GREEN STAR ENVIRONMENTAL

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FEASABILITY STUDY AND CORRECTIVE ACTION PLAN

OAKLAND BUS TERMINAL
2103 SAN PABLO AVENUE
OAKLAND, CALIFORNIA 94608

Green Star Environmental Report No. 15-1379

Report Prepared For:

FirstGroup America, Inc.
600 Vine Street, Suite 1400
Cincinnati, OH 45202

October 9, 2015

Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, California

Having reviewed the attached Corrective Action Plan, being familiar with the project to which it relates, and understanding the guidelines of Alameda County Alameda Environmental Health, I hereby certify that the referenced report, dated October 9, 2015, has been prepared and the related activities were conducted in accordance with the required standards.

October 9, 2015

DATE

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I declare, under penalty of perjury, that the information and/or recommendations contained in the attached Corrective Action Plan dated October 9, 2015 are true and correct to the best of my knowledge.

October 9, 2015
DATE

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2103 San Pablo Avenue
Oakland, California 94608

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INTRODUCTION

On behalf of FirstGroup America, Inc. (FirstGroup) and Greyhound Lines, Inc. (Greyhound), Green Star Environmental (Green Star) has prepared a Feasibility Study (FS) and Corrective Action Plan (CAP) for the Greyhound Lines Terminal located at 2103 San Pablo Avenue, Oakland, California ("Site"; Fuel Leak Case No. RO0000074 and Geotracker Global ID T0600100666). This FS/CAP has been prepared in accordance with a letter from Alameda County Environmental Health (ACEH) dated April 17, 2015 primarily in order to address the presence of concentrations of chemicals of concern in soil and groundwater at the Site in excess of State Water Resources Control Board (SWRCB) standards under the Low Threat Underground Storage Tank Case Closure Policy (LCTP).

1.0 SITE BACKGROUND

1.1 Site History

The Site has been developed as a bus terminal since 1929. Six, out-of-service underground storage tanks (USTs) were removed from the Site in April 1990. The USTs were reportedly out of use for at least two decades prior to their removal. Subsurface investigations between 1989 and 1997 indicated that petroleum hydrocarbon impacts, including phase-separated hydrocarbons (PSH), were present in soils and groundwater at the Site. The groundwater gradient at the Site has historically been a radial pattern migrating to the west-southwest and to the northwest from higher elevations to the east.

The monitoring well network was surveyed by a California licensed surveyor on April 8, 2009, to mean sea level (msl) elevation and latitude and longitude using the North American Vertical Datum 1988 (NAVD88) and North American Datum 1983 (NAD83) coordinate systems.

Between October 20 and 22, 2010, Green Star advanced twelve additional soil borings at the Site in order to further evaluate subsurface conditions in the area of the former USTs. To document current groundwater conditions, Green Star began conducting groundwater monitoring events in September 2008 and most recently in March of 2015 utilizing the network of 13 wells at the Site. Soil and groundwater data are discussed in Section 2.0. Table 1 presents a summary of previous reports related to the Site. Tables 2 and 3 present cumulative summaries of groundwater gauging and analytical data, respectively, while Table 4 presents a cumulative summary of soil analytical results. Table 5 presents a summary of soil vapor results from October 2010. A USGS Topographic/Site Location Map is presented as Figure 1. Site details are illustrated in Figures 2a and 2b.

1.2 Previous Remediation Activities

In March 1991, approximately 714 tons of stockpiled, tankhold-related soils were removed from the Site and treated via solidification/stabilization processes at Gibson Oil Refinery in Bakersfield, California. It was reported by a previous consultant that soils treated by Gibson were typically utilized as road base material. This indicates that the excavated tankpit was backfilled with imported fill and not the existing, contaminated stockpiles.

A groundwater remediation system was operated from 1992 to 1997 to recover phase-separated hydrocarbons (PSH) and dissolved-phase impacts in groundwater utilizing total-fluid recovery pumps in four, four-inch diameter wells (ES-1, ES-5, BC-1 and ES-2).

The recovered fluids were treated with an oil/water separator and activated carbon absorption columns prior to the permitted discharge to the sanitary sewer. Data indicate that the system was effective as PSH greater than 0.1-foot has not been detected since 1995.

1.3 Land Use Category

The Site has been developed as a bus terminal since 1929 and as such is a commercial property. The Site is zoned by the City of Oakland as an area of Central Business Service Commercial/Downtown Residential Open Space Combining zones (C-51/S-17). Due to extensive remodeling upgrades performed on the bus terminal at the Site, it is unlikely that the Site will be utilized in the near or even relatively distant future for any purpose other than bus terminal operations.

Adjacent properties with the highest potential to be impacted by petroleum hydrocarbons related to the former source area at the Site are Castro Street followed by Interstate Highway 980 (I-980). Downgradient of I-980 is a commercial property and Brush Street. Beyond Brush Street is a mixed-use neighborhood of commercial and residential properties. The nearest sensitive property downgradient of the Site is a day care center located in the mixed-use neighborhood northwest of Brush Street approximately 485 feet northwest of the Site. The results of an area survey are presented in Section 3.3.2.

1.4 Geology, Hydrogeology, and Lithology

According to the United States Geological Survey1 (USGS) and the San Francisco Bay Regional Water Quality Control Board[2] (RWQCB), the Site is located in the San Francisco Basin west of the Hayward Fault. More specifically, the Site is located in the Santa Clara Valley groundwater basin and the East Bay Plain sub-basin. The Site is underlain by unconsolidated Quaternary-aged sediments generally associated with beach and dune formations. In this area, the Quaternary deposits at the surface are mapped as the Merritt Sands which can be up to 60 feet thick. The Quaternary-aged sediments are assumed to be located on the Cretaceous and Jurassic-aged Franciscan bedrock complex which is approximately 450 ft below mean seal level (msl) in the area of the Site. Other unconsolidated sediments, which may include the early Pleistocene-aged Santa Clara formation, are present between the Merritt Sands and the Franciscan bedrock, but these sediments do not appear to be well understood at this time. A USGS cross-section of Oakland area northeast past the Hayward fault is presented as Appendix A.

Soils encountered at the Site during subsurface investigations have generally included horizons of clays near the surface which are underlain by sandy soils with some intervals of interbedded silts. An unspecified fill material has been indicated to be present near the surface in several borings. The Site is covered by improved surfaces (concrete or asphalt) which are generally underlain by the clayey soils to approximately 12 to 16 feet below surface grade (bsg). The clayey soils appear to correspond with the Clear Lake-Urban complex of clayey soils described to be present at the Site by the Alameda County Soil Survey[3]. Although the Urban-Baywood complex of sandy soils is also indicated by the soil survey to be present at the northern portion of the Site, no borings have been advanced in this area. Groundwater has been measured to range from depths of approximately 12 to 22 feet bsg (approximately 3.6 to 9.7 feet msl) and is generally present within a horizon of sandy soils (Table 2). Cross-sections illustrating the subsurface at the Site to approximately ten feet below msl are presented as Figures 3a and 3b. Boring logs are presented as Appendix B.

Lake Merritt is the nearest surface water body at approximately 0.50-mile east-southeast from the Site. The Oakland Inner Harbor is located approximately 1.1 miles south-southwest of the Site.

Groundwater in the area is utilized for very limited amounts of irrigation, industrial and potable purposes, but shallow groundwater (less than 50 feet bgs) use in the area is most typically for household irrigation purposes[4]. The RWQCB lists the East Bay Plain groundwater sub-basin as having existing beneficial uses of groundwater in the form of municipal, industrial and agricultural[2]. The RWQCB indicates that the area had a high density of historic water wells set in the Merritt Sand (greater than five per square mile), but that many of the wells were contaminated by septic fields or saltwater intrusion. The results of a water well search for the Site and vicinity are presented in Section 3.3.1.

The City of Oakland obtains its municipal and drinking water from the East Bay Municipal Utility District (EBMUD). EBMUD obtains the vast majority of water for the system from surface water collected from a watershed of the Sierra Nevada Mountain Range that is stored at the Pardee Reservoir, located approximately 80 miles east-northeast of the Site, with a small percentage of the system water coming from local precipitation runoff stored in area reservoirs.

1.5 Nearby Environmental Projects

A review of ACEH's Local Oversight Program (LOP) on-line database as well as the water well search data detailed in Section 3.3.1 indicate that several properties in the area of the Site are sources of environmental impacts to soil and groundwater in relation to USTs. Four of these LOP facilities are near the Site. Two facilities, City Center Project Parcel T12 and Sinclair Paint Site, are located adjacent and upgradient to crossgradient of the Site (south-southeast). Based on a September 1999 report, City Center Project Parcel T12 contains fill material contaminated with oil, grease, and metals (Fuel Leak Case RO-0002809); no further information is available on the LOP website. The Sinclair Paint Site was granted closure in January 1998 after a site investigation of former underground storage tanks indicated TPH, MTBE and BTEX contamination in groundwater from temporary well points; no remediation was performed at this site (Fuel Leak Case RO-0002815). The two other facilities, Peerless Stages (2021 Brush Street; approximately 438 feet west-northwest) and Herrington-Olsen Photo (769 22nd Street; approximately 676 feet northwest) are located downgradient of the Site (west-northwest to north-northwest; Figure 9). The data related to the downgradient projects indicate that both projects had soil and groundwater impacts of petroleum hydrocarbons and that both projects have been closed.

The nearest downgradient project to the Site, Peerless Stages (Fuel Leak Case RO-0000407) is located approximately 460 feet west-northwest of the Site (Figure 9). The project was closed in February 2002 after the removal of two USTs, excavation of impacted soils, and completion of nine groundwater monitoring events between 1999 and 2001. In their closure letter dated February 15, 2002, ACEH states that 240 ppm TPH-d and 4.0 ppm MTBE remains in soils and 1.20 ppm TPH-d and 1.50 ppm MTBE remains in groundwater at the Site. Residential properties are located immediately downgradient of the impacts and the extent and magnitude of the impacts beneath the residential properties were not evaluated.

The other downgradient project, Herrington-Olsen Photo (Fuel Leak Case STID #3919), is located approximately 645 feet north-northwest of the Site (Figure 9). The project was

closed in February 9, 2001 after a UST was removed in 1993, some impacted soils were excavated, and eleven groundwater monitoring events were conducted between 1994 and 1999. In their closure letter dated February 20, 2001, ACEH states that 5 ppm benzene and 1,600 ppm TPH-g remains in soils and 2.6 ppm benzene, 25.0 ppm TPH-g, and 6.4 ppm TPH-d remains in groundwater at the Site.

2.0 CONTAMINATION ASSESSMENT

2.1 Groundwater Impacts

A groundwater monitoring event using the network of 13 monitoring wells at the Site was conducted most recently in March 2015. Historically, the monitoring well network at the Site has been comprised of 14 monitoring wells, but in September 2008, monitoring well ES-10 was found covered by pavement comprising Castro Street. Monitoring well BC-2 was not sampled due its close proximity to monitoring well BC-3.

Total depths, depths to groundwater, and the potential presence of phase-separated hydrocarbons (PSH) were measured in each monitoring well using a Solonist® interface probe on March 12 and 13, 2015. Table 2b presents a cumulative summary of groundwater gauging data. PSH was not detected in March 2015 and has not been detected since October 1997. Groundwater elevations in the monitoring wells gauged ranged from 8.19 feet above msl in monitoring well ES-8 to 7.87 feet above msl in monitoring well ES-7. The calculated hydraulic gradient was approximately 0.003 ft/ft. The groundwater flow direction was radial in all directions from in the vicinity of monitoring wells ES-6 and ES-8. The groundwater gradient in March 2015 is presented as Figure 4a. Cumulative graphs of groundwater elevations and PSH thicknesses are presented as Appendix C.

Groundwater samples were collected from 12 monitor wells (BC-1, BC-3, ES-1 through ES-9, and ES-11). BC-2 was not sampled due to its close proximity to BC-3. Each well was sampled for total petroleum hydrocarbons-gasoline, diesel, and oil ranges (TPH-g, TPH-d, and TPH-o, respectively), benzene, toluene, ethylbenzene, and xylenes (BTEX), naphthalene, methyl tertiary butyl ether (MTBE), ethyl tertiary butyl ether (ETBE), tert-amyl methyl ether (TAME), di-isopropyl ether (DIPE), 1,2-dichloroethane (EDC), 1,2-dibromoethane (EDB), tertiary butyl alcohol (TBA), and ethanol.

2.1.1 BTEX Constituents

Analytical results from the groundwater event indicated concentrations of at least one dissolved-phase BTEX constituent were present in all 12 monitoring wells sampled. Benzene was detected at a concentration that exceeded the San Francisco Bay Regional Water Quality Control Board (RWQCB) Environmental Screening Level (ESL) for non-drinking water resources in four monitoring wells (ES-1 through ES-3, and ES-5) and at a maximum concentration of 740 µg/L in the sample collected from monitoring well ES-2. Ethylbenzene, and Xylenes were detected at concentrations that exceeded their respective RWQCB ESL for non-drinking water resources in the samples collected from monitoring wells ES-3 and ES-5. Maximum Ethylbenzene and Xylene concentrations were 130 µg/L and 160 µg/L respectively in the sample collected from monitoring well ES-5. Toluene was not detected above RWQCB ESL for non-drinking water in any of the sampled wells. Dissolved-phase benzene in groundwater is illustrated as Figure 4b.

2.1.2 TPH Constituents

Analytical results from the groundwater event indicated concentrations of at least one dissolved-phase TPH constituent were present in all 12 monitoring wells sampled. TPH-g was detected at a concentration that exceeded the RWQCB ESL for non-drinking water resources in six monitoring wells (BC-1, ES-1, ES-2, ES-3, ES-5, and ES-8) and at a maximum concentration of 7,100 µg/L in the sample collected from monitoring well ES-2. TPH-d was detected at a concentration that exceeded the RWQCB ESL for non-drinking water resources in four monitoring wells (ES-1, ES-2, ES-3, and ES-5) and at a maximum concentration of 830 µg/L in the sample collected from monitoring well ES-2. TPH-o was detected above laboratory detection limits in five monitoring wells (ES-2, ES-4, ES-5, ES-6, and ES-9), but did not exceed the RWQCB ESL for non-drinking water resources. Concentrations of dissolved-phase TPH-g and TPH-d in groundwater are illustrated as Figures 4c and 4d, respectively.

2.1.3 Miscellaneous Petroleum Hydrocarbons

The only miscellaneous petroleum hydrocarbons detected above laboratory detection limits were naphthalene, EDC and DIPE. Naphthalene was detected in three monitoring wells (ES-1, ES-3 and ES-5) and exceeded the RWQCB ESL for non-drinking water resources in two monitoring wells (ES-3 and ES-5) at a maximum concentration of 53 µg/L in the sample collected from monitoring well ES-5. DIPE was detected in eight monitoring wells (BC-1, ES-1 through ES-5, ES-8, and ES-9) and at a maximum concentration of 77 µg/L in the sample collected from monitoring well ES-2. EDC was detected in six monitoring wells (ES-1 to ES-5 and ES-8) at a maximum concentration of 6.6 µg/L in the sample collected from monitoring well ES-5. Concentrations of DIPE and EDC did not exceed their respective RWQCB ESLs for non-drinking water resources. MTBE, ETBE, TAME, EDB, TBA and ethanol were not detected above laboratory detection limits.

Concentrations of chemicals of concern from the March 2015 groundwater monitoring event are depicted in Figures 4b, 4c, and 4d. Concentrations of dissolved-phase benzene in groundwater are illustrated as Figure 4b. Concentrations of dissolved-phase TPH-g and TPH-d in groundwater are illustrated as Figures 4c and 4d, respectively. Concentrations in BC-3 were not utilized for contouring as the well completion details for BC-3 are unknown and the well screen does not appear to intercept the impacted zone.

Table 2 presents a cumulative summary of groundwater gauging data. Table 3 presents a cumulative summary of groundwater analytical data. Appendix C presents cumulative graphs of groundwater elevations and PSH thickness while Appendix D presents cumulative graphs of dissolved-phase BTEX and TPH constituent concentrations.

The nearest offsite monitoring well located on an adjacent, downgradient property that is not part of the Site's monitoring well network is MW-1 located at the Peerless Stages LOP facility detailed in Section 1.5. This monitoring well is located approximately 455 feet west-northwest of the Site and was utilized by Peerless Stages as an upgradient well. According to available information, the Peerless Stages monitoring well MW-1 has contained only sporadic, low concentrations of dissolved-phase petroleum hydrocarbons. The well is screened at a depth that would detect groundwater impacts related to the Site.

2.2 Soil Impacts

Between October 20 and 22, 2010, twelve additional soil borings (B-1 to B-12) were advanced at the Site in order to further evaluate subsurface conditions in the area of the former UST tankpit. The borings were advanced to depths ranging from 15 to 20 feet below ground surface (bgs). Selected soil samples were analyzed for BTEX, MTBE, and TPH-g via EPA Method 8021 and diesel range TPH (TPH-d) via EPA Method 8015. Analytical results from the October 2010 sampling event are discussed below.

2.2.1 BTEX Constituents

Analytical results indicated at least one BTEX constituent was detected in 12 of 20 analyzed samples. Benzene was detected in seven samples at concentrations ranging from 0.0052 mg/Kg in B-1 (6.5') to 3.4 mg/Kg in B-8 (16'). Toluene was detected in five samples at concentrations ranging from 0.0049 mg/Kg in B-1 (14') to 1.1 mg/Kg in B-7 (16'). Ethylbenzene was detected in six samples at concentrations ranging from 0.021 mg/Kg in B-1 (14') to 7.3 mg/Kg in B-8 (16'). Xylenes were detected in eleven samples at concentrations ranging from 0.0043 in B-9 (13') to 13 mg/Kg in B-2 (15.5') and B-4 (15.5').

2.2.2 TPH Constituents

Analytical results indicated at least one TPH constituent was detected in 19 of 20 analyzed samples. TPH-g was detected in 13 samples at concentrations ranging from 1.2 mg/Kg in B-2 (7.5') to 2,600 mg/Kg in B-8 (16'). TPH-d was detected in 17 samples at concentrations ranging from 1.5 mg/Kg in B-7 (5.5') to 3,100 mg/Kg in B-8 (16').

2.2.3 Other VOCs

Analytical results indicated that MTBE was detected above laboratory detection limits only in sample B-7 (16') at a concentration of 5.9 mg/Kg. The samples were not analyzed for any other VOCs.

Of the detected constituents in soil samples from the October 2010 event, none of the samples exceeded their RWQCB ESLs for shallow soils (<3m bgs); however, concentrations of benzene, ethylbenzene, xylenes, TPH-g and TPH-d exceeded their established RWQCB ESLs for deep soils (>3m bgs) in seven borings (B-2, B-3, B-4, B-5, B-7, B-8 and B-10). Benzene exceeded its ESL of 2.00 mg/Kg in two samples at concentrations of 2.50 mg/Kg in B-2 (15.5') and 3.40 mg/Kg in B-8 (16'). Ethylbenzene exceeded its ESL of 4.70 mg/Kg in three samples at concentrations ranging from 6.70 mg/Kg in B-4 (15.5') to 7.30 mg/Kg in B-8 (16'). Xylenes exceeded their ESL of 11.0 mg/Kg in two samples at concentrations of 13.0 mg/Kg in B-2 (15.5') and in B-4 (15.5'). TPH-g exceeded its ESL of 180 mg/Kg in seven samples at concentrations ranging from 880 mg/Kg in B-3 (16') to 2,600 mg/Kg in B-8 (16'). TPH-d exceeded its ESL of 180 mg/Kg in four samples at concentrations ranging from 260 mg/Kg in B-5 (16') to 3,100 mg/Kg in B-8 (16').

The former UST tankpit area and soil boring locations are illustrated in Figure 2b. Cumulative concentrations of chemicals of concern in soil are depicted in Figures 5a and 5b. Table 4 presents a cumulative summary of soil analytical results.

2.3 Soil Vapor

On October 20, 2010, four direct-push soil borings (SV-1, SV-2, SV-3a, and SV-3b) were advanced to approximately 5 feet bgs in an effort to collect soil vapor samples using Geoprobe soil vapor apparatus. Only the sample from SV-2 reached a proper final

pressure of -5 inches of mercury (Hg). This indicates low permeability soils were present at the sampling depth at borings SV-1, SV-3a, and SV-3b as an adequate volume of soil vapor could not be collected. However, a soil vapor sample was collected at SV-2.

2.3.1 BTEX Constituents

Analytical results indicated that benzene was present at a concentration of 0.032 mg/m^3 in the sample SV-2. No other BTEX constituents were present above laboratory detection limits.

2.3.2 TPH Constituents

Analytical results indicated that TPH-g was detected in soil vapor sample SV-2 at an estimated concentration of 8.70 mg/m^3. TPH-g was reported as an estimated value as a TPH-g standard was not analyzed with the sample for calibration verification. However, McCampbell Analytical, Inc. is confident in the accuracy of the result due to the calibration stability of laboratory equipment with respect to TPH analysis.

2.3.3 Other VOCs

Analytical results indicated that concentrations of the four following VOCs were detected above laboratory detection limits: cyclohexane (0.0540 mg/m^3), hexane (0.200 mg/m^3), 4-methyl-2-pentanone (0.071 mg/m^3), and 1,2,4-trimethylbenzene (0.013 mg/m^3). Hexane and 1,2,4-trimethlybenzene are common fuel fractions. Cyclohexane and 4-methyl-2-pentanone, a derivative of acetone, are common laboratory contaminants.

Of the detected chemical constituents, only benzene and TPH-g have established soil vapor RWQCB ESL's for shallow soil (<3m bgs). Neither benzene (0.032 mg/m^3) nor TPH-g (8.70 mg/m^3) exceeded their respective ESLs of 0.280 mg/m^3 or 29.0 mg/m^3. It should be noted that, only one soil vapor sample (SV-2) could be collected due to low permeability soils.

Concentrations of chemicals of concern from the October 2010 soil vapor sampling event are depicted in Figure 6. Table 5 presents a summary of soil vapor analytical results from October 2010.

Cross-sections illustrating the subsurface at the Site to approximately ten feet below msl are presented as Figures 3a and 3b.

2.4 Summary of Pre- and Post- Remediation Impacts

Pursuant to the letter from ACEH dated September 8, 2011, pre- and post- remediation impacts were examined for soil and groundwater. Since complete soil sampling was not done before remediation in 1991, it is difficult to assess any pre-remediation impacts. Analytical results from soil sampling conducted from 1989 to 1993 are illustrated in Figures 5a and 5b, along with analytical results from the October 2010 sampling event. Soil impacts appear to be limited to the immediate area of the former UST tankpit, as evidenced by soil data from several borings advanced in the area of the former tankpit both before and after the USTs were removed (BC-1, BC-2, BC-3, ES-1, ES-2 and ES-5). These borings are present either within or immediately outside the perimeter of the former tankpit.

