479	0.3	*0.14*	0.09	8.90	0.16	668	2,396
1/22/2010	12,152	907	221	*7.9*	6.8	7,486	0.2	*0.12*	0.10	9.00	0.21	1,048	2,567
2/18/2010	12,757	605	284	*7.2*	4.3	7,490	0.2	*0.11*	0.07	9.07	0.21	746	2,688
3/17/2010	13,404	647	264	2.7	3.3	7,493	0.1	*0.112*	0.07	9.14	0.21	864	2,828
4/14/2010	14,098	694	253	9.0	3.9	7,497	0.1	*0.14*	0.08	9.23	0.21	873	2,970
5/19/2010	14,887	789	234	*8.7*	*6.4*	7,504	0.2	*0.14*	0.10	9.33	0.21	936	3,123
6/17/2010	15,582	695	245	*8.5*	*5.4*	7,509	0.2	*0.13*	0.08	9.41	0.21	812	3,255
7/28/2010	16,590	1,009	269	9.1	*8.6*	7,518	0.2	*0.064*	0.09	9.51	0.21	1,266	3,460
8/19/2010	17,332	742	265	10.9	7.4	7,525	0.2	*0.52*	0.22	9.72	0.18	832	3,596
9/27/2010	18,028	695	232	*7.4*	5.9	7,531	0.2	*0.55*	0.35	10.07	0.205	827	3,730
10/20/2010	18,578	551	251	*6.5*	3.5	7,534	0.2	*0.49*	0.26	10.33	0.16	494	3,811
11/30/2010	19,562	984	280	15.6	10.8	7,545	0.3	*0.49*	0.48	10.81	0.075	455	3,884
12/13/2010	19,872	310	280	15.6	4.9	7,550	0.4	*1.49*	0.31	11.12	0.04	81	3,898
System shutdown due to high groundwater elevation on 12/13/2010. As measurements could not be collected, recovery calculations were based off data collected from the 11/30/2010 O&M event.													
6/6/2011	19,920	0	238	250	0.0	7,550	0.0	*0.52*	0.00	11.12	0.12	0	3,898
6/15/2011	20,136	216	266	250	50.9	7,601	5.7	*0.52*	0.11	11.22	0.12	151	3,922
7/20/2011	20,425	289	248	*8.2*	35.9	7,637	3.0	*0.62*	0.16	11.38	0.39	671	4,031
8/8/2011	20,434	9	256	*8.2*	0.1	7,637	0.2	*0.62*	0.01	11.39	0.39	20	4,035
8/16/2011	20,651	217	230	*7.4*	1.5	7,638	0.2	*0.55*	0.12	11.50	0.25	303	4,084
9/14/2011	21,320	670	268	11.3	5.8	7,644	0.2	*0.55*	0.34	11.85	0.11	426	4,153
10/12/2011	21,997	677	240	*9.1*	6.6	7,651	0.2	*0.68*	0.40	12.24	0.11	438	4,225
11/23/2011	23,000	1,003	226	14.3	10.2	7,661	0.2	*0.52*	0.53	12.77	0.11	597	4,322
12/14/2011	23,503	503	252	10.4	5.6	7,667	0.3	*0.45*	0.22	12.99	0.05	140	4,344
1/24/2012	24,344	841	222	47.3	21.5	7,688	0.6	*0.52*	0.36	13.35	0	0	4,344
2/15/2012	24,869	525	229	9.6	12.6	7,701	0.6	*0.55*	0.24	13.59	0	0	4,344

Table 5. Inland SVE System Petroleum Hydrocarbon Recovery Rates
BP West Coast Products Terminal 21T, Seattle, Washington

Date	Hours of Operation	Hours operated over period	Total HSVE Flow Rate from wells (SCFM)	Influent Gasoline Range Organics (GRO) (mg/m^3)	GRO recovered over period (lbs)	Cumulative GRO recovery (lbs)	GRO avg lbs/day over period	Influent Benzene (mg/m^3)	Benzene recovered over period (lbs)	Cumulative benzene recovery (lbs)	Avg CO2 %- Atmospheric concentration (0.04%)	Pounds GRO Destruction due to Enhanced Biodegredation over period (lbs)	Cumulative GRO Destruction due to Enhanced Biodegredation (gal)
3/14/2012	25,537	668	260	*6.5*	4.9	7,706	0.2	*0.49*	0.32	13.90	0	0	4,344
4/18/2012	26,376	840	248	*6.9*	5.4	7,711	0.2	*0.52*	0.40	14.31	0	0	4,344
5/16/2012	27,046	670	251	*6.9*	4.3	7,715	0.2	*0.52*	0.33	14.63	0	0	4,344
6/13/2012	27,718	672	259	*6.1*	4.2	7,720	0.1	*0.45*	0.31	14.94	0	0	4,344
7/20/2012	28,608	891	237	10.0	6.6	7,726	0.2	*0.58*	0.43	15.37	0	0	4,344
8/15/2012	29,229	621	250.6	*7.8*	5.2	7,731	0.2	*0.58*	0.34	15.71	0.01	35	4,350
9/6/2012	29,753	524	249.0	*10.0*	4.3	7,736	0.2	*0.78*	0.33	16.04	0.01	30	4,355
10/24/2012	30,906	1,153	261.6	*6.1*	8.9	7,745	0.2	*0.45*	0.68	16.72	0	0	4,355
11/28/2012	31,631	725	244.1	21.3	9.4	7,754	0.3	*0.52*	0.33	17.05	0	0	4,355
System shutdown due to high groundwater elevation on 11/28/2012. System will be restarted once groundwater elevations fall to a level that will not interfere with system operation.													
4/17/2013	31,764	133	267.7	*22*	2.8	7,757	0.5	*NA*	0.03	17.08	0	0	4,355
5/17/2013	32,484	721	270.8	*37*	21.4	7,778	0.7	*0.00076*	0.19	17.27	0	0	4,355
6/12/2013	33,106	621	258.3	*28*	20.0	7,798	0.8	*0.00079*	0.0005	17.27	0	0	4,355
7/24/2013	34,114	1,009	236.8	*24*	24.3	7,823	0.6	*0.00013*	0.0004	17.27	0	0	4,355
8/21/2013	34,786	672	265.9	*35*	18.7	7,841	0.7	*0.00097*	0.0003	17.27	0	0	4,355
9/25/2013	35,625	839	260.7	*27*	21.1	7,862	0.6	*0.00075*	0.0007	17.28	0	0	4,355
10/15/2013	36,104	479	258.7	*35*	14.4	7,877	0.7	*0.00097*	0.0004	17.28	0	0	4,355
11/20/2013	36,967	863	259.2	*27*	26.0	7,903	0.7	*0.00074*	0.0007	17.28	0	0	4,355
12/18/2013	37,638	670.7	234	4.4	9.7	7,912	0.3	0.04	0.0126	17.29	0	0	4,355
1/15/2014	38,308	670.6	235.4	12.0	4.8	7,917	0.2	0.99	0.3037	17.59	0	0	4,355
2/12/2014	38,979	671.0	266.7	2.3	4.5	7,922	0.2	*0.017*	0.3177	17.91	0	0	4,355
3/20/2014	39,620	641	260.4	*1.8*	1.3	7,923	0.05	*0.017*	0.0108	17.92	0	0	4,355
4/16/2014	40,263	643	262.8	*1.5*	1.0	7,924	0.04	0.017	0.0107	17.93	0	0	4,355
5/21/2014	41,101	838	249.2	5.9	3.0	7,927	0.09	*0.017*	0.0137	17.95	0	0	4,355
6/18/2014	41,771	670	251.0	*1.9*	2.4	7,929	0.09	*0.017*	0.0107	17.96	0	0	4,355
7/25/2014	42,657	886	267.6	*0.82*	1.2	7,931	0.0	*0.0013*	0.0079	17.96	0	0	4,355
8/13/2014	43,113	456	252.8	NR	1.9	7,933	0.10	*0.029*	0.0067	17.97	0	0	4,355
9/17/2014	43,953	840	241.8	7.9	3.4	7,936	0.10	*0.087*	0.0451	18.02	0	0	4,355
10/14/2014	44,625	672	260.3	1.4	2.9	7,939	0.10	*0.0013*	0.0279	18.04	0	0	4,355
11/18/2014	45,464	839	257.6	*0.82*	0.9	7,940	0.03	*0.0013*	0.0011	18.05	0	0	4,355
12/17/2014	46,135	670	250.6	*0.82*	0.5	7,940	0.02	*0.0013*	0.0008	18.05	0	0	4,355
Total Combined Recovery lbs (Bio+GRO): 34,723				**Total lbs of Gasoline (GRO): 7,940**					**Total lbs Benzene: 18.05**		**Total lbs due to Biodegredation: 26,783**		
Total Combined Recovery gal (Bio+GRO): 5,646				**Total gal of Gasoline (GRO): 1,291**					**Total gal of Benzene: 2.46**		**Total gal due to Biodegredation: 4,355**		

Table 5. Inland SVE System Petroleum Hydrocarbon Recovery Rates
BP West Coast Products Terminal 21T, Seattle, Washington

Date	Hours of Operation	Hours operated over period	Total HSVE Flow Rate from wells (SCFM)	Influent Gasoline Range Organics (GRO) (mg/m^3)	GRO recovered over period (lbs)	Cumulative GRO recovery (lbs)	GRO avg lbs/day over period	Influent Benzene (mg/m^3)	Benzene recovered over period (lbs)	Cumulative benzene recovery (lbs)	Avg CO2 %- Atmospheric concentration (0.04%)	Pounds GRO Destruction due to Enhanced Biodegredation over period (lbs)	Cumulative GRO Destruction due to Enhanced Biodegredation (gal)

Notes:

System operation was discontinued in December 2014, as monitoring data showed that the system was no longer recovering hydrocarbons and or enhancing biodegredation.

Samples were collected from the SVE influent vapor stream (air) for all analyses.

Samples were analyzed for concentrations of gasoline range organics (GRO) and benzene, toluene, ethylbenzene, & xylenes (BTEX) at an accredited lab.

Samples analysis methodologies utilized included TO-3 or NWTPH-Gx for GRO and TO-15, TO-3, or 8021b for BTEX.

Pounds of gasoline were converted to gallons by assuming that 6.15 lbs. equals 1.0 gallons.

Pounds of benzene were converted to gallons by assuming that 7.33 lbs. equals 1.0 gallons.

Total pounds of recovered gasoline started at 839 pounds, as this was the amount recovered during pilot testing.

Total pounds of recovered benzene started at 0.80 pounds, as this was the amount recovered during pilot testing.

Benzene and Gasoline recovery were biased high, as recoveries were calculated assuming analytes were present at associated detection limits. This provides a protective estimate of analyte concentrations below detection limits.

Analytes were not detected from analyses for all values listed in *italic*. The associated detection limits for the analyses are the value listed in *italic*.

The SVE system was shutdown from December 2010 through June 2011 and November 2012 through April 2013 due to high groundwater elevations that submerged horizontal SVE screens. The SVE system was restarted once the groundwater elevation had fallen to a save level for system operation.

Due to a laboratory oversight, benzene concentrations could not be quantified for the April 17, 2013 air sample. The May 17, 2013 air sample was analyzed for benzene using EPA Method TO-15, which generated data to a much lower detection limit than historically reported. No benzene was detected in this sample.

August 2014 GRO concentrations were not utilized to calculate GRO recovery. Laboratory analyses for GRO were biased high by the presence of non-target analytes, identified as siloxane compounds not typically found in gasoline and is not present at the site. This data was excluded to avoid artificially elevating gasoline capture.

Definitions:

Avg - average
Bio - biodegradation of petroleum hydrocarbons
CO_2 - carbon dioxide
gal - gallons
GRO - gasoline range organics (gasoline range petroleum hydrocarbons)
hr. - hour
HSVE - horizontal soil vapor extraction
lbs. - pounds
mg/m^3 - milligrams per cubic meter
NA - not available (see reasons above)
NR - not reported
SCFM - standard cubic feet per minute
SVE - soil vapor extraction
TPH - total petroleum hydrocarbons

Enhanced Biodegradation Calculations:

C = Average Influent CO_2 concentration (%)
Q = Influent Flow Rate (SCFM)
Mc = Molecular wt. of Carbon Dioxide = 44
CO_2 recovery (lbs./hr.) = C x Q x Mc x 5.277 x 10-4
5.277 x 10-4 is a constant and is derived as follows:
1/100% x 60min/1hr x 1 lb. Mole/379 cu.ft. x 1/3
Note: SVE TPH as CO_2 recovery rates were calculated by assuming that for every 3 lbs. of CO_2 detected, 1 lb. of TPH is metabolized, and that all CO_2 present in vapor stream above background atmospheric concentrations (0.04%) is attributable to microbial degradation of hydrocarbons in soil.

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1					
AMW-01	12/21/2000	ND	1,310	ND	14.0
AMW-01	3/28/2001	59.3	2,600	ND	69.6
AMW-01	6/13/2001	105 U	944	ND	**470**
AMW-01	10/4/2001	ND	851	ND	**152**
AMW-01	12/12/2001	ND	1700 J	ND UJ	**1,260**
AMW-01	3/7/2002	153	1,410	ND	**1,410**
AMW-01	6/12/2002	143 J	2,100	ND	**1,680**
AMW-01	9/19/2002	139 J	571 J	ND UJ	**1,180**
AMW-01	12/17/2002	196	2,190	ND	**74.6**
AMW-01	3/26/2003	101	2,100	ND	**933**
AMW-01	6/27/2003	ND	2,090	ND	**1,260**
AMW-01	9/18/2003	55	2,140	ND	48.5
AMW-01	12/22/2003	136	1750 J	ND	**571**
AMW-01	3/8/2004	ND UJ	ND	ND	**961**
AMW-01	6/16/2004	138	386	ND	**1,540**
AMW-01	9/28/2004	83	ND	ND	**292**
AMW-01	12/6/2004	103	ND	ND	**411**
AMW-01	3/10/2005	113	ND	ND	**812**
AMW-01	6/21/2005	129	ND	ND	**1,130**
AMW-01	9/27/2005	77	ND UJ	ND	**181 J**
AMW-01	12/13/2005	ND UJ	342	ND	**132**
AMW-01	3/21/2006	88	ND	ND	**363**
AMW-01	7/6/2006	ND UJ	ND	ND	**912**
AMW-01	9/18/2006	91.7	ND	ND	7.38
AMW-01	12/12/2006	**1,650 J**	ND UJ	ND UJ	**539 J**
AMW-01	3/21/2007	89.9	ND	ND	**457**
AMW-01	6/6/2007	61	ND	ND	**486**
AMW-01	9/12/2007	65	ND	ND	**157**
AMW-01	12/18/2007	ND	ND	ND	10.6 J
AMW-01	3/25/2008	ND	ND	ND	**76**
AMW-01	6/25/2008	64.9	ND	ND	**370**
AMW-01	9/17/2008	55.0	ND	ND	**162**
AMW-01	12/16/2008	ND	ND	ND	**330**
AMW-01	3/11/2009	ND	ND	ND	**374**
AMW-01	6/10/2009	ND	R	R	**240 J**
AMW-01	9/16/2009	ND	ND	ND	7.4
AMW-01	12/16/2009	ND	ND	ND	**280**
AMW-01	3/30/2010	ND	ND	ND	**310**
AMW-01	6/9/2010	ND	720	ND	**280**
AMW-01	9/14/2010	ND	ND	ND	69.7
AMW-01	12/14/2010	ND	ND	ND	**282**
AMW-01	3/22/2011	ND	ND	ND	**247**
AMW-01	6/22/2011	ND	300 J	ND	39.6
AMW-01	9/27/2011	ND	ND	ND	22.2
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
AMW-01	12/20/2011	ND	ND	ND UJ	**151**
AMW-01	3/20/2012	ND	ND	ND	**178**
AMW-01	6/21/2012	ND	ND	ND	**77**
AMW-01	9/10/2012	ND	ND	ND	38.7 J
AMW-01	12/19/2012	ND	ND	ND	61.2
AMW-01	3/19/2013	ND	ND	ND	**110**
AMW-01	6/25/2013	ND	ND	ND	12
AMW-01	9/10/2013	ND	ND	ND	17
AMW-01	12/10/2013	ND	ND	ND	17
AMW-01	3/11/2014	ND	990 J	ND	**77**
AMW-01	6/10/2014	ND UJ	1,100	ND	7.3
AMW-01	9/9/2014	ND	440 J	ND UJ	8.4
AMW-01	12/9/2014	ND	1,500	ND	20
AMW-01	3/10/2015	ND U	1,200 J	ND	68
AMW-01	6/9/2015	ND	450	ND	50
AMW-01	9/22/2015	ND	250	ND	12
AMW-01	12/15/2015	ND	430 J	ND UJ	38 J
AMW-01	3/8/2016	ND	320 J	ND UJ	24
AMW-01	6/8/2016	ND	1,200 J	ND UJ	4.1
AMW-01	9/8/2016	ND	1,300	ND	5.1
AMW-01	12/6/2016	ND U	800 J	ND	7.3
AMW-01	3/7/2017	230 J	1,300 J	1,100 J	1.0
AMW-01	6/7/2017	ND	ND UJ	ND	1.9
AMW-01	9/12/2017	ND	ND	ND	2.4
AMW-01	12/5/2017	ND	ND	ND	1.0
AMW-01	3/20/2018	240	ND	ND	ND
AMW-01	6/19/2018	ND UJ	480	710	ND
AMW-01	9/11/2018	ND	ND UJ	ND UJ	ND
AMW-01	12/11/2018	ND	610	ND	ND
AMW-01	3/12/2019	ND	ND	ND	ND
AMW-01	6/18/2019	ND	270	ND	ND
AMW-01	9/24/2019	ND	350 J	ND UJ	ND
AMW-01	12/17/2019	ND	ND	ND	ND
AMW-01	3/18/2020	ND	ND	ND	ND
AMW-01	6/10/2020	ND	420	ND	ND
AMW-01	9/16/2020	ND	300	ND	ND
AMW-01	12/16/2020	ND	ND	ND	ND
AMW-01	3/10/2021	ND	ND	ND	ND
AMW-01	6/17/2021	ND	ND	ND	ND
AMW-01	9/22/2021	ND	ND	ND	ND
AMW-01	12/8/2021	ND	ND	ND	ND
AMW-01	3/23/2022	ND	ND	ND	ND
AMW-01	6/22/2022	ND	ND	ND	ND
AMW-01	9/21/2022	ND	270	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
AMW-01	1/11/2023	ND	320 J	ND	ND
AMW-01	3/29/2023	ND UJ	ND UJ	ND UJ	ND UJ
AMW-01	6/28/2023	ND	ND	ND	ND
AMW-01	9/27/2023	ND	ND	ND	ND
AMW-01	12/13/2023	ND	ND	ND	ND
AMW-02	12/21/2000	ND	803	ND	3.14
AMW-02	3/28/2001	Not accessible due to earthquake damage to warehouse.			
AMW-02	6/13/2001	ND	999	ND	3.88 U
AMW-02	10/4/2001	ND	1,200	ND	10.90
AMW-02	12/12/2001	ND	1,500 J	ND UJ	5.47
AMW-02	3/7/2002	Not accessible due to repair of earthquake damage to warehouse.			
AMW-02	6/12/2002	ND	2,420	ND	1.49
AMW-02	9/19/2002	ND UJ	495 J	ND UJ	1.61
AMW-02	12/17/2002	ND	1,890	ND	4.08
AMW-02	3/26/2003	ND	2,200	ND	5.23
AMW-02	6/27/2003	ND	1,680	ND	1.11
AMW-02	9/18/2003	ND	2,430	790	2.01
AMW-02	12/22/2003	ND	1,880 J	ND	ND
AMW-02	3/8/2004	ND	ND	ND	ND
AMW-02	6/16/2004	ND	ND	ND	2.40
AMW-02	9/28/2004	ND	ND	ND	0.85
AMW-02	12/8/2004	ND	ND	ND	23.2
AMW-02	3/10/2005	ND	ND	ND	38.4
AMW-02	6/21/2005	ND	ND	ND	16.1
AMW-02	9/27/2005	ND	ND	ND	9.04
AMW-02	12/13/2005	ND	366	ND	7.26
AMW-02	3/21/2006	ND	ND	ND	2.16
AMW-02	7/6/2006	ND	ND	ND	41.1
AMW-02	9/18/2006	ND	ND	ND	3.18
AMW-02	12/12/2006	84.5 UJ	ND UJ	ND UJ	25.8 J
AMW-02	3/21/2007	ND	ND	ND	**92.2**
AMW-02	6/6/2007	ND	ND	ND	**442**
AMW-02	9/12/2007	ND	ND	ND	4.03 J
AMW-02	12/18/2007	ND	ND	ND	66.2
AMW-02	3/25/2008	75.9	ND	ND	**343**
AMW-02	6/25/2008	ND	ND	ND	**125**
AMW-02	9/17/2008	ND	ND	ND	30.7
AMW-02	12/16/2008	ND	ND	ND	**189**
AMW-02	3/11/2009	ND	ND	ND	**421**
AMW-02	6/10/2009	ND	R	R	**100**
AMW-02	9/16/2009	ND	ND	ND	12
AMW-02	12/16/2009	ND	ND	ND	**110**
AMW-02	3/30/2010	ND	1,000	ND	**210**
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
AMW-02	6/9/2010	ND	1,000	260	**130**
AMW-02	9/14/2010	ND	ND	ND	22.6
AMW-02	12/14/2010	ND	ND	ND	**96.2 J**
AMW-02	3/22/2011	ND	ND	ND	**149**
AMW-02	6/22/2011	ND	ND	ND	20.0
AMW-02	9/27/2011	ND	ND	ND	6.5
AMW-02	12/20/2011	ND	ND	ND	12.2
AMW-02	3/20/2012	ND	ND	ND	31.6
AMW-02	6/21/2012	ND	ND	ND	**82.5**
AMW-02	9/10/2012	ND	ND	ND	12.7 J
AMW-02	12/19/2012	ND	ND	ND	12.4
AMW-02	3/19/2013	ND	ND	ND	9.3
AMW-02	6/25/2013	ND	ND	ND	13.0
AMW-02	9/10/2013	ND	ND	ND	8.1
AMW-02	12/10/2013	ND	ND	ND	5.7
AMW-02	3/11/2014	ND	ND	ND	19.0
AMW-02	6/10/2014	ND UJ	320	ND	12.0
AMW-02	9/9/2014	ND	270	ND	29.0
AMW-02	12/9/2014	ND	530	ND	15.0
AMW-02	3/10/2015	ND U	370	ND	ND
AMW-02	6/9/2015	ND	ND	ND	3.1
AMW-02	9/22/2015	ND	ND	ND	2.0
AMW-02	12/15/2015	ND	ND	ND	4.4
AMW-02	3/8/2016	ND	290	ND	1.9
AMW-02	6/8/2016	ND	840	ND	3.0
AMW-02	9/8/2016	ND	810	ND	15.0
AMW-02	12/6/2016	ND	510	ND	4.4
AMW-02	3/7/2017	ND	850	740	ND
AMW-02	6/6/2017	ND	ND	ND	2.7
AMW-02	9/12/2017	ND	ND	ND	1.1
AMW-02	12/5/2017	ND	ND	ND UJ	0.96
AMW-02	3/20/2018	53.0	ND	ND	2.30
AMW-02	6/19/2018	ND	ND	ND	0.92
AMW-02	9/11/2018	ND	300	ND	1.20
AMW-02	12/11/2018	ND	560	ND	1.50
AMW-02	3/12/2019	ND	ND	ND	ND
AMW-02	6/18/2019	ND	630	ND	2.40
AMW-02	9/24/2019	ND	260	ND	12.0
AMW-02	12/17/2019	ND	ND	ND	(69.75 Average)**
AMW-02	3/18/2020	ND	ND	ND	30 J
AMW-02	6/10/2020	ND	330	ND	28
AMW-02	9/16/2020	ND	380	ND	14
AMW-02	12/16/2020	ND	ND	ND	1.9
AMW-02	3/10/2021	ND	ND	ND	0.92
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
AMW-02	6/17/2021	ND	ND	ND	0.58
AMW-02	9/22/2021	ND	ND	ND	ND
AMW-02	12/8/2021	ND	ND	ND	ND
AMW-02	3/23/2022	ND	ND	ND	0.63
AMW-02	6/22/2022	ND	ND	ND	0.53
AMW-02	9/21/2022	ND	ND	ND	0.56
AMW-02	1/11/2023	ND	ND	ND	0.51
AMW-02	3/29/2023	ND UJ	ND UJ	ND UJ	**200 J**
AMW-02	6/28/2023	ND	ND	760	6.9 J
AMW-02	9/27/2023	ND	ND	ND	ND
AMW-02	12/13/2023	ND	ND	ND	ND
AMW-03	12/21/2000	127	1,420	ND	ND
AMW-03	3/28/2001	Not accessible due to earthquake damage to warehouse.			
AMW-03	6/13/2001	ND	745	ND	ND
AMW-03	10/4/2001	ND	1,210	ND	ND
AMW-03	12/12/2001	ND	1,080 J	ND UJ	ND
AMW-03	3/7/2002	Not accessible due to earthquake damage to warehouse.			
AMW-03	6/12/2002	ND	1,070	ND	ND
AMW-03	9/19/2002	ND UJ	643 J	ND UJ	ND UJ
AMW-03	12/17/2002	ND	1,160	ND	ND
AMW-03	3/26/2003	ND	1,240	ND	ND
AMW-03	6/27/2003	ND	713	ND	ND
AMW-03	9/18/2003	ND	1,050	ND	ND
AMW-03	12/22/2003	ND	374 J	ND	ND
AMW-03	3/8/2004	ND	ND	ND	ND
AMW-03	6/16/2004	ND	ND	ND	1.02
AMW-03	9/28/2004	ND	ND	ND	ND
AMW-03	12/8/2004	ND	ND UJ	ND UJ	ND
AMW-03	3/10/2005	ND	ND	ND	1.56
AMW-03	6/21/2005	ND	ND	ND	0.99
AMW-03	9/27/2005	ND	ND UJ	ND	0.997
AMW-03	12/13/2005	ND	ND	ND	0.828
AMW-03	3/21/2006	ND	ND	ND	2.770
AMW-03	7/6/2006	ND	ND	ND	2.28
AMW-03	9/18/2006	ND	ND	ND	ND
AMW-03	12/12/2006	ND UJ	ND UJ	ND UJ	0.974 J
AMW-03	3/21/2007	ND	ND	ND	ND
AMW-03	6/6/2007	ND	ND	ND	ND
AMW-03	9/12/2007	ND	ND	ND	ND UJ
AMW-03	12/18/2007	ND	ND	ND	ND
AMW-03	3/25/2008	ND	ND	ND	ND
AMW-03	6/25/2008	ND	ND	ND	ND
AMW-03	9/17/2008	ND	ND	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
AMW-03	12/16/2008	ND	ND	ND	ND
AMW-03	3/11/2009	ND	ND	ND	ND
AMW-03	6/10/2009	ND	R	R	ND
AMW-03	9/16/2009	ND	ND	ND	ND
AMW-03	12/16/2009	ND	ND	ND	ND
AMW-03	3/30/2010	ND	400	ND	ND
AMW-03	6/9/2010	ND	230	ND	ND
AMW-03	9/14/2010	ND	ND	ND	ND
AMW-03	12/14/2010	ND	ND	ND	ND
AMW-03	3/22/2011	ND	ND	ND	0.54
AMW-03	6/22/2011	ND	ND	ND	ND
AMW-03	9/27/2011	ND	ND	ND	ND
AMW-03	12/20/2011	ND	ND	ND	ND
AMW-03	3/20/2012	ND	ND	ND	0.52
AMW-03	6/21/2012	ND	ND	ND	ND
AMW-03	9/10/2012	ND	ND	ND	ND
AMW-03	12/19/2012	ND	ND	ND	ND
AMW-03	3/19/2013	ND	ND	ND	ND
AMW-03	6/25/2013	ND	ND	ND	ND
AMW-03	9/10/2013	ND	ND	ND	ND
AMW-03	12/10/2013	ND	ND	ND	ND
AMW-03	3/11/2014	ND	320 J	ND	ND
AMW-03	6/10/2014	ND UJ	430	ND	ND
AMW-03	9/9/2014	ND	360	ND	ND
AMW-03	12/9/2014	ND	570	ND	ND
AMW-03	3/10/2015	ND U	650	ND	ND
AMW-03	6/9/2015	ND	410	ND	ND
AMW-03	9/22/2015	ND	ND	ND	ND
AMW-03	12/15/2015	ND	ND	ND	ND
AMW-03	3/8/2016	ND	250	ND U	ND
AMW-03	6/8/2016	ND	840	ND	ND
AMW-03	9/7/2016	ND	330	ND	ND
AMW-03	12/6/2016	ND	820	ND	ND U
AMW-03	3/7/2017	ND	890	510	ND
AMW-03	6/6/2017	ND	ND	ND	ND
AMW-03	9/12/2017	ND	ND	ND	ND
AMW-03	12/5/2017	ND	ND	ND	ND
AMW-03	3/20/2018	ND	ND	390	ND
AMW-03	6/19/2018	ND	ND	ND	ND
AMW-03	9/11/2018	ND	ND	ND	ND
AMW-03	12/11/2018	ND	370	ND	ND
AMW-03	3/12/2019	ND	ND	ND	ND
AMW-03	6/18/2019	ND	ND	ND	ND
AMW-03	9/24/2019	ND	ND	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
AMW-03	12/17/2019	ND	ND	ND	ND
AMW-03	3/18/2020	ND	ND	ND	ND
AMW-03	6/10/2020	ND	ND	ND	ND
AMW-03	9/16/2020	ND	ND	ND	ND
AMW-03	12/16/2020	ND	ND	ND	ND
AMW-03	3/10/2021	ND	ND	ND	ND
AMW-03	6/17/2021	ND	ND	ND	ND
AMW-03	9/22/2021	ND	ND	ND	ND
AMW-03	12/8/2021	ND	ND	ND	ND
AMW-03	3/23/2022	ND	ND	ND	ND
AMW-03	6/22/2022	ND	ND	ND	ND
AMW-03	9/21/2022	ND	ND	ND	ND
AMW-03	1/11/2023	ND	ND	ND	ND
AMW-03	3/29/2023	ND UJ	ND UJ	ND UJ	ND UJ
AMW-03	6/28/2023	ND	ND	ND	ND
AMW-03	9/27/2023	76	ND	ND	ND
AMW-03	12/13/2023	ND	ND	ND	ND
AMW-04	12/21/2000	ND	1,570	ND	0.66
AMW-04	3/28/2001	ND	1,660	ND	0.766
AMW-04	6/13/2001	ND	987	ND	ND
AMW-04	10/4/2001	ND	379	ND	ND
AMW-04	12/12/2001	ND	930 J	ND UJ	ND
AMW-04	3/7/2002	ND	519	ND	2.94
AMW-04	6/12/2002	ND	1,200	ND	0.63
AMW-04	9/19/2002	ND UJ	760 J	ND UJ	1.45 J
AMW-04	12/17/2002	ND	1,070	ND	ND
AMW-04	3/26/2003	ND	1,240	ND	0.84
AMW-04	6/27/2003	ND	875	ND	ND
AMW-04	9/18/2003	ND	1,660	ND	ND
AMW-04	12/22/2003	ND	686 J	ND	1.73
AMW-04	3/8/2004	ND	ND	ND	ND
AMW-04	6/16/2004	ND	ND	ND	ND
AMW-04	9/27/2004	ND	ND	ND	ND
AMW-04	12/6/2004	ND	ND	ND	ND
AMW-04	3/10/2005	ND	ND	ND	ND
AMW-04	6/21/2005	ND	ND	ND	ND
AMW-04	9/27/2005	ND	ND UJ	ND	ND
AMW-04	12/13/2005	ND UJ	ND	ND	ND UJ
AMW-04	3/21/2006	ND	ND	ND	0.65
AMW-04	7/6/2006	ND UJ	ND	ND	ND UJ
AMW-04	9/18/2006	ND	ND	ND	ND
AMW-04	12/12/2006	ND UJ	ND UJ	ND UJ	ND UJ
AMW-04	3/21/2007	ND	ND	ND	0.64
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
AMW-04	6/6/2007	ND	ND	ND	ND
AMW-04	9/12/2007	ND	ND	ND	ND UJ
AMW-04	12/18/2007	ND	ND	ND	ND
AMW-04	3/26/2008	ND	ND	ND	ND
AMW-04	6/25/2008	ND	ND	ND	ND
AMW-04	9/17/2008	ND	ND	ND	ND
AMW-04	12/16/2008	ND	ND	ND	0.63
AMW-04	3/11/2009	ND	ND	ND	ND
AMW-04	6/10/2009	ND	R	R	ND
AMW-04	9/16/2009	ND	ND	ND	ND
AMW-04	12/16/2009	ND UJ	ND	ND	ND
AMW-04	3/30/2010	ND	610	ND	0.57
AMW-04	6/9/2010	ND	430	ND	ND
AMW-04	9/14/2010	ND	ND	ND	ND
AMW-04	12/14/2010	ND	ND	ND	ND
AMW-04	3/22/2011	ND	ND	ND	ND
AMW-04	6/22/2011	ND	ND	ND	ND
AMW-04	9/27/2011	ND	ND	ND	ND
AMW-04	12/27/2011	ND	ND	ND	ND
AMW-04	3/20/2012	ND	ND	ND	ND
AMW-04	6/21/2012	ND	ND	ND	ND
AMW-04	9/10/2012	ND	ND	ND	ND
AMW-04	12/19/2012	ND	ND	ND	ND
AMW-04	3/19/2013	ND	ND	ND	ND
AMW-04	6/25/2013	ND	ND	ND	ND
AMW-04	9/10/2013	ND	ND	ND	ND
AMW-04	12/10/2013	ND	ND	ND	ND
AMW-04	3/11/2014	ND	780 J	ND	ND
AMW-04	6/10/2014	ND UJ	400	ND	ND
AMW-04	9/9/2014	ND	480	ND	ND
AMW-04	12/9/2014	ND	630	ND	ND
AMW-04	3/10/2015	ND U	590	ND	ND
AMW-04	6/9/2015	ND	420	ND	ND
AMW-04	9/22/2015	ND	ND	ND	ND
AMW-04	12/15/2015	ND	ND	ND	ND
AMW-04	3/8/2016	ND	390	ND U	ND
AMW-04	6/8/2016	ND	860	ND	ND
AMW-04	9/8/2016	ND	800	ND	ND
AMW-04	12/6/2016	ND	830	ND	ND U
AMW-04	3/7/2017	ND	830	640	ND
AMW-04	6/6/2017	ND	ND	ND	ND
AMW-04	9/12/2017	ND	ND	ND	ND
AMW-04	12/5/2017	ND	ND	ND	ND
AMW-04	3/20/2018	74 J	ND	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
AMW-04	6/19/2018	ND	300	ND	ND
AMW-04	9/11/2018	ND	ND	ND	ND
AMW-04	12/11/2018	ND	500	ND	ND
AMW-04	3/12/2019	59	ND	ND	ND
AMW-04	6/18/2019	ND	ND	ND	ND
AMW-04	9/24/2019	ND	ND	ND	ND
AMW-04	12/17/2019	ND	ND	ND	ND
AMW-04	3/18/2020	ND	ND	ND	ND
AMW-04	6/10/2020	ND	ND	ND	ND
AMW-04	9/16/2020	ND	ND	ND	ND
AMW-04	12/16/2020	ND	ND	ND	ND
AMW-04	3/10/2021	ND	ND	ND	ND
AMW-04	6/17/2021	ND	ND	ND	ND
AMW-04	9/22/2021	ND	ND	ND	ND
AMW-04	12/8/2021	ND	ND	ND	ND
AMW-04	3/23/2022	ND	ND	ND	ND
AMW-04	6/22/2022	ND	ND	ND	ND
AMW-04	9/21/2022	ND	260	ND	ND
AMW-04	1/11/2023	ND	ND	ND	ND
AMW-04	3/30/2023	ND UJ	ND UJ	ND UJ	ND UJ
AMW-04	6/28/2023	ND	ND	ND	ND
AMW-04	9/27/2023	ND	ND	ND	ND
AMW-04	12/13/2023	ND	ND	ND	ND
AMW-05	12/21/2000	ND	1,450	ND	ND
AMW-05	3/28/2001	ND	1,360	ND	ND
AMW-05	6/13/2001	ND	440	ND	ND
AMW-05	10/4/2001	71.4 U	318	ND	ND
AMW-05	12/12/2001	ND	940 J	ND UJ	ND
AMW-05	3/7/2002	ND	1,100	ND	2.12
AMW-05	6/12/2002	78	1,180	ND	0.701
AMW-05	9/19/2002	ND UJ	760 J	ND UJ	1.45 J
AMW-05	12/17/2002	ND	1,820	ND	ND
AMW-05	3/26/2003	ND	1,900	ND	0.577
AMW-05	3/27/2003	ND	381 J	ND UJ	ND
AMW-05	9/19/2003	ND	2,150	ND	ND
AMW-05	12/22/2003	ND	1,420 J	ND	0.833
AMW-05	3/8/2004	ND	ND	ND	ND
AMW-05	6/16/2004	ND	ND	ND	ND
AMW-05	9/27/2004	ND	ND	ND	ND
AMW-05	12/6/2004	ND	ND	ND	ND
AMW-05	3/10/2005	ND	ND	ND	ND
AMW-05	6/21/2005	ND	ND	ND	ND
AMW-05	9/27/2005	ND	ND UJ	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
AMW-05	12/13/2005	ND	ND	ND	0.727
AMW-05	3/21/2006	ND	ND	ND	0.692
AMW-05	7/6/2006	ND	ND	ND	ND
AMW-05	9/18/2006	ND	ND	ND	ND
AMW-05	12/12/2006	ND UJ	ND UJ	ND UJ	0.565 J
AMW-05	3/21/2007	ND	ND	ND	1.11
AMW-05	6/6/2007	ND	ND	ND	ND
AMW-05	9/12/2007	ND	ND	ND	ND UJ
AMW-05	12/18/2007	ND	ND	ND	ND
AMW-05	3/26/2008	ND	ND	ND	ND
AMW-05	6/25/2008	ND	ND	ND UJ	ND
AMW-05	9/17/2008	ND	ND	ND UJ	ND
AMW-05	12/16/2008	ND	ND	ND	0.768
AMW-05	3/11/2009	ND	ND	ND	0.885
AMW-05	6/10/2009	ND	R	R	ND
AMW-05	9/16/2009	54	ND	ND	ND
AMW-05	12/16/2009	ND UJ	ND	ND	ND
AMW-05	3/30/2010	ND	890	ND	1.3
AMW-05	6/9/2010	ND	640	ND	ND
AMW-05	9/14/2010	ND	ND	ND	ND
AMW-05	12/14/2010	ND	ND	ND	ND
AMW-05	3/22/2011	ND	ND	ND	ND
AMW-05	6/22/2011	ND	ND	ND	ND
AMW-05	9/27/2011	ND	ND	ND	ND
AMW-05	12/20/2011	ND	ND	ND	ND
AMW-05	3/20/2012	ND	ND	ND	ND
AMW-05	6/21/2012	ND	ND	ND	ND
AMW-05	9/10/2012	ND	ND	ND	ND
AMW-05	12/19/2012	ND	ND	ND	ND
AMW-05	3/19/2013	ND	ND	ND	ND
AMW-05	6/25/2013	ND	ND	ND	ND
AMW-05	9/10/2013	ND	ND	ND	ND
AMW-05	12/10/2013	ND	ND	ND	ND
AMW-05	3/11/2014	ND	ND	ND	ND
AMW-05	6/10/2014	ND UJ	560	ND	ND
AMW-05	9/9/2014	ND	300	ND	ND
AMW-05	12/9/2014	ND	460	ND	ND
AMW-05	3/10/2015	ND	480	ND	ND
AMW-05	6/9/2015	ND	300	ND	ND
AMW-05	9/22/2015	ND	ND	ND	ND
AMW-05	12/15/2015	ND	ND	ND	ND
AMW-05	3/8/2016	ND	ND	ND U	ND
AMW-05	6/8/2016	ND	850	ND	ND
AMW-05	9/8/2016	ND	1,300	ND	2.0
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
AMW-05	12/6/2016	ND	420	ND	ND U
AMW-05	3/7/2017	ND	910	1,000	ND
AMW-05	6/6/2017	ND	ND	ND	ND
AMW-05	9/12/2017	ND	ND	ND	ND
AMW-05	12/5/2017	ND	ND	ND	ND
AMW-05	3/20/2018	ND	ND	340	ND
AMW-05	6/19/2018	ND	ND	ND	ND
AMW-05	9/11/2018	ND	ND	ND	ND
AMW-05	12/11/2018	ND	320	ND	ND
AMW-05	3/12/2019	51	ND	ND	ND
AMW-05	6/18/2019	ND	ND	ND	ND
AMW-05	9/24/2019	ND	ND	ND	ND
AMW-05	12/17/2019	ND	ND	ND	ND
AMW-05	3/18/2020	ND	ND	ND	ND
AMW-05	6/10/2020	ND	ND	ND	ND
AMW-05	9/16/2020	ND	ND	ND	ND
AMW-05	12/16/2020	ND	ND	ND	ND
AMW-05	3/10/2021	ND	ND	ND	ND
AMW-05	6/17/2021	ND	ND	ND	ND
AMW-05	9/22/2021	ND	ND	ND	ND
AMW-05	12/8/2021	ND	ND	ND	ND
AMW-05	3/23/2022	ND	ND UJ	ND	ND
AMW-05	6/22/2022	ND	ND UJ	ND UJ	ND
AMW-05	9/21/2022	ND	ND	ND	ND
AMW-05	1/11/2023	ND	ND	ND	ND
AMW-05	3/30/2023	ND UJ	ND UJ	ND UJ	ND UJ
AMW-05	6/28/2023	ND	ND	ND	ND
AMW-05	9/27/2023	ND	ND	ND	ND
AMW-05	12/13/2023	ND	1,200	ND	ND
GM-11S	4/10/1997	**3,910**	2,210	1,230	**616 J**
GM-11S	7/8/1997	960 J	1,090	ND	46.9 J
GM-11S	10/21/1997	**1,570**	1,260	ND	**126**
GM-11S	1/21/1998	390	788	ND	**250**
GM-11S	3/11/1998	**1,800**	776	ND	**640**
GM-11S	7/6/1998	680	470 J	ND	41
GM-11S	10/20/1998	260	584	ND	27
GM-11S	12/15/1998	**1,300**	1,090	ND	**500**
GM-11S	3/26/1999	**1,100**	779	ND	**220**
GM-11S	6/23/1999	710	520	ND	**92**
GM-11S	CONVERTED TO RECOVERY WELL - SAMPLING DISCONTINUED				
GM-12S	4/10/1997	140	4,500	2,720	42.9
GM-12S	7/8/1997	160	4,590	3,450	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
GM-12S	10/20/1997	ND	600	1,630	ND
GM-12S	1/21/1998	ND	1,210	2,040	ND
GM-12S	3/10/1998	ND	2,040	ND	ND
GM-12S	7/6/1998	140	2,830	1,980	0.8
GM-12S	10/20/1998	77	1,200	775	ND
GM-12S	3/26/1999	280	2,080 J	1,100 J	0.5
GM-12S	6/23/1999	260	1,530	ND	ND
GM-12S		WELL DELETED FROM MONITORING PROGRAM			
GM-14S	9/13/2007	608	1020	ND	0.97
GM-14S	12/20/2007	389	341	ND	1.02
GM-14S	3/27/2008	172	ND	ND	0.538
GM-14S	6/27/2008	**2,680 J**	577	ND	2.5 J
GM-14S	9/19/2008	**1,440**	719	ND	1.32
GM-14S	12/17/2008	**1,630 J**	963	ND	1.6
GM-14S	3/12/2009	**1,300**	562	ND	7.98
GM-14S	6/11/2009	**2,500**	R	R	ND
GM-14S	9/18/2009	**2,300**	1,600	ND	ND
GM-14S	12/17/2009	750	870	ND	ND
GM-14S	4/1/2010	**2,000**	880	ND	ND
GM-14S	6/10/2010	**1,900 J**	3,200	560	11 J
GM-14S	9/16/2010	**2,070**	690	ND	ND
GM-14S	12/15/2010	245	400	ND	ND
GM-14S	3/23/2011	748	350	ND	ND
GM-14S	6/23/2011	**2,190**	590	ND	ND
GM-14S	9/28/2011	**3,660**	840	ND	ND
GM-14S	12/21/2011	**3,150**	1,200	ND	ND
GM-14S	3/21/2012	903	480	ND	ND
GM-14S	6/22/2012	**3,050**	500	ND	ND
GM-14S	9/11/2012	**3,330**	920	ND	ND
GM-14S	12/20/2012	464	480	ND	ND
GM-14S	3/20/2013	**1,400**	340	ND	ND
GM-14S	6/26/2013	**2,200**	770	ND	1.3
GM-14S	9/11/2013	**1,700**	810	ND	0.77
GM-14S	12/11/2013	**3,300**	570	ND	ND
GM-14S	3/12/2014	760	1,600	940	0.53
GM-14S	6/11/2014	**2,000 J**	1,300	ND	1.2
GM-14S	9/10/2014	**2,900 J**	1,100	ND	0.87
GM-14S	12/10/2014	1,000	1,800	1,200	0.84
GM-14S	3/11/2015	**2,000 J**	1,300	ND	1.0
GM-14S	6/9/2015	**2,500 J**	2,000	ND	1.6
GM-14S	9/23/2015	**2,500**	1,600	ND	1.0
GM-14S	12/16/2015	450	1,200	850	1.0
GM-14S	3/9/2016	150	710	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
GM-14S	6/9/2016	**2,700 J**	2,200	ND	0.51
GM-14S	9/9/2016	**2,400 J**	1,900	ND	ND
GM-14S	12/7/2016	550	1,300	ND	ND U
GM-14S	3/8/2017	180	1,400	1000	ND
GM-14S	6/7/2017	**1,200 J**	630	ND	ND
GM-14S	9/13/2017	**2,100**	1,000	ND	ND
GM-14S	12/6/2017	870	890	ND	ND
GM-14S	3/21/2018	870 J	590	ND	ND
GM-14S	6/19/2018	950 J	960	ND	ND
GM-14S	9/12/2018	**2,200 J**	1,200	ND	ND
GM-14S	12/12/2018	**1,600**	930	ND	ND
GM-14S	3/13/2019	760	680	ND	ND
GM-14S	6/19/2019	**2,500**	1,400	ND	ND
GM-14S	9/25/2019	**1,800**	1,500	ND	ND
GM-14S	12/18/2019	**2,300**	1,000	ND	ND
GM-14S	3/19/2020	**1,200**	490 J	ND UJ	ND
GM-14S	6/10/2020	**1,200**	1,300	ND	ND
GM-14S	9/17/2020	**3,000**	950	ND	ND
GM-14S	12/16/2020	**1,900**	880	ND	ND
GM-14S	3/11/2021	700	440	ND	ND
GM-14S	6/17/2021	**2,000**	830	ND	6.5
GM-14S	9/23/2021	**1,700**	3,900	930	**220**
GM-14S	12/8/2021	460	380	ND	27
GM-14S	3/24/2022	680	330	ND	**220**
GM-14S	6/22/2022	**1,100**	650	ND	**850**
GM-14S	9/22/2022	**1,900**	1,200	ND	**1,900**
GM-14S	1/12/2023	280 J	500	ND	**200**
GM-14S	3/30/2023	600 J	1200 J	ND UJ	**650 J**
GM-14S	6/28/2023	970	2,000	ND	**700**
GM-14S	9/28/2023	940	2,000	ND	**530**
GM-14S	12/14/2023	530	670	ND	**440**
GM-15S	4/9/1997	ND	290	ND	ND
GM-15S	7/8/1997	170	800	ND	1.4
GM-15S	10/21/1997	ND	ND	ND	ND
GM-15S	1/21/1998	ND	293	ND	ND
GM-15S	3/11/1998	ND	ND	ND	ND
GM-15S	7/7/1998	54	253	ND	ND
GM-15S	10/21/1998	310	550	ND	ND
GM-15S	12/15/1998	120	342	ND	ND
GM-15S	3/25/1999	ND	ND	ND	ND
GM-15S	6/23/1999	76	ND	ND	ND
GM-15S	9/27/1999	NS	NS	NS	NS
GM-15S	12/14/1999	160 U	316	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
GM-15S	3/24/2000	ND	451	ND	ND
GM-15S	6/30/2000	167	1,200	ND	ND
GM-15S	9/27/2000	355 J	1,130 J	ND	ND UJ
GM-15S	12/21/2000	801	1,990	ND	ND
GM-15S	3/27/2001	548	2,810	ND	0.747 J
GM-15S	6/12/2001	909	1,040	ND	2.58 U
GM-15S	10/3/2001	955	1,220	ND	10.9 J
GM-15S	12/11/2001	578	1,100	ND	9.62
GM-15S	3/6/2002	434	1,430	ND	12.1
GM-15S	6/10/2002	786	2,530	ND	14.7
GM-15S	9/18/2002	825 J	1,320 J	ND UJ	9.38 J
GM-15S	12/16/2002	738	1,690 J	ND	4.16
GM-15S	3/25/2003	833 J	2,920	ND	3.57 J
GM-15S	6/26/2003	616	2,940 J	ND	2.49 J
GM-15S	9/19/2003	636	1,530	ND	1.58
GM-15S	12/22/2003	672	647 J	ND	1.47 J
GM-15S	3/8/2004	458 J	ND	ND	2.83 J
GM-15S	6/17/2004	836 J	356	ND	1.26
GM-15S	9/28/2004	655	ND	ND	1.62 J
GM-15S	12/8/2004	847	ND	ND	1.53
GM-15S	3/11/2005	587	ND	ND	1.07 J
GM-15S	6/22/2005	984 J	ND	ND	0.682
GM-15S	9/28/2005	840	ND	ND	1.43 J
GM-15S	12/14/2005	702	ND	ND	1.27
GM-15S	3/22/2006	317	ND	ND	0.614
GM-15S	7/7/2006	647	ND	ND	0.767
GM-15S	9/19/2006	533	ND	ND	0.836
GM-15S	12/13/2006	494 J	ND UJ	ND UJ	ND UJ
GM-15S	3/22/2007	420	ND	ND	ND
GM-15S	6/7/2007	404	ND	ND	0.505
GM-15S	9/13/2007	180	ND	ND	ND UJ
GM-15S	12/19/2007	549	ND	ND	0.943
GM-15S	3/26/2008	404	ND	ND	0.613
GM-15S	6/26/2008	480	ND	ND	0.665
GM-15S	9/18/2008	445	ND	ND	0.599
GM-15S	12/17/2008	Well not sampled, sampling reduced to a semi-annual event			
GM-15S	3/12/2009	695	ND	ND	19.6
GM-15S	9/16/2009	390	ND	ND	ND
GM-15S	3/30/2010	670	520	ND	1.1
GM-15S	9/15/2010	269	ND	ND	6.6
GM-15S	3/23/2011	ND	ND	ND	ND
GM-15S	9/27/2011	427	ND	ND	0.79
GM-15S	3/20/2012	143	ND	ND	ND
GM-15S	9/10/2012	ND	ND	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
GM-15S	3/19/2013	92	ND	ND	**100**
GM-15S	6/25/2013	**1,300**	ND	ND	**400**
GM-15S	9/10/2013	270	ND	ND	**110**
GM-15S	12/11/2013	320	ND	ND	1.3
GM-15S	3/12/2014	110	430 J	ND	ND
GM-15S	6/11/2014	ND	ND	ND	ND
GM-15S	9/9/2014	180	870	ND	ND
GM-15S	12/9/2014	250	520	ND	ND
GM-15S	3/10/2015	ND	340	ND	ND
GM-15S	6/9/2015	72	400	ND	ND
GM-15S	9/22/2015	430	ND	ND	ND
GM-15S	12/15/2015	370	ND	ND	ND
GM-15S	3/8/2016	100	ND	ND	ND
GM-15S	6/8/2016	ND	600	ND	ND
GM-15S	9/8/2016	240	660	ND	ND
GM-15S	12/6/2016	ND	ND	ND UJ	ND U
GM-15S	3/7/2017	ND	350	210	ND
GM-15S	6/6/2017	ND	ND	ND	ND
GM-15S	9/12/2017	140	ND	ND	ND
GM-15S	12/6/2017	100	ND	ND	ND
GM-15S	9/11/2018	310	460	ND	ND
GM-15S	3/12/2019	150	ND	ND	ND
GM-15S	9/24/2019	250	ND	ND	ND
GM-15S	3/18/2020	ND	ND	ND	ND
GM-15S	9/16/2020	190	320	ND	ND
GM-15S	3/10/2021	ND	ND	ND	ND
GM-15S	9/22/2021	180	ND	ND	ND
GM-15S	3/23/2022	ND	ND	ND	ND
GM-15S	9/21/2022	300	260	ND	1.7
GM-15S	3/29/2023	ND UJ	ND UJ	ND UJ	ND UJ
GM-15S	9/28/2023	150	500	ND	ND
GM-16S	4/9/1997	ND	3,980	1,630	
GM-16S	7/8/1997	ND	3,890	1,710	ND
GM-16S	10/21/1997	ND	720	ND	ND
GM-16S	1/21/1998	ND	1,390	ND	ND
GM-16S	3/12/1998	ND	5,780	1,620	ND
GM-16S	7/7/1998	ND	1,310	ND	ND
GM-16S	10/20/1998	ND	ND	ND	ND
GM-16S	12/17/1998	ND	2,170	871	ND
GM-16S	3/26/1999	NS	1,990	960	NS
GM-16S	6/28/1999	NS	480	ND	NS
GM-16S	WELL DELETED FROM MONITORING PROGRAM / REINITIATED 3RD QUARTER 2007				
GM-16S	9/13/2007	ND	ND	ND	ND UJ
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
GM-16S	12/20/2007	ND	ND	ND	ND
GM-16S	3/27/2008	65.3	ND	ND	ND
GM-16S	6/27/2008	81.1	ND	ND	ND
GM-16S	9/19/2008	72.7	ND	ND	ND
GM-16S	12/17/2008	Well not sampled, sampling has been reduced to a semi-annual event			
GM-16S	3/12/2009	ND	456	ND	ND
GM-16S	9/18/2009	300	750	ND	ND
GM-16S	3/31/2010	390	1,800	ND	ND
GM-16S	9/16/2010	263	490	ND	ND
GM-16S	3/23/2011	193	350	ND	ND
GM-16S	9/28/2011	377	400	ND	ND
GM-16S	3/21/2012	ND	290	ND	ND
GM-16S	9/11/2012	ND	ND	ND	ND
GM-16S	3/20/2013	79	ND	ND	ND
GM-16S	9/11/2013	62	ND	ND	ND
GM-16S	3/12/2014	ND	1,600	ND	ND
GM-16S	9/10/2014	960	1,200	ND	ND
GM-16S	3/11/2015	400	2,200	970	ND
GM-16S	9/23/2015	170	910	ND	ND
GM-16S	3/9/2016	170	660	ND U	ND
GM-16S	9/9/2016	340	1,900	ND	ND
GM-16S	3/8/2017	91	1,500	680	ND
GM-16S	9/13/2017	380	1,300	ND	ND
GM-16S	3/21/2018	160	350	ND	ND
GM-16S	9/12/2018	260	700	ND	ND
GM-16S	3/13/2019	200	700	ND	ND
GM-16S	9/25/2019	130	970	ND	ND
GM-16S	3/19/2020	89	550	ND	ND
GM-16S	9/17/2020	140	670	ND	ND
GM-16S	3/11/2021	59	460	ND	ND
GM-16S	9/23/2021	80	490	ND	ND
GM-16S	3/24/2022	ND	ND	ND	ND
GM-16S	9/22/2022	ND	640	ND	ND
GM-16S	3/30/2023	ND UJ	360 J	ND UJ	0.68 J
GM-16S	9/28/2023	ND	380	ND	ND
GM-17S	4/9/1997	ND	1,720	900	ND
GM-17S	7/9/1997	ND	720	ND	ND
GM-17S	10/21/1997	ND	ND	ND	ND
GM-17S	1/22/1998	ND	320	ND	ND
GM-17S	3/11/1998	ND	926	ND	ND
GM-17S	7/7/1998	52 J	410 J	ND UJ	ND UJ
GM-17S	10/21/1998	ND	ND	ND	ND
GM-17S	12/15/1998	ND	1,060	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
GM-17S	3/26/1999	NS	851	ND	NS
GM-17S	6/28/1999	NS	393	ND	NS
GM-17S	WELL DELETED FROM MONITORING PROGRAM / REINITIATED 3RD QUARTER 2007				
GM-17S	9/13/2007	ND	ND	ND	ND UJ
GM-17S	12/20/2007	ND	ND	ND	ND
GM-17S	3/27/2008	ND	ND	ND	ND
GM-17S	6/27/2008	ND	ND	ND	ND
GM-17S	9/19/2008	ND	ND	ND	ND
GM-17S	12/17/2008	Well not sampled, sampling has been reduced to a semi-annual event			
GM-17S	3/12/2009	ND	ND	ND	ND
GM-17S	9/18/2009	53	ND	ND	ND
GM-17S	3/31/2010	ND	ND	ND	ND
GM-17S	9/16/2010	ND	ND	ND	ND
GM-17S	3/23/2011	ND	ND	ND	ND
GM-17S	9/28/2011	ND	ND	ND	ND
GM-17S	3/21/2012	ND	ND	ND	ND
GM-17S	9/11/2012	ND	ND	ND	ND
GM-17S	3/20/2013	ND	ND	ND	ND
GM-17S	9/11/2013	ND	ND	ND	ND
GM-17S	3/12/2014	ND	420	ND	ND
GM-17S	9/10/2014	ND	ND	ND	ND
GM-17S	3/11/2015	ND U	ND	ND	ND
GM-17S	9/23/2015	ND	250	ND	ND
GM-17S	3/9/2016	ND	ND	ND U	ND
GM-17S	9/9/2016	ND	710	ND	ND
GM-17S	3/8/2017	ND	450	430	ND
GM-17S	9/13/2017	63	ND	ND	ND
GM-17S	3/21/2018	56	ND	ND	ND
GM-17S	9/12/2018	63	ND	ND	ND
GM-17S	3/13/2019	71	ND	ND	ND
GM-17S	9/25/2019	ND	ND	ND	ND
GM-17S	3/19/2020	ND	ND	ND	ND
GM-17S	9/17/2020	ND	ND	ND	ND
GM-17S	3/11/2021	ND	ND	ND	ND
GM-17S	9/23/2021	ND	ND	ND	ND
GM-17S	3/24/2022	ND	ND	ND	ND
GM-17S	9/22/2022	ND	ND	ND	ND
GM-17S	3/30/2023	ND UJ	ND UJ	ND UJ	ND UJ
GM-17S	9/28/2023	ND	ND	ND	ND
GM-24S	4/9/1997	970	2,180	1,070	ND
GM-24S	7/9/1997	**4,040**	1,200	ND	ND
GM-24S	10/22/1997	**2,760**	710	ND	1.1
GM-24S	1/22/1998	**1,300**	841	ND	2.1
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
GM-24S	3/11/1998	370	765	ND	ND
GM-24S	7/7/1998	**1,500 J**	762 J	ND UJ	ND UJ
GM-24S	10/20/1998	800	929	ND	1.6
GM-24S	12/17/1998	**1,100**	867	ND	ND
GM-24S	3/26/1999	**3,500**	1,470	ND	ND
GM-24S	6/28/1999	**2,600**	1,390	ND	**2,600**
GM-24S	9/29/1999	**2,200**	1,030	ND	0.8
GM-24S	12/14/1999	**1,900**	857	ND	1.3 U
GM-24S	3/24/2000	**2,860**	1,230	ND	ND
GM-24S	6/30/2000	**4,570**	2,110	ND	ND
GM-24S	9/27/2000	**3,080 J**	2,690 J	ND	ND UJ
GM-24S	12/21/2000	**3,420**	4,100	947	ND
GM-24S	3/27/2001	**2,570**	3,120	884	0.704 J
GM-24S	6/12/2001	Tank Farm was inaccessible to sampling activities			
GM-24S	10/3/2001	**2,820**	1,800	ND	3.88 J
GM-24S	12/11/2001	**1,560**	2,250	ND	1.13 J
GM-24S	3/6/2002	**2,180**	2,170	ND	12.1
GM-24S	6/10/2002	**2,230**	1,800	ND	2.2 J
GM-24S	9/18/2002	**1,930 J**	1,130 J	ND UJ	3.79 J
GM-24S	12/16/2002	**1,330**	4,250	949	2.32
GM-24S	3/25/2003	**1,510**	1,930	850	0.667 J
GM-24S	6/25/2003	**3,510 J**	ND UJ	ND UJ	3.38 J
GM-24S	9/19/2003	**2,490**	1,610	ND	3.49
GM-24S	12/23/2003	**2,890**	2,220 J	ND	1.66 J
GM-24S	3/9/2004	**2,850**	345	ND	0.928 J
GM-24S	6/17/2004	**2,800**	567	ND	1.66
GM-24S	9/29/2004	**2,190**	0.365	ND	2.25
GM-24S	12/9/2004	**1,910**	ND	ND	2.34
GM-24S	3/11/2005	**2,670**	0.365	ND	1.61
GM-24S	6/22/2005	**3,990**	261	ND	3.68
GM-24S	9/28/2005	**4,190**	296	ND	3.23 J
GM-24S	12/14/2005	**2,430**	293	ND	2.79
GM-24S	3/22/2006	**2,310**	303	ND	1.95 J
GM-24S	7/7/2006	**2,700**	ND	ND	1.82
GM-24S	9/19/2006	**2,480**	535	ND	2.03
GM-24S	12/14/2006	**1,070 J**	ND UJ	ND UJ	ND UJ
GM-24S	3/22/2007	**2,750 J**	427 J	ND	2.97 J
GM-24S	6/7/2007	**2,600 J**	429	ND	2.25
GM-24S	9/13/2007	**1,390 J**	346 J	ND	1.16 J
GM-24S	12/20/2007	**ND UJ**	ND	ND	ND
GM-24S	3/27/2008	578	ND	ND	0.59
GM-24S	6/26/2008	**1,980**	439	ND	2.13
GM-24S	9/19/2008	**1,210**	252	ND	1.34
GM-24S	12/17/2008	**1,260**	ND	ND	1.32 J
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
GM-24S	3/12/2009	**1,260**	309	ND	1.35
GM-24S	6/11/2009	**1,200**	R	R	ND
GM-24S	9/17/2009	**1,600 J**	850	ND	ND
GM-24S	12/17/2009	620 J	430	ND	ND
GM-24S	4/1/2010	990 J	370	ND	ND
GM-24S	6/10/2010	**1,200**	760 J	ND	2.9 J
GM-24S	9/16/2010	**1,480 J**	460 J	ND	ND
GM-24S	12/15/2010	448	ND	ND	ND
GM-24S	3/23/2011	**2,260**	350	ND	ND
GM-24S	6/23/2011	**1,140 J**	380	ND	ND
GM-24S	9/28/2011	806 J	710 J	ND	ND
GM-24S	12/21/2011	**2,080**	260	ND	ND
GM-24S	3/21/2012	462 J	260	ND	ND
GM-24S	6/22/2012	**1,220**	270	ND	ND
GM-24S	9/11/2012	**2,460**	550	ND	ND
GM-24S	12/20/2012	244	ND	ND	ND
GM-24S	3/20/2013	**1,100**	270	ND	ND
GM-24S	6/26/2013	850 J	390	ND	ND
GM-24S	9/11/2013	500 J	470	ND	ND UJ
GM-24S	12/11/2013	**1,700**	450 J	ND	ND
GM-24S	3/12/2014	200 J	300 J	ND	ND
GM-24S	6/11/2014	1,000	450	ND	ND
GM-24S	9/10/2014	620 J	720	ND	ND
GM-24S	12/10/2014	840 J	320	ND	ND
GM-24S	3/11/2015	**1,400**	610	ND	ND
GM-24S	6/10/2015	**1,100**	500	ND	ND
GM-24S	9/23/2015	490 J	630 J	ND	ND
GM-24S	12/16/2015	170 J	ND	ND	ND UJ
GM-24S	3/9/2016	440	290 J	ND UJ	ND
GM-24S	6/9/2016	750 J	590	ND UJ	ND
GM-24S	9/9/2016	**1,800**	1,000	ND	ND
GM-24S	12/7/2016	450 J	350	ND UJ	ND
GM-24S	3/8/2017	550 J	430	290	ND
GM-24S	6/7/2017	560 J	280	ND	ND
GM-24S	9/13/2017	**1,500**	670	ND	ND
GM-24S	12/6/2017	440	ND	ND	ND
GM-24S	3/21/2018	790	370	270	ND
GM-24S	6/20/2018	310	170	ND	ND
GM-24S	9/12/2018	530 J	990 J	410 J	ND
GM-24S	12/12/2018	460 J	310	ND	ND
GM-24S	3/13/2019	510	250	ND	ND
GM-24S	6/19/2019	580	470	ND	ND
GM-24S	9/25/2019	920 J	900	ND	ND
GM-24S	12/18/2019	**1,200 J**	580	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
GM-24S	3/19/2020	750	300	ND	ND
GM-24S	6/10/2020	870 J	470	ND	ND
GM-24S	9/17/2020	**2,100 J**	800	ND	ND
GM-24S	12/16/2020	**1,200 J**	390	ND	ND
GM-24S	3/11/2021	**2,300 J**	680 J	ND	0.59
GM-24S	6/17/2021	530 J	350 J	ND	ND
GM-24S	9/23/2021	640	470 J	ND	ND
GM-24S	12/8/2021	450	280	ND	ND
GM-24S	3/24/2022	590 J	270 J	ND	ND
GM-24S	6/22/2022	380	520	ND	ND
GM-24S	9/22/2022	**1,500**	600	ND	ND
GM-24S	1/12/2023	420 J	560 J	ND	ND
GM-24S	3/30/2023	250 J	310 J	ND UJ	ND UJ
GM-24S	6/28/2023	190 J	ND UJ	ND	ND
GM-24S	9/28/2023	320	320	ND	ND
GM-24S	12/14/2023	450	370	ND	ND
AR-03	4/9/1997	**4,560**	5,890 J	1,070 J	**2,780 J**
AR-03	7/8/1997	**2,690**	7,600	1,640	**311**
AR-03	10/21/1997	**2,460**	730	ND	**204**
AR-03	1/21/1998	570	1,740	ND	41
AR-03	3/10/1998	**2,800**	2,490	ND	**850**
AR-03	7/6/1998	**2,900**	2,030	ND	35
AR-03	10/20/1998	990	2,230	ND	ND
AR-03	12/15/1998	780	1,200	ND	50
AR-03	3/25/1999	**3,800**	2,480	ND	**1,600**
AR-03	6/23/1999	**3,300**	2,390	ND	**290**
AR-03	9/29/1999	**3,400**	2,570	ND	10
AR-03	12/14/1999	**2,400**	1,390	ND	**340**
AR-03	3/24/2000	**1,380**	3,600	ND	**574**
AR-03	6/30/2000	**3,230**	7,980	1,040	**523**
AR-03	9/27/2000	**2,320 J**	3,700 J	772	ND UJ
AR-03	12/21/2000	**2,480**	5,140	ND	41.9
AR-03	3/27/2001	**2,050**	3,500	812	**583**
AR-03	6/14/2001	**1,330 J**	2,220	ND	1.59 R
AR-03	10/3/2001	533	1,640	ND	ND
AR-03	12/11/2001	**1,870**	1,790	ND	**661**
AR-03	3/6/2002	**2,890**	4,520	ND	**1800**
AR-03	6/10/2002	**2280 J**	5,590	794	**160 J**
AR-03	9/18/2002	484 J	1,890 J	ND UJ	6.01 J
AR-03	12/16/2002	321	2,830	ND	ND
AR-03	3/26/2003	**2,090**	6,190	ND	**1070 J**
AR-03	6/26/2003	610 J	2,790	ND	28.1
AR-03	9/19/2003	297	1,630	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
AR-03	12/23/2003	918	1640 J	ND	**228**
AR-03	3/9/2004	**2,350**	ND	ND	**659**
AR-03	6/17/2004	769 J	675	ND	34.3
AR-03	9/29/2004	332	ND	ND	ND
AR-03	12/8/2004	344	ND	ND	6.65
AR-03	3/11/2005	454	ND	ND	12.6
AR-03	6/22/2005	288	ND	ND	1.47
AR-03	9/28/2005	389	ND	ND	ND
AR-03	12/14/2005	520	408	ND	32.7
AR-03	3/22/2006	**2,450**	947	ND	**451**
AR-03	7/7/2006	860	ND	ND	67.3
AR-03	9/19/2006	323	ND	ND	ND
AR-03	12/13/2006	**1,210 J**	ND UJ	ND UJ	**134 J**
AR-03	3/22/2007	**1,880 J**	518	ND	**304**
AR-03	6/7/2007	**1,503**	ND	ND	**148**
AR-03	9/13/2007	186	ND	ND	ND
AR-03	12/19/2007	317	ND	ND	1.59
AR-03	3/26/2008	**2,010**	263	ND	172
AR-03	6/26/2008	**2,580**	ND	ND	**72.0**
AR-03	9/17/2008	758	ND	ND	0.79
AR-03	12/17/2008	**1,030 J**	384	ND	0.94
AR-03	3/13/2009	157	462	ND	ND
AR-03	6/11/2009	940	R	R	3.30
AR-03	9/17/2009	**1,200**	590	ND	ND
AR-03	12/16/2009	160	1,100	ND	ND
AR-03	3/31/2010	230	3,700	ND	ND
AR-03	6/10/2010	810	**14,000**	930	ND
AR-03	9/15/2010	676	180	ND	ND
AR-03	12/15/2010	ND	130	ND	ND
AR-03	3/24/2011	ND	390	ND	ND
AR-03	6/23/2011	297	380	ND	ND
AR-03	9/28/2011	821	270	ND	ND
AR-03	12/21/2011	940	170	ND	ND
AR-03	3/21/2012	ND	ND	ND	ND
AR-03	6/21/2012	ND	340	ND	ND
AR-03	9/10/2012	815 J	650 J	ND	ND
AR-03	12/20/2012	ND	460	ND	ND
AR-03	3/20/2013	78	ND	ND	ND
AR-03	6/26/2013	370	ND	ND	ND
AR-03	9/11/2013	540	280	ND	ND
AR-03	12/11/2013	390	560	ND	ND
AR-03	3/12/2014	ND	1,100 J	ND	ND
AR-03	6/10/2014	ND UJ	2,700	ND	ND
AR-03	9/9/2014	260	3,100	850	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1 Continued					
AR-03	12/10/2014	ND	2,100	1,100	ND
AR-03	3/10/2015	ND U	1,800	ND	ND
AR-03	6/10/2015	330	3,100	860	ND
AR-03	9/23/2015	620	390	ND	ND
AR-03	12/16/2015	ND	1,100	ND	ND
AR-03	3/8/2016	ND	680	ND U	ND
AR-03	6/9/2016	390	3,500	1,200	ND
AR-03	9/7/2016	780 J	2,200	760	ND
AR-03	12/7/2016	ND U	1,800	ND	ND U
AR-03	3/8/2017	ND	2,100	920	ND
AR-03	6/7/2017	ND	740	ND	ND
AR-03	9/13/2017	420	940	ND	ND
AR-03	12/5/2017	140 J	ND	ND	ND
AR-03	3/21/2018	66	ND	ND	ND
AR-03	9/11/2018	690 J	690	ND	ND
AR-03	3/13/2019	540	ND	ND	ND
AR-03	9/24/2019	480	570	ND	ND
AR-03	3/18/2020	59	410	ND	ND
AR-03	9/16/2020	680	490	ND	ND
AR-03	3/10/2021	ND	430	ND	ND
AR-03	9/22/2021	390	330	ND	ND
AR-03	3/23/2022	110	270	ND	ND
AR-03	9/21/2022	740	500	ND	ND
AR-03	3/29/2023	ND UJ	790 J	ND UJ	ND UJ
AR-03	9/28/2023	520	820	ND	ND
MW-1-T9	12/15/2005	434	785	ND	ND
MW-1-T9	3/22/2006	**1,600**	214	ND	**78.9**
MW-1-T9	7/7/2006	816	ND	ND	0.852
MW-1-T9	9/19/2006	236	ND	ND	ND
MW-1-T9	12/13/2006	307 J	ND UJ	ND UJ	ND UJ
MW-1-T9	3/22/2007	922 J	510	ND	15.8 J
MW-1-T9	6/7/2007	**1,130**	428	ND	0.779
MW-1-T9	9/14/2007	536	ND	ND	ND
MW-1-T9	12/19/2007	120	ND	ND	ND
MW-1-T9	3/26/2008	879	467	ND	18.3
MW-1-T9	6/26/2008	**1,050 J**	ND	ND	7.02
MW-1-T9	9/18/2008	919	ND	ND	0.5
MW-1-T9	12/17/2008	374	ND	ND	ND
MW-1-T9	3/13/2009	377	445	ND	0.666
MW-1-T9	6/11/2009	1,000	R	R	1.7
MW-1-T9	9/17/2009	980	770	ND	0.5
MW-1-T9	12/17/2009	98	590	ND	ND
MW-1-T9	3/31/2010	**1,300 J**	**11,000**	ND	1.4
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1 Continued					
MW-1-T9	6/10/2010	820	**14,000**	1,200	0.7
MW-1-T9	9/15/2010	473	160	ND	ND
MW-1-T9	12/15/2010	147	120	ND	ND
MW-1-T9	3/24/2011	256	440	ND	ND
MW-1-T9	6/22/2011	437	370	ND	ND
MW-1-T9	9/29/2011	338	ND	ND	ND
MW-1-T9	12/21/2011	438	110	ND	ND
MW-1-T9	3/22/2012	121	ND	ND	ND
MW-1-T9	6/22/2012	268	260	ND	ND
MW-1-T9	9/10/2012	338	580	ND	ND
MW-1-T9	12/20/2012	170	530	ND	ND
MW-1-T9	3/20/2013	300	ND	ND	ND
MW-1-T9	6/26/2013	380	ND	ND	ND
MW-1-T9	9/11/2013	270	ND	ND	ND
MW-1-T9	12/11/2013	560	160	ND	ND
MW-1-T9	3/12/2014	160	3,700 J	890 J	ND
MW-1-T9	6/11/2014	360	5,800	940	ND
MW-1-T9	9/10/2014	350	3,700	700	ND
MW-1-T9	12/10/2014	160	1,600	ND	ND
MW-1-T9	3/11/2015	250	**12,000**	2,500	ND
MW-1-T9	6/10/2015	320	5,300	1,400	ND
MW-1-T9	9/23/2015	250	540	ND	ND
MW-1-T9	12/16/2015	170	1,100	ND	ND
MW-1-T9	3/9/2016	310	2,900	ND	ND
MW-1-T9	6/9/2016	490	7,900	3,200	ND
MW-1-T9	9/7/2016	320	1,600	ND	ND
MW-1-T9	12/7/2016	150	4,200	1,200	ND U
MW-1-T9	3/8/2017	140	7,100	1,900	ND
MW-1-T9	6/7/2017	260	2,400	ND	ND
MW-1-T9	9/13/2017	280	830	ND	ND
MW-1-T9	12/6/2017	290	ND	ND	ND
MW-1-T9	3/21/2018	200	ND	ND	ND
MW-1-T9	9/12/2018	320	1,000	ND	ND
MW-1-T9	3/13/2019	370	620	ND	ND
MW-1-T9	9/25/2019	220	470	ND	ND
MW-1-T9	3/19/2020	120	1,000	ND	ND
MW-1-T9	9/17/2020	380	500	ND	ND
MW-1-T9	3/11/2021	170	330	ND	ND
MW-1-T9	9/23/2021	290	580	ND	ND
MW-1-T9	3/24/2022	87	ND	ND	ND
MW-1-T9	9/22/2022	260	380	ND	ND
MW-1-T9	3/31/2023	240	1,200	ND	ND
MW-1-T9	9/27/2023	200	830	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1 Continued					
MW-2-T9	12/15/2005	**7,870**	2,270	ND	63.9
MW-2-T9	3/22/2006	**8,070**	212	ND	49.6
MW-2-T9	7/7/2006	**2,670 J**	ND	ND	17.8
MW-2-T9	9/19/2006	**1,280**	ND	ND	13.4
MW-2-T9	12/13/2006	**1,980 J**	ND UJ	ND UJ	7.17 J
MW-2-T9	3/22/2007	**3,700 J**	ND	ND	24.1 J
MW-2-T9	6/7/2007	**2830 J**	0.261	ND	16.6 J
MW-2-T9	9/14/2007	748	ND	ND	4.69 J
MW-2-T9	12/19/2007	869	ND	ND	3.82
MW-2-T9	3/26/2008	**3,420**	ND	ND	21.5
MW-2-T9	6/26/2008	**1,170 J**	ND	ND	7.1
MW-2-T9	9/18/2008	**1,100**	ND	ND	1.62
MW-2-T9	12/17/2008	**1,110**	ND	ND	1.93
MW-2-T9	3/13/2009	**1,140**	ND	ND	2.92
MW-2-T9	6/11/2009	**2,200**	R	R	0.75
MW-2-T9	9/17/2009	940	370	ND	ND
MW-2-T9	12/17/2009	**1,200**	1,500	ND	ND
MW-2-T9	3/31/2010	**2,200 J**	1,100	ND	0.75
MW-2-T9	6/10/2010	**1500 J**	3,100	340	1.5
MW-2-T9	9/15/2010	683	ND	ND	ND
MW-2-T9	12/15/2010	**1,810**	390	ND	0.53
MW-2-T9	3/24/2011	**2,000**	430	ND	ND
MW-2-T9	6/23/2011	**1,400**	250	ND	ND
MW-2-T9	9/29/2011	962	320	ND	ND
MW-2-T9	12/21/2011	**1,280**	120	ND	ND
MW-2-T9	3/22/2012	426	ND	ND	ND
MW-2-T9	6/22/2012	766	270	ND	ND
MW-2-T9	9/10/2012	**1,710**	460	ND	ND
MW-2-T9	12/20/2012	513	ND UJ	ND UJ	ND
MW-2-T9	3/20/2013	580	ND	ND	ND
MW-2-T9	6/26/2013	650	ND	ND	ND
MW-2-T9	9/10/2013	700	ND	ND	ND
MW-2-T9	12/11/2013	700	240	ND	ND
MW-2-T9	3/12/2014	740	1,400 J	ND	ND
MW-2-T9	6/11/2014	380	1,000	ND	ND
MW-2-T9	9/10/2014	520	680	ND	ND
MW-2-T9	12/10/2014	360	1,100	ND	ND
MW-2-T9	3/11/2015	270	1,000	ND	ND
MW-2-T9	6/10/2015	620	1,100	ND	ND
MW-2-T9	9/23/2015	410	680	ND	ND
MW-2-T9	12/16/2015	770	830	ND	ND
MW-2-T9	3/9/2016	660	960	ND	ND
MW-2-T9	6/9/2016	670	1,600	ND	ND
MW-2-T9	9/7/2016	620	1,100	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
MW-2-T9	12/7/2016	480	1,300	ND	ND U
MW-2-T9	3/8/2017	520	1,800	730	ND
MW-2-T9	6/7/2017	630 J	370	ND	ND
MW-2-T9	9/13/2017	610	420	ND	ND
MW-2-T9	12/6/2017	480	ND	ND	ND
MW-2-T9	3/21/2018	490	190	ND	ND
MW-2-T9	9/12/2018	660	1,000	270	ND
MW-2-T9	3/13/2019	470	350	ND	ND
MW-2-T9	9/25/2019	440	480	ND	ND
MW-2-T9	3/19/2020	470	970	ND	ND
MW-2-T9	9/17/2020	480	610	ND	ND
MW-2-T9	3/11/2021	260	ND	ND	ND
MW-2-T9	9/23/2021	310	480	ND	ND
MW-2-T9	3/24/2022	170	250	ND	ND
MW-2-T9	9/22/2022	290	540	ND	ND
MW-2-T9	3/31/2023	230	530	ND	ND
MW-2-T9	9/27/2023	760	620	ND	ND
MW-3-T9	12/15/2005	509	860	ND	2.08
MW-3-T9	3/22/2006	572	543	ND	2.67
MW-3-T9	7/7/2006	749	ND	ND	3.48
MW-3-T9	9/19/2006	609	317	ND	1.48
MW-3-T9	12/13/2006	541	ND	ND	1.33
MW-3-T9	3/22/2007	722	ND	ND	2.33
MW-3-T9	6/7/2007	603	ND	ND	2.1
MW-3-T9	9/14/2007	536	ND	ND	1.68 J
MW-3-T9	12/19/2007	578	ND	ND	1.61
MW-3-T9	3/26/2008	522	ND	ND	1.36
MW-3-T9	6/26/2008	711	ND	ND	4.78
MW-3-T9	9/17/2008	502	ND	ND	0.585
MW-3-T9	12/17/2008	668	ND	ND	5.35
MW-3-T9	3/13/2009	275	ND	ND	0.553
MW-3-T9	6/11/2009	630	2,400	1,800	7
MW-3-T9	9/17/2009	490	ND	ND	ND
MW-3-T9	12/17/2009	580	1,000	ND	ND
MW-3-T9	3/31/2010	690 J	790	ND	5.1
MW-3-T9	6/10/2010	500	2,500	ND	5.2
MW-3-T9	9/15/2010	331	ND	ND	3.8
MW-3-T9	12/15/2010	449	ND	ND	15
MW-3-T9	3/24/2011	826	270	ND	**87.7**
MW-3-T9	6/23/2011	632	ND	ND	69.6
MW-3-T9	9/29/2011	468	ND	ND	40.1
MW-3-T9	12/21/2011	788	ND	ND	58.2
MW-3-T9	3/22/2012	825	ND	ND	**191**
MW-3-T9	6/21/2012	596	ND	ND	**113**
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 1, continued					
MW-3-T9	9/10/2012	679	ND	ND	**94.9**
MW-3-T9	12/20/2012	617	760	ND	**172**
MW-3-T9	3/20/2013	700	ND	ND	68
MW-3-T9	6/26/2013	520	ND	ND	55
MW-3-T9	9/10/2013	490	ND	ND	39
MW-3-T9	12/11/2013	980	ND	ND	39
MW-3-T9	3/12/2014	1,000	1,400 J	ND	28
MW-3-T9	6/11/2014	670	1,300	ND	14
MW-3-T9	9/10/2014	650	1,400	ND	14
MW-3-T9	12/10/2014	800	1,000	ND	13
MW-3-T9	3/11/2015	1,000	2,100	ND	2.1
MW-3-T9	6/10/2015	760	1,100	ND	0.74
MW-3-T9	9/22/2015	560	250	ND	0.62
MW-3-T9	12/16/2015	930	590	ND	2.4
MW-3-T9	3/9/2016	1,000	1,400	ND U	0.87
MW-3-T9	6/9/2016	810	2,000	ND	ND
MW-3-T9	9/7/2016	820	1,500	ND	0.53
MW-3-T9	12/7/2016	970	1,700	ND	1.50
MW-3-T9	3/8/2017	900	2,700	540	2.50
MW-3-T9	6/7/2017	750	780	ND	1.50
MW-3-T9	9/13/2017	740	290	ND	0.53
MW-3-T9	12/6/2017	800	ND	ND	1.3
MW-3-T9	3/21/2018	750	160	ND	1.9
MW-3-T9	9/12/2018	960	690	ND	ND
MW-3-T9	3/13/2019	880	950	ND	2.3
MW-3-T9	9/25/2019	770	530	ND	ND
MW-3-T9	3/19/2020	710	810	ND	1.1
MW-3-T9	9/17/2020	620	690	ND	ND
MW-3-T9	3/11/2021	740	280	ND	ND
MW-3-T9	9/23/2021	570	ND	ND	ND
MW-3-T9	3/24/2022	720	ND	ND	0.52
MW-3-T9	9/22/2022	570	280	ND	ND
MW-3-T9	3/29/2023	670 J	1300 J	ND UJ	17 J
MW-3-T9	9/27/2023	730	720	ND	ND
MW-4-T9	12/15/2005	ND	ND	ND	1.26
MW-4-T9	3/22/2006	ND	ND	ND	0.836
MW-4-T9	7/7/2006	ND	ND	ND	0.745
MW-4-T9	9/19/2006	ND	ND	ND	1.53
MW-4-T9	12/13/2006	ND UJ	ND UJ	ND UJ	1.46
MW-4-T9	3/22/2007	ND	ND	ND	0.625
MW-4-T9	6/7/2007	81	ND	ND	ND
MW-4-T9	9/14/2007	ND	ND	ND	0.599 J
MW-4-T9	12/19/2007	ND	ND	ND	1.55
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (μg/L)	TPH-D WTPH-Dx (μg/L)	TPH-O WTPH-Dx (μg/L)	Benzene EPA 8021 & 8260 (μg/L)
Plant 1, continued					
MW-4-T9	3/26/2008	ND	ND	ND	ND
MW-4-T9	6/26/2008	ND	ND	ND	ND
MW-4-T9	9/18/2008	ND	ND	ND	0.92
MW-4-T9	12/17/2008	ND	ND	ND	1.1
MW-4-T9	3/13/2009	ND	ND	ND	0.506
MW-4-T9	6/11/2009	ND	R	R	ND
MW-4-T9	9/17/2009	60	ND	ND	ND
MW-4-T9	12/16/2009	ND	ND	ND	ND
MW-4-T9	3/31/2010	ND	ND	ND	ND
MW-4-T9	6/10/2010	ND	210	ND	ND
MW-4-T9	9/15/2010	ND	ND	ND	ND
MW-4-T9	12/15/2010	ND	ND	ND	ND
MW-4-T9	3/24/2011	ND	ND	ND	ND
MW-4-T9	6/23/2011	ND	ND	ND	ND
MW-4-T9	9/28/2011	ND	ND	ND	ND
MW-4-T9	12/21/2011	ND	ND	ND	ND
MW-4-T9	3/21/2012	ND	ND	ND	ND
MW-4-T9	6/21/2012	ND	ND	ND	ND
MW-4-T9	9/10/2012	ND	ND	ND	ND
MW-4-T9	12/20/2012	ND	ND	ND	ND
MW-4-T9	3/20/2013	ND	ND	ND	ND
MW-4-T9	6/26/2013	ND	ND	ND	ND
MW-4-T9	9/10/2013	ND	ND	ND	ND
MW-4-T9	12/11/2013	ND	ND	ND	ND
MW-4-T9	3/12/2014	ND	290 J	ND	ND
MW-4-T9	6/11/2014	ND	480	ND	ND
MW-4-T9	9/9/2014	ND	400	ND	ND
MW-4-T9	12/10/2014	ND	360	ND	ND
MW-4-T9	3/10/2015	ND U	ND	ND	ND
MW-4-T9	6/10/2015	ND	300	ND	ND
MW-4-T9	9/23/2015	ND	320	ND	ND
MW-4-T9	12/16/2015	ND	320	ND	ND
MW-4-T9	3/8/2016	ND	ND	ND U	ND
MW-4-T9	6/9/2016	ND	680	ND	ND
MW-4-T9	9/9/2016	ND	460	ND	ND
MW-4-T9	12/7/2016	ND U	ND	ND	ND U
MW-4-T9	3/8/2017	ND	350	160	ND
MW-4-T9	6/7/2017	ND	ND	ND	ND
MW-4-T9	9/13/2017	ND	ND	ND	ND
MW-4-T9	12/6/2017	ND	ND	ND	ND
MW-4-T9		WELL DELETED FROM MONITORING PROGRAM			
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 2					
GM-19S	4/10/1997	**1,070**	4,260	1,840	1.3
GM-19S	7/9/1997	**1,030**	1,840	1,150	0.9 J
GM-19S	10/22/1997	800	370	ND	3.6
GM-19S	1/22/1998	400 J	1,320	ND	1.8
GM-19S	3/12/1998	180	1,860	ND	ND
GM-19S	7/8/1998	1,000 J	1,660 J	ND UJ	ND UJ
GM-19S	10/21/1998	570	1,260	ND	2.5
GM-19S	12/17/1998	650	1,970	ND	0.9
GM-19S	3/25/1999	72	1,420	793	ND
GM-19S	6/22/1999	**1,600**	1,100	ND	1.5
GM-19S	9/27/1999	**1,900 J**	NS	NS	44 J
GM-19S	12/13/1999	**1,500 J**	1,160	ND	**470**
GM-19S	3/24/2000	ND	1,530	ND	**955**
GM-19S	7/3/2000	771	1,380	ND	**2,330 J**
GM-19S	9/29/2000	ND UJ	2,290 J	776 J	**4,010 J**
GM-19S	12/21/2000	ND	3,150	806	**2,660**
GM-19S	3/28/2001	**2,940**	2,320	994	**1,730**
GM-19S	6/15/2001	**3,270**	1,230	ND	**3,390**
GM-19S	10/5/2001	Not accessible due to island redevelopment activities			
GM-19S	12/13/2001	**5,140**	2,350	985	**1,990**
GM-19S	3/8/2002	**11,000**	1,940	NS	**723**
GM-19S	6/11/2002	**2,720 J**	3,210	810	**710 J**
GM-19S	9/18/2002	**1,320 J**	2,430 J	ND UJ	**1,960 J**
GM-19S	12/16/2002	730	4590 J	1,770	**2,320 J**
GM-19S	3/25/2003	**9,540**	3,350	960	**1,960**
GM-19S	6/25/2003	**3,640**	3,740 J	1,380 J	**596**
GM-19S	9/19/2003	**1,290**	2,010	ND	**469**
GM-19S	12/23/2003	**1,070 J**	2,190 J	ND	**496**
GM-19S	3/9/2004	**1,450**	ND	ND	**832**
GM-19S	6/17/2004	**1,150**	498	ND	**307**
GM-19S	9/29/2004	679 J	NS	NS	**87.8**
GM-19S	12/9/2004	501	NS	NS	47
GM-19S	3/11/2005	649	NS	NS	**210.0**
GM-19S	6/22/2005	NS	NS	NS	**99.7**
GM-19S	9/28/2005	467	NS	NS	43.9
GM-19S	12/14/2005	581	NS	NS	**508**
GM-19S	3/22/2006	**1,710**	NR	NR	**853**
GM-19S	7/7/2006	850	NR	NR	**426**
GM-19S	9/19/2006	389	NS	NS	63
GM-19S	12/13/2006	445 J	NS	NS	**167 J**
GM-19S	3/22/2007	**1,070 J**	NS	NS	**1,400**
GM-19S	6/7/2007	200 J	NS	NS	15
GM-19S	9/13/2007	484	NS	NS	**956**
GM-19S	12/19/2007	88	NS	NS	**140**
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 2, continued					
GM-19S	3/27/2008	560	NS	NS	**869**
GM-19S	6/26/2008	958	NS	NS	**164**
GM-19S	9/19/2008	530	NS	NS	**178**
GM-19S	12/18/2008	Well not sampled, sampling has been reduced to a semi-annual event			
GM-19S	3/12/2009	261	NS	NS	**186**
GM-19S	9/17/2009	510	NS	NS	**140**
GM-19S	3/31/2010	220	NS	NS	**110**
GM-19S	9/15/2010	372	NS	NS	**111**
GM-19S	3/23/2011	56.5	NS	NS	26.9
GM-19S	9/28/2011	709	NS	NS	31.0
GM-19S	3/21/2012	355	NS	NS	8.4
GM-19S	9/11/2012	312	NS	NS	47.0
GM-19S	3/20/2013	330	NR	NR	38.0
GM-19S	9/11/2013	750	NR	NR	**160**
GM-19S	3/12/2014	ND	NR	NR	10
GM-19S	9/10/2014	53	NR	NR	44
GM-19S	3/11/2015	1,000 J	NR	NR	4.6
GM-19S	9/23/2015	860	NR	NR	5.8
GM-19S	3/9/2016	ND	NR	NR	ND
GM-19S	9/8/2016	340	NR	NR	ND
GM-19S	3/8/2017	ND	NR	NR	ND
GM-19S	9/13/2017	220	NR	NR	ND
GM-19S	3/21/2018	140	NR	NR	ND
GM-19S		WELL DELETED FROM MONITORING PROGRAM			
GM-19D	4/10/1997	ND	6,680	2,050	**234**
GM-19D	7/9/1997	ND	5,910	1,780	**330**
GM-19D	10/22/1997	70	ND	ND	**263**
GM-19D	1/22/1998	ND	1,820	ND	**260**
GM-19D	3/12/1998	ND	2,630	ND	**140**
GM-19D	7/8/1998	ND UJ	2,120 J	ND UJ	**360 J**
GM-19D	10/21/1998	ND	1,930	ND	**180**
GM-19D	12/17/1998	ND	2,260	ND	**170**
GM-19D	3/25/1999	57	2,280	ND	**150**
GM-19D	6/22/1999	150	1,520	ND	**150**
GM-19D	9/27/1999	75 J	2,460 J	ND UJ	**120 J**
GM-19D	12/13/1999	550 J	1,930	ND	**170**
GM-19D	3/22/2000	ND	2,490	ND	**208**
GM-19D	7/3/2000	ND	5,260	1,280	**225**
GM-19D	9/29/2000	ND UJ	6,490 J	1,470 J	**210 J**
GM-19D	12/21/2000	ND	8,700	984	**225**
GM-19D	3/28/2001	ND	8,100	1,990	**163**
GM-19D	6/12/2001	ND	2,650	ND	**278**
GM-19D	10/5/2001	Not accessible due to island redevelopment activities			
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 2, continued					
GM-19D	12/13/2001	ND	7,830	1,880	**265**
GM-19D	3/8/2002	ND	3,400	ND	**281**
GM-19D	6/11/2002	63	7,810	1,470	**220**
GM-19D	9/18/2002	59.8 J	1,960 UJ	ND UJ	**215**
GM-19D	12/16/2002	52 J	6880 J	1,020	**263**
GM-19D	3/26/2003	ND	2,880	ND UJ	**270**
GM-19D	6/25/2003	ND	6,930	1,770	**222**
GM-19D	9/19/2003	ND	2,300	ND	**241**
GM-19D	12/23/2003	ND	7710 J	1,140	**261**
GM-19D	3/9/2004	82	ND	ND	**173**
GM-19D	6/17/2004	56.1	3,430	ND	**169**
GM-19D		WELL DELETED FROM MONITORING PROGRAM			
GM-21S	4/10/1997	ND	4,640	2,960	ND
GM-21S	7/9/1997	ND	5,080	2,420	ND
GM-21S	10/23/1997	ND	ND	ND	ND
GM-21S	1/23/1998	ND	1,710	ND	ND
GM-21S	3/12/1998	ND	615	ND	ND
GM-21S	7/9/1998	ND	2,190	ND	ND
GM-21S	10/21/1998	ND	694	ND	ND
GM-21S	12/17/1998	ND	1,050	ND	ND
GM-21S	3/25/1999	NS	793	ND	NS
GM-21S	6/22/1999	NS	875	ND	NS
GM-21S	9/27/1999	NS	3,330 J	ND UJ	NS
GM-21S	12/13/1999	NS	648	ND	NS
GM-21S	3/23/2000	ND	1,480	ND	ND
GM-21S	7/6/2000	ND	3,020	ND	ND
GM-21S	9/29/2000	ND UJ	3,310 J	924 J	ND UJ
GM-21S	12/21/2000	NS	NS	NS	NS
GM-21S	3/28/2001	Not accessible due to island redevelopment activities			
GM-21S	6/12/2001	Not accessible due to island redevelopment activities			
GM-21S	10/5/2001	Not accessible due to island redevelopment activities			
GM-21S	12/13/2001	Not accessible due to island redevelopment activities			
GM-21S	3/6/2002	ND	454	ND	ND
GM-21S		WELL DELETED FROM MONITORING PROGRAM			
GM-21D	4/10/1997	ND	1,730 J	810 J	ND
GM-21D	7/9/1997	ND	1,860	ND	ND
GM-21D	10/23/1997	ND	ND	ND	ND
GM-21D	1/23/1998	ND	744	ND	ND
GM-21D	3/12/1998	ND	1,830	ND	ND
GM-21D	7/9/1998	ND	1,030 J	ND UJ	ND
GM-21D	10/21/1998	ND	684	ND	ND
GM-21D	12/17/1998	ND	926	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
Plant 2, continued					
GM-21D	6/22/1999	NS	1,100	ND	NS
GM-21D	9/27/1999	NS	2,330 J	ND UJ	NS
GM-21D	12/13/1999	NS	986	ND	NS
GM-21D		WELL DELETED FROM MONITORING PROGRAM			
GM-22S		WELL NOT SAMPLED BETWEEN 1997 AND 2000			
GM-22S	3/23/2000	ND	5,060	841	0.538
GM-22S	7/6/2000	ND	8,930	1,050	ND
GM-22S	9/29/2000	ND UJ	3,130 J	1,620 J	2.04 J
GM-22S	12/21/2000	ND	5,070	1,720	ND
GM-22S	3/28/2001	ND	5,430	2,500	ND
GM-22S	6/15/2001	ND	3,110	ND	ND
GM-22S	10/5/2001	Not accessible due to island redevelopment activities			
GM-22S	12/13/2001	55.3	4,780	2,320	ND
GM-22S	3/8/2002	ND	2,710	831	ND
GM-22S		WELL DELETED FROM MONITORING PROGRAM			
GM-23S	4/10/1997	NS	NS	NS	NS
GM-23S	7/9/1997	750	1,830	1,010	ND
GM-23S	10/22/1997	400	ND	ND	ND
GM-23S	1/23/1998	NS	NS	NS	NS
GM-23S	3/12/1998	NS	NS	NS	NS
GM-23S	7/8/1998	480 J	467 J	ND UJ	ND UJ
GM-23S	10/21/1998	500	1,250	ND	ND
GM-23S	12/17/1998	NS	NS	NS	NS
GM-23S	3/25/1999	NS	NS	NS	NS
GM-23S	6/22/1999	680	801	ND	ND
GM-23S	9/28/1999	940	682	ND	ND
GM-23S		WELL DELETED FROM MONITORING PROGRAM			
T-18-1	6/14/2001	ND	1,670	ND	ND
T-18-1	10/5/2001	ND	1,270	ND	ND
T-18-1	12/13/2001	ND	365	ND	ND
T-18-1	3/6/2002	ND	357	ND	ND
T-18-1		WELL DELETED FROM MONITORING PROGRAM			
T-18-2a	6/14/2001	ND	385	ND	ND
T-18-2a	10/5/2001	ND	339	ND	ND
T-18-2a	12/13/2001	ND	323	ND	ND
T-18-2a	3/6/2002	ND	256	ND	ND
T-18-2a		WELL DELETED FROM MONITORING PROGRAM			
MW-03R	6/11/2002	NS	**20,700**	ND	NS
MW-03R	9/18/2002	NS	9,690 J	1,990 J	NS
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Table 6. Groundwater Monitoring Analytical Results for TPH and Benzene
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G WTPH-Gx (µg/L)	TPH-D WTPH-Dx (µg/L)	TPH-O WTPH-Dx (µg/L)	Benzene EPA 8021 & 8260 (µg/L)
MW-03R	12/16/2002	NS	NS	NS	NS
MW-03R	3/25/2003	NS	ND	ND UJ	NS
MW-03R	6/26/2003	NS	**10,200**	2,500	NS
MW-03R	9/19/2003	NS	831	ND	NS
MW-03R	12/23/2003	NS	472 J	ND	NS
MW-03R	3/9/2004	NS	645	ND	NS
MW-03R	6/17/2004	NS	935	ND	NS
MW-03R		WELL DELETED FROM MONITORING PROGRAM			
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Note: Values in **bold** exceed the cleanup level.

J	Estimated value.
µg/L	Micrograms per liter.
NA	Not analyzed.
ND	Constituent not detected above reporting limit.
NS	Not sampled.
TPH	Total petroleum hydrocarbons.
TPH-D	Total petroleum hydrocarbons as diesel.
TPH-G	Total petroleum hydrocarbons as gasoline.
TPH-O	Total petroleum hydrocarbons as oil.
U	Undetected.
WTPH-DX	Washington State Method for Analysis of Diesel and Oil in Water - Extended.
WTPH-G	Washington State Method for Analysis of Gasoline in Water.

EPA 8021 or EPA 9260 - EPA Methods for Analysis of Benzene in Water.

** AMW-02 benzene result from 12/17/2019 of 69.75 is the average of 4 analyses performed from the sample, which were 87, 67 J, 61 J, 64 J.

Table 7. Groundwater Monitoring Analytical Results for cPAHs
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	Benz(a)anthracene (µg/L)	Benzo(a)pyrene (µg/L)	Benzo(b)fluoranthene (µg/L)	Benzo(k)fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz(a,h)anthracene (µg/L)	Indeno(1,2,3,-cd)pyrene (µg/L)
Plant 1								
GM-11S	4/10/1997	ND	ND	ND	ND	0.01	ND	ND
GM-11S	7/8/1997	ND	ND	ND	ND	0.01 J	ND	0.01 J
GM-11S	10/21/1997	0.02	0.01	0.02	0.01	0.02	0.01	0.01
GM-11S	1/21/1998	ND	ND	ND	ND	0.01 U	ND	ND
GM-11S				WELL DELETED FROM cPAH MONITORING PROGRAM				
GM-12S	4/10/1997	0.02	0.03	**0.04**	**0.04**	**0.06**	ND	**0.04**
GM-12S	7/8/1997	**0.06 J**	**0.07 J**	**0.11 J**	**0.09 J**	**0.13 J**	0.01 J	**0.06 J**
GM-12S	10/20/1997	**0.07 J**	**0.06 J**	**0.1 J**	**0.09 J**	**0.15 J**	0.01	**0.08 J**
GM-12S	1/21/1998	0.1 U	**0.11**	**0.12**	**0.12 U**	**0.16 U**	**0.04**	**0.11**
GM-12S	3/10/1998	**0.05**	**0.06**	**0.1**	**0.07**	**0.12**	0.02	**0.09**
GM-12S	7/6/1998	0.01	0.01	0.03	0.02	**0.04**	ND	0.03
GM-12S	10/20/1998	0.03	0.03	**0.05**	**0.04**	**0.07 J**	0.01	**0.05**
GM-12S	3/26/1999	0.01	0.01	0.02	0.02	0.02	ND	0.02 U
GM-12S	6/23/1999	ND	0.01	0.01	0.01	0.01	ND	0.01
GM-12S				WELL DELETED FROM cPAH MONITORING PROGRAM				
GM-15S	4/9/1997	ND	ND	ND	ND	ND	ND	ND
GM-15S	7/8/1997	ND	0.01 J	0.02 J	0.01 J	ND	ND	0.01 J
GM-15S	10/21/1997	ND	ND	ND	ND	ND	ND	ND
GM-15S	1/21/1998	ND	ND	ND	ND	ND	ND	ND
GM-15S				WELL DELETED FROM cPAH MONITORING PROGRAM				
GM-16S	4/9/1997	ND	ND	ND	ND	ND	ND	ND
GM-16S	7/8/1997	ND	ND	ND	ND	ND	ND	ND
GM-16S	10/21/1997	ND	ND	ND	ND	ND	ND	ND
GM-16S	1/21/1998	ND	ND	ND	ND	ND	ND	ND
GM-16S				WELL DELETED FROM cPAH MONITORING PROGRAM				
GM-17S	4/9/1997	ND	ND	ND	ND	ND	ND	ND
GM-17S	7/9/1997	0.01 J	ND	0.01 J	0.01 J	0.02 J	0.01 J	0.01 J
GM-17S	10/21/1997	ND	ND	ND	ND	ND	ND	ND
GM-17S	1/22/1998	ND	ND	ND	ND	ND	ND	ND
GM-17S				WELL DELETED FROM cPAH MONITORING PROGRAM				
GM-24S	4/9/1997	ND	ND	ND	ND	ND	ND	ND
GM-24S	7/9/1997	ND	ND	ND	ND	ND	ND	ND
GM-24S	10/22/1997	ND	ND	ND	ND	ND	ND	ND
GM-24S	1/22/1998	ND	ND	ND	ND	ND	ND	ND
GM-24S				WELL DELETED FROM cPAH MONITORING PROGRAM				
AR-03	4/9/1997	ND R	ND R	ND R	ND R	ND R	ND R	ND R
AR-03	7/8/1997	ND	ND	ND	ND	ND	ND	ND
AR-03	10/21/1997	ND	ND	ND	ND	ND	ND	ND
AR-03	1/21/1998	ND	ND	ND	ND	ND	ND	ND
AR-03				WELL DELETED FROM cPAH MONITORING PROGRAM				
Cleanup Level		0.031	0.031	0.031	0.031	0.031	0.031	0.031

Table 7. Groundwater Monitoring Analytical Results for cPAHs
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	Benz(a)anthracene (µg/L)	Benzo(a)pyrene (µg/L)	Benzo(b)fluoranthene (µg/L)	Benzo(k)fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz(a,h)anthracene (µg/L)	Indeno(1,2,3,-cd)pyrene (µg/L)
Plant 1, continued								
AMW-01	12/21/2000	ND	ND	0.116	ND	ND	ND	ND
AMW-01	3/28/2001	**0.0372 J**	**0.0821 J**	**0.04585 * J**	**0.04585 * J**	**0.0347 J**	ND UJ	ND UJ
AMW-01	6/13/2001	ND	ND	ND *	ND *	ND	**0.052**	ND
AMW-01	10/4/2001	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-01	12/12/2001	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-01	3/7/2002	ND	ND	ND	ND	ND	ND	ND
AMW-01	6/12/2002	ND	ND	ND	ND	ND	ND	ND
AMW-01	9/19/2002	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-01	12/17/2002	0.0292 J	ND	ND	ND	ND	ND	ND
AMW-01	6/16/2004	ND	ND	ND	ND	ND	ND	ND
AMW-01	9/28/2004	ND	ND	ND	ND	ND	ND	ND
AMW-01	12/6/2004	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-01	3/10/2005	U	U	**0.0509**	U	**0.0637**	**0.0483**	**0.0506**
AMW-01	6/21/2005	0.024	ND	**0.0411**	**0.0502**	**0.0322**	ND	0.0222
AMW-01	9/27/2005	ND	ND	ND	ND	ND	ND	ND
AMW-01	12/13/2005	ND	ND	ND	ND	ND	ND	ND
AMW-01	3/21/2006	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-01	7/6/2006	ND	ND	ND	ND	ND	ND	ND
AMW-01	9/18/2006	ND	ND	ND	ND	ND	ND	ND
AMW-01	12/12/2006	ND R	ND R	ND R	ND R	ND R	NDR	ND R
AMW-01	3/21/2007	**0.212 J**	**0.177 J**	**0.22 J**	**0.29 J**	**0.215 J**	**0.237 J**	**0.229 J**
AMW-01	6/6/2007	ND	ND	ND	ND	ND	ND	ND
AMW-01	9/12/2007	0.0124 J	ND UJ	ND UJ	ND UJ	0.0133 J	ND UJ	ND UJ
AMW-01	12/18/2007	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-01	3/25/2008	ND	ND	ND	ND	ND	ND	ND
AMW-01	6/25/2008	cPAH Sampling Reduced to an Annual Event						
AMW-01	12/16/2008	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-01	12/16/2009	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-01	12/14/2010	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-01	12/21/2011	ND	ND	0.018	ND	ND	ND	ND
AMW-01	12/19/2012	ND	ND	ND	ND	ND	ND	ND
AMW-01	12/10/2013	ND	ND	ND	ND	ND	ND	ND
AMW-01	12/9/2014	ND	ND	ND	ND	ND	ND	ND
AMW-01	12/15/2015	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-01	12/6/2016	ND	ND U	ND	ND	ND	ND U	ND
AMW-01	12/5/2017	ND	ND UJ	ND UJ	ND	ND	ND	ND UJ
AMW-01	12/11/2018	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-01	12/17/2019	ND	ND	ND	ND	ND	ND	ND
AMW-01	12/16/2020	ND	ND	0.022	ND	ND	ND	ND
AMW-01	12/8/2021	ND	ND	ND	ND	ND	ND	ND
AMW-01	1/11/2023	0.023	0.031	**0.057 J**	0.031	0.024	0.026 J	**0.038**
AMW-01	12/28/2023	ND	ND	ND	ND	ND	ND	ND
AMW-02	12/21/2000	ND	ND	ND	ND	ND	ND	ND
AMW-02	3/28/2001	Warehouse not accessible due to earthquake damage.						
AMW-02	6/13/2001	ND UJ	ND UJ	ND UJ *	ND UJ *	ND UJ	**0.052 J**	ND UJ
Cleanup Level		0.031	0.031	0.031	0.031	0.031	0.031	0.031

Table 7. Groundwater Monitoring Analytical Results for cPAHs
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	Benz(a)anthracene (µg/L)	Benzo(a)pyrene (µg/L)	Benzo(b)fluoranthene (µg/L)	Benzo(k)fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz(a,h)anthracene (µg/L)	Indeno(1,2,3,-cd)pyrene (µg/L)
Plant 1, continued								
AMW-02	10/4/2001	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-02	12/12/2001	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-02	6/12/2002	ND	ND	ND	ND	ND	ND	ND
AMW-02	9/19/2002	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-02	12/17/2002	ND	ND	ND	ND	ND	ND	ND
AMW-02	6/16/2004	ND	ND	ND	ND	**0.0322**	ND	ND
AMW-02	9/28/2004	ND	ND	ND	ND	ND	ND	ND
AMW-02	12/8/2004	ND	ND	ND	ND	ND	ND	ND
AMW-02	3/10/2005	U	U	0.136	U	U	0.0153	0.0143
AMW-02	6/21/2005	ND	ND	ND	ND	ND	ND	ND
AMW-02	9/27/2005	ND	ND	ND	ND	ND	ND	ND
AMW-02	12/13/2005	ND	ND	ND	ND	ND	ND	ND
AMW-02	3/21/2006	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-02	7/6/2006	ND	ND	ND	ND	ND	ND	ND
AMW-02	9/18/2006	ND	ND	ND	ND	ND	ND	ND
AMW-02	12/12/2006	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	NDUJ
AMW-02	3/21/2007	**0.201**	**0.191**	**0.207**	**0.237**	**0.215**	**0.226**	**0.232**
AMW-02	6/6/2007	ND	ND	ND	ND	ND	ND	ND
AMW-02	9/12/2007	ND UJ	ND UJ	ND UJ	ND UJ	0.0117 J	ND UJ	ND UJ
AMW-02	12/18/2008	ND	ND	ND	ND	ND	ND	ND
AMW-02	3/25/2008	ND	ND	ND	ND	ND	ND	ND
AMW-02	6/25/2008	cPAH Sampling Reduced to an Annual Event						
AMW-02	12/16/2008	ND	ND	ND	ND	ND	ND	ND
AMW-02	12/16/2009	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-02	12/14/2010	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-02	12/21/2011	ND	ND	ND	0.017	ND	ND	ND
AMW-02	12/19/2012	ND	ND	ND	ND	ND	ND	ND
AMW-02	12/10/2013	0.016	ND	ND	ND	ND	ND	ND
AMW-02	12/9/2014	ND	ND	ND	ND	ND	ND	ND
AMW-02	12/15/2015	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-02	12/6/2016	ND	ND U	ND	ND	ND	ND	ND
AMW-02	12/5/2017	0.029	**0.041**	**0.068**	ND	**0.045**	ND	**0.042**
AMW-02	12/11/2018	ND	ND	ND	ND	ND	ND	ND
AMW-02	12/17/2019	ND	ND	ND	ND	ND	ND	ND
AMW-02	12/16/2020	ND	ND	ND	ND	ND	ND	ND
AMW-02	12/8/2021	ND	ND	ND	ND	ND	ND	ND
AMW-02	1/11/2023	ND	ND	ND	ND	ND	ND	ND
AMW-02	12/28/2023	ND	ND	**0.052**	ND	ND	ND	ND
AMW-03	12/21/2000	ND	ND	ND	ND	ND	ND	ND
AMW-03	3/28/2001	Warehouse not accessible due to earthquake damage.						
AMW-03	6/13/2001	ND	ND	ND *	ND *	ND	**0.051**	ND
AMW-03	10/4/2001	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-03	12/12/2001	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-03	6/12/2002	ND	ND	ND	ND	ND	ND	ND
AMW-03	9/19/2002	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
Cleanup Level		0.031	0.031	0.031	0.031	0.031	0.031	0.031

Table 7. Groundwater Monitoring Analytical Results for cPAHs
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	Benz(a)anthracene (µg/L)	Benzo(a)pyrene (µg/L)	Benzo(b)fluoranthene (µg/L)	Benzo(k)fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz(a,h)anthracene (µg/L)	Indeno(1,2,3,-cd)pyrene (µg/L)
Plant 1, continued								
AMW-03	12/17/2002	ND	ND	ND	ND	ND	ND	ND
AMW-03	6/16/2004	ND	ND	ND	ND	ND	ND	ND
AMW-03	9/28/2004	ND	ND	ND	ND	ND	ND	ND
AMW-03	1/20/2005	ND	ND	ND	ND	ND	ND	ND
AMW-03	3/10/2005	U	ND	0.142	U	U	ND	ND
AMW-03	6/21/2005	ND	ND	ND	ND	ND	ND	ND
AMW-03	9/27/2005	ND	ND	ND	ND	ND	ND	ND
AMW-03	12/13/2005	ND	ND	ND	ND	ND	ND	ND
AMW-03	3/21/2006	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-03	7/6/2006	ND	ND	ND	ND	ND	ND	ND
AMW-03	9/18/2006	ND	ND	ND	ND	ND	ND	ND
AMW-03	12/12/2006	**0.0835J**	NDUJ	0.157J	**0.0387J**	**0.0784J**	**0.116J**	**0.125J**
AMW-03	3/21/2007	**0.0714**	**0.0689**	**0.0583**	**0.0773**	**0.0851**	**0.0823**	**0.0752**
AMW-03	6/6/2007	ND	ND	ND	ND	ND	ND	ND
AMW-03	9/12/2007	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-03	12/18/2007	ND	ND	ND	ND	ND	ND	ND
AMW-03	3/25/2008	ND	ND	ND	ND	ND	ND	ND
AMW-03	6/25/2008	cPAH Sampling Reduced to an Annual Event						
AMW-03	12/16/2008	ND	ND	ND	ND	ND	ND	ND
AMW-03	12/16/2009	ND	ND	ND	ND	ND	ND	ND
AMW-03	12/14/2010	ND	ND	ND	ND	ND	ND	ND
AMW-03	12/21/2011	0.017	0.028	**0.051**	0.017	0.030	ND	0.030
AMW-03	12/19/2012	ND	ND	ND	ND	ND	ND	ND
AMW-03	12/10/2013	ND	ND	ND	0.019	0.016	ND	ND
AMW-03	12/9/2014	ND	ND	0.024	ND	0.027	ND	ND
AMW-03	12/15/2015	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-03	12/6/2016	ND	ND U	ND	ND	ND	ND	ND
AMW-03	12/5/2017	0.029	0.028	**0.049**	ND	**0.037**	ND	**0.036**
AMW-03	12/11/2018	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-03	12/17/2019	ND	ND	ND	ND	ND	ND	ND
AMW-03	12/16/2020	ND	ND	ND	ND	ND	ND	ND
AMW-03	12/8/2021	ND	ND	ND	ND	ND	ND	ND
AMW-03	1/11/2023	ND	ND	0.051	ND	ND	ND	0.021
AMW-03	12/28/2023	ND	ND	ND	ND	ND	ND	ND
AMW-04	12/21/2000	ND	ND	ND	ND	ND	ND	ND
AMW-04	3/28/2001	**0.0497**	**0.0762 J**	**0.04325 * J**	**0.04325 * J**	**0.0451 J**	ND UJ	ND UJ
AMW-04	6/13/2001	ND	ND	ND *	ND *	ND	**0.054**	ND
AMW-04	10/4/2001	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-04	12/12/2001	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-04	3/7/2002	0.0264	ND	0.0276	ND	**0.0350**	ND	ND
AMW-04	6/12/2002	ND	ND	ND	ND	ND	ND	ND
AMW-04	9/19/2002	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-04	12/17/2002	**0.0396 J**	ND	ND	ND	ND	ND	ND
AMW-04	6/16/2004	ND	ND	ND	ND	ND	ND	ND
AMW-04	9/27/2004	**0.0338**	ND	0.0116	0.0152	**0.0343**	ND	ND
Cleanup Level		0.031	0.031	0.031	0.031	0.031	0.031	0.031

Table 7. Groundwater Monitoring Analytical Results for cPAHs
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	Benz(a)anthracene (µg/L)	Benzo(a)pyrene (µg/L)	Benzo(b)fluoranthene (µg/L)	Benzo(k)fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz(a,h)anthracene (µg/L)	Indeno(1,2,3,-cd)pyrene (µg/L)
Plant 1, continued								
AMW-04	12/6/2004	ND	ND	ND	ND	ND	ND	ND
AMW-04	3/10/2005	ND	ND	ND	ND	ND	ND	ND
AMW-04	6/21/2005	ND R	ND R	ND R	ND R	ND R	ND R	ND R
AMW-04	9/27/2005	ND	ND	ND	ND	ND	ND	ND
AMW-04	12/13/2005	ND	ND	ND	ND	ND	ND	ND
AMW-04	3/21/2006	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-04	7/6/2006	ND	ND	ND	ND	ND	ND	ND
AMW-04	9/18/2006	ND	ND	ND	ND	ND	ND	ND
AMW-04	12/12/2006	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-04	3/21/2007	ND	ND	ND	ND	ND	ND	ND
AMW-04	6/6/2007	ND	ND	ND	ND	ND	ND	ND
AMW-04	9/12/2007	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-04	12/18/2007	ND	ND	ND	ND	ND	ND	ND
AMW-04	3/26/2008	ND	ND	ND	ND	ND	ND	ND
AMW-04	6/25/2008	cPAH Sampling Reduced to an Annual Event						
AMW-04	12/16/2008	ND	ND	ND	ND	ND	ND	ND
AMW-04	12/16/2009	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-04	12/14/2010	**0.031 J**	0.023 J	**0.034 J**	**0.044 J**	**0.043 J**	**0.085 J**	**0.076 J**
AMW-04	12/21/2011	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-04	12/19/2012	ND	ND	ND	ND	ND	ND	ND
AMW-04	12/10/2013	ND	ND	ND	ND	ND	ND	ND
AMW-04	12/9/2014	ND	ND	ND	ND	ND	ND	ND
AMW-04	12/15/2015	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-04	12/6/2016	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-04	12/5/2017	0.021	0.025	**0.041**	ND	**0.035**	ND	0.028
AMW-04	12/11/2018	ND	ND	ND	ND	ND	ND	ND
AMW-04	12/17/2019	ND	ND	ND	ND	ND	ND	ND
AMW-04	12/16/2020	ND	ND	ND	ND	ND	ND	ND
AMW-04	12/8/2021	ND	ND	ND	ND	ND	ND	ND
AMW-04	1/11/2023	ND	ND	ND	ND	ND	ND	ND
AMW-04	12/28/2023	ND	ND	ND	ND	ND	ND	ND
AMW-05	12/21/2000	ND	ND	ND	ND	ND	ND	ND
AMW-05	3/28/2001	0.0280 J	**0.0750 J**	**0.0431 * J**	**0.0431 * J**	0.0301 J	ND UJ	ND UJ
AMW-05	6/13/2001	ND UJ	ND UJ	ND UJ *	ND UJ *	ND UJ	ND UJ	ND UJ
AMW-05	10/4/2001	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-05	12/12/2001	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-05	3/7/2002	ND	ND	ND	ND	ND	ND	ND
AMW-05	6/12/2002	ND	ND	ND	ND	ND	ND	ND
AMW-05	9/19/2002	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-05	12/17/2002	ND	ND	ND	ND	ND	ND	ND
AMW-05	6/16/2004	ND	ND	ND	ND	ND	ND	ND
AMW-05	6/16/2004	ND	ND	ND	ND	ND	ND	ND
AMW-05	12/6/2004	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-05	3/10/2005	ND	ND	ND	ND	ND	ND	ND
AMW-05	6/21/2005	0.0132	ND	0.0189	0.0185	0.0178	ND	0.0142
Cleanup Level		0.031	0.031	0.031	0.031	0.031	0.031	0.031

Table 7. Groundwater Monitoring Analytical Results for cPAHs
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	Benz(a)anthracene (µg/L)	Benzo(a)pyrene (µg/L)	Benzo(b)fluoranthene (µg/L)	Benzo(k)fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz(a,h)anthracene (µg/L)	Indeno(1,2,3,-cd)pyrene (µg/L)
Plant 1, continued								
AMW-05	9/27/2005	ND	ND	ND	ND	ND	ND	ND
AMW-05	12/13/2005	ND	ND	ND	ND	ND	ND	ND
AMW-05	3/21/2006	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-05	7/6/2006	ND	ND	ND	ND	ND	ND	ND
AMW-05	9/18/2006	ND	ND	ND	ND	**0.0832 J**	ND	ND
AMW-05	12/12/2006	**0.0771J**	ND UJ	**0.157J**	**0.0397J**	**0.0768J**	**0.121J**	**0.129J**
AMW-05	3/21/2007	**0.0499**	**0.0534**	**0.0551**	**0.51**	**0.0562**	**0.051**	**0.0633**
AMW-05	6/6/2007	ND	ND	ND	ND	ND	ND	ND
AMW-05	9/12/2007	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-05	12/18/2007	ND	ND	ND	ND	ND	ND	ND
AMW-05	3/26/2008	0.0159	ND	ND	ND	0.0116	ND	ND
AMW-05	6/25/2008	cPAH Sampling Reduced to an Annual Event						
AMW-05	12/16/2008	ND	ND	ND	ND	ND	ND	ND
AMW-05	12/16/2009	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-05	12/14/2010	0.019 J	0.018 J	0.021 J	0.020 J	0.025 J	ND UJ	ND UJ
AMW-05	12/21/2011	ND	ND	0.018	ND	ND	ND	ND
AMW-05	12/19/2012	ND	ND	ND	ND	ND	ND	ND
AMW-05	12/10/2013	**0.037**	**0.031**	**0.053**	ND	**0.051**	ND	0.030
AMW-05	12/9/2014	ND	ND	ND	ND	ND	ND	ND
AMW-05	12/15/2015	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-05	12/6/2016	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-05	12/5/2017	0.023	**0.032**	**0.049**	ND	**0.035**	ND	**0.034**
AMW-05	12/11/2018	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
AMW-05	12/17/2019	ND	ND	ND	ND	ND	ND	ND
AMW-05	12/16/2020	ND	ND	ND	ND	ND	ND	ND
AMW-05	12/8/2021	ND	ND	ND	ND	ND	ND	ND
AMW-05	1/11/2023	ND	ND	ND	ND	ND	ND	ND
AMW-05	12/28/2023	ND	ND	ND	ND	ND	ND	ND
Plant 2								
GM-19S	4/10/1997	ND	ND	ND	ND	ND	ND	ND
GM-19S	7/9/1997	ND	ND	ND	ND	ND	ND	ND
GM-19S	10/22/1997	ND	ND	ND	ND	ND	ND	ND
GM-19S	1/22/1998	ND	ND	ND	ND	ND	ND	ND
GM-19S		WELL DELETED FROM cPAH MONITORING PROGRAM						
GM-19D	4/10/1997	ND	ND	ND	ND	ND	ND	ND
GM-19D	7/9/1997	ND	ND	ND	ND	ND	ND	ND
GM-19D	10/22/1997	ND	ND	ND	ND	ND	ND	ND
GM-19D	1/22/1998	ND	ND	ND	ND	ND	ND	ND
GM-19D		WELL DELETED FROM cPAH MONITORING PROGRAM						
GM-21S	4/10/1997	ND	ND	ND	ND	ND	ND	ND
GM-21S	7/9/1997	ND	ND	ND	ND	ND	ND	ND
GM-21S	10/23/1997	ND	ND	ND	ND	ND	ND	ND
Cleanup Level		0.031	0.031	0.031	0.031	0.031	0.031	0.031

Table 7. Groundwater Monitoring Analytical Results for cPAHs
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	Benz(a)anthracene (µg/L)	Benzo(a)pyrene (µg/L)	Benzo(b)fluoranthene (µg/L)	Benzo(k)fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz(a,h)anthracene (µg/L)	Indeno(1,2,3,-cd)pyrene (µg/L)
Plant 2, continued								
GM-21S	1/23/1998	ND	ND	ND	ND	ND	ND	ND
GM-21S				WELL DELETED FROM cPAH MONITORING PROGRAM				
GM-21D	4/10/1997	ND	ND	ND	ND	ND	ND	ND
GM-21D	7/9/1997	0.01 J	0.01 J	0.02 J	0.02 J	0.02 UJ	ND	0.01 J
GM-21D	10/23/1997	ND	ND	ND	ND	ND	ND	ND
GM-21D	1/23/1998	ND	ND	ND	ND	ND	ND	ND
GM-21D				WELL DELETED FROM cPAH MONITORING PROGRAM				
GM-23S	7/9/1997	ND	ND	ND	ND	ND	ND	ND
GM-23S	10/22/1997	ND	ND	ND	ND	ND	ND	ND
GM-23S				WELL DELETED FROM cPAH MONITORING PROGRAM				
Cleanup Level		0.031	0.031	0.031	0.031	0.031	0.031	0.031

Note: Values in **bold** exceed the cleanup level.

cPAHs Carcinogenic polynuclear aromatic hydrocarbons.
J Estimated value.
µg/L Micrograms per liter.
NA Not analyzed.
ND Constituent not detected above reporting limit.
R Rejected; the presence or absence of the constituent cannot be verified.
U Undetected.