A groundwater remediation system was operated at the site from 1992 until 1997 and data indicates that the system was effective as PSH greater than 0.1-foot has not been

detected since 1995. The PSH plume and groundwater map from an October 1992 sampling event are illustrated in Figure 7a. Current groundwater data from the Site indicates that past remedial efforts were successful in removing enough source material that significant off-site migration of petroleum hydrocarbons in groundwater has not occurred. The vast majority of groundwater impacted with concentrations of petroleum hydrocarbons remains on-site.

3.0 CONCEPTUAL SITE MODEL

3.1 Sources

The Site has been developed as a bus terminal since 1929. Six, out-of-service underground storage tanks (USTs) were removed from the Site in April 1990. The USTs were reportedly out of use for at least two decades prior to their removal. Subsurface investigations between 1989 and 1997 indicated that petroleum hydrocarbon impacts, including phase-separated hydrocarbons (PSH), were present in soils and groundwater at the Site. The groundwater gradient at the Site has historically been a radial pattern migrating to the west-southwest and to the northwest from higher elevations to the east.

The monitoring well network was surveyed by a California licensed surveyor on April 8, 2009, to mean sea level (msl) elevation and latitude and longitude using the North American Vertical Datum 1988 (NAVD88) and North American Datum 1983 (NAD83) coordinate systems.

Between October 20 and 22, 2010, Green Star advanced twelve additional soil borings at the Site in order to further evaluate subsurface conditions in the area of the former USTs. To document current groundwater conditions, Green Star began conducting groundwater monitoring events in September 2008 and most recently in March of 2015 utilizing the network of 13 wells at the Site.

Results of the October 2010 subsurface investigation and the ongoing groundwater monitoring of the Site indicate that impacted soils appear to still be present at the Site within the area of the former tankpit and are the likely cause of the observed soil and groundwater impacts. The zone of highest impacted soil appears to be generally laterally contained to the former tankpit area and vertically distributed between approximately 10 feet bgs and downward to the groundwater table at the Site which is typically at an average depth of approximately 17 feet bgs. The analytical results from the ongoing groundwater monitoring events, specifically those conducted in August of 2014 and most recently in March of 2015 which show stable or decreasing trends of dissolved phase chemicals of concern in groundwater, indicates that no new releases have occurred or are ongoing from the current UST system at the Site.

3.2 Exposure Pathways

An assessment of exposure pathways, based on current data is presented below.

3.2.1 Soil

Petroleum impacts in soils at the site are generally confined to the former tankpit and are observed at depths of approximately 10 feet bgs down to the groundwater table at approximately 16-17 feet bgs. Soils in the shallow subsurface across the Site, at depths ranging from the surface to approximately 17 feet bgs are primarily comprised of fill material within the former tankpit which

are impacted by petroleum constituents and clays and clayey sands outside the former tankpit which are generally unimpacted. The depth of the petroleum impacts will prevent the direct contact of petroleum constituents with potential receptors under current exposure scenarios.

3.2.2 Groundwater

The potential ingestion pathway resulting from chemicals in the petroleum-impacted soils leaching to groundwater is not currently a viable pathway because groundwater at the Site is not used as a source of drinking water and a municipal water supply is readily available. Although groundwater is located at a minimum depth of 16 feet bgs, potential volatilization of chemical constituents in groundwater to ambient and outdoor air could potentially impact the adjacent Greyhound terminal building and/or future construction or excavation workers.

3.2.3 Soil Vapor

Given the relatively shallow depth of the petroleum-impacted soils, volatilization of chemical constituents in soil to ambient or indoor air into the adjacent Greyhound terminal building is possible.

3.3 Receptor Survey

3.3.1 Water Well Search

Green Star requested data related to water wells present within at least 0.5-mile of the Site from known regulatory data sources: Alameda County Public Works Agency (ACPWA) and State of California Department of Water Resources (DWR). The records indicated that the vast majority of water wells in the area of the Site are utilized for environmental purposes: monitoring or remediation. Seven of the wells were listed for irrigation, domestic use, industrial, or as cathodic protection wells, but none were listed as public supply wells. At the request of the ACEH, wells within a 1,500-foot radius of the site have been plotted on a map included as Figure 8. Of the seven identified wells, only one well listed as a cathodic protection well is within 1,500 feet of the Site. The well is not specifically addressed but is listed as being located at San Pablo Avenue and 18^{th}/19^{th} Street. Coordinates for the well were also given and used to plot the location of the well on the map. The well appears to be approximately 800 feet southeast of the Site. No listed irrigation, domestic use, industrial, or as cathodic protection wells appear to be impacted by or be present in a location that could be impacted in the future by petroleum hydrocarbons related to the Site.

3.3.2 Area Survey

A walking survey of the Site's area was conducted in 2009 in order to identify unknown, potential receptors or sensitive property uses (residences, water wells, schools, parks, etc.; Figure 9). The survey included an area within at least 500 feet of the Site's property boundary. The area is developed as a dense urban landscape with the majority of the survey area's developments being commercial operations or multi-family residences. No indication of the presence of water wells was observed during the survey. No residences are present within 500 feet downgradient of the Site. Other than residences at upgradient properties, only two sensitive properties were observed. Begin Plaza Park is present northeast of the Site in an up- to cross-gradient location relative to groundwater impacts at the Site. A YMCA child development center is located approximately 485 feet

downgradient of the Site, across Castro Street, I-980 and Brush Street. It should be noted that the YMCA child development center is adjacent to the Peerless Stages project site (ACEH LOP facility) and approximately 50 feet from known impacts at Herrington-Olsen Photography (ACEH LOP facility). Impacts related to the Site do not appear to threaten sensitive properties or other potential receptors.

3.3.3 Vapor Survey

A vapor survey of subsurface conduits at the Site, mainly near the impacted area, was conducted in April 2009. The Site and surrounding streets and right-of-ways were evaluated for the existence of conduits that could allow vapors related to petroleum hydrocarbon impacts at the Site to migrate to the surface or building interiors. Once identified, the atmosphere inside the conduits was screened for VOCs using a photo-ionization detector (PID). The conduits identified included: various manways (sewer, natural gas, and water), storm drains, and floor drains. No VOCs were measured in the conduits' atmospheres. The locations of the identified conduits and related measurements are illustrated as Figure 10.

3.3.4 Utility/Conduit Survey

A survey of subsurface utilities in the vicinity of the impacts at the Site was conducted in 2009 in order to evaluate the potential for the utilities or related trenches to intercept the impacts or impacted groundwater. Groundwater impacts from the Site extend under Castro Street. Four subsurface utility lines are located under Castro Street: a 24-inch outside diameter (OD) sanitary sewer, an 8-inch inside diameter (ID) gas line, a 12-inch OD storm sewer and an 8-inch ID water line (Figure 2b). None of the utilities under Castro Street intercept the water table. The base of the 24-inch sanitary sewer is closest to the groundwater table at approximately 11.7 feet above msl while groundwater has been present in monitoring well ES-8 at elevations ranging from 5.48 to 9.1 feet above msl. Several utility lines are located on-site near the source area, but the on-site lines are very near the surface and do not intercept or approach the water table. Furthermore, direct measurements of accessible near surface atmospheres in accessible lines indicated that measurable concentrations of petroleum hydrocarbons were not present (Section 3.3.3).

4.0 CLEAN UP GOALS

The Site has been utilized as a bus terminal since 1929 and is completely paved with parking areas, driveways, sidewalks, and building foundation. No indication of a residential property being impacted by petroleum hydrocarbons related to the former USTs at the Site has been observed. Soil impacts at the Site appear to be generally confined to the area of the former tankpit at the Site. Therefore, Green Star will use guidance and standards set forth by the State Water Resources Control Board (SWRCB) under the Low Threat Underground Storage Tank Case Closure Policy (LTCP) as target cleanup goals for impacted soils at the Site. Specifically, soil data will be compared to the media specific criteria for direct contact and outdoor air exposure to soils at commercial/industrial sites. Ultimately successful remediation of the site should result in COC concentrations in soils that satisfy the San Francisco Regional Water Quality Control Board (SFRWQCB) Basin Plan Environmental Screening Levels (ESLs) for shallow (<3m bgs) and deep (>3m bgs) soils for commercial/industrial sites with non-drinking water resources.

The data indicates that residual groundwater impacts at the Site do not appear to present significant risk to human health at the surface due to the lack of apparent exposure pathways. The vast majority of the groundwater impacts remain on-site as evidenced by relatively low concentrations of impacts in downgradient wells ES-6, ES-7, ES-8, and ES-9 and no indication of actual use of impacted groundwater at off-site properties exists based on a receptor survey, and shallow groundwater beneath the site has no documented beneficial use. Therefore, Green Star will use guidance and standards set forth by the SWRCB under the LTCP as target cleanup goals for impacted groundwater at the Site. Specifically, groundwater data will be compared to the media specific criteria for groundwater with emphasis on establishing that the contaminant plume in groundwater is either stable or decreasing and will ultimately satisfy the SFRWQCB Basin Plan Environmental Screening Levels ESLs for non-drinking water resources and potential vapor intrusion concerns for commercial/industrial sites.

Soil vapor data from the Site is limited due to difficulty in collecting samples from what appear to be low permeability soils. The data indicates that all chemicals of concern are below SFRWQCB ESLs for commercial sites. However, due to the very limited data set, the data is inconclusive. Under the SWRCB LTCP media specific criteria for vapor intrusion to indoor air and direct contact and outdoor air exposure, closure with respect to soil vapor concerns can be obtained through the use of soil and groundwater data from the site. Therefore, due to the difficulty in collecting soil vapor from the Site, Green Star will use SWRCB LTCP media specific criteria for vapor intrusion to indoor air and direct contact and outdoor air exposure based on soil and groundwater data from the Site as target cleanup goals for soil vapor. Ultimately successful remediation of the site should result in COC concentrations in soil vapor that satisfy the SFRWQCB Basin Plan ESLs for shallow soil gas (<3m bgs) at commercial/industrial sites.

5.0 REMEDIAL OPTIONS

5.1 Remedial Options Considered

The first option that was considered was excavation. However, due to the Site being an active bus terminal, the proximity of the presumed secondary source material in the former tank pit to the terminal building and traffic lanes of Castro Street, and the depth of the petroleum hydrocarbon impacted soil (10 feet bgs to water table), excavation of the secondary source material does not seem feasible. Excavation would require closure of the Greyhound facility's passenger loading and unload area as well as cutting off the facility's refueling capabilities. Additionally, multiple utilities lines associated with the terminal building including sanitary sewer lines traverse the potential excavation area and would be at risk of damage or failure. Extensive shoring and bracing of the excavation walls would also be necessary as the excavation walls would be required to be nearly vertical near the terminal building and along Castro Street, and deep based on the vertical extent of impacted soil.

Secondly, a combination pump-and-treat and vapor extraction system was considered and, ultimately, ruled out. Pump-and-treat systems are most effective for the treatment and reduction of PSH present on groundwater and have far more limited effectiveness in treating dissolved phase groundwater impacts because they ultimately do not directly address the source of the contamination. As an example, a pump-and-treat system was operated at the Site for a period of five years from 1992 to 1997, which successfully addressed the PSH at the Site but was not successful in treating dissolved-phase groundwater impacts. As PSH has not been detected at the site since 1997 and the impacts to groundwater at the Site are in the dissolved-phase as a result of being in

contact with contaminated soils, pump-and-treat would have very limited results. Furthermore, operation of a pump and treat system would require long term disruption of the facility operations for a period of years as well as ongoing maintenance of the system and discharge to the public sanitary sewer system which would significantly increase costs. Soil vapor extraction (SVE) as a treatment for soil contaminants would also be limited in its effectiveness for multiple reasons. Typically, residual petroleum impacts are difficult to treat since older impact plumes often include the heavier constituents of petroleum hydrocarbons and are not easily volatilized or naturally attenuated. Due to the age of the release at the site and the relatively low VOCs concentrations present in soil and groundwater, SVE would have limited success in adequately treating and removing contaminant mass from the remaining secondary source materials. Additionally, SVE in similar fashion to pump-and-treat for groundwater would require long term disruption of the facility operations for a period of years as well as ongoing maintenance of the system and management of discharge byproducts which would significantly increase costs. For these reasons, extraction and recovery of the impacted groundwater with simultaneous soil vapor extraction was not considered further.

5.2 Remediation Technology Selected

In order to address residual impacts in soil and groundwater at the Site, Green Star is recommending in situ chemical oxidation treatment of the secondary source material in the form of petroleum hydrocarbon impacted soils remaining within the former tankpit. In Situ Chemical Oxidation (ISCO) reactions predominantly take place in the aqueous phase in the subsurface, and have limited impact on contaminants adsorbed on soil and in the non-aqueous phase liquid (NAPL) phase. The proposed injection will be Surfactant-Enhanced ISCO. This is a relatively new, field verified technology capable of reducing the amount of source NAPL if present, desorbing contaminants from soil, and reducing the flux of groundwater constituents associated with these sites. This technology remediates NAPLs where present and contaminant species that are strongly sorbed to soil and sediment.

Chemical oxidation has been used across the country with success in remediation of sites with residual petroleum hydrocarbon impacts in soil and groundwater, as is the concern at this Site. Typically, residual petroleum impacts are difficult to treat since older impact plumes often include the heavier constituents of petroleum hydrocarbons and are not easily volatilized or naturally attenuated. At this Site, the BTEX and TPH constituents as well as miscellaneous other VOCs commonly associated with petroleum hydrocarbon impacts in vadose zone soils and dissolved in groundwater are being targeted for treatment by the chemical injections. Green Star believes that Surfactant-Enhanced ISCO is the most cost-effective remediation approach and can be completed in the most efficient time frame. Additionally, by directly treating the secondary source material in the form of impacted soils remaining at the Site, Green Star is confident that cleanup goals under the SWRCB LCTP will be met or exceeded for all media specific criteria. Furthermore, direct destruction of the source contaminants via Surfactant-Enhanced ISCO would greatly reduce the remaining natural attenuation time of observable impacts to ultimately meet SFRWQCB Basin Plan ESLs for commercial/industrial sites in the timeliest manner possible.

5.2.1 Site Safety Plan Preparation and Permitting

A site-specific Health and Safety Plan (HASP) will be written for environmental activities conducted at the Site. This safety plan will incorporate activities

including assessment of soil and groundwater and chemical oxidant injection. During injection activities, the minimum level of personal protective equipment (PPE) required is Level D. The HASP will include details regarding PPE and emergency response.

Applicable permits for drilling and injection of chemical reagents will be filed with the State of California prior to start of field activities.

5.2.2 Injection Point and Monitoring Point Installation

Prior to installation of injection points, a thorough review of available as-built drawings and a public utility locate request will be conducted. In addition, a private utility locator will be contracted to screen for utilities in the interior of the property to locate utilities that may not be identified by the public utility locate.

Green Star will oversee the advancement of approximately 10 soil borings at the Site in the area of the former tankpit near monitoring wells BC-1, BC-2, BC-3, ES-1, ES-2, ES-3, and ES-5. The area of the former tankpit is irregularly shaped and is approximately 2,226 square feet. Each of the 10 borings will be converted to permanent injection points. Permanent injection locations will be placed near existing groundwater monitoring wells with known hydrocarbon impacts, and be installed on approximately 12-foot centers. The proposed treatment area and locations of the borings/injection points are presented on Figure 11 and a construction detail of the injection points is included as Figure 12.

All drilling activities will be conducted by a licensed water well driller in the State of California as required and will be supervised by a Green Star scientist. The soil borings will be advanced utilizing a hollow-stem auger. Each boring will be drilled to approximately 22-25 feet bgs. No soil sampling and only limited Organic Vapor Analyzer (OVA) screening and logging will be conducted during injection point installation due to extensive existing soil boring data for the Site.

For the installation of the permanent injection points, a two-inch-diameter PVC casing will be installed in each borehole. Each casing will consist of 10-13 feet of screen (0.010 screen) and approximately 12 feet of blank riser. Clean silica sand will be placed in the annular space around each injection point until 2 feet above each screened interval, and a two- to three-foot thick hydrated bentonite chip seal will be placed above the sand interval followed by an expansive grout seal to approximately 2 feet bgs. The injection points will be completed at the surface with concrete, a steel manway cover, and locking compression caps.

In addition to the 10 permanent injection points, Green Star will oversee the advancement of two additional soil borings immediately west of the former tankpit area. These two soil borings will be converted to groundwater monitoring wells and be used as treatment performance monitoring points MP-1 and MP-2 as discussed in Section 5.2.5 below. The proposed treatment area and locations of the monitoring points are presented on Figure 11.

The soil borings will be advanced utilizing a hollow-stem auger. Each boring will be drilled to approximately 25 feet bgs or approximately 10 feet into the groundwater table. No soil sampling and only limited Organic Vapor Analyzer (OVA) screening and logging will be conducted during monitoring point

installation due to extensive existing soil boring data for the Site.

For the installation of the treatment performance plan monitoring points, a two-inch-diameter PVC casing will be installed in each borehole. Each casing will consist of 15 feet of screen (0.010 screen) and approximately 10 feet of blank riser. Clean silica sand will be placed in the annular space around each injection point until 2 feet above each screened interval, and a hydrated bentonite chip seal will be placed above the sand interval to approximately 2 feet bgs. The monitoring points will be completed at the surface with concrete, a steel manway cover, and locking compression caps.

5.2.3 Sitewide Gauging

Green Star will conduct gauging events prior to the chemical oxidation application. Gauging will be conducted with an electronic interface probe, and depths to groundwater and PSH (if present) will be recorded. Proper decontamination of the interface probe will be conducted between each monitoring well to prevent possible cross contamination. Purge water and decontamination water will be temporarily stored on-site in 55-gallon drums pending disposal.

5.2.4 In Situ Treatment

With the assistance of a contractor that specializes in application of chemical oxidizers, an aqueous solution of a proprietary sequence and mix of sodium percarbonate, sodium persulfate, hydrogen peroxide, Ivey-sol™ and sodium hydroxide solutions will be applied through the injection points. Safety Data Sheets for each injection chemical are included in Appendix E.

The injection treatment solution will be applied in accordance with recommended application practices. The targeted vertical interval for treatment is the suspected zone of secondary source material in the form of contaminated soils and the top of the groundwater table, which are approximately 10-17 feet bgs. Assuming a radius of influence of 6 feet, the area treated will be approximately 65 feet long by 45 feet wide. Additionally, soils in the vadose zone, which have elevated hydrocarbon concentrations, will be targeted in order to treat secondary sources of PSH that may be a source of impact to groundwater.

Based on information from previous assessments at the Site and reasonable assumptions, an aqueous solution of hydrogen peroxide-sodium percarbonate will be injected at very low flow rate (avg. 1-3 gpm) and pressure (<15 psi). This will minimize disturbance of the affected formation and provide the greatest control of oxidant distribution. Additionally, using the low flow rate and pressure will allow for monitoring of adjacent wells for the presence of off-gassing and the lateral extent of the treatment area. The aqueous oxidizing solution will be applied into the targeted treatment zone through each permanent injection point. This will be followed by a potable water purge to ensure the reagent is completely dispersed into the formation.

It is important to note that although chemical oxidation is a reasonably viable option for this Site, it is not possible to predict the effectiveness of the treatment, or the length of time treatment will take. In general, the effectiveness of the application will depend on the size and depth of the area to be treated, the type

of soil and conditions present, presence of secondary sources, and hydrogeologic parameters such as hydraulic conductivity. In the event that a second application of chemical oxidation reagents is deemed necessary, the permanent injection points will be used for this and any subsequent injections.

5.2.5 Treatment Performance Monitoring Plan

In order to document and mitigate the possible mobilization of petroleum hydrocarbons at the Site during the injection treatment and to monitor the extent of the zone of treatment, Green Star has developed a multi-phase monitoring plan. The details of the monitoring plan are outlined below.

Seven existing on-site monitoring wells (BC-1, BC-2, BC-3, ES-1, ES-2, ES-3, and ES-5) located within or adjacent to the proposed injection area will be used as performance monitoring plan wells (PMP wells) to monitor for the possible presence of mobilized hydrocarbons and to document the area of influence of the injection treatment. Additionally, two proposed newly installed monitoring points (MP-1 and MP-2) will be included to complete the PMP well network. The location of the PMP wells has been chosen based on their proximity to the proposed treatment area and due to the radial pattern of groundwater flow at the site predominantly to the north, west, and south. Because PSH has not been observed at the Site since 1995, Green star does not believe that any significant mobilization of PSH to groundwater will occur. However, Green Star will monitor for the presence of PSH as part of the Treatment Performance Monitoring Plan in an effort to be able to immediately detect, mitigate migration of, and remove PSH if mobilized due to the injection treatment. In addition, temporary rebounding effects if dissolved-phase petroleum impacts in nearby groundwater monitoring wells are anticipated. However, the application of the treatment solution at low flow and low pressure will minimize the downgradient migration of dissolved-phase contaminants while maximizing the contact time of the treatment solution with petroleum hydrocarbon constituents, both as PSH if present and in the dissolved-phase, to achieve the highest amount of source material mass destruction possible. A site map is attached as Figure 11 illustrating the treatment area and monitoring points.

Each of the PMP wells will be gauged periodically every 1-2 hours during the course of injection with an interface probe capable of detecting PSH. Should PSH be detected it will be immediately removed and containerized onsite in a 55-gallon drum pending offsite disposal. PSH removal will continue until measureable PSH is no longer present. In the event that PSH is present and persistence for three consecutive monitoring cycles in a given PMP well or cluster of PMP wells, the injection process will be stopped in the vicinity of the affected PMP well(s) until PSH has been removed and is no longer measurable. At this time, the injection plan will be re-evaluated and adjustments will be made to the injection rates and locations as applicable and a plan for hydraulic control of the site may be implemented if warranted.

In addition to directly gauging for PSH Green Star will field test each PMP well for oxidation-reduction potential (ORP) and pH. In previous ISCO remediation projects using similar techniques, Green Star has found these two parameters to be good indicators of the area of influence for the injection treatment. All field chemistry parameters will be measured using a YSI Multi-Probe System or

equivalent. The YSI will be calibrated for pH and ORP prior to injecting activities.

Prior to injection activities, several ORP and pH measurements will be recorded from the selected PMP wells. The data will be collected over a 6-24 hour period and at a minimum include 4 data points. This data will be averaged for each well to establish baseline ORP and pH readings for each PMP well.

ORP and pH measurements will be taken from each PMP well using a YSI probe at approximately 1-2 hour intervals during injection. These measurements will be logged in field records and monitored for changes relative to background levels obtained prior to the injection process.

During the injection treatment, fluctuations in ORP and pH for each PMP well will be documented but will not be used as a trigger mechanism to determine the rate or location of injection activities as in the case of direct PSH detection; because the PMP wells are within the proposed treatment area or immediately adjacent to the proposed treatment area, Green Star expects to observe fluctuations in ORP and pH readings in the PMP wells. This data will be used to monitor the area of influence of the injection treatment and when observed in conjunction with the PSH gauging data will help to determine the effectiveness of the treatment.