Well	Date	Free Product
Plant 1		
GM-11S	9/29/1999	**~0.29 foot**
GM-11S	10/19/1999	**~0.59 foot**
GM-11S	11/19/1999	**~0.51 foot**
GM-11S	12/28/1999	**~0.10 foot**
GM-11S	1/21/2000	**~0.01 foot**
GM-11S	2/16/2000	**~0.01 foot**
GM-11S	3/27/2000	**~0.01 foot**
GM-11S	4/14/2000	**~0.01 foot**
GM-11S	5/15/2000	**~0.34 foot**
GM-11S	6/26/2000	**~0.07 foot**
GM-11S	7/19/2000	None
GM-11S	8/15/2000	None
GM-11S	9/29/2000	**Sheen**
GM-11S	10/12/2000	None
GM-11S	11/14/2000	**~0.03 foot**
GM-11S	12/14/2000	None
GM-11S	1/11/2001	**~0.01 foot**
GM-11S	2/15/2001	None
GM-11S	3/15/2001	None
GM-11S	4/13/2001	None
GM-11S	5/16/2001	**~0.13 foot**
GM-11S	6/11/2001	None
GM-11S	7/24/2001	None
GM-11S	8/21/2001	None
GM-11S	9/6/2001	**Sheen**
GM-11S	10/19/2001	None
GM-11S	11/15/2001	**Sheen**
GM-11S	12/10/2001	**Sheen**
GM-11S	1/16/2002	**Sheen**
GM-11S	2/21/2002	**Sheen**
GM-11S	3/18/2002	**Sheen**
GM-11S	4/18/2002	**Sheen**
GM-11S	5/20/2002	**Sheen**
GM-11S	6/19/2002	**Sheen**
GM-11S	7/15/2002	**Sheen**
GM-11S	8/20/2002	**Sheen**
GM-11S	9/20/2002	**Sheen**
GM-11S	10/15/2002	**Sheen**
GM-11S	11/27/2002	**Sheen**
GM-11S	12/18/2002	**Sheen**
GM-11S	1/16/2003	**Sheen**
GM-11S	2/11/2003	**Sheen**
GM-11S	3/11/2003	**Sheen**
GM-11S	4/15/2003	**Sheen**
GM-11S	5/15/2003	**Sheen**
GM-11S	6/17/2003	**Sheen**
GM-11S	7/15/2003	**Sheen**
GM-11S	8/13/2003	**Sheen**
GM-11S	9/16/2003	**Sheen**
GM-11S	10/14/2003	**Sheen**
GM-11S	11/19/2003	**Sheen**
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-11S	12/17/2003	**Sheen**
GM-11S	1/13/2004	**Sheen**
GM-11S	2/10/2004	**Sheen**
GM-11S	3/17/2004	**Sheen**
GM-11S	4/15/2004	**Sheen**
GM-11S	5/25/2004	**Sheen**
GM-11S	6/13/2004	**Sheen**
GM-11S	7/13/2004	**Sheen**
GM-11S	8/12/2004	**Sheen**
GM-11S	9/16/2004	**Sheen**
GM-11S	10/13/2004	**Sheen**
GM-11S	11/18/2004	**Sheen**
GM-11S	12/16/2004	**Sheen**
GM-11S	1/13/2005	**Sheen**
GM-11S	2/15/2005	**Sheen**
GM-11S	3/15/2005	**Sheen**
GM-11S	4/15/2005	**Sheen**
GM-11S	5/20/2005	**Sheen**
GM-11S	6/10/2005	**Sheen**
GM-11S	7/15/2005	**Sheen**
GM-11S	8/12/2005	**Sheen**
GM-11S	9/14/2005	**Sheen**
GM-11S	10/14/2005	**Sheen**
GM-11S	11/23/2005	**Sheen**
GM-11S	12/19/2005	**Sheen**
GM-11S	1/25/2006	**Sheen**
GM-11S	2/14/2006	**Sheen**
GM-11S	3/15/2006	**Sheen**
GM-11S	4/14/2006	**Sheen**
GM-11S	5/17/2006	**Sheen**
GM-11S	6/14/2006	**Sheen**
GM-11S	7/12/2006	**Sheen**
GM-11S	8/16/2006	**Sheen**
GM-11S	9/13/2006	**Sheen**
GM-11S	10/12/2006	**Sheen**
GM-11S	11/17/2006	**Sheen**
GM-11S	12/19/2006	**Sheen**
GM-11S	1/19/2007	**Sheen**
GM-11S	2/16/2007	**Sheen**
GM-11S	3/19/2007	**Sheen**
GM-11S	4/19/2007	**Sheen**
GM-11S	5/17/2007	**Sheen**
GM-11S	6/14/2007	**Sheen**
GM-11S	7/13/2007	**Sheen**
GM-11S	8/16/2007	**Sheen**
GM-11S	9/10/2007	**Sheen**
GM-11S	10/17/2007	**Sheen**
GM-11S	11/16/2007	**Sheen**
GM-11S	12/14/2007	**Sheen**
GM-11S	1/22/2008	**Sheen**
GM-11S	2/14/2008	**Sheen**
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-11S	3/14/2008	**Sheen**
GM-11S	4/18/2008	**Sheen**
GM-11S	5/16/2008	**Sheen**
GM-11S	6/18/2008	**Sheen**
GM-11S	7/16/2008	**Sheen**
GM-11S	8/18/2008	**Sheen**
GM-11S	9/16/2008	**Sheen**
GM-11S	10/15/2008	**Sheen**
GM-11S	11/14/2008	**Sheen**
GM-11S	12/11/2008	**Sheen**
GM-11S	1/14/2009	**Sheen**
GM-11S	2/18/2009	**Sheen**
GM-11S	3/17/2009	**Sheen**
GM-11S	4/16/2009	None
GM-11S	5/14/2009	None
GM-11S	6/16/2009	None
GM-11S	7/22/2009	**Sheen**
GM-11S	8/18/2009	**Sheen**
GM-11S	9/14/2009	**Sheen**
GM-11S	10/20/2009	**Sheen**
GM-11S	11/18/2009	None
GM-11S	12/15/2009	None
GM-11S	1/21/2010	**Sheen**
GM-11S	2/17/2010	**Sheen**
GM-11S	3/16/2010	**Sheen**
GM-11S	4/15/2010	None
GM-11S	5/18/2010	**Sheen**
GM-11S	6/17/2010	**Sheen**
GM-11S	7/29/2010	**Sheen**
GM-11S	8/19/2010	**Sheen**
GM-11S	9/22/2010	**Sheen**
GM-11S	10/20/2010	**Sheen**
GM-11S	11/30/2010	**Sheen**
GM-11S	12/23/2010	**Sheen**
GM-11S	1/19/2011	**Sheen**
GM-11S	2/16/2011	**Sheen**
GM-11S	3/29/2011	**Sheen**
GM-11S	4/21/2011	**Sheen**
GM-11S	5/19/2011	**Sheen**
GM-11S	6/15/2011	**Sheen**
GM-11S	7/20/2011	None
GM-11S	8/17/2011	None
GM-11S	9/14/2011	None
GM-11S	10/12/2011	None
GM-11S	11/23/2011	None
GM-11S	12/14/2011	None
GM-11S	1/24/2012	None
GM-11S	2/15/2012	None
GM-11S	3/16/2012	None
GM-11S	4/18/2012	None
GM-11S	5/16/2012	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-11S	6/13/2012	None
GM-11S	7/20/2012	None
GM-11S	9/6/2012	None
GM-11S	8/15/2012	None
GM-11S	10/24/2012	None
GM-11S	11/28/2012	None
GM-11S	12/18/2012	None
GM-11S	1/23/2013	**Sheen**
GM-11S	2/21/2013	**Sheen**
GM-11S	3/13/2013	None
GM-11S	4/17/2013	None
GM-11S	5/22/2013	None
GM-11S	6/12/2013	None
GM-11S	7/24/2013	**Sheen**
GM-11S	8/21/2013	None
GM-11S	9/25/2013	**Sheen**
GM-11S	10/15/2013	None
GM-11S	11/20/2013	None
GM-11S	12/18/2013	None
GM-11S	1/15/2014	None
GM-11S	2/12/2014	None
GM-11S	3/20/2014	None
GM-11S	4/16/2014	None
GM-11S	5/21/2014	None
GM-11S	6/18/2014	None
GM-11S	7/25/2014	None
GM-11S	8/13/2014	None
GM-11S	9/17/2014	None
GM-11S	10/15/2014	None
GM-11S	11/18/2014	None
GM-11S	12/17/2014	None
GM-11S	1/14/2015	None
GM-11S	2/11/2015	None
GM-11S	3/18/2015	None
GM-11S	4/15/2015	None
GM-11S	5/14/2015	None
GM-11S	6/17/2015	None
GM-11S	7/15/2015	None
GM-11S	8/12/2015	None
GM-11S	9/16/2015	None
GM-11S	10/14/2015	None
GM-11S	11/18/2015	None
GM-11S	12/10/2015	None
GM-11S	1/13/2016	None
GM-11S	2/10/2016	None
GM-11S	3/16/2016	None
GM-11S	4/13/2016	None
GM-11S	5/18/2016	None
GM-11S	6/15/2016	None
GM-11S	7/12/2016	None
GM-11S	8/18/2016	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-11S	9/21/2016	None
GM-11S	10/19/2016	None
GM-11S	11/16/2016	None
GM-11S	12/14/2016	None
GM-11S	1/18/2017	None
GM-11S	2/15/2017	None
GM-11S	3/15/2017	None
GM-11S	4/12/2017	None
GM-11S	5/17/2017	None
GM-11S	6/14/2017	None
GM-11S	7/19/2017	None
GM-11S	8/16/2017	None
GM-11S	9/20/2017	None
GM-11S	10/18/2017	**Sheen**
GM-11S	11/15/2017	**Sheen**
GM-11S	12/13/2017	None
GM-11S	1/17/2018	None
GM-11S	2/14/2018	None
GM-11S	3/14/2018	None
GM-11S	4/18/2018	None
GM-11S	5/16/2018	**Sheen**
GM-11S	6/13/2018	**Sheen**
GM-11S	7/18/2018	**Sheen**
GM-11S	8/15/2018	**Sheen**
GM-11S	9/19/2018	None
GM-11S	10/17/2018	None
GM-11S	11/14/2018	None
GM-11S	12/19/2018	None
GM-11S	1/16/2019	None
GM-11S	2/15/2019	None
GM-11S	3/20/2019	None
GM-11S	4/24/2019	None
GM-11S	5/14/2019	None
GM-11S	6/10/2019	None
GM-11S	7/10/2019	None
GM-11S	8/13/2019	None
GM-11S	9/10/2019	None
GM-11S	10/16/2019	None
GM-11S	11/20/2019	None
GM-11S	12/11/2019	None
GM-11S	1/23/2020	None
GM-11S	2/20/2020	None
GM-11S	3/24/2020	None
GM-11S	4/23/2020	None
GM-11S	5/28/2020	None
GM-11S	6/18/2020	None
GM-11S	7/23/2020	None
GM-11S	8/20/2020	None
GM-11S	9/24/2020	None
GM-11S	10/22/2020	None
GM-11S	11/19/2020	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-11S	12/23/2020	None
GM-11S	1/21/2021	None
GM-11S	2/18/2021	None
GM-11S	3/18/2021	None
GM-11S	4/15/2021	None
GM-11S	5/20/2021	None
GM-11S	6/24/2021	None
GM-11S	7/22/2021	None
GM-11S	8/26/2021	None
GM-11S	9/16/2021	None
GM-11S	10/21/2021	**Slight Sheen**
GM-11S	11/18/2021	None
GM-11S	12/16/2021	None
GM-11S	1/20/2022	None
GM-11S	2/17/2022	None
GM-11S	3/17/2022	None
GM-11S	4/21/2022	None
GM-11S	5/19/2022	None
GM-11S	6/16/2022	None
GM-11S	7/21/2022	None
GM-11S	8/18/2022	None
GM-11S	9/29/2022	None
GM-11S	10/27/2022	None
GM-11S	11/23/2022	None
GM-11S	12/22/2022	None
GM-11S	1/26/2023	None
GM-11S	2/23/2023	None
GM-11S	3/23/2023	None
GM-11S	4/20/2023	None
GM-11S	5/25/2023	None
GM-11S	6/22/2023	None
GM-11S	7/20/2023	None
GM-11S	8/31/2023	None
GM-11S	9/21/2023	None
GM-11S	10/19/2023	None
GM-11S	11/22/2023	None
GM-11S	12/28/2023	None
GM-11S	1/31/2024	**Slight Sheen**
GM-11S	2/23/2024	None
GM-11S	3/21/2024	None
GM-12S	4/14/2000	None
GM-12S	5/15/2000	NM
GM-12S	6/15/2000	NM
GM-12S	7/19/2000	NM
GM-12S	8/15/2000	NM
GM-12S	9/29/2000	None
GM-12S	10/12/2000	None
GM-12S	11/14/2000	None
GM-12S	12/14/2000	None
GM-12S	1/11/2001	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-12S	2/15/2001	None
GM-12S	3/15/2001	None
GM-12S	4/13/2001	None
GM-12S	5/16/2001	None
GM-12S	6/11/2001	None
GM-12S	7/24/2001	None
GM-12S	8/21/2001	None
GM-12S	9/6/2001	None
GM-12S	10/19/2001	None
GM-12S	11/15/2001	None
GM-12S	12/10/2001	None
GM-12S	1/16/2002	NM
GM-12S	2/21/2002	None
GM-12S	3/18/2002	None
GM-12S	4/18/2002	None
GM-12S	5/20/2002	None
GM-12S	6/19/2002	None
GM-12S	7/15/2002	None
GM-12S	8/20/2002	None
GM-12S	9/20/2002	None
GM-12S	10/15/2002	None
GM-12S	11/27/2002	None
GM-12S	12/18/2002	None
GM-12S	1/16/2003	None
GM-12S	2/11/2003	None
GM-12S	3/11/2003	None
GM-12S	4/15/2003	None
GM-12S	5/15/2003	None
GM-12S	6/17/2003	None
GM-12S	7/15/2003	None
GM-12S	8/13/2003	None
GM-12S	9/16/2003	None
GM-12S	10/14/2003	None
GM-12S	11/19/2003	None
GM-12S	12/17/2003	None
GM-12S	1/13/2004	None
GM-12S	2/10/2004	None
GM-12S	3/17/2004	None
GM-12S	4/15/2004	None
GM-12S	5/25/2004	None
GM-12S	6/13/2004	None
GM-12S	7/13/2004	None
GM-12S	8/12/2004	None
GM-12S	9/16/2004	None
GM-12S	10/13/2004	None
GM-12S	11/18/2004	None
GM-12S	12/16/2004	None
GM-12S	1/13/2005	None
GM-12S	2/15/2005	None
GM-12S	3/15/2005	None
GM-12S	4/15/2005	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-12S	5/20/2005	None
GM-12S	6/10/2005	None
GM-12S	7/15/2005	None
GM-12S	8/12/2005	None
GM-12S	9/14/2005	None
GM-12S	10/14/2005	None
GM-12S	11/23/2005	None
GM-12S	12/19/2005	None
GM-12S	1/25/2006	None
GM-12S	2/14/2006	None
GM-12S	3/15/2006	None
GM-12S	4/14/2006	None
GM-12S	5/17/2006	None
GM-12S	6/14/2006	None
GM-12S	7/12/2006	None
GM-12S	8/16/2006	None
GM-12S	9/13/2006	None
GM-12S	10/12/2006	None
GM-12S	11/17/2006	None
GM-12S	12/19/2006	None
GM-12S	1/19/2007	None
GM-12S	2/16/2007	None
GM-12S	3/19/2007	None
GM-12S	4/19/2007	None
GM-12S	5/17/2007	None
GM-12S	6/14/2007	None
GM-12S	7/13/2007	None
GM-12S	8/16/2007	None
GM-12S	9/10/2007	None
GM-12S	10/17/2007	None
GM-12S	11/16/2007	None
GM-12S	12/14/2007	None
GM-12S	1/22/2008	None
GM-12S	2/14/2008	None
GM-12S	3/14/2008	None
GM-12S	4/18/2008	None
GM-12S	5/16/2008	None
GM-12S	6/18/2008	None
GM-12S	7/16/2008	None
GM-12S	8/18/2008	None
GM-12S	9/16/2008	None
GM-12S	10/15/2008	None
GM-12S	11/14/2008	None
GM-12S	12/11/2008	None
GM-12S	1/14/2009	None
GM-12S	2/18/2009	None
GM-12S	3/17/2009	None
GM-12S	4/16/2009	None
GM-12S	5/14/2009	None
GM-12S	6/16/2009	None
GM-12S	7/22/2009	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-12S	8/18/2009	None
GM-12S	9/14/2009	None
GM-12S	10/20/2009	None
GM-12S	11/18/2009	None
GM-12S	12/15/2009	None
GM-12S	1/21/2010	None
GM-12S	2/17/2010	None
GM-12S	3/16/2010	None
GM-12S	4/15/2010	None
GM-12S	5/18/2010	None
GM-12S	6/17/2010	None
GM-12S	7/29/2010	None
GM-12S	8/19/2010	None
GM-12S	9/22/2010	None
GM-12S	10/20/2010	None
GM-12S	11/30/2010	None
GM-12S	12/23/2010	None
GM-12S	1/19/2011	None
GM-12S	2/16/2011	None
GM-12S	3/29/2011	None
GM-12S	4/21/2011	None
GM-12S	5/19/2011	None
GM-12S	6/15/2011	None
GM-12S	7/20/2011	None
GM-12S	8/17/2011	None
GM-12S	9/14/2011	None
GM-12S	10/12/2011	None
GM-12S	11/23/2011	None
GM-12S	12/14/2011	None
GM-12S	1/24/2012	None
GM-12S	2/15/2012	None
GM-12S	3/16/2012	None
GM-12S	4/18/2012	None
GM-12S	5/16/2012	None
GM-12S	6/13/2012	None
GM-12S	7/20/2012	None
GM-12S	8/15/2012	None
GM-12S	9/6/2012	None
GM-12S	10/24/2012	None
GM-12S	11/28/2012	None
GM-12S	12/18/2012	None
GM-12S	1/23/2012	None
GM-12S	2/21/2013	None
GM-12S	3/13/2013	None
GM-12S	4/17/2013	None
GM-12S	5/22/2013	None
GM-12S	6/12/2013	None
GM-12S	7/24/2013	None
GM-12S	8/21/2013	None
GM-12S	9/25/2013	None
GM-12S	10/15/2013	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-12S	11/20/2013	None
GM-12S	12/18/2013	None
GM-12S	1/15/2014	None
GM-12S	2/12/2014	None
GM-12S	3/20/2014	None
GM-12S	4/16/2014	None
GM-12S	5/21/2014	None
GM-12S	6/18/2014	None
GM-12S	7/25/2014	None
GM-12S	8/13/2014	None
GM-12S	9/17/2014	None
GM-12S	10/15/2014	None
GM-12S	11/18/2014	None
GM-12S	12/17/2014	None
GM-12S	1/14/2015	None
GM-12S	2/11/2015	None
GM-12S	3/18/2015	None
GM-12S	4/15/2015	None
GM-12S	5/14/2015	None
GM-12S	6/17/2015	None
GM-12S	7/15/2015	None
GM-12S	8/12/2015	None
GM-12S	9/16/2015	None
GM-12S	10/14/2015	None
GM-12S	11/18/2015	None
GM-12S	12/10/2015	None
GM-12S	1/13/2016	None
GM-12S	2/10/2016	None
GM-12S	3/16/2016	None
GM-12S	4/13/2016	None
GM-12S	5/18/2016	None
GM-12S	6/15/2016	None
GM-12S	7/12/2016	None
GM-12S	8/18/2016	None
GM-12S	9/21/2016	None
GM-12S	10/19/2016	None
GM-12S	11/16/2016	None
GM-12S	12/14/2016	None
GM-12S	1/18/2017	None
GM-12S	2/15/2017	None
GM-12S	3/15/2017	Noine
GM-12S	4/12/2017	None
GM-12S	5/17/2017	None
GM-12S	6/14/2017	None
GM-12S	7/19/2017	None
GM-12S	8/16/2017	None
GM-12S	9/20/2017	Noine
GM-12S	10/18/2017	None
GM-12S	11/15/2017	None
GM-12S	12/13/2017	None
GM-12S	1/17/2018	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-12S	2/14/2018	None
GM-12S	3/14/2018	None
GM-12S	4/18/2018	None
GM-12S	5/16/2018	None
GM-12S	6/13/2018	None
GM-12S	7/18/2018	None
GM-12S	8/15/2018	None
GM-12S	9/19/2018	None
GM-12S	10/17/2018	None
GM-12S	11/14/2018	None
GM-12S	12/19/2018	None
GM-12S	1/16/2019	None
GM-12S	2/15/2019	None
GM-12S	3/20/2019	None
GM-12S	4/24/2019	None
GM-12S	5/14/2019	None
GM-12S	6/10/2019	None
GM-12S	7/10/2019	None
GM-12S	8/13/2019	None
GM-12S	9/10/2019	None
GM-12S	10/16/2019	None
GM-12S	11/20/2019	None
GM-12S	12/11/2019	None
GM-12S	1/23/2020	None
GM-12S	2/20/2020	None
GM-12S	3/24/2020	None
GM-12S	4/23/2020	None
GM-12S	5/28/2020	None
GM-12S	6/18/2020	None
GM-12S	7/23/2020	None
GM-12S	8/20/2020	None
GM-12S	9/24/2020	None
GM-12S	10/22/2020	None
GM-12S	11/19/2020	None
GM-12S	12/23/2020	None
GM-12S	1/21/2021	None
GM-12S	2/18/2021	None
GM-12S	3/18/2021	None
GM-12S	4/15/2021	None
GM-12S	5/20/2021	None
GM-12S	6/24/2021	None
GM-12S	7/22/2021	None
GM-12S	8/26/2021	None
GM-12S	9/16/2021	None
GM-12S	10/21/2021	None
GM-12S	11/18/2021	None
GM-12S	12/16/2021	None
GM-12S	1/20/2022	None
GM-12S	2/17/2022	None
GM-12S	3/17/2022	None
GM-12S	4/21/2022	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-12S	5/19/2022	None
GM-12S	6/16/2022	None
GM-12S	7/21/2022	None
GM-12S	8/18/2022	None
GM-12S	9/29/2022	None
GM-12S	10/27/2022	None
GM-12S	11/23/2022	None
GM-12S	12/22/2022	None
GM-12S	1/26/2023	None
GM-12S	2/23/2023	None
GM-12S	3/23/2023	None
GM-12S	4/20/2023	None
GM-12S	5/25/2023	None
GM-12S	6/22/2023	None
GM-12S	7/20/2023	None
GM-12S	8/31/2023	None
GM-12S	9/21/2023	None
GM-12S	10/19/2023	None
GM-12S	11/22/2023	None
GM-12S	12/28/2023	None
GM-12S	1/31/2024	None
GM-12S	2/23/2024	None
GM-12S	3/21/2024	None
GM-13S	7/6/1998	**Yes***
GM-13S	10/20/1998	**~0.08 foot**
GM-13S	11/18/1998	**~0.08 foot**
GM-13S	12/15/1998	**~0.01 foot**
GM-13S	2/17/1999	**~0.08 foot**
GM-13S	3/15/1999	**~0.34 foot**
GM-13S	4/14/1999	**~0.20 foot**
GM-13S	5/13/1999	**~0.44 foot**
GM-13S	6/15/1999	**~0.35 foot**
GM-13S	7/15/1999	**~0.31 foot**
GM-13S	8/17/1999	**~0.19 foot**
GM-13S	9/16/1999	**~0.09 foot**
GM-13S	10/19/1999	**~0.10 foot**
GM-13S	11/19/1999	**~0.11 foot**
GM-13S	12/28/1999	**~0.12 foot**
GM-13S	1/21/2000	**~0.11 foot**
GM-13S	2/16/2000	
GM-13S	3/21/2000	**~0.11 foot**
GM-13S	4/14/2000	**~0.13 foot**
GM-13S	5/15/2000	**~0.10 foot**
GM-13S	6/16/2000	**Sheen**
GM-13S	7/19/2000	**Sheen**
GM-13S	8/15/2000	**Sheen**
GM-13S	9/29/2000	None
GM-13S	10/12/2000	**Sheen**
GM-13S	11/14/2000	**~0.01 foot**
GM-13S	12/14/2000	NM
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-13S	1/11/2001	NM
GM-13S	2/15/2001	NM
GM-13S	3/15/2001	NM
GM-13S	4/13/2001	NM
GM-13S	5/16/2001	None
GM-13S	6/11/2001	None
GM-13S	7/24/2001	None
GM-13S	8/21/2001	None
GM-13S	9/6/2001	**Sheen**
GM-13S	10/19/2001	None
GM-13S	11/15/2001	None
GM-13S	12/10/2001	**Sheen**
GM-13S	1/16/2002	**Sheen**
GM-13S	2/21/2002	NM
GM-13S	3/18/2002	None
GM-13S	4/18/2002	None
GM-13S	5/20/2002	None
GM-13S	6/19/2002	None
GM-13S	7/15/2002	None
GM-13S	8/20/2002	None
GM-13S	9/20/2002	None
GM-13S	10/15/2002	None
GM-13S	11/27/2002	None
GM-13S	12/18/2002	None
GM-13S	1/16/2003	None
GM-13S	2/11/2003	None
GM-13S	3/11/2003	**Sheen**
GM-13S	4/15/2003	**Sheen**
GM-13S	5/15/2003	**Sheen**
GM-13S	6/17/2003	None
GM-13S	7/15/2003	None
GM-13S	8/13/2003	None
GM-13S	9/16/2003	None
GM-13S	10/14/2003	None
GM-13S	11/19/2003	None
GM-13S	12/17/2003	None
GM-13S	1/13/2004	None
GM-13S	2/10/2004	None
GM-13S	3/17/2004	None
GM-13S	4/15/2004	None
GM-13S	5/25/2004	**Sheen**
GM-13S	6/13/2004	**Sheen**
GM-13S	7/13/2004	**Sheen**
GM-13S	8/12/2004	None
GM-13S	9/16/2004	None
GM-13S	10/13/2004	None
GM-13S	11/18/2004	None
GM-13S	12/16/2004	None
GM-13S	1/13/2005	None
GM-13S	2/15/2005	None
GM-13S	3/15/2005	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-13S	4/15/2005	None
GM-13S	5/20/2005	None
GM-13S	6/10/2005	None
GM-13S	7/15/2005	None
GM-13S	8/12/2005	None
GM-13S	9/14/2005	None
GM-13S	10/14/2005	None
GM-13S	11/23/2005	None
GM-13S	12/19/2005	None
GM-13S	1/25/2006	None
GM-13S	2/14/2006	None
GM-13S	3/15/2006	None
GM-13S	4/14/2006	None
GM-13S	5/17/2006	None
GM-13S	6/14/2006	None
GM-13S	7/12/2006	None
GM-13S	8/16/2006	**Sheen**
GM-13S	9/13/2006	**Sheen**
GM-13S	10/12/2006	None
GM-13S	11/17/2006	None
GM-13S	12/19/2006	None
GM-13S	1/19/2007	None
GM-13S	2/16/2007	None
GM-13S	3/19/2007	**Sheen**
GM-13S	4/19/2007	None
GM-13S	5/17/2007	None
GM-13S	6/14/2007	None
GM-13S	7/13/2007	None
GM-13S	8/16/2007	None
GM-13S	9/10/2007	None
GM-13S	10/17/2007	None
GM-13S	11/16/2007	None
GM-13S	12/14/2007	None
GM-13S	1/22/2008	None
GM-13S	2/14/2008	None
GM-13S	3/14/2008	None
GM-13S	4/18/2008	None
GM-13S	5/16/2008	None
GM-13S	6/18/2008	None
GM-13S	7/16/2008	None
GM-13S	8/18/2008	None
GM-13S	9/16/2008	None
GM-13S	10/15/2008	None
GM-13S	11/14/2008	None
GM-13S	12/11/2008	None
GM-13S	1/14/2009	None
GM-13S	2/18/2009	None
GM-13S	3/17/2009	None
GM-13S	4/16/2009	None
GM-13S	5/14/2009	None
GM-13S	6/16/2009	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-13S	7/22/2009	None
GM-13S	8/18/2009	None
GM-13S	9/14/2009	None
GM-13S	10/20/2009	None
GM-13S	11/18/2009	None
GM-13S	12/15/2009	None
GM-13S	1/21/2010	None
GM-13S	2/17/2010	**Sheen**
GM-13S	3/16/2010	**Film**
GM-13S	4/15/2010	**Film**
GM-13S	5/18/2010	**Film**
GM-13S	6/17/2010	**Film**
GM-13S	7/29/2010	**Sheen**
GM-13S	8/19/2010	None
GM-13S	9/22/2010	**Film**
GM-13S	10/20/2010	None
GM-13S	11/30/2010	None
GM-13S	12/23/2010	None
GM-13S	1/19/2011	None
GM-13S	2/16/2011	None
GM-13S	3/29/2011	**Film**
GM-13S	4/21/2011	**~0.01 foot**
GM-13S	5/19/2011	**Film**
GM-13S	6/15/2011	None
GM-13S	7/20/2011	**Film**
GM-13S	8/17/2011	None
GM-13S	9/14/2011	None
GM-13S	10/12/2011	None
GM-13S	11/23/2011	None
GM-13S	12/14/2011	None
GM-13S	1/24/2012	None
GM-13S	2/15/2012	None
GM-13S	3/16/2012	None
GM-13S	4/18/2012	None
GM-13S	5/16/2012	None
GM-13S	6/13/2012	None
GM-13S	7/20/2012	**Film**
GM-13S	8/15/2012	**Film**
GM-13S	9/6/2012	**Film**
GM-13S	10/24/2012	**Film**
GM-13S	11/28/2012	**Film**
GM-13S	12/18/2012	None
GM-13S	1/23/2013	None
GM-13S	2/21/2013	None
GM-13S	3/13/2013	None
GM-13S	4/17/2013	None
GM-13S	5/22/2013	None
GM-13S	6/13/2013	None
GM-13S	7/24/2013	None
GM-13S	8/21/2013	None
GM-13S	9/25/213	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-13S	10/15/2013	None
GM-13S	11/20/2013	None
GM-13S	12/18/2013	None
GM-13S	1/15/2014	None
GM-13S	2/12/2014	None
GM-13S	3/20/2014	None
GM-13S	4/16/2014	None
GM-13S	5/21/2014	None
GM-13S	6/18/2014	None
GM-13S	7/25/2014	None
GM-13S	8/13/2014	None
GM-13S	9/17/2014	None
GM-13S	10/15/2014	None
GM-13S	11/18/2014	None
GM-13S	12/17/2014	None
GM-13S	1/14/2015	None
GM-13S	2/11/2015	None
GM-13S	3/18/2015	None
GM-13S	4/15/2015	None
GM-13S	5/14/2015	None
GM-13S	6/17/2015	None
GM-13S	7/15/2015	None
GM-13S	8/12/2015	None
GM-13S	9/16/2015	None
GM-13S	10/14/2015	None
GM-13S	11/18/2015	None
GM-13S	12/10/2015	None
GM-13S	1/13/2016	None
GM-13S	2/10/2016	None
GM-13S	3/16/2016	None
GM-13S	4/13/2016	**Sheen**
GM-13S	5/18/2016	None
GM-13S	6/15/2016	None
GM-13S	7/12/2016	None
GM-13S	8/18/2016	None
GM-13S	9/21/2016	**Sheen**
GM-13S	10/19/2016	None
GM-13S	11/16/2016	None
GM-13S	12/14/2016	None
GM-13S	1/18/2017	None
GM-13S	2/15/2017	None
GM-13S	3/15/2017	None
GM-13S	4/12/2017	None
GM-13S	5/17/2017	None
GM-13S	6/14/2017	None
GM-13S	7/19/2017	None
GM-13S	8/16/2017	**Sheen**
GM-13S	9/20/2017	None
GM-13S	10/18/2017	None
GM-13S	11/15/2017	None
GM-13S	12/13/2017	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-13S	1/17/2018	**Sheen**
GM-13S	2/14/2018	None
GM-13S	3/14/2018	None
GM-13S	4/18/2018	None
GM-13S	5/16/2018	**Sheen**
GM-13S	6/13/2018	None
GM-13S	7/18/2018	None
GM-13S	8/15/2018	None
GM-13S	9/19/2018	None
GM-13S	10/17/2018	**Sheen**
GM-13S	11/14/2018	None
GM-13S	12/19/2018	None
GM-13S	1/16/2019	None
GM-13S	2/15/2019	None
GM-13S	3/20/2019	None
GM-13S	4/24/2019	None
GM-13S	5/14/2019	None
GM-13S	6/10/2019	None
GM-13S	7/10/2019	None
GM-13S	8/13/2019	None
GM-13S	9/10/2019	None
GM-13S	10/16/2019	None
GM-13S	11/20/2019	None
GM-13S	12/11/2019	None
GM-13S	1/23/2020	None
GM-13S	2/20/2020	None
GM-13S	3/24/2020	None
GM-13S	4/23/2020	None
GM-13S	5/28/2020	None
GM-13S	6/18/2020	None
GM-13S	7/23/2020	None
GM-13S	8/20/2020	None
GM-13S	9/24/2020	None
GM-13S	10/22/2020	None
GM-13S	11/19/2020	None
GM-13S	12/23/2020	None
GM-13S	1/21/2021	None
GM-13S	2/18/2021	None
GM-13S	3/18/2021	None
GM-13S	4/15/2021	None
GM-13S	5/20/2021	None
GM-13S	6/24/2021	None
GM-13S	7/22/2021	None
GM-13S	8/26/2021	None
GM-13S	9/16/2021	**Slight Sheen**
GM-13S	10/21/2021	**Slight Sheen**
GM-13S	11/18/2021	None
GM-13S	12/16/2021	None
GM-13S	1/20/2022	**Slight Sheen**
GM-13S	2/17/2022	None
GM-13S	3/17/2022	**Slight Sheen**
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-13S	4/21/2022	None
GM-13S	5/19/2022	None
GM-13S	6/16/2022	**Slight Sheen**
GM-13S	7/21/2022	**Slight Sheen**
GM-13S	8/18/2022	None
GM-13S	9/29/2022	None
GM-13S	10/27/2022	None
GM-13S	11/23/2022	None
GM-13S	12/22/2022	None
GM-13S	1/26/2023	None
GM-13S	2/23/2023	None
GM-13S	3/23/2023	None
GM-13S	4/20/2023	None
GM-13S	5/25/2023	None
GM-13S	6/22/2023	None
GM-13S	7/20/2023	None
GM-13S	8/31/2023	None
GM-13S	9/21/2023	None
GM-13S	10/19/2023	None
GM-13S	11/22/2023	None
GM-13S	12/28/2023	None
GM-13S	1/31/2024	None
GM-13S	2/23/2024	None
GM-13S	3/21/2024	None
GM-14S	4/9/1997	**Sheen**
GM-14S	7/9/1997	**Sheen**
GM-14S	10/22/1997	**Sheen**
GM-14S	1/22/1998	**Sheen**
GM-14S	3/12/1998	**Sheen**
GM-14S	7/6/1998	**Sheen**
GM-14S	10/20/1998	**Sheen**
GM-14S	12/15/1998	**Sheen**
GM-14S	3/26/1999	**Sheen**
GM-14S	6/28/1999	**Sheen**
GM-14S	9/28/1999	None
GM-14S	8/15/2000	None
GM-14S	9/29/2000	None
GM-14S	10/12/2000	None
GM-14S	11/14/2000	None
GM-14S	12/14/2000	None
GM-14S	1/11/2001	None
GM-14S	2/15/2001	None
GM-14S	3/15/2001	None
GM-14S	4/13/2001	None
GM-14S	5/16/2001	None
GM-14S	6/11/2001	None
GM-14S	7/24/2001	None
GM-14S	8/21/2001	None
GM-14S	9/6/2001	None
GM-14S	10/19/2001	None
Cleanup Level		No Sheen

Well	Date	Free Product
Plant 1, continued		
GM-14S	11/15/2001	None
GM-14S	12/10/2001	None
GM-14S	1/16/2002	None
GM-14S	2/21/2002	None
GM-14S	3/18/2002	None
GM-14S	4/18/2002	None
GM-14S	5/20/2002	None
GM-14S	6/19/2002	None
GM-14S	7/15/2002	None
GM-14S	8/20/2002	None
GM-14S	9/20/2002	None
GM-14S	10/15/2002	None
GM-14S	11/27/2002	None
GM-14S	12/18/2002	None
GM-14S	1/16/2003	None
GM-14S	2/11/2003	None
GM-14S	3/11/2003	None
GM-14S	4/15/2003	None
GM-14S	5/15/2003	None
GM-14S	6/17/2003	None
GM-14S	7/15/2003	None
GM-14S	8/13/2003	None
GM-14S	9/16/2003	None
GM-14S	10/14/2003	None
GM-14S	11/19/2003	None
GM-14S	12/17/2003	None
GM-14S	1/13/2004	None
GM-14S	2/10/2004	None
GM-14S	3/17/2004	None
GM-14S	4/15/2004	None
GM-14S	5/25/2004	None
Converted to Compliance Monitoring		
Cleanup Level		No Sheen

Notes: Values in **bold** exceed the cleanup level.

Due to maintenance of a sorbent "sock" placed in GM-13S and MW-03, these measurements do not necessarily reflect actual product thicknesses in the wells.

Active product recovery from GM-11S began in April 2000. Product thickness recorded in GM-11S after that date is not representative of static conditions.

MW-03 was destroyed during Island redevelopment activities and was replaced by MW-03R.

* Free product present, thickness not measured.

~ Approximately.

NM Not measured due to inaccessibility.

Table 9. 2023 Quarterly Performance Monitoring Groundwater Elevations
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TOC Elevation (feet)	Depth to Water (ft below TOC)	Groundwater Elevation (feet)
Plant 1				
GM-14S	3/30/2023	11.77	3.92	7.85
GM-14S	6/28/2023		4.59	7.18
GM-14S	9/28/2023		4.48	7.29
GM-14S	12/14/2023		3.12	8.65
GM-15S	3/29/2023	12.32	4.83	7.49
GM-15S	9/28/2023		5.49	6.83
GM-16S	3/30/2023	11.99	4.42	7.57
GM-16S	6/28/2023		4.96	7.03
GM-16S	9/28/2023		4.89	7.10
GM-16S	12/14/2023		3.73	8.26
GM-17S	3/30/2023	12.56	4.19	8.37
GM-17S	6/28/2023		4.91	7.65
GM-17S	9/28/2023		5.11	7.45
GM-17S	12/14/2023		3.39	9.17
GM-24S	3/30/2023	11.11	2.99	8.12
GM-24S	6/28/2023		3.69	7.42
GM-24S	9/28/2023		3.33	7.78
GM-24S	12/14/2023		2.22	8.89
AR-03	3/29/2023	12.49	4.83	7.66
AR-03	9/28/2023		6.14	6.35
AMW-01	3/29/2023	12.17	5.71	6.46
AMW-01	6/28/2023		9.39	2.78
AMW-01	9/27/2023		10.99	1.18
AMW-01	12/13/2023		4.92	7.25
AMW-02	3/29/2023	15.36	8.23	7.13
AMW-02	6/28/2023		13.23	2.13
AMW-02	9/27/2023		13.42	1.94
AMW-02	12/13/2023		7.01	8.35
AMW-03	3/29/2023	15.29	8.98	6.31
AMW-03	6/28/2023		13.06	2.23
AMW-03	9/27/2023		12.06	3.23
AMW-03	12/13/2023		7.61	7.68
AMW-04	3/30/2023	11.42	5.49	5.93
AMW-04	6/28/2023		7.31	4.11
AMW-04	9/27/2023		7.23	4.19
AMW-04	12/13/2023		4.20	7.22

Table 9. 2023 Quarterly Performance Monitoring Groundwater Elevations
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

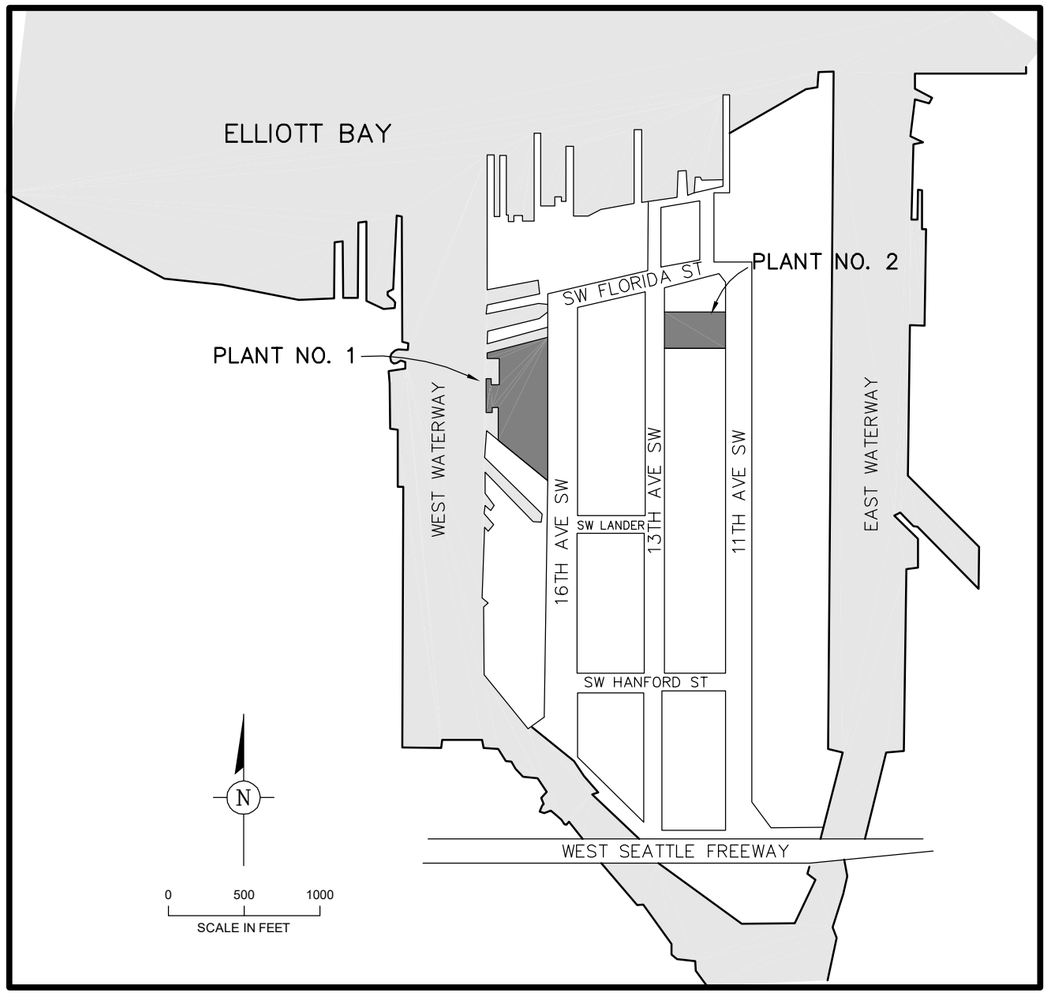
Well	Date	TOC Elevation (feet)	Depth to Water (ft below TOC)	Groundwater Elevation (feet)
Plant 1 Continued				
AMW-05	3/30/2023	11.05	4.98	6.07
AMW-05	6/28/2023		7.24	3.81
AMW-05	9/27/2023		7.53	3.52
AMW-05	12/13/2023		4.06	6.99
MW-06	3/30/2023	11.66	4.35	7.31
MW-06	6/29/2023		4.84	6.82
MW-06	9/28/2023		4.35	7.31
MW-06	12/14/2023		3.64	8.02
MW-1-T9	3/31/2023	12.21	5.31	6.90
MW-1-T9	9/27/2023		5.91	6.30
MW-2-T9	3/31/2023	12.37	5.11	7.26
MW-2-T9	9/27/2023		5.78	6.59
MW-3-T9	3/29/2023	11.87	4.71	7.16
MW-3-T9	9/27/2023		5.38	6.49

Definitions:

ft	Feet
Elevation	Elevations listed are in feet to North American Vertical Datum of 1988 (NAVD88) . Subtract approximately 3.4 feet to listed NAVD88 elevations to convert to the National Geodetic Vertical Datum of 1929 (NGVD 29) elevations for comparison to historic elevations provided in previous reports.
TOC	Top of casing

FIGURES

AREA PLAN



SITE PLAN

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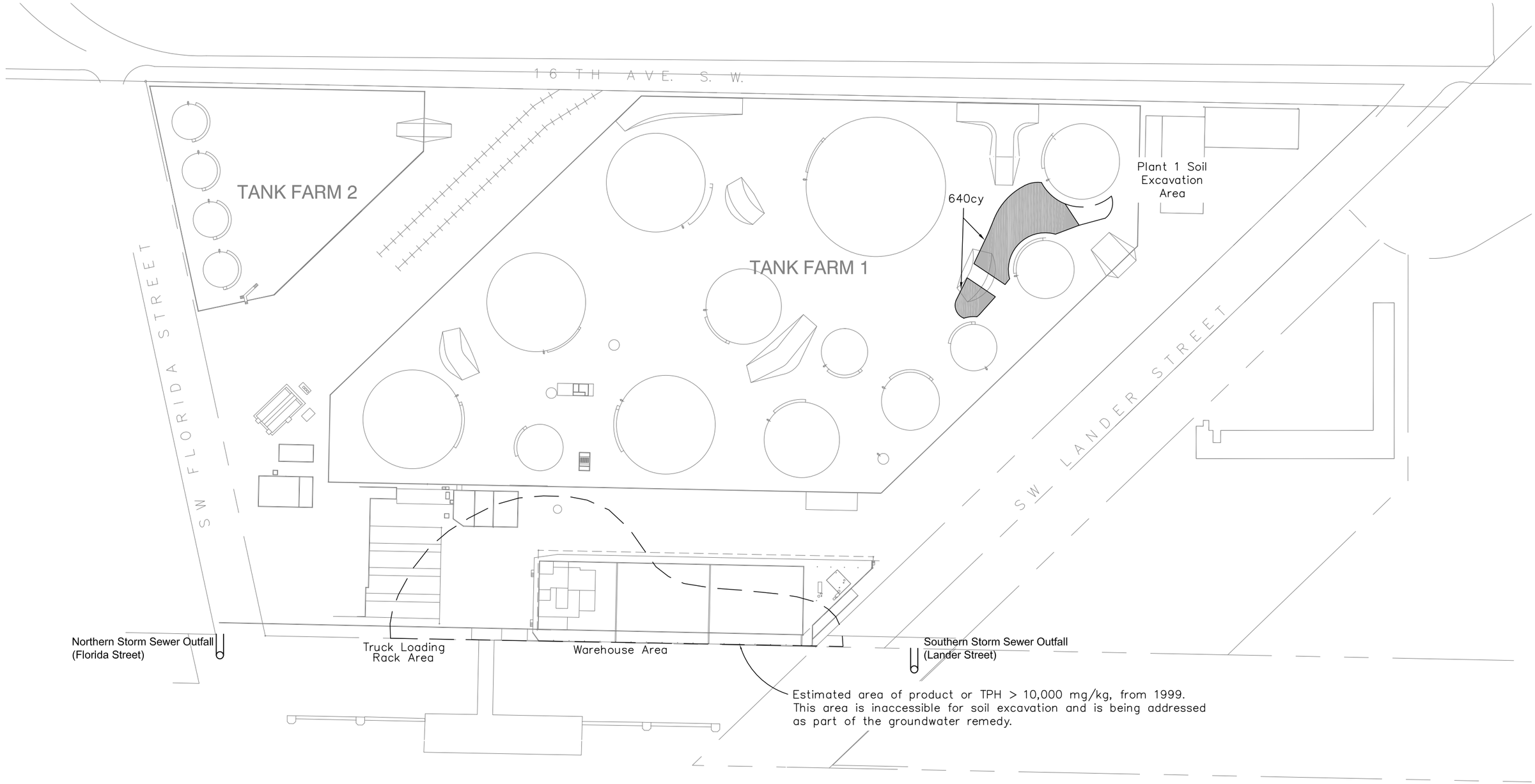
Kenmore WA 98028

Site Location Map

Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)
1652 Southwest Lander Street
Seattle, WA 98134

FIGURE
1

C:\DCS_PROJECTS\TechSolve PROJECTS\BP21T\ARCO 21T\dwg\VMAP2.dwg JAN 13 2011 12:26:16



LEGEND

FROM 1999: ESTIMATED AREA OF INACCESSIBLE SOILS WITH PRODUCT OR TPH > 20,000 ppm.

EXCAVATED REMEDIATION AREAS

640cy = AMOUNT OF TPH CONTAMINATED SOIL REMOVED (CUBIC YARDS)

N

0 50 100

SCALE IN FEET

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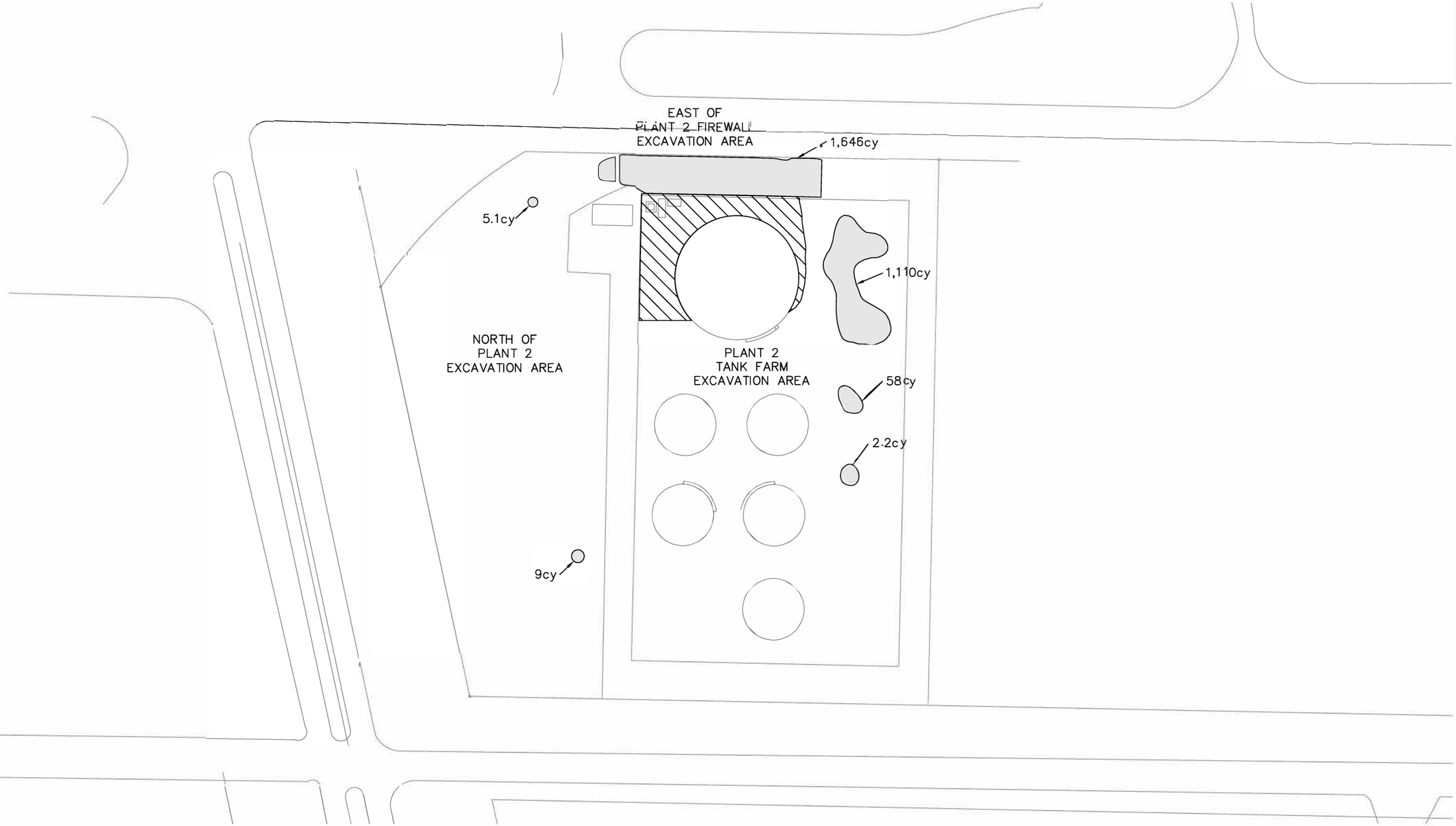
Areas of Remediation - Plant 1

Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)
1652 SW Lander Street, Seattle, WA 98134

FIGURE

2

C:\Data\CAD\Projects\TechSolv\ARCO 21T.dwg\ARCO21T.dwg << Areas of Remediation - P1 >> 11/26/2018 (SL)



LEGEND

FROM 1999: ESTIMATED AREA OF INACCESSIBLE SOILS WITH PRODUCT OR TPH > 20,000 ppm.

EXCAVATED REMEDIATION AREAS

N

0 50 100

SCALE IN FEET

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Kenmore, WA 98028

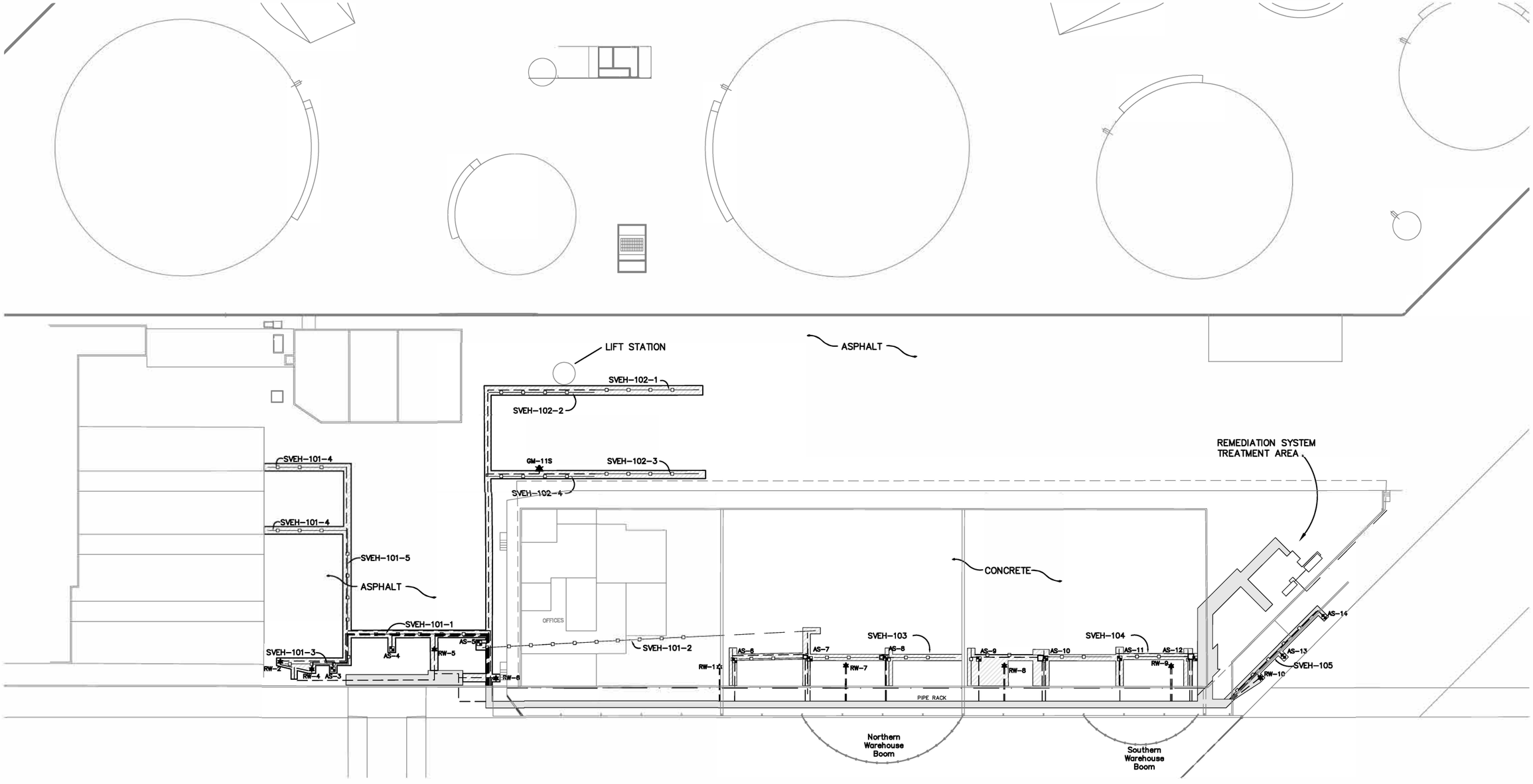
Areas of Remediation - Plant 2

Site:SeaPort Seattle Terminal (Former ARCO/ BP Harbor Island Terminal)
1652 SW Lander Street, Seattle WA 98134

FIGURE

3

C:\Data\CAD\Projects\TechSolv\ARCO 21T\dwg\ARCO21T.dwg << Areas for Remediation - P2 >> OCT 07 2008 09:48:43 (bCAD)



LEGEND

RW-1	GROUNDWATER RECOVERY WELL
RW-5	GROUNDWATER RECOVERY WELL
SVE-1	SOIL VAPOR EXTRACTION WELL
MW-2	GROUNDWATER MONITORING WELL
AS-1	AIR SPARGE WELL
	SVE LINES
	AS LINES
	WATERWAY BOOMS

N

0 20 40

SCALE IN FEET

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Remediation System Plant 1 Waterfront

Site: SeaPort Seattle Terminal (Former ARCO / BP Harbor Island Terminal)
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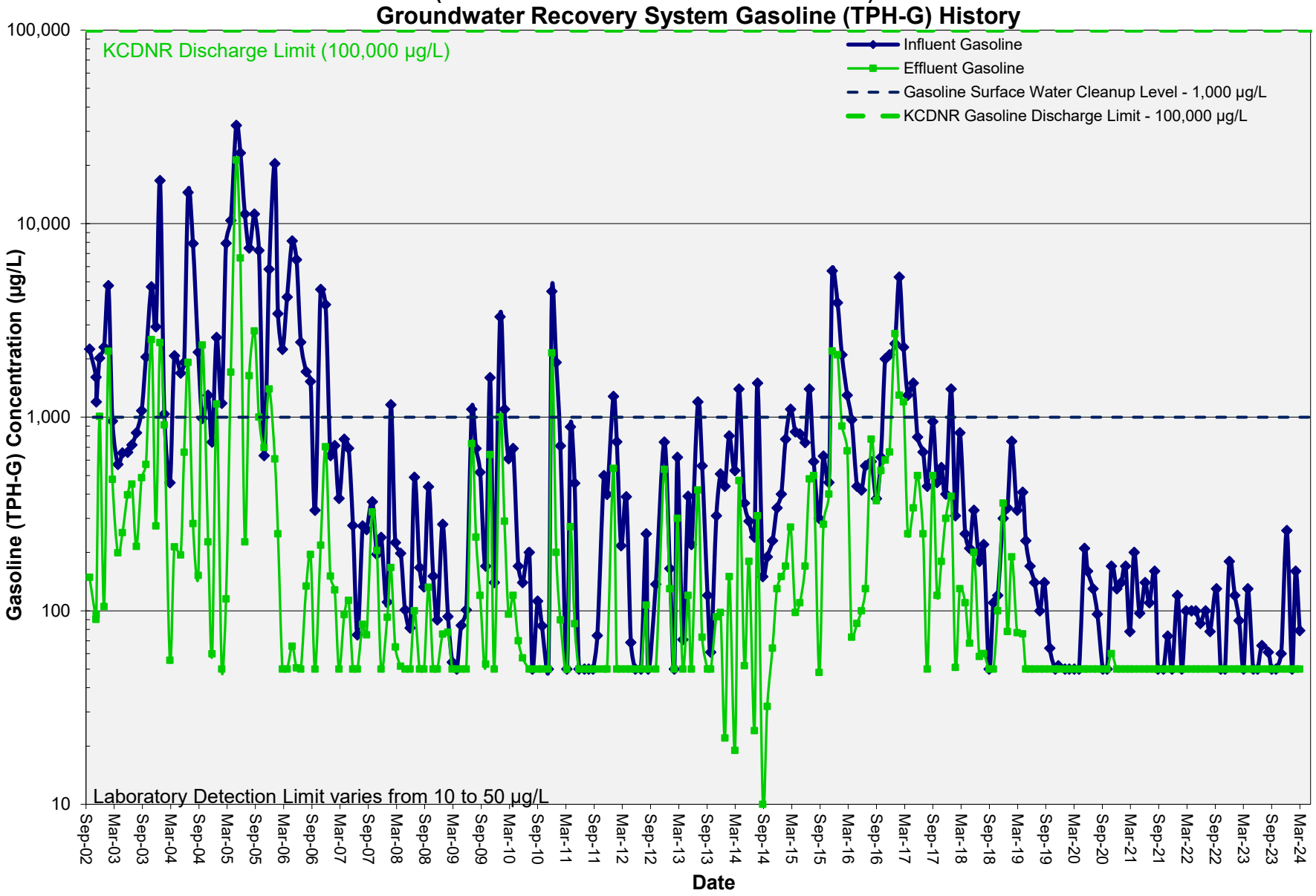
FIGURE

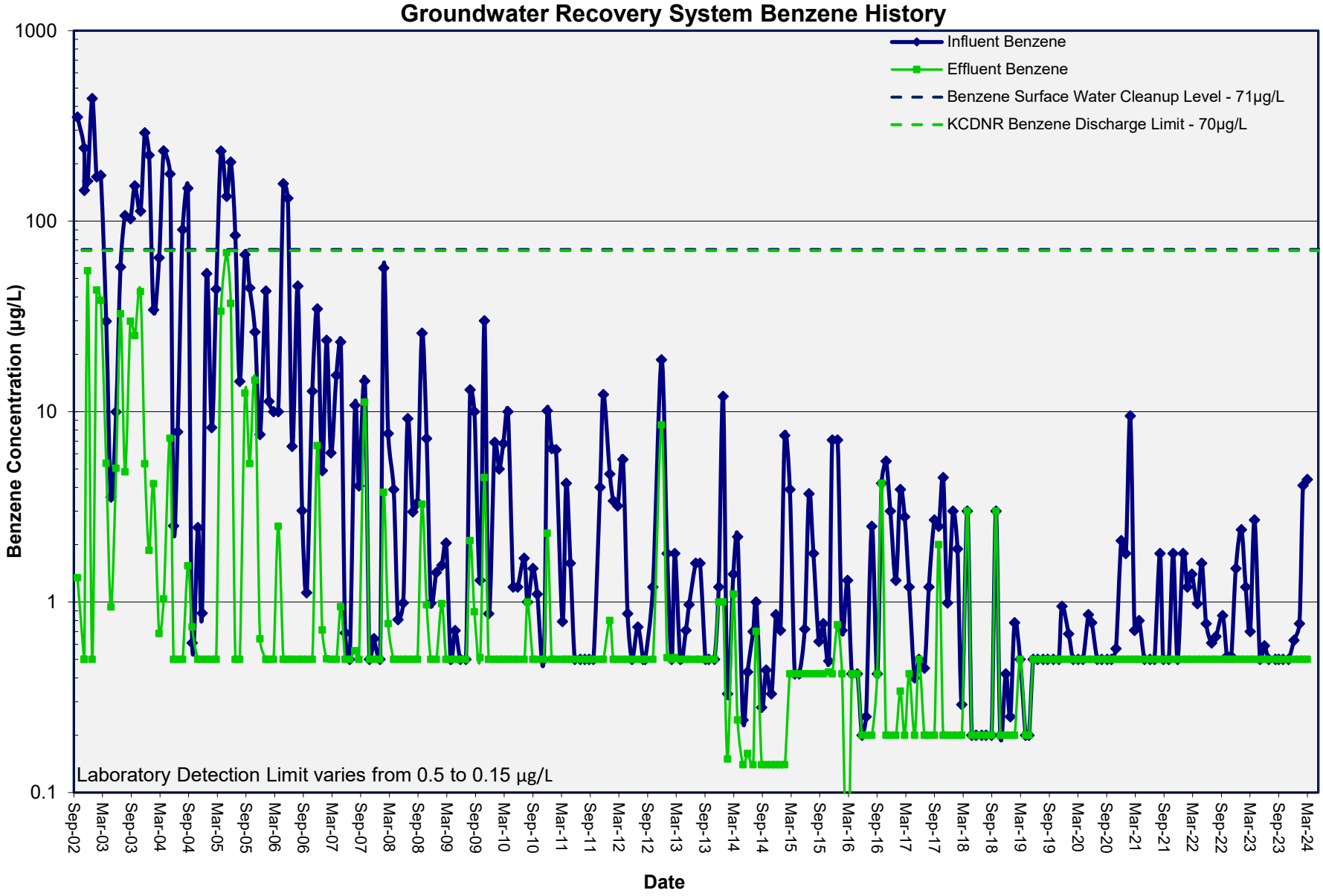
4

Figure 5. Final System Influent vs. Effluent Gasoline Concentrations
October 2002 through March 2024
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)



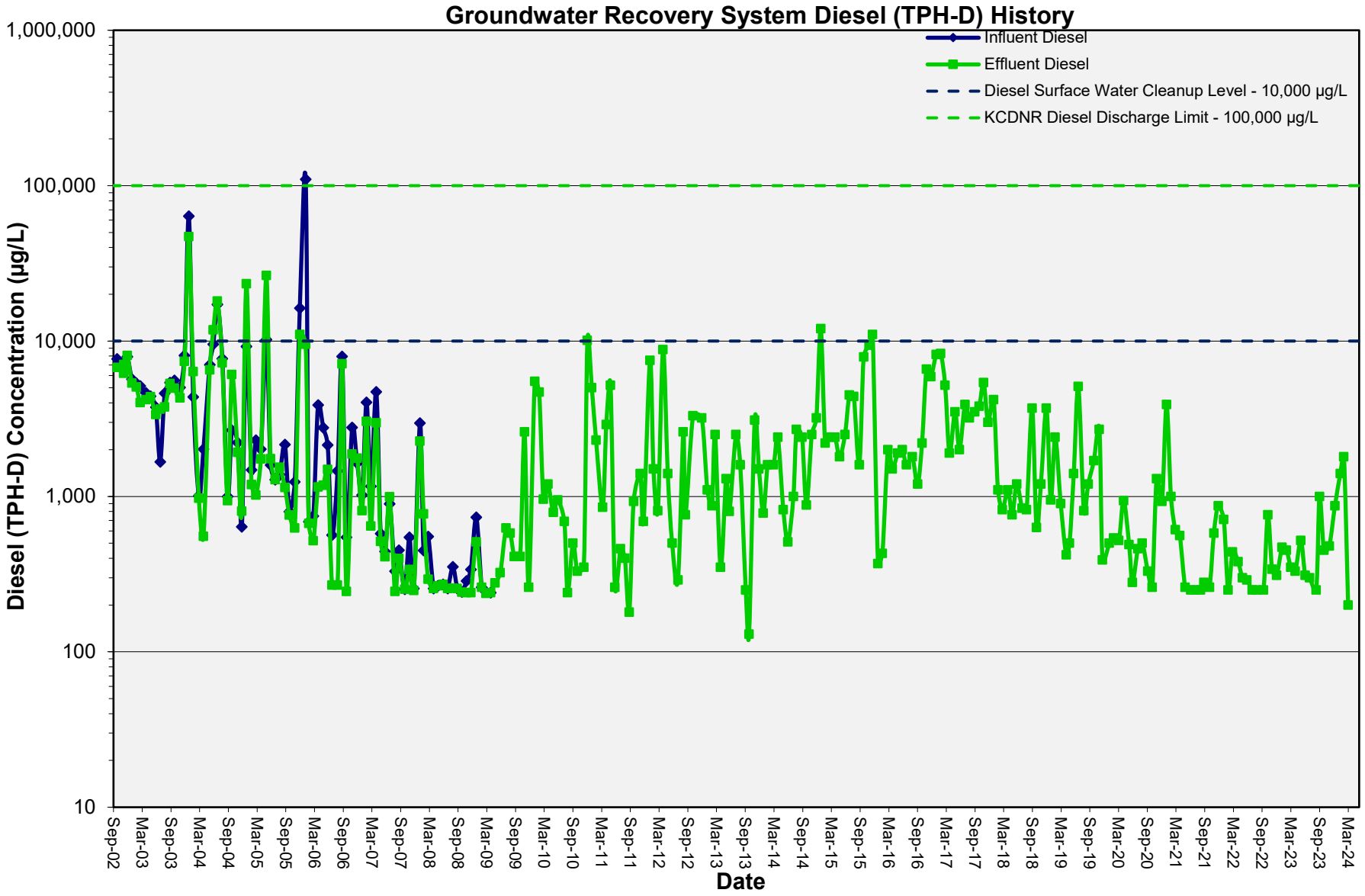
Note: Data is included since startup of the final groundwater and product recovery system in 2002.

Figure 6. Final System Influent vs. Effluent Benzene Concentrations
October 2002 through March 2024
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)



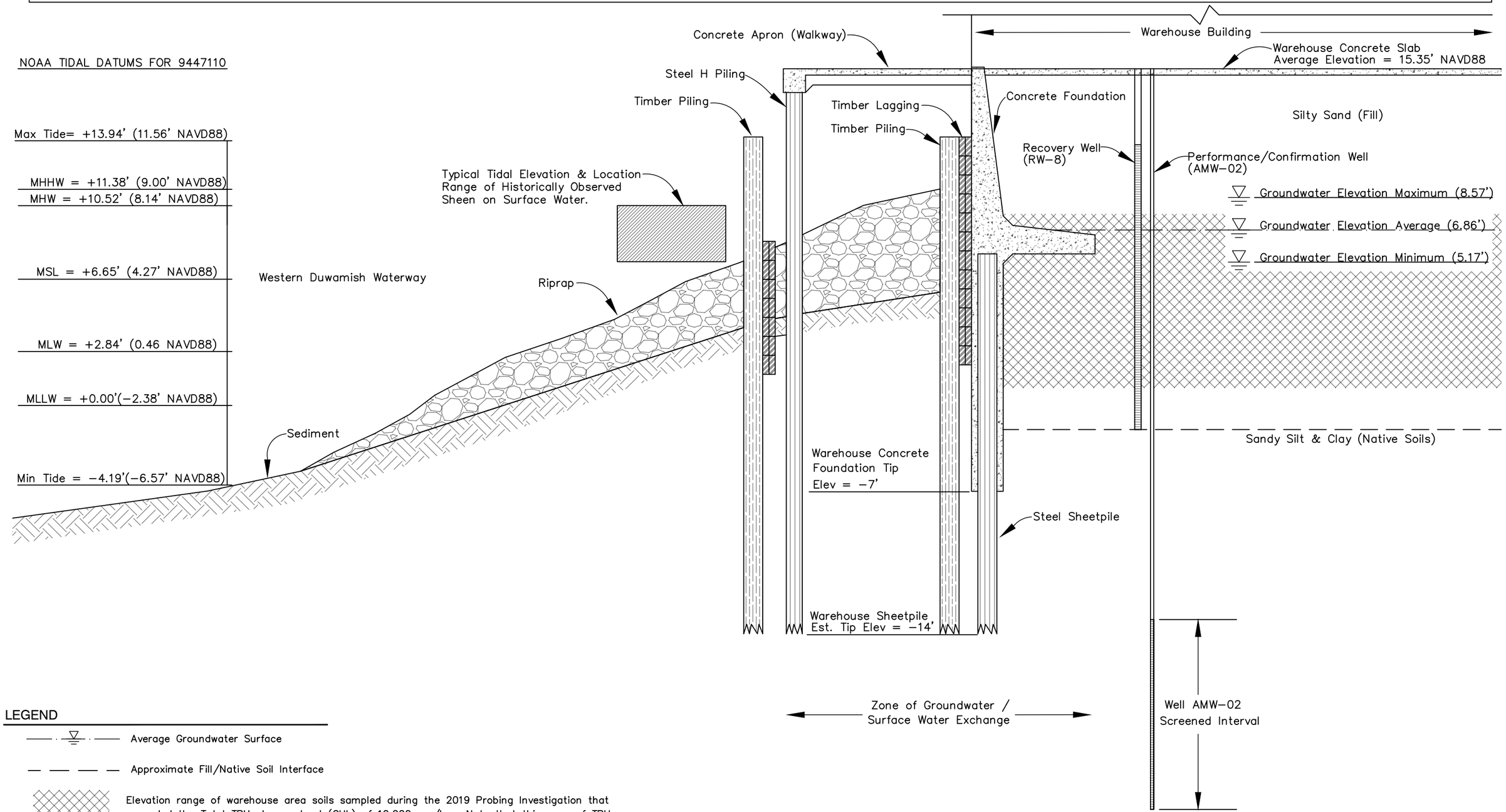
Note: Data is included since startup of the final groundwater and product recovery system in 2002.

Figure 7. Final System Influent vs. Effluent Diesel Concentrations
October 2002 through March 2024
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)



Note: Data is included since startup of the final groundwater and product recovery system in 2002.

West — East



LEGEND

Average Groundwater Surface

Approximate Fill/Native Soil Interface

Elevation range of warehouse area soils sampled during the 2019 Probing Investigation that exceeded the Total TPH cleanup level (CUL) of 10,000 mg/kg. Note that this zone of TPH impacted soil is discontinuous and does not extend throughout the warehouse. See TPH contour figures for specific locations and depths of soil exceeding the CUL.

Groundwater Elevation Maximum, Average, and Minimum values are based upon 2000–2019 monthly gauging data (230 individual gauging events) collected from Monitoring Well GM−13S, which is screened in shallow groundwater.

NOAA Tidal Datums for Station 9447110 (Lockheed Shipyard, Harbor Island) are to Mean Low Low Water (MLLW). Subtract 2.38' from MLLW elevations to convert to North American Vertical Datum of 1988 (NAVD88).

0 2.5 5
SCALE IN FEET

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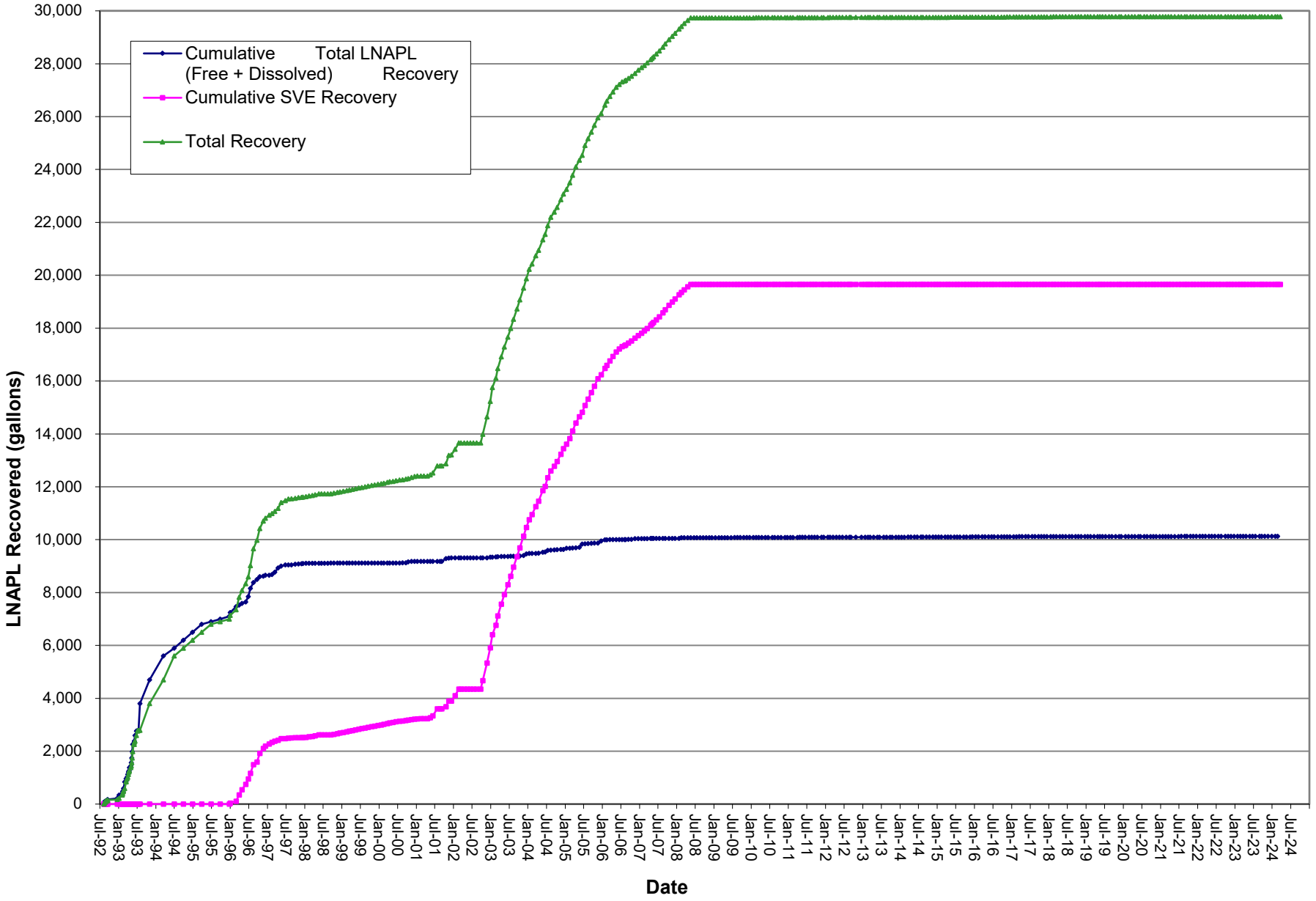
Plant 1 East/West Cross Section
Warehouse Construction & Waterway Details

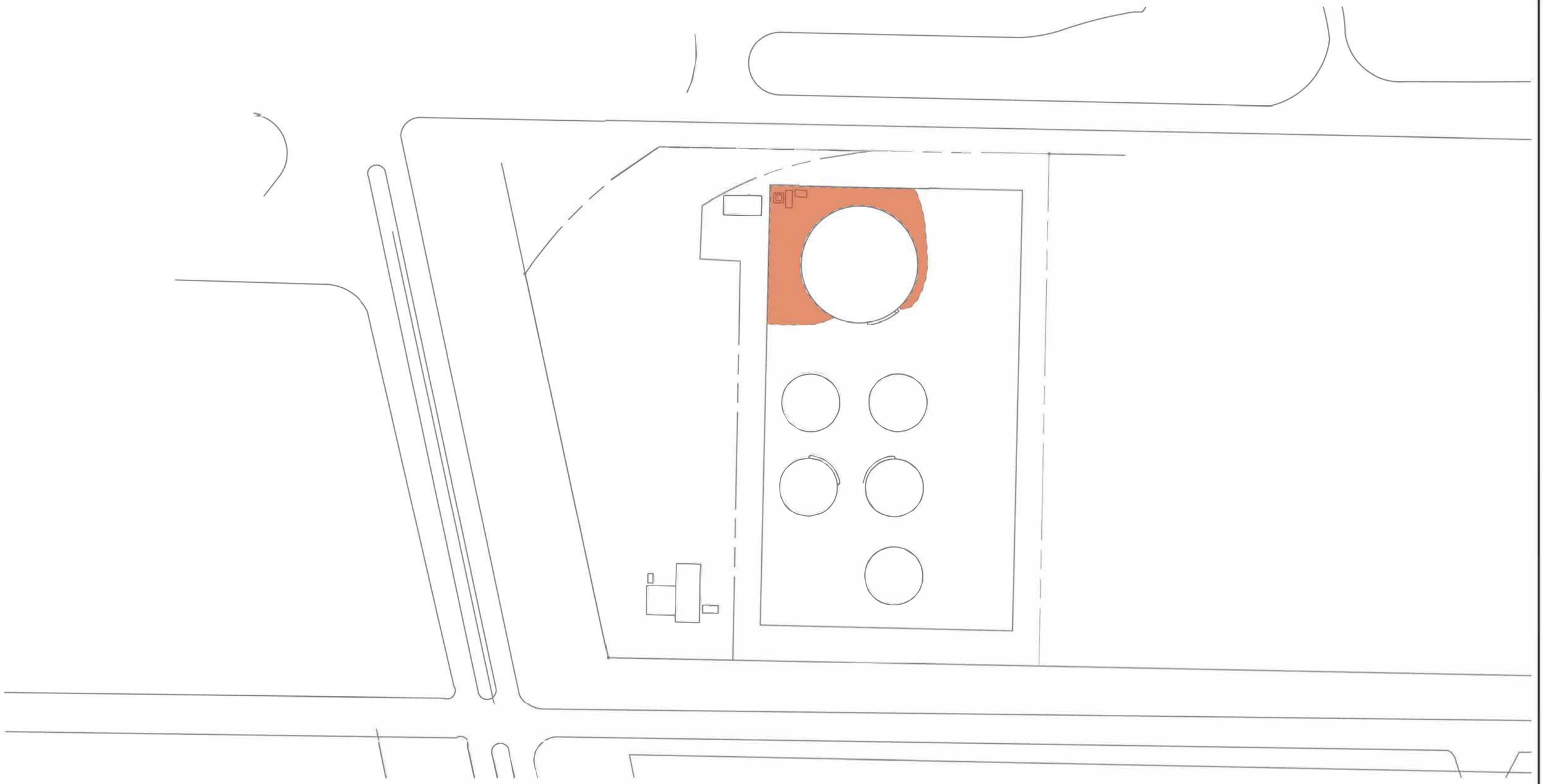
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)
1652 Southwest Lander Street, Seattle WA 98134

FIGURE
8

Figure 9. **Cumulative Waterfront LNAPL Recovery Through March 2024**
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)



Note: Soil vapor extraction recovery occurred January 1996 through May 2008.



LEGEND

Areas where construction or soil excavation activities are regulated by the Restrictive Covenant of the Consent Decree due to total petroleum hydrocarbons potentially above cleanup levels.