5.2.6 Confirmation Groundwater Gauging and Monitoring

Green Star will conduct gauging events during and immediately following the application of the hydrogen peroxide-sodium percarbonate solution to monitor the effectiveness of the treatment and for the detection of mobilized PSH (if present) as described in Section 5.2.5. In addition, a site-wide gauging event will also be conducted one month following treatment. Gauging will be conducted with an electronic interface probe, and depths to groundwater and PSH (if present) will be recorded. Proper decontamination of the interface probe will be conducted between each monitoring well to prevent possible cross contamination. Purge water and decontamination water will be temporarily stored on-site in 55-gallon drums pending disposal.

Green Star will also conduct one year of quarterly post treatment groundwater monitoring events beginning one month after completion of the in situ treatment. During each event the network of groundwater monitoring wells at the site will be sampled for TPH-g, TPH-d, TPH-o, BTEX, naphthalene, MTBE, ETBE, TAME, DIPE, EDC, EDB, TBA, and ethanol to match typical groundwater monitoring at the site. Additionally, groundwater samples with the highest TPH-d results will be analyzed for poly-aromatic hydrocarbons (PAHs). During the four quarterly groundwater monitoring events, Green Star will be monitoring for the effectiveness of the in situ treatment by observing trends in the concentrations of chemicals of concern over time. Analytical results from the four quarterly groundwater monitoring events will be compared to concentrations outlined in the SWRCB LTCP.

5.2.7 Confirmation Soil Sampling

Because sufficient soil data exists to satisfy the SWRCB LCTP for soils at the site, Green Star will not collect soil confirmation samples following the in situ treatment. However, to specifically address the SWRCB LTCP Media Specific Criteria for Direct Contact and Outdoor Air, Green Star will obtain shallow soil samples from the 0-5 foot interval and the 5-10 foot interval in the area of current

or likely fuel dispensers during the installation of injection points and additional monitoring points prior to ISCO remediation activities. Analytical results from the obtained samples will be used to determine if the Site meets the SRWCB LCTP Media Specific Criteria for Direct Contact and Outdoor Air and/or if additional remediation is needed in this shallow interval to meet the LTCP criteria. The soil samples will be analyzed for TPH-g, TPH-d, TPH-o, BTEX, naphthalene, MTBE, ETBE, TAME, DIPE, EDC, EDB, TBA, ethanol, PAHs.

5.2.8 Confirmation Soil Vapor Sampling

Because previous attempts to collect sufficient soil vapor data at the Site were unsuccessful due to low permeability soils and because the LTCP Media Specific Criteria for Vapor Intrusion to Indoor Air and Direct Contact and Outdoor Air may be satisfied based on groundwater and soil analytical data obtained from the Site, Green Star does not intend to collect additional soil vapor confirmation samples from the Site. Therefore, post remediation groundwater monitoring analytical data as described in section 5.2.6 and shallow soil analytical data as described in section 5.2.7 will be used to determine if the media specific criteria have been met under the SWRCB LTCP.

6.0 SCHEDULE

Upon approval of this CAP by the ACEH, Green Star will notify the adjacent property owners for the required public notification period of 30 days. Following the conclusion of the public notification period, Green Star will begin the proposed field activities according to the following approximate schedule:

Preparatory Activities

Prior to start of field activities, a site-specific Health and Safety Plan (HASP) will be prepared and the necessary permits for field activities will be acquired.

Field Activities

Week 1: Field activities will be initiated with the injection point installation, additional monitoring point installation, and initial site wide gauging.

Week 2: In situ treatment will begin with concurrent monitoring of groundwater monitoring wells and newly installed monitoring points.

Week 3: Field activities will be completed and confirmation gauging will be conducted.

One month following the initial application of chemicals, the first of four quarterly site wide gauging and groundwater monitoring events will be conducted. No extra days/weeks have been included to account for delays due to equipment failure and/or rainfall.

7.0 REPORTING

Following completion of injection activities, a report documenting field activities will be prepared. This report will document remediation activities at the Site, including installation of injection wells, chemical oxidation application, and confirmation gauging. In general, this report will include a description of field activities, analytical data, and conclusions.

8.0 REFERENCES

1. USGS (2000), *Geologic map and map database of the Oakland metropolitan area, Alameda, Contra Costa, and San Francisco Counties, California*.

2. California Regional Water Quality Control Board, San Francisco Bay Region (January 2007), *San Francisco Bay Basin (Region 2), Water Quality Control Plan (Basin Plan)*.

3. USDA Soil Conservation Service (March 1981), *Soil Survey of Alameda County, California, Western Part.*

4. California Regional Water Quality Control Board, San Francisco Bay Region, Groundwater Committee (June 1999), *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report, Alameda and Contra Costs Counties, CA*.

5. California Regional Water Quality Control Board, San Francisco Bay Region (Interim Final, Revised May 2008), *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*.

6. Oakland Urban Land Redevelopment Program: Guidance Document, City of Oakland, Public Works Agency, January 1, 2000.

TABLES

Table 1 - Summary of Previous Reports
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, Alameda County, California
Green Star Project No. 15-1379

Reference No.	Document Date	Type	Title	Author	Description
1	6/22/1989	Report	Phase I Investigation	Brown and Caldwell	Report determined that six USTs were present at the Site. Based on analytical testing of residual liquids in the USTs and soil samples, the USTs appeared to contain diesel, gasoline and water and at least some release has occurred to the subsurface. Groundwater was encountered at approximately 22 ft bgs, but was not sampled. Wells BC-1, BC-2, and BC-3 were found to be installed by 1992, but were not documented by this report.
2	7/21/1989	Letter	Report of Soil Contamination	Greyhound Lines, Vernon Sorgee PE	Reported release of diesel and/or gasoline from six, out of service USTs.
3	1/27/1992	Report	Preliminary Site Investigation Report	Engineering-Science, Inc.	The six USTs were reportedly unused for approximately 20 years. The six USTs were removed after the 1989 investigation. In November 1991, Engineering-Science, Inc. installed five monitoring wells (ES-1 through ES-5) and performed groundwater monitoring and a storm drain inspection. PSH was detected in wells BC-1 and ES-5. In soil, TPH-d was detected in only one sample from ES-5 while TEX was present samples from ES-1, ES-2, and ES-5. In groundwater, BTEX was present in ES-1, ES-2, ES-3 and ES-5 while TPH-d was present only in ES-5. Wells BC-1, BC-2 and BC-3 were not sampled. No evidence of impacts were observed in the inspected storm drains.
4	7/13/1992	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Monthly monitoring report of water levels and PSH. PSH was detected in four of the monitoring wells.
5	8/5/1992	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in three of the monitoring wells. Quarterly groundwater sampling was performed.
6	8/19/1992	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in four of the monitoring wells.
7	10/1/1992	Letter	Hydrocarbon Recovery System Installation/ Monitoring	Engineering-Science, Inc.	Summarizes the proposed remediation system that is to be installed. Documents system monitoring and groundwater monitoring procedures which include monthly and quarterly reports.
8	10/6/1992	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in four of the monitoring wells.
9	11/11/1992	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in four of the monitoring wells. Quarterly groundwater sampling was performed.
10	12/15/1992	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in four of the monitoring wells. The hydrocarbon recovery system was installed in November 1992.
11	12/15/1992	Report	Tank Closure Documentation	Engineering-Science, Inc.	The six USTs were removed in April 1990. As no documentation of the tank removal was available on the San Francisco Bay Region of the California RWQCB's fuel leak list, this report was created to document the removal. The report contains tank disposal records, records of soil disposal, analytical results of samples collected during the tank/soil removal, laboratory reports including quality control/quality assurances, and chain-of-custody documentation in order to provide the proper tank closure documentation requested by ACEH. No release determination samples were collected as part of the removal operation.
12	12/18/1992	Report	Hydrocarbon Recovery System Installation	Engineering-Science, Inc.	A remediation system was installed in November 1992 to recover PSH utilizing pneumatic, total fluids pumps in four, four-inch ID diameter recovery wells (30 ft. deep; ES-1, ES-5, BC-1 and ES-2). The recovered fluids were treated with an oil/water separator and activated carbon absorption columns prior to discharge to the sanitary sewer. Weekly system maintenance checks were performed during the initial start-up and first eight weeks of operation.

Table 1 - Summary of Previous Reports
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, Alameda County, California
Green Star Project No. 15-1379

Reference No.	Document Date	Type	Title	Author	Description
13	1/11/1993	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in three of the monitoring wells.
14	1/31/1993	Report	Quarterly Status Report	Engineering-Science, Inc.	Quarterly monitoring report. PSH was detected in four of the wells. Quarterly groundwater sampling was performed.
15	3/8/1993	Report	Quarterly Status Report	Engineering-Science, Inc.	Continued quarterly monitoring report. PSH was detected in three of the wells. Quarterly groundwater sampling was performed.
16	3/8/1993	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in three of the monitoring wells.
17	4/2/1993	Report	Supplemental Site Assessment Investigation Work Plan	Engineering-Science, Inc.	A workplan was created to further define the lateral and vertical extent of soil and groundwater contamination. Specific remedial actions for mitigating the contamination will also be assessed. Proposed work includes installation of six to eight soil borings which will be converted to groundwater monitoring wells.
18	4/13/1993	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in three of the monitoring wells.
19	5/11/1993	Report	Quarterly Status Report	Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was detected in three of the monitoring wells. Quarterly groundwater sampling was performed.
20	6/15/1993	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in three of the monitoring wells.
21	7/29/1993	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in three of the monitoring wells.
22	8/12/1993	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in two of the monitoring wells.
23	8/30/1993	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in two of the monitoring wells.
24	10/1/1993	Report	Preliminary Risk Evaluation	Engineering-Science, Inc.	The risk assessment includes an evaluation of potential contaminant exposure pathways, existing contaminant levels and distribution, chemical characteristics, and site-specific factors such as soil permeability, and local land and water uses. For this assessment, the site was divided into two regions: the former Tank Pit area (source area) and the region surrounding the source area (perimeter). Concentrations of contaminants in groundwater within the source area exceed criteria derived to protect both human health and the environment. None of the chemicals detected in the groundwater within the perimeter were found to exceed the criteria used, indicating that the recovery system is preventing migration of contaminants from the source area. Concentrations of BTEX in soils did not exceed calculated risk-based preliminary remediation goals in either the source area or the perimeter sample locations. TPH was detected in soils in the source area, but risk-based PRGs could not be derived for these contaminants because USEPA-derived toxicity values are not available. It was concluded that a more detailed quantitative risk assessment was not needed.
25	10/15/1993	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in three of the monitoring wells.
26	11/16/1993	Report	Quarterly Status Report	Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was detected in four of the monitoring wells. Quarterly groundwater sampling was performed.

Table 1 - Summary of Previous Reports
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, Alameda County, California
Green Star Project No. 15-1379

Reference No.	Document Date	Type	Title	Author	Description
27	11/18/1993	Report	Supplemental Site Assessment	Engineering-Science, Inc.	Documented the installation of six soil borings/wells (ES-6 through ES-11) and groundwater monitoring event. No impacts were detected in the soil samples. ES-11 was the only newly installed monitoring well with detectable concentrations of BTEX. While PSH was not detected, the continued operation of the groundwater recovery system on-site and continued groundwater monitoring was recommended. Groundwater impacts were limited to wells near the former USTs and ES-11.
28	12/15/1993	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in three of the monitoring wells.
29	1/13/1994	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in three of the monitoring wells.
30	2/26/1994	Report	Quarterly Status Report	Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was detected in three of the monitoring wells. Quarterly groundwater sampling was performed.
31	3/18/1994	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in three of the monitoring wells.
32	4/11/1994	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in four of the monitoring wells.
33	5/18/1994	Report	Quarterly Status Report	Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was detected in four of the monitoring wells. Quarterly groundwater sampling was performed.
34	6/1/1994	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in four of the monitoring wells.
35	7/8/1994	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in three of the monitoring wells.
36	9/1/1994	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in four of the monitoring wells.
37	9/7/1994	Report	Quarterly Status Report	Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was not recorded due to equipment theft. Quarterly groundwater sampling was performed.
38	9/28/1994	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in four of the monitoring wells.
39	10/31/1994	Report	Quarterly Status Report	Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was detected in one of the monitoring wells. Quarterly groundwater sampling was performed.
40	12/15/1994	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected in two of the monitoring wells. The last report in which PSH was detected greater than 0.1-foot.
41	1/23/1995	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected at less than 0.1-foot in one of the monitoring wells.
42	2/14/1995	Report	Quarterly Status Report	Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was not detected in any of the monitoring wells. Quarterly groundwater sampling was performed.
43	2/23/1995	Letter	Monthly Monitoring Report	Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected at less than 0.1-foot in two of the monitoring wells.
44	3/23/1995	Letter	Monthly Monitoring Report	Parsons Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected at less than 0.1-foot in one of the monitoring wells.

Table 1 - Summary of Previous Reports
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, Alameda County, California
Green Star Project No. 15-1379

Reference No.	Document Date	Type	Title	Author	Description
45	5/19/1995	Report	Quarterly Status Report	Parsons Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was detected at less than 0.1-foot in one of the monitoring wells. Quarterly groundwater sampling was performed.
46	7/6/1995	Letter	Monthly Monitoring Report	Parsons Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected at less than 0.1-foot in three of the monitoring wells.
47	7/7/1995	Letter	Monthly Monitoring Report	Parsons Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected at less than 0.1-foot in one of the monitoring wells.
48	8/8/1995	Report	Quarterly Status Report	Parsons Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was detected at less than 0.1-foot in one of the monitoring wells. Quarterly groundwater sampling was performed.
49	9/25/1995	Letter	Monthly Monitoring Report	Parsons Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected at less than 0.1-foot in two of the monitoring wells.
50	10/17/1995	Letter	Monthly Monitoring Report	Parsons Engineering-Science, Inc.	Continued monthly monitoring report. PSH was detected at less than 0.1-foot in one of the monitoring wells.
51	12/5/1995	Report	Quarterly Status Report	Parsons Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was detected at less than 0.1-foot in one of the monitoring wells. Quarterly groundwater sampling was performed.
52	2/26/1996	Report	Quarterly Status Report	Parsons Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was detected at less than 0.1-foot in one of the monitoring wells. Quarterly groundwater sampling was performed.
53	5/2/1996	Report	Quarterly Status Report	Parsons Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was not detected in any of the monitoring wells. Quarterly groundwater sampling was performed.
54	8/9/1996	Report	Quarterly Status Report	Parsons Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was not detected in any of the monitoring wells. Quarterly groundwater sampling was performed.
55	11/26/1996	Report	Quarterly Status Report	Parsons Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was not detected in any of the monitoring wells. Quarterly groundwater sampling was performed.
56	2/18/1997	Report	Quarterly Status Report	Parsons Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was not detected in any of the monitoring wells. Quarterly groundwater sampling was performed.
57	5/23/1997	Report	Quarterly Status Report	Parsons Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was not detected in any of the monitoring wells. Quarterly groundwater sampling was performed.
58	9/15/1997	Report	Quarterly Status Report	Parsons Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was not detected in any of the monitoring wells. Quarterly groundwater sampling was performed. Product had not been recovered since September 1994 and to date 1,015 gallons of free product had been recovered. In addition, 82,610 gallons of groundwater had been treated and discharged to the sanitary sewer.
59	11/25/1997	Report	Quarterly Status Report	Parsons Engineering-Science, Inc.	Continued quarterly groundwater monitoring report. PSH was detected at less than 0.1-foot in one of the monitoring wells. Quarterly groundwater sampling was performed. The recovery system was deactivated in January 1997.
60	6/14/2000	Report	Case Closure Checklist, Leaking Underground Storage Tank Program	Central Valley Regional Water Quality Control Board	Case closure checklist, site location map, water well driller's reports, analytical summary (monitoring wells: 07/08/92-10/07/97), site plan, soil analytical data map, groundwater analytical data map.

Table 1 - Summary of Previous Reports
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, Alameda County, California
Green Star Project No. 15-1379

Reference No.	Document Date	Type	Title	Author	Description
61	6/15/2000	Report	Risk Management Plan	Parsons Engineering Science, Inc.	Includes stipulations and restrictions that must be followed in order to comply with all requirements of the Risk Management Plan as specified by the ACEH, CASE closure checklist, site location map, analytical summary (monitoring wells: 07/08/92-10/07/97), site plan, soil analytical data map, and groundwater analytical data map.
62	6/15/2000	Report	Final Closure Request	Parsons Engineering Science, Inc.	Reviews site history and existing conditions (in 12/97, the groundwater monitoring program was terminated with ACEH and RWQCB's approval). Requested No Further Action (NFA) as: none of the 384 wells located in Section 26 are used for municipal water supply, Lake Merrit is located approximately 1,700 feet east of the site and is the nearest surface water body, regional groundwater flow is to the south-southwest, no soil remediation was required at the site, a total fluid recovery system was used between 01/93 through 02/97 to remove PSH discovered in four onsite wells (ES-1, ES-2, ES-5, and BC-1), PSH was completely removed and dissolved constituents were reduced to levels of diminishing returns, factors limiting potential adverse impacts include the limited horizontal and vertical extent of the dissolved hydrocarbon plume and the removal of PSH from the vicinity of of the former UST locations, and absence of potable drinking wells or reservoirs within a one-mile radius. Conclusions from the Preliminary Risk Evaluation and Tier II Benzene assessment indicated the lack of any significant health or environmental threats to current or future users of the site under currentuse conditions. It was recommended that a NFA status be granted for the site with a deed restriction and Risk Management Plan in place.
63	11/12/2008	Report	Groundwater Monitoring Report	Green Star Environmental	A groundwater monitoring event was performed in September 2008 utilizing 13 wells. PSH was not detected. Benzene, toluene, and naphthalene exceeded City of Oakland RBSLs. TPH-g and TPH-d exceeded Cal EPA ESLs. The majority of the groundwater impacts remained on-site.
64	5/12/2009	Report	Groundwater Monitoring Report	Green Star Environmental	A groundwater monitoring event was performed in April 2009 utilizing 13 wells. PSH was not detected. Benzene, toluene, naphthalene, and EDB exceeded City of Oakland RBSLs. TPH-g and TPH-d exceeded California EPA ESLs. The majority of groundwater impacts remained on-site.
65	7/1/2009	Report	Site Conceptual Model	Green Star Environmental	The Site Conceptual Model evaluated known data for the project. No known exposures appear to be occuring and the majority of the groundwater impacts have remained on-site. No downgradient receptors appear to be at risk. A Workplan to confirm current soil impacts was submitted to ACEH.
66	9/28/2009	Report	Groundwater Monitoring Report	Green Star Environmental	A groundwater monitoring event was performed in April 2009 utilizing 13 wells. PSH was not detected. Benzene, toluene, naphthalene, EDB, and EDC exceeded City of Oakland RBSLs. TPH-g and TPH-d exceeded California EPA ESLs. The majority of groundwater impacts remained on-site.
67	12/11/2009	Report	Groundwater Monitoring Report	Green Star Environmental	A groundwater monitoring event was performed in October 2009 utilizing 13 wells. PSH was not detected. Benzene, toluene, naphthalene, and EDC exceeded City of Oakland RBSLs. TPH-g and TPH-d exceeded California EPA ESLs. The majority of groundwater impacts remained on-site.
68	9/23/2010	Report	Groundwater Monitoring Report	Green Star Environmental	A groundwater monitoring event was performed in July 2010 utilizing 13 wells. PSH was not detected. Benzene, toluene, ethylbenzene, xylenes, naphthalene, and EDC exceeded City of Oakland RBSLs. TPH-g, TPH-d, and TPH-o exceeded California EPA ESLs. The majority of groundwater impacts remained on-site.
69	7/6/2011	Report	Groundwater Monitoring Report	Green Star Environmental	A groundwater monitoring event was performed in February 2011 utilizing 13 wells. PSH was not detected. Benzene, toluene, ethylbenzene, xylenes, naphthalene, and EDC exceeded RWQCB ESLs. TPH-g, TPH-d, and TPH-o exceeded California EPA ESLs. The majority of groundwater impacts remained on-site.

Table 1 - Summary of Previous Reports
Oakland Bus Terminal
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Green Star Project No. 15-1379

Reference No.	Document Date	Type	Title	Author	Description
70	7/6/2011	Report	Site Investigation and Soil Gas Survey Report	Green Star Environmental	In October 2010, 12 soil borings were advanced to evaluate subsurface conditions in the area of the former tankpit and 4 direct-push soil borings were used to collect soil vapor samples. None of the soil samples exceeded the RWQCB ESL for shallow soils, however, benzene, ethylbenzene, xylenes, TPH-g, and TPH-d exceeded the RWQCB ESL for deep soils. Of the detected chemical constituents in the collected soil vapor sample, RWQCB ESLs for shallow soils were established only for benzene and TPH-g, and neither were exceeded in the sample.
71	12/21/2011	Report	Site Conceptual Model	Green Star Environmental	The Site Conceptual Model evaluated known data for the project. No known exposures appear to be occuring and the majority of the groundwater impacts have remained on-site. No downgradient receptors appear to be at risk.
72	2/13/2012	Report	Groundwater Monitoring Report	Green Star Environmental	A groundwater monitoring event was performed in December, 2011 utilizing 12 wells. PSH was not detected. Analytical results indicated that benzene, ethylbenzene, xylenes, naphthalene, and TPH (TPH-g and TPH-d) were detected above the non-ingestion-specific RWQCB ESL for each constituent.
73	2/10/2015	Report	Groundwater Monitoring Report	Green Star Environmental	A groundwater monitoring event was performed in August 2014 utilizing 12 wells. PSH was not detected. Benzene, ethylbenzene, xylenes, and naphthalene exceeded RWQCB ESLs. TPH-g, TPH-d exceeded California EPA ESLs. The majority of groundwater impacts remained on-site.
74	4/6/2015	Report	Groundwater Monitoring Report	Green Star Environmental	A groundwater monitoring event was performed in March 2015 utilizing 12 wells. PSH was not detected. Benzene, ethylbenzene, xylenes, and naphthalene exceeded RWQCB ESLs. TPH-g, TPH-d exceeded California EPA ESLs. The majority of groundwater impacts remained on-site.