N

0 50 100

SCALE IN FEET

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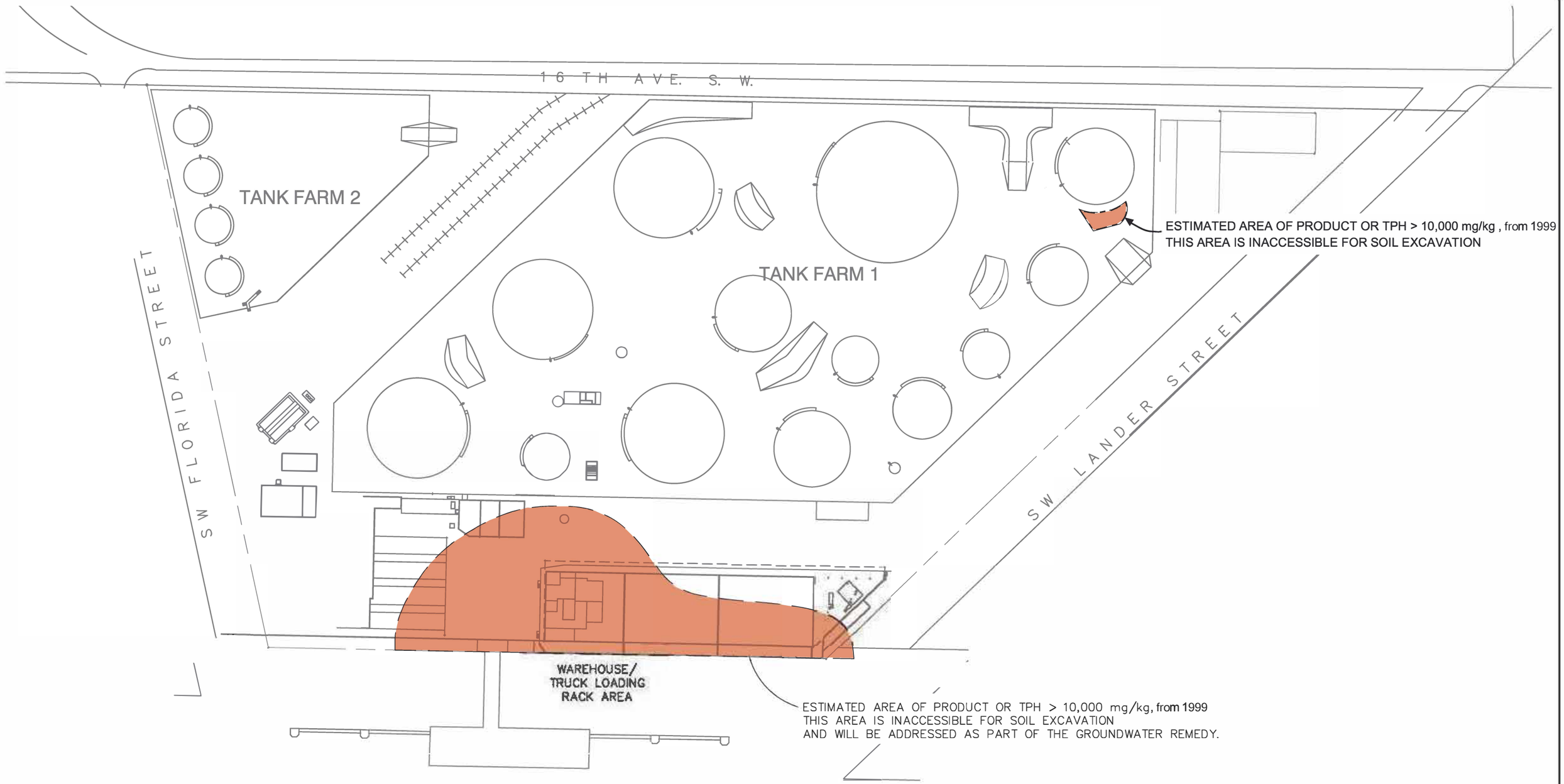
Areas of Restriction - Plant 2

Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)
1652 SW Lander Street, Seattle WA 98134

FIGURE

10

C:\Data\CAD\LDD2 Projects\TechSolv - ARCO 21T\dwg\ARCO21T.dwg MAR 24 2003 17:07:02 (bCAD)



LEGEND

Areas where construction or soil excavation activities are regulated by the Restrictive Covenant of the Consent Decree due to total petroleum hydrocarbons potentially above cleanup levels.

N

0 50 100

SCALE IN FEET

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Areas of Restriction - Plant 1

Site:Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)
1652 Southwest Lander Street, Seattle WA 98134

FIGURE

11

C:\Data\CADVLDD2 Projects\TechSolv - ARCO 21T\dwg\ARCD21T.dwg MAR 24 2003 16:39:14 (bCAD)

TANK 9

TANK 13

TANK 10

NK 14

4.32
WALL RET COR..

B-004
10
ND

MW-1-T9
B-012
ND
ND

B-005
12
0.0845

B-003
3290
4.32

MW-2-T9

P1

B-011
13900
16.8

B-006
5750
1.4.4

B-002
59
0.185

P2

AR03

B-010
8510
8.53

B-007
55
0.217

B-001
904
1.21

P3

MW-3-T9

B-009
1760
ND

B-008
ND
ND

GM-15S

MW-4-T9

10,000 mg/kg

1,000 mg/kg

100 mg/kg

10 mg/kg

2,685 sq.ft.

14,185 sq.ft.

26,560 sq.ft.

46,900 sq.ft.

LANDERS

LEGEND

B-002 BORING LOCATION

59 TOTAL PETROLEUM HYDROCARBONS (MG/KG)
0.185 BENZENE (MG/KG)

GRAPHIC SCALE

0 15 30
(IN FEET)

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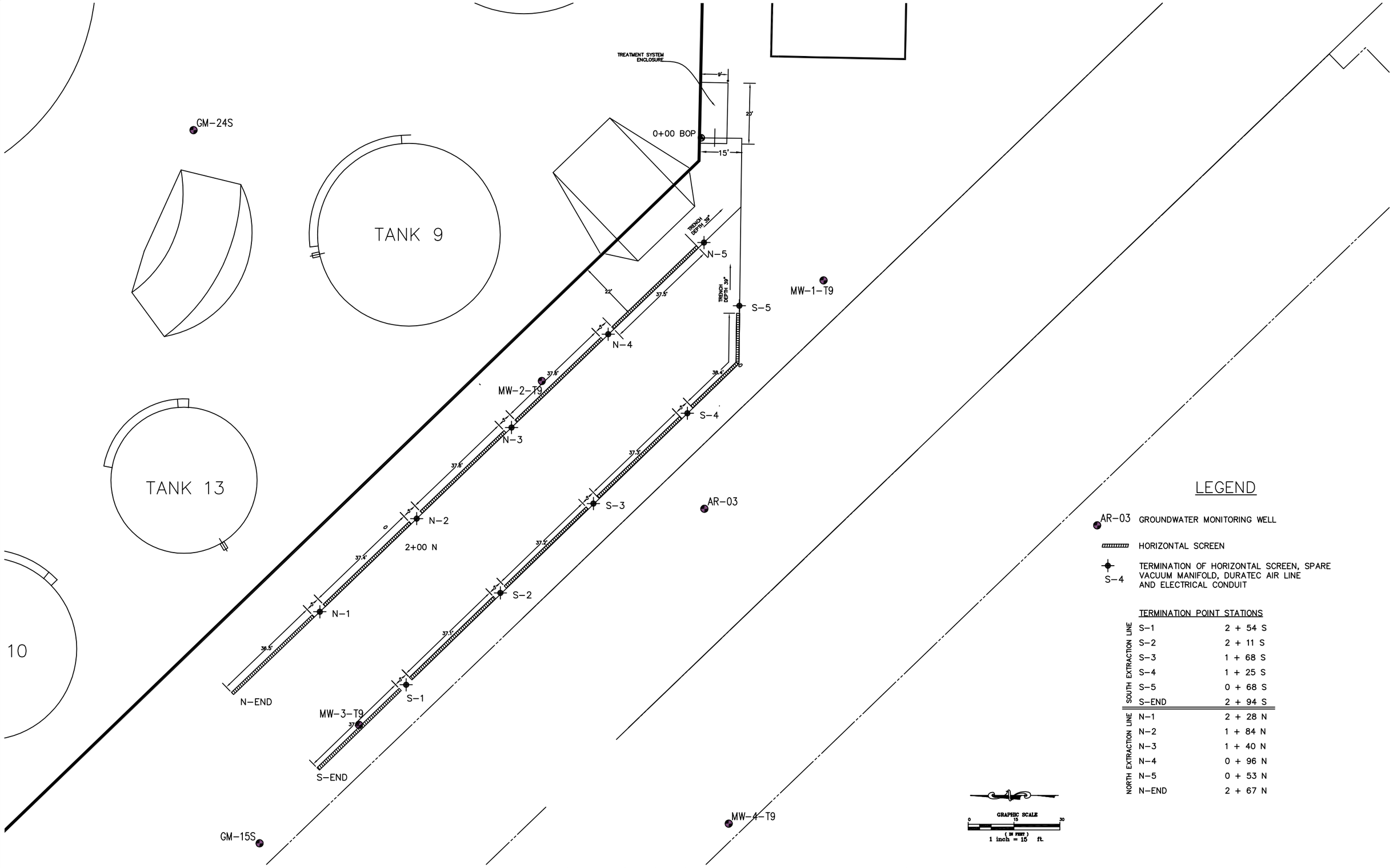
CHECKED: CHECKER
APPROVED: APPROVED
DRAFTER: DRAFTER

Former Hydrocarbon Mass Distribution
Plant 1 Southern Property Boundary
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

FIGURE
12



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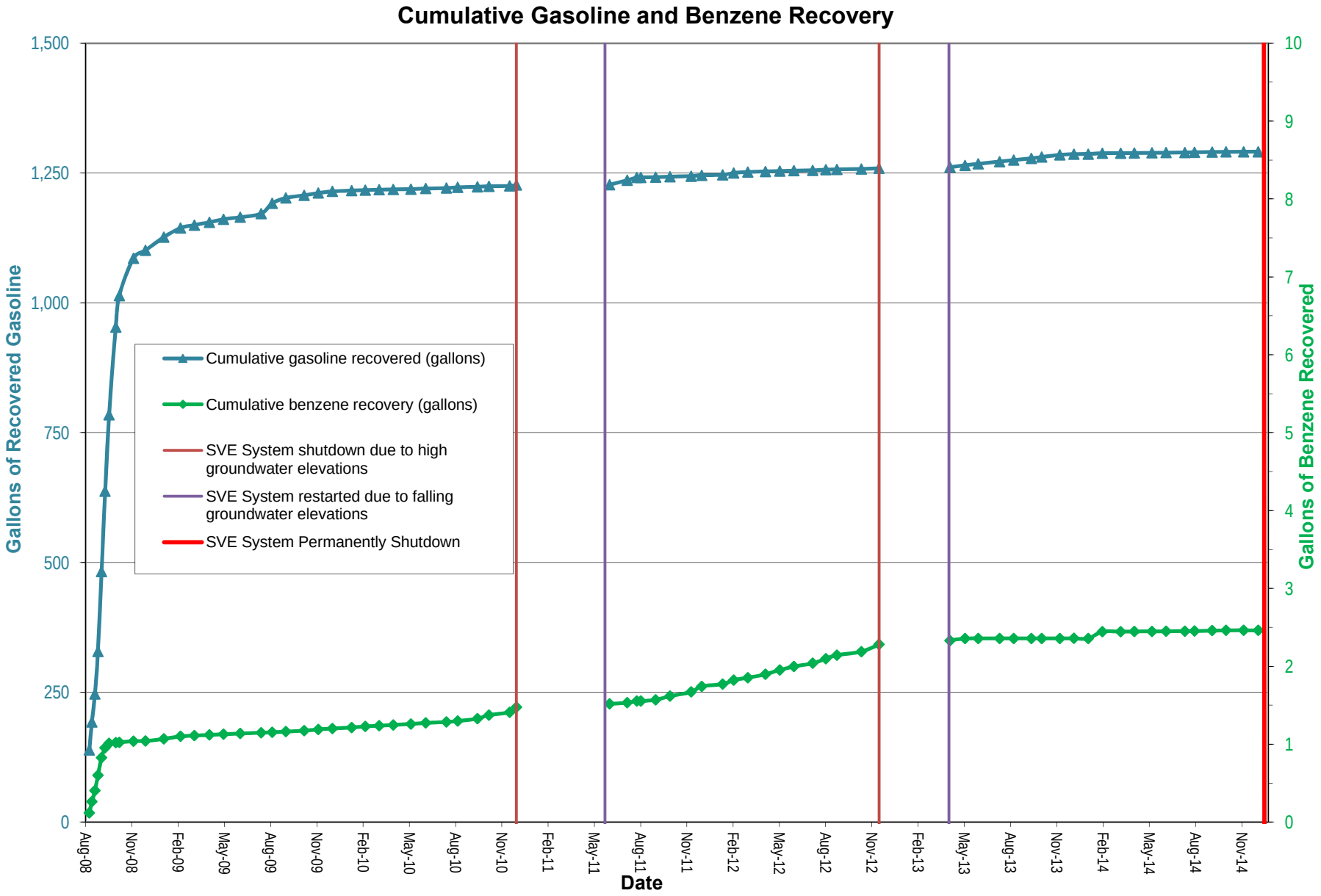
CHECKED: LARSEN
APPROVED: NA
DESIGNER: NA

INLAND SVE REMEDIATION SYSTEM LAYOUT
VICINITY GROUNDWATER MONITORING WELLS
Site: SeaPort Seattle Terminal (FormerARCO/BP Harbor Island Terminal)

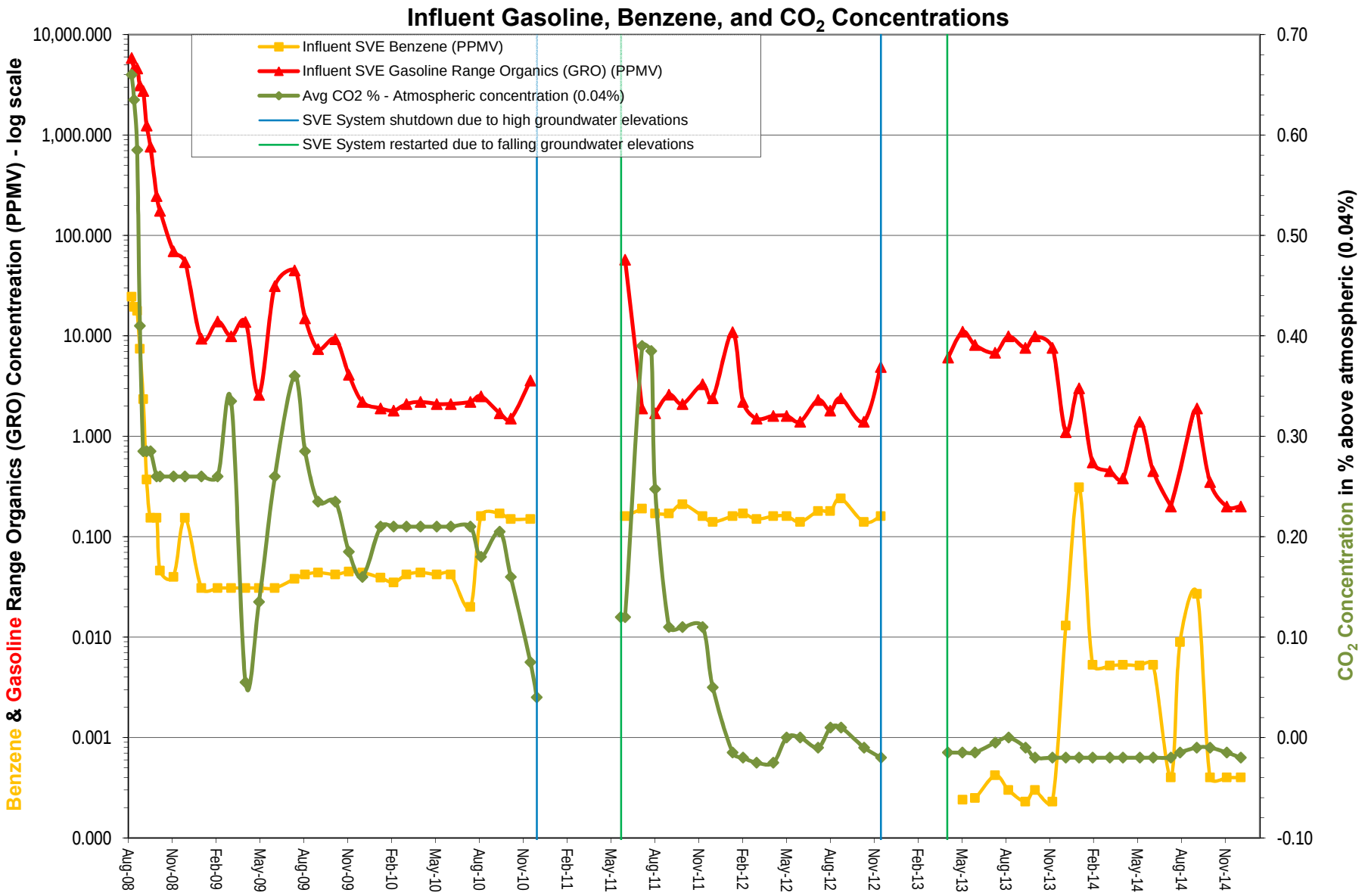
FIGURE
13

Figure 14. Inland SVE System Cumulative Hydrocarbon Recovery
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)



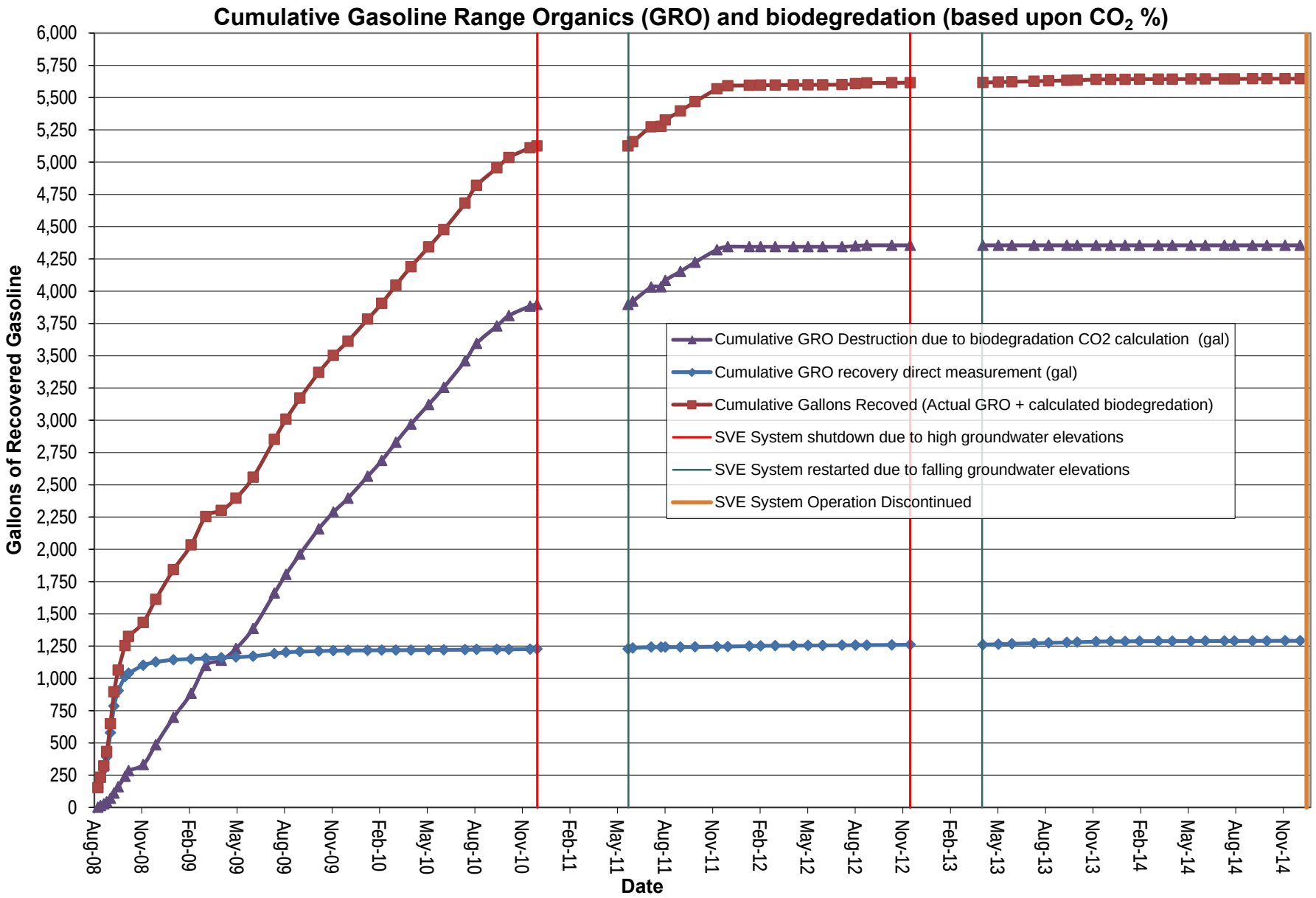
Note: Benzene and gasoline recovery are biased high as recovery is calculated assuming that benzene and gasoline are present at the laboratory decection limit for all samples reported as non detections from the laboratory.

Figure 15. Inland SVE System Gasoline, Benzene, and Carbon Dioxide History
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)



Notes:
GRO - Gasoline Range Organic concentration by EPA TO-3
CO_2 - Concentration by detector tube minus atmospheric CO_2 concentration of 0.04%
PPMV - Parts Per Million Volume

Figure 16. Inland SVE Biodegradation and Vapor Recovery
Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)



LEGEND

GM-16S	MONITORING WELL
AMW-01	PERFORMANCE/CONFIRMATION WELL
GM-13D	PERFORMANCE WELL
GM-13S	PRODUCT PERFORMANCE WELL

N

0 50 100
SCALE IN FEET

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Plant 1 Monitoring Well Network

Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)
1652 Southwest Lander Street
Seattle, WA 98134

FIGURE
17

\\server\ServerData\data\Aproject\ARCO 21T\Drawings and CAD files\Autocad files\Quarterly GWM Figures

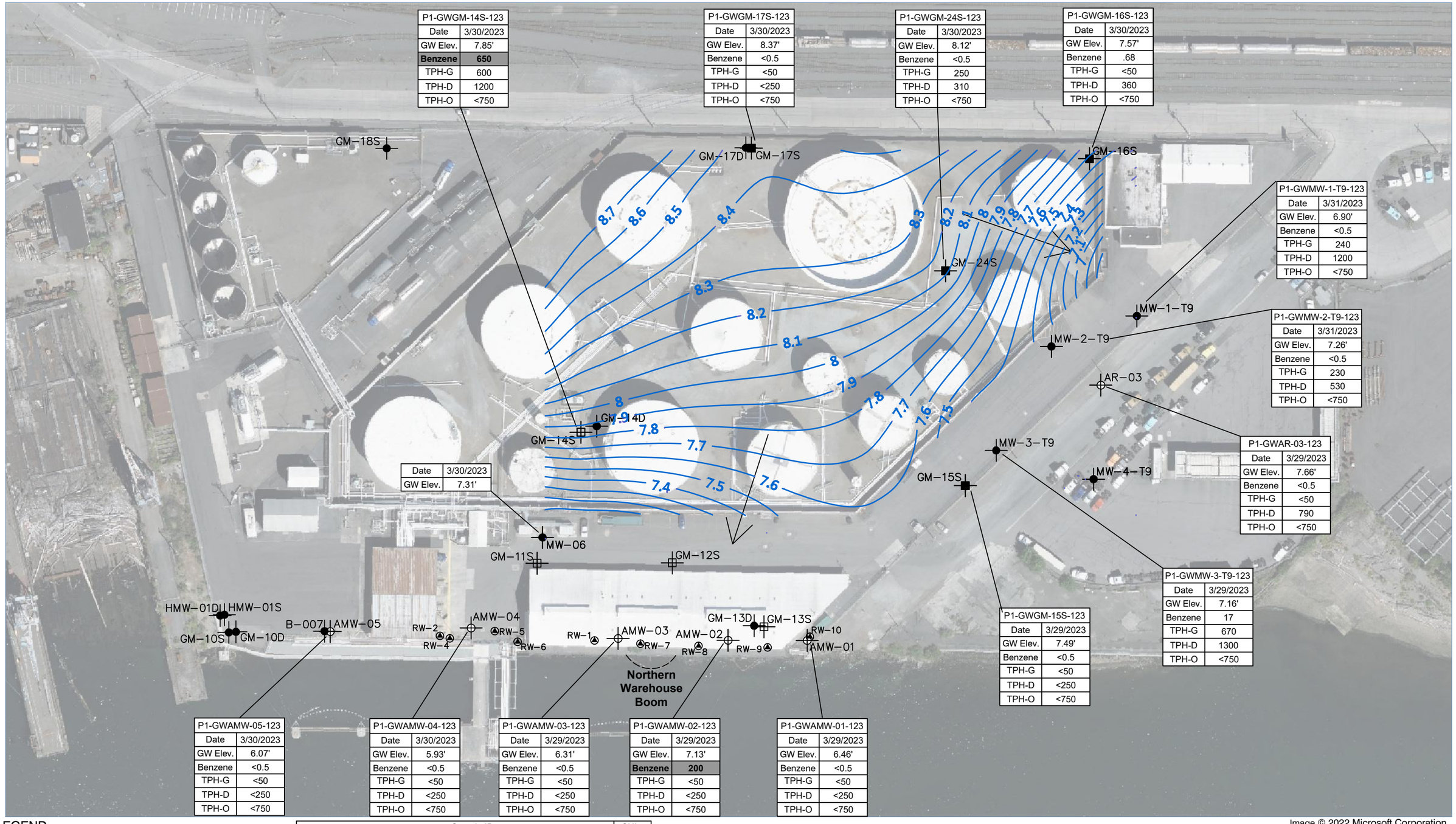


Image © 2022 Microsoft Corporation

LEGEND

- GM-16S Monitoring Well
- RW-5 Recovery Well
- AMW-01 Performance/Confirmation Well
- GM-13D Performance Well
- Groundwater Flow Direction
- GM-13S Product Performance Well
- Groundwater Contour (Feet NAVD88)

	Sample ID	CUL
Date	Date Sample Collected	–
GW Elev.	Groundwater Elevation in Feet NAVD88	–
Benzene	Benzene (EPA 8260) in µg/L	71
TPH-G	Total Petroleum Hydrocarbons as Gasoline (NWTPH-GX) in µg/L	1,000
TPH-D	Total Petroleum Hydrocarbons as Diesel (NWTPH-DX) in µg/L	10,000
TPH-O	Total Petroleum Hydrocarbons as Oil (NWTPH-DX) in µg/L	10,000

Notes: **Bold** - Detected concentration exceeds site specific cleanup level
< = Not detected at listed laboratory reporting limit

N

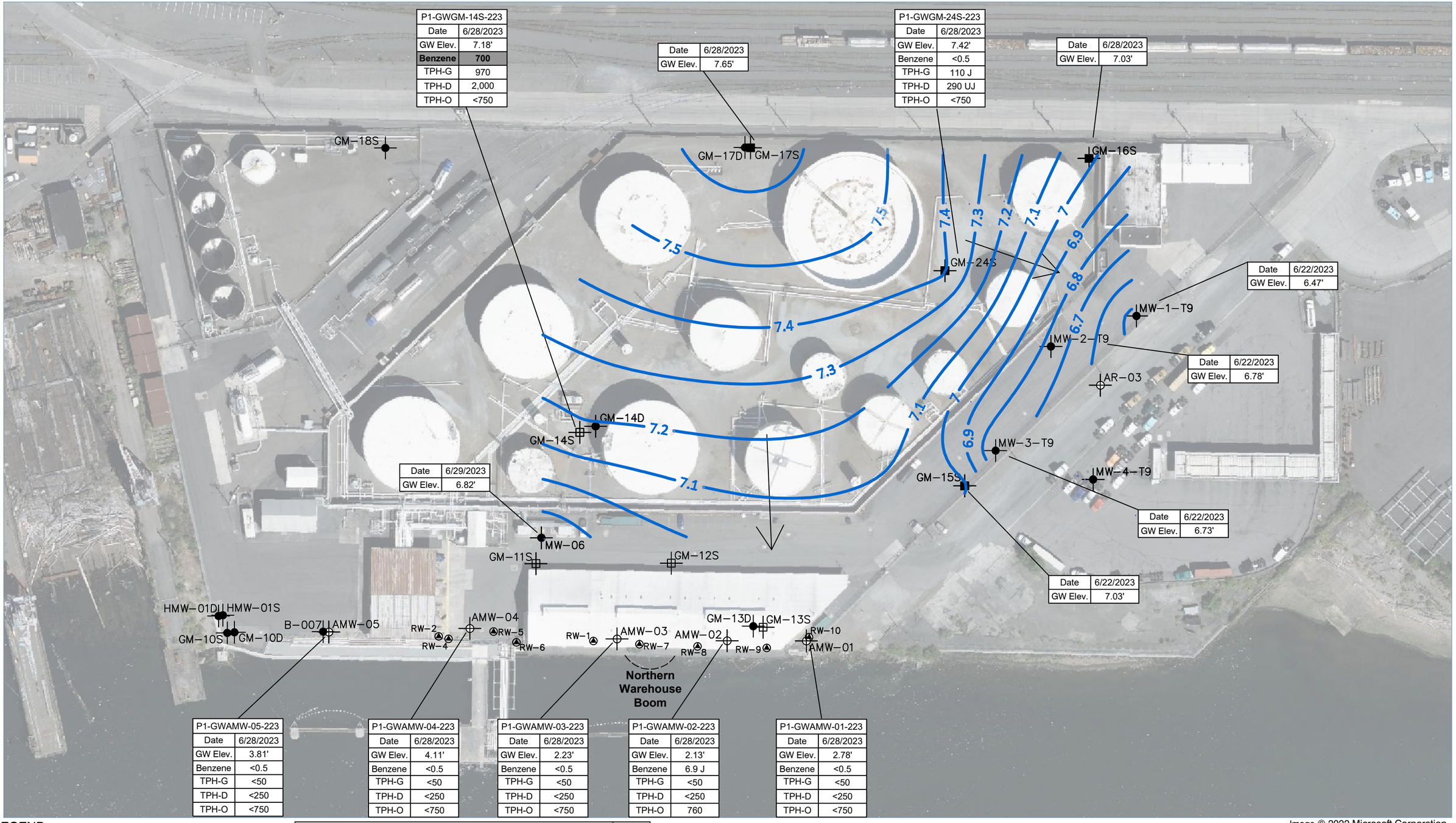
0 50 100
SCALE IN FEET

TechSolve Environmental
7518 N.E. 169th Street
Kenmore, WA 98028

Plant 1 First Quarter 2023 GW Monitoring Analytical Results & Contours

Site:SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)
1652 Southwest Lander Street
Seattle, WA 98134

FIGURE
18



LEGEND

- GM-16S Monitoring Well
- RW-5 Recovery Well
- AMW-01 Performance/Confirmation Well
- Groundwater Flow Direction
- GM-13D Performance Well
- GM-13S Product Performance Well
- Groundwater Contour (Feet NAVD88)

Sample ID		CUL
Date	Date Sample Collected	–
GW Elev.	Groundwater Elevation in Feet NAVD88	–
Benzene	Benzene (EPA 8260) in µg/L	71
TPH-G	Total Petroleum Hydrocarbons as Gasoline (NWTPH-GX) in µg/L	1,000
TPH-D	Total Petroleum Hydrocarbons as Diesel (NWTPH-DX) in µg/L	10,000
TPH-O	Total Petroleum Hydrocarbons as Oil (NWTPH-DX) in µg/L	10,000

Notes: **Bold** - Detected concentration exceeds site specific cleanup level
< = Not detected at listed laboratory reporting limit

N

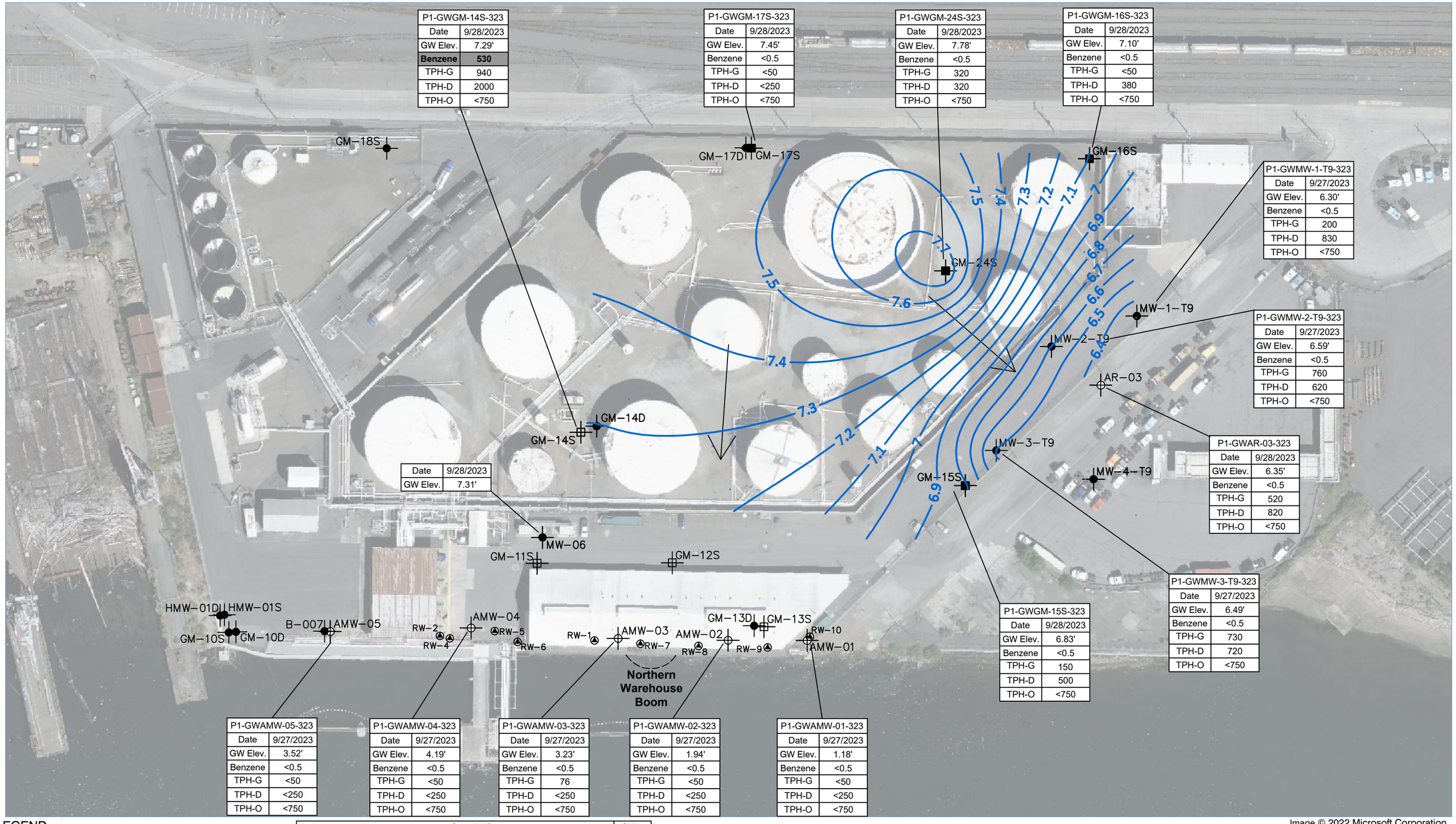
0 50 100
SCALE IN FEET

TechSolve Environmental
7518 N.E. 169th Street
Kenmore, WA 98028

Plant 1 Second Quarter 2023 GW Monitoring Analytical Results & Contours

Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)
1652 Southwest Lander Street
Seattle, WA 98134

FIGURE
19



LEGEND

- GM-16S Monitoring Well
- RW-5 Recovery Well
- AMW-01 Performance/Confirmation Well
- GM-13D Performance Well
- Groundwater Flow Direction
- GM-13S Product Performance Well
- Groundwater Contour (Feet NAVD88)

Sample ID	CUL
Date	Date Sample Collected	–
GW Elev.	Groundwater Elevation in Feet NAVD88	–
Benzene	Benzene (EPA 8260) in µg/L	71
TPH-G	Total Petroleum Hydrocarbons as Gasoline (NWTPH-GX) in µg/L	1,000
TPH-D	Total Petroleum Hydrocarbons as Diesel (NWTPH-DX) in µg/L	10,000
TPH-O	Total Petroleum Hydrocarbons as Oil (NWTPH-DX) in µg/L	10,000

Notes: **Bold** - Detected concentration exceeds site specific cleanup level
< = Not detected at listed laboratory reporting limit

N

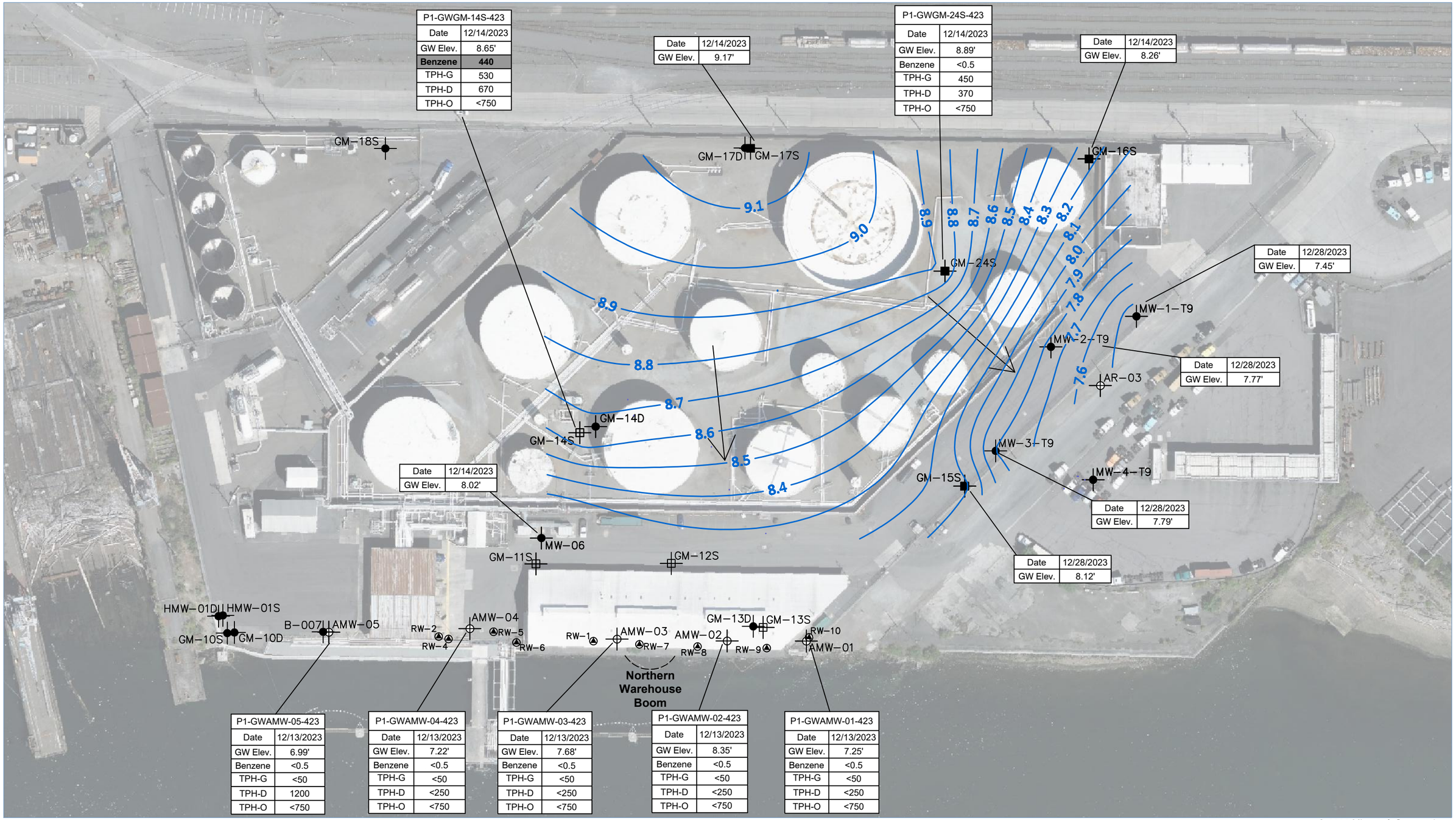
0 50 100
SCALE IN FEET

TechSolve Environmental
7518 NE 169th Street
Kenmore, WA 98028

Plant 1 Third Quarter 2023
GW Monitoring Analytical Results & Contours

SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)
1652 Southwest Lander Street
Seattle, WA 98134

FIGURE
20



LEGEND

- GM-16S Monitoring Well
- RW-5 Recovery Well
- AMW-01 Performance/Confirmation Well
- GM-13D Performance Well
- GM-13S Product Performance Well
- Groundwater Flow Direction
- Groundwater Contour (Feet NAVD88)

Sample ID	CUL
Date	Date Sample Collected	–
GW Elev.	Groundwater Elevation in Feet NAVD88	–
Benzene	Benzene (EPA 8260) in µg/L	71
TPH-G	Total Petroleum Hydrocarbons as Gasoline (NWTPH-GX) in µg/L	1,000
TPH-D	Total Petroleum Hydrocarbons as Diesel (NWTPH-DX) in µg/L	10,000
TPH-O	Total Petroleum Hydrocarbons as Oil (NWTPH-DX) in µg/L	10,000

Notes: **Bold** - Detected concentration exceeds site specific cleanup level
< = Not detected at listed laboratory reporting limit

N

0 50 100
SCALE IN FEET

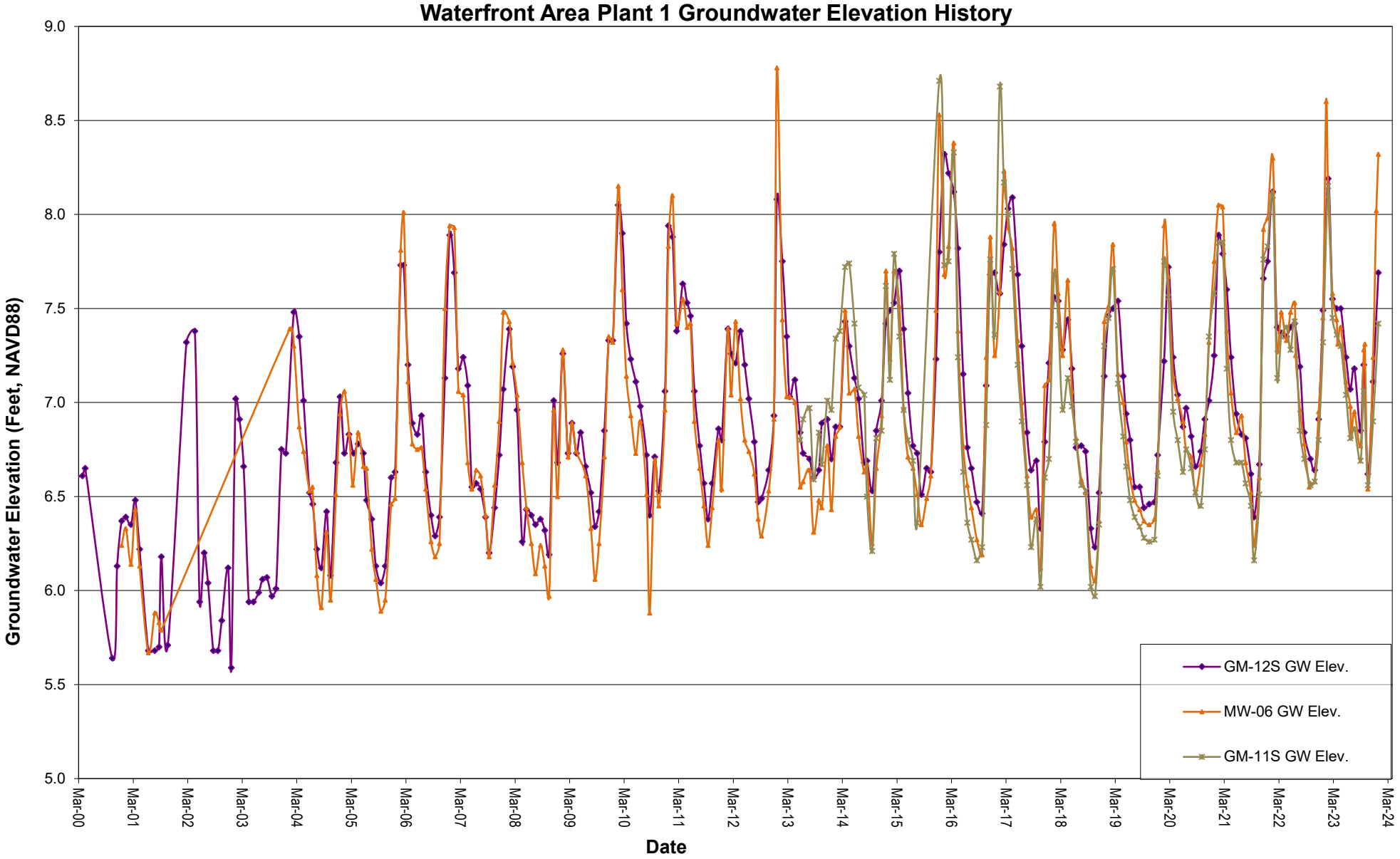
TechSolve Environmental
7518 N.E. 169th Street
Kenmore, WA 98028

Plant 1 Fourth Quarter 2023
GW Monitoring Analytical Results & Contours

Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)
1652 Southwest Lander Street
Seattle, WA 98134

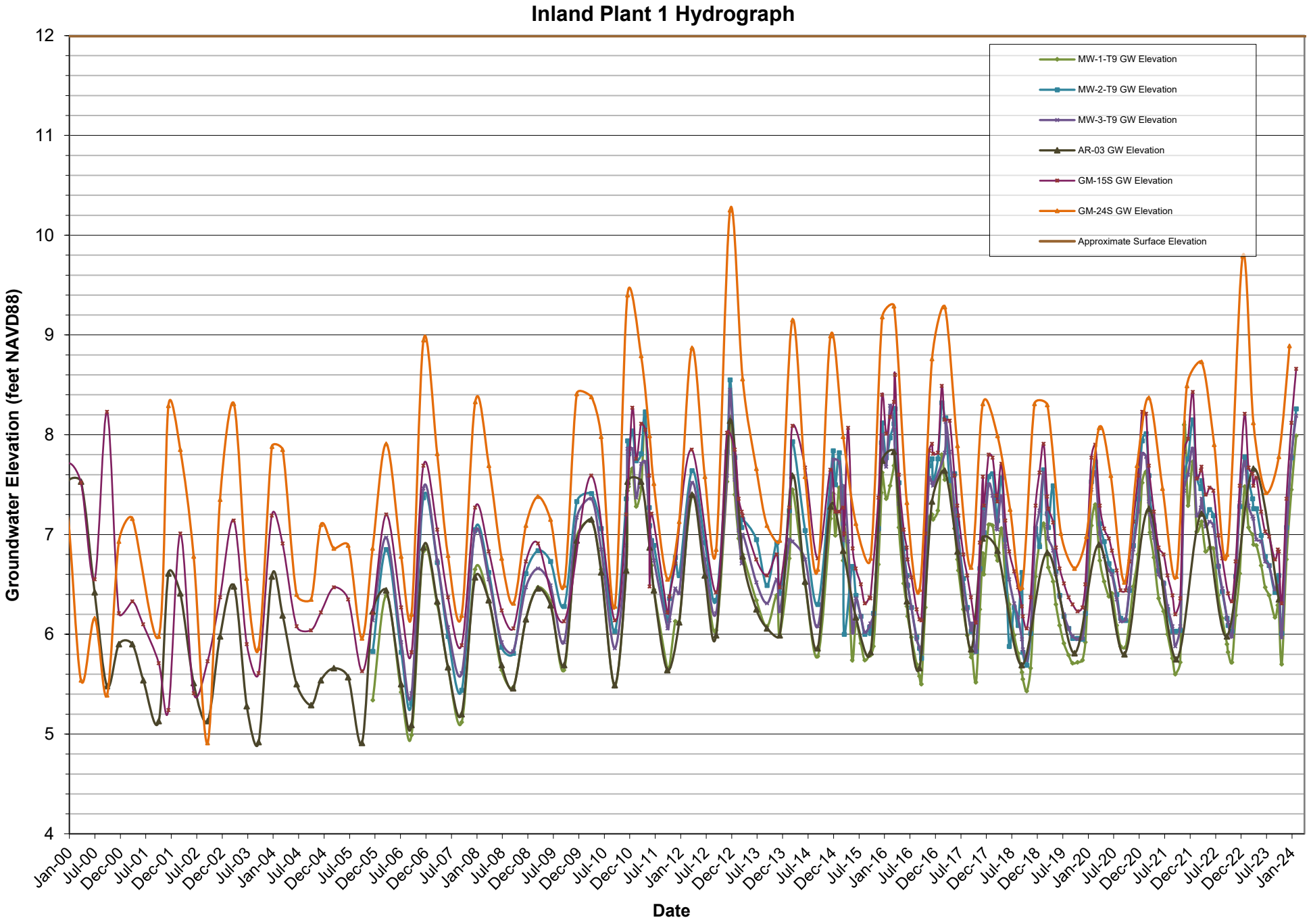
FIGURE
21

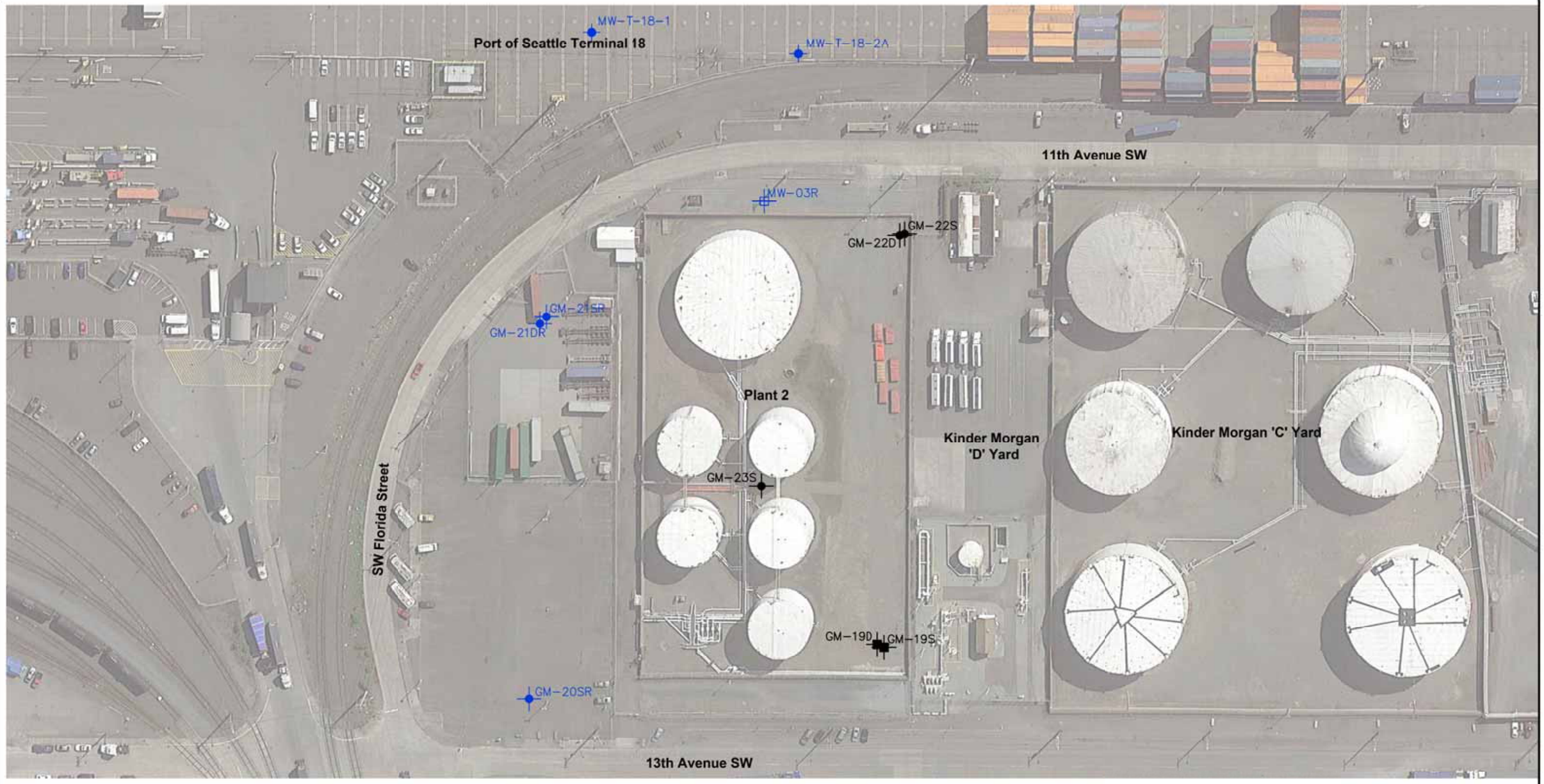
Figure 22. Plant 1 Waterfront Hydrograph
March 2000 through December 2023
Site: Seaport SeattleTerminal (Former ARCO/BP Harbor Island Terminal)



Note: Groundwater monitoring in well MW-06 is conducted voluntarily by TechSolve and is not part of the required monitoring program. Well GM-13S is excluded from the hydrograph as it has been shown to be tidally affected and within the recovery system capture zone. Data for well GM-11S is only included after May 2013, when it was no longer used as a recovery well.

Figure 23. Plant 1 Southern Boundary Area Hydrograph
January 2000 through December 2023
Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)





LEGEND

- GROUNDWATER MONITORING WELL
- PRODUCT PERFORMANCE WELL
- PERFORMANCE WELL
- WELLS HIGHLIGHTED IN BLUE HAVE BEEN DECOMMISSIONED

0 50 100
SCALE IN FEET

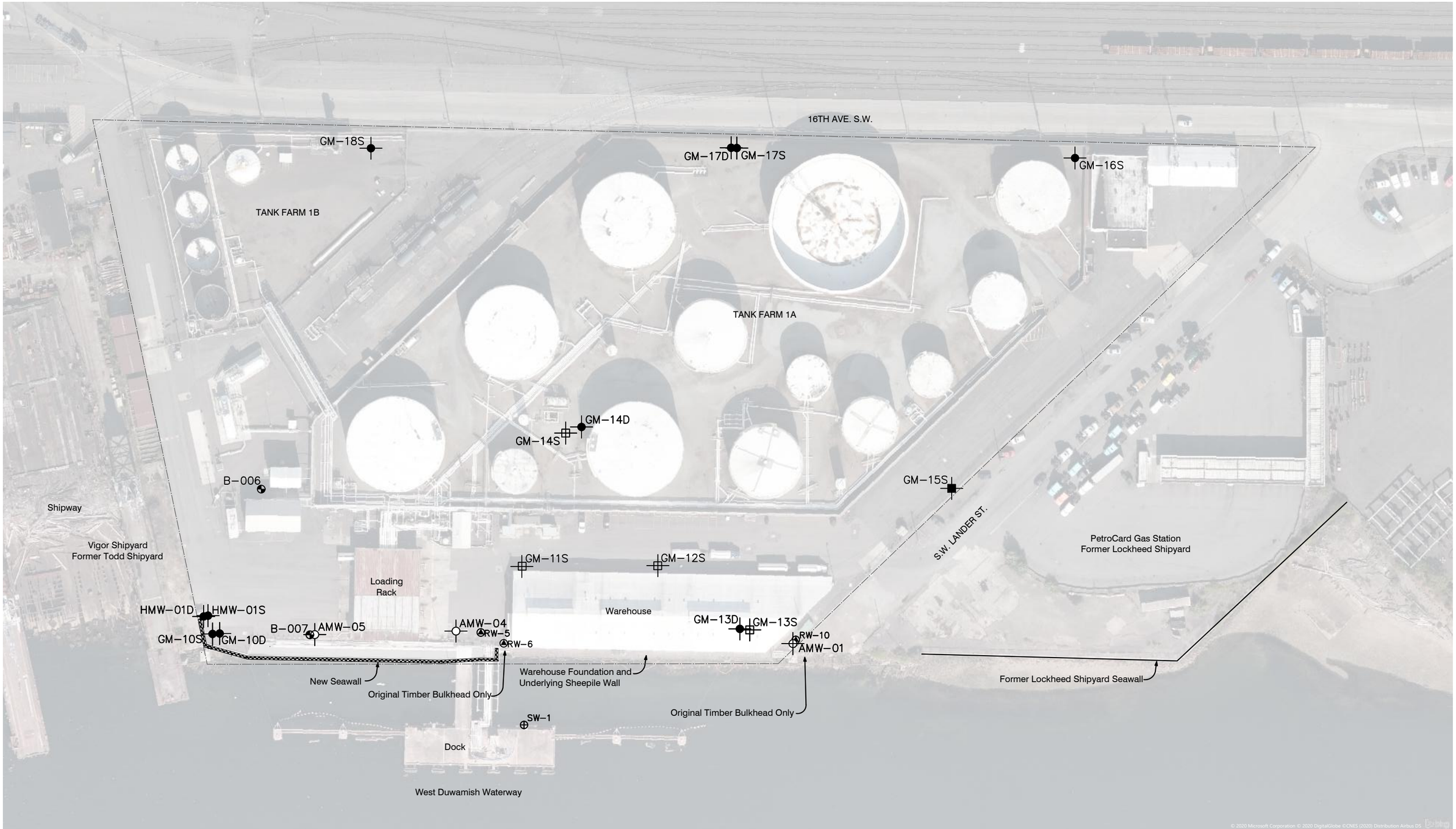
TechSolve Environmental
7518 N.E. 169th Street,
Kenmore, WA 98028
P:(425) 402-8277 F:(425) 402-7917

Plant 2 Monitoring Well Network

Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)
1652 SW Lander Street , Seattle WA 98028

FIGURE
24

C:\Data\CAD\Projects\TechSolv\ARCO 21T\dwg\ARCO21T.dwg << Plant 2 Monitoring Well Network >> OCT 07 2008 09:48:43 (bCAD)



LEGEND

GM-16S	Monitoring Well	RW-6	Recovery Well
AMW-01	Performance/Confirmation Well	SW-1	Stilling Well
GM-13D	Performance Well	B-006	Piezometer Well
GM-13S	Product Performance Well		Property Line

N

0 50 100

SCALE IN FEET

TechSolve Environmental

7518 N.E. 169th Street
Kenmore, WA 98028

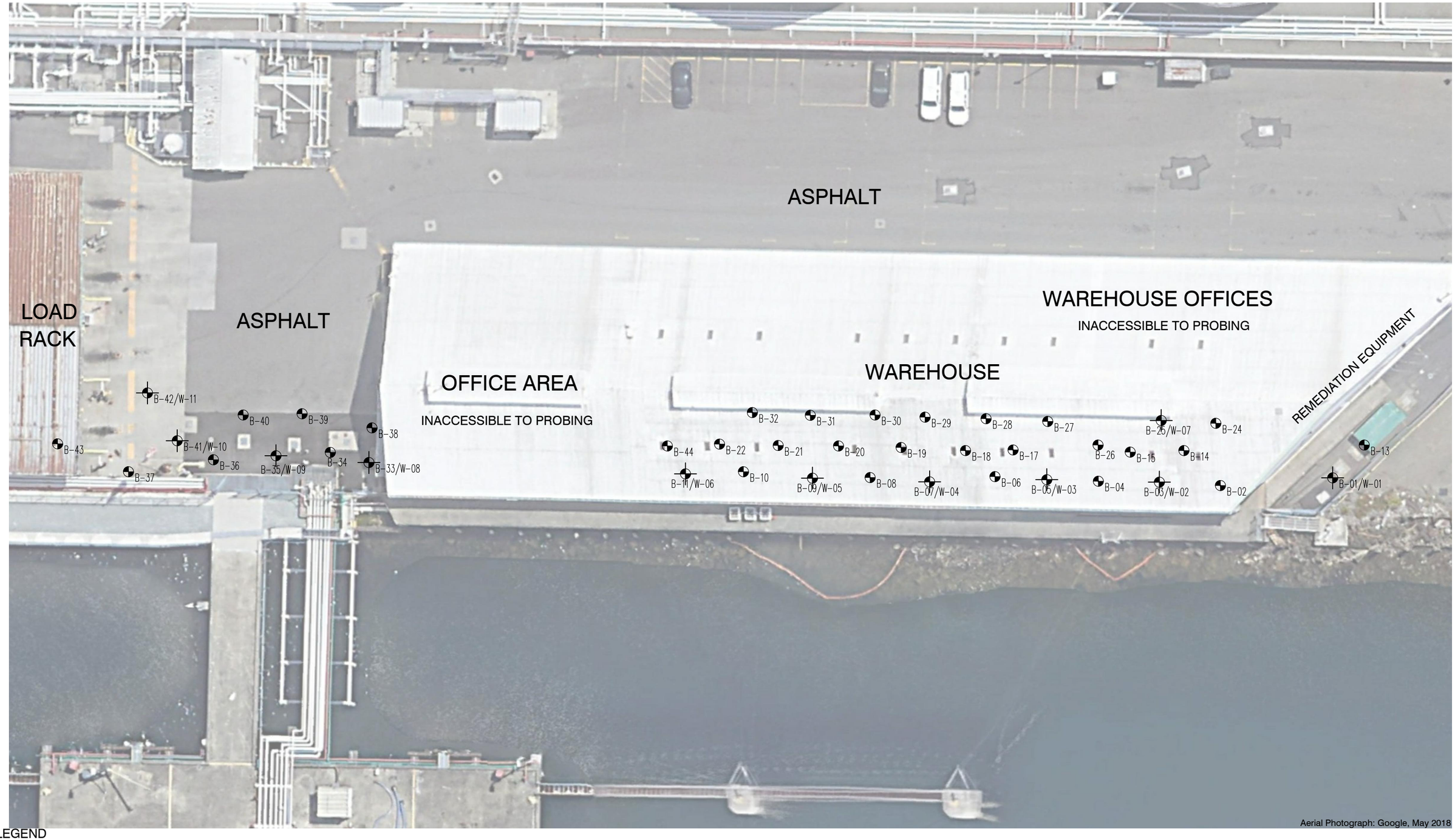
Plant 1 Hydraulic Evaluation Study Wells

Site: SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)
1652 Southwest Lander Street
Seattle, WA 98134

FIGURE

25

\\server\ServerData\data\Aproject\ARCO 21T\Drawings and CAD files\Autocad files\Quarterly GWM Figures: P1 Hyd Eval Wells Mods (6/29/21)



Aerial Photograph: Google, May 2018

LEGEND

- B-01 PROBING BORING LOCATION
- B-01/W-01 PROBING BORING LOCATION / TEMPORARY PIEZOMETER WELL

N

0 15 30

SCALE IN FEET

TechSolve Environmental
7518 N.E. 169th Street
Kenmore, WA 98028

Plant 1 Probing Investigation Boring Locations

Site: SeaPort Seattle Terminal (Former ARCO BP Harbor Island Terminal)
1652 Southwest Lander Street Seattle WA 98134

FIGURE 26

APPENDICES

A. King County Industrial Waste Semi-Annual Self-Monitoring Reports
B. Sheen Observations – Loading Rack & Warehouse 1996 Through 2023
C. Groundwater Monitoring Wells Hydrocarbon Analytical Graphs
D. Seattle Terminal Northern Bulkhead Replacement Project Typical Section

APPENDIX A

King County Industrial Waste Semi-Annual Self-Monitoring Reports

King County

Industrial Waste Program Semi-Annual Self-Monitoring Report

TECHSOLVE GROUNDWATER REMEDIATION PROJECT

Send to: King County Industrial Waste Program
201 S. Jackson Street, Suite 513
Seattle, WA 98104-3855
Phone 206-477-5300 / FAX 206-263-3001
Email: info.KCIW@kingcounty.gov

Company Name: TLP Management Services, LLC

This form is available at www.kingcounty.gov/industrialwaste

Please specify year: **2023** **Semi-Annual Report for Semester 1** **Sample Site No.:** **A43262** **Permit/DA No.:** **7592-06**

All units are mg/l unless otherwise noted. Note: Write in self-monitoring parameters, if not provided, e.g. Silver (Ag) or settleable solids (ml/L).

	Sample Date month/day	Sample Type C (Composite) G (Grab) BC (Batch)	Benzene (CAS # 71-43-2)	Ethylbenzene (CAS # 100-41-4)	Toluene (CAS# 108-88-3)	Xylenes, Total (1330-20-7)	Nonpolar fats, oils & grease (FOG) (Record average of 3 grabs only)	Discharge Volume on sample day (gallons)	Total Monthly Flow (gallons)
Semester 1	**JAN/26**	G	<0.0005	<0.001	<0.001	<0.003	Diesel: 0.470 Oil: <0.75 Gas: <0.050	1,560	110,660
	FEB/23	G	<0.0005	<0.001	<0.001	<0.003	Diesel: 0.450 Oil: <0.75 Gas: <0.050	1,690	44,820
	MAR/23	G	<0.0005	<0.001	<0.001	<0.003	Diesel: 0.350 Oil: <0.75 Gas: <0.050	1,800	34,270
	APR/20	G and C for FOG	<0.0005	<0.001	<0.001	<0.003	FOG : <5.0 Diesel: 0.330 Oil: <0.75 Gas: <0.050	1,580	38,420
	MAY/25	G	<0.0014	<0.001	<0.001	<0.003	Diesel: 0.520 Oil: <0.75 Gas: 0.070	1,050	41,630
	JUN/22	G	<0.0005	<0.001	<0.001	<0.003	Diesel: <0.310 Oil: <0.75 Gas: <0.050	1,090	29,060

—▶ **Total Volume Semester 2: 298,860 gallons**

—▶ Maximum daily flow from Semester 1: **4,470 gallons.**
Date on which maximum daily flow occurred: **1/9/2023**

NOTES:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that all data requiring a laboratory analysis were analyzed by a Washington State Department of Ecology accredited laboratory for each parameter tested.

Signature of Principal Executive or Authorized Agent

7/11/23
Date

Due Date: Semi-annual report for **Semester 1** is due by **July 15** each year. **Please Note:** Do not include original laboratory reports with this form unless otherwise requested. Keep the original laboratory reports on file and available for inspection for at least three years.

King County

Industrial Waste Program Semi-Annual Self-Monitoring Report

TECHSOLVE GROUNDWATER REMEDIATION PROJECT

Send to: King County Industrial Waste Program
201 S. Jackson Street, Suite 513
Seattle, WA 98104-3855
Phone 206-477-5300 / FAX 206-263-3001
Email: info.KCIW@kingcounty.gov

This form is available at www.kingcounty.gov/industrialwaste

Company Name: TLP Management Services, LLC

Please specify year: **2023** **Semi-Annual Report for Semester 2** **Sample Site No.:** **A43262** **Permit/DA No.:** **7592-06**

All units are mg/l unless otherwise noted. Note: Write in self-monitoring parameters, if not provided, e.g. Silver (Ag) or settleable solids (ml/L).

	Sample Date month/day	Sample Type C (Composite) G (Grab) BC (Batch)	Benzene (CAS # 71-43-2)	Ethylbenzene (CAS # 100-41-4)	Toluene (CAS# 108-88-3)	Xylenes, Total (1330-20-7)	Nonpolar fats, oils & grease (FOG) (Record average of 3 grabs only)	Discharge Volume on sample day (gallons)	Total Monthly Flow (gallons)
Semester 2	**JUL/20**	G	<0.0005	<0.001	<0.001	<0.003	Diesel: 0.30 Oil: <0.75 Gas: <0.050	840	21,920
	AUG/31	G	<0.0005	<0.001	<0.001	<0.003	Diesel: <0.25 Oil: <0.75 Gas: <0.050	810	31,780
	SEP/21	G	<0.0005	<0.001	<0.001	<0.003	Diesel: 1.0 Oil: <0.75 Gas: <0.050	600	15,530
	OCT/19	G	<0.0005	<0.001	<0.001	<0.003	Diesel: 0.45 Oil: <0.75 Gas: <0.050	1,020	22,230
	NOV/22	G and C for FOG	<0.0005	<0.001	<0.001	<0.003	FOG : <5.0 Diesel: 0.48 Oil: <0.75 Gas: 0.050	1,370	42,560
	DEC/28	G	<0.0005	<0.001	<0.001	<0.003	Diesel: 0.87 Oil: <0.75 Gas: <0.050	3,140	63,020
		—▶						**Total Volume Semester 2: 197,040 gallons**	
		—▶Maximum daily flow from Semester 2: **3,480 gallons.** Date on which maximum daily flow occurred: **12/27/2023**							
		NOTES: Page 1							

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that all data requiring a laboratory analysis were analyzed by a Washington State Department of Ecology accredited laboratory for each parameter tested.

Signature of Principal Executive or Authorized Agent

1/8/24
Date

Due Date: Semi-annual report for **Semester 2** is due by **January 15** each year. **Please Note:** Do not include original laboratory reports with this form unless otherwise requested. Keep the original laboratory reports on file and available for inspection for at least three years.

King County

Industrial Waste Program Semi-Annual Self-Monitoring Report

TECHSOLVE GROUNDWATER REMEDIATION PROJECT

Send to: King County Industrial Waste Program
201 S. Jackson Street, Suite 513
Seattle, WA 98104-3855
Phone 206-477-5300 / FAX 206-263-3001
Email: info.KCIW@kingcounty.gov

This form is available at www.kingcounty.gov/industrialwaste

Company Name: **TLP Management Services, LLC**

Please specify year: **2023** **Semi-Annual Report for Semester 2** **Sample Site No.:** **A43262** **Permit/DA No.:** **7592-06**

All units are mg/l unless otherwise noted. Note: Write in self-monitoring parameters, if not provided, e.g. Silver (Ag) or settleable solids (ml/L).

	Sample Date month/day	Sample Type C (Composite) G (Grab) BC (Batch)	Arsenic, Total (As)	Cadmium, Total (Cd)	Chromium, Total (Cr)	Copper, Total (Cu)	Lead, Total (Pb)	Mercury, Total (Hg)	Nickel, Total (Ni)	Silver, Total (Ag)	Zinc, Total (Zn)
Semester 2	JUL/____										
	AUG/____										
	SEP/____										
	OCT/____										
	NOV/22	G	<0.005	<0.005	<0.010	<0.005	<0.005	<0.0002	<0.010	<0.005	0.076
	DEC/____										

—► **Total Volume Semester 2: 197,040 gallons**

—► Maximum daily flow from Semester 2: **3,480 gallons.**
Date on which maximum daily flow occurred: **12/27/2023**

NOTES: Page 2

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that all data requiring a laboratory analysis were analyzed by a Washington State Department of Ecology accredited laboratory for each parameter tested.