ACEH = Alameda County Environmental Health RWQCB = Regional Water Quality Control Board

Table 2 - Cumulative Summary of Groundwater Level Measurements
Oakland Bus Terminal
2103 San Pablo Ave.
Oakland, Alameda County, California
Green Star Project No. 15-1379

Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
BC-1	07/07/92	24.41	19.55	20.66	1.11	nm	4.65
BC-1	08/04/92	24.41	18.47	20.90	2.43	nm	5.48
BC-1	08/31/92	24.41	18.68	21.02	2.34	nm	5.29
BC-1	10/06/92	24.41	18.82	21.14	2.32	nm	5.15
BC-1	11/06/92	24.41	18.24	20.69	2.45	nm	5.70
BC-1	01/07/93	24.41	19.60	21.76	2.16	nm	4.40
BC-1	04/06/93	24.41	--	18.26	--	nm	6.15
BC-1	07/03/93	24.41	19.05	19.15	0.10	nm	5.34
BC-1	08/04/93	24.41	19.30	19.40	0.10	nm	5.09
BC-1	09/01/93	24.41	19.23	19.32	0.09	nm	5.16
BC-1	10/07/93	24.41	19.25	19.43	0.18	nm	5.13
BC-1	11/02/93	24.41	19.42	19.61	0.19	nm	4.95
BC-1	12/06/93	24.41	19.31	19.53	0.22	nm	5.06
BC-1	01/05/94	24.41	19.25	19.42	0.17	nm	5.13
BC-1	02/02/94	24.41	19.30	19.50	0.20	nm	5.07
BC-1	03/02/94	24.41	18.40	18.60	0.20	nm	5.97
BC-1	04/07/94	24.41	18.10	18.20	0.10	nm	6.29
BC-1	05/05/94	24.41	18.65	18.84	0.19	nm	5.72
BC-1	06/07/94	24.41	18.25	18.52	0.27	nm	6.11
BC-1	07/13/94	24.41	--	18.70	--	nm	5.71
BC-1	08/03/94	24.41	--	18.40	--	nm	6.01
BC-1	09/14/94	24.41	18.72	18.73	0.01	nm	5.69
BC-1	10/06/94	24.41	--	18.58	--	nm	5.83
BC-1	11/02/94	24.41	18.81	18.82	0.01	nm	5.60
BC-1	12/07/94	24.41	17.93	17.94	0.01	nm	6.48
BC-1	01/13/95	24.41	--	18.58	--	nm	5.83
BC-1	02/14/95	24.41	16.76	16.80	0.04	nm	7.64
BC-1	03/07/95	24.41	--	17.08	--	nm	7.33
BC-1	04/11/95	24.41	--	16.55	--	nm	7.86
BC-1	05/09/95	24.41	16.99	17.00	0.01	nm	7.42
BC-1	06/09/95	24.41	17.38	17.39	0.01	nm	7.03
BC-1	07/06/95	24.41	--	17.64	--	nm	6.77
BC-1	08/10/95	24.41	--	17.89	--	nm	6.52
BC-1	09/07/95	24.41	--	17.96	--	nm	6.45
BC-1	10/03/95	24.41	--	18.23	--	nm	6.18
BC-1	10/05/95	24.41	--	18.23	--	nm	6.18
BC-1	11/02/95	24.41	--	18.02	--	nm	6.39
BC-1	12/07/95	24.41	--	18.64	--	nm	5.77
BC-1	01/03/96	24.41	--	18.36	--	nm	6.05
BC-1	02/06/96	24.41	--	17.43	--	nm	6.98
BC-1	03/12/96	24.41	--	16.85	--	nm	7.56
BC-1	05/07/96	24.41	--	17.45	--	nm	6.96
BC-1	06/05/96	24.41	--	17.46	--	nm	6.95
BC-1	09/05/96	24.41	--	18.16	--	nm	6.25
BC-1	10/08/96	24.41	--	18.40	--	nm	6.01
BC-1	11/08/96	24.41	--	18.57	--	nm	5.84
BC-1	12/13/96	24.41	--	18.24	--	nm	6.17
BC-1	01/16/97	24.41	--	17.19	--	nm	7.22
BC-1	02/14/97	24.41	--	16.88	--	nm	7.53
BC-1	03/07/97	24.41	--	17.31	--	nm	7.10
BC-1	04/17/97	24.41	--	17.92	--	nm	6.49
BC-1	07/15/97	24.41	--	18.61	--	nm	5.80
BC-1	10/07/97	24.41	--	18.72	--	nm	5.69
BC-1	09/24/08	24.41	--	16.68	--	29.55	7.73
BC-1	04/08/09	24.41	--	14.95	--	29.55	9.46
BC-1	07/14/09	24.41	--	15.77	--	29.58	8.64
BC-1	10/06/09	24.41	--	16.27	--	29.59	8.14
BC-1	07/28/10	24.41	--	16.22	--	29.75	8.19
BC-1	02/08/11	24.41	--	15.88	--	29.56	8.53
BC-1	12/13/11	24.41	--	16.61	--	29.70	7.80
BC-1	08/04/14	24.41	--	17.20	--	29.71	7.21
BC-1	03/12/15	24.41	--	16.37	--	29.65	8.04

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Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
BC-2	07/07/92	24.37	--	16.89	--	nm	nd[2]
BC-2	08/04/92	24.37	--	18.46	--	nm	nd[2]
BC-2	08/31/92	24.37	--	18.89	--	nm	nd[2]
BC-2	10/06/92	24.37	--	18.50	--	nm	nd[2]
BC-2	11/06/92	24.37	--	15.98	--	nm	nd[2]
BC-2	01/07/93	24.37	--	13.50	--	nm	nd[2]
BC-2	04/06/93	24.37	--	15.20	--	nm	nd[2]
BC-2	07/03/93	24.37	--	17.75	--	nm	nd[2]
BC-2	08/04/93	24.37	--	18.10	--	nm	nd[2]
BC-2	09/01/93	24.37	--	18.48	--	nm	nd[2]
BC-2	10/07/93	24.37	--	19.02	--	nm	nd[2]
BC-2	11/02/93	24.37	--	18.76	--	nm	nd[2]
BC-2	12/06/93	24.37	--	18.87	--	nm	nd[2]
BC-2	01/05/94	24.37	--	16.76	--	nm	nd[2]
BC-2	02/02/94	24.37	--	16.42	--	nm	nd[2]
BC-2	05/05/94	24.37	--	17.30	--	nm	nd[2]
BC-2	06/07/94	24.37	--	17.70	--	nm	nd[2]
BC-2	07/13/94	24.37	--	17.10	--	nm	nd[2]
BC-2	08/03/94	24.37	--	18.36	--	nm	nd[2]
BC-2	09/14/94	24.37	--	17.04	--	nm	nd[2]
BC-2	01/13/95	24.37	--	12.80	--	nm	nd[2]
BC-2	02/14/95	24.37	--	15.11	--	nm	nd[2]
BC-2	03/07/95	24.37	--	16.21	--	nm	nd[2]
BC-2	04/11/95	24.37	--	15.56	--	nm	nd[2]
BC-2	05/09/95	24.37	--	15.81	--	nm	nd[2]
BC-2	06/09/95	24.37	--	16.88	--	nm	nd[2]
BC-2	07/06/95	24.37	--	16.88	--	nm	nd[2]
BC-2	08/10/95	24.37	--	17.55	--	nm	nd[2]
BC-2	09/07/95	24.37	--	18.03	--	nm	nd[2]
BC-2	10/03/95	24.37	--	18.24	--	nm	nd[2]
BC-2	10/05/95	24.37	--	18.24	--	nm	nd[2]
BC-2	11/02/95	24.37	--	18.36	--	nm	nd[2]
BC-2	01/03/96	24.37	--	17.86	--	nm	nd[2]
BC-2	02/06/96	24.37	--	16.31	--	nm	nd[2]
BC-2	03/12/96	24.37	--	16.50	--	nm	nd[2]
BC-2	04/09/96	24.37	--	16.90	--	nm	nd[2]
BC-2	05/07/96	24.37	--	17.20	--	nm	nd[2]
BC-2	06/05/96	24.37	--	17.10	--	nm	nd[2]
BC-2	07/09/96	24.37	--	17.70	--	nm	nd[2]
BC-2	10/08/96	24.37	--	18.40	--	nm	nd[2]
BC-2	11/08/96	24.37	--	18.30	--	nm	nd[2]
BC-2	12/13/96	24.37	--	16.80	--	nm	nd[2]
BC-2	01/16/97	24.37	--	16.40	--	nm	nd[2]
BC-2	02/14/97	24.37	--	16.30	--	nm	nd[2]
BC-2	03/07/97	24.37	--	17.00	--	nm	nd[2]
BC-2	04/17/97	24.37	--	17.70	--	nm	nd[2]
BC-2	07/15/97	24.37	--	18.50	--	nm	nd[2]
BC-2	10/07/97	24.37	--	18.69	--	nm	nd[2]
BC-2	09/24/08	24.37	--	16.82	--	19.90	nd[2]
BC-2	04/08/09	24.37	--	16.34	--	19.91	nd[2]
BC-2	07/14/09	24.37	--	17.08	--	19.93	nd[2]
BC-2	10/06/09	24.37	--	16.61	--	19.94	nd[2]
BC-2	07/28/10	24.37	--	16.25	--	20.02	nd[2]
BC-2	02/08/11	24.37	--	15.55	--	19.85	nd[2]
BC-2	12/13/11	24.37	--	16.56	--	20.02	nd[2]
BC-2	08/04/14	24.37	--	17.12	--	20.16	nd[2]
BC-2	03/12/15	24.37	--	16.39	--	19.93	nd[2]

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Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
BC-3	07/07/92	24.42	--	16.68	--	nm	nd[2]
BC-3	08/04/92	24.42	--	19.24	--	nm	nd[2]
BC-3	08/31/92	24.42	--	19.10	--	nm	nd[2]
BC-3	10/06/92	24.42	--	18.93	--	nm	nd[2]
BC-3	11/06/92	24.42	--	16.81	--	nm	nd[2]
BC-3	01/07/93	24.42	--	16.55	--	nm	nd[2]
BC-3	04/06/93	24.42	--	15.44	--	nm	nd[2]
BC-3	07/03/93	24.42	--	16.81	--	nm	nd[2]
BC-3	08/04/93	24.42	--	18.82	--	nm	nd[2]
BC-3	09/01/93	24.42	--	18.40	--	nm	nd[2]
BC-3	10/07/93	24.42	--	18.58	--	nm	nd[2]
BC-3	11/02/93	24.42	--	18.53	--	nm	nd[2]
BC-3	12/06/93	24.42	--	18.67	--	nm	nd[2]
BC-3	01/05/94	24.42	--	17.51	--	nm	nd[2]
BC-3	02/02/94	24.42	--	16.40	--	nm	nd[2]
BC-3	03/02/94	24.42	--	15.00	--	nm	nd[2]
BC-3	04/07/94	24.42	--	17.70	--	nm	nd[2]
BC-3	05/05/94	24.42	--	17.90	--	nm	nd[2]
BC-3	06/07/94	24.42	--	17.34	--	nm	nd[2]
BC-3	07/13/94	24.42	--	18.10	--	nm	nd[2]
BC-3	08/03/94	24.42	--	18.36	--	nm	nd[2]
BC-3	09/14/94	24.42	--	18.31	--	nm	nd[2]
BC-3	10/06/94	24.42	--	18.58	--	nm	nd[2]
BC-3	11/02/94	24.42	--	18.61	--	nm	nd[2]
BC-3	12/07/94	24.42	--	16.29	--	nm	nd[2]
BC-3	01/13/95	24.42	--	15.40	--	nm	nd[2]
BC-3	02/14/95	24.42	--	15.86	--	nm	nd[2]
BC-3	03/07/95	24.42	--	16.21	--	nm	nd[2]
BC-3	04/11/95	24.42	--	15.08	--	nm	nd[2]
BC-3	05/09/95	24.42	--	16.92	--	nm	nd[2]
BC-3	06/09/95	24.42	--	16.90	--	nm	nd[2]
BC-3	07/06/95	24.42	--	16.87	--	nm	nd[2]
BC-3	08/10/95	24.42	--	17.54	--	nm	nd[2]
BC-3	09/07/95	24.42	--	17.80	--	nm	nd[2]
BC-3	10/03/95	24.42	--	17.95	--	nm	nd[2]
BC-3	10/05/95	24.42	--	17.95	--	nm	nd[2]
BC-3	11/02/95	24.42	--	18.33	--	nm	nd[2]
BC-3	01/03/96	24.42	--	17.55	--	nm	nd[2]
BC-3	02/06/96	24.42	--	17.15	--	nm	nd[2]
BC-3	03/12/96	24.42	--	16.50	--	nm	nd[2]
BC-3	04/09/96	24.42	--	16.60	--	nm	nd[2]
BC-3	05/07/96	24.42	--	16.90	--	nm	nd[2]
BC-3	06/05/96	24.42	--	17.00	--	nm	nd[2]
BC-3	07/09/96	24.42	--	17.40	--	nm	nd[2]
BC-3	10/08/96	24.42	--	18.10	--	nm	nd[2]
BC-3	11/08/96	24.42	--	18.20	--	nm	nd[2]
BC-3	12/13/96	24.42	--	17.60	--	nm	nd[2]
BC-3	09/24/08	24.42	--	17.01	--	20.11	nd[2]
BC-3	04/08/09	24.42	--	14.93	--	20.15	nd[2]
BC-3	07/14/09	24.42	--	16.10	--	20.16	nd[2]
BC-3	10/06/09	24.42	--	16.66	--	20.16	nd[2]
BC-3	07/28/10	24.42	--	16.32	--	20.24	nd[2]
BC-3	02/08/11	24.42	--	15.92	--	20.15	nd[2]
BC-3	12/13/11	24.42	--	16.59	--	20.23	nd[2]
BC-3	08/04/14	24.42	--	17.22	--	20.20	nd[2]
BC-3	03/12/15	24.42	--	16.42	--	20.08	nd[2]

Table 2 - Cumulative Summary of Groundwater Level Measurements
Oakland Bus Terminal
2103 San Pablo Ave.
Oakland, Alameda County, California
Green Star Project No. 15-1379

Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
ES-1	06/16/92	24.11	20.18	23.78	3.60	nm	3.25
ES-1	07/07/92	24.11	--	18.60	--	nm	5.51
ES-1	08/04/92	24.11	18.80	18.81	0.01	nm	5.31
ES-1	08/31/92	24.11	18.96	18.97	0.01	nm	5.15
ES-1	10/06/92	24.11	19.08	19.10	0.02	nm	5.03
ES-1	11/06/92	24.11	18.52	18.53	0.01	nm	5.59
ES-1	01/07/93	24.11	20.27	20.26	0.01	nm	3.86
ES-1	04/06/93	24.11	--	17.88	--	nm	6.23
ES-1	07/03/93	24.11	--	18.68	--	nm	5.43
ES-1	08/04/93	24.11	--	18.85	--	nm	5.26
ES-1	09/01/93	24.11	--	18.90	--	nm	5.21
ES-1	10/07/93	24.11	19.04	19.03	0.01	nm	5.09
ES-1	11/02/93	24.11	--	19.20	--	nm	4.91
ES-1	12/06/93	24.11	--	19.15	--	nm	4.96
ES-1	01/05/94	24.11	--	18.96	--	nm	5.15
ES-1	02/02/94	24.11	--	18.92	--	nm	5.19
ES-1	05/05/94	24.11	17.91	18.08	0.17	nm	6.17
ES-1	06/07/94	24.11	18.50	18.68	0.18	nm	5.58
ES-1	07/13/94	24.11	17.88	18.02	0.14	nm	6.20
ES-1	08/03/94	24.11	18.04	18.21	0.17	nm	6.04
ES-1	09/14/94	24.11	18.66	18.64	0.02	nm	5.49
ES-1	10/06/94	24.11	18.39	18.43	0.04	nm	5.71
ES-1	11/02/94	24.11	--	18.39	--	nm	5.72
ES-1	12/07/94	24.11	--	17.70	--	nm	6.41
ES-1	01/13/95	24.11	18.39	18.43	0.04	nm	5.71
ES-1	02/14/95	24.11	16.44	16.45	0.01	nm	7.67
ES-1	03/07/95	24.11	--	16.74	--	nm	7.37
ES-1	04/11/95	24.11	--	16.25	--	nm	7.86
ES-1	05/09/95	24.11	--	16.66	--	nm	7.45
ES-1	06/09/95	24.11	17.15	17.16	0.01	nm	6.96
ES-1	07/06/95	24.11	--	17.28	--	nm	6.83
ES-1	08/10/95	24.11	17.60	17.61	0.01	nm	6.51
ES-1	09/07/95	24.11	--	17.79	--	nm	6.32
ES-1	10/05/95	24.11	--	18.01	--	nm	6.10
ES-1	01/03/96	24.11	--	18.04	--	nm	6.07
ES-1	04/09/96	24.11	--	17.40	--	nm	6.71
ES-1	01/16/97	24.11	--	16.79	--	nm	7.32
ES-1	02/14/97	24.11	--	16.53	--	nm	7.58
ES-1	03/07/97	24.11	--	17.01	--	nm	7.10
ES-1	04/17/97	24.11	--	18.13	--	nm	5.98
ES-1	07/15/97	24.11	--	18.44	--	nm	5.67
ES-1	10/07/97	24.11	18.36	18.37	0.01	nm	5.75
ES-1	09/24/08	24.11	--	16.46	--	30.13	7.65
ES-1	04/08/09	24.11	--	14.75	--	30.15	9.36
ES-1	07/14/09	24.11	--	15.67	--	30.08	8.44
ES-1	10/06/09	24.11	--	16.10	--	30.15	8.01
ES-1	07/28/10	24.11	--	15.98	--	30.24	8.13
ES-1	02/08/11	24.11	--	15.59	--	30.11	8.52
ES-1	12/13/11	24.11	--	16.38	--	30.19	7.73
ES-1	08/04/14	24.11	nm	nm	nm	nm	nm
ES-1	03/12/15	24.11	--	16.13	--	30.18	7.98

Table 2 - Cumulative Summary of Groundwater Level Measurements
Oakland Bus Terminal
2103 San Pablo Ave.
Oakland, Alameda County, California
Green Star Project No. 15-1379

Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
ES-2	06/16/92	24.66	18.63	18.64	0.01	nm	6.03
ES-2	07/07/92	24.66	--	19.62	--	nm	5.04
ES-2	08/04/92	24.66	19.17	19.76	0.59	nm	5.38
ES-2	08/31/92	24.66	19.29	19.90	0.61	nm	5.25
ES-2	10/06/92	24.66	19.41	20.00	0.59	nm	5.14
ES-2	11/06/92	24.66	18.84	19.44	0.60	nm	5.71
ES-2	01/07/93	24.66	20.05	20.40	0.35	nm	4.54
ES-2	04/06/93	24.66	18.20	18.31	0.11	nm	6.44
ES-2	07/03/93	24.66	19.31	19.32	0.01	nm	5.35
ES-2	08/04/93	24.66	19.15	19.18	0.03	nm	5.50
ES-2	09/01/93	24.66	19.50	19.59	0.09	nm	5.14
ES-2	10/07/93	24.66	19.57	19.60	0.03	nm	5.08
ES-2	11/02/93	24.66	19.60	19.61	0.01	nm	5.06
ES-2	12/06/93	24.66	19.71	19.74	0.03	nm	4.94
ES-2	01/05/94	24.66	19.57	19.61	0.04	nm	5.08
ES-2	02/02/94	24.66	19.20	19.25	0.05	nm	5.45
ES-2	03/02/94	24.66	19.00	19.50	0.50	nm	5.57
ES-2	04/07/94	24.66	19.10	19.19	0.09	nm	5.54
ES-2	05/05/94	24.66	18.77	18.79	0.02	nm	5.89
ES-2	06/07/94	24.66	--	18.61	--	nm	6.05
ES-2	07/13/94	24.66	--	18.78	--	nm	5.88
ES-2	08/03/94	24.66	--	18.72	--	nm	5.94
ES-2	09/14/94	24.66	19.10	19.14	0.04	nm	5.55
ES-2	10/06/94	24.66	--	18.86	--	nm	5.80
ES-2	11/02/94	24.66	18.97	19.91	0.94	nm	5.51
ES-2	12/07/94	24.66	--	18.14	--	nm	6.52
ES-2	01/13/95	24.66	--	18.86	--	nm	5.80
ES-2	02/14/95	24.66	--	16.92	--	nm	7.74
ES-2	03/07/95	24.66	--	17.25	--	nm	7.41
ES-2	04/11/95	24.66	--	16.71	--	nm	7.95
ES-2	05/09/95	24.66	--	17.15	--	nm	7.51
ES-2	06/09/95	24.66	17.60	17.61	0.01	nm	7.06
ES-2	07/06/95	24.66	17.78	17.79	0.01	nm	6.88
ES-2	08/10/95	24.66	18.09	18.10	0.01	nm	6.57
ES-2	09/07/95	24.66	--	18.29	--	nm	6.37
ES-2	10/03/95	24.66	18.45	18.48	0.03	nm	6.20
ES-2	10/05/95	24.66	18.45	18.48	0.03	nm	6.20
ES-2	11/02/95	24.66	18.62	18.65	0.03	nm	6.03
ES-2	12/07/95	24.66	18.85	18.90	0.05	nm	5.80
ES-2	01/03/96	24.66	18.54	18.55	0.01	nm	6.12
ES-2	02/06/96	24.66	--	17.60	--	nm	7.06
ES-2	03/12/96	24.66	--	17.08	--	nm	7.58
ES-2	04/09/96	24.66	--	17.18	--	nm	7.48
ES-2	05/07/96	24.66	--	17.66	--	nm	7.00
ES-2	06/05/96	24.66	--	17.66	--	nm	7.00
ES-2	07/09/96	24.66	--	18.02	--	nm	6.64
ES-2	09/05/96	24.66	--	18.39	--	nm	6.27
ES-2	10/08/96	24.66	--	18.61	--	nm	6.05
ES-2	11/08/96	24.66	--	18.78	--	nm	5.88
ES-2	12/13/96	24.66	--	18.43	--	nm	6.23
ES-2	01/16/97	24.66	--	17.57	--	nm	7.09
ES-2	02/14/97	24.66	--	17.08	--	nm	7.58
ES-2	03/07/97	24.66	--	17.56	--	nm	7.10
ES-2	04/17/97	24.66	--	18.11	--	nm	6.55
ES-2	07/15/97	24.66	--	18.97	--	nm	5.69
ES-2	10/07/97	24.66	--	18.87	--	nm	5.79
ES-2	09/24/08	24.66	--	16.96	--	30.19	7.70
ES-2	04/08/09	24.66	--	15.25	--	31.15	9.41
ES-2	07/14/09	24.66	--	16.07	--	30.16	8.59
ES-2	10/06/09	24.66	--	16.57	--	30.15	8.09
ES-2	07/28/10	24.66	--	16.49	--	30.30	8.17
ES-2	02/08/11	24.66	--	16.12	--	30.15	8.54
ES-2	12/13/11	24.66	--	16.91	--	30.29	7.75
ES-2	08/04/14	24.66	--	17.39	--	30.24	7.27
ES-2	03/12/15	24.66	--	16.64	--	30.24	8.02

Table 2 - Cumulative Summary of Groundwater Level Measurements
Oakland Bus Terminal
2103 San Pablo Ave.
Oakland, Alameda County, California
Green Star Project No. 15-1379

Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
ES-3	06/16/92	24.93	--	19.41	--	nm	5.52
ES-3	07/07/92	24.93	--	19.52	--	nm	5.41
ES-3	08/04/92	24.93	--	19.68	--	nm	5.25
ES-3	08/31/92	24.93	--	19.80	--	nm	5.13
ES-3	10/06/92	24.93	--	19.96	--	nm	4.97
ES-3	11/06/92	24.93	18.84	19.84	1.00	nm	5.90
ES-3	01/07/93	24.93	--	19.20	--	nm	5.73
ES-3	04/06/93	24.93	--	15.92	--	nm	9.01
ES-3	07/03/93	24.93	--	18.12	--	nm	6.81
ES-3	08/04/93	24.93	--	19.18	--	nm	5.75
ES-3	09/01/93	24.93	--	19.36	--	nm	5.57
ES-3	10/07/93	24.93	--	19.62	--	nm	5.31
ES-3	11/02/93	24.93	--	19.70	--	nm	5.23
ES-3	12/06/93	24.93	--	19.68	--	nm	5.25
ES-3	01/05/94	24.93	--	19.52	--	nm	5.41
ES-3	02/02/94	24.93	--	19.30	--	nm	5.63
ES-3	03/02/94	24.93	--	18.68	--	nm	6.25
ES-3	04/07/94	24.93	--	19.00	--	nm	5.93
ES-3	05/05/94	24.93	--	18.78	--	nm	6.15
ES-3	06/07/94	24.93	--	18.90	--	nm	6.03
ES-3	07/13/94	24.93	--	18.71	--	nm	6.22
ES-3	08/03/94	24.93	--	19.03	--	nm	5.90
ES-3	09/14/94	24.93	--	19.84	--	nm	5.09
ES-3	10/06/94	24.93	--	19.24	--	nm	5.69
ES-3	11/02/94	24.93	--	19.37	--	nm	5.56
ES-3	12/07/94	24.93	--	18.44	--	nm	6.49
ES-3	01/13/95	24.93	--	17.35	--	nm	7.58
ES-3	02/14/95	24.93	--	17.22	--	nm	7.71
ES-3	03/07/95	24.93	--	17.52	--	nm	7.41
ES-3	04/11/95	24.93	--	16.95	--	nm	7.98
ES-3	05/09/95	24.93	17.34	17.39	0.05	nm	7.58
ES-3	06/09/95	24.93	--	17.87	--	nm	7.06
ES-3	07/06/95	24.93	--	18.07	--	nm	6.86
ES-3	08/10/95	24.93	--	18.40	--	nm	6.53
ES-3	09/07/95	24.93	--	18.59	--	nm	6.34
ES-3	10/03/95	24.93	--	18.76	--	nm	6.17
ES-3	10/05/95	24.93	--	18.76	--	nm	6.17
ES-3	11/02/95	24.93	--	18.96	--	nm	5.97
ES-3	12/07/95	24.93	--	19.19	--	nm	5.74
ES-3	01/03/96	24.93	--	17.55	--	nm	7.38
ES-3	02/06/96	24.93	--	17.86	--	nm	7.07
ES-3	03/12/96	24.93	--	17.35	--	nm	7.58
ES-3	04/09/96	24.93	--	17.65	--	nm	7.28
ES-3	05/07/96	24.93	--	17.94	--	nm	6.99
ES-3	06/05/96	24.93	--	17.94	--	nm	6.99
ES-3	07/09/96	24.93	--	18.33	--	nm	6.60
ES-3	09/05/96	24.93	--	18.63	--	nm	6.30
ES-3	10/08/96	24.93	--	18.98	--	nm	5.95
ES-3	11/08/96	24.93	--	19.16	--	nm	5.77
ES-3	12/13/96	24.93	--	18.81	--	nm	6.12
ES-3	01/16/97	24.93	--	17.72	--	nm	7.21
ES-3	02/14/97	24.93	--	17.47	--	nm	7.46
ES-3	03/07/97	24.93	--	17.90	--	nm	7.03
ES-3	04/17/97	24.93	--	18.42	--	nm	6.51
ES-3	07/15/97	24.93	--	19.01	--	nm	5.92
ES-3	10/07/97	24.93	--	19.18	--	nm	5.75
ES-3	09/24/08	24.93	--	17.38	--	31.44	7.55
ES-3	04/08/09	24.93	--	15.65	--	31.55	9.28
ES-3	07/14/09	24.93	--	16.54	--	31.51	8.39
ES-3	10/06/09	24.93	--	17.06	--	31.56	7.87
ES-3	07/28/10	24.93	--	16.80	--	31.74	8.13
ES-3	02/08/11	24.93	--	16.41	--	31.45	8.52
ES-3	12/13/11	24.93	--	17.11	--	31.46	7.82
ES-3	08/04/14	24.93	--	17.80	--	31.72	7.13
ES-3	03/12/15	24.93	--	16.96	--	31.49	7.97

Table 2 - Cumulative Summary of Groundwater Level Measurements
Oakland Bus Terminal
2103 San Pablo Ave.
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Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
ES-4	06/16/92	23.93	18.63	18.98	0.35	nm	5.23
ES-4	07/07/92	23.93	--	18.51	--	nm	5.42
ES-4	08/04/92	23.93	--	18.66	--	nm	5.27
ES-4	08/31/92	23.93	--	18.79	--	nm	5.14
ES-4	10/06/92	23.93	--	18.92	--	nm	5.01
ES-4	11/06/92	23.93	--	18.94	--	nm	4.99
ES-4	01/07/93	23.93	--	18.76	--	nm	5.17
ES-4	04/06/93	23.93	--	17.26	--	nm	6.67
ES-4	07/03/93	23.93	--	18.08	--	nm	5.85
ES-4	08/04/93	23.93	--	18.16	--	nm	5.77
ES-4	09/01/93	23.93	--	18.46	--	nm	5.47
ES-4	10/07/93	23.93	--	18.62	--	nm	5.31
ES-4	11/02/93	23.93	--	18.74	--	nm	5.19
ES-4	12/06/93	23.93	--	18.72	--	nm	5.21
ES-4	01/05/94	23.93	--	18.55	--	nm	5.38
ES-4	02/02/94	23.93	--	18.42	--	nm	5.51
ES-4	03/02/94	23.93	--	17.86	--	nm	6.07
ES-4	04/07/94	23.93	--	18.80	--	nm	5.13
ES-4	05/05/94	23.93	--	17.86	--	nm	6.07
ES-4	06/07/94	23.93	--	17.94	--	nm	5.99
ES-4	07/13/94	23.93	--	18.13	--	nm	5.80
ES-4	08/03/94	23.93	--	17.94	--	nm	5.99
ES-4	09/14/94	23.93	--	18.18	--	nm	5.75
ES-4	10/06/94	23.93	--	18.25	--	nm	5.68
ES-4	11/02/94	23.93	--	18.35	--	nm	5.58
ES-4	12/07/94	23.93	--	17.56	--	nm	6.37
ES-4	01/13/95	23.93	--	16.77	--	nm	7.16
ES-4	02/14/95	23.93	--	16.37	--	nm	7.56
ES-4	03/07/95	23.93	--	16.66	--	nm	7.27
ES-4	04/11/95	23.93	--	16.14	--	nm	7.79
ES-4	05/09/95	23.93	--	16.57	--	nm	7.36
ES-4	06/09/95	23.93	--	17.02	--	nm	6.91
ES-4	07/06/95	23.93	--	17.19	--	nm	6.74
ES-4	08/10/95	23.93	--	17.84	--	nm	6.09
ES-4	09/07/95	23.93	--	17.68	--	nm	6.25
ES-4	10/03/95	23.93	--	17.84	--	nm	6.09
ES-4	10/05/95	23.93	--	17.84	--	nm	6.09
ES-4	11/02/95	23.93	--	18.02	--	nm	5.91
ES-4	12/07/95	23.93	--	18.23	--	nm	5.70
ES-4	01/03/96	23.93	--	17.87	--	nm	6.06
ES-4	02/06/96	23.93	--	17.02	--	nm	6.91
ES-4	03/12/96	23.93	--	16.54	--	nm	7.39
ES-4	04/09/96	23.93	--	16.76	--	nm	7.17
ES-4	05/07/96	23.93	--	16.17	--	nm	7.76
ES-4	06/05/96	23.93	--	17.05	--	nm	6.88
ES-4	07/09/96	23.93	--	17.37	--	nm	6.56
ES-4	09/05/96	23.93	--	17.74	--	nm	6.19
ES-4	10/08/96	23.93	--	17.97	--	nm	5.96
ES-4	11/08/96	23.93	--	18.13	--	nm	5.80
ES-4	12/13/96	23.93	--	17.83	--	nm	6.10
ES-4	01/16/97	23.93	--	16.92	--	nm	7.01
ES-4	02/14/97	23.93	--	16.56	--	nm	7.37
ES-4	03/07/97	23.93	--	16.95	--	nm	6.98
ES-4	04/17/97	23.93	--	17.45	--	nm	6.48
ES-4	07/15/97	23.93	--	18.05	--	nm	5.88
ES-4	10/07/97	23.93	--	18.23	--	nm	5.70
ES-4	09/24/08	23.93	--	16.20	--	29.94	7.73
ES-4	04/08/09	23.93	--	14.46	--	29.95	9.47
ES-4	07/14/09	23.93	--	15.29	--	29.96	8.64
ES-4	10/06/09	23.93	--	15.80	--	29.94	8.13
ES-4	07/28/10	23.93	--	15.77	--	29.83	8.16
ES-4	02/08/11	23.93	--	15.38	--	29.65	8.55
ES-4	12/13/11	23.93	--	16.19	--	30.05	7.74
ES-4	08/04/14	23.93	--	16.68	--	30.00	7.25
ES-4	03/12/15	23.93	--	15.90	--	28.49	8.03

Table 2 - Cumulative Summary of Groundwater Level Measurements
Oakland Bus Terminal
2103 San Pablo Ave.
Oakland, Alameda County, California
Green Star Project No. 15-1379

Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
ES-5	06/16/92	24.08	18.40	20.40	2.00	nm	5.30
ES-5	07/07/92	24.08	--	20.23	--	nm	3.85
ES-5	08/04/92	24.08	18.16	20.43	2.27	nm	5.49
ES-5	08/31/92	24.08	18.24	20.80	2.56	nm	5.35
ES-5	10/06/92	24.08	18.24	21.37	3.13	nm	5.25
ES-5	11/06/92	24.08	17.60	20.92	3.32	nm	5.85
ES-5	01/05/93	24.08	18.42	19.75	1.33	nm	5.41
ES-5	01/07/93	24.08	19.35	22.00	2.65	nm	4.23
ES-5	04/06/93	24.08	--	17.28	--	nm	6.80
ES-5	07/03/93	24.08	--	19.50	--	nm	4.58
ES-5	08/04/93	24.08	--	18.61	--	nm	5.47
ES-5	09/01/93	24.08	18.79	18.80	0.01	nm	5.29
ES-5	10/07/93	24.08	18.65	19.33	0.68	nm	5.30
ES-5	11/02/93	24.08	18.91	19.45	0.54	nm	5.07
ES-5	12/06/93	24.08	18.78	19.25	0.47	nm	5.21
ES-5	02/02/94	24.08	18.18	19.98	1.80	nm	5.56
ES-5	03/02/94	24.08	18.07	18.30	0.23	nm	5.97
ES-5	04/07/94	24.08	18.37	18.38	0.01	nm	5.71
ES-5	05/05/94	24.08	18.24	18.26	0.02	nm	5.84
ES-5	06/07/94	24.08	18.26	18.27	0.01	nm	5.82
ES-5	07/13/94	24.08	--	18.30	--	nm	5.78
ES-5	08/03/94	24.08	--	17.90	--	nm	6.18
ES-5	09/14/94	24.08	18.41	18.42	0.01	nm	5.67
ES-5	10/06/94	24.08	--	18.23	--	nm	5.85
ES-5	11/02/94	24.08	--	18.47	--	nm	5.61
ES-5	12/07/94	24.08	--	17.45	--	nm	6.63
ES-5	01/13/95	24.08	--	18.23	--	nm	5.85
ES-5	02/14/95	24.08	--	16.45	--	nm	7.63
ES-5	03/07/95	24.08	--	16.53	--	nm	7.55
ES-5	04/11/95	24.08	--	16.00	--	nm	8.08
ES-5	05/09/95	24.08	--	16.45	--	nm	7.63
ES-5	06/09/95	24.08	--	16.90	--	nm	7.18
ES-5	07/06/95	24.08	--	17.09	--	nm	6.99
ES-5	08/10/95	24.08	--	17.44	--	nm	6.64
ES-5	09/07/95	24.08	--	17.61	--	nm	6.47
ES-5	10/03/95	24.08	--	18.74	--	nm	5.34
ES-5	10/05/95	24.08	--	18.74	--	nm	5.34
ES-5	11/02/95	24.08	--	17.98	--	nm	6.10
ES-5	12/07/95	24.08	18.21	18.22	0.01	nm	5.87
ES-5	01/03/96	24.08	--	17.89	--	nm	6.19
ES-5	02/06/96	24.08	--	16.76	--	nm	7.32
ES-5	03/12/96	24.08	--	16.36	--	nm	7.72
ES-5	04/09/96	24.08	--	16.70	--	nm	7.38
ES-5	05/07/96	24.08	--	16.95	--	nm	7.13
ES-5	06/05/96	24.08	--	16.95	--	nm	7.13
ES-5	07/09/96	24.08	--	17.34	--	nm	6.74
ES-5	01/16/97	24.08	--	16.68	--	nm	7.40
ES-5	02/14/97	24.08	--	16.43	--	nm	7.65
ES-5	03/07/97	24.08	--	16.90	--	nm	7.18
ES-5	04/17/97	24.08	--	17.41	--	nm	6.67
ES-5	07/15/97	24.08	--	18.29	--	nm	5.79
ES-5	10/07/97	24.08	--	18.48	--	nm	5.60
ES-5	09/24/08	24.08	--	16.49	--	30.06	7.59
ES-5	04/08/09	24.08	--	14.75	--	30.13	9.33
ES-5	07/15/09	24.08	--	15.61	--	30.08	8.47
ES-5	10/06/09	24.08	--	16.12	--	30.08	7.96
ES-5	07/28/10	24.08	--	15.97	--	30.26	8.11
ES-5	02/08/11	24.08	--	15.55	--	30.05	8.53
ES-5	12/13/11	24.08	--	16.33	--	30.16	7.75
ES-5	08/04/14	24.08	--	15.83	--	30.31	8.25
ES-5	03/12/15	24.08	--	16.12	--	30.19	7.96

Table 2 - Cumulative Summary of Groundwater Level Measurements
Oakland Bus Terminal
2103 San Pablo Ave.
Oakland, Alameda County, California
Green Star Project No. 15-1379

Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
ES-6	01/05/93	27.06	--	21.76	--	nm	5.30
ES-6	09/01/93	27.06	--	21.94	--	nm	5.12
ES-6	10/07/93	27.06	--	21.81	--	nm	5.25
ES-6	11/02/93	27.06	--	21.91	--	nm	5.15
ES-6	12/06/93	27.06	--	21.90	--	nm	5.16
ES-6	02/02/94	27.06	--	21.74	--	nm	5.32
ES-6	03/02/94	27.06	--	21.10	--	nm	5.96
ES-6	04/07/94	27.06	--	21.30	--	nm	5.76
ES-6	05/05/94	27.06	--	21.16	--	nm	5.90
ES-6	06/07/94	27.06	--	21.02	--	nm	6.04
ES-6	07/13/94	27.06	--	21.40	--	nm	5.66
ES-6	08/03/94	27.06	--	21.58	--	nm	5.48
ES-6	09/14/94	27.06	--	21.52	--	nm	5.54
ES-6	10/06/94	27.06	--	21.58	--	nm	5.48
ES-6	11/02/94	27.06	--	21.64	--	nm	5.42
ES-6	12/07/94	27.06	--	20.94	--	nm	6.12
ES-6	01/13/95	27.06	--	20.25	--	nm	6.81
ES-6	02/14/95	27.06	--	19.82	--	nm	7.24
ES-6	03/07/95	27.06	--	20.06	--	nm	7.00
ES-6	04/11/95	27.06	--	19.56	--	nm	7.50
ES-6	05/09/95	27.06	nd[4]	nd[4]	nd[4]	nm	nd[4]
ES-6	06/09/95	27.06	--	20.37	--	nm	6.69
ES-6	07/06/95	27.06	--	20.55	--	nm	6.51
ES-6	08/10/95	27.06	--	20.81	--	nm	6.25
ES-6	09/07/95	27.06	--	20.94	--	nm	6.12
ES-6	10/03/95	27.06	--	21.14	--	nm	5.92
ES-6	10/05/95	27.06	--	21.14	--	nm	5.92
ES-6	11/02/95	27.06	--	21.31	--	nm	5.75
ES-6	12/07/95	27.06	--	21.48	--	nm	5.58
ES-6	01/03/96	27.06	--	21.24	--	nm	5.82
ES-6	02/06/96	27.06	--	20.52	--	nm	6.54
ES-6	03/12/96	27.06	--	19.85	--	nm	7.21
ES-6	04/09/96	27.06	--	20.14	--	nm	6.92
ES-6	05/07/96	27.06	--	20.42	--	nm	6.64
ES-6	06/05/96	27.06	--	20.41	--	nm	6.65
ES-6	07/09/96	27.06	--	20.74	--	nm	6.32
ES-6	10/08/96	27.06	--	21.23	--	nm	5.83
ES-6	11/08/96	27.06	--	21.44	--	nm	5.62
ES-6	12/13/96	27.06	--	21.19	--	nm	5.87
ES-6	01/16/97	27.06	--	20.15	--	nm	6.91
ES-6	02/14/97	27.06	--	19.92	--	nm	7.14
ES-6	03/07/97	27.06	--	20.31	--	nm	6.75
ES-6	04/17/97	27.06	--	20.78	--	nm	6.28
ES-6	07/15/97	27.06	--	21.32	--	nm	5.74
ES-6	10/07/97	27.06	--	21.48	--	nm	5.58
ES-6	09/24/08	27.06	--	19.02	--	34.98	8.04
ES-6	04/08/09	27.06	--	17.39	--	35.00	9.67
ES-6	07/14/09	27.06	--	18.13	--	35.03	8.93
ES-6	10/06/09	27.06	--	18.52	--	35.00	8.54
ES-6	07/28/10	27.06	--	18.77	--	35.12	8.29
ES-6	02/08/11	27.06	--	18.37	--	34.93	8.69
ES-6	12/13/11	27.06	--	19.18	--	39.19	7.88
ES-6	08/04/14	27.06	--	19.64	--	35.11	7.42
ES-6	03/12/15	27.06	--	18.95	--	35.04	8.11

Table 2 - Cumulative Summary of Groundwater Level Measurements
Oakland Bus Terminal
2103 San Pablo Ave.
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Green Star Project No. 15-1379

Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
ES-7	01/05/93	25.66	--	19.90	--	nm	5.76
ES-7	09/01/93	25.66	--	19.71	--	nm	5.95
ES-7	10/07/93	25.66	--	19.99	--	nm	5.67
ES-7	11/02/93	25.66	--	20.12	--	nm	5.54
ES-7	12/06/93	25.66	--	20.15	--	nm	5.51
ES-7	02/02/94	25.66	--	19.79	--	nm	5.87
ES-7	03/02/94	25.66	--	19.14	--	nm	6.52
ES-7	04/07/94	25.66	--	19.44	--	nm	6.22
ES-7	05/05/94	25.66	--	19.30	--	nm	6.36
ES-7	06/07/94	25.66	--	19.33	--	nm	6.33
ES-7	07/13/94	25.66	--	19.11	--	nm	6.55
ES-7	08/03/94	25.66	--	19.40	--	nm	6.26
ES-7	09/14/94	25.66	--	19.64	--	nm	6.02
ES-7	10/06/94	25.66	--	19.73	--	nm	5.93
ES-7	11/02/94	25.66	--	19.79	--	nm	5.87
ES-7	12/07/94	25.66	--	19.89	--	nm	5.77
ES-7	01/13/95	25.66	--	18.11	--	nm	7.55
ES-7	02/14/95	25.66	--	17.63	--	nm	8.03
ES-7	03/07/95	25.66	--	17.92	--	nm	7.74
ES-7	04/11/95	25.66	--	17.35	--	nm	8.31
ES-7	05/09/95	25.66	--	17.79	--	nm	7.87
ES-7	06/09/95	25.66	--	18.29	--	nm	7.37
ES-7	07/06/95	25.66	--	18.46	--	nm	7.20
ES-7	08/10/95	25.66	--	18.77	--	nm	6.89
ES-7	09/07/95	25.66	--	18.98	--	nm	6.68
ES-7	10/03/95	25.66	--	19.15	--	nm	6.51
ES-7	10/05/95	25.66	--	19.15	--	nm	6.51
ES-7	11/02/95	25.66	--	19.36	--	nm	6.30
ES-7	12/07/95	25.66	--	19.57	--	nm	6.09
ES-7	01/03/96	25.66	--	19.29	--	nm	6.37
ES-7	02/06/96	25.66	--	18.41	--	nm	7.25
ES-7	03/12/96	25.66	--	17.76	--	nm	7.90
ES-7	04/09/96	25.66	--	18.05	--	nm	7.61
ES-7	05/07/96	25.66	--	18.36	--	nm	7.30
ES-7	06/05/96	25.66	--	18.36	--	nm	7.30
ES-7	07/09/96	25.66	--	18.72	--	nm	6.94
ES-7	09/05/96	25.66	--	19.12	--	nm	6.54
ES-7	10/08/96	25.66	--	19.37	--	nm	6.29
ES-7	11/08/96	25.66	--	19.56	--	nm	6.10
ES-7	12/13/96	25.66	--	19.28	--	nm	6.38
ES-7	01/16/97	25.66	--	18.19	--	nm	7.47
ES-7	02/14/97	25.66	--	17.88	--	nm	7.78
ES-7	03/07/97	25.66	--	18.30	--	nm	7.36
ES-7	04/17/97	25.66	--	18.81	--	nm	6.85
ES-7	09/24/08	25.66	--	18.20	--	31.28	7.46
ES-7	04/08/09	25.66	--	16.52	--	31.29	9.14
ES-7	07/14/09	25.66	--	17.36	--	31.30	8.30
ES-7	10/06/09	25.66	--	17.90	--	31.72	7.76
ES-7	07/28/10	25.66	--	17.52	--	31.50	8.14
ES-7	02/08/11	25.66	--	17.18	--	31.33	8.48
ES-7	12/13/11	25.66	--	17.91	--	33.55	7.75
ES-7	08/04/14	25.66	--	17.10	--	31.61	8.56
ES-7	03/12/15	25.66	--	17.79	--	33.28	7.87