Signature of Principal Executive or Authorized Agent

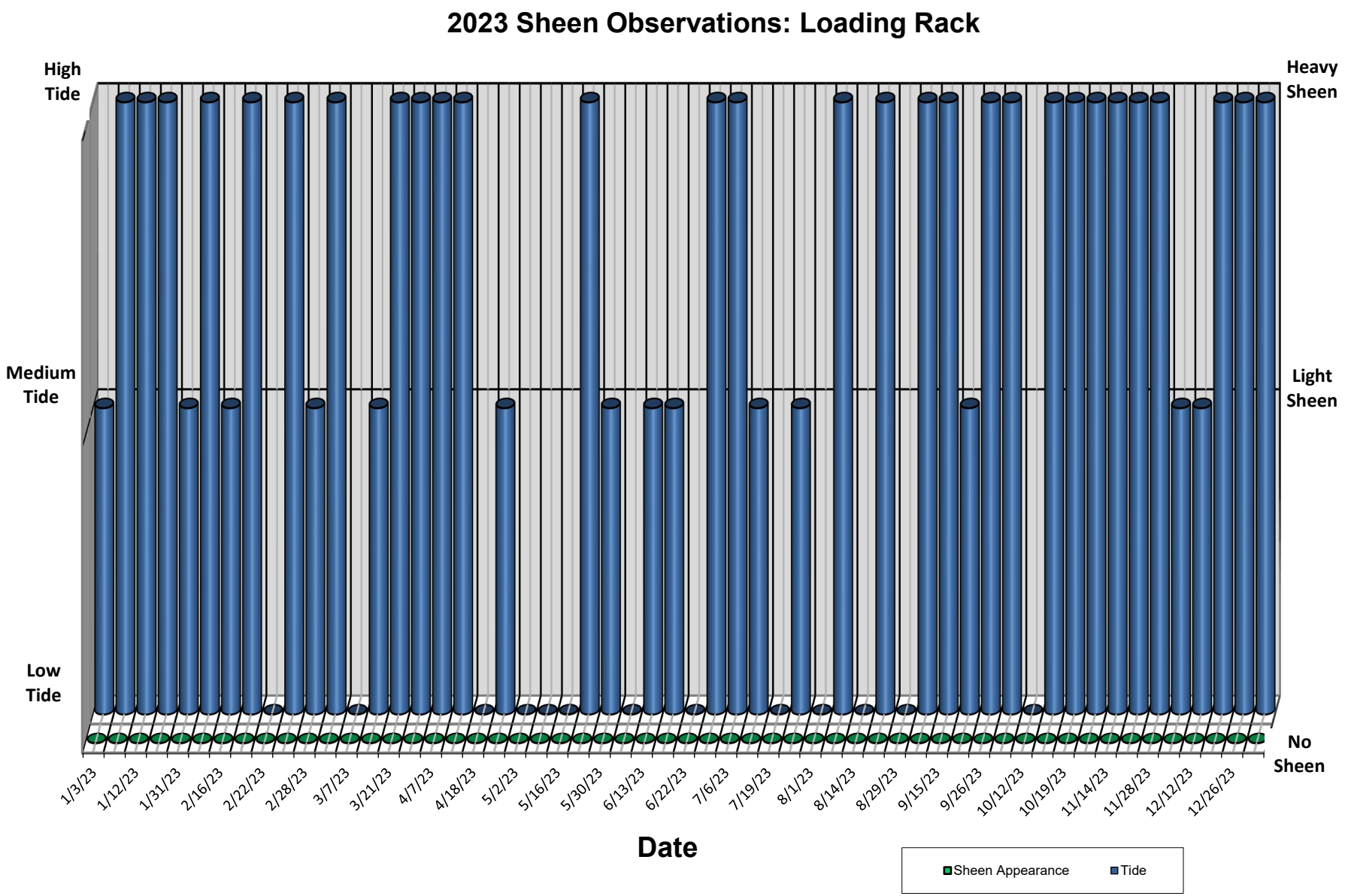
Date 1/8/24

Due Date: Semi-annual report for **Semester 2** is due by **January 15** each year. **Please Note:** Do not include original laboratory reports with this form unless otherwise requested. Keep the original laboratory reports on file and available for inspection for at least three years.

Appendix B

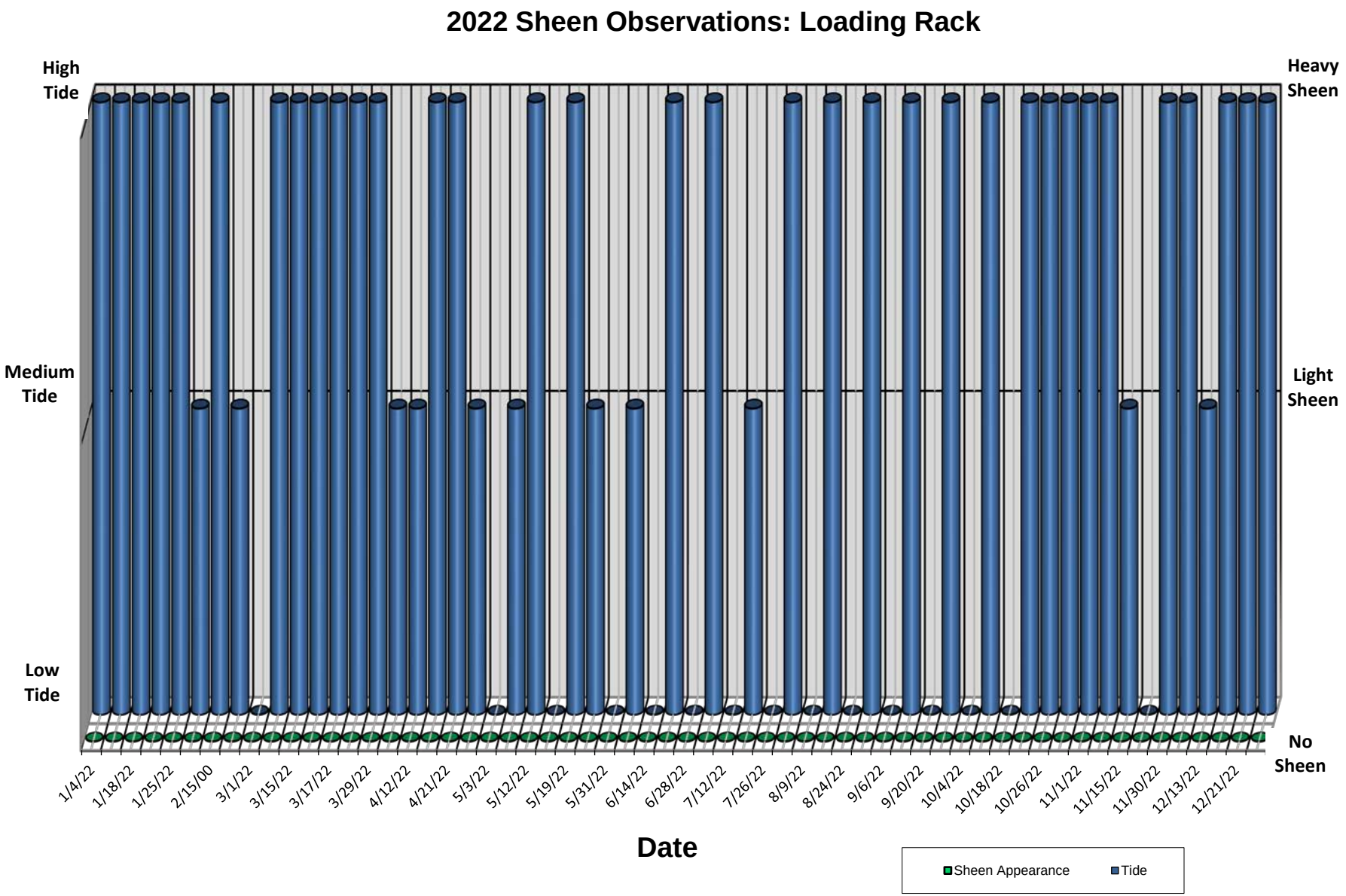
Sheen Observations – Loading Rack & Warehouse 1996 Through 2023

Sheen Observations - Loading Rack Area
SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)



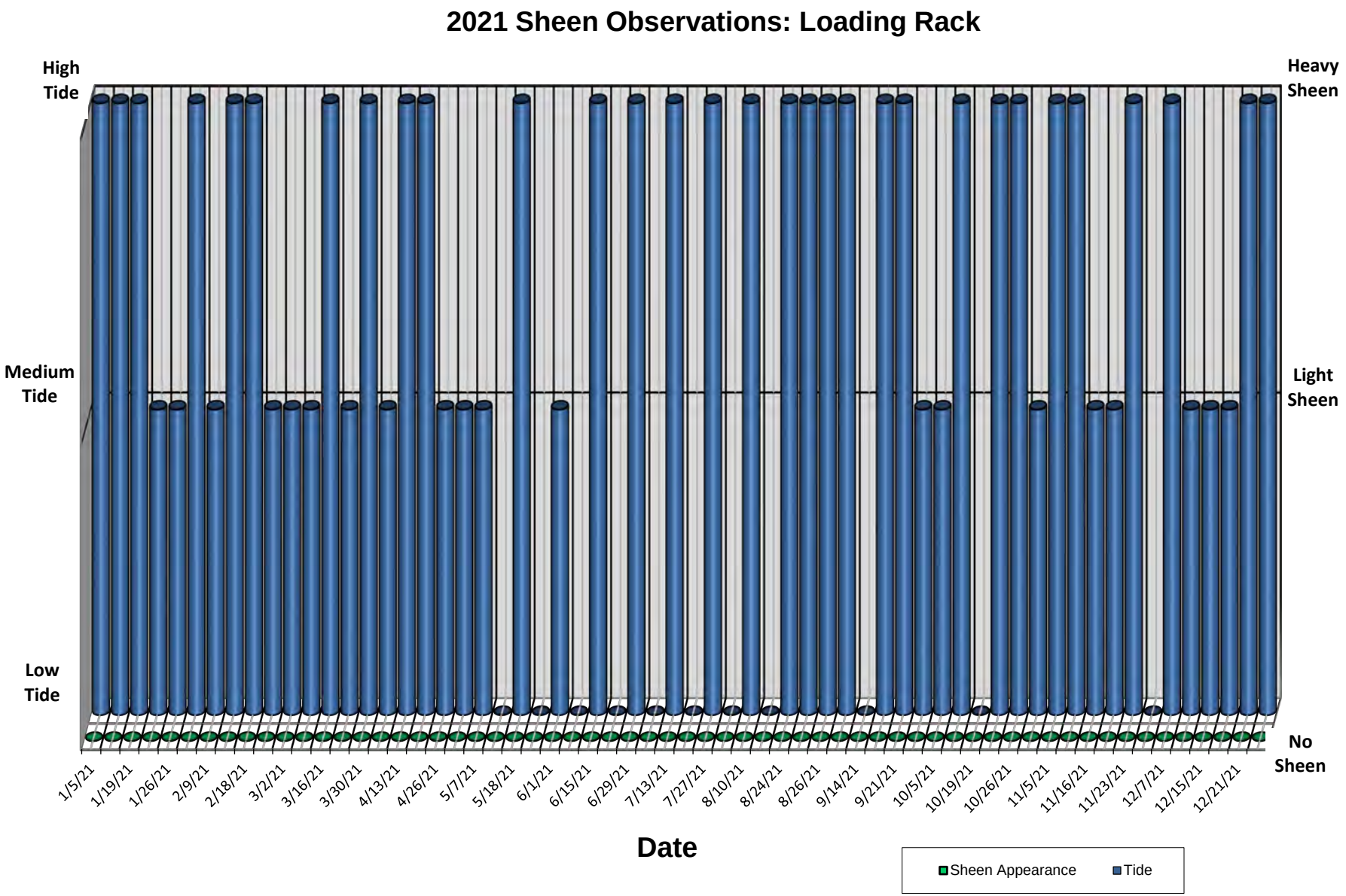
Loading Rack Area Boom removed in August 2017 with concurrence from Ecology due to persistent lack of sheens.

Sheen Observations - Loading Rack Area
Seaport Midstream Partners LLC Seattle Terminal



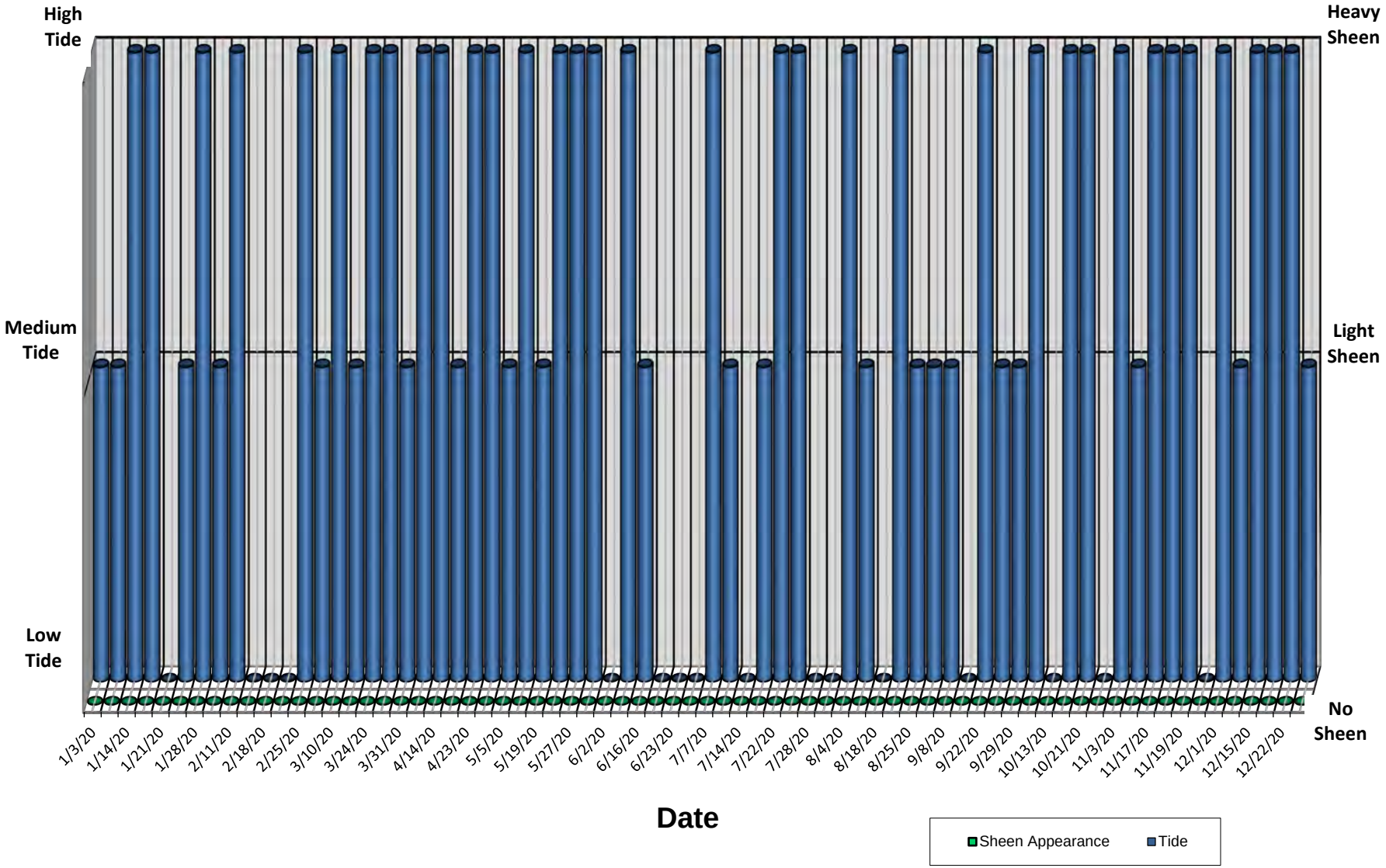
Loading Rack Area Boom removed in August 2017 with concurrence from Ecology due to persistent lack of sheens.

Sheen Observations - Loading Rack Area
Seaport Midstream Partners LLC Seattle Terminal

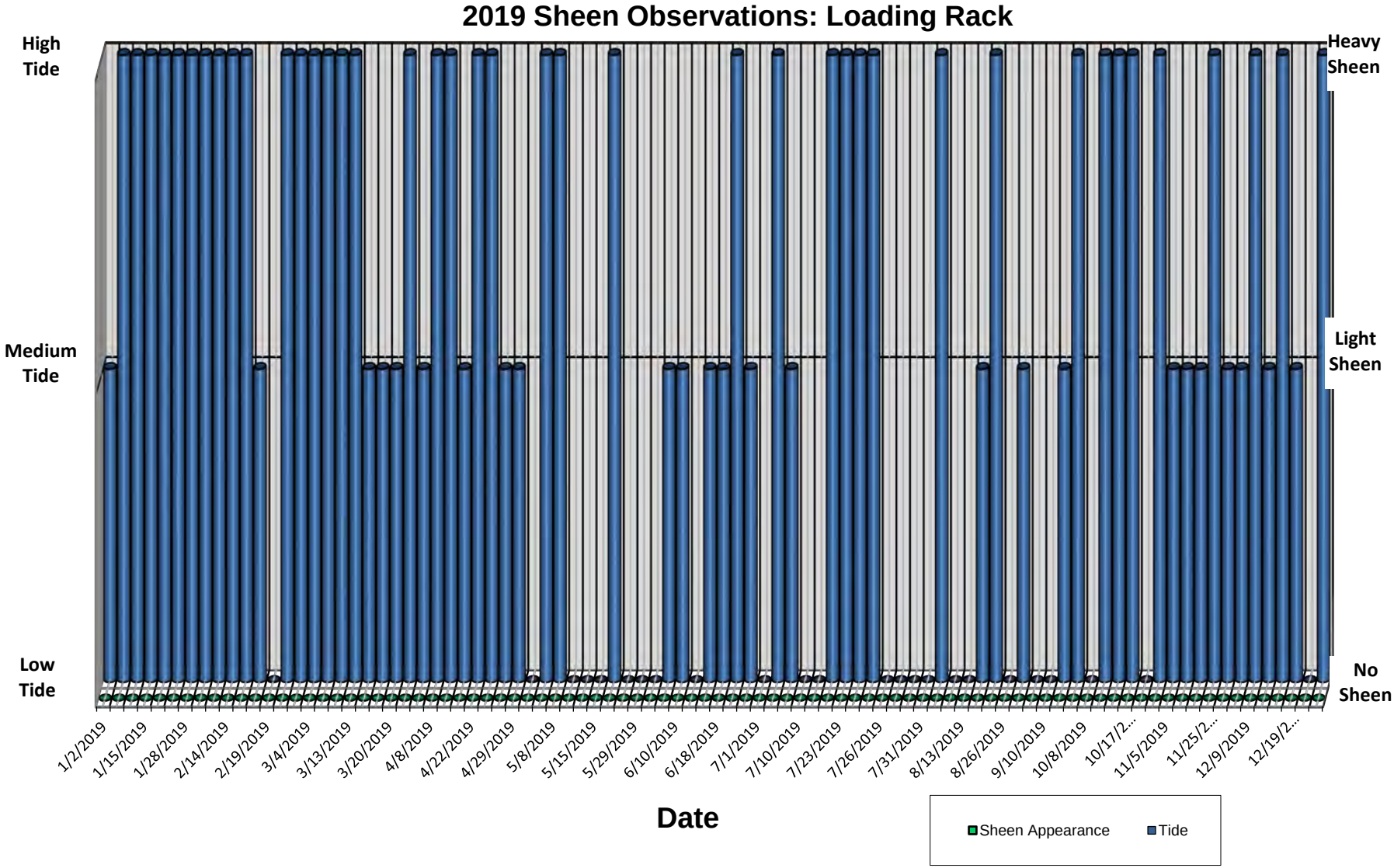


Loading Rack Area Boom removed in August 2017 with concurrance from Ecology due to persistent lack of sheens.

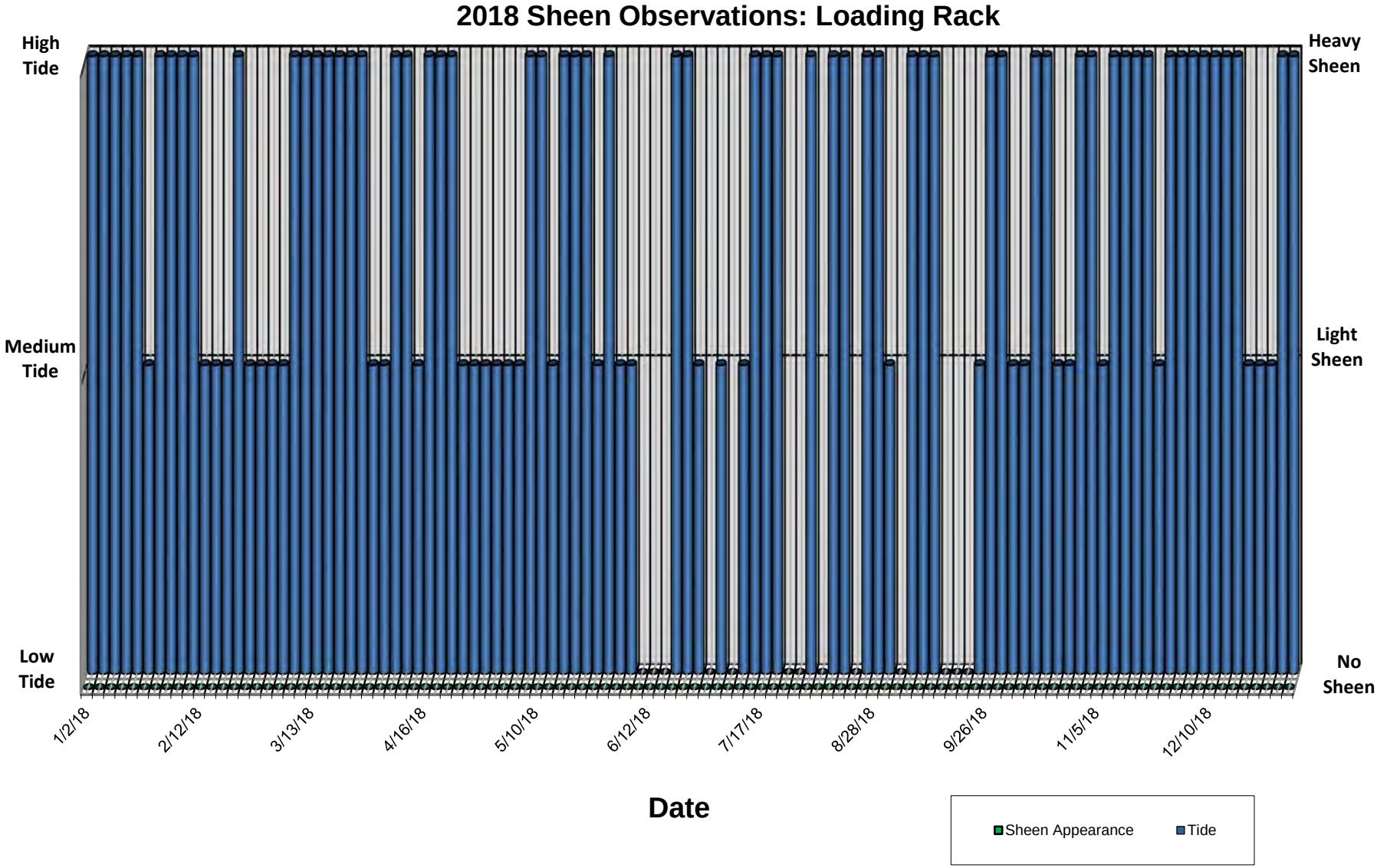
2020 Sheen Observations: Loading Rack



Loading Rack Area Boom removed in August 2017 with concurrance from Ecology due to persistent lack of sheens.

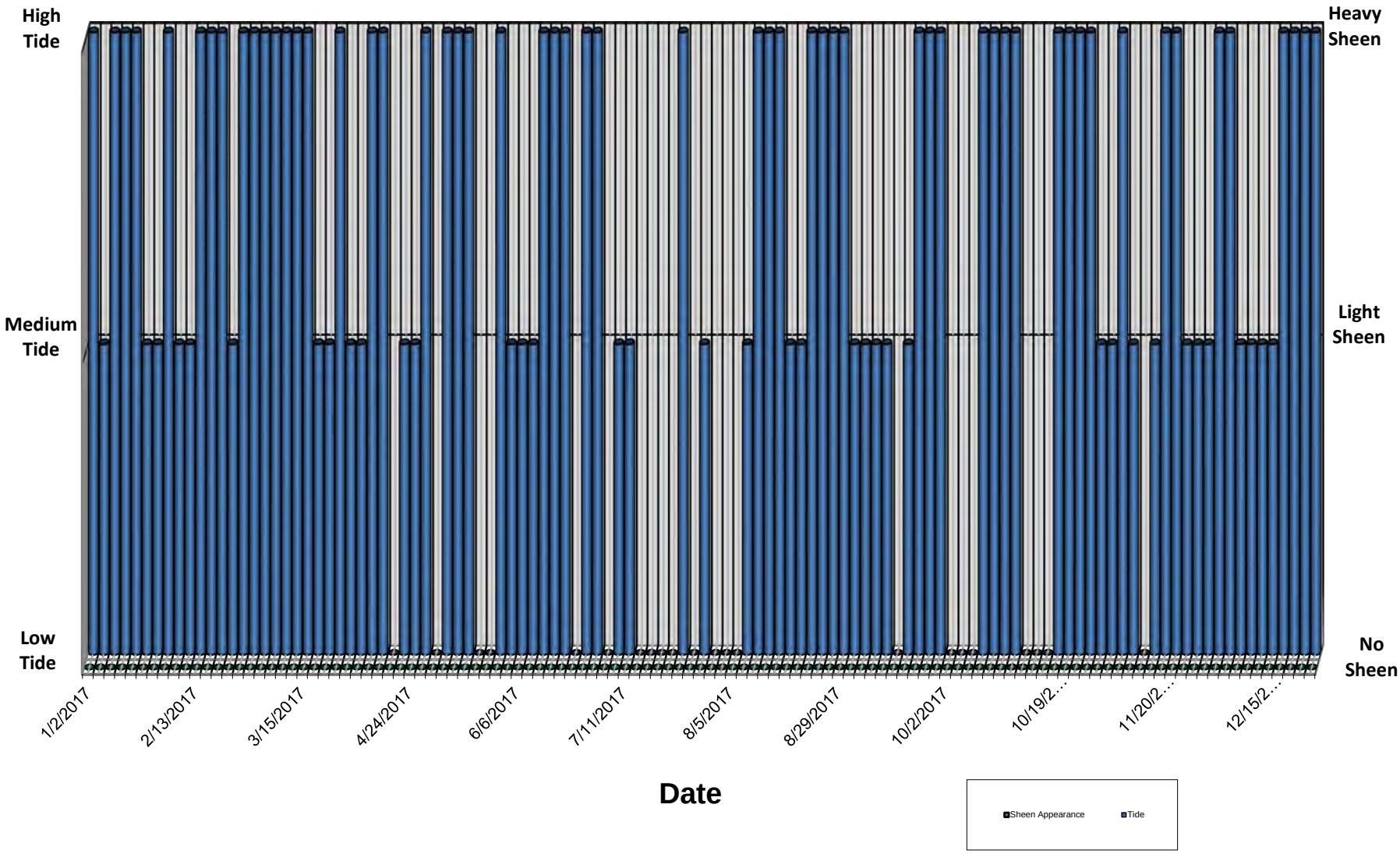


Loading Rack Area Boom removed in August 2017 with concurrance from Ecology due to persistent lack of sheens.



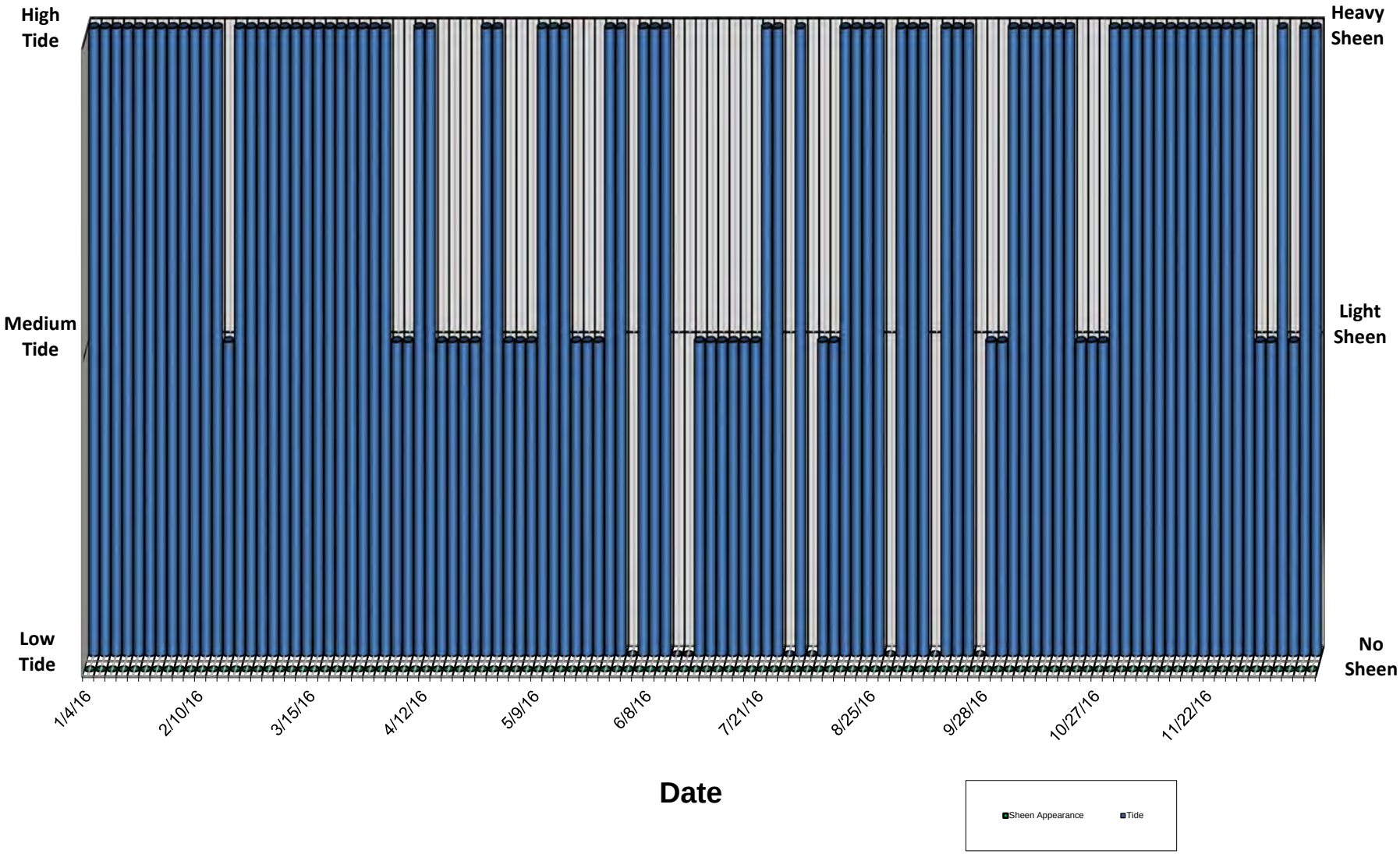
Loading Rack Area Boom removed in August 2017 with concurrance from Ecology due to persistent lack of sheens.

2017 Sheen Observations: Loading Rack

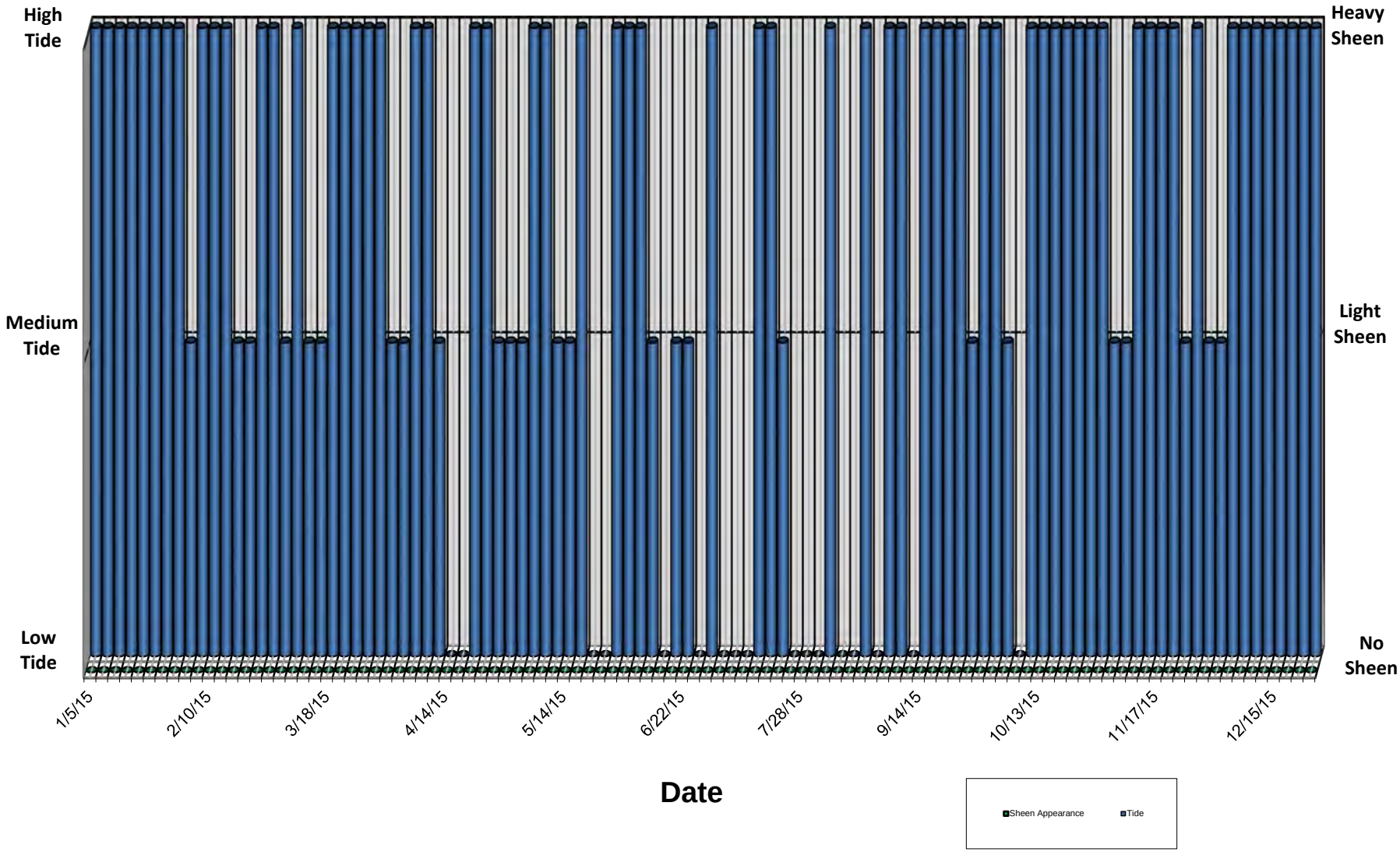


Loading Rack Area Boom removed in August 2017 with concurrance from Ecology due to persistent lack of sheens.

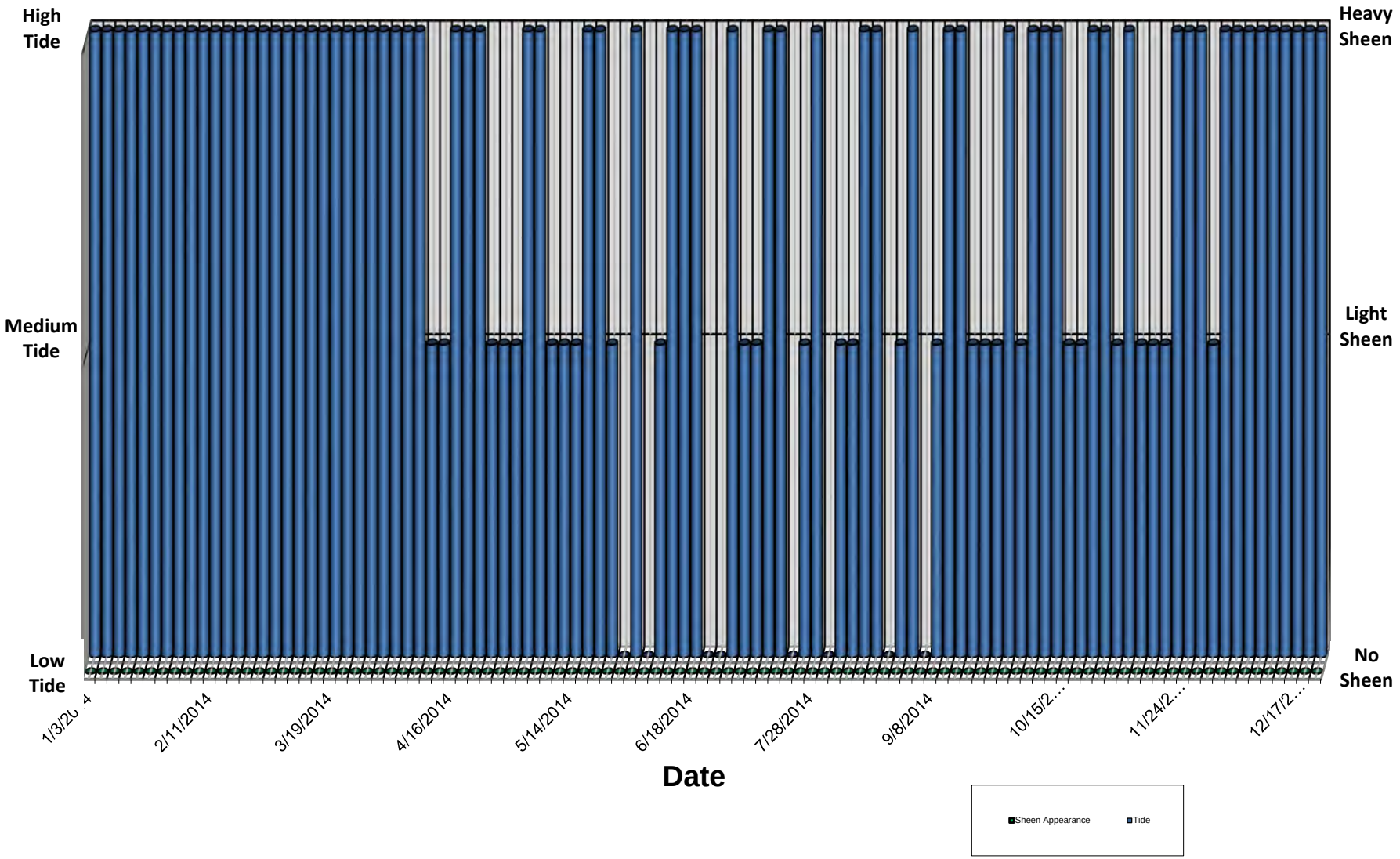
2016 Sheen Observations: Loading Rack



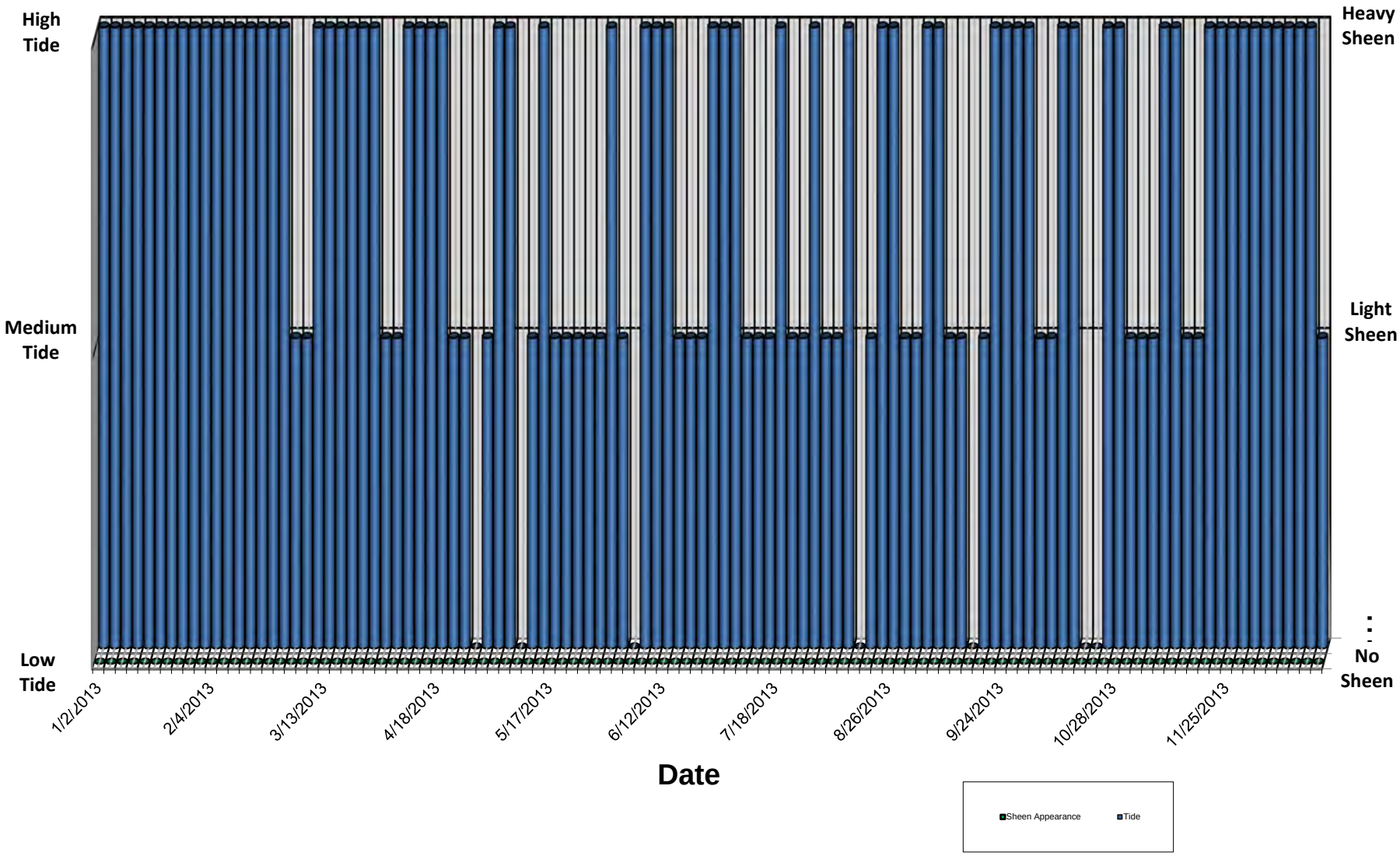
2015 Sheen Observations: Loading Rack



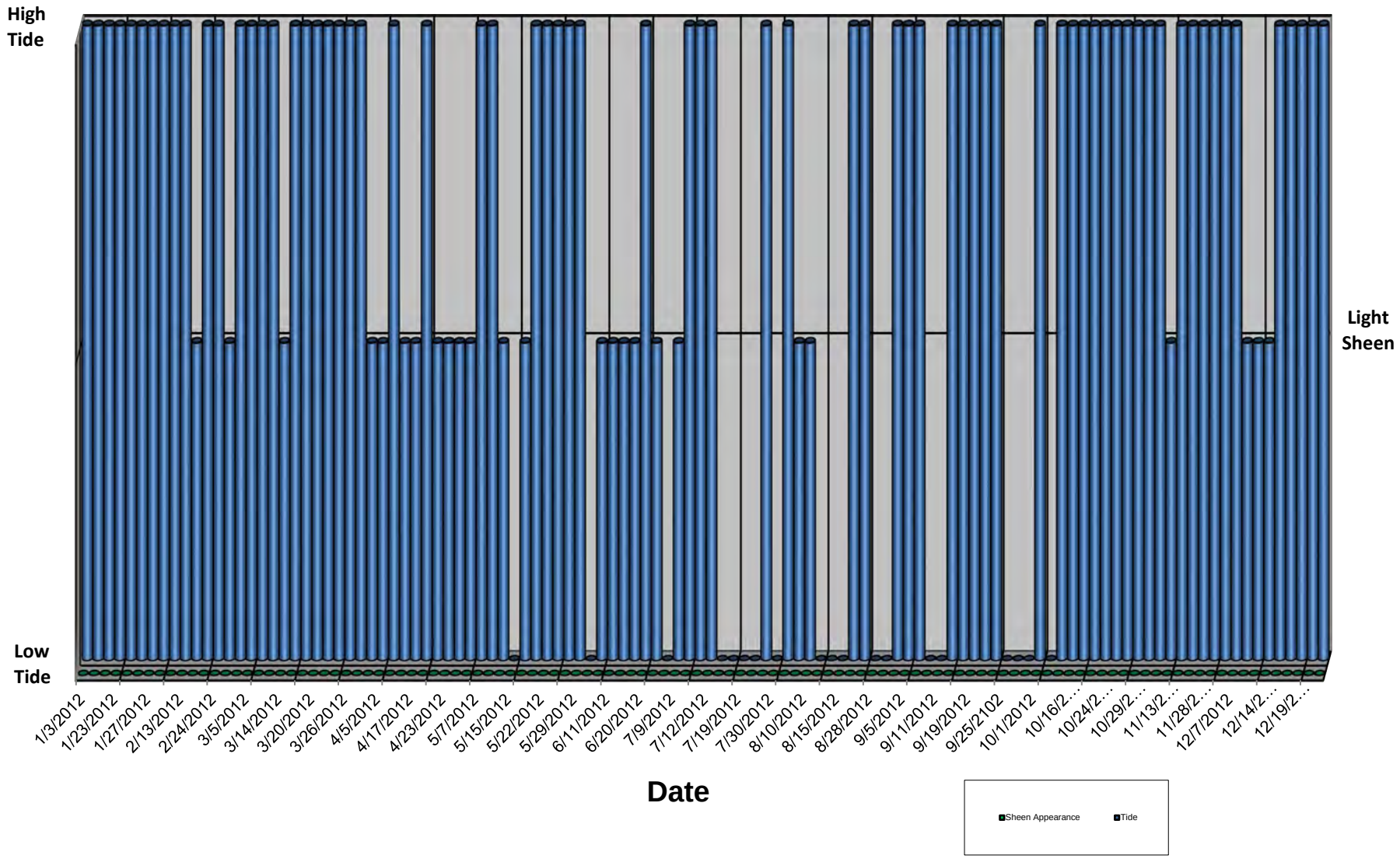
2014 Sheen Observations: Loading Rack



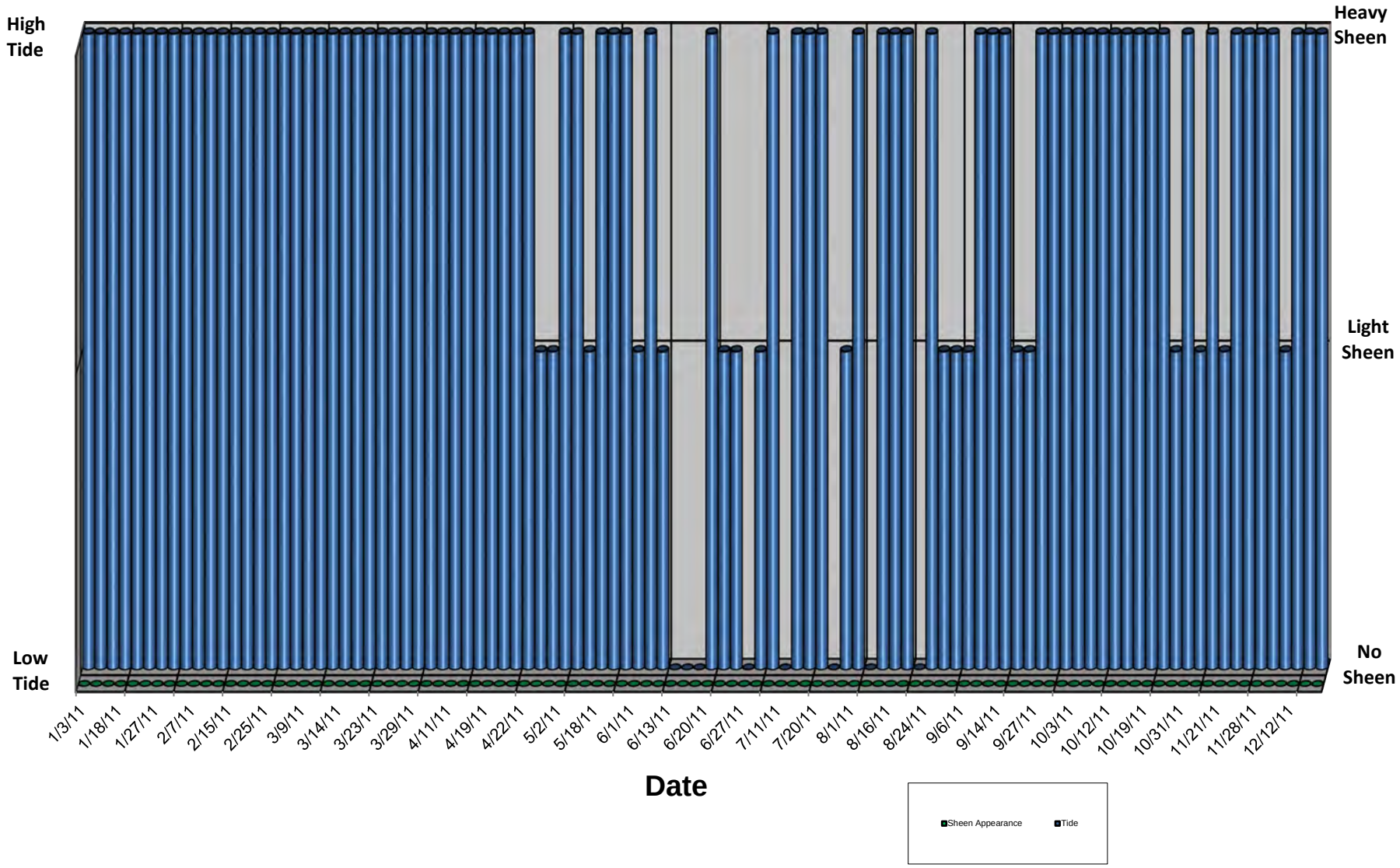
2013 Sheen Observations: Loading Rack



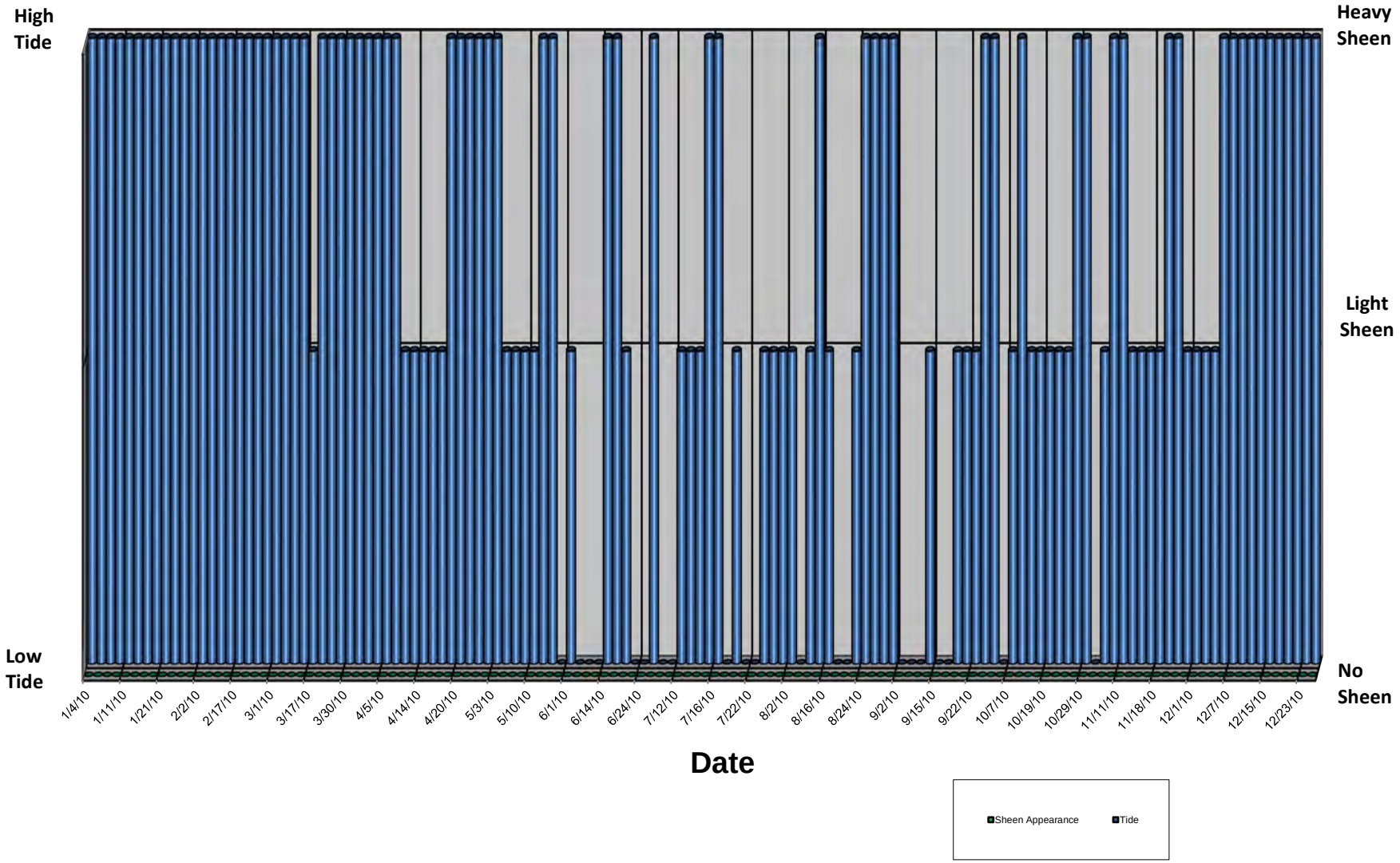
2012 Sheen Observations: Loading Rack

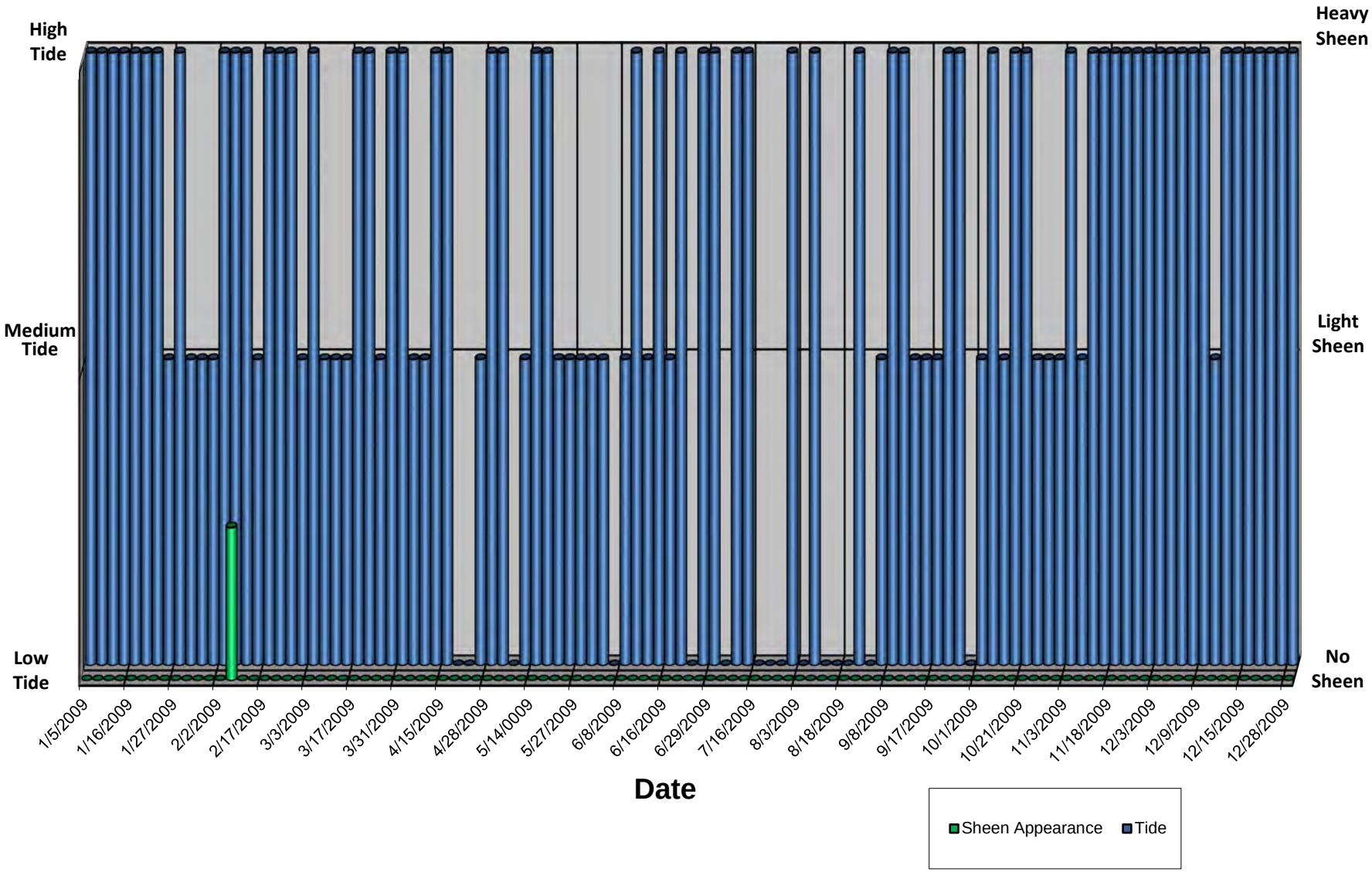


2011 Sheen Observations: Loading Rack

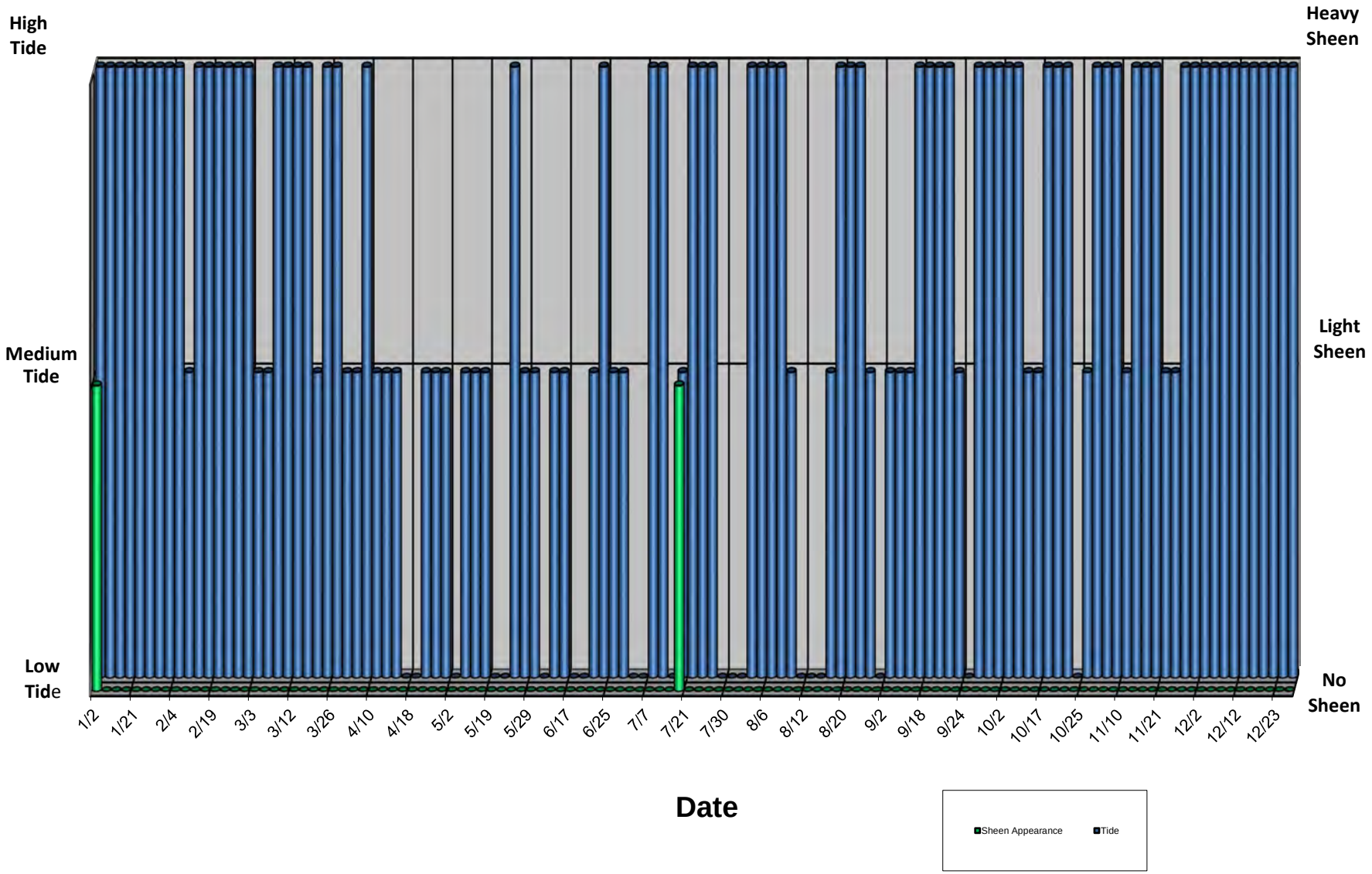


2010 Sheen Observations: Loading Rack

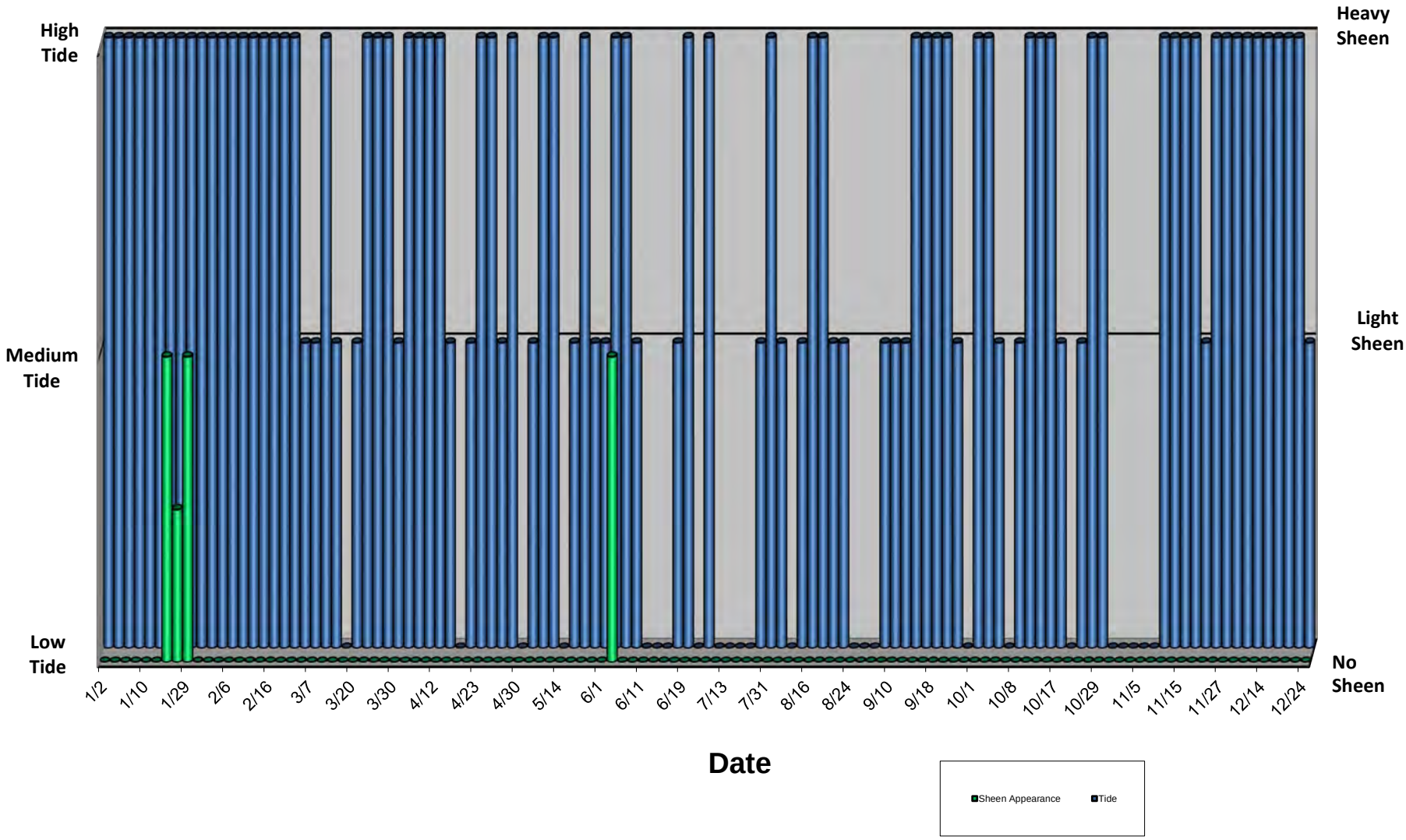



2009 Sheen Observations: Loading Rack
High Tide
Medium Tide
Low Tide
Heavy Sheen
Light Sheen
No Sheen
1/5/2009
1/16/2009
1/27/2009
2/2/2009
2/17/2009
3/3/2009
3/17/2009
3/31/2009
4/15/2009
4/28/2009
5/14/0009
5/27/2009
6/8/2009
6/16/2009
6/29/2009
7/16/2009
8/3/2009
8/18/2009
9/8/2009
9/17/2009
10/1/2009
10/21/2009
11/3/2009
11/18/2009
12/3/2009
12/9/2009
12/15/2009
12/28/2009
Date
Sheen Appearance
Tide