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Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
ES-8	09/01/93	24.74	--	18.88	--	nm	5.86
ES-8	10/07/93	24.74	--	19.13	--	nm	5.61
ES-8	11/02/93	24.74	--	19.26	--	nm	5.48
ES-8	12/06/93	24.74	--	19.24	--	nm	5.50
ES-8	01/05/94	24.74	--	19.10	--	nm	5.64
ES-8	02/02/94	24.74	--	19.08	--	nm	5.66
ES-8	03/02/94	24.74	--	18.28	--	nm	6.46
ES-8	04/07/94	24.74	--	18.44	--	nm	6.30
ES-8	05/05/94	24.74	--	18.26	--	nm	6.48
ES-8	06/07/94	24.74	--	18.32	--	nm	6.42
ES-8	07/13/94	24.74	--	18.50	--	nm	6.24
ES-8	08/03/94	24.74	--	18.42	--	nm	6.32
ES-8	09/14/94	24.74	--	18.50	--	nm	6.24
ES-8	10/06/94	24.74	--	18.76	--	nm	5.98
ES-8	11/02/94	24.74	--	18.76	--	nm	5.98
ES-8	12/07/94	24.74	--	18.00	--	nm	6.74
ES-8	01/13/95	24.74	--	16.83	--	nm	7.91
ES-8	02/14/95	24.74	--	16.67	--	nm	8.07
ES-8	03/07/95	24.74	--	16.99	--	nm	7.75
ES-8	04/11/95	24.74	--	16.41	--	nm	8.33
ES-8	05/09/95	24.74	--	16.92	--	nm	7.82
ES-8	06/09/95	24.74	--	17.35	--	nm	7.39
ES-8	07/06/95	24.74	--	17.56	--	nm	7.18
ES-8	08/10/95	24.74	--	17.89	--	nm	6.85
ES-8	09/07/95	24.74	--	18.09	--	nm	6.65
ES-8	10/03/95	24.74	--	18.27	--	nm	6.47
ES-8	10/05/95	24.74	--	18.27	--	nm	6.47
ES-8	11/02/95	24.74	--	18.51	--	nm	6.23
ES-8	12/07/95	24.74	--	18.72	--	nm	6.02
ES-8	01/03/96	24.74	--	18.36	--	nm	6.38
ES-8	02/06/96	24.74	--	17.07	--	nm	7.67
ES-8	03/12/96	24.74	--	16.79	--	nm	7.95
ES-8	04/09/96	24.74	--	17.10	--	nm	7.64
ES-8	05/07/96	24.74	--	17.34	--	nm	7.40
ES-8	06/05/96	24.74	--	17.36	--	nm	7.38
ES-8	07/09/96	24.74	--	17.71	--	nm	7.03
ES-8	09/05/96	24.74	--	18.13	--	nm	6.61
ES-8	10/08/96	24.74	--	18.44	--	nm	6.30
ES-8	11/08/96	24.74	--	18.61	--	nm	6.13
ES-8	12/13/96	24.74	--	18.32	--	nm	6.42
ES-8	01/16/97	24.74	--	17.22	--	nm	7.52
ES-8	02/14/97	24.74	--	16.94	--	nm	7.80
ES-8	03/07/97	24.74	--	17.36	--	nm	7.38
ES-8	09/24/08	24.74	--	17.35	--	28.94	7.39
ES-8	04/08/09	24.74	--	15.64	--	28.80	9.10
ES-8	07/14/09	24.74	--	16.49	--	28.85	8.25
ES-8	10/06/09	24.74	--	17.03	--	29.16	7.71
ES-8	07/28/10	24.74	--	16.41	--	29.21	8.33
ES-8	02/08/11	24.74	--	16.01	--	29.11	8.73
ES-8	12/13/11	24.74	--	16.79	--	29.32	7.95
ES-8	08/06/14	24.74	--	17.09	--	29.30	7.65
ES-8	03/12/15	24.74	--	16.55	--	29.22	8.19

Table 2 - Cumulative Summary of Groundwater Level Measurements
Oakland Bus Terminal
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Green Star Project No. 15-1379

Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
ES-9	09/01/93	23.33	--	19.74	--	nm	3.59
ES-9	10/07/93	23.33	--	17.90	--	nm	5.43
ES-9	12/06/93	23.33	--	18.00	--	nm	5.33
ES-9	01/05/94	23.33	--	17.80	--	nm	5.53
ES-9	02/02/94	23.33	--	17.02	--	nm	6.31
ES-9	03/02/94	23.33	--	17.12	--	nm	6.21
ES-9	04/07/94	23.33	--	17.24	--	nm	6.09
ES-9	05/05/94	23.33	--	17.04	--	nm	6.29
ES-9	06/07/94	23.33	--	17.06	--	nm	6.27
ES-9	07/13/94	23.33	--	17.40	--	nm	5.93
ES-9	08/03/94	23.33	--	17.10	--	nm	6.23
ES-9	09/14/94	23.33	--	17.09	--	nm	6.24
ES-9	10/06/94	23.33	--	17.46	--	nm	5.87
ES-9	11/02/94	23.33	--	17.55	--	nm	5.78
ES-9	12/07/94	23.33	--	16.79	--	nm	6.54
ES-9	01/13/95	23.33	--	15.80	--	nm	7.53
ES-9	02/14/95	23.33	--	15.49	--	nm	7.84
ES-9	03/07/95	23.33	--	15.79	--	nm	7.54
ES-9	04/11/95	23.33	--	15.23	--	nm	8.10
ES-9	05/09/95	23.33	--	15.72	--	nm	7.61
ES-9	06/09/95	23.33	--	16.13	--	nm	7.20
ES-9	07/06/95	23.33	--	16.34	--	nm	6.99
ES-9	08/10/95	23.33	--	16.67	--	nm	6.66
ES-9	09/07/95	23.33	--	16.87	--	nm	6.46
ES-9	10/03/95	23.33	--	17.09	--	nm	6.24
ES-9	10/05/95	23.33	--	17.09	--	nm	6.24
ES-9	11/02/95	23.33	--	17.30	--	nm	6.03
ES-9	12/07/95	23.33	--	17.48	--	nm	5.85
ES-9	01/03/96	23.33	--	17.12	--	nm	6.21
ES-9	02/06/96	23.33	--	16.00	--	nm	7.33
ES-9	03/12/96	23.33	--	15.63	--	nm	7.70
ES-9	04/09/96	23.33	--	15.92	--	nm	7.41
ES-9	05/07/96	23.33	--	16.17	--	nm	7.16
ES-9	06/05/96	23.33	--	16.19	--	nm	7.14
ES-9	07/09/96	23.33	--	16.52	--	nm	6.81
ES-9	09/05/96	23.33	--	16.92	--	nm	6.41
ES-9	10/08/96	23.33	--	17.19	--	nm	6.14
ES-9	11/08/96	23.33	--	17.37	--	nm	5.96
ES-9	12/13/96	23.33	--	17.09	--	nm	6.24
ES-9	01/16/97	23.33	--	15.99	--	nm	7.34
ES-9	02/14/97	23.33	--	15.71	--	nm	7.62
ES-9	03/07/97	23.33	--	16.12	--	nm	7.21
ES-9	04/17/97	23.33	--	16.66	--	nm	6.67
ES-9	09/24/08	23.33	--	15.88	--	34.91	7.45
ES-9	04/08/09	23.33	--	14.14	--	34.97	9.19
ES-9	07/14/09	23.33	--	14.98	--	34.94	8.35
ES-9	10/06/09	23.33	--	15.52	--	34.91	7.81
ES-9	07/28/10	23.33	--	15.31	--	34.94	8.02
ES-9	02/08/11	23.33	--	14.89	--	34.84	8.44
ES-9	12/13/11	23.33	--	15.69	--	34.95	7.64
ES-9	08/06/14	23.33	--	16.05	--	34.90	7.28
ES-9	03/12/15	23.33	--	15.41	--	34.99	7.92

Table 2 - Cumulative Summary of Groundwater Level Measurements
Oakland Bus Terminal
2103 San Pablo Ave.
Oakland, Alameda County, California
Green Star Project No. 15-1379

Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
ES-10	09/01/93	95.24	--	18.04	--	nm	77.20
ES-10	10/07/93	95.24	--	17.40	--	nm	77.84
ES-10	11/02/93	95.24	--	17.46	--	nm	77.78
ES-10	12/06/93	95.24	--	17.44	--	nm	77.80
ES-10	01/05/94	95.24	--	17.27	--	nm	77.97
ES-10	02/02/94	95.24	--	17.25	--	nm	77.99
ES-10	03/02/94	95.24	--	16.61	--	nm	78.63
ES-10	04/07/94	95.24	--	16.74	--	nm	78.50
ES-10	05/05/94	95.24	--	16.55	--	nm	78.69
ES-10	06/07/94	95.24	--	17.50	--	nm	77.74
ES-10	07/13/94	95.24	--	16.10	--	nm	79.14
ES-10	08/03/94	95.24	--	16.20	--	nm	79.04
ES-10	09/14/94	95.24	--	16.48	--	nm	78.76
ES-10	10/06/94	95.24	--	16.96	--	nm	78.28
ES-10	11/02/94	95.24	--	17.05	--	nm	78.19
ES-10	12/07/94	95.24	--	16.29	--	nm	78.95
ES-10	01/13/95	95.24	--	15.42	--	nm	79.82
ES-10	02/14/95	95.24	--	15.05	--	nm	80.19
ES-10	03/07/95	95.24	--	15.34	--	nm	79.90
ES-10	04/11/95	95.24	--	14.82	--	nm	80.42
ES-10	05/09/95	95.24	--	15.26	--	nm	79.98
ES-10	06/09/95	95.24	--	15.70	--	nm	79.54
ES-10	07/06/95	95.24	--	15.89	--	nm	79.35
ES-10	08/10/95	95.24	--	16.21	--	nm	79.03
ES-10	09/07/95	95.24	--	16.42	--	nm	78.82
ES-10	10/03/95	95.24	--	16.59	--	nm	78.65
ES-10	10/05/95	95.24	--	16.59	--	nm	78.65
ES-10	11/02/95	95.24	--	16.77	--	nm	78.47
ES-10	12/07/95	95.24	--	16.97	--	nm	78.27
ES-10	01/03/96	95.24	--	16.61	--	nm	78.63
ES-10	02/06/96	95.24	--	15.71	--	nm	79.53
ES-10	03/12/96	95.24	--	17.35	--	nm	77.89
ES-10	04/09/96	95.24	--	15.44	--	nm	79.80
ES-10	05/07/96	95.24	--	15.75	--	nm	79.49
ES-10	06/05/96	95.24	--	17.75	--	nm	77.49
ES-10	07/09/96	95.24	--	18.04	--	nm	77.20
ES-10	09/05/96	95.24	--	16.45	--	nm	78.79
ES-10	10/08/96	95.24	--	16.70	--	nm	78.54
ES-10	11/08/96	95.24	--	16.87	--	nm	78.37
ES-10	12/13/96	95.24	--	16.55	--	nm	78.69
ES-10	01/16/97	95.24	--	15.49	--	nm	79.75
ES-10	02/14/97	95.24	--	15.23	--	nm	80.01
ES-10	03/07/97	95.24	--	15.67	--	nm	79.57
ES-10	04/17/97	95.24	--	16.18	--	nm	79.06
ES-10[3]	09/24/08	nm	nm	nm	nm	nm	nm
ES-10[3]	07/14/09	nm	nm	nm	nm	nm	nm
ES-10[3]	10/06/09	nm	nm	nm	nm	nm	nm
ES-10[3]	07/28/10	nm	nm	nm	nm	nm	nm
ES-10[3]	02/08/11	nm	nm	nm	nm	nm	nm
ES-10[3]	12/13/11	nm	nm	nm	nm	nm	nm
ES-10[3]	08/04/14	nm	nm	nm	nm	nm	nm
ES-10[3]	03/12/15	nm	nm	nm	nm	nm	nm

Table 2 - Cumulative Summary of Groundwater Level Measurements
Oakland Bus Terminal
2103 San Pablo Ave.
Oakland, Alameda County, California
Green Star Project No. 15-1379

Well No.	Date	Elevation to Top of Casing (feet MSL)[1]	Depth to Phase-Separated Liquid (feet BMP)	Depth to Water (feet BMP)	Product Thickness (feet)	Depth to Bottom (feet BMP)	Groundwater Elevation (feet MSL)
ES-11	09/01/93	24.08	--	18.74	--	nm	5.34
ES-11	10/07/93	24.08	--	18.90	--	nm	5.18
ES-11	11/02/93	24.08	--	19.00	--	nm	5.08
ES-11	12/06/93	24.08	--	19.02	--	nm	5.06
ES-11	01/05/94	24.08	--	18.86	--	nm	5.22
ES-11	02/02/94	24.08	--	18.74	--	nm	5.34
ES-11	03/02/94	24.08	--	18.14	--	nm	5.94
ES-11	04/07/94	24.08	--	18.38	--	nm	5.70
ES-11	05/05/94	24.08	--	18.15	--	nm	5.93
ES-11	06/07/94	24.08	--	18.28	--	nm	5.80
ES-11	07/13/94	24.08	--	18.60	--	nm	5.48
ES-11	08/03/94	24.08	--	18.18	--	nm	5.90
ES-11	09/14/94	24.08	--	18.47	--	nm	5.61
ES-11	10/06/94	24.08	--	18.55	--	nm	5.53
ES-11	11/02/94	24.08	--	18.64	--	nm	5.44
ES-11	12/07/94	24.08	--	17.49	--	nm	6.59
ES-11	01/13/95	24.08	--	17.16	--	nm	6.92
ES-11	02/14/95	24.08	--	16.76	--	nm	7.32
ES-11	03/07/95	24.08	--	17.04	--	nm	7.04
ES-11	04/11/95	24.08	--	16.54	--	nm	7.54
ES-11	05/09/95	24.08	--	16.95	--	nm	7.13
ES-11	06/09/95	24.08	--	17.34	--	nm	6.74
ES-11	07/06/95	24.08	--	17.54	--	nm	6.54
ES-11	08/10/95	24.08	--	17.85	--	nm	6.23
ES-11	09/07/95	24.08	--	18.03	--	nm	6.05
ES-11	10/03/95	24.08	--	18.20	--	nm	5.88
ES-11	10/05/95	24.08	--	18.20	--	nm	5.88
ES-11	11/02/95	24.08	--	18.38	--	nm	5.70
ES-11	12/07/95	24.08	--	18.59	--	nm	5.49
ES-11	01/03/96	24.08	--	18.21	--	nm	5.87
ES-11	02/06/96	24.08	--	17.45	--	nm	6.63
ES-11	03/12/96	24.08	--	16.83	--	nm	7.25
ES-11	04/09/96	24.08	--	17.13	--	nm	6.95
ES-11	05/07/96	24.08	--	17.42	--	nm	6.66
ES-11	06/05/96	24.08	--	17.42	--	nm	6.66
ES-11	07/09/96	24.08	--	17.71	--	nm	6.37
ES-11	09/05/96	24.08	--	18.07	--	nm	6.01
ES-11	10/08/96	24.08	--	18.29	--	nm	5.79
ES-11	11/08/96	24.08	--	18.45	--	nm	5.63
ES-11	12/13/96	24.08	--	18.09	--	nm	5.99
ES-11	01/16/97	24.08	--	17.10	--	nm	6.98
ES-11	02/14/97	24.08	--	16.90	--	nm	7.18
ES-11	03/07/97	24.08	--	17.30	--	nm	6.78
ES-11	04/17/97	24.08	--	17.80	--	nm	6.28
ES-11	09/24/08	24.08	--	16.29	--	35.00	7.79
ES-11	04/08/09	24.08	--	14.59	--	35.05	9.49
ES-11	07/14/09	24.08	--	15.38	--	35.03	8.70
ES-11	10/06/09	24.08	--	15.90	--	35.04	8.18
ES-11	07/28/10	24.08	--	15.94	--	35.19	8.14
ES-11	02/08/11	24.08	--	15.51	--	34.94	8.57
ES-11	12/13/11	24.08	--	16.34	--	35.14	7.74
ES-11	08/04/14	24.08	--	16.60	--	35.10	7.48
ES-11	03/12/15	24.08	--	16.03	--	35.05	8.05

nm = not measured nd = not determined -- = none detected BMP = Below Measuring Point

Note: 1) On April 8, 2009, the well network was surveyed according to the North American Vertical Datum 1988 (NAVD 88) system.
2) Well casings are not vertical.
3) Monitoring well ES-10 has been paved over and is not accessible.
4) Data not entered due to apparent typographical error in previous consultant's findings.

Table 3 - Cumulative Summary of Groundwater Analytical Results
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, Alameda County, California
Green Star Project No. 15-1379

Sample ID	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	Naphthalene	MTBE	ETBE	TAME	DIPE	EDB	EDC *	TBA	Ethanol	TPH-g	TPH-d	TPH-o	Total PAHs
BC-1	04/17/97	**160**	**72**	**35**	**93**	360	nt	BDL	nt	nt	nt	nt	nt	nt	nt	**200**	**640**	nt	nt
	07/15/97	**520**	**130**	**170**	**290**	1110	nt	**100**	nt	nt	nt	nt	nt	nt	nt	**11000**	**95000**	nt	**203**
	10/07/97	**310**	**600**	**370**	**1900**	3180	nt	BDL	nt	nt	nt	nt	nt	nt	nt	**31000**	**484000**	nt	**4340**
	09/25/08	**220**	**22**	**32**	**38**	312	**16**	<0.31	<0.14	**0.26 J**	**82**	**0.39 J**	<0.24	<6	<74	**3700**	**2000**	<290	nt
	04/09/09	**130**	**20**	**17**	**33**	200	**6**	<0.3	<0.14	**0.58 J**	**74**	**0.27 J**	<0.23	<17	<74	**2100**	**3700**	<33	nt
	07/15/09	**200**	**39**	**35**	**58**	332	**14**	<0.32	<0.14	<0.14	**110**	**0.28 J**	<0.23	<17	<74	**3200**	**910**	**150**	nt
	10/07/09	**230**	**34**	**45**	**62**	371	**23**	<0.32	<0.14	<0.14	**60**	<0.17	<0.23	<17	<74	**3700**	**630**	**64**	nt
	07/29/10	**76**	**4.9**	**8.6**	**8.5**	98	**4.8**	<0.83	<0.83	<0.83	nt	<0.83	<0.83	<3.3	<83	**1000**	**290**	<250	nt
	02/09/11	**35**	**2.5**	**2.8**	**4.7**	45	**2.3**	<0.5	<0.5	<0.5	**49**	<0.5	<0.50	<4.0	<100	**420**	**370**	<250	nt
	12/13/11	**120**	**6.9**	**3.2**	**6.8**	136.9	**4.1**	<0.25	<0.25	<0.25	**65**	<0.25	<0.25	**3.7**	<25	**1200**	**300**	<250	nt
	12/13/11	**74**	**7.6**	**10**	**16**	108	**10**	<.50	<0.35	<1.1	**42**	<0.60	<0.45	<4.7	<110	**1200**	**270**	<250	nt
	03/12/15	**6**	**0.56J**	**0.38J**	<0.62	8	<0.40	<0.25	<0.18	<0.55	**73**	<0.30	<0.23	<2.4	<78	**540**	**180**	<65	nt
BC-2	07/08/92	BDL	BDL	BDL	**8**	8	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	**2100**	nt	nt
	10/06/92	BDL	**1**	**1**	**7**	9	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	01/07/93	BDL	**1**	**2**	**10**	13	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	04/06/93	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**130**	nt	nt
	07/23/93	**1**	**2**	**2**	**8**	13	nt	nt	nt	nt	nt	nt	nt	nt	nt	<500	**500**	nt	BDL
	10/07/93	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	**1400**	nt	nt
	01/05/94	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	04/07/94	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	07/13/94	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	10/06/94	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	01/13/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**1100**	nt	nt
	04/11/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	07/06/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**290**	nt	nt
	10/05/95	**1**	BDL	BDL	**1**	2	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**1500**	nt	nt
	04/17/97	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	**50**	nt	nt
	07/15/97	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	**680**	nt	BDL
	10/07/97	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	**920**	nt	BDL
	09/24/08	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
	04/09/09	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
	07/15/09	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
	10/07/09	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
	07/29/10	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
	02/09/11	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
	12/13/11	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC-3	07/08/92	BDL	**2.5**	BDL	**6**	8.5	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	**3900**	nt	nt
	10/06/92	BDL	**1.9**	**0.5**	**2**	4.4	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	**800**	nt	nt
	01/07/93	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	04/06/93	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**120**	nt	nt
	07/23/93	**3**	**3.6**	**1.8**	**8**	16.4	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**nt****	nt	nt
	10/07/93	BDL	BDL	**0.1**	**2**	2	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	**1400**	nt	nt
	01/05/94	BDL	BDL	BDL	**2**	2	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**1800**	nt	nt
	04/07/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**850**	nt	nt
	07/13/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**200**	nt	nt
	10/06/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**820**	nt	nt
	01/13/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**890**	nt	nt
	04/11/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	07/06/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**380**	nt	nt
	10/05/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/17/97	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt

Table 3 - Cumulative Summary of Groundwater Analytical Results
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, Alameda County, California
Green Star Project No. 15-1379

Sample ID	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	Naphthalene	MTBE	ETBE	TAME	DIPE	EDB	EDC *	TBA	Ethanol	TPH-g	TPH-d	TPH-o	Total PAHs
	07/15/97	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	**490**	nt	BDL
	10/07/97	BDL	BDL	**1.9**	**2**	3.9	nt	BDL	nt	nt	nt	nt	nt	nt	nt	**51**	**1340**	nt	BDL
	09/25/08	<4	**0.6 J**	**0.6 J**	<0.3	1.2	<0.3	<0.31	<0.14	**0.7 J**	<0.36	<0.31	<0.24	<6	<74	<84	<21	**1300**	nt
	04/09/09	**6**	**0.8 J**	**0.8 J**	**1.2 J**	8.8	**5**	<0.3	<0.14	**0.52 J**	**0.43 J**	<0.17	<0.23	<17	<74	<24	**18 J**	**880**	nt
	07/15/09	**4.9 J**	**0.6 J**	**0.3 J**	<0.13	5.8	**0.22 J**	<0.32	<0.14	**0.44 J**	**0.3 J**	<0.17	<0.23	<17	<74	**19 J**	**59**	**170**	nt
	10/07/09	**3**	**0.3 J**	**0.2 J**	**0.4 J**	3.9	**0.2 J**	<0.32	<0.14	<0.14	**0.4 J**	<0.17	<0.23	<17	<74	**25 J**	**58**	**110**	nt
	07/29/10	**1.7**	**0.47 J**	**0.78**	**0.55**	3.5	**0.59**	<0.25	<0.25	<0.25	nt	<0.25	<0.25	<1	<25	<50	<50	<250	nt
	02/09/11	**0.44 J**	**0.69**	**1.3**	**2.2**	4.6	**0.88**	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2	<50	<50	<50	<250	nt
	12/13/11	**2.2**	**0.65**	**0.88**	**1.0**	4.73	**1.5**	<0.25	<0.25	**3.3**	<0.25	<0.25	<0.25	**2.0**	<25	<50	<50	<250	nt
	03/13/15	**0.16JB**	**0.065J**	<0.050	<0.25	0.23	<0.16	<0.10	<0.070	<0.22	<0.070	<0.12	<0.090	<0.94	<31	**22J**	<24	<65	nt
ES-1	11/19/91	**130**	**43**	**10**	**91**	274	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	04/17/97	**110**	**18**	**7**	**45**	180	nt	BDL	nt	nt	nt	nt	nt	nt	nt	**100**	BDL	nt	nt
	07/16/97	**76**	**8**	**11**	**25**	120	nt	BDL	nt	nt	nt	nt	nt	nt	nt	**960**	**1200**	nt	**14**
	10/07/97	**49**	**34**	**11**	**23**	117	nt	**14**	nt	nt	nt	nt	nt	nt	nt	**1700**	**2770**	nt	**10**
	09/25/08	**140**	**9**	**14**	**16**	179	**11**	<0.31	<0.14	<0.26	**130**	<0.31	**0.49 J**	<6	<74	**2900**	**2500**	<290	nt
	04/09/09	**260**	**29**	**27**	**49**	365	**25**	<0.32	<0.14	<0.14	**66**	**0.37 J**	**0.47 J**	<17	<74	**2400**	**3600**	<36	nt
	07/15/09	**300**	**63**	**92**	**90**	545	**53**	<0.32	<0.14	**0.23 J**	**100**	**0.38 J**	**0.86 J**	<17	<74	**5000**	**930**	**210**	nt
	10/07/09	**340**	**36**	**44**	**53**	473	**37**	<0.32	<0.14	<0.14	**82**	<0.17	**0.7 J**	<17	<74	**4100**	**610**	**100**	nt
	07/29/10	**630**	**61**	**110**	**120**	921	**95**	<6.2	<6.2	<6.2	nt	<6.2	<6.2	<25	<620	**5200**	**1100**	<250	nt
	02/09/11	**390**	**41**	**52**	**71**	554	**33**	<5	<5	<5	**49**	<5	<5	<40	<1000	**4400**	**810**	<250	nt
	12/13/11	**470**	**46**	**66**	**87**	669	**64**	<0.25	<0.25	<0.25	**59**	<0.25	<0.25	<1.0	<25	**4600**	**790**	<250	nt
	03/12/15	**120**	**14**	**10**	**50**	194	**12**	<0.50	<0.35	<1.1	**37**	<0.60	**1.8JB**	<4.7	<160	**4000**	**370**	<65	nt
ES-2	11/19/91	**390**	**96**	**78**	**310**	874	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	04/17/97	**340**	**110**	**110**	**240**	800	nt	BDL	nt	nt	nt	nt	nt	nt	nt	**3800**	**1800**	nt	nt
	07/15/97	**190**	**140**	**73**	**250**	653	nt	**81**	nt	nt	nt	nt	nt	nt	nt	**3700**	**16000**	nt	**194**
	10/07/97	**190**	**46**	**46**	**70**	352	nt	BDL	nt	nt	nt	nt	nt	nt	nt	**7200**	**8040**	nt	**993**
	09/25/08	**700**	**53**	**29**	**84**	866	**10**	<0.31	<0.14	**0.41 J**	**100**	<0.31	**0.38 J**	<6	<74	**6000**	**1500**	nt	<290
	04/09/09	**690**	**59**	**27 J**	**72**	848	**8 J**	<3.2	<1.4	**5.6 J**	**110**	<1.7	<2.3	<170	<740	**2200**	**7500**	<38	nt
	07/15/09	**700**	**68**	**23**	**94**	885	**1.9 J**	<0.32	<0.14	**0.42 J**	**120**	**0.25 J**	<0.23	<17	<74	**8400**	**1300**	**230**	nt
	10/07/09	**730**	**61**	**30**	**90**	911	**4**	<0.32	<0.14	<0.14	**85**	<0.17	<0.23	<17	<74	**6000**	**1100**	**980**	nt
	07/29/10	**800**	**57**	**15 J**	**78**	950	**11 J**	<8.30	<8.3	<8.3	nt	<8.3	<8.3	<33	<830	**8300**	**1300**	<250	nt
	02/09/11	**1000**	**76**	**20 J**	**110**	1206	<12	<12.0	<12	<12	**99**	<12	<12	<100	<2500	**5500**	**1700**	**500**	nt
	12/13/11	**1100**	**69**	**17**	**84**	1270	<0.25	<0.25	<0.25	<0.25	**95**	<0.25	<0.25	**6.6**	<25	**6900**	**1200**	<250	nt
	08/06/14	**850**	**61**	**14 J**	**87**	1012	<8.0	<5.00	<3.5	<11	**85**	<6.0	<4.5	<47	<1100	**6200**	**1100**	<250	nt
	03/12/15	**740**	**50**	**15J**	**63**	868	<5.3	<3.30	<2.30	<7.30	**77**	<4.0	**5.9JB**	<31	<1000	**7100**	**830**	**96J**	nt
ES-3	11/19/91	**61**	**16**	**14**	**33**	124	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	**BDL**	nt	nt
	07/08/92	**51**	**21**	**48**	**34**	154	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	**1300**	nt	nt
	10/06/92	**93**	**18**	BDL	**11**	122	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	01/07/93	**52**	**49**	**100**	**250**	451	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	04/06/93	**53**	BDL	**67**	**78**	198	nt	nt	nt	nt	nt	nt	nt	nt	nt	**4500**	**510**	nt	nt
	07/23/93	**28**	**6**	**5**	**5**	44	nt	nt	nt	nt	nt	nt	nt	nt	nt	**1500**	**600**	nt	nt
	10/07/93	**2**	**1**	BDL	**2**	5	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	01/05/94	**13**	**2**	**7**	**5**	27	nt	nt	nt	nt	nt	nt	nt	nt	nt	**530**	nt	nt	nt
	04/07/94	**10**	**9**	**26**	**34**	79	nt	nt	nt	nt	nt	nt	nt	nt	nt	**850**	**910**	nt	nt
	07/13/94	**2**	**1**	**1**	**3**	7	nt	nt	nt	nt	nt	nt	nt	nt	nt	**370**	**280**	nt	nt
	10/06/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	01/13/95	**19**	**15**	**72**	**88**	194	nt	nt	nt	nt	nt	nt	nt	nt	nt	**1600**	**1100**	nt	nt
	04/11/95	**20**	**7**	**36**	**22**	85	nt	nt	nt	nt	nt	nt	nt	nt	nt	**940**	**390**	nt	nt
	07/06/95	**6**	BDL	**7**	BDL	13	nt	nt	nt	nt	nt	nt	nt	nt	nt	**240**	**1200**	nt	nt
	10/05/95	**2**	**2**	BDL	BDL	4	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**110**	nt	nt
	01/05/96	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt

Table 3 - Cumulative Summary of Groundwater Analytical Results
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, Alameda County, California
Green Star Project No. 15-1379

Sample ID	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	Naphthalene	MTBE	ETBE	TAME	DIPE	EDB	EDC *	TBA	Ethanol	TPH-g	TPH-d	TPH-o	Total PAHs
	04/09/96	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	**120**	nt	nt
	07/09/96	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	10/08/96	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	01/16/97	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	**51**	BDL	nt	nt
	04/17/97	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	**120**	nt	nt
	07/15/97	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	**170**	nt	BDL
	10/07/97	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	**205**	nt	BDL
	09/24/08	**230**	**17**	**23**	**48**	318	**28**	<0.31	<0.14	**0.28 J**	**110**	<0.31	**0.78 J**	<6	<74	**3000**	**1400**	<290	nt
	04/09/09	**340**	**91**	**180**	**372**	983	**83**	<1.6	<0.71	<0.68	**96**	<0.86	<1.1	<84	<370	**2600**	**9700**	<3.2	nt
	07/15/09	**230**	**75**	**190**	**413**	908	**110**	<1.6	<0.71	<0.68	**45 J**	<0.86	<1.1	<84	<370	**9400**	**1400**	**280**	nt
	10/07/09	**250**	**28**	**42**	**105**	425	**35**	<0.32	<0.14	<0.14	**100**	<0.17	**0.8 J**	<17	<74	**4700**	**860**	**84**	nt
	07/29/10	**120**	**44**	**200**	**200**	564	**110**	<2.5	<2.5	<2.5	nt	<2.5	<2.5	<10	<250	**5800**	**1200**	<250	nt
	02/09/11	**120**	**74**	**360**	**400**	954	**180**	<2.5	<2.5	<2.5	**180**	<2.5	<2.5	<20	<500	**4300**	**1600**	<250	nt
	12/13/11	**84**	**47**	**120**	**160**	411	**81**	<0.25	<0.25	<0.25	**18**	<0.25	<0.25	**5.4**	<25	**5200**	**1200**	<250	nt
	08/06/14	**290**	**36**	**42**	**55**	423	**31**	<2.0	<1.4	<4.4	**75**	<2.4	<1.8	<19	<440	**4000**	**830**	<250	nt
	03/12/15	**84**	**27**	**120**	**110**	341	**40**	<0.50	<0.35	<1.1	**21**	<0.60	**1.7JB**	<4.7	<160	**5300**	**630**	<65	nt
ES-4	11/19/91	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	07/08/92	**31**	**6**	BDL	**3**	39	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	10/06/92	**100**	**8**	BDL	**8**	116	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	01/07/93	**30**	**7**	**8**	**16**	60	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	04/06/93	**33**	**2**	**2**	**5**	42	nt	nt	nt	nt	nt	nt	nt	nt	nt	**360**	BDL	nt	nt
	07/23/93	**24**	**1**	**1**	**8**	34	nt	nt	nt	nt	nt	nt	nt	nt	nt	<500	<500	nt	nt
	10/07/93	**8**	BDL	BDL	**2**	10	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	01/05/94	**15**	**1**	**0.4**	**3**	19	nt	nt	nt	nt	nt	nt	nt	nt	nt	**130**	BDL	nt	nt
	04/07/94	**11**	BDL	BDL	BDL	11	nt	nt	nt	nt	nt	nt	nt	nt	nt	**170**	BDL	nt	nt
	07/13/94	**9**	BDL	BDL	**1**	10	nt	nt	nt	nt	nt	nt	nt	nt	nt	**130**	BDL	nt	nt
	10/06/94	**18**	BDL	**2**	**3**	23	nt	nt	nt	nt	nt	nt	nt	nt	nt	**100**	BDL	nt	nt
	01/13/95	**12**	BDL	BDL	**2**	14	nt	nt	nt	nt	nt	nt	nt	nt	nt	**150**	BDL	nt	nt
	04/11/95	**39**	**4**	**12**	**24**	79	nt	nt	nt	nt	nt	nt	nt	nt	nt	**180**	BDL	nt	nt
	07/06/95	**100**	**10**	**26**	**61**	197	nt	nt	nt	nt	nt	nt	nt	nt	nt	**600**	**160**	nt	nt
	10/05/95	**210**	**16**	**71**	**84**	381	nt	nt	nt	nt	nt	nt	nt	nt	nt	**1200**	**170**	nt	nt
	01/05/96	**34**	BDL	**5**	**4**	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	**120**	BDL	nt	nt
	04/09/96	**57**	**3**	**17**	**19**	96	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	07/09/96	**43**	**5**	**21**	**17**	86	nt	nt	nt	nt	nt	nt	nt	nt	nt	**220**	BDL	nt	nt
	10/08/96	**110**	**4**	**42**	**39**	195	nt	nt	nt	nt	nt	nt	nt	nt	nt	**860**	BDL	nt	nt
	01/16/97	**5**	BDL	BDL	**1**	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	**59**	BDL	nt	nt
	04/17/97	**87**	**11**	**49**	**24**	171	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	**100**	nt	nt
	07/15/97	**110**	**11**	**42**	**40**	203	nt	BDL	nt	nt	nt	nt	nt	nt	nt	**920**	**370**	nt	**18**
	10/07/97	**11**	BDL	**28**	**23**	16	nt	BDL	nt	nt	nt	nt	nt	nt	nt	**120**	**101**	nt	**24**
	09/25/08	<0.4	<0.3	<0.3	<0.3	BDL	<0.3	<0.31	<0.14	**0.7 J**	**7 J**	<0.31	<0.24	<6	<74	**69**	**91**	nt	<29
	04/09/09	**8**	**0.8 J**	**1.6 J**	**2.5 J**	13	**0.7 J**	<0.30	<0.14	**0.54 J**	**20**	<0.17	<0.23	<17	<74	**640**	**520**	<34	nt
	07/15/09	**8**	**1.7 J**	**4.2 J**	<0.13	14	**1.9 J**	<0.32	<0.14	<0.14	**25**	<0.17	<0.23	<17	<74	**800**	**110**	**45 J**	nt
	10/07/09	**0.2 J**	<0.29	**0.2 J**	**0.5 J**	1	<0.11	<0.32	<0.14	<0.14	**14**	<0.17	<0.23	<17	<74	**310**	**81**	<29	nt
	07/29/10	**0.81**	<0.25	**0.31 J**	**0.58**	2	**0.26 J**	<0.25	<0.25	<0.25	nt	<0.25	<0.25	<1	<25	**250**	**120**	<250	nt
	02/09/11	**1**	**0.58**	**0.49 J**	**0.97**	3	**0.56**	<0.25	<0.25	<0.25	**17**	<0.25	<0.25	<2	<50	**220**	**72**	<250	nt
	12/13/11	**11**	**0.89**	**0.73**	**1.1**	13.72	**0.76**	<0.25	<0.25	**2.2**	**28**	<0.25	<0.25	**3.4**	<25	**270**	**95**	<250	nt
	08/06/14	<0.1	<0.080	<0.10	<0.50	BDL	**0.36 J**	<0.20	<0.14	<0.44	**62**	<0.24	<0.18	<1.9	<44	**200**	<50	<250	nt
	03/12/15	**0.11JB**	**0.13J**	**0.056J**	<0.25	0.30	<0.16	<0.10	<0.070	<0.22	**21**	<0.12	**0.15JB**	<0.94	<31	**85**	<24	**77J**	nt
ES-5	11/19/91	**2100**	**390**	**840**	**6000**	9330	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	**950000**	nt	nt
	04/17/97	**590**	**120**	**180**	**1000**	1890	nt	BDL	nt	nt	nt	nt	nt	nt	nt	**2400**	**1600**	nt	nt
	07/16/97	**810**	**180**	**430**	**1800**	3220	nt	**350**	nt	nt	nt	nt	nt	nt	nt	**27000**	**15000**	nt	**216000**
	10/07/97	**260**	**470**	**160**	**590**	1480	nt	BDL	nt	nt	nt	nt	nt	nt	nt	**15000**	**6510**	nt	**424**

Table 3 - Cumulative Summary of Groundwater Analytical Results
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, Alameda County, California
Green Star Project No. 15-1379

Sample ID	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	Naphthalene	MTBE	ETBE	TAME	DIPE	EDB	EDC *	TBA	Ethanol	TPH-g	TPH-d	TPH-o	Total PAHs
	09/25/08	**970**	**190**	**400**	**350**	1910	**180**	<0.31	<0.14	<0.26	**150**	<0.31	**0.57 J**	<6	<74	**12000**	**1900**	<290	nt
	04/09/09	**590**	**150**	**230**	**248**	1218	**100**	<3.2	<1.4	**5.9 J**	**30 J**	<1.7	<2.3	<170	<740	**3700**	**10000**	<33	nt
	07/15/09	**770**	**220**	**430**	**407**	1827	**180**	<1.6	<0.71	<0.68	**63**	<0.86	<1.1	<84	<370	**16000**	**1300**	**180**	nt
	10/07/09	**710**	**190**	**440**	**373**	1713	**160**	<3.2	<1.4	<1.4	**68**	<1.7	<2.3	<170	<740	**12000**	**1500**	140	nt
	07/29/10	**400**	**120**	**270**	**220**	1010	**160**	<5	<5	<5	nt	<5	<5	<20	<500	**11000**	**1800**	**310**	nt
	02/09/11	**650**	**180**	**400**	**330**	1560	**170**	<8.3	<8.3	<8.3	**17**	<8.3	<8.3	<67	<1700	**9700**	**2200**	<250	nt
	12/13/11	**290**	**93**	**170**	**210**	763	**130**	<0.25	<0.25	<0.25	**2.5**	<0.25	<0.25	<1.0	<25	**6600**	**1200**	<250	nt
	12/13/11	**400**	**130**	**220**	**210**	960	**99**	<3.3	<2.3	<7.3	<2.3	<4.0	<3.0	<31	<730	**9600**	**1100**	<250	nt
	03/13/15	**290**	**110**	**130**	**160**	690	**53**	<1.0	<0.70	<2.2	**4.3J**	<1.2	**6.6**	<9.4	<310	**6200**	**750**	**91J**	nt
ES-6	07/23/93	<0.3	<0.3	<0.3	<0.6	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	<500	<500	nt	nt
	10/07/93	**1**	BDL	BDL	BDL	1	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	01/05/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/07/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	**160**	BDL	nt	nt
	07/13/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	10/06/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	01/13/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/11/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	07/06/95	BDL	BDL	BDL	**2**	2	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	10/05/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	01/05/96	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/09/96	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	**220**	nt	nt
	07/09/96	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	10/08/96	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	01/16/97	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/17/97	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	**120**	nt	nt
	07/15/97	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	**60**	nt	BDL
	10/07/97	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	BDL
	09/24/08	<0.4	<0.3	<0.3	<0.3	BDL	**0.5 J**	<0.31	<0.14	**0.65 J**	**3 J**	<0.31	<0.24	<6	<74	<17	**68**	<290	nt
	04/08/09	<0.1	<0.2	<0.1	<0.1	BDL	<0.1	<0.3	<0.14	**0.55 J**	**0.93 J**	<0.17	<0.23	<17	<74	<22	<16	**170**	nt
	07/15/09	**2.1 J**	**0.86 J**	**2.1 J**	<0.13	5.060	**1.2 J**	<0.32	<0.14	**0.74 J**	**0.88 J**	<0.17	<0.23	<17	<74	**161**	**73**	**200**	nt
	10/06/09	<0.1	<0.29	<0.15	<0.13	BDL	<0.11	<0.32	<0.14	<0.14	**0.4 J**	<0.17	<0.23	<17	<74	**17 J**	**30 J**	**34 J**	nt
	07/29/10	<0.25	<0.25	<0.25	<0.25	BDL	<0.25	<0.25	<0.25	<0.25	nt	<0.25	<0.25	<1	<25	<50	<50	<250	nt
	02/09/11	<0.25	<0.25	<0.25	<0.25	BDL	<0.25	<0.25	<0.25	<0.25	**0.37 J**	<0.25	<0.25	<2	<50	<50	<50	<250	nt
	12/13/11	**4.5**	**0.54**	**0.49 J**	**0.68**	5.72	**0.52**	<0.25	<0.25	**2.9**	**0.33 J**	<0.25	<0.25	**2.1**	<25	<50	<50	<250	nt
	08/05/14	<0.051	<0.040	<0.050	<0.25	0.00	< 0.016	<0.1	<0.070	<0.22	<0.070	<0.12	<0.090	<0.94	<22	<50	<50	<250	nt
	03/12/15	**0.19JB**	**0.11J**	<0.050	<0.25	0.30	<0.16	<0.10	<0.070	<0.22	<0.070	<0.12	<0.090	<0.94	<31	**16J**	<24	**74J**	nt
ES-7	07/23/93	<0.3	<0.3	<0.3	<0.0006	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	<500	<500	nt	nt
	10/07/93	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	01/05/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/07/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	**110**	**100**	nt	nt
	07/13/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	10/06/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	01/13/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/11/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	07/06/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	10/05/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	07/09/96	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/17/97	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	**60**	nt	nt
	09/24/08	<0.4	<0.3	<0.3	<0.3	BDL	<0.3	<0.31	<0.14	**0.66 J**	<0.36	<0.31	<0.24	<6	<74	<17	<2	**150**	nt
	04/08/09	<0.1	<0.2	<0.1	<0.1	BDL	<0.1	<0.3	<0.14	**0.53 J**	<0.15	<0.17	<0.23	<17	<74	<23	<16	**690**	nt
	07/15/09	**1.3 J**	**0.51 J**	**0.96 J**	<0.13	2.77	**0.52 J**	<0.32	<0.14	**0.7 J**	<0.15	<0.17	<0.23	<17	<74	**27 J**	**31 J**	**93**	nt
	10/06/09	<0.1	<0.29	<0.15	<0.13	BDL	<0.11	<0.32	<0.14	<0.14	<0.15	<0.17	<0.23	<17	<74	**24 J**	<20	**41 J**	nt

Table 3 - Cumulative Summary of Groundwater Analytical Results
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, Alameda County, California
Green Star Project No. 15-1379