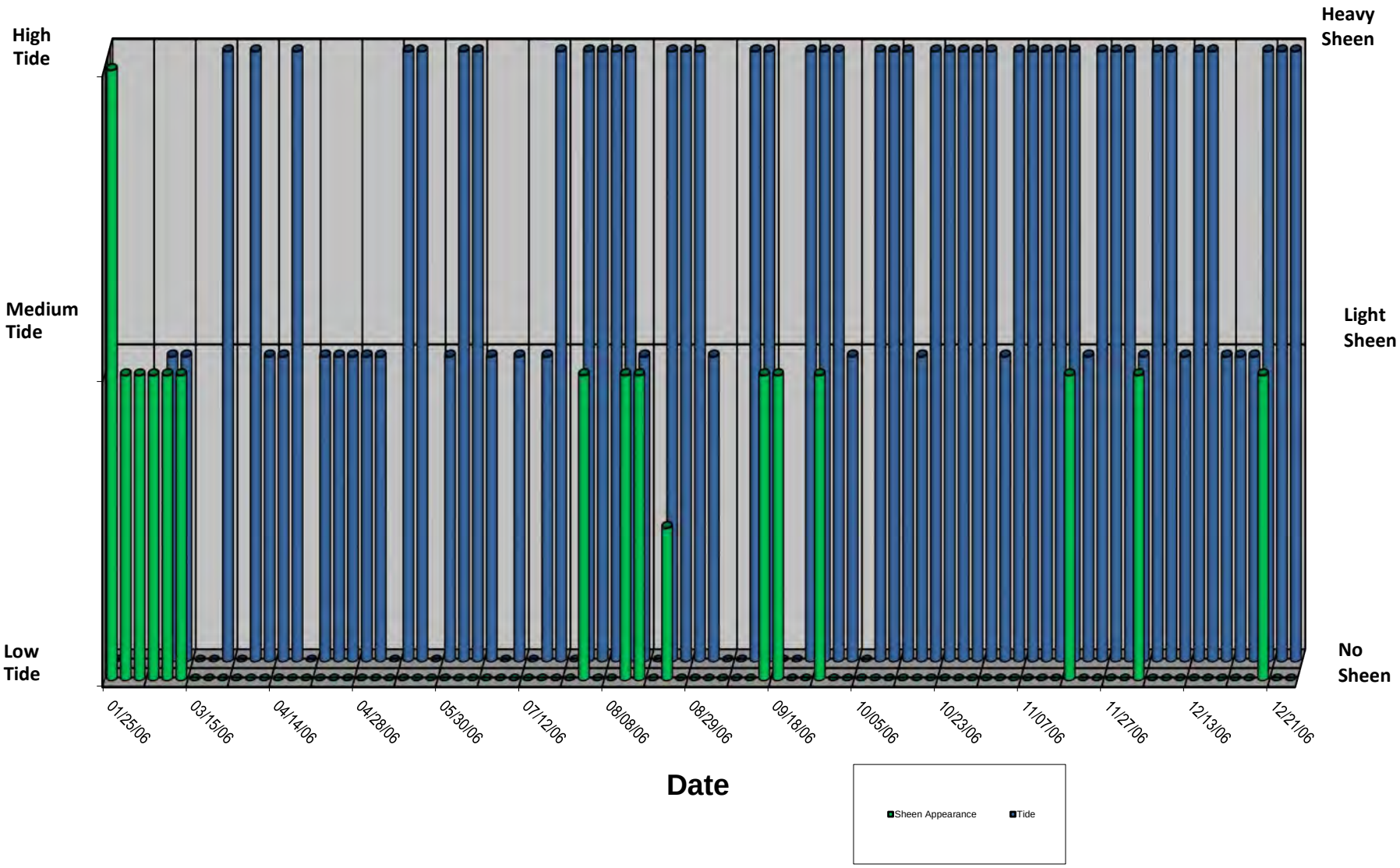
2008 Sheen Observations: Loading Rack



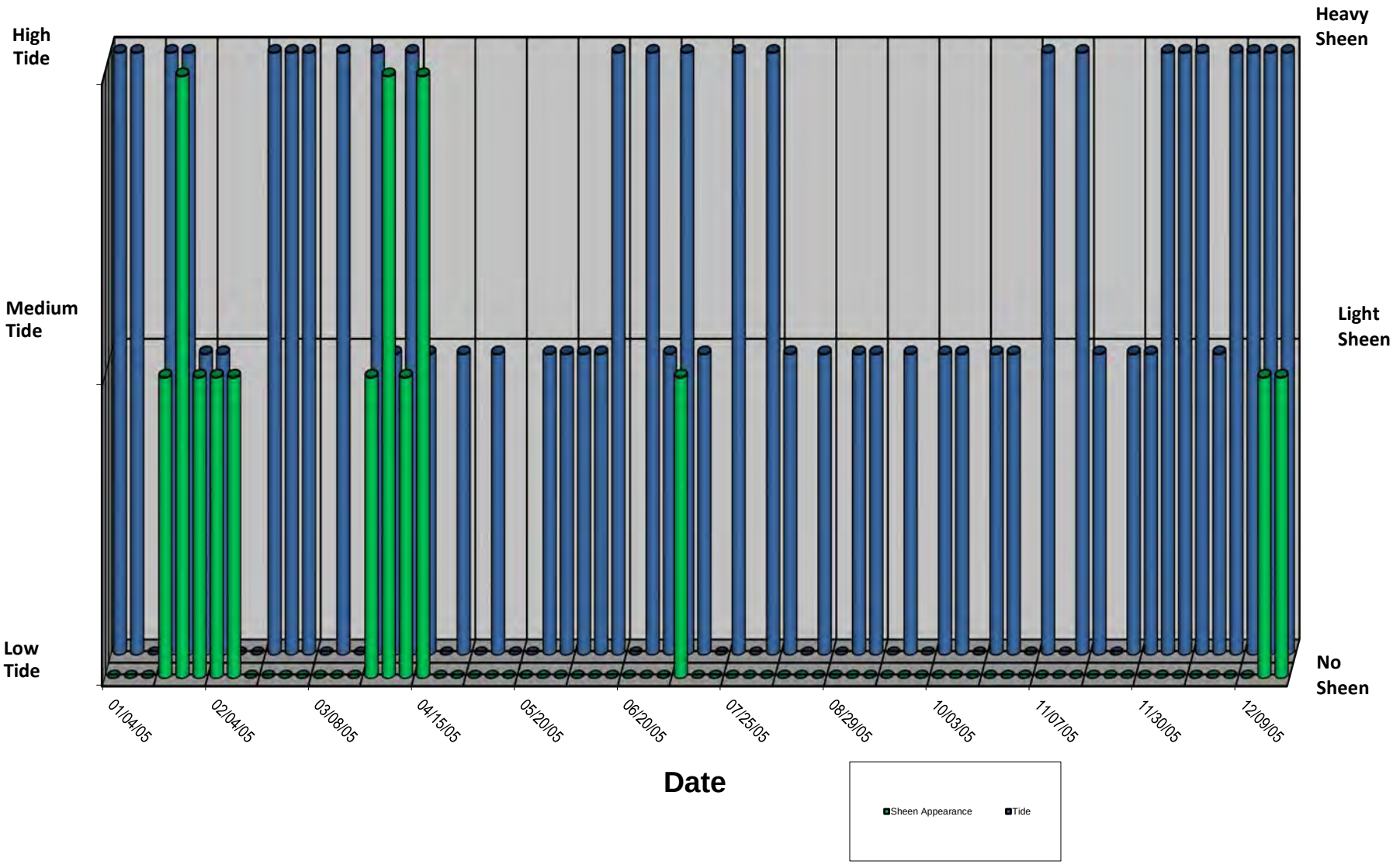
2007 Sheen Observations: Loading Rack



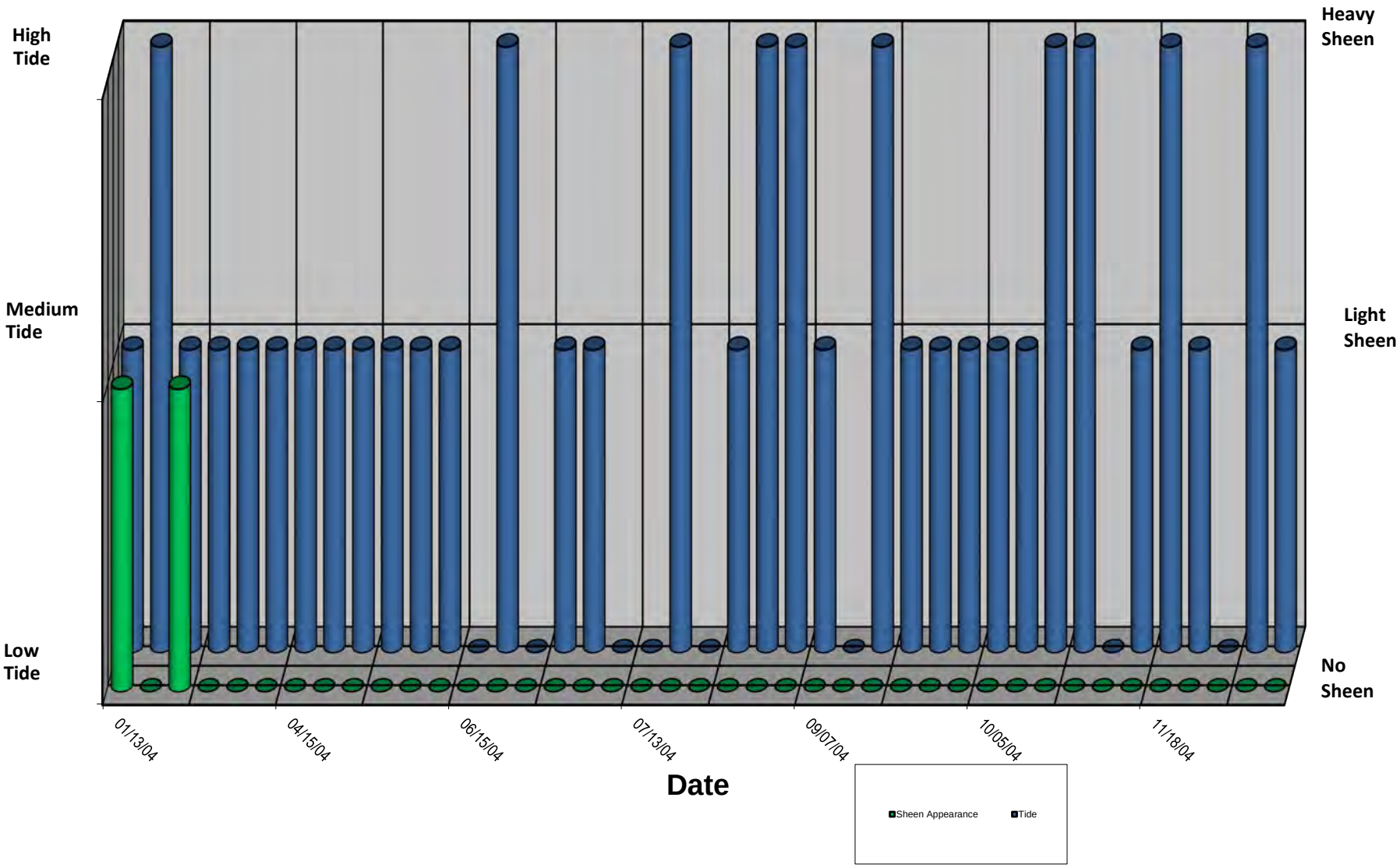
2006 Sheen Observations: Loading Rack



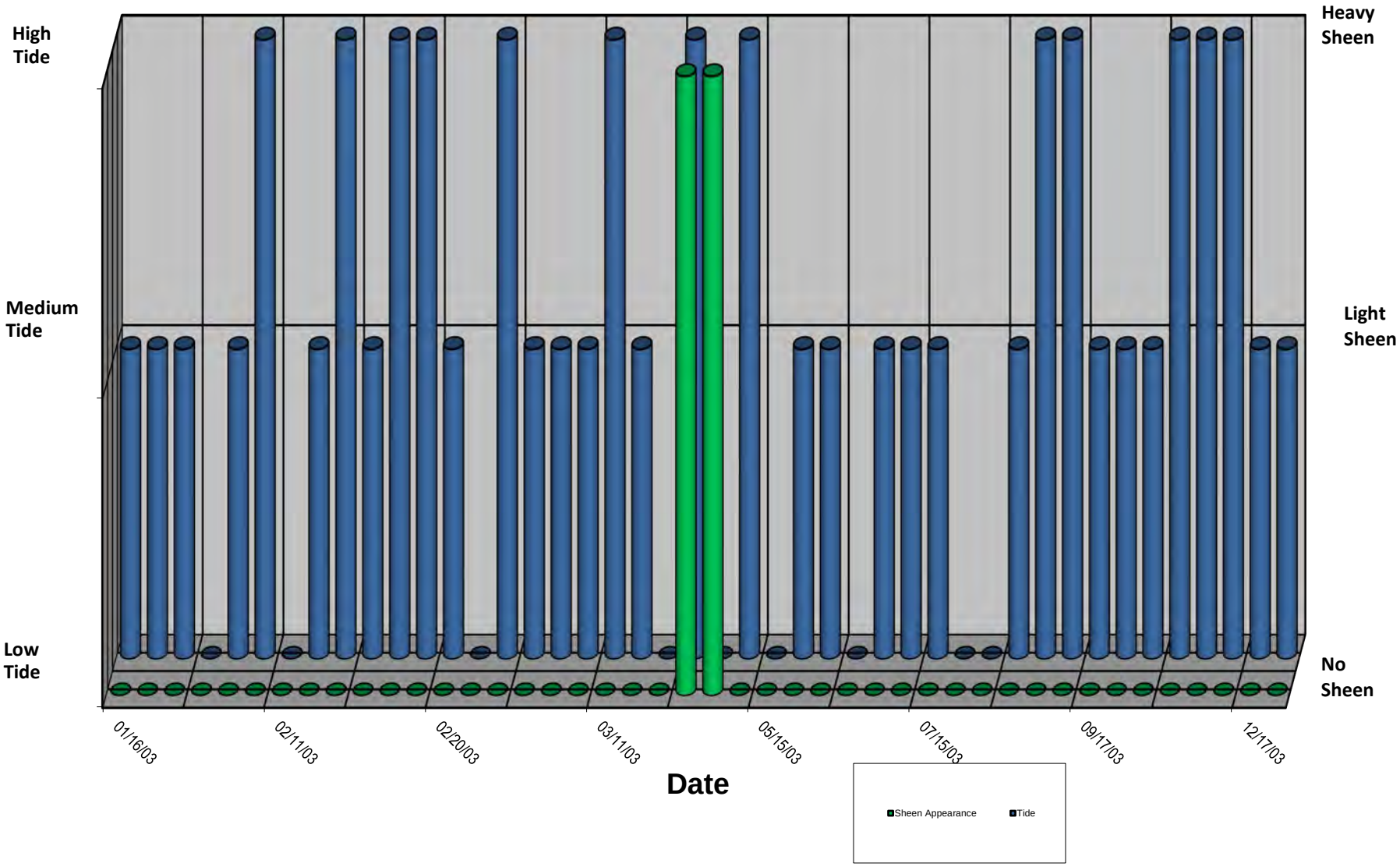
2005 Sheen Observations: Loading Rack

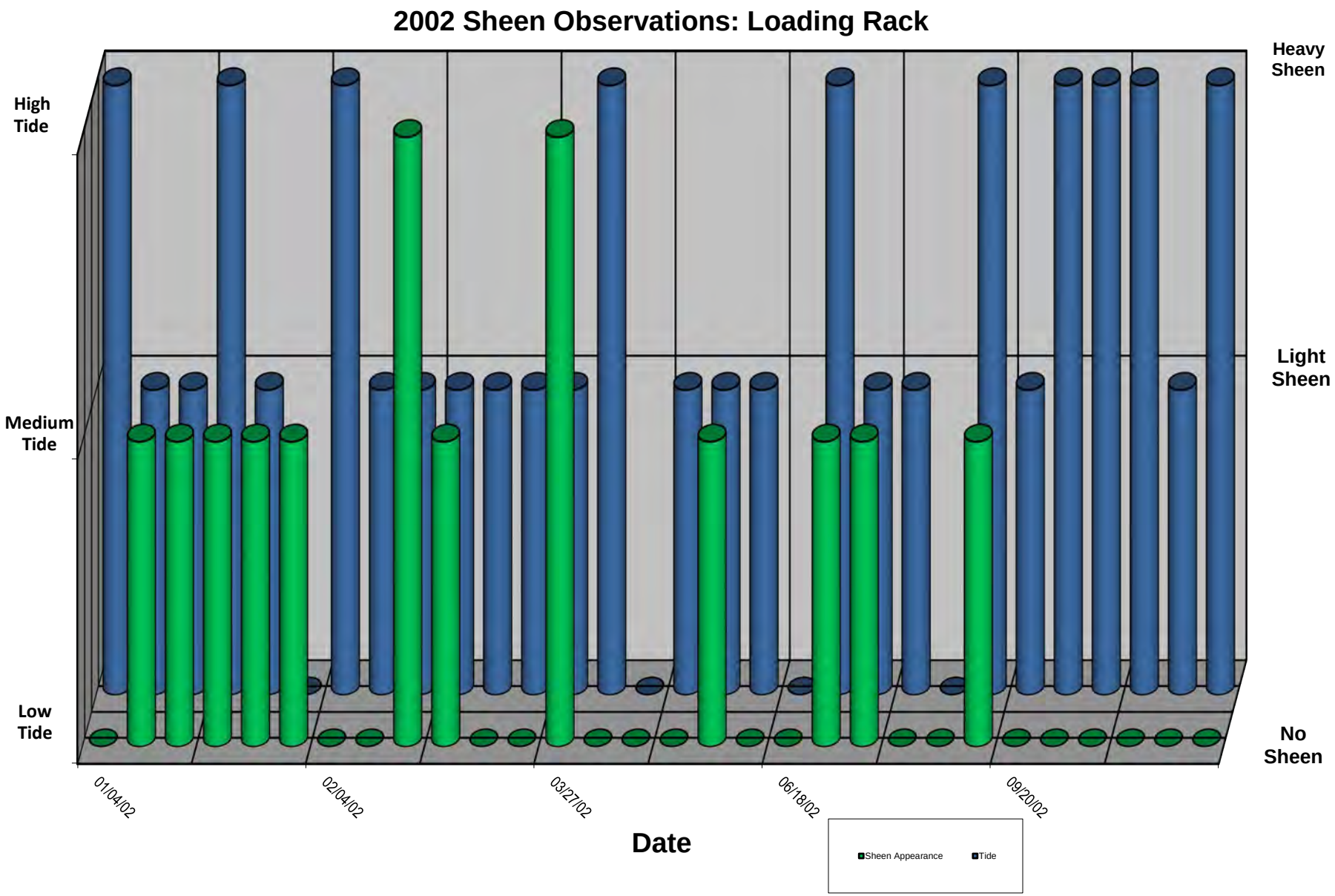


2004 Sheen Observations: Loading Rack

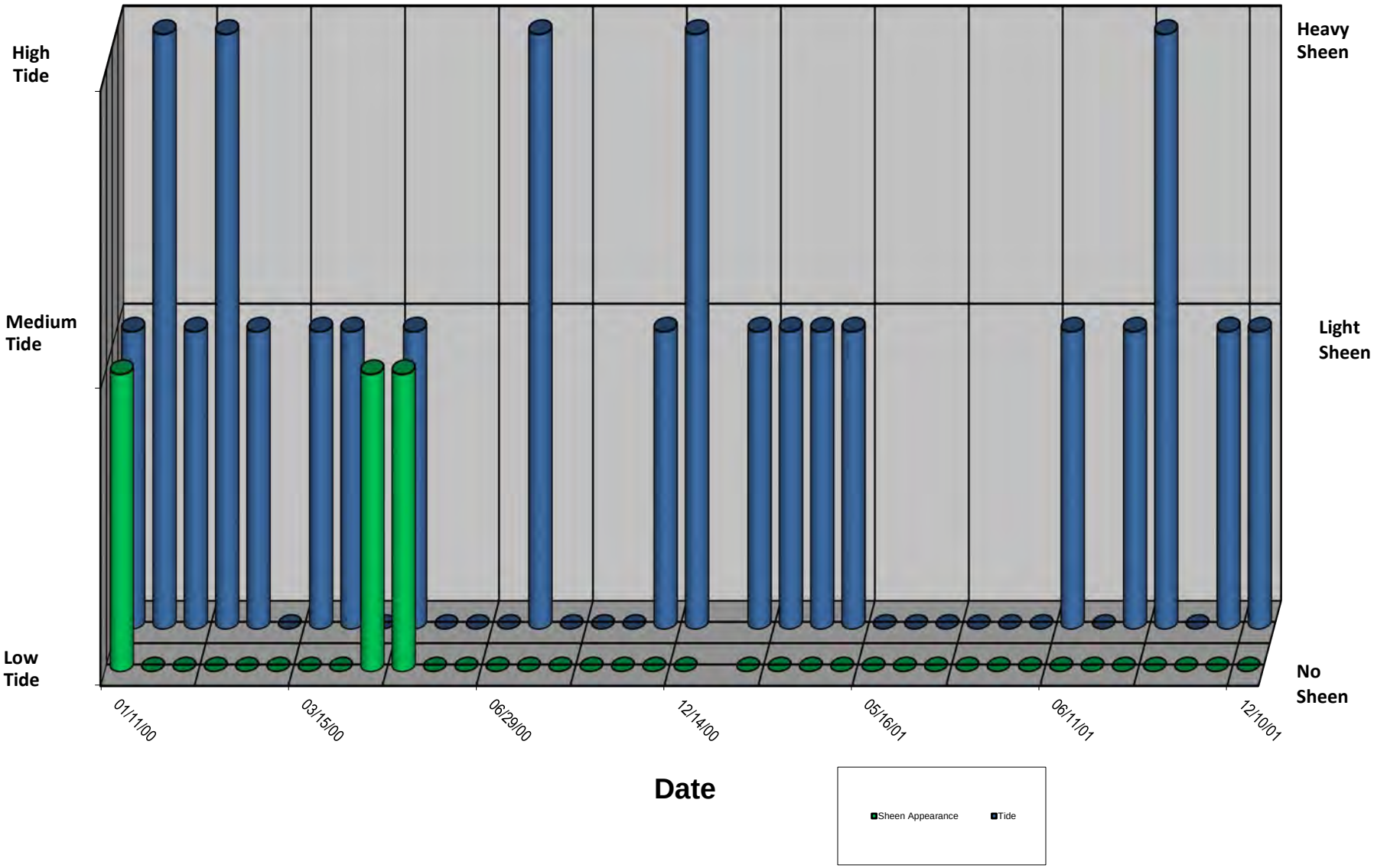


2003 Sheen Observations: Loading Rack

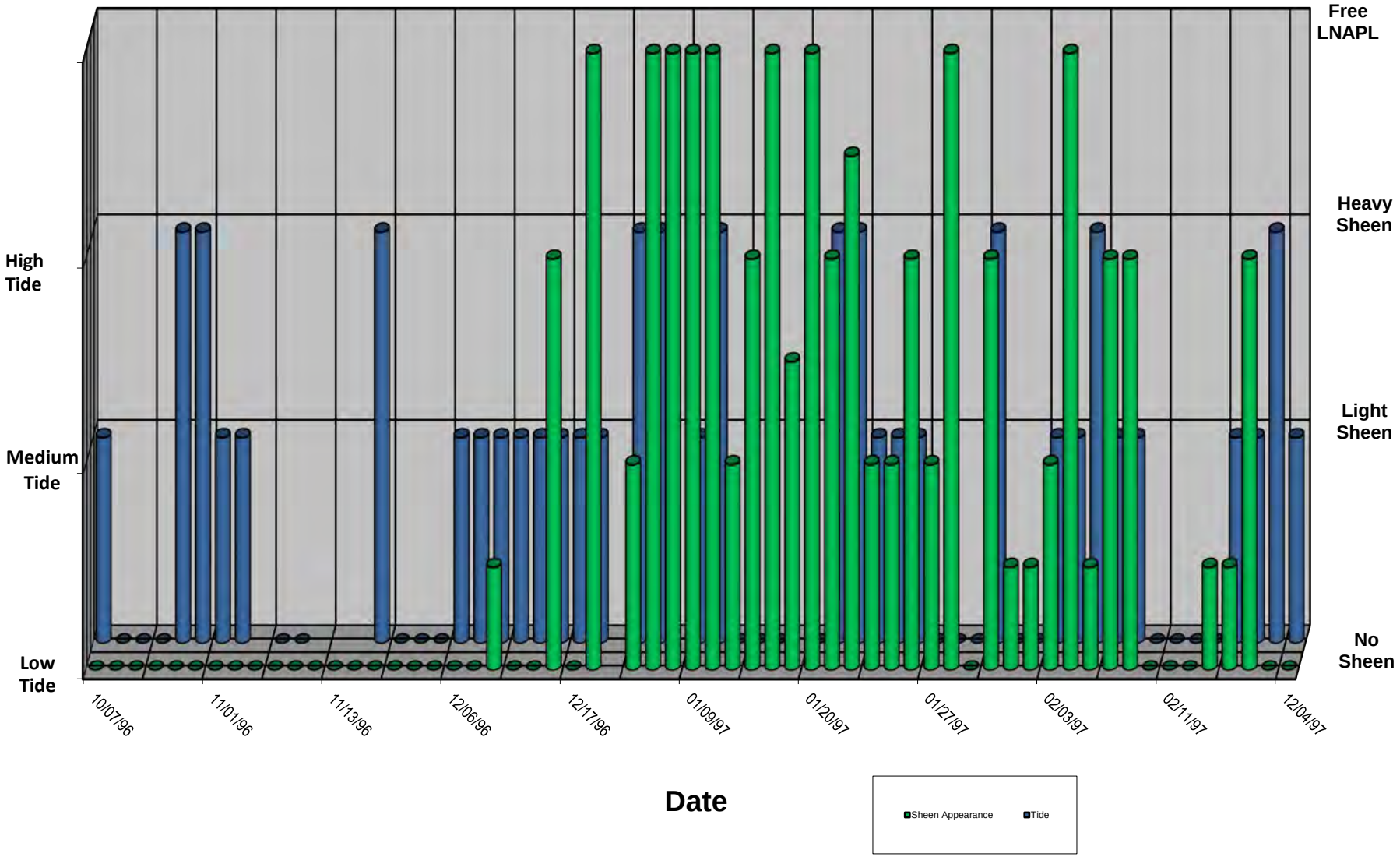



2002 Sheen Observations: Loading Rack
High Tide
Medium Tide
Low Tide
Heavy Sheen
Light Sheen
No Sheen
01/04/02
02/04/02
03/27/02
06/18/02
09/20/02
Date
Sheen Appearance
Tide

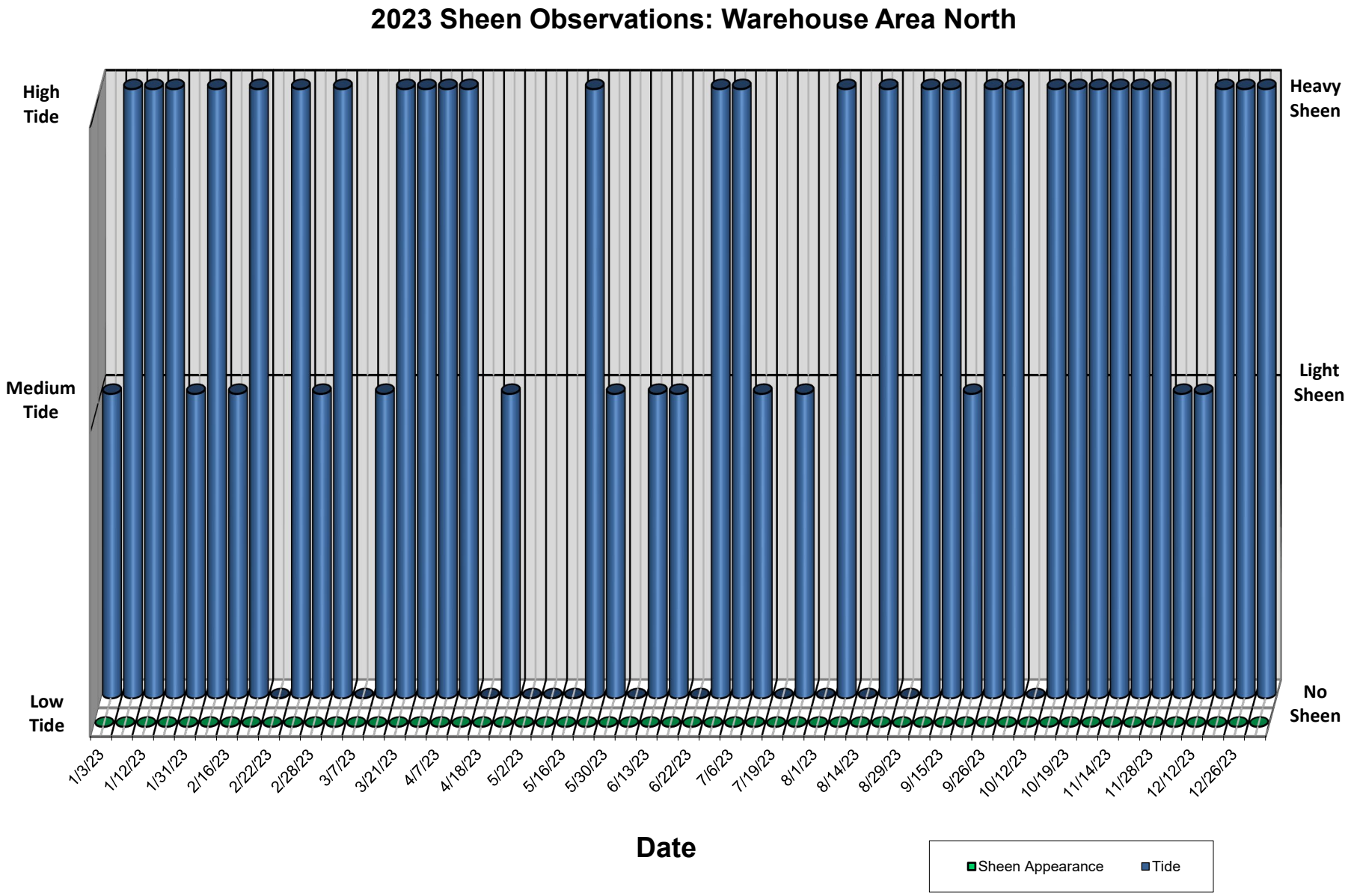
2000-2001 Sheen Observations: Loading Rack



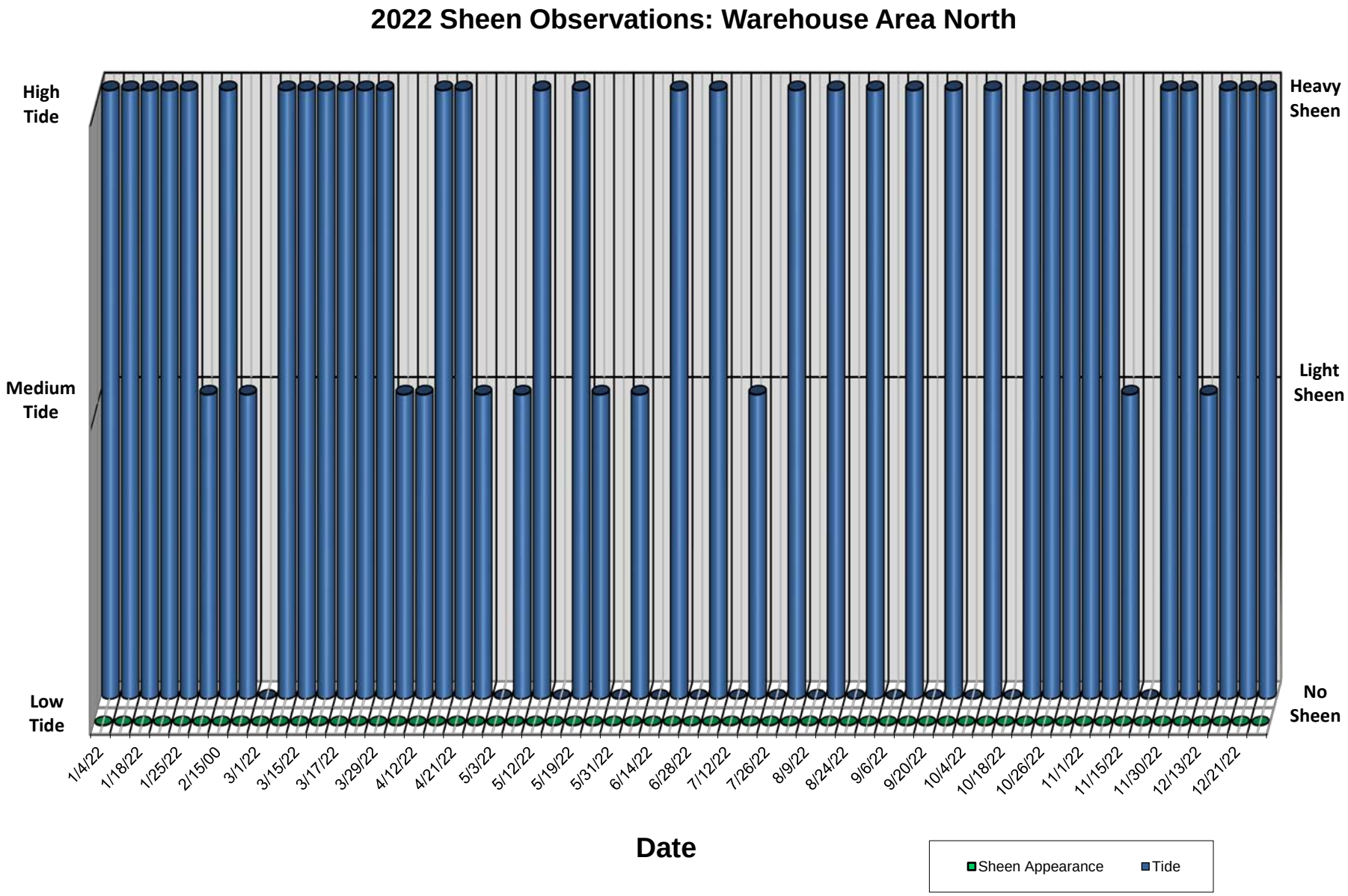
1996-1997 Sheen Observations: Loading Rack



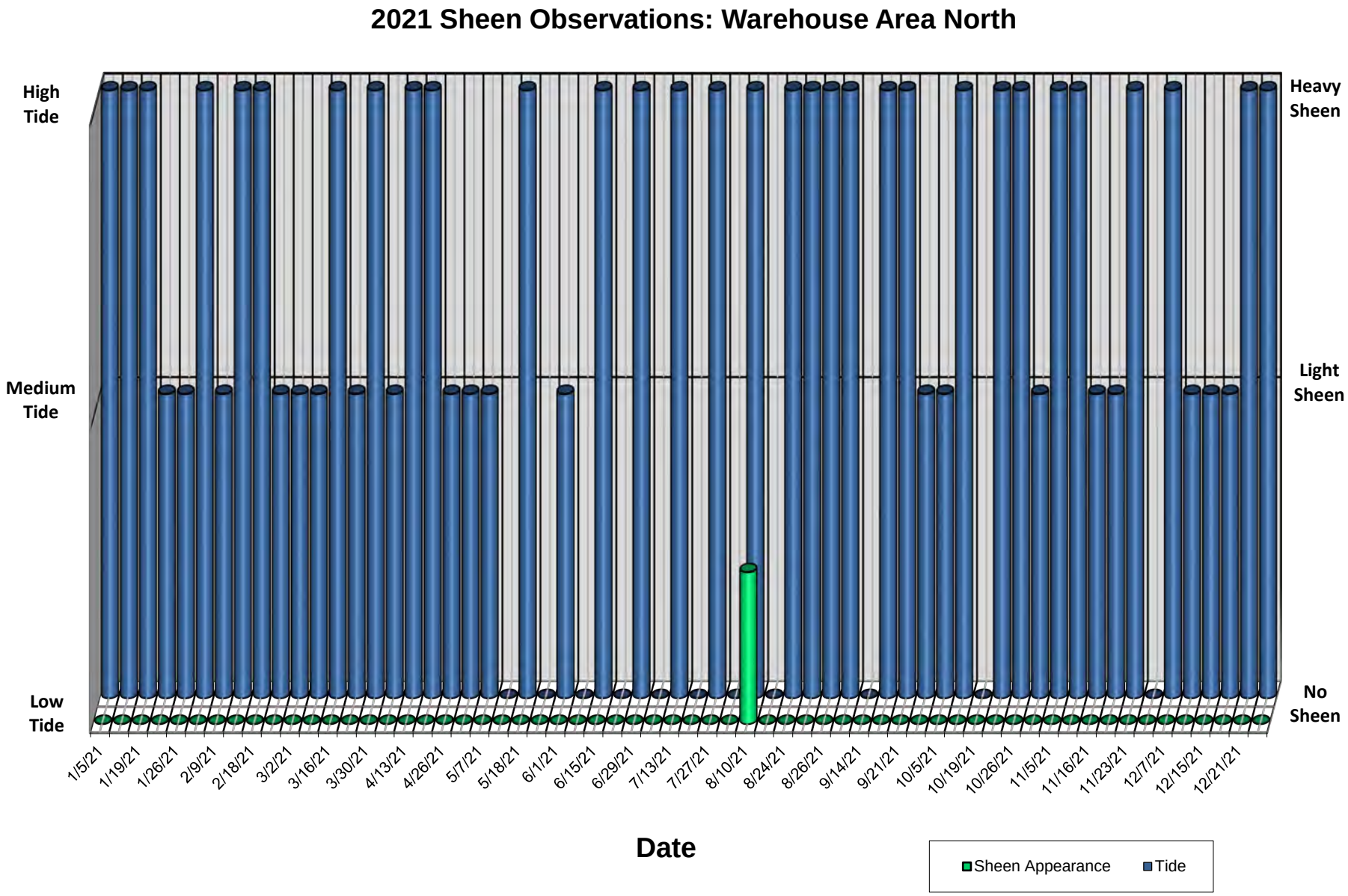
Sheen Observations - Northern Warehouse Boom
SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)



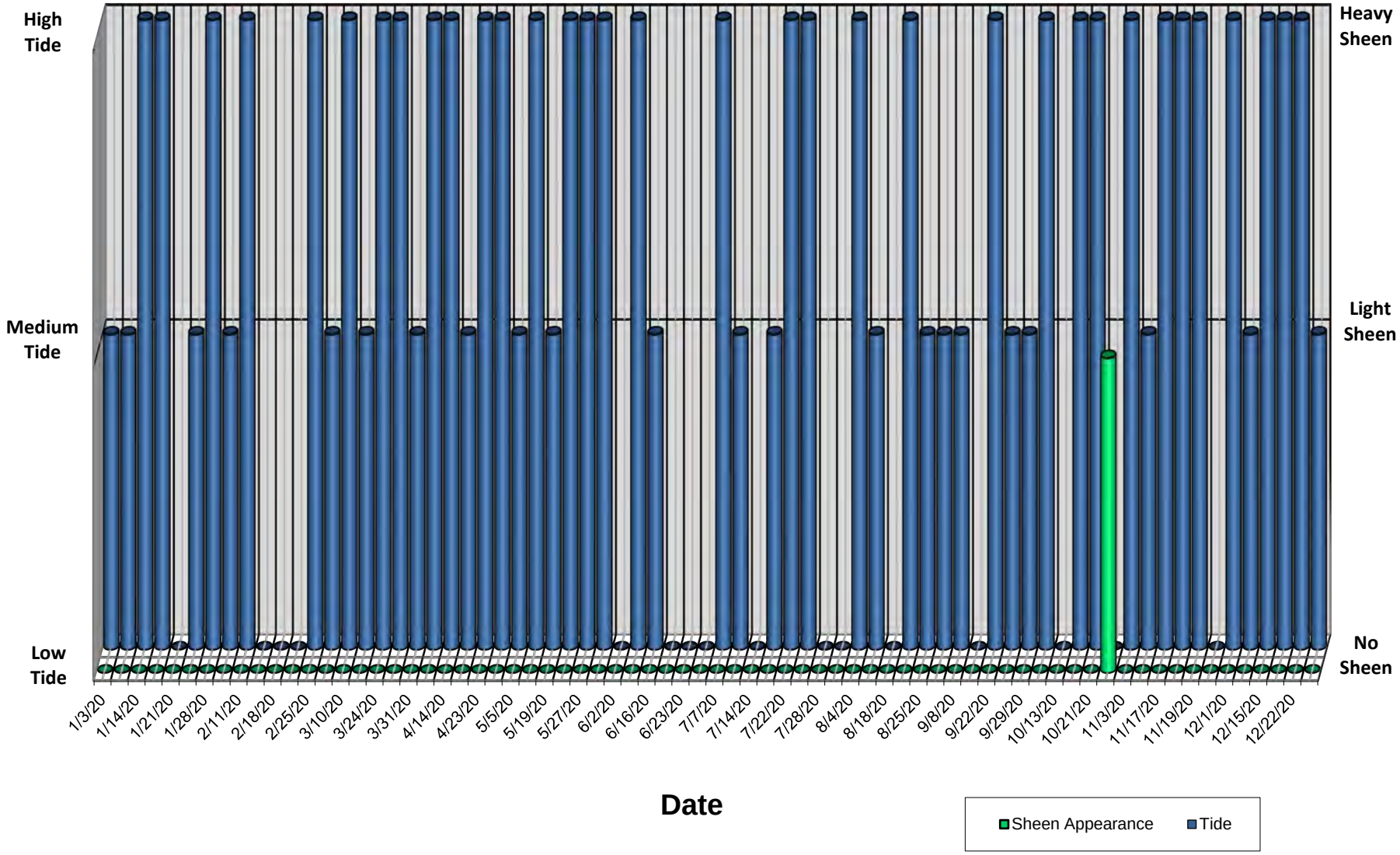
Sheen Observations - Northern Warehouse Boom
Seaport Midstream Partners LLC Seattle Terminal

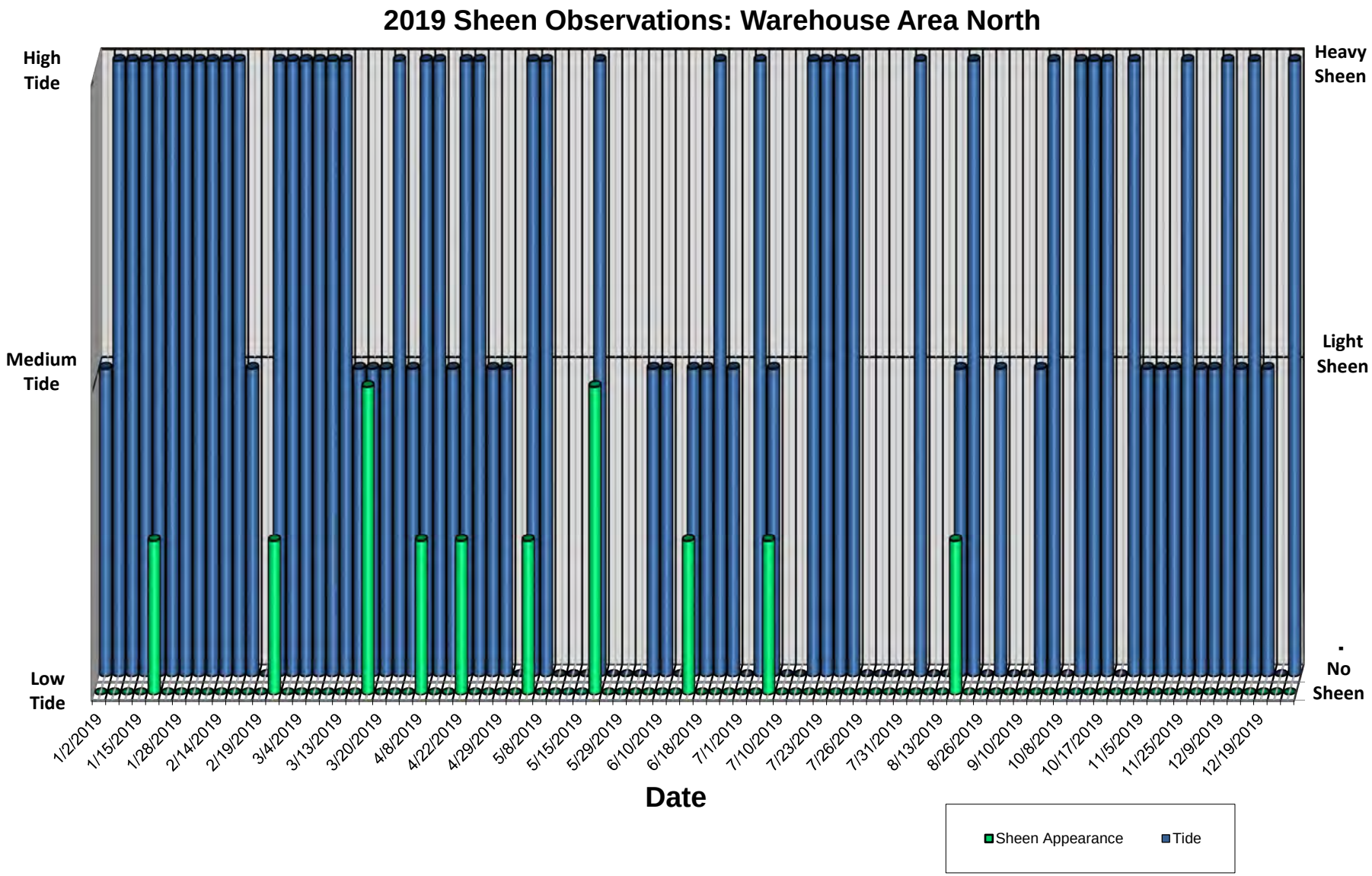


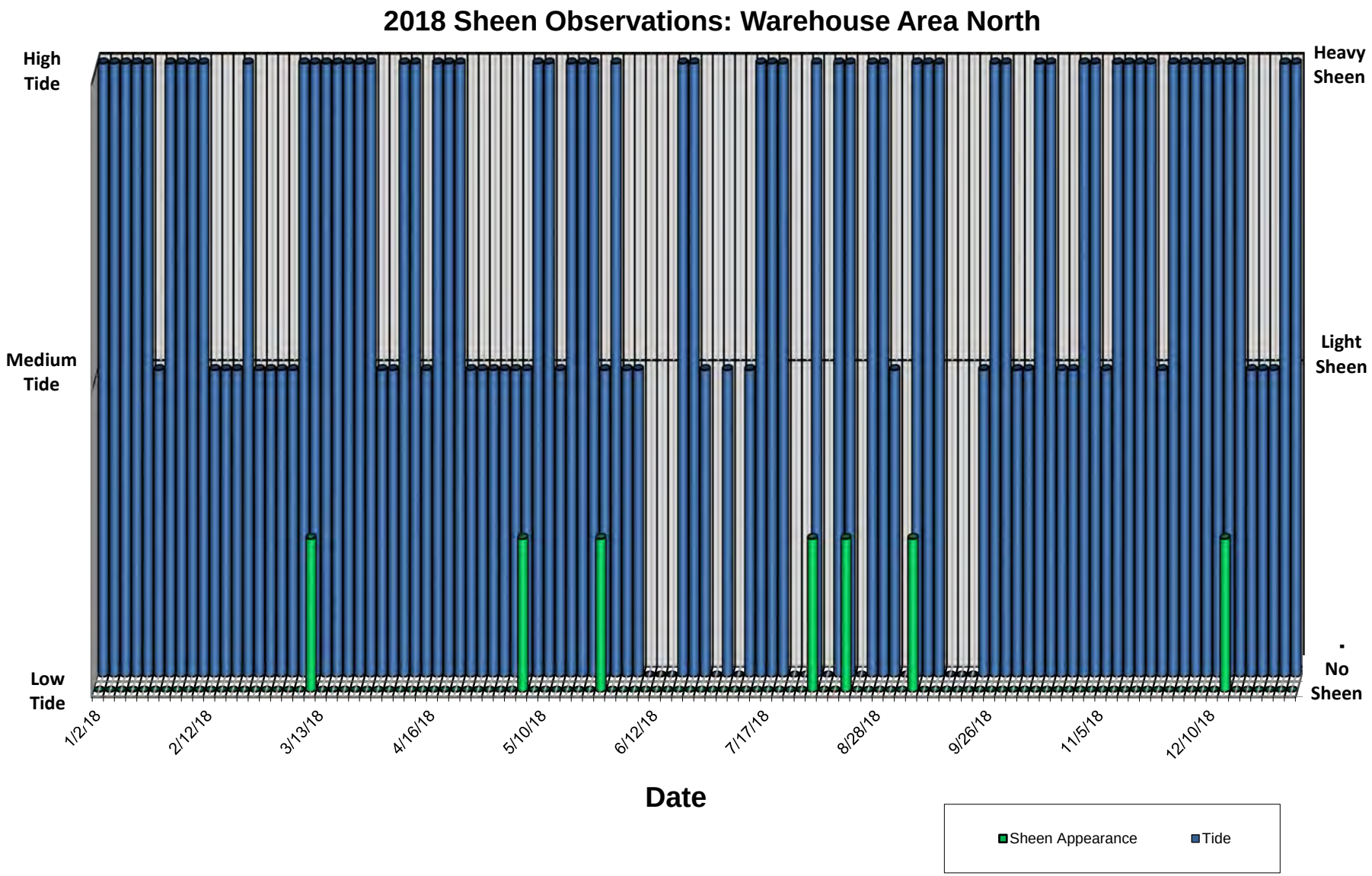
Sheen Observations - Northern Warehouse Boom
Seaport Midstream Partners LLC Seattle Terminal

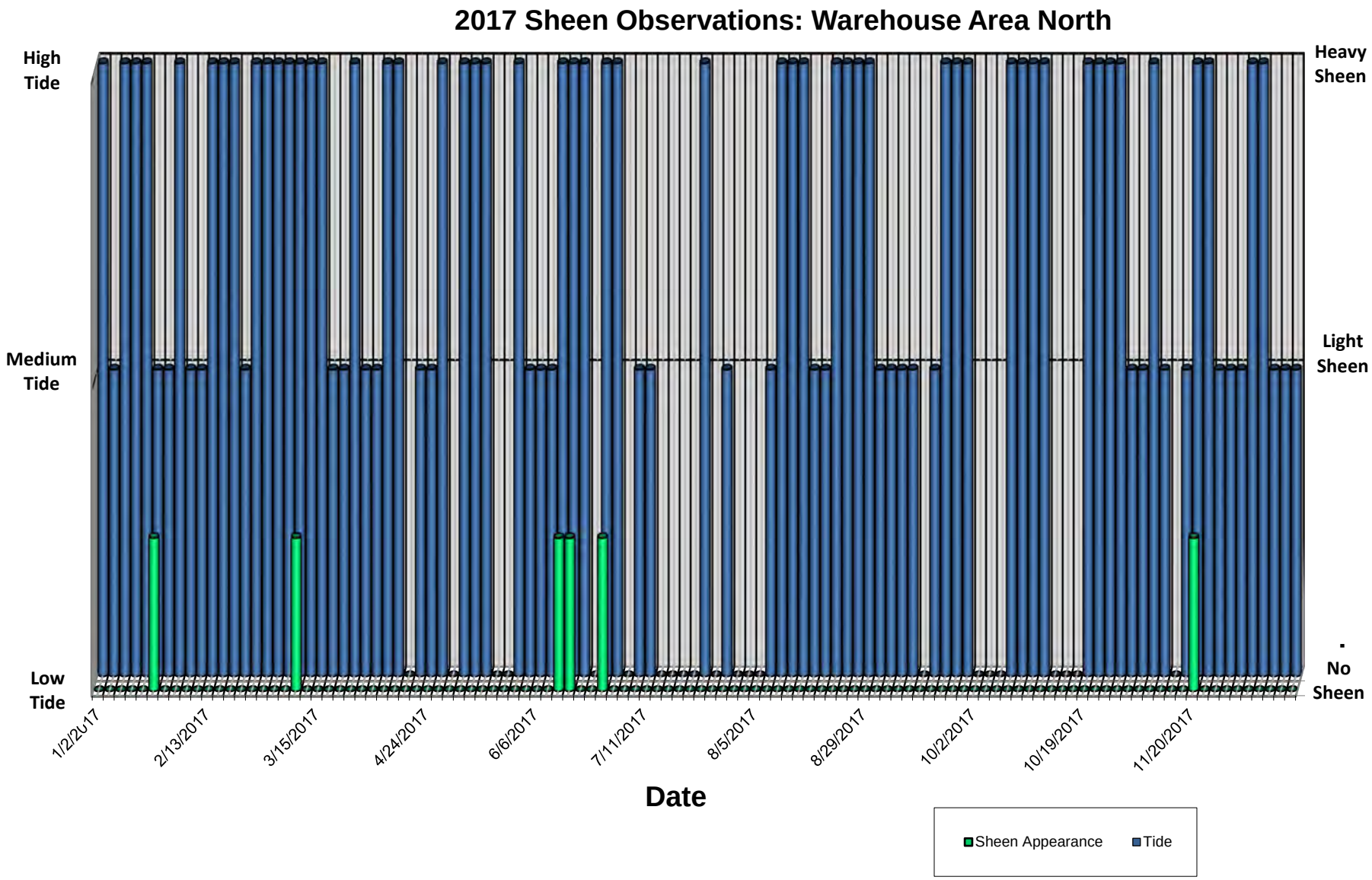


2020 Sheen Observations: Warehouse Area North



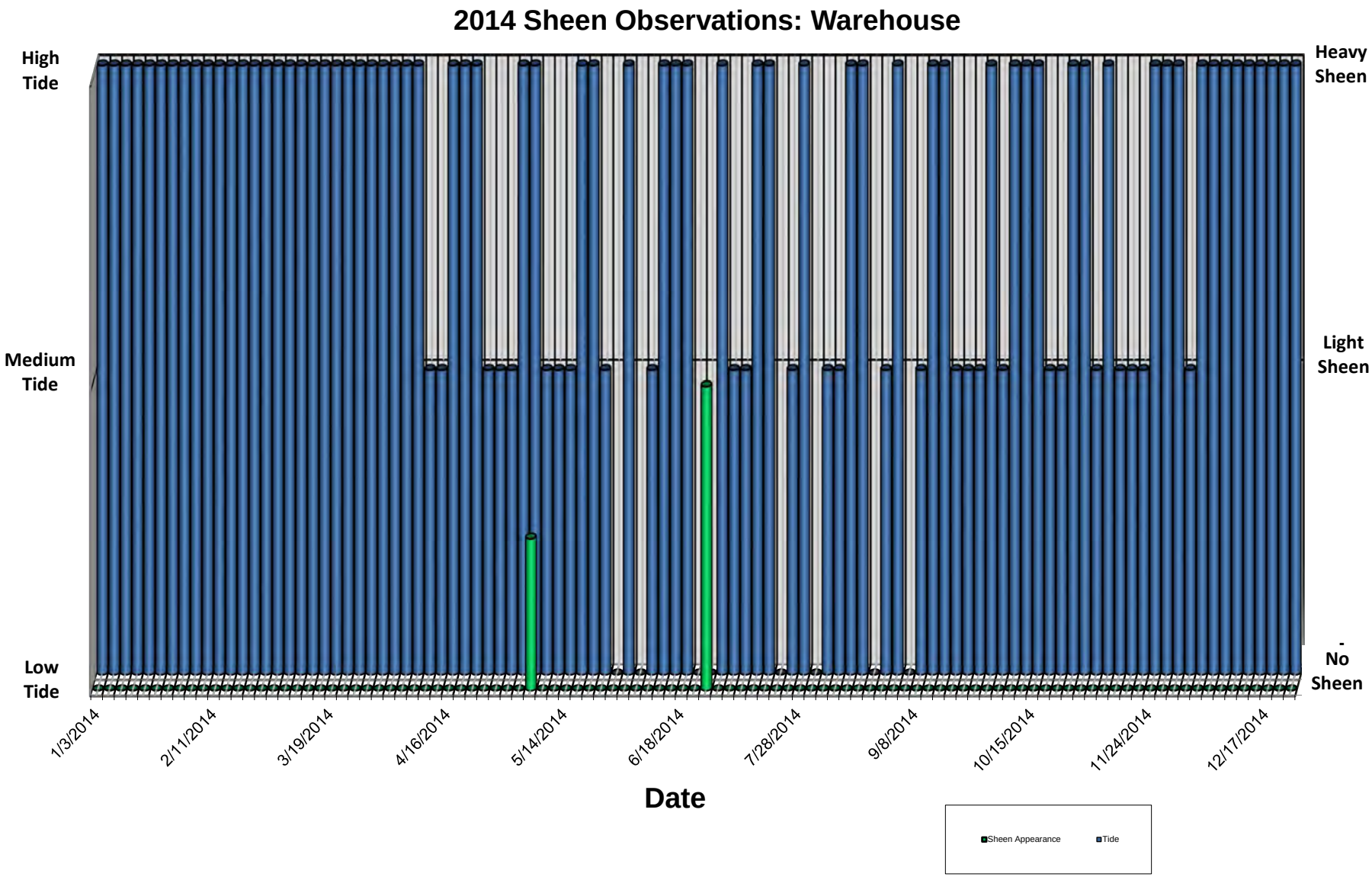

2019 Sheen Observations: Warehouse Area North
High Tide
Medium Tide
Low Tide
Heavy Sheen
Light Sheen
No Sheen
1/2/2019
1/15/2019
1/28/2019
2/14/2019
2/19/2019
3/4/2019
3/13/2019
3/20/2019
4/8/2019
4/22/2019
4/29/2019
5/8/2019
5/15/2019
5/29/2019
6/10/2019
6/18/2019
7/1/2019
7/10/2019
7/23/2019
7/26/2019
7/31/2019
8/13/2019
8/26/2019
9/10/2019
10/8/2019
10/17/2019
11/5/2019
11/25/2019
12/9/2019
12/19/2019
Date
Sheen Appearance
Tide


2018 Sheen Observations: Warehouse Area North
High Tide
Medium Tide
Low Tide
Heavy Sheen
Light Sheen
No Sheen
1/2/18
2/12/18
3/13/18
4/16/18
5/10/18
6/12/18
7/17/18
8/28/18
9/26/18
11/5/18
12/10/18
Date
Sheen Appearance
Tide

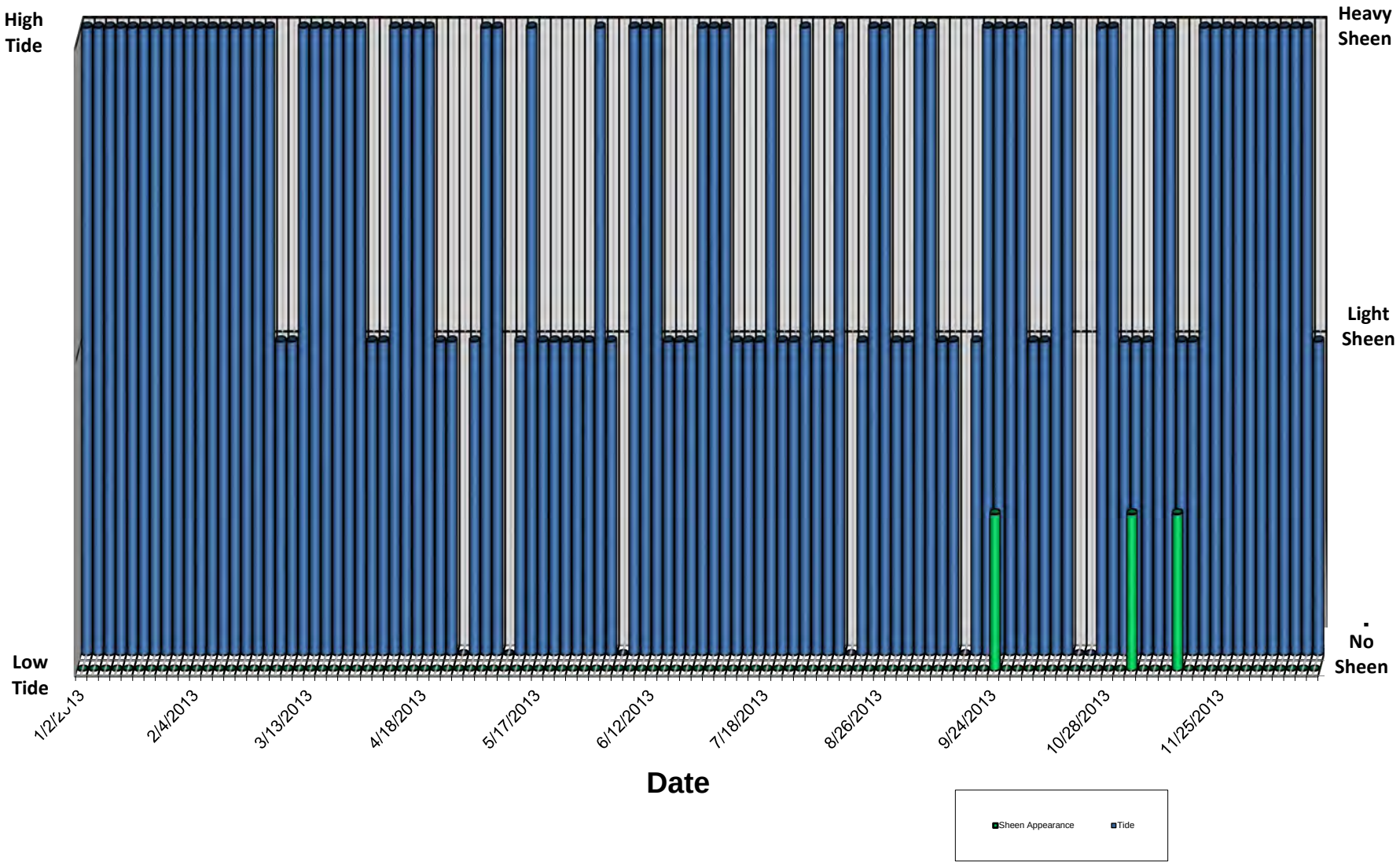

2017 Sheen Observations: Warehouse Area North
High Tide
Medium Tide
Low Tide
Heavy Sheen
Light Sheen
No Sheen
1/2/2017
2/13/2017
3/15/2017
4/24/2017
6/6/2017
7/11/2017
8/5/2017
8/29/2017
10/2/2017
10/19/2017
11/20/2017
Date
Sheen Appearance
Tide


2016 Sheen Observations: Warehouse Area North
High Tide
Medium Tide
Low Tide
Heavy Sheen
Light Sheen
No Sheen
1/4/16
2/10/16
3/15/16
4/12/16
5/9/16
6/8/16
7/21/16
8/25/16
9/28/16
10/27/16
11/22/16
Date
Sheen Appearance
Tide

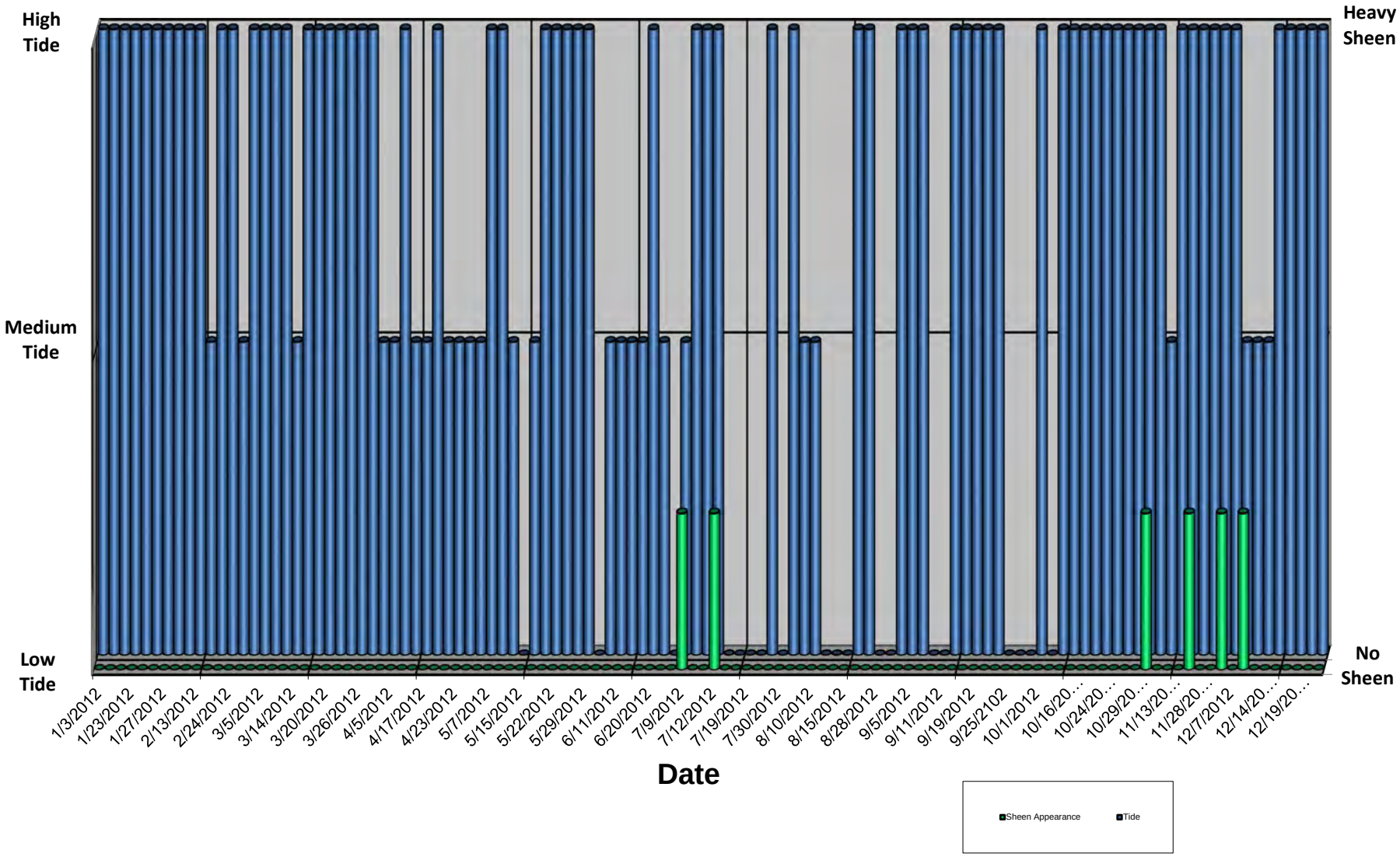

2015 Sheen Observations: Warehouse
High Tide
Medium Tide
Low Tide
Heavy Sheen
Light Sheen
No Sheen
1/5/15
2/10/15
3/18/15
4/14/15
5/14/15
6/22/15
7/28/15
9/14/15
10/13/15
11/17/15
12/15/15
Date
Sheen Appearance
Tide


2014 Sheen Observations: Warehouse
High Tide
Medium Tide
Low Tide
Heavy Sheen
Light Sheen
No Sheen
1/3/2014
2/11/2014
3/19/2014
4/16/2014
5/14/2014
6/18/2014
7/28/2014
9/8/2014
10/15/2014
11/24/2014
12/17/2014
Date
Sheen Appearance
Tide

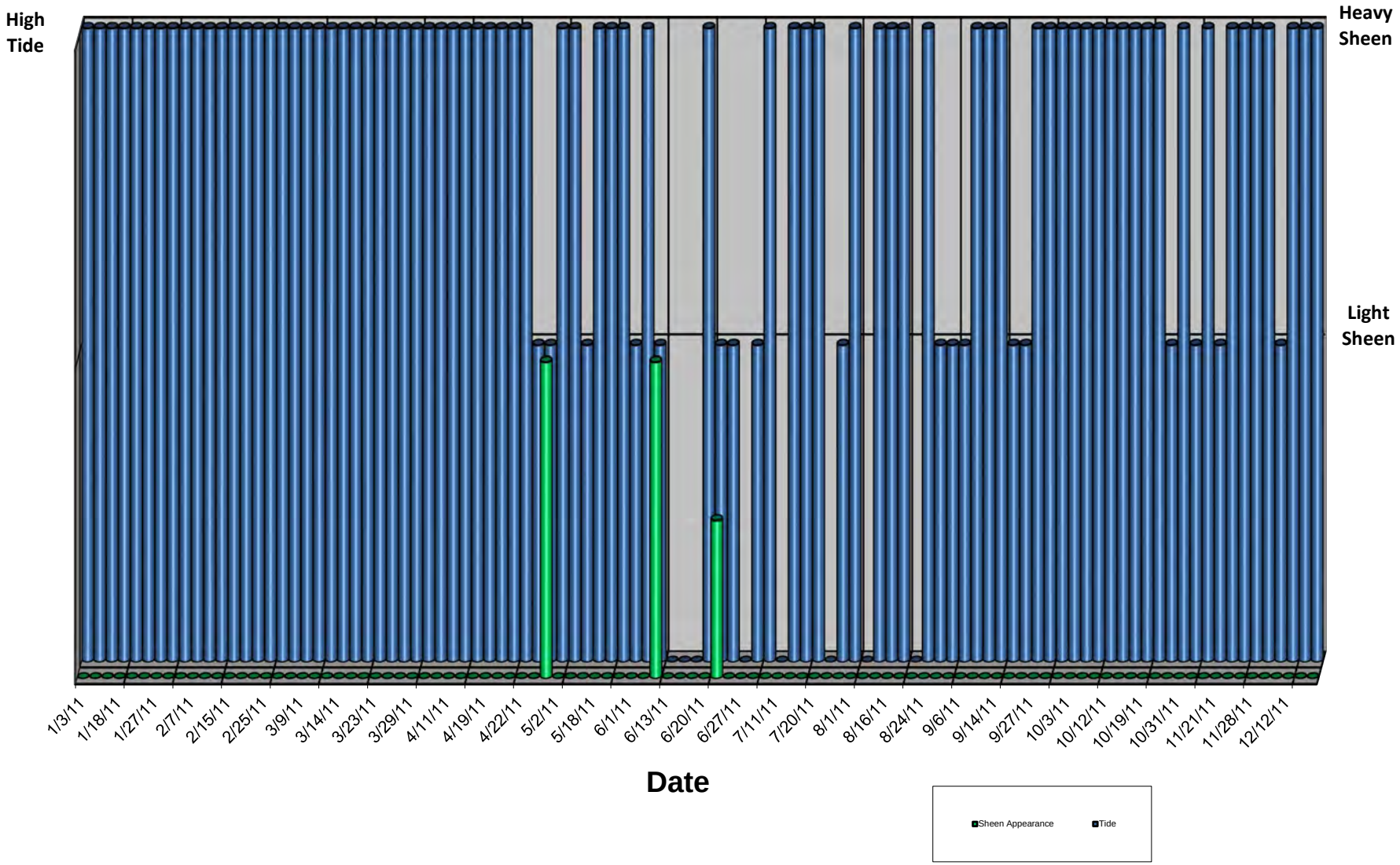
2013 Sheen Observations: Warehouse



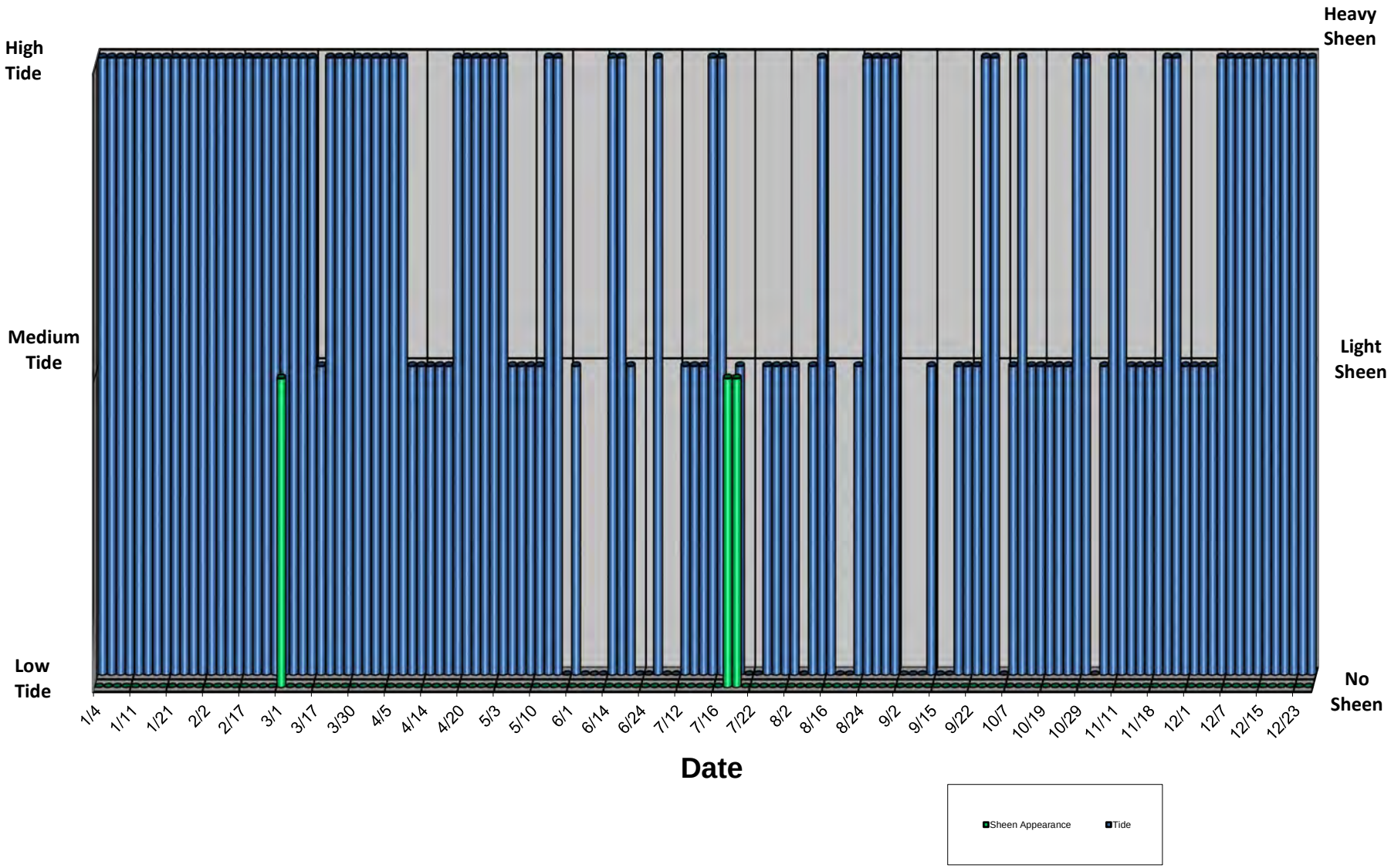
2012 Sheen Observations: Warehouse



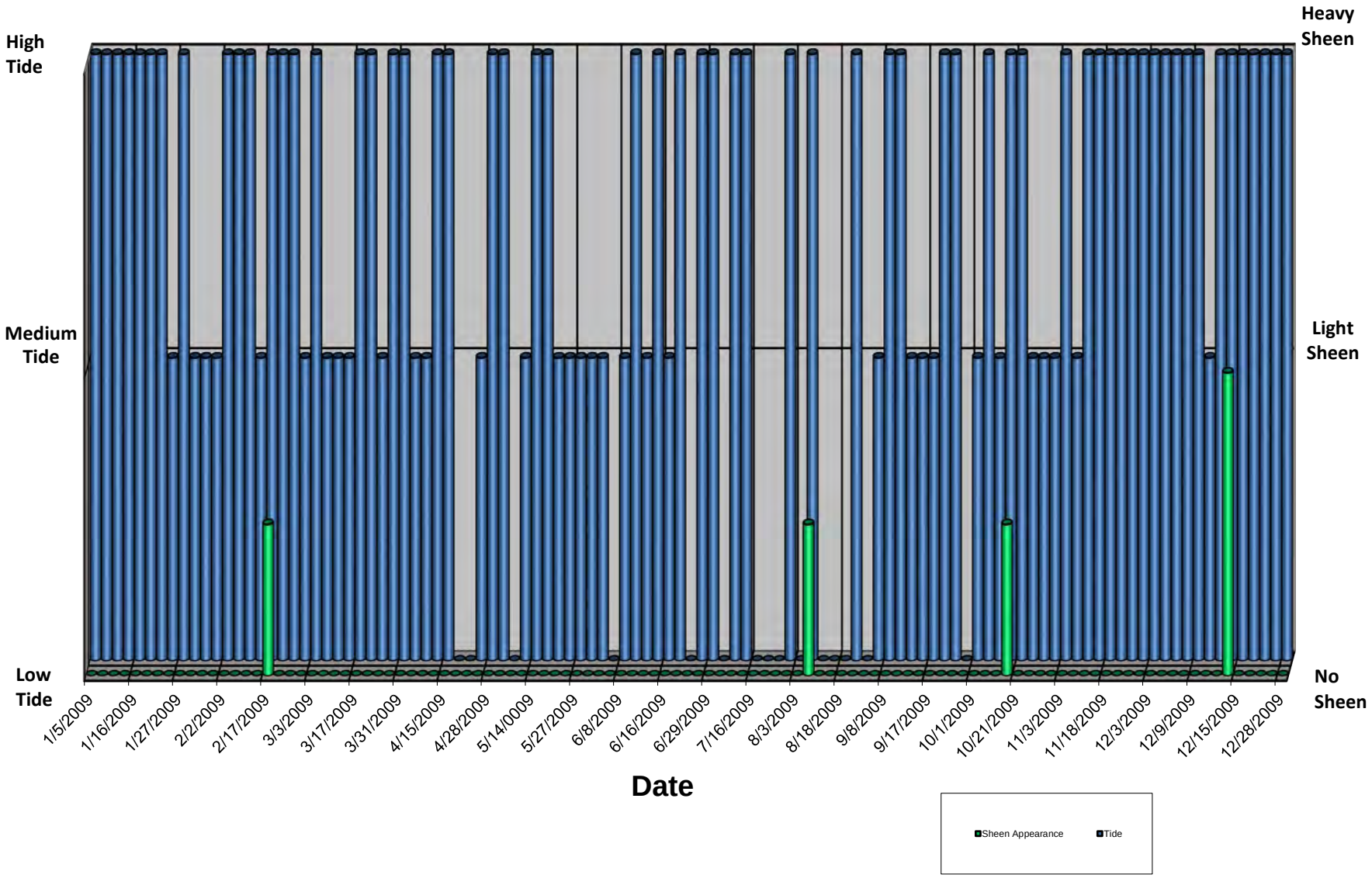
2011 Sheen Observations: Warehouse



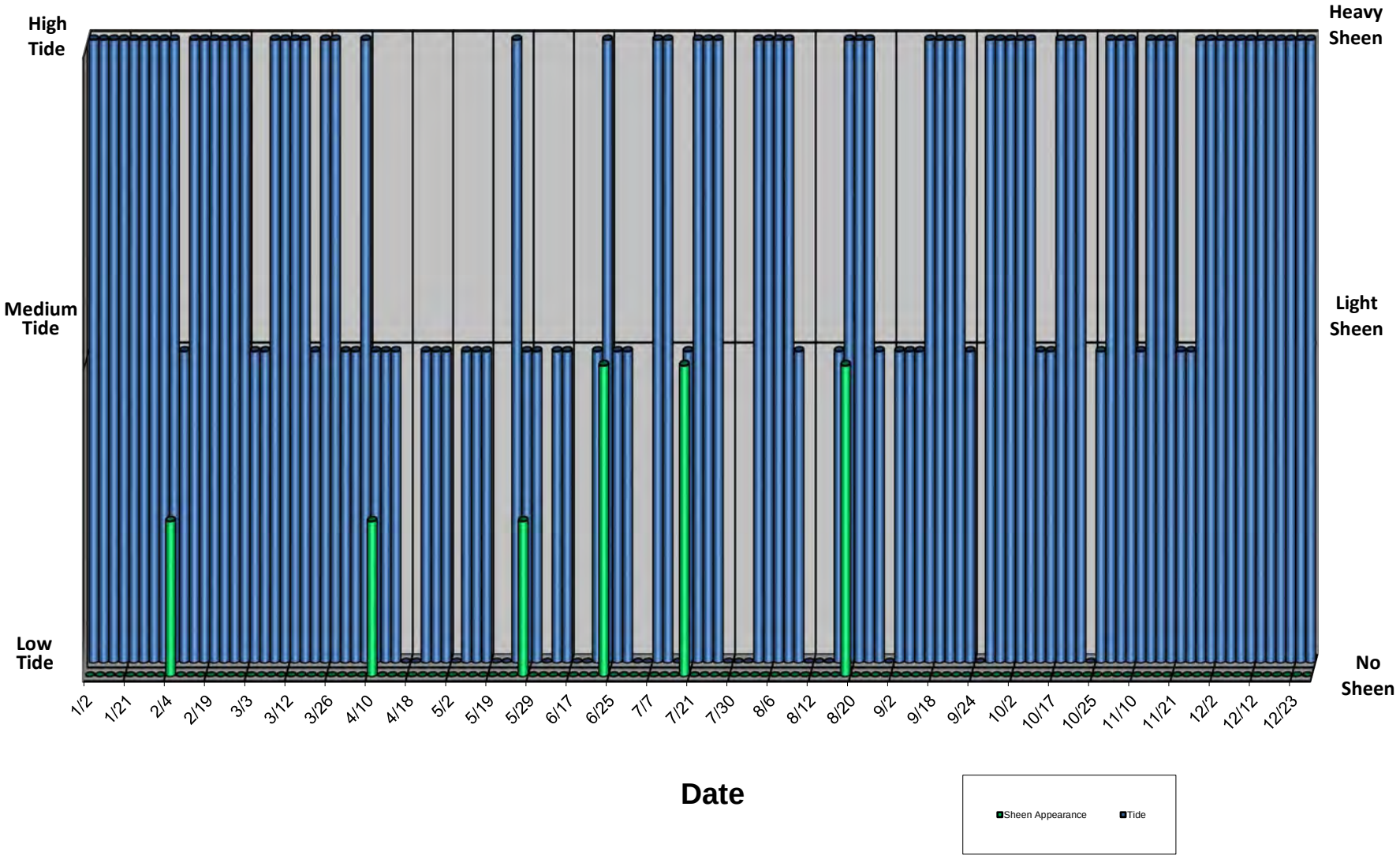
2010 Sheen Observations: Warehouse



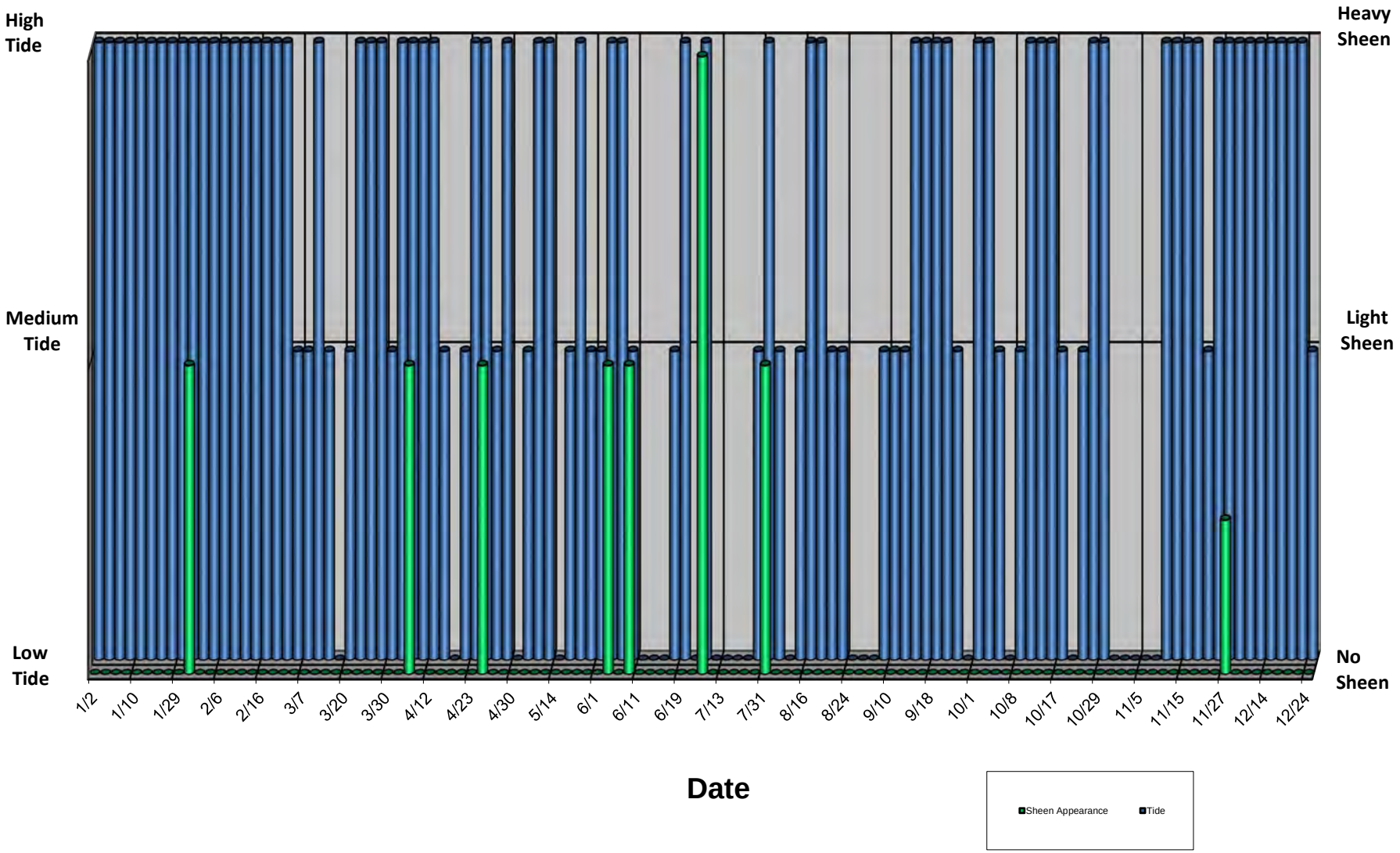
2009 Sheen Observations: Warehouse



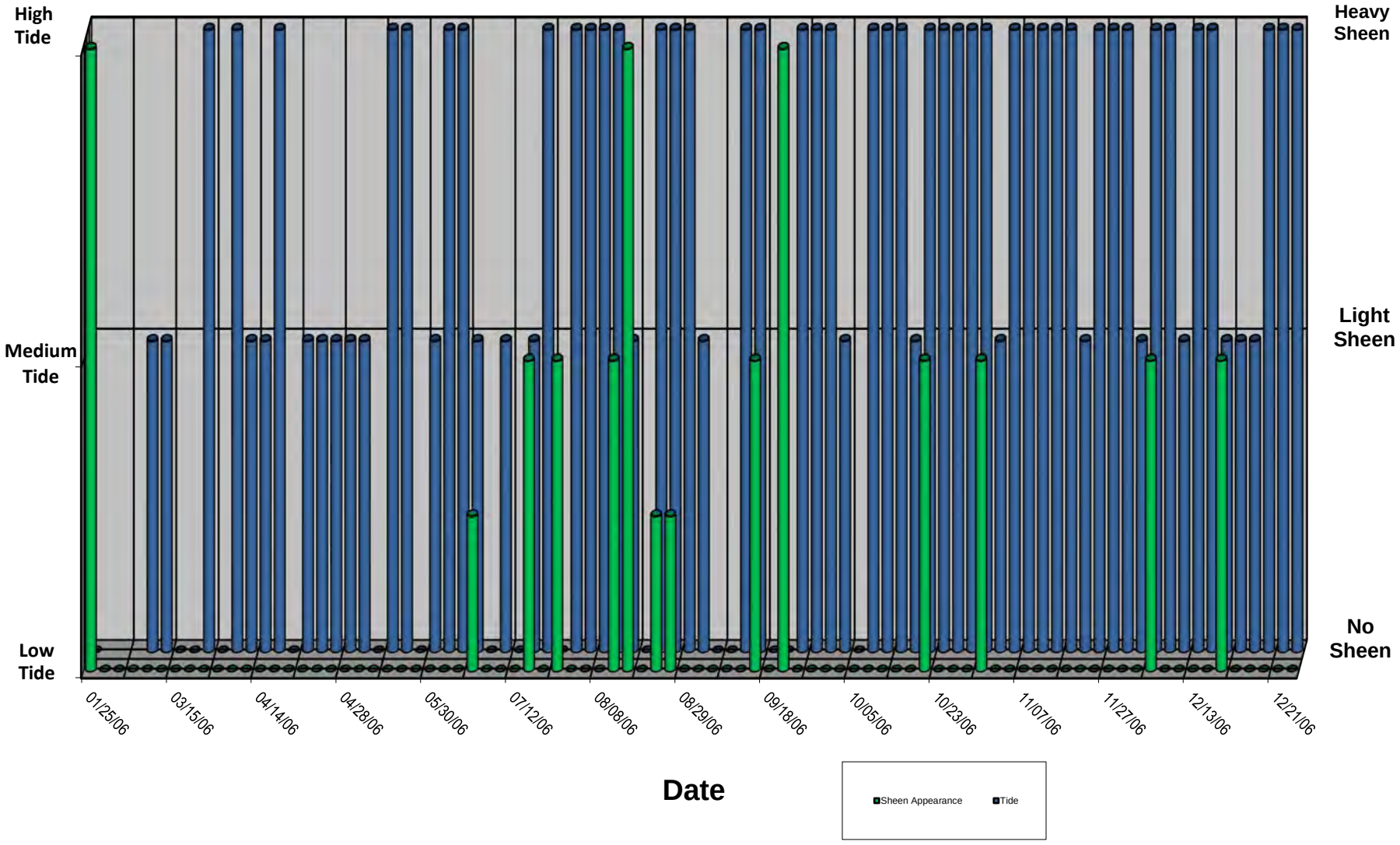
2008 Sheen Observations: Warehouse



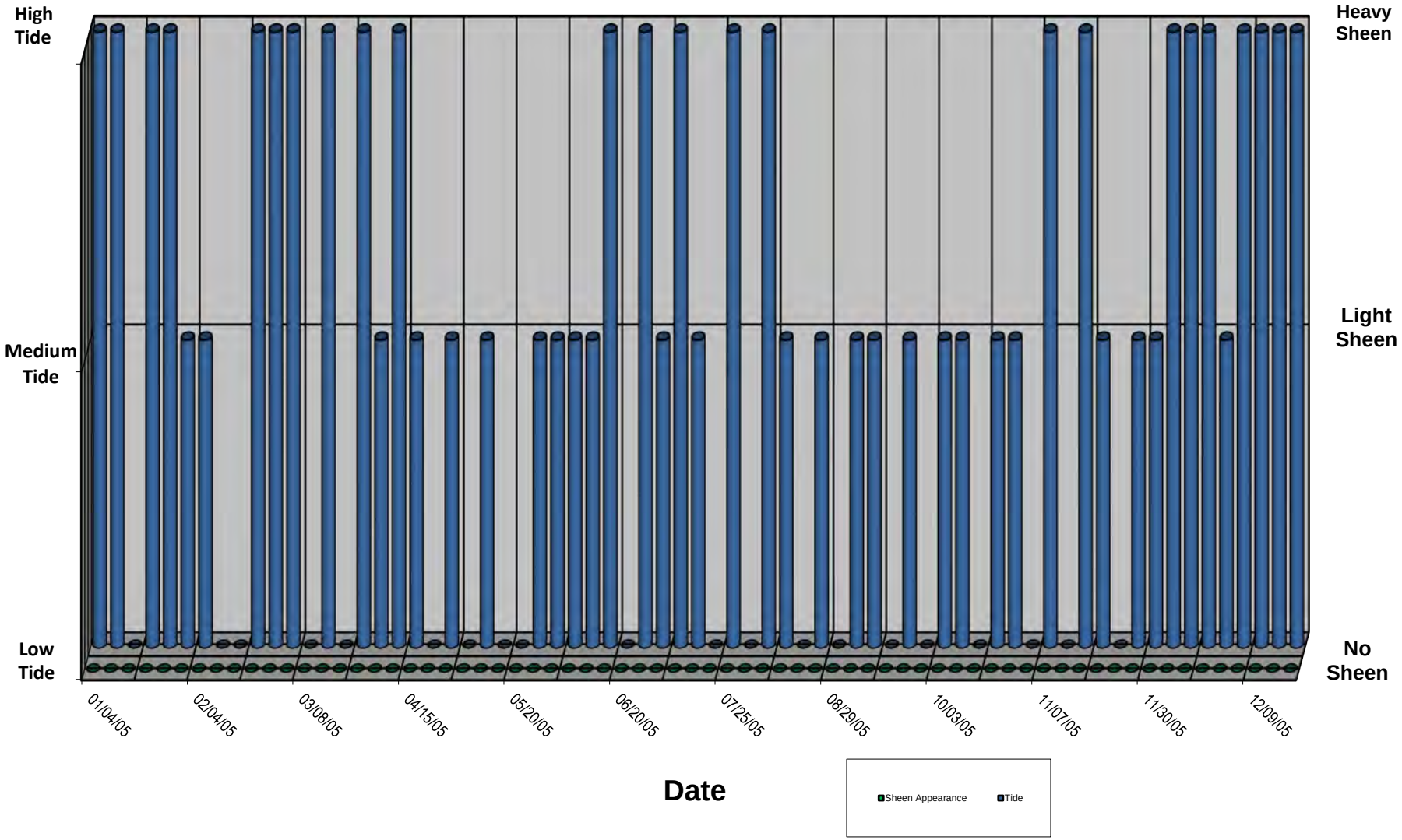
2007 Sheen Observations: Warehouse



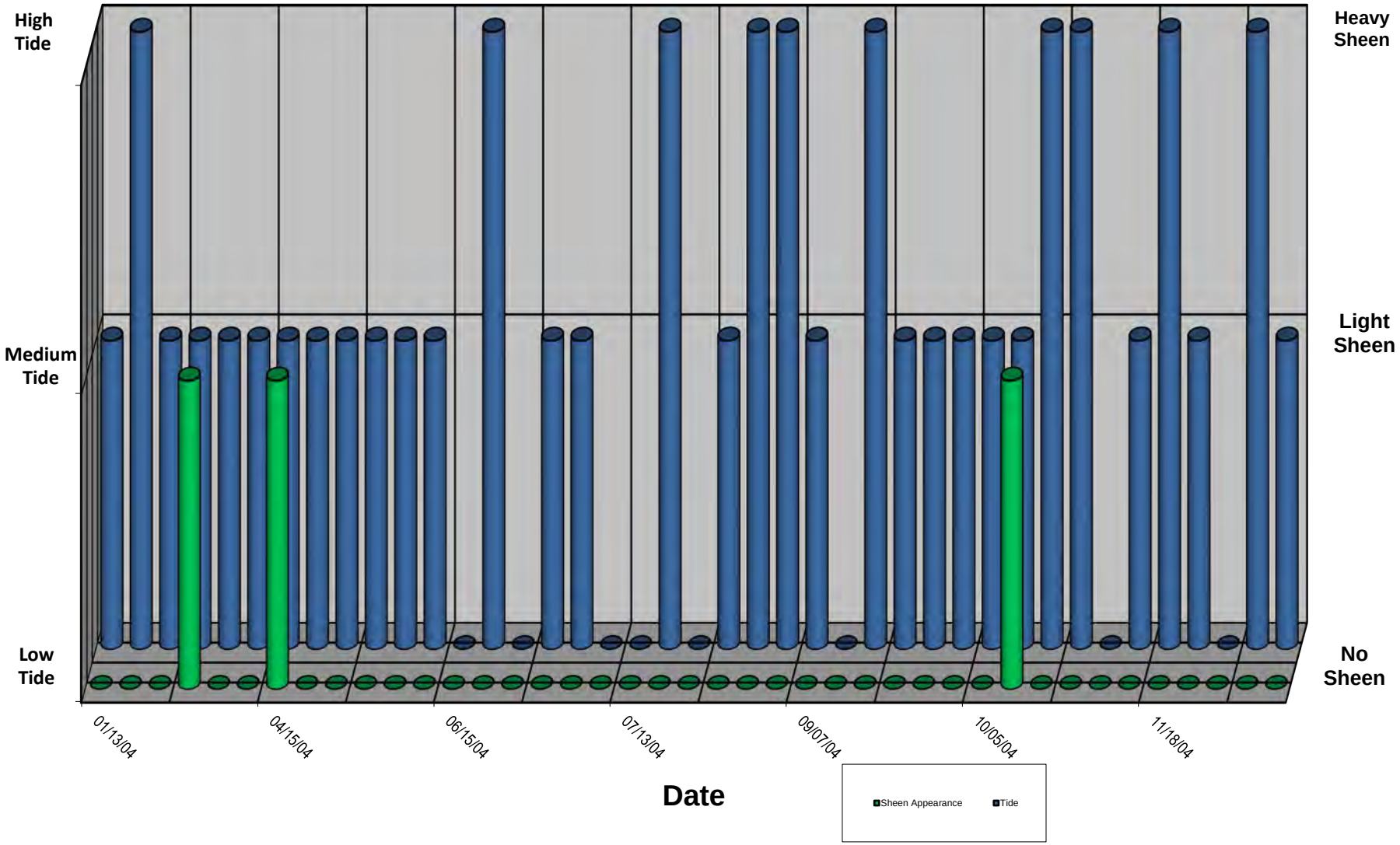
2006 Sheen Observations: Warehouse

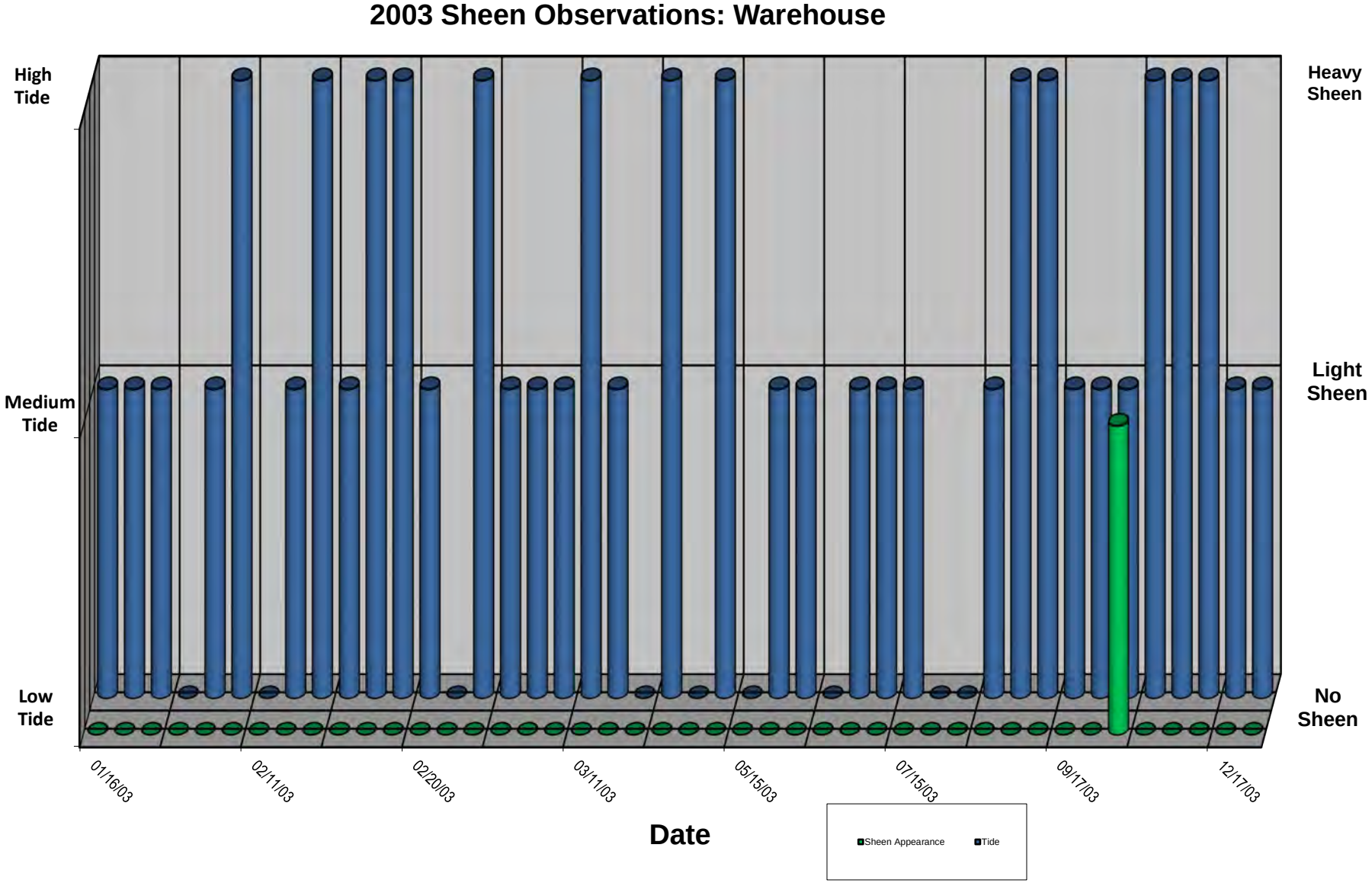


2005 Sheen Observations: Warehouse



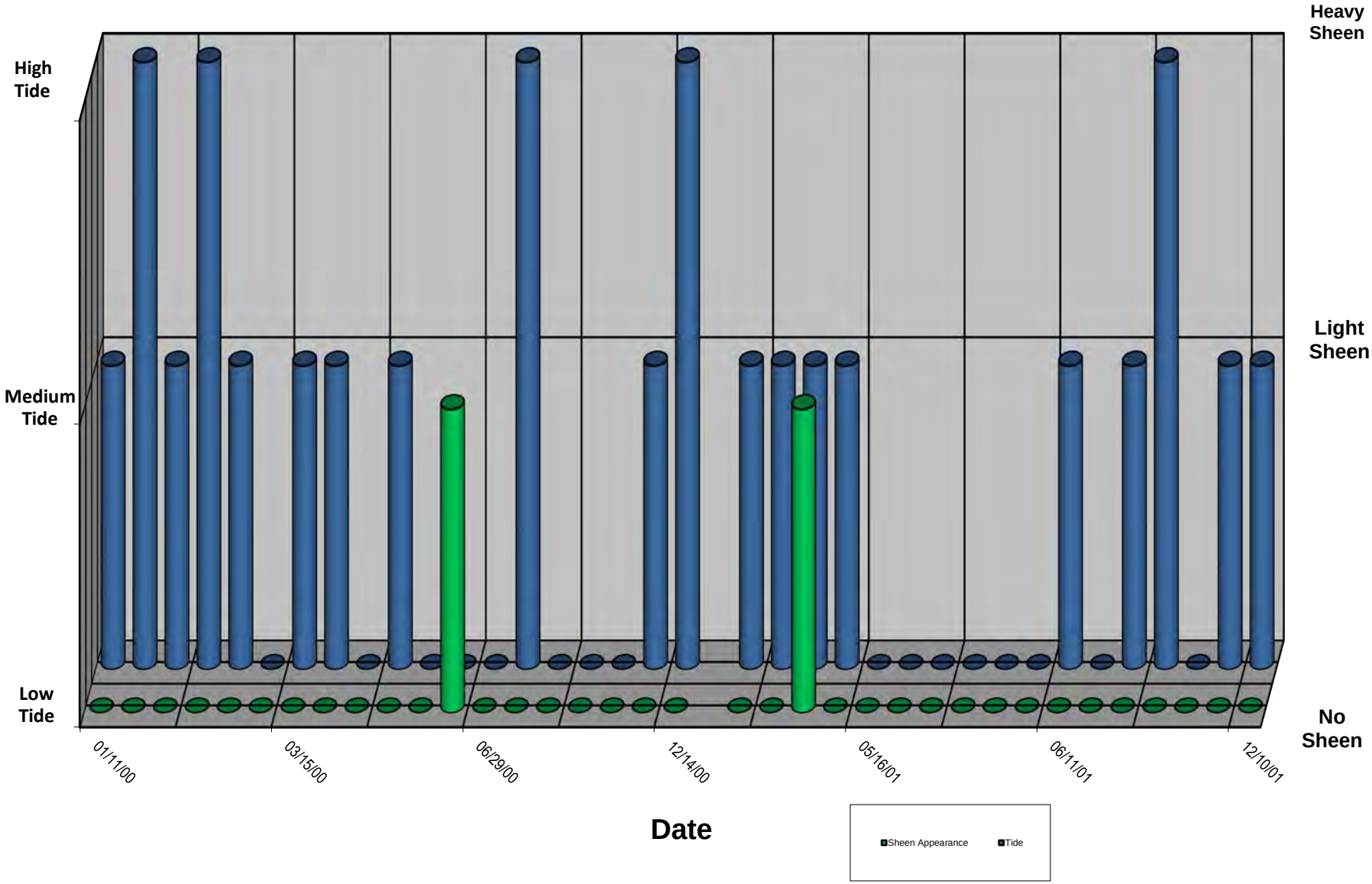
2004 Sheen Observations: Warehouse



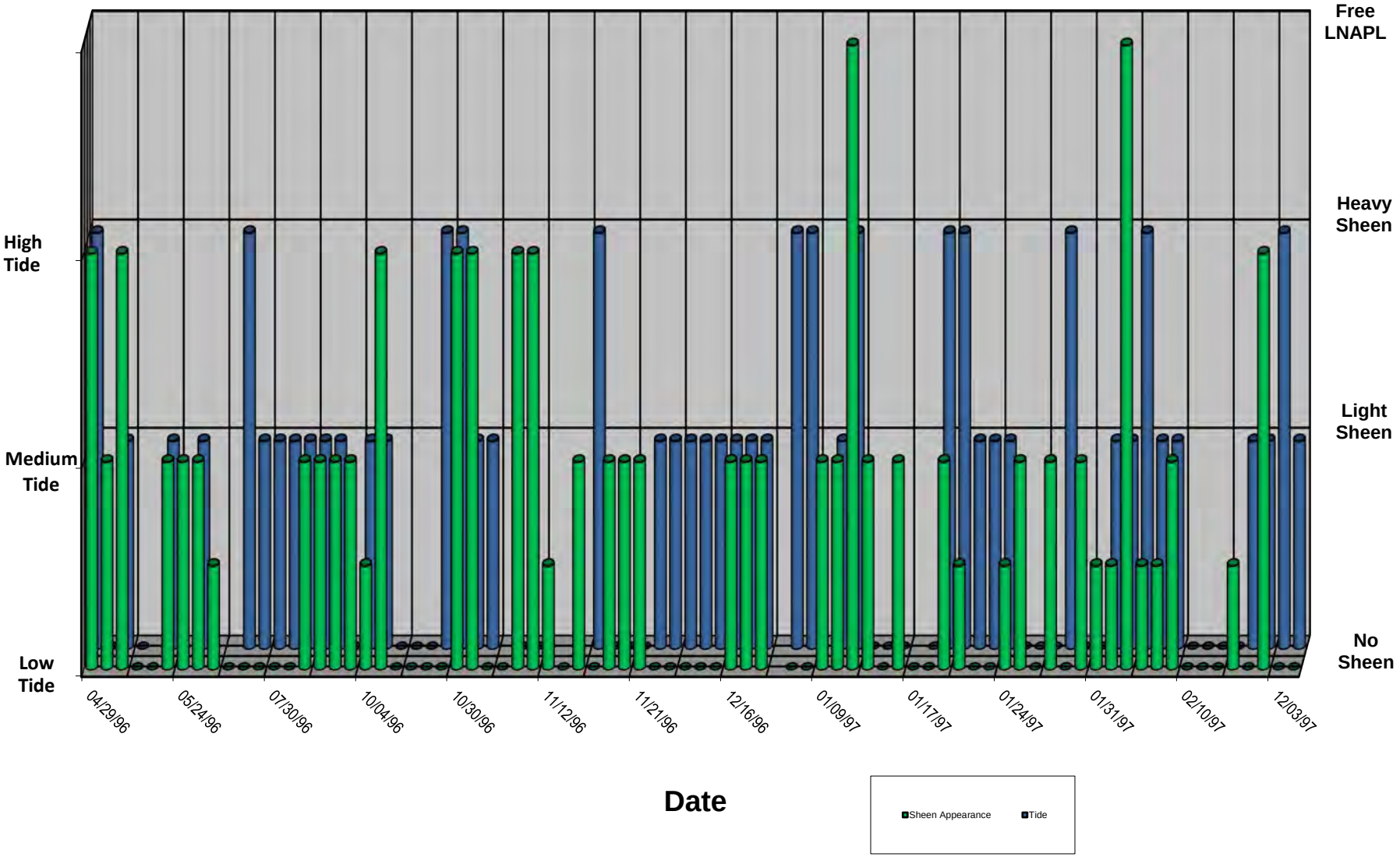

2003 Sheen Observations: Warehouse
High Tide
Medium Tide
Low Tide
Heavy Sheen
Light Sheen
No Sheen
01/16/03
02/11/03
02/20/03
03/11/03
05/15/03
07/15/03
09/17/03
12/17/03
Date
Sheen Appearance
Tide


2002 Sheen Observations: Warehouse
High Tide
Medium Tide
Low Tide
Heavy Sheen
Light Sheen
No Sheen
01/04/02
02/04/02
03/27/02
06/18/02
09/20/02
Date
Sheen Appearance
Tide

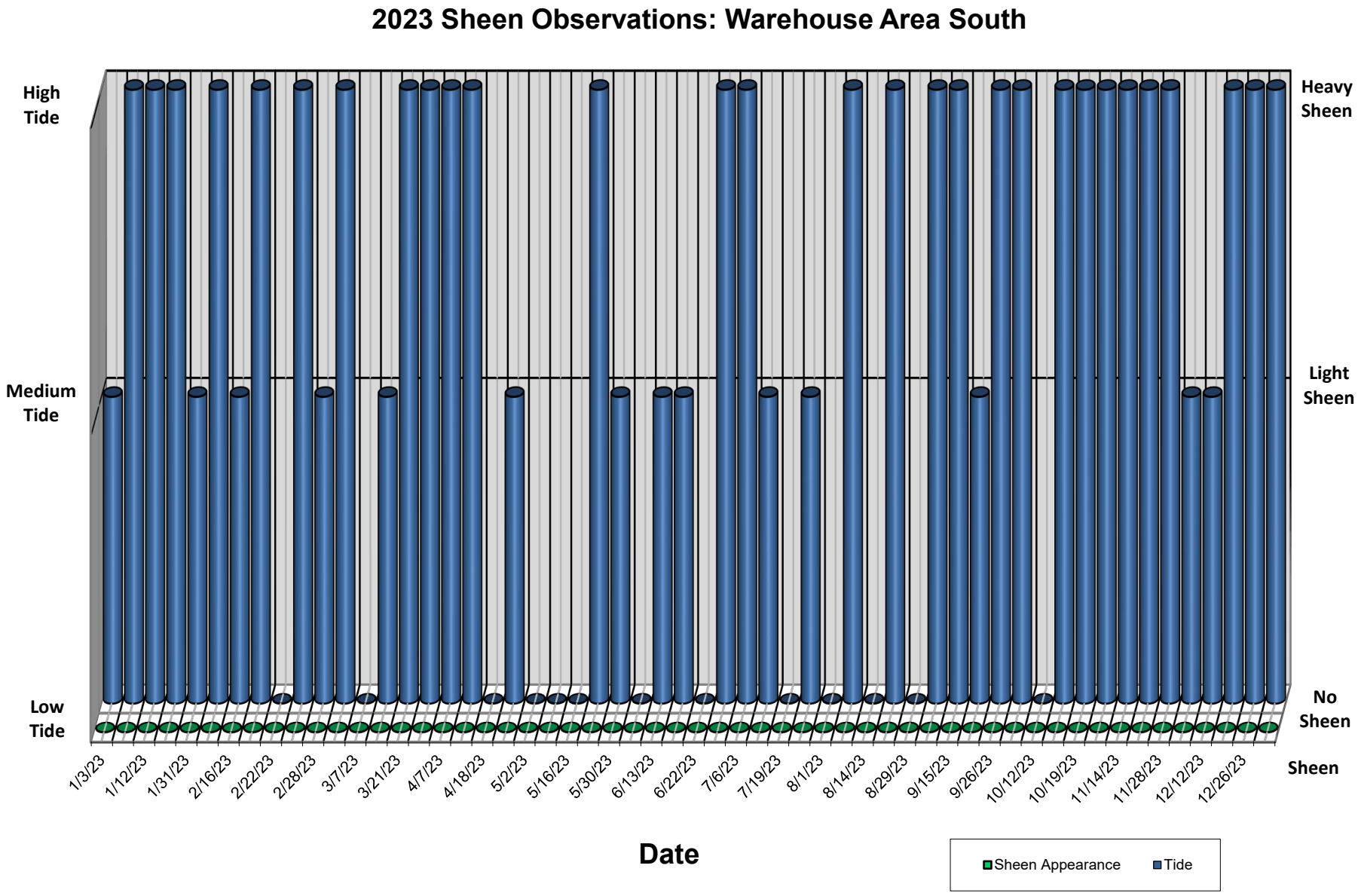
2000-2001 Sheen Observations: Warehouse



1996-1997 Sheen Observations: Warehouse

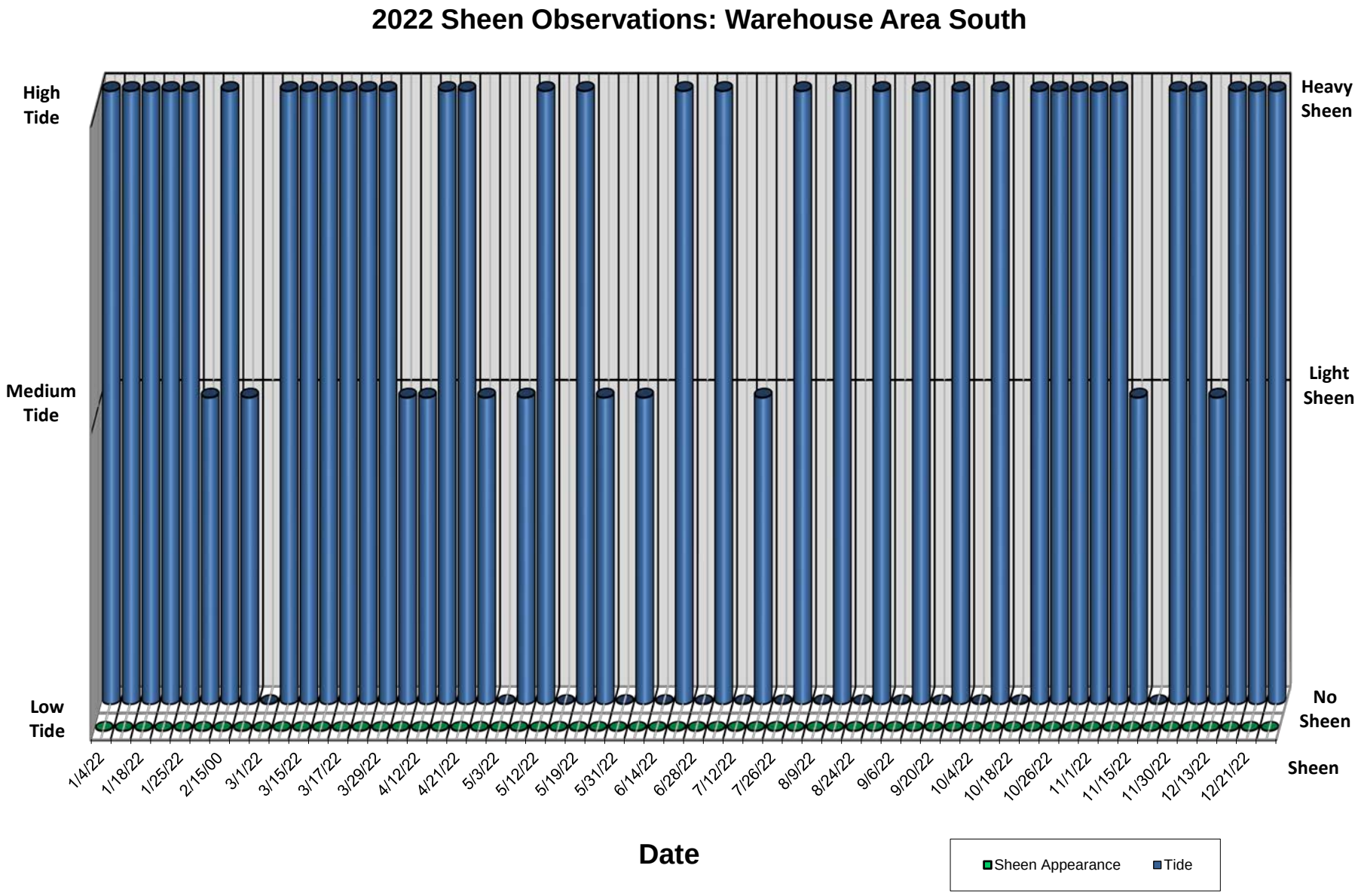


Sheen Observations - Southern Warehouse Area
SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)



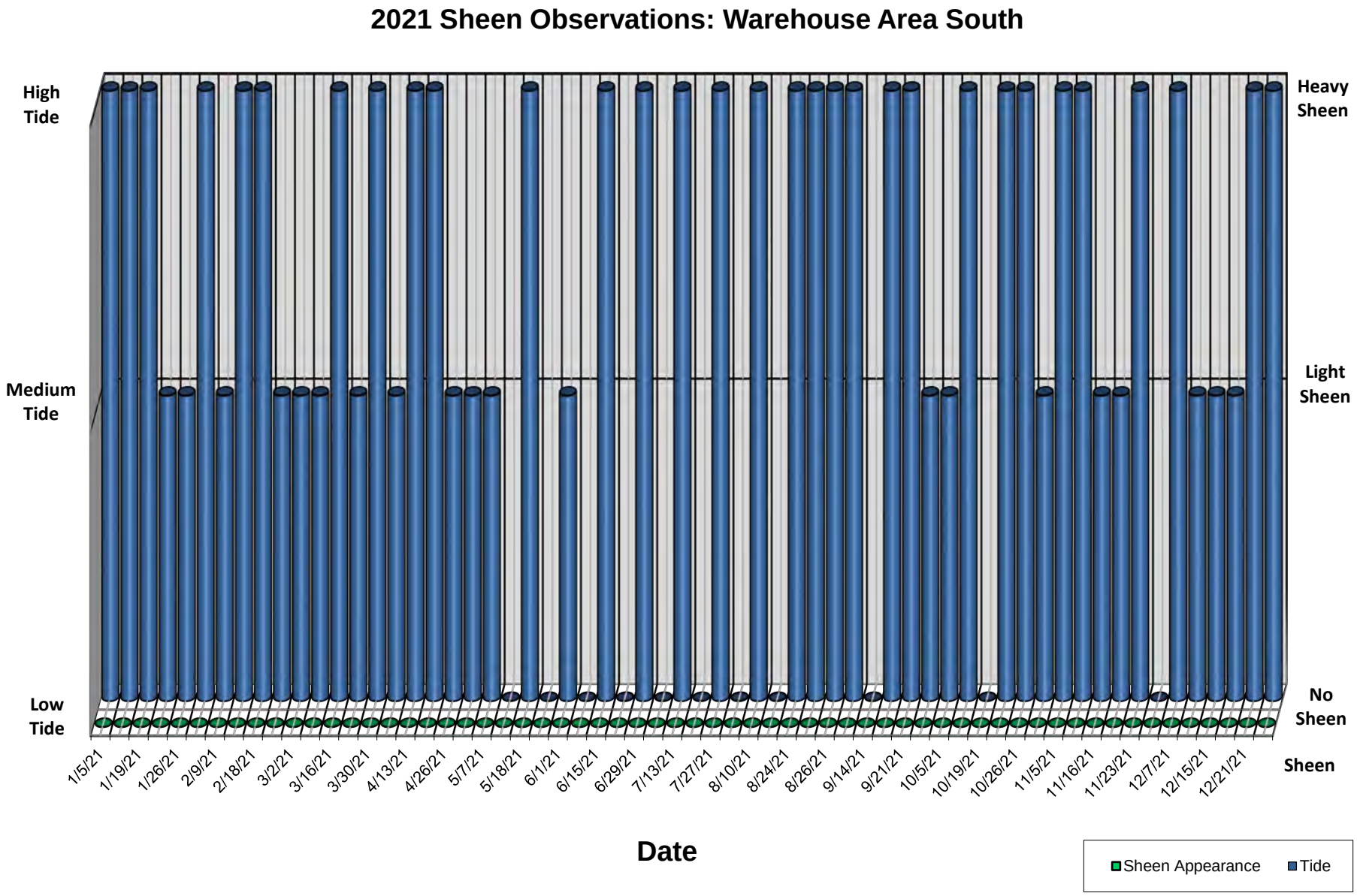
Southern Warehouse Boom removed in April 2022 with concurrence from Ecology due to persistent lack of sheens.

Sheen Observations - Southern Warehouse Boom
Seaport Midstream Partners LLC Seattle Terminal

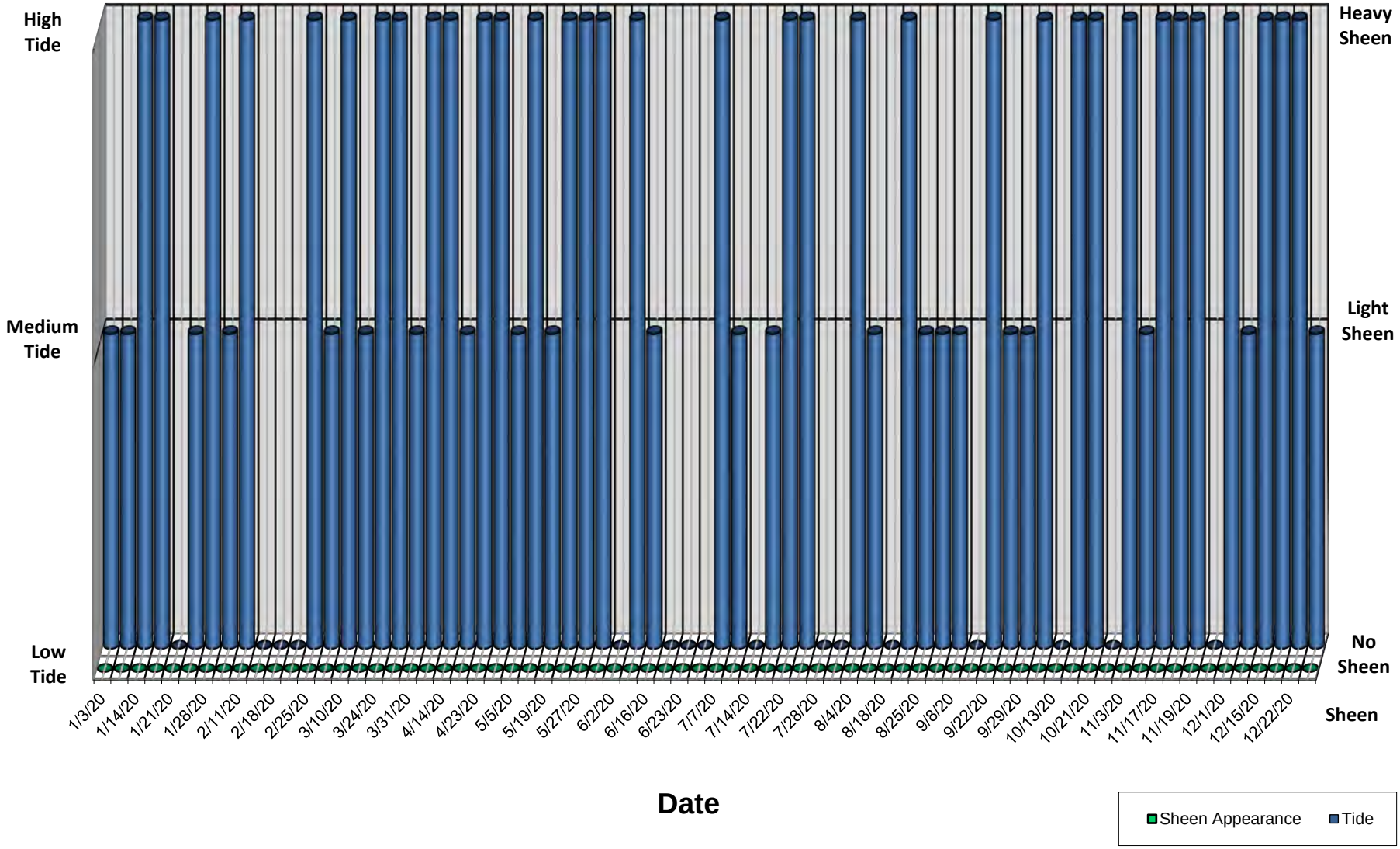


Southern Warehouse Boom removed in April 2022 with concurrence from Ecology due to persistent lack of sheens.

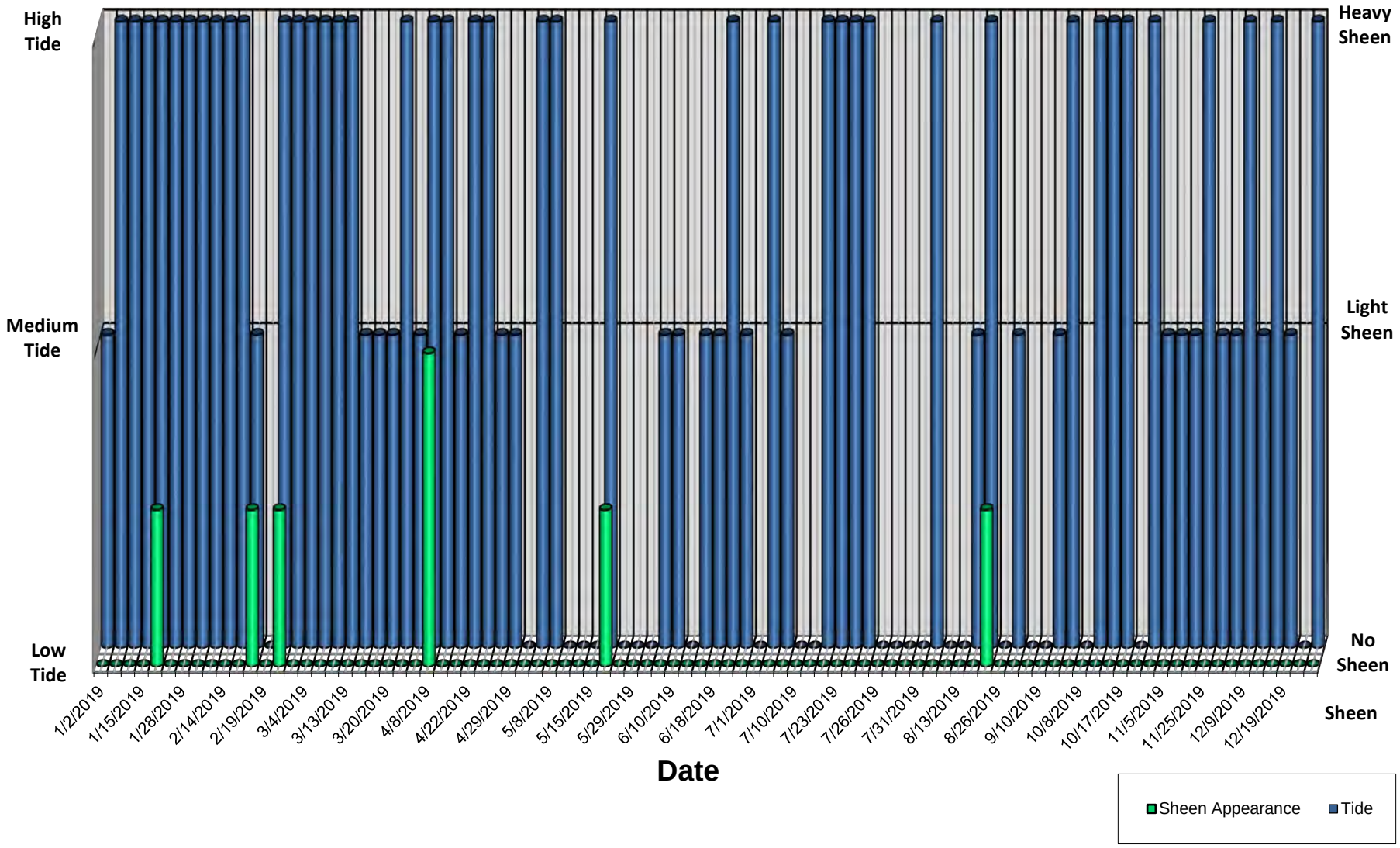
Sheen Observations - Southern Warehouse Boom
Seaport Midstream Partners LLC Seattle Terminal

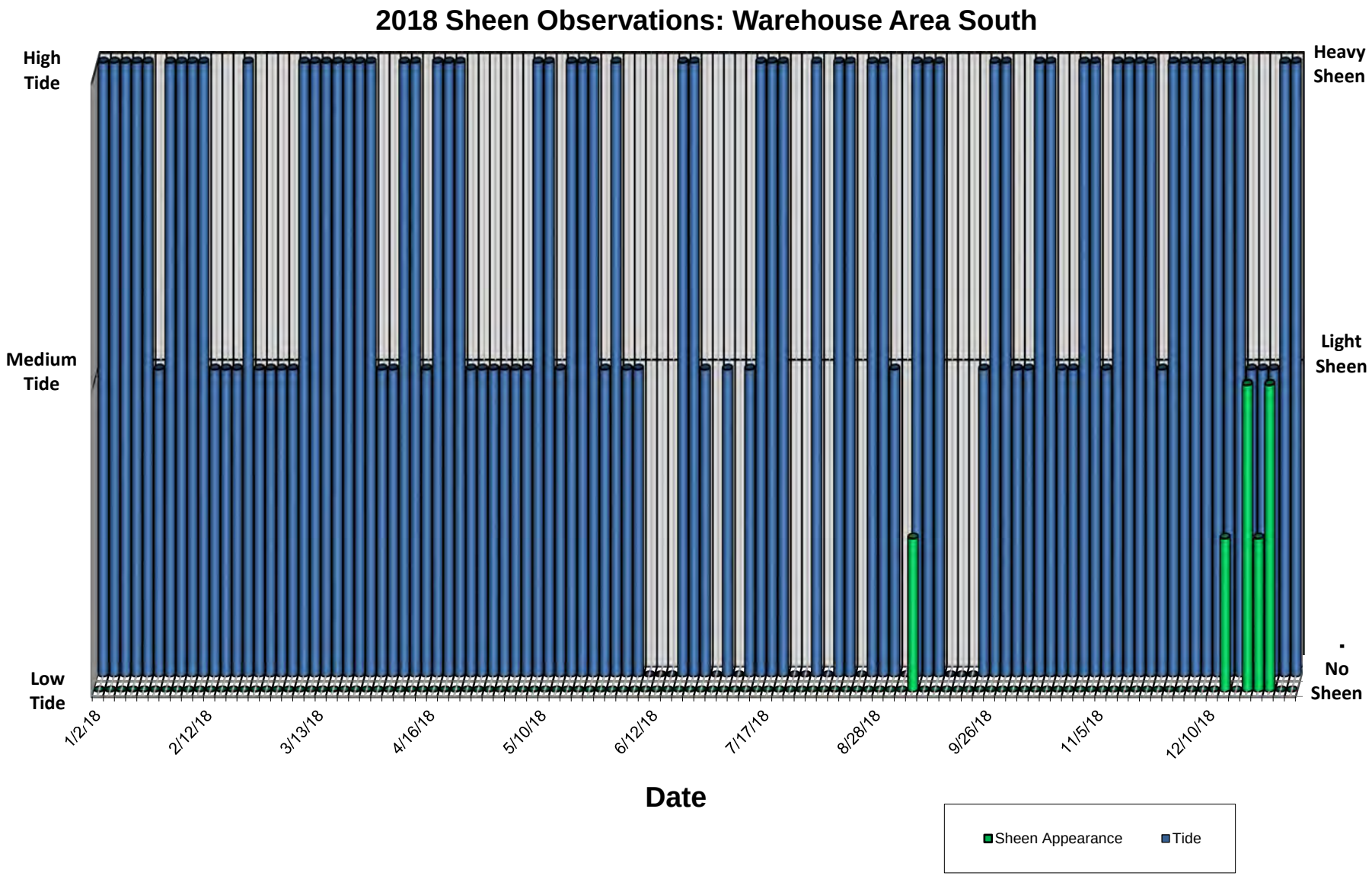


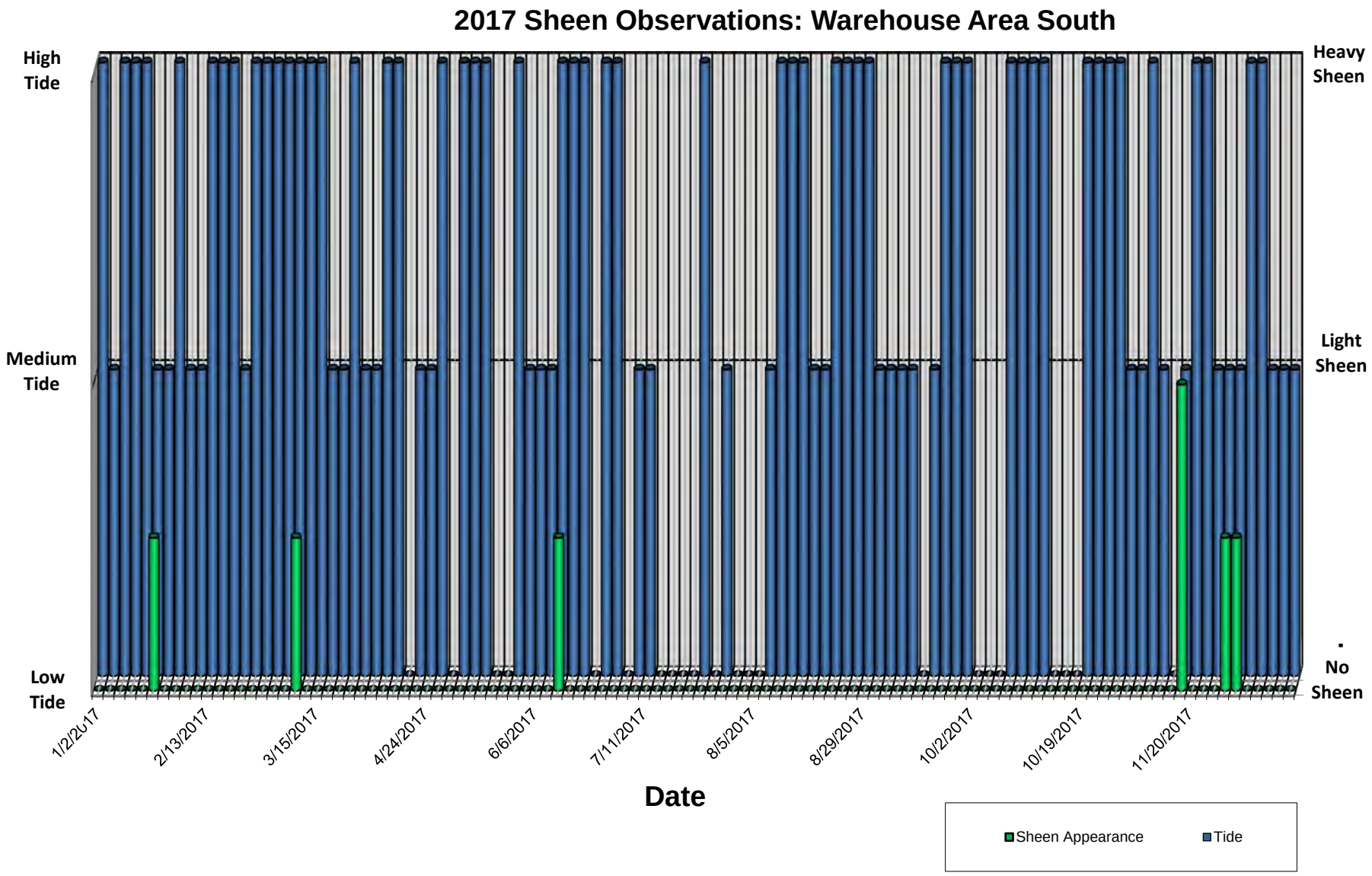
2020 Sheen Observations: Warehouse Area South

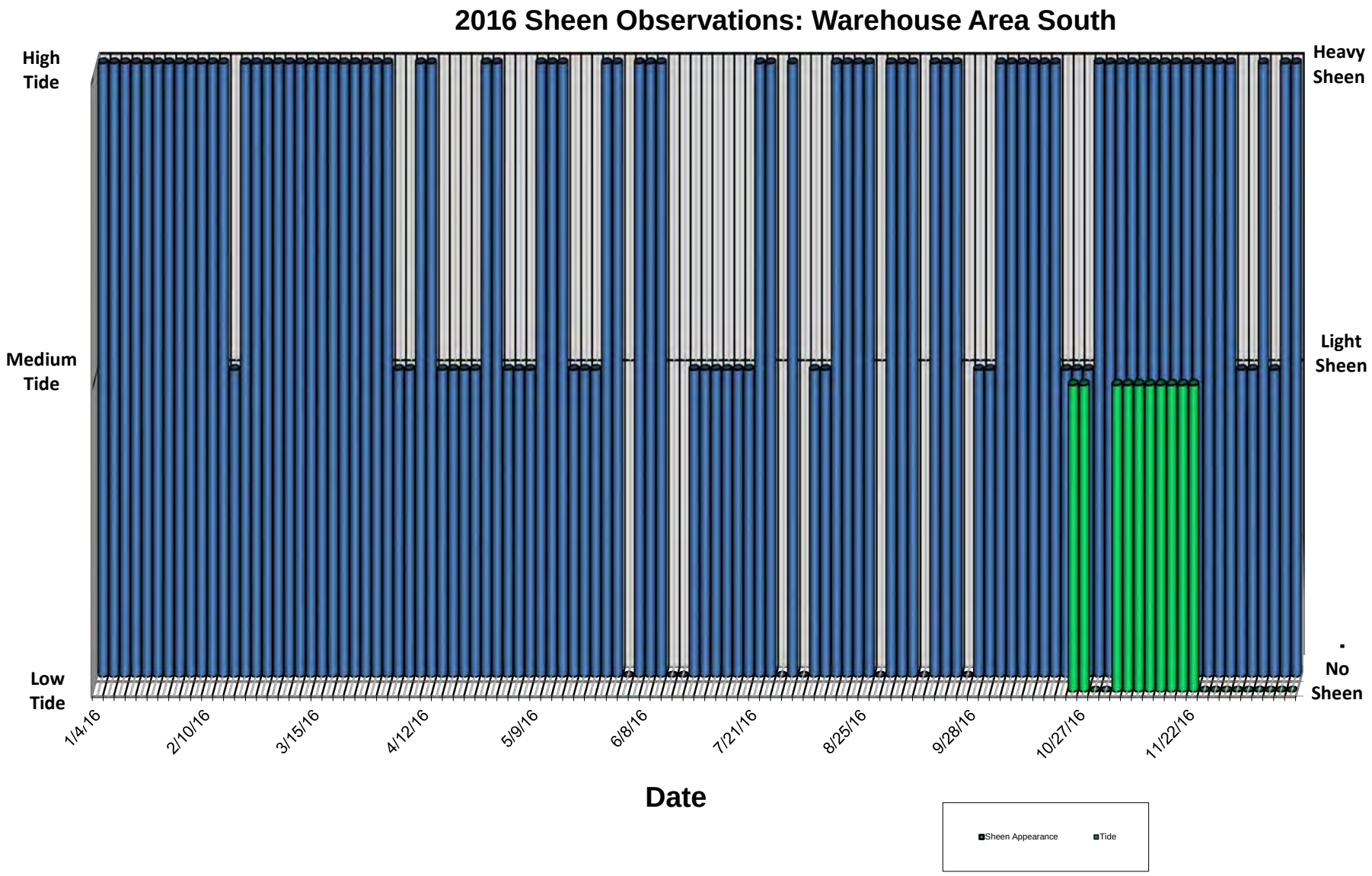


2019 Sheen Observations: Warehouse Area South



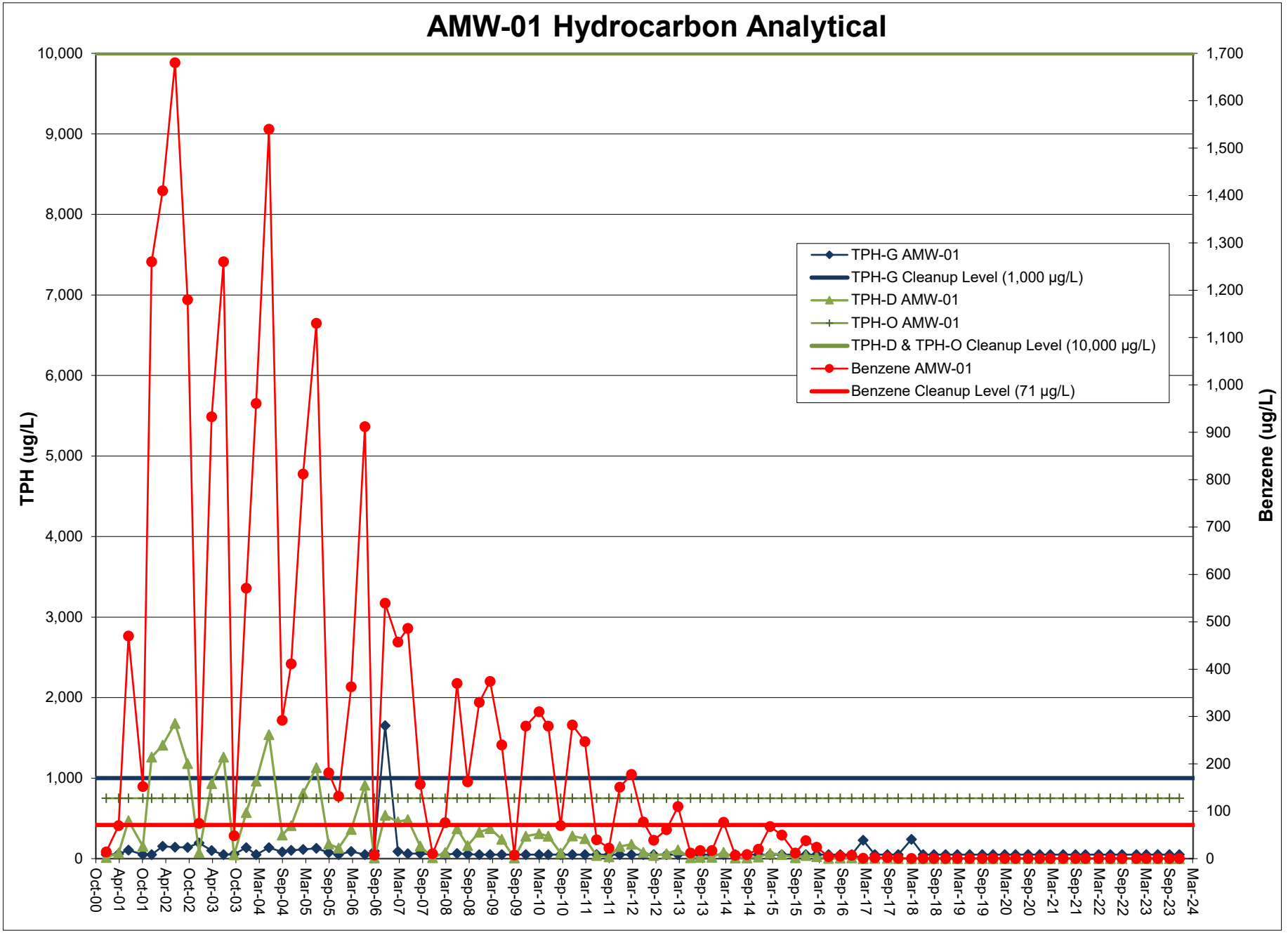

2018 Sheen Observations: Warehouse Area South
High Tide
Medium Tide
Low Tide
Heavy Sheen
Light Sheen
No Sheen
1/2/18
2/12/18
3/13/18
4/16/18
5/10/18
6/12/18
7/17/18
8/28/18
9/26/18
11/5/18
12/10/18
Date
Sheen Appearance
Tide


2017 Sheen Observations: Warehouse Area South
High Tide
Medium Tide
Low Tide
Heavy Sheen
Light Sheen
No Sheen
1/2/2017
2/13/2017
3/15/2017
4/24/2017
6/6/2017
7/11/2017
8/5/2017
8/29/2017
10/2/2017
10/19/2017
11/20/2017
Date
Sheen Appearance
Tide


2016 Sheen Observations: Warehouse Area South
High Tide
Medium Tide
Low Tide
Heavy Sheen
Light Sheen
No Sheen
1/4/16
2/10/16
3/15/16
4/12/16
5/9/16
6/8/16
7/21/16
8/25/16
9/28/16
10/27/16
11/22/16
Date
Sheen Appearance
Tide

Appendix C

Groundwater Monitoring Wells Hydrocarbon Analytical Graphs


AMW-01 Hydrocarbon Analytical
TPH (ug/L)
Benzene (ug/L)
TPH-G AMW-01
TPH-G Cleanup Level (1,000 µg/L)
TPH-D AMW-01
TPH-O AMW-01
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene AMW-01
Benzene Cleanup Level (71 µg/L)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
Oct-00
Apr-01
Oct-01
Apr-02
Oct-02
Apr-03
Oct-03
Mar-04
Sep-04
Mar-05
Sep-05
Mar-06
Sep-06
Mar-07
Sep-07
Mar-08
Sep-08
Mar-09
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Mar-10
Sep-10
Mar-11
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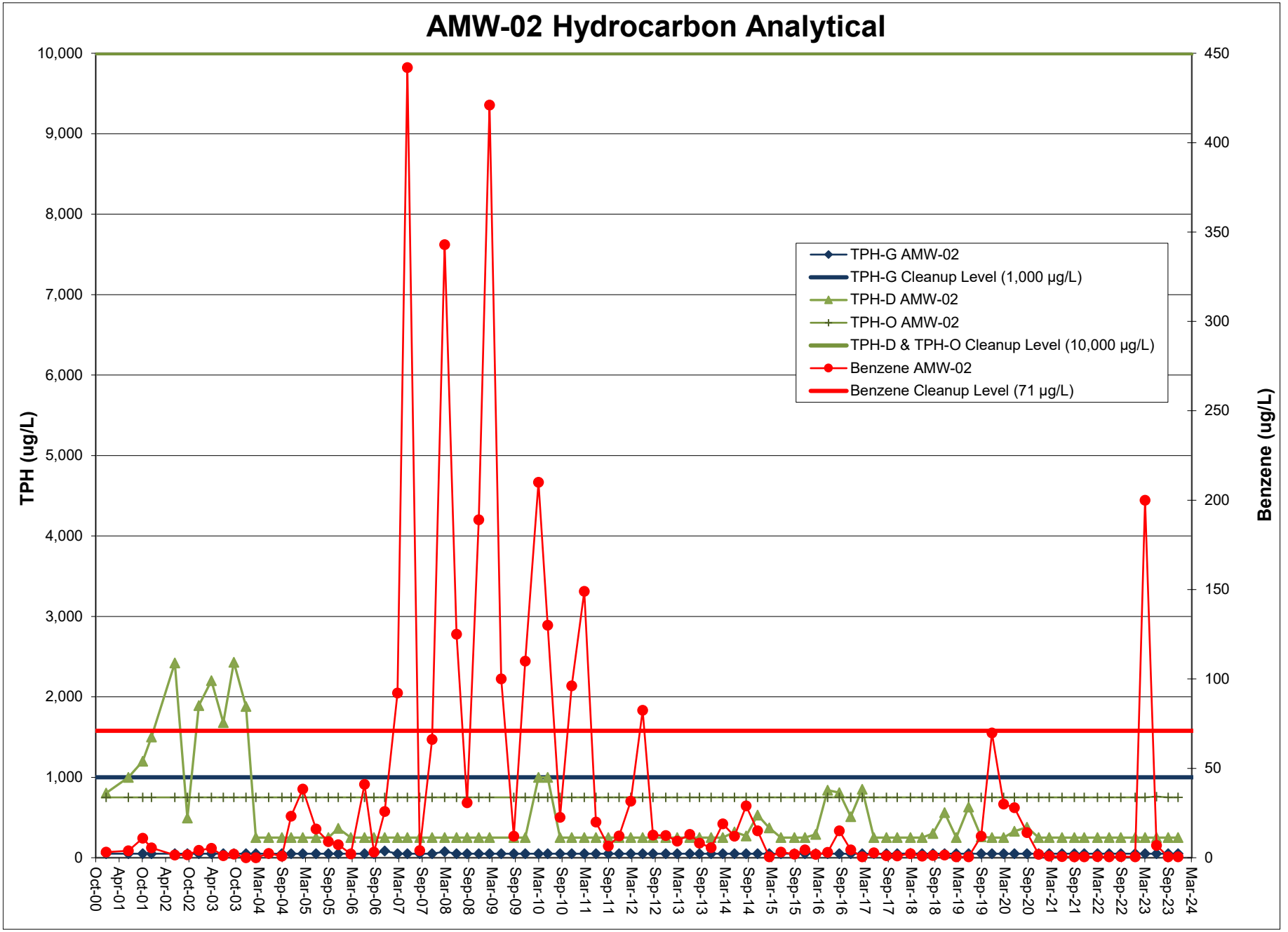
Mar-23
Sep-23
Mar-24


AMW-02 Hydrocarbon Analytical
TPH (ug/L)
Benzene (ug/L)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450
400
350
300
250
200
150
100
50
0
TPH-G AMW-02
TPH-G Cleanup Level (1,000 µg/L)
TPH-D AMW-02
TPH-O AMW-02
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene AMW-02
Benzene Cleanup Level (71 µg/L)
Oct-00
Apr-01
Oct-01
Apr-02
Oct-02
Apr-03
Oct-03
Mar-04
Sep-04
Mar-05
Sep-05
Mar-06
Sep-06
Mar-07
Sep-07
Mar-08
Sep-08
Mar-09
Sep-09
Mar-10
Sep-10
Mar-11
Sep-11
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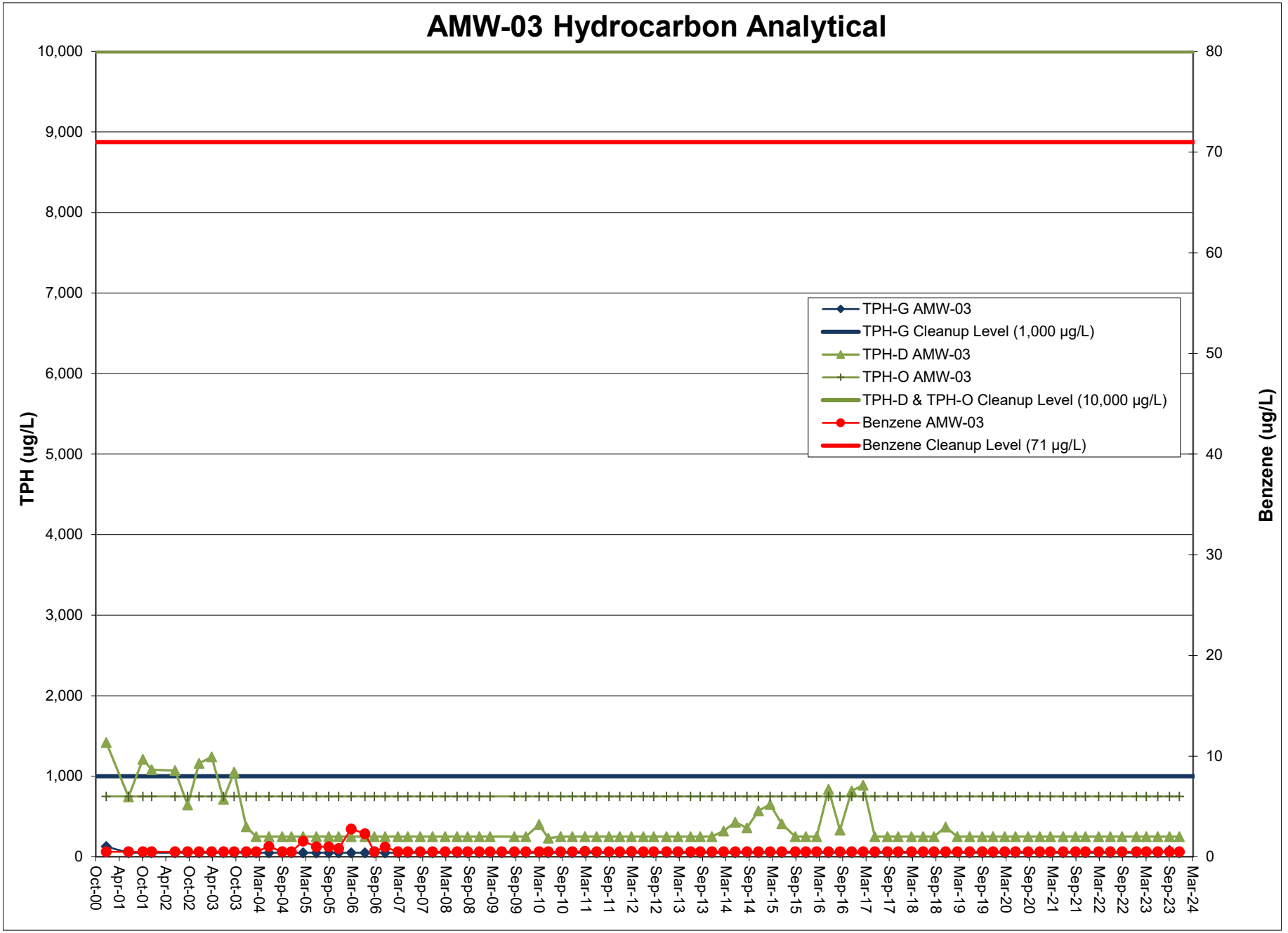
Sep-23
Mar-24


AMW-03 Hydrocarbon Analytical
TPH (ug/L)
Benzene (ug/L)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
80
70
60
50
40
30
20
10
0
TPH-G AMW-03
TPH-G Cleanup Level (1,000 µg/L)
TPH-D AMW-03
TPH-O AMW-03
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene AMW-03
Benzene Cleanup Level (71 µg/L)
Oct-00
Apr-01
Oct-01
Apr-02
Oct-02
Apr-03
Oct-03
Mar-04
Sep-04
Mar-05
Sep-05
Mar-06
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Sep-09
Mar-10
Sep-10
Mar-11
Sep-11
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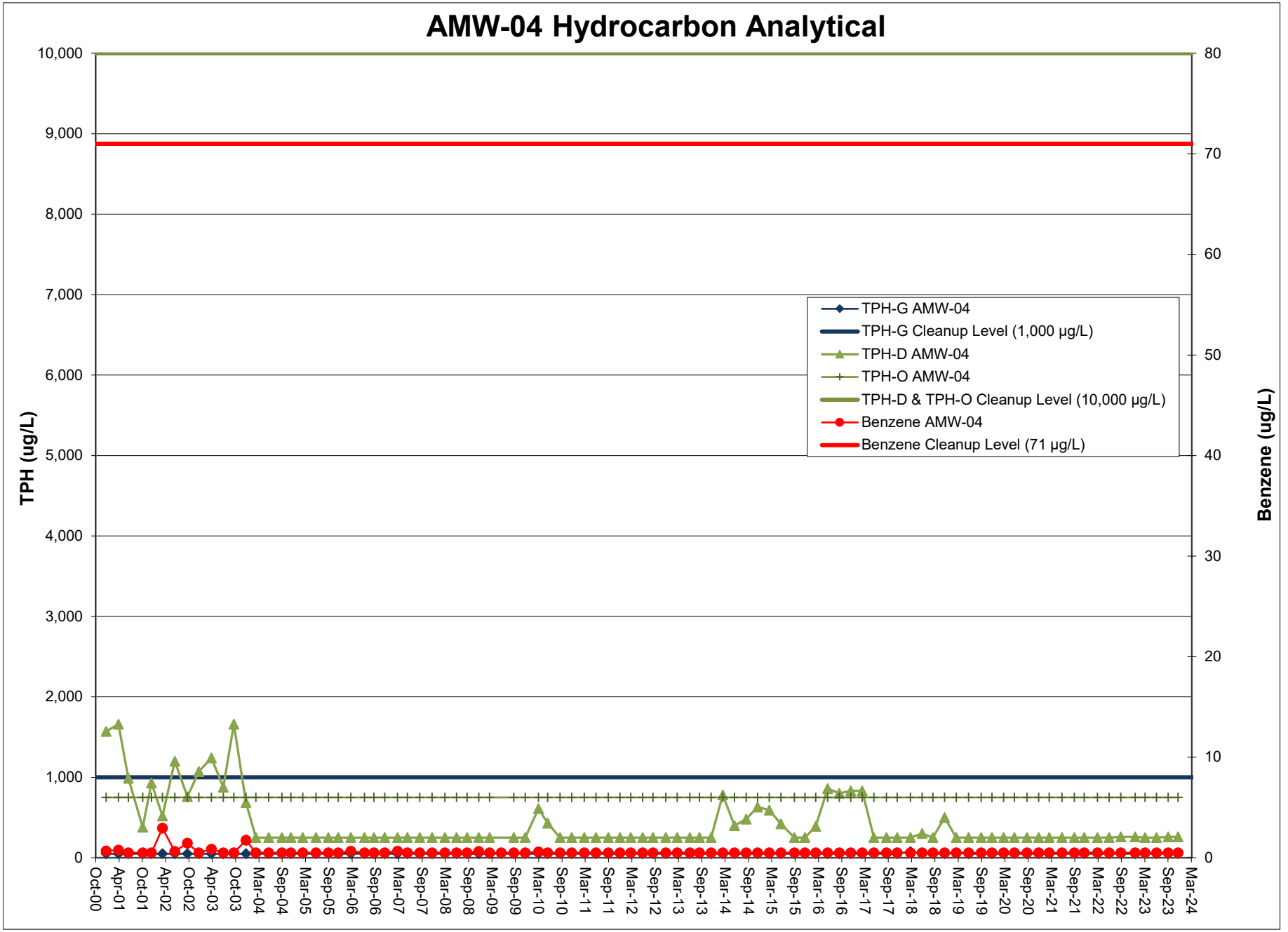
Sep-22
Mar-23
Sep-23
Mar-24


AMW-04 Hydrocarbon Analytical
TPH (ug/L)
Benzene (ug/L)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
80
70
60
50
40
30
20
10
0
TPH-G AMW-04
TPH-G Cleanup Level (1,000 µg/L)
TPH-D AMW-04
TPH-O AMW-04
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene AMW-04
Benzene Cleanup Level (71 µg/L)
Oct-00
Apr-01
Oct-01
Apr-02
Oct-02
Apr-03
Oct-03
Mar-04
Sep-04
Mar-05
Sep-05
Mar-06
Sep-06
Mar-07
Sep-07
Mar-08
Sep-08
Mar-09
Sep-09
Mar-10
Sep-10
Mar-11
Sep-11
Mar-12
Sep-12
Mar-13
Sep-13
Mar-14
Sep-14
Mar-15
Sep-15
Mar-16
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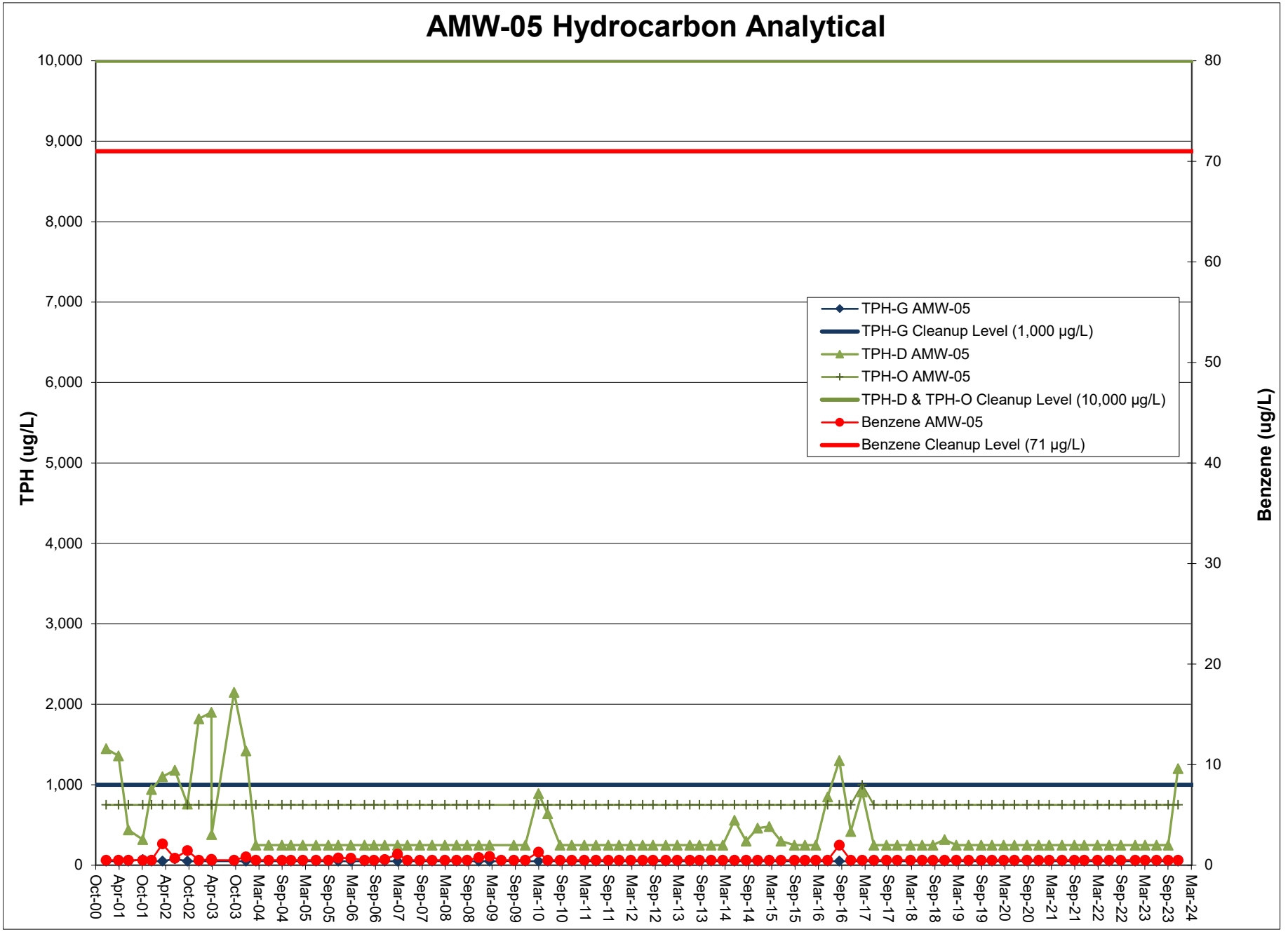
Mar-22
Sep-22
Mar-23
Sep-23
Mar-24


AMW-05 Hydrocarbon Analytical
TPH (ug/L)
Benzene (ug/L)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
80
70
60
50
40
30
20
10
0
TPH-G AMW-05
TPH-G Cleanup Level (1,000 µg/L)
TPH-D AMW-05
TPH-O AMW-05
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene AMW-05
Benzene Cleanup Level (71 µg/L)
Oct-00
Apr-01
Oct-01
Apr-02
Oct-02
Apr-03
Oct-03
Mar-04
Sep-04
Mar-05
Sep-05
Mar-06
Sep-06
Mar-07
Sep-07
Mar-08
Sep-08
Mar-09
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Mar-10
Sep-10
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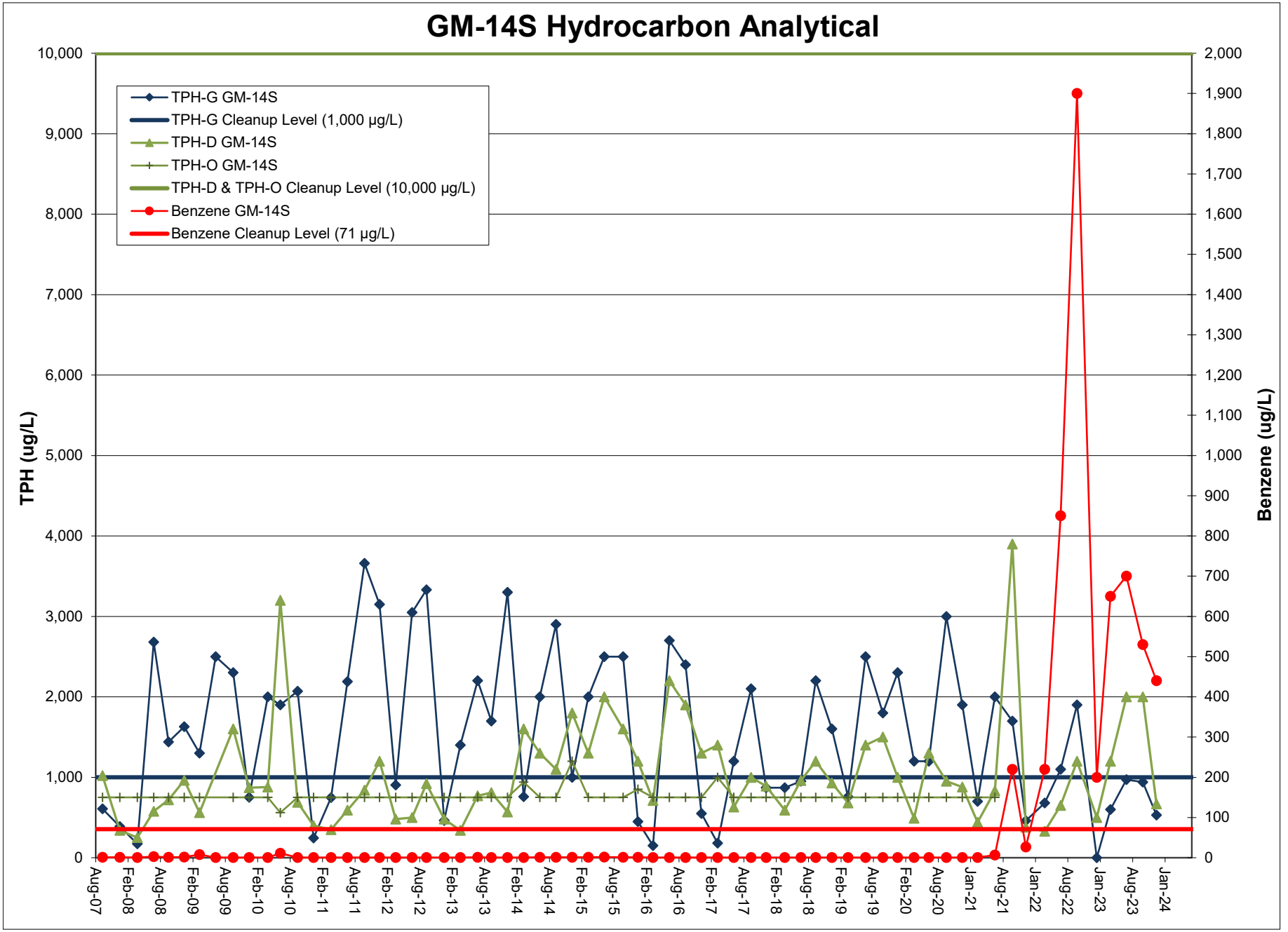
Mar-23
Sep-23
Mar-24


GM-14S Hydrocarbon Analytical
TPH (ug/L)
Benzene (ug/L)
TPH-G GM-14S
TPH-G Cleanup Level (1,000 µg/L)
TPH-D GM-14S
TPH-O GM-14S
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene GM-14S
Benzene Cleanup Level (71 µg/L)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
2,000
1,900
1,800
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
Aug-07
Feb-08
Aug-08
Feb-09
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Feb-10
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Feb-14
Aug-14
Feb-15
Aug-15
Feb-16
Aug-16
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Jan-21
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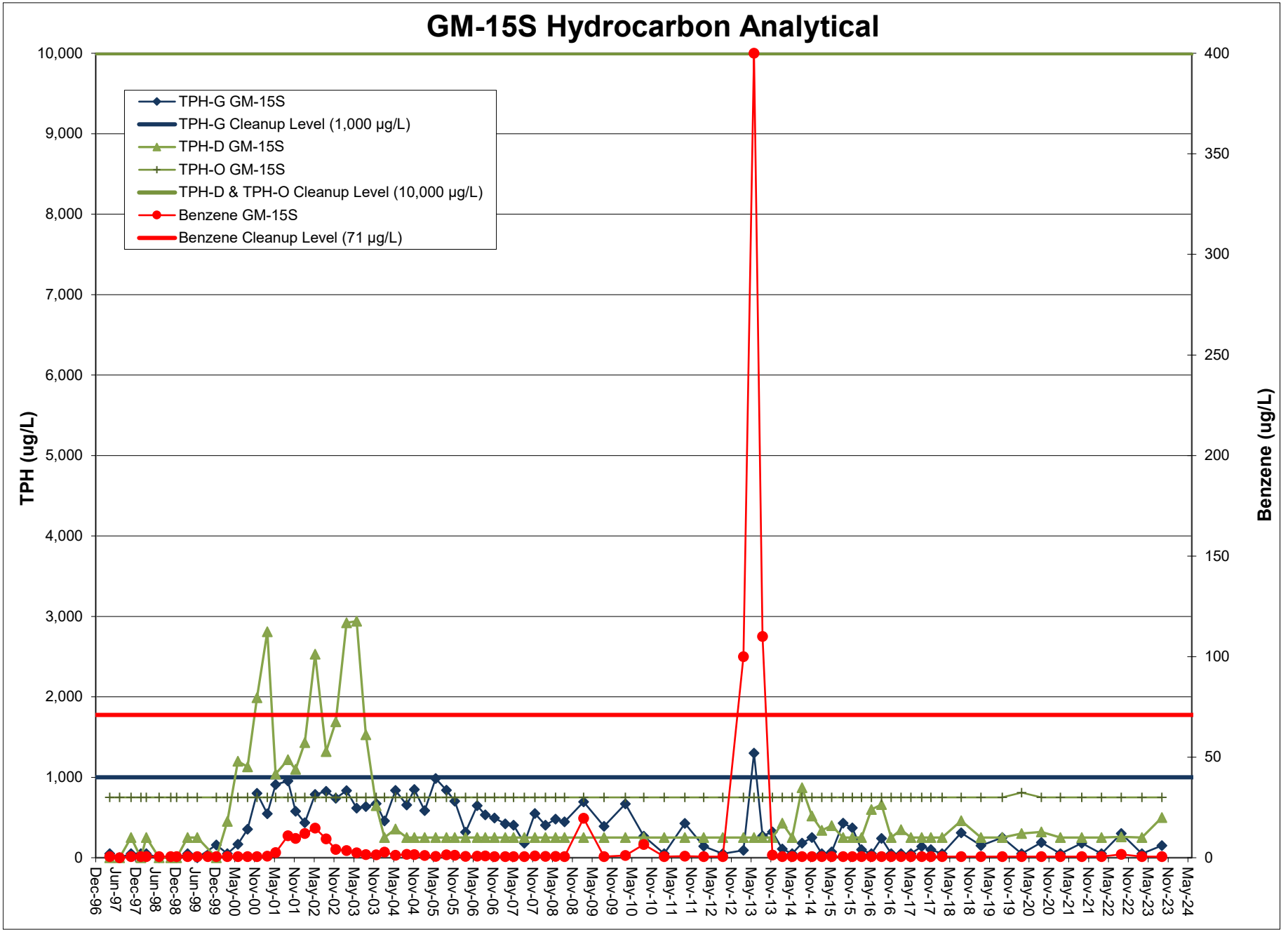
Jan-22
Aug-22
Jan-23
Aug-23
Jan-24


GM-15S Hydrocarbon Analytical
TPH-G GM-15S
TPH-G Cleanup Level (1,000 µg/L)
TPH-D GM-15S
TPH-O GM-15S
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene GM-15S
Benzene Cleanup Level (71 µg/L)
TPH (ug/L)
Benzene (ug/L)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
400
350
300
250
200
150
100
50
0
Dec-96
Jun-97
Dec-97
Jun-98
Dec-98
Jun-99
Dec-99
May-00
Nov-00
May-01
Nov-01
May-02
Nov-02
May-03
Nov-03
May-04
Nov-04
May-05
Nov-05
May-06
Nov-06
May-07
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May-08
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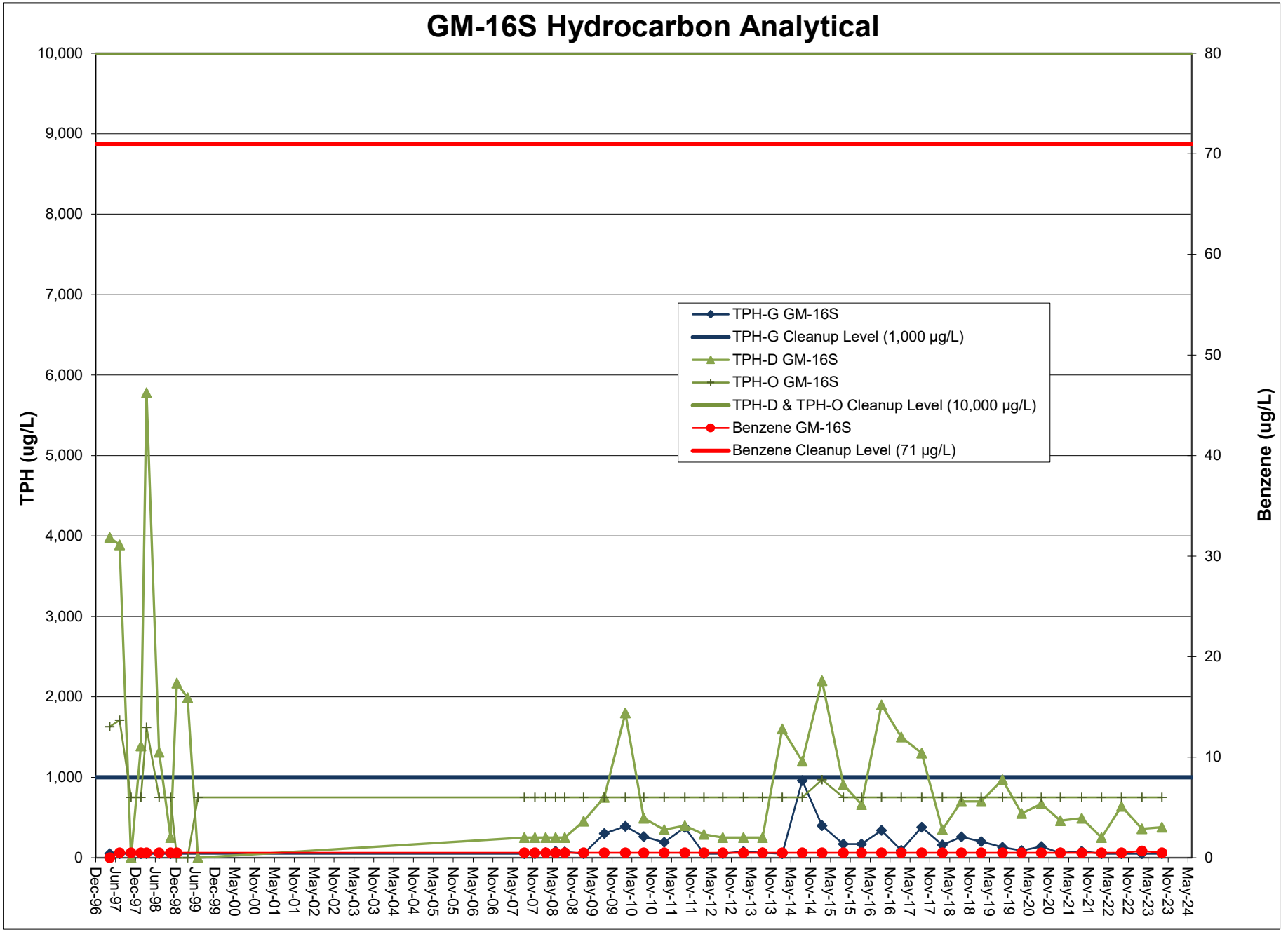
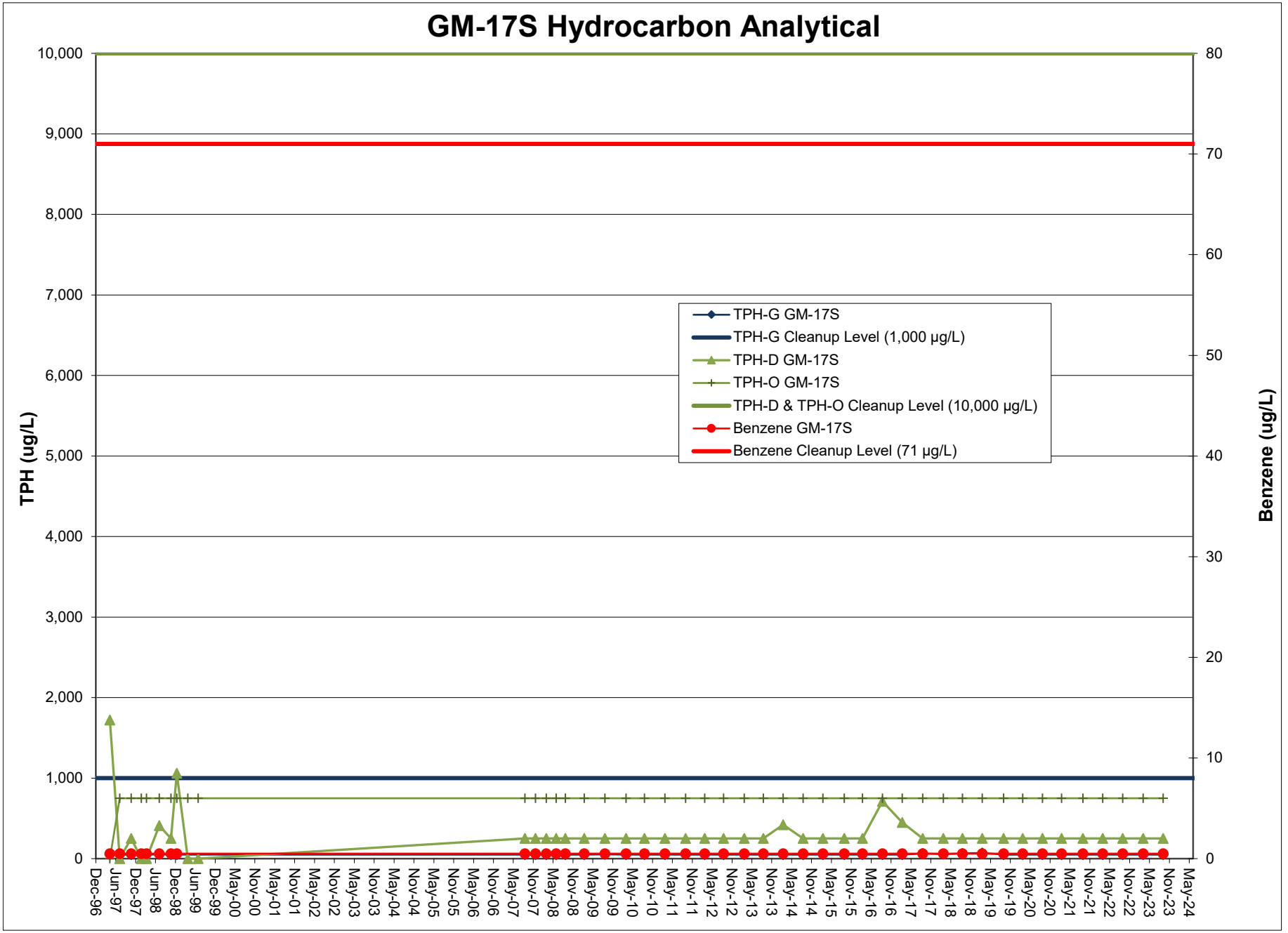
Nov-22
May-23
Nov-23
May-24


GM-16S Hydrocarbon Analytical
TPH (ug/L)
Benzene (ug/L)
TPH-G GM-16S
TPH-G Cleanup Level (1,000 µg/L)
TPH-D GM-16S
TPH-O GM-16S
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene GM-16S
Benzene Cleanup Level (71 µg/L)


GM-17S Hydrocarbon Analytical
TPH (ug/L)
Benzene (ug/L)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
80
70
60
50
40
30
20
10
0
TPH-G GM-17S
TPH-G Cleanup Level (1,000 µg/L)
TPH-D GM-17S
TPH-O GM-17S
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene GM-17S
Benzene Cleanup Level (71 µg/L)
Dec-96
Jun-97
Dec-97
Jun-98
Dec-98
Jun-99
Dec-99
May-00
Nov-00
May-01
Nov-01
May-02
Nov-02
May-03
Nov-03
May-04
Nov-04
May-05
Nov-05
May-06
Nov-06
May-07
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May-11
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May-12
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Nov-13
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May-15
Nov-15
May-16
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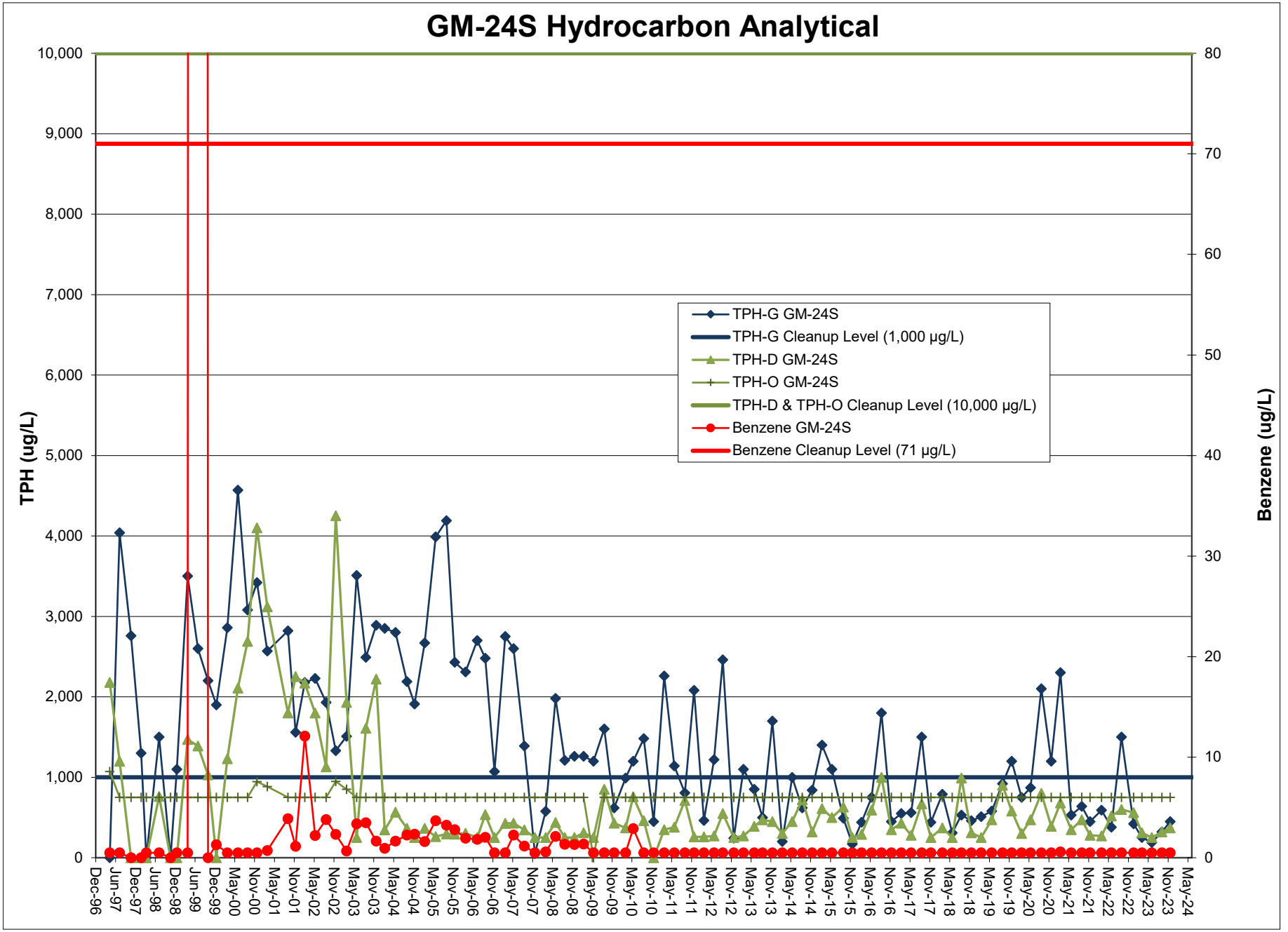
Nov-22
May-23
Nov-23
May-24


GM-24S Hydrocarbon Analytical
TPH (ug/L)
Benzene (ug/L)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
80
70
60
50
40
30
20
10
0
TPH-G GM-24S
TPH-G Cleanup Level (1,000 µg/L)
TPH-D GM-24S
TPH-O GM-24S
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene GM-24S
Benzene Cleanup Level (71 µg/L)
Dec-96
Jun-97
Dec-97
Jun-98
Dec-98
Jun-99
Dec-99
May-00
Nov-00
May-01
Nov-01
May-02
Nov-02
May-03
Nov-03
May-04
Nov-04
May-05
Nov-05
May-06
Nov-06
May-07
Nov-07
May-08
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May-10
Nov-10
May-11
Nov-11
May-12
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May-13
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May-15
Nov-15
May-16
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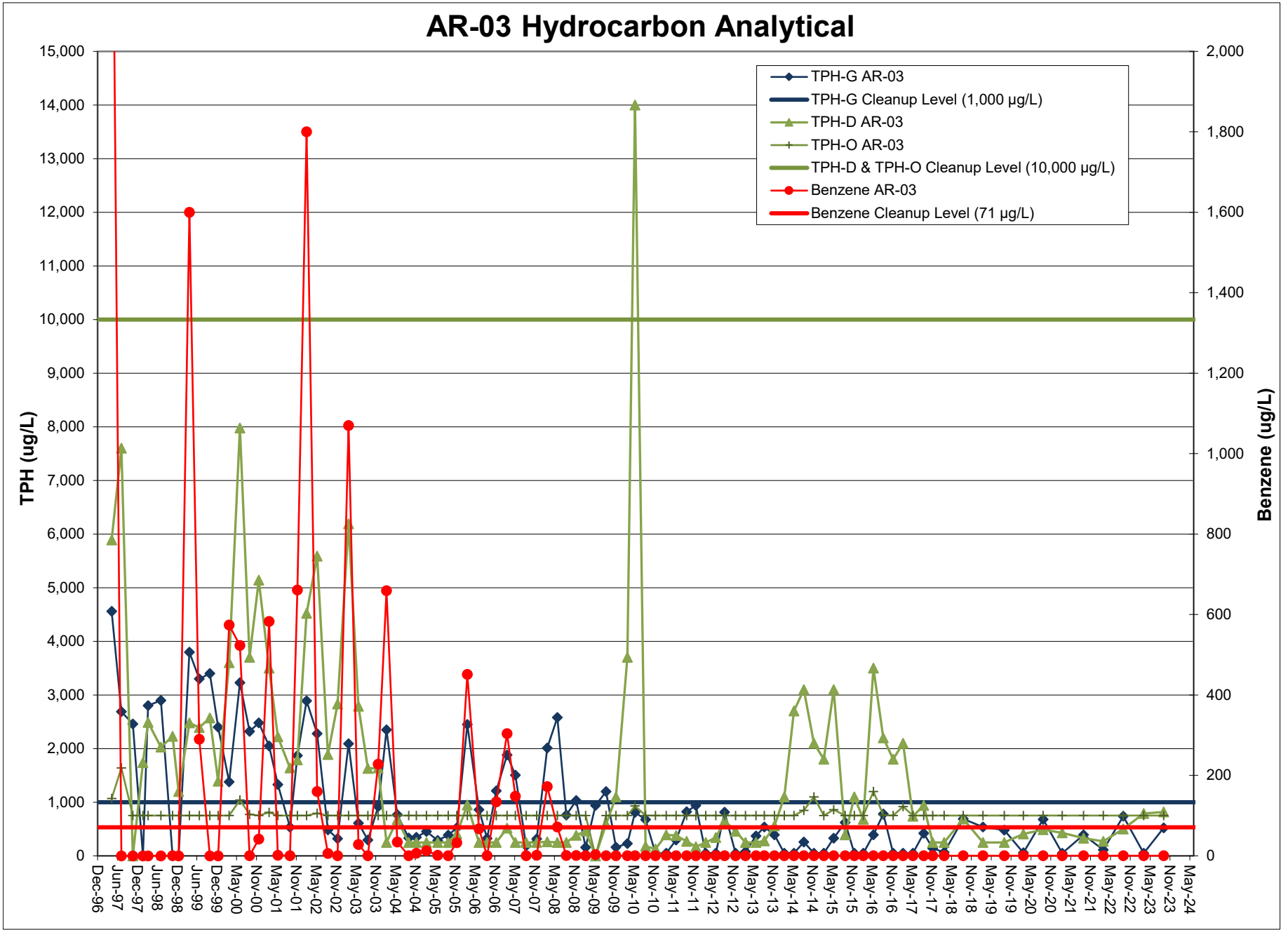
May-22
Nov-22
May-23
Nov-23
May-24


AR-03 Hydrocarbon Analytical
TPH (ug/L)
Benzene (ug/L)
TPH-G AR-03
TPH-G Cleanup Level (1,000 µg/L)
TPH-D AR-03
TPH-O AR-03
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene AR-03
Benzene Cleanup Level (71 µg/L)
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
Dec-96
Jun-97
Dec-97
Jun-98
Dec-98
Jun-99
Dec-99
May-00
Nov-00
May-01
Nov-01
May-02
Nov-02
May-03
Nov-03
May-04
Nov-04
May-05
Nov-05
May-06
Nov-06
May-07
Nov-07
May-08
Nov-08
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Nov-09
May-10
Nov-10
May-11
Nov-11
May-12
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May-14
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May-15
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May-16
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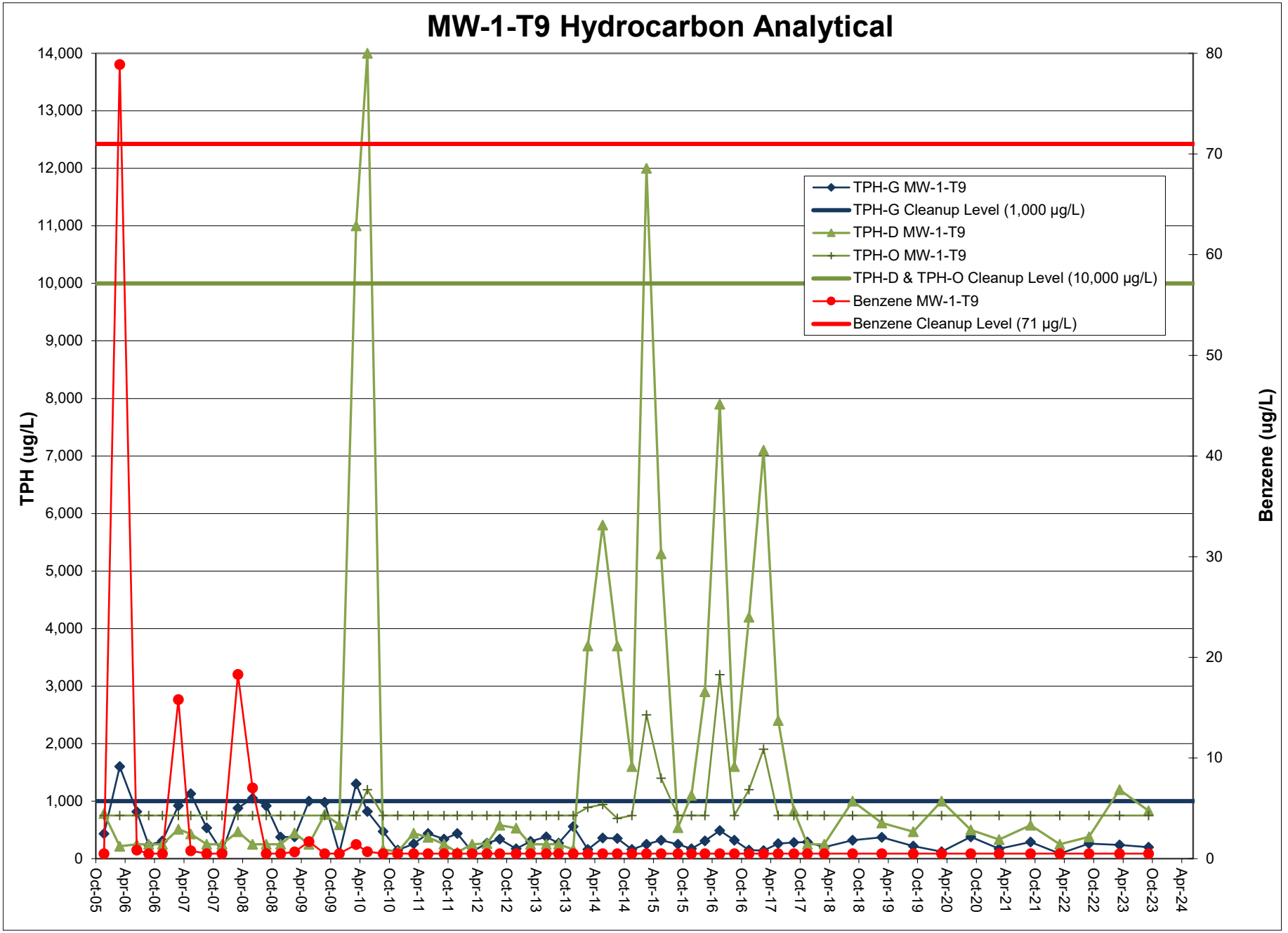
Nov-18
May-19
Nov-19
May-20
Nov-20
May-21
Nov-21
May-22
Nov-22
May-23
Nov-23
May-24


MW-1-T9 Hydrocarbon Analytical
TPH (ug/L)
Benzene (ug/L)
TPH-G MW-1-T9
TPH-G Cleanup Level (1,000 µg/L)
TPH-D MW-1-T9
TPH-O MW-1-T9
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene MW-1-T9
Benzene Cleanup Level (71 µg/L)
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
9,000
10,000
11,000
12,000
13,000
14,000
0
10
20
30
40
50
60
70
80
Oct-05
Apr-06
Oct-06
Apr-07
Oct-07
Apr-08
Oct-08
Apr-09
Oct-09
Apr-10
Oct-10
Apr-11
Oct-11
Apr-12
Oct-12
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Apr-16
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Apr-17
Oct-17
Apr-18
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Apr-19
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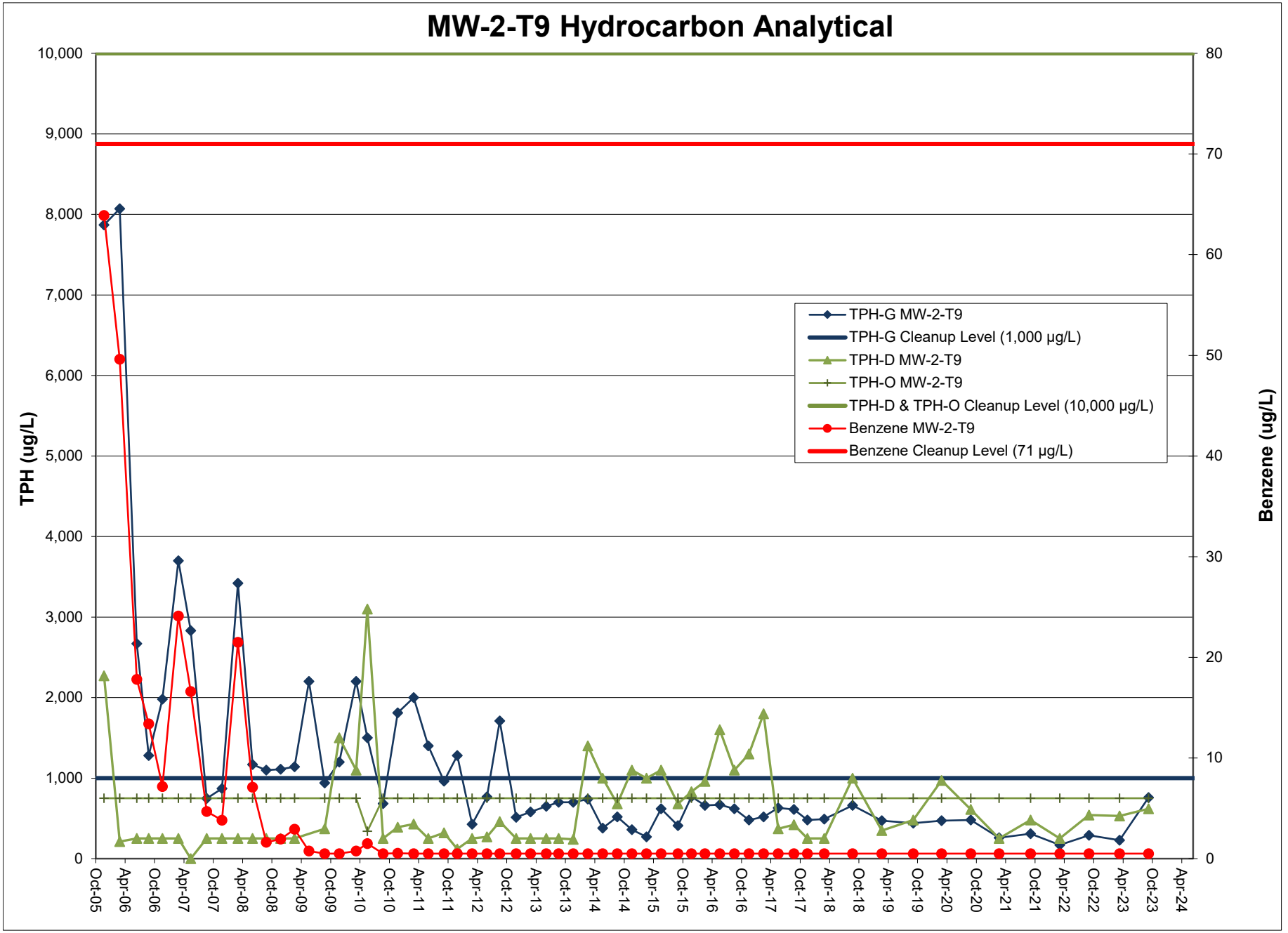
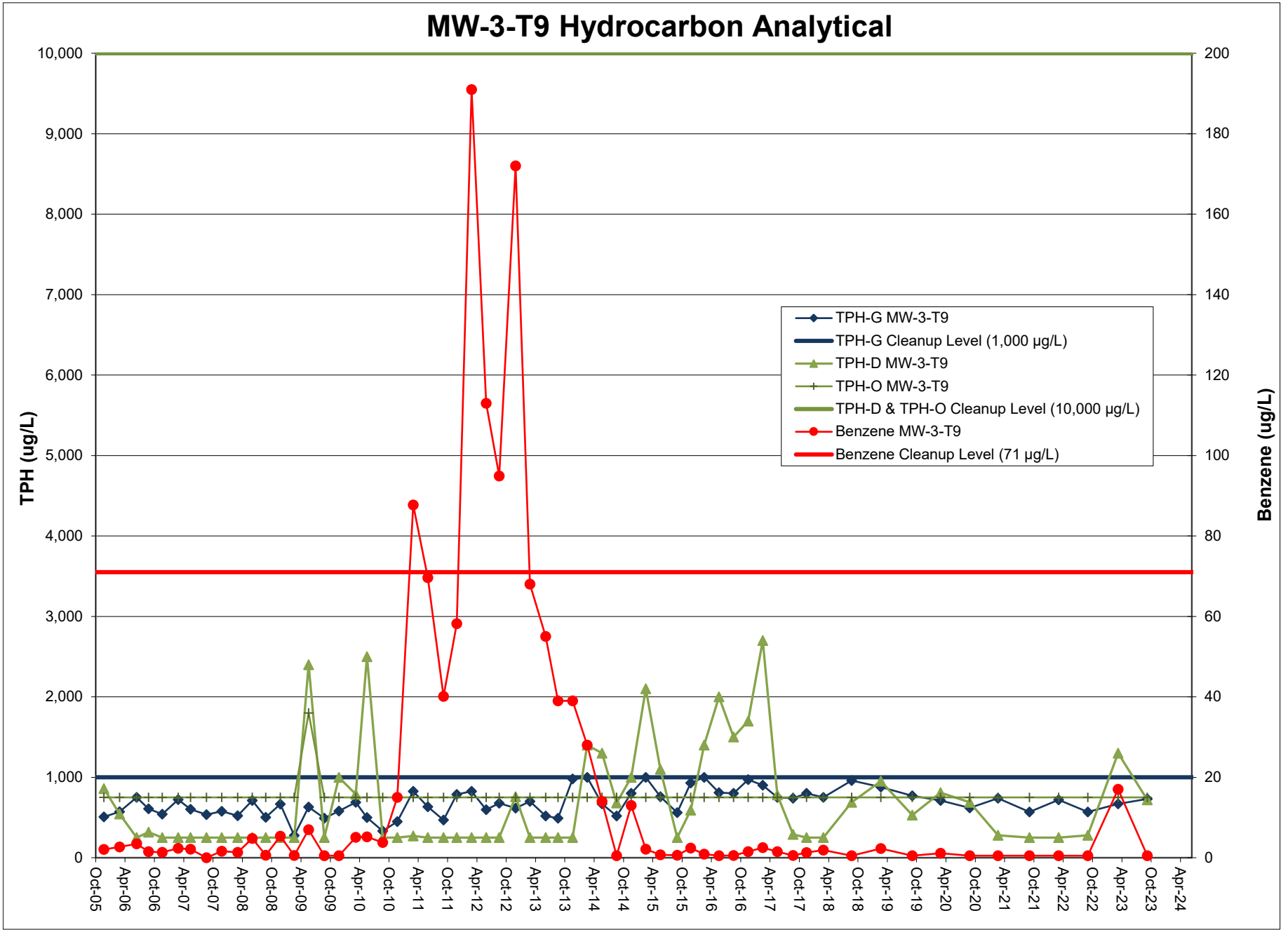
Apr-22
Oct-22
Apr-23
Oct-23
Apr-24


MW-2-T9 Hydrocarbon Analytical
TPH (ug/L)
Benzene (ug/L)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
80
70
60
50
40
30
20
10
0
Oct-05
Apr-06
Oct-06
Apr-07
Oct-07
Apr-08
Oct-08
Apr-09
Oct-09
Apr-10
Oct-10
Apr-11
Oct-11
Apr-12
Oct-12
Apr-13
Oct-13
Apr-14
Oct-14
Apr-15
Oct-15
Apr-16
Oct-16
Apr-17
Oct-17
Apr-18
Oct-18
Apr-19
Oct-19
Apr-20
Oct-20
Apr-21
Oct-21
Apr-22
Oct-22
Apr-23
Oct-23
Apr-24
TPH-G MW-2-T9
TPH-G Cleanup Level (1,000 µg/L)
TPH-D MW-2-T9
TPH-O MW-2-T9
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene MW-2-T9
Benzene Cleanup Level (71 µg/L)


MW-3-T9 Hydrocarbon Analytical
TPH (ug/L)
Benzene (ug/L)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
200
180
160
140
120
100
80
60
40
20
0
TPH-G MW-3-T9
TPH-G Cleanup Level (1,000 µg/L)
TPH-D MW-3-T9
TPH-O MW-3-T9
TPH-D & TPH-O Cleanup Level (10,000 µg/L)
Benzene MW-3-T9
Benzene Cleanup Level (71 µg/L)
Oct-05
Apr-06
Oct-06
Apr-07
Oct-07
Apr-08
Oct-08
Apr-09
Oct-09
Apr-10
Oct-10
Apr-11
Oct-11
Apr-12
Oct-12
Apr-13
Oct-13
Apr-14
Oct-14
Apr-15
Oct-15
Apr-16
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Oct-18
Apr-19
Oct-19
Apr-20
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Apr-21
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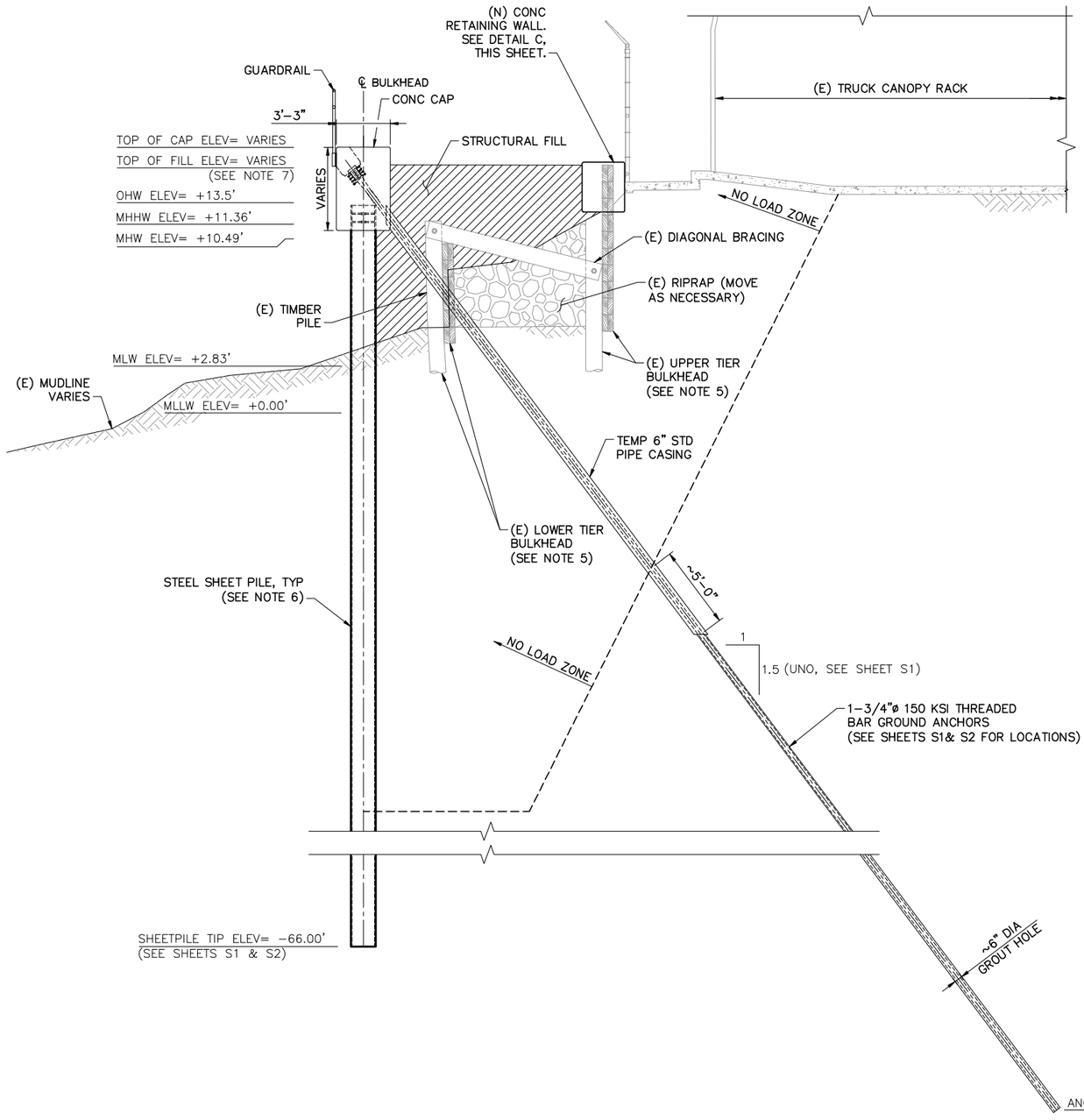
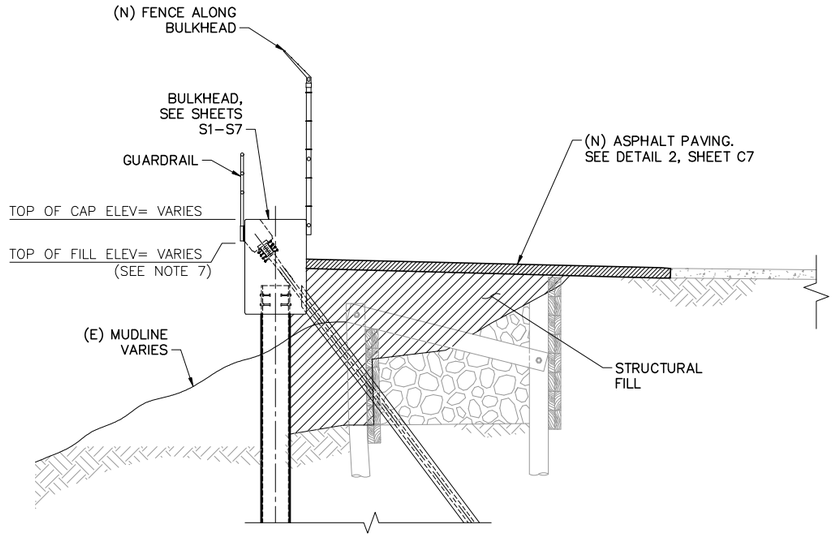
Apr-22
Oct-22
Apr-23
Oct-23
Apr-24

Appendix D

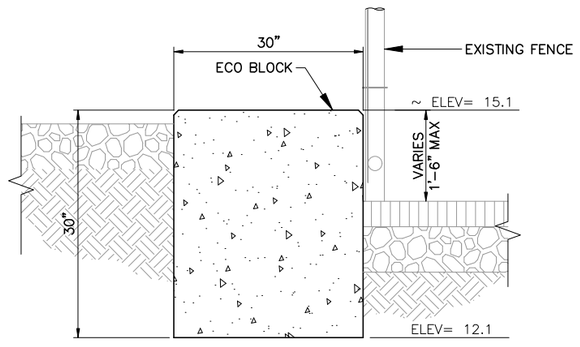
Sheet Pile Cross Section



A / S1 & S2 **TYPICAL SECTION**
SCALE: 1/4"=1'-0"



B / S1 **TYPICAL SECTION**
SCALE: 1/4" = 1'-0"
(FOR OTHER DETAILS SEE SECTION A)



C / - **TYPICAL RETAINING WALL SECTION**
SCALE: 1" = 1'-0"

NOTES:

1. SEE ELEVATIONS ON SHEETS S1 THRU S2 FOR THE TOP OF PILE CAP ELEVATIONS, APPROX MUDLINE ELEVATIONS, & ANCHOR LOCATIONS.
2. ANCHOR TIP ELEVATION IS SUBJECT TO CHANGE BASED ON TEST ANCHOR RESULTS.
3. EXPECTED MAXIMUM ANCHOR LOAD = 240 kips
4. REFER TO SPECIFICATION FOR ANCHOR TESTING PROCEDURES.
5. TIP OF TIMBER PILES IS UNKNOWN.
6. SHEET PILES TO BE PROVIDED BY THE OWNER.
7. SEE GRADING PLAN ON SHEET C6.

RECORD DRAWING

This record drawing has been prepared, in part, based upon information furnished by others. While this information is believed to be reliable, the Engineer cannot assure its accuracy, and thus is not responsible for the accuracy of this record drawing or for any errors or omissions which may have been incorporated into it as a result. Those relying on this record drawing are advised to obtain independent verification of its accuracy before applying it for any purpose.

moffatt & nichol **DATE : 8/24/2018**

1'-0" 0'-0" 1'-0" 2'-0"
SCALE: 1"=1'-0"

4'-0" 0'-0" 4'-0" 8'-0"
SCALE: 1/4"=1'-0"

SHT NO.: S3

moffatt & nichol
600 UNIVERSITY STREET
SUITE# 610
SEATTLE, WA 98101
(206) 622-0222

INDEX REV	REF DWG NO	DESCRIPTION

REV	DATE	PROJ#	R&I NO.	REVISION	CONTRACTOR	CKD	PIC

OLD DWG. NO.: N/A

BP West Coast Products LLC
U.S. Pipelines & Logistics

SEATTLE TERMINAL
NORTH BULKHEAD REPLACEMENT PROJECT
TYPICAL SECTIONS

SCALE: AS NOTED TYPE: 14 SUBTYPE: 75

DWG NO. SE-1-S-10197417 REVISION -

10197417