Sample ID	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	Naphthalene	MTBE	ETBE	TAME	DIPE	EDB	EDC *	TBA	Ethanol	TPH-g	TPH-d	TPH-o	Total PAHs
	07/29/10	<0.25	<0.25	<0.25	<0.25	BDL	<0.25	<0.25	<0.25	<0.25	nt	<0.25	<0.25	<1	<25	<50	<50	<250	nt
	02/09/11	<0.25	<0.25	<0.25	<0.25	BDL	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2	<50	<50	<50	<250	nt
	12/13/11	**2.7**	**0.40 J**	**0.42 J**	**0.56**	4.08	**0.33 J**	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<1.0	<25	<50	<50	<250	nt
	08/06/14	<0.051	<0.040	<0.050	<0.25	0.00	< 0.016	<0.10	<0.070	<0.22	<0.070	<0.12	<0.090	<0.94	<22	<50	<50	<250	nt
	03/12/15	**0.061JB**	**0.12J**	<0.050	<0.25	0.18	<0.16	<0.10	<0.070	<0.22	<0.070	<0.12	<0.090	<0.94	<31	**15J**	<24	<65	nt
ES-8	07/23/93	<0.3	<0.3	<0.3	<0.6	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	<500	<500	nt	nt
	10/07/93	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	01/05/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/07/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	07/13/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt	nt
	10/06/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	01/13/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/11/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	07/06/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	10/05/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	07/09/96	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	09/24/08	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
	04/08/09	**15**	**1.4 J**	**2 J**	**2.7 J**	21.1	**0.3 J**	<0.3	<0.14	<0.14	**56**	<0.17	<0.23	<17	<74	**1600**	**2300**	<33	nt
	07/14/09	**6**	**0.83 J**	**0.61 J**	<0.13	7.4	<0.11	<0.32	<0.14	<0.14	**45**	<0.17	<0.23	<17	<74	**1800**	**540**	**230**	nt
	10/06/09	**7**	**1 J**	**1 J**	**1 J**	10	**0.2 J**	<0.32	<0.14	<0.14	**36**	<0.17	<0.23	<17	<74	**1900**	**270**	**170**	nt
	07/28/10	<0.25	<0.25	<0.25	<0.25	BDL	<0.25	<0.25	<0.25	<0.25	nt	<0.25	<0.25	<1	<25	**260**	**84**	<250	nt
	02/08/11	**1**	<0.25	<0.25	<0.25	1.000	<0.25	<0.25	<0.25	<0.25	120	<0.25	<0.25	<2	<50	**280**	**91**	<250	nt
	12/13/11	**0.36 J**	<0.25	<0.25	<0.25	0.36	<0.25	<0.25	<0.25	<0.25	**34**	<0.25	<0.25	<1.0	<25	**280**	**61**	<250	nt
	08/06/14	**3.4**	**0.33 J**	**1.3 J**	<1.2	5.03	**1.2 J**	<0.50	<0.35	<1.1	**74**	<0.60	<0.45	<4.7	<110	**730**	**71**	<250	nt
	03/12/15	**2.6**	**0.45J**	**0.35J**	**0.39J**	3.79	<0.16	<0.10	<0.070	<0.22	**30**	<0.12	**0.15JB**	<0.94	<31	**930**	**94**	<65	nt
ES-9	07/23/93	<0.3	<0.3	<0.3	<0.6	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	<500	<500	nt	nt
	10/07/93	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	01/05/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/07/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	07/13/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	10/06/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	01/13/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**1100**	nt	nt
	04/11/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	07/06/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	10/05/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	09/24/08	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
	04/08/09	<0.1	<0.2	<0.1	<0.1	BDL	<0.1	<0.3	<0.14	**0.55J**	**0.56J**	<0.17	<0.23	<17	<74	<23	<16	**210**	nt
	07/15/09	<0.1	<0.29	<0.15	<0.13	BDL	<0.1	<0.32	<0.14	**0.66J**	**0.52J**	<0.17	<0.23	<17	<74	<16	**28J**	**61**	nt
	10/06/09	<0.1	<0.29	<0.15	**0.2J**	0.2	<0.1	<0.32	<0.14	<0.14	**0.5J**	<0.17	<0.23	<17	<74	**22J**	**27J**	**52**	nt
	07/28/10	<0.25	<0.25	<0.25	<0.25	BDL	<0.25	<0.25	<0.25	<0.25	nt	<0.25	<0.25	<1	<25	<50	<50	<250	nt
	02/08/11	<0.25	<0.25	<0.25	<0.25	BDL	<0.25	<0.25	<0.25	<0.25	**0.45J**	<0.25	<0.25	<2	<50	<50	<50	<250	nt
	12/13/11	<0.25	<0.25	<0.25	<0.25	BDL	<0.25	<0.25	<0.25	<0.25	**6.0**	<0.25	<0.25	<1.0	<25	<50	<50	<250	nt
	08/06/14	<0.051	<0.040	<0.050	<0.25	0.00	< 0.016	<0.10	<0.070	<0.22	**1.3**	<0.12	<0.090	<0.94	<22	<50	<50	<250	nt
	03/12/15	<0.22	**0.13J**	<0.050	<0.25	0.13	<0.16	<0.10	<0.070	<0.22	**0.8**	<0.12	<0.090	<0.94	<31	**17J**	**25J**	**83J**	nt
ES-10	07/23/93	<0.3	<0.3	<0.3	<0.6	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	<500	<500	nt	nt
	10/07/93	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	01/05/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/07/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	07/13/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	10/06/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	01/13/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt

Table 3 - Cumulative Summary of Groundwater Analytical Results
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, Alameda County, California
Green Star Project No. 15-1379

Sample ID	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	Naphthalene	MTBE	ETBE	TAME	DIPE	EDB	EDC *	TBA	Ethanol	TPH-g	TPH-d	TPH-o	Total PAHs
	04/11/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	07/06/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	10/05/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	09/24/08	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne
	04/09/09	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne
	07/15/09	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne
	10/7/2009	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne
	07/29/10	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne
	02/09/11	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne
	12/13/11	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne	dne
ES-11	07/23/93	<0.3	**1**	<0.3	**1**	2	nt	nt	nt	nt	nt	nt	nt	nt	nt	<500	<500	nt	nt
	10/07/93	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	01/05/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/07/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	**350**	nt	nt
	07/13/94	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	10/06/94	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
	01/13/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/11/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	**170**	BDL	nt	nt
	07/06/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	10/05/95	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	07/09/96	BDL	BDL	BDL	BDL	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	04/17/97	BDL	BDL	BDL	BDL	BDL	nt	BDL	nt	nt	nt	nt	nt	nt	nt	BDL	BDL	nt	nt
	09/25/08	<0.4	<0.3	<0.3	<0.3	BDL	<0.3	<0.31	<0.14	**0.67J**	<0.36	<0.31	<0.24	<6	<74	<17	**28J**	<29	nt
	04/09/09	**2.5J**	**0.9J**	**1.7J**	**3J**	8.1	**1.1J**	<0.3	<0.14	**0.52J**	**0.25J**	<0.17	<0.23	<17	<74	<25	<16	**200**	nt
	07/15/09	**2.8J**	**0.97J**	**2.1J**	<0.13	5.87	**1.4J**	<0.32	<0.14	<0.14	**0.25J**	<0.17	<0.23	<17	<74	**41J**	<20	<29	nt
	10/07/09	<0.1	<0.29	<0.15	<0.13	BDL	<0.11	<0.32	<0.14	<0.14	<0.15	<0.17	<0.23	<17	<74	<16	<20	<29	nt
	07/29/10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
	02/09/11	**0.47J**	<0.25	**0.26J**	<0.25	0.73	**0.27J**	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2	<50	<50	<50	<250	nt
	12/13/11	**1.2**	<0.25	<0.25	**0.32J**	1.52	**0.28J**	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<1.0	<25	<50	<50	<250	nt
	08/06/14	<0.051	<0.040	<0.050	<0.25	0.00	< 0.016	<0.10	<0.070	<0.22	<0.070	<0.12	<0.090	<0.94	<22	<50	<50	<250	nt
	03/13/15	**0.057JB**	**0.19J**	<0.050	<0.25	0.25	<0.16	<0.10	<0.070	<0.22	<0.070	<0.12	<0.090	<0.94	<31	**19J**	<24	<65	nt
RWQCB ESLs (non-drinking water resource)		**46**	**130**	**43**	**100**	ne	**24**	**1800**	ne	ne	ne	**150**	**200**	**18000**	ne	**210**	**210**	**210**	ne
RWQCB ESLs (potential vapor intrusion concerns, commercial)		**1800**	**530000**	**170000**	**160000**	ne	**11000**	**80000**	ne	ne	ne	**540**	**690**	(use soil gas)	ne	(use soil gas)	(use soil gas)	ne	ne

Analytical test results are reported in micrograms per liter (µg/L).
Bolded results indicate detected concentrations exceeded laboratory detection limits.
nt = not tested for that constituent ns = not sampled dne = does not exist ne = not established <, BDL = below laboratory detection limits J = reported result is between the MDL and PQL B = analyte detected in the asssociated Method Blank and in the sample na = not analyzed
* EDC is the abbreviation for 1,2-Dichloroethane (1,2-DCA) presented in the Analytical Report attached as Appendix A.
Notes: 1) BTEX analyzed by EPA Method 8260
2) TPH-d analyzed by EPA Method 3550/8015 Modified
3) TPH-g analyzed by EPA Method 8015M
** Sample not analyzed due to broken sample bottle during shipment

Table 4 - Cumulative Summary of Soil Analytical Results
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, Alameda County, California
Green Star Project No. 11-1379

Sample ID	Depth in feet BGS	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	Naphthalene	MTBE	ETBE	TAME	DIPE	EDC	EDB	TBA	Ethanol	TPH-g	TPH-d	TPH-o	TFH
Investigation Samples (Collected by a Previous Consultant)																				
BC-1	16-16.5	07/08/89	nr	1.78	**37.5**	1.13	40.4	nt	nt	nt	nt	nt	nt	nt	nt	nt	nr	nr	nr	3,060
BC-1	25-25.5	07/08/89	<10.0	<0.001	0.027	0.008	0.035	nt	nt	nt	nt	nt	nt	nt	nt	nt	nr	nr	nr	<10.0
BC-2	16-16.5	07/08/89	nr	4.00	2.00	**49.5**	55.5	nt	nt	nt	nt	nt	nt	nt	nt	nt	nr	nr	nr	4,260
BC-2	25-25.5	07/08/89	<10.0	0.090	0.402	0.154	0.646	nt	nt	nt	nt	nt	nt	nt	nt	nt	nr	nr	nr	<10.0
BC-3	16-16.5	07/08/89	nr	2.24	**28.9**	1.03	32.2	nt	nt	nt	nt	nt	nt	nt	nt	nt	nr	nr	nr	1,850
BC-3	25-25.5	07/08/89	<10.0	<0.001	0.008	<0.001	0.008	nt	nt	nt	nt	nt	nt	nt	nt	nt	nr	nr	nr	<10.0
ES-1	16-18	11/11/91	<1.00	3.00	3.40	**22.0**	28.4	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	<2.50	nt	nt
ES-2	16-18	11/12/91	<2.00	**27.0**	**28.0**	**150**	205	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	<2.50	nt	nt
ES-3	16-18	11/12/91	<0.001	<0.002	<0.002	<0.004	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	<2.50	nt	nt
ES-4	16-18	11/13/91	<0.001	<0.002	<0.002	<0.004	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	BDL	nt	nt
ES-5	16-18	11/14/91	<0.001	0.080	0.065	0.330	0.475	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	160	nt	nt
ES-6	15-16.5	07/23/93	<0.005	<0.005	<0.005	<0.015	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	<10.0	<10.0	nt	nt
ES-7	20-21.5	07/20/93	<0.005	<0.005	<0.005	<0.015	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	<10.0	<10.0	nt	nt
ES-8	20-21.5	07/20/93	<0.005	<0.005	<0.005	<0.015	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	<10.0	<10.0	nt	nt
ES-9	15-16.5	07/21/93	<0.005	<0.005	<0.005	<0.015	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	<10.0	<10.0	nt	nt
ES-10	20-21.5	07/21/93	<0.005	<0.005	<0.005	<0.015	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	<10.0	<10.0	nt	nt
ES-11	20-21.5	07/21/93	<0.005	<0.005	<0.005	<0.015	BDL	nt	nt	nt	nt	nt	nt	nt	nt	nt	<10.0	<10.0	nt	nt
Source Area Confirmation Samples																				
B-1	6.5	10/22/10	0.0052	0.0073	<0.0037	0.033	0.0455	nt	<0.037	nt	nt	nt	nt	nt	nt	nt	16.0	27.0	nt	nt
B-1	14.0	10/22/10	0.053	0.0049	0.021	0.018	0.0969	nt	<0.040	nt	nt	nt	nt	nt	nt	nt	5.70	2.40	nt	nt
B-2	7.5	10/22/10	0.0071	<0.0039	<0.0039	<0.0039	0.0071	nt	<0.039	nt	nt	nt	nt	nt	nt	nt	1.20	<1.0	nt	nt
B-2	15.5	10/22/10	**2.50**	<2.0	4.60	**13.0**	20.1	nt	<20	nt	nt	nt	nt	nt	nt	nt	**2,400**	57.0	nt	nt
B-3	5.5	10/22/10	<0.0035	<0.0035	<0.0035	<0.0035	BDL	nt	<0.035	nt	nt	nt	nt	nt	nt	nt	<0.71	2.20	nt	nt
B-3	16.0	10/22/10	1.30	0.380	3.60	3.10	8.38	nt	<1.5	nt	nt	nt	nt	nt	nt	nt	**880**	35.0	nt	nt
B-4	9.5	10/20/10	<0.0042	<0.0042	<0.0042	<0.0042	BDL	nt	<0.042	nt	nt	nt	nt	nt	nt	nt	<0.83	<1.0	nt	nt
B-4	15.5	10/20/10	<0.82	0.870	**6.70**	**13.0**	20.6	nt	<8.2	nt	nt	nt	nt	nt	nt	nt	**1,800**	**1,400**	nt	nt
B-5	11.5	10/20/10	0.018	<0.0039	<0.0039	0.014	0.032	nt	<0.039	nt	nt	nt	nt	nt	nt	nt	8.90	9.70	nt	nt
B-5	16.0	10/20/10	<0.45	<0.45	<0.45	1.70	1.70	nt	<4.5	nt	nt	nt	nt	nt	nt	nt	**930**	**260**	nt	nt
B-6	6.0	10/21/10	<0.0038	<0.0038	<0.0038	<0.0038	BDL	nt	<0.038	nt	nt	nt	nt	nt	nt	nt	<0.76	7.70	nt	nt
B-7	5.5	10/21/10	<0.0045	<0.0045	<0.0045	<0.0045	BDL	nt	<0.045	nt	nt	nt	nt	nt	nt	nt	<0.89	1.50	nt	nt
B-7	16.0	10/21/10	<0.45	1.10	<0.45	7.10	8.20	nt	5.90	nt	nt	nt	nt	nt	nt	nt	**2,500**	**1,300**	nt	nt
B-8	5.5	10/21/10	<0.0042	<0.0042	<0.0042	<0.0042	BDL	nt	<0.042	nt	nt	nt	nt	nt	nt	nt	<0.83	4.90	nt	nt
B-8	16.0	10/21/10	**3.40**	<2.2	**7.30**	6.00	16.7	nt	<22	nt	nt	nt	nt	nt	nt	nt	**2,600**	**3,100**	nt	nt
B-9	13.0	10/21/10	<0.0042	<0.0042	<0.0042	0.0043	0.0043	nt	<0.042	nt	nt	nt	nt	nt	nt	nt	2.80	2.20	nt	nt
B-10	5.5	10/21/10	<0.0040	<0.0040	<0.0040	<0.0040	BDL	nt	<0.040	nt	nt	nt	nt	nt	nt	nt	<0.80	1.80	nt	nt
B-10	16.0	10/21/10	<2.2	<2.2	**6.80**	9.90	16.7	nt	<22	nt	nt	nt	nt	nt	nt	nt	**2,200**	99.0	nt	nt
B-11	5.5	10/21/10	<0.0040	<0.0040	<0.0040	<0.0040	BDL	nt	<0.040	nt	nt	nt	nt	nt	nt	nt	1.30	<1.0	nt	nt
B-11	14.5	10/21/10	<0.0043	<0.0043	<0.0043	<0.0043	BDL	nt	<0.043	nt	nt	nt	nt	nt	nt	nt	<0.85	7.20	nt	nt
San Francisco Bay Regional Water Quality Control Board (RWQCB) Environmental Screening Levels (ESLs; shallow soils, <3m bgs, commercial/industrial, non-drinking water resource)			**0.270**	**9.30**	**4.70**	**11.0**	ne	**2.80**	**8.40**	ne	ne	ne	**0.480**	**0.044**	**110**	ne	**180**	**180**	**2,500**	ne
RWQCB ESLs (deep soils, >3m bgs, commercial/industrial, non-drinking water resource)			**2.00**	**9.30**	**4.70**	**11.0**	ne	**4.80**	**8.40**	ne	ne	ne	**4.30**	**1.00**	**110**	ne	**180**	**180**	**5,000**	ne

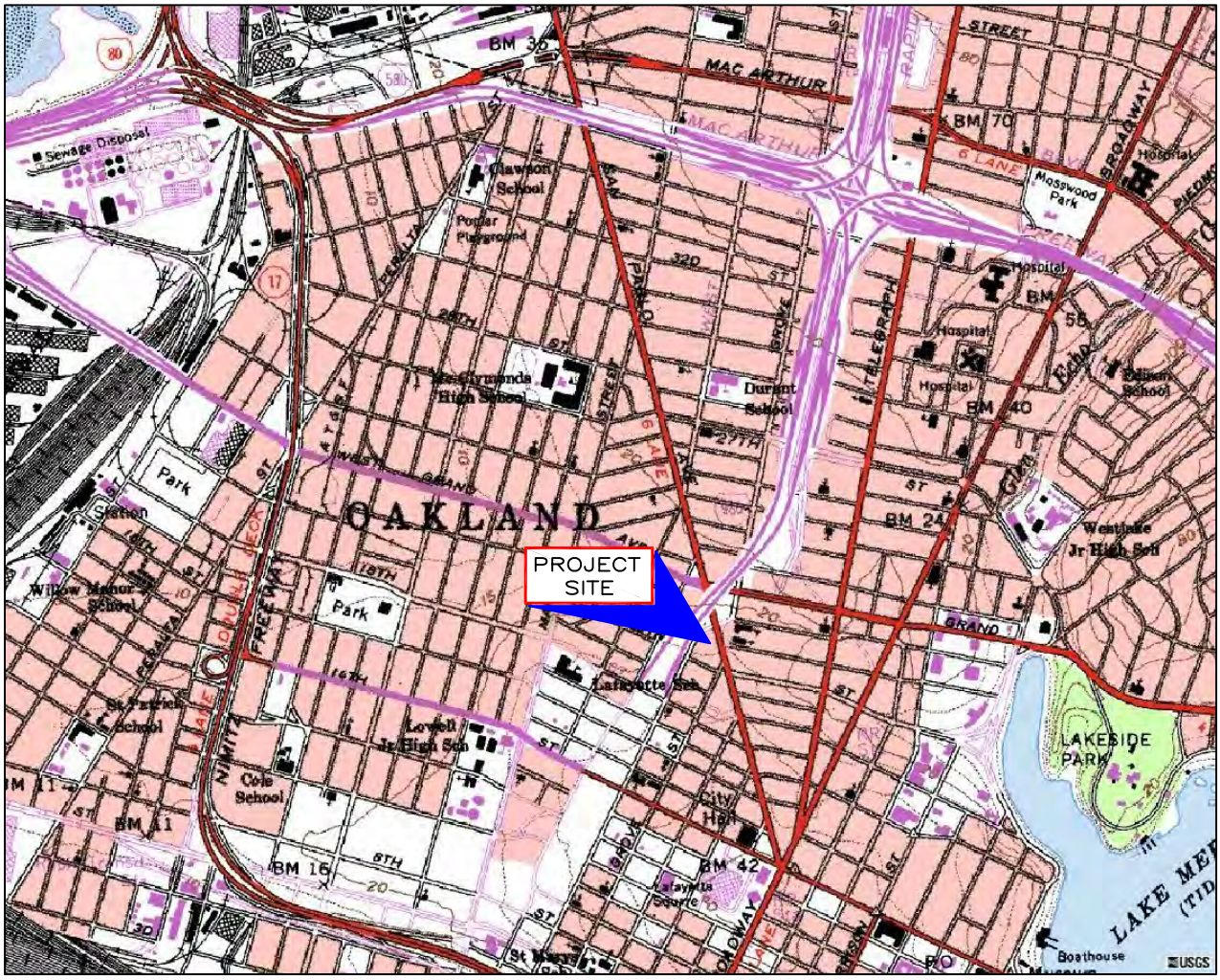
Analytical test results are reported in milligrams per Kilogram (mg/Kg).
<, BDL = below laboratory detection limits
nt = not tested for that constituent ne = not established
nr = Interpretation of results not possible as reported by previous consultant.
SAT = ESL exceeds saturated soil concentration of chemical
Bolded results indicate detected concentrations exceeded RWQCB ESLs.

FIGURES

OAKLAND WEST QUADRANGLE
OAKLAND, CALIFORNIA

LAT=37° 48' 40" N
LONG=122° 16' 24" W

1996



NORTH

SCALE 1:24000

0 1/2 1

(Miles)

0 2000 4000

(Feet)

CONTOUR INTERVAL 10 FEET

1379

FIGURE 1

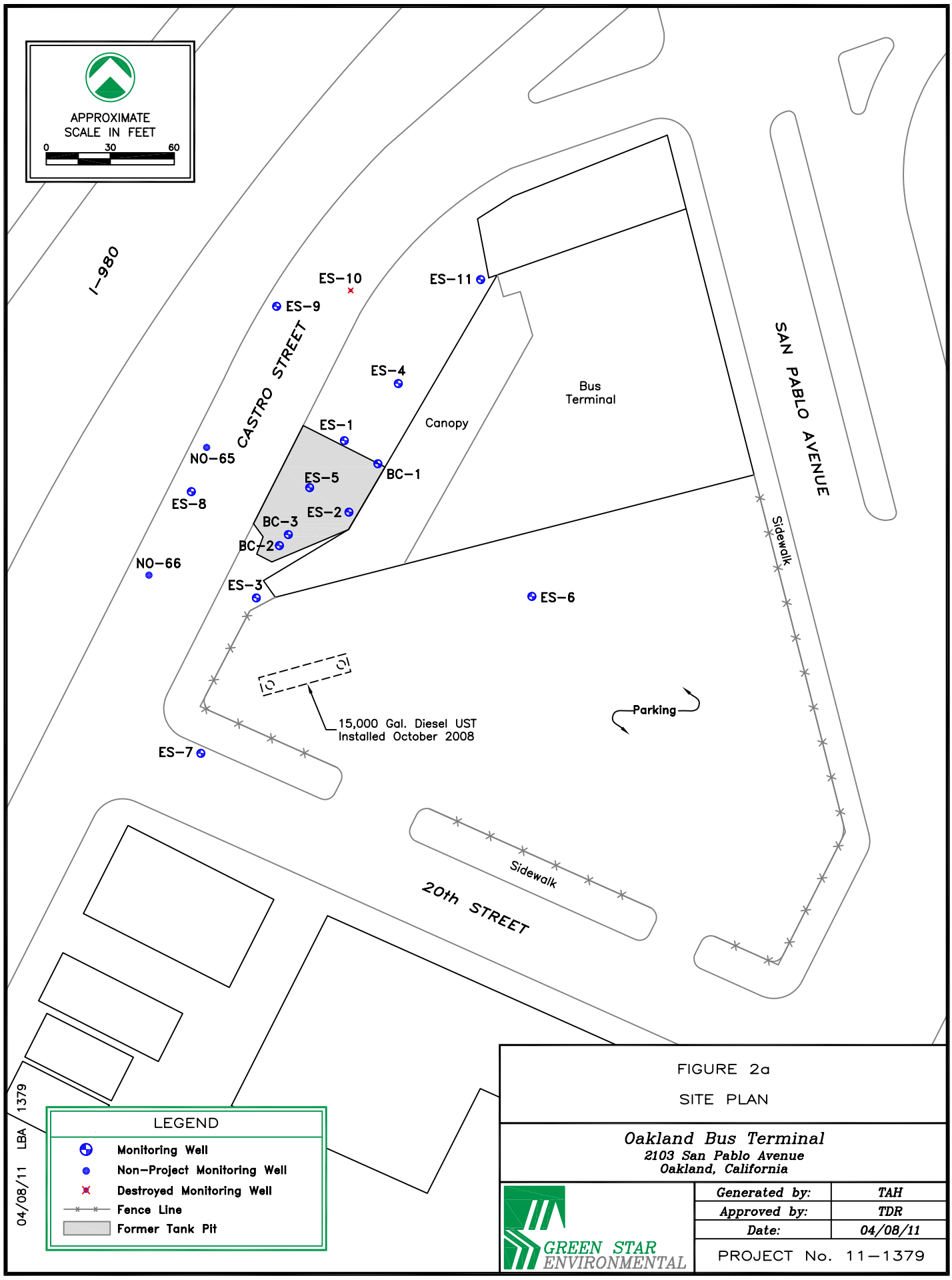
SITE LOCATION/USGS TOPOGRAPHIC MAP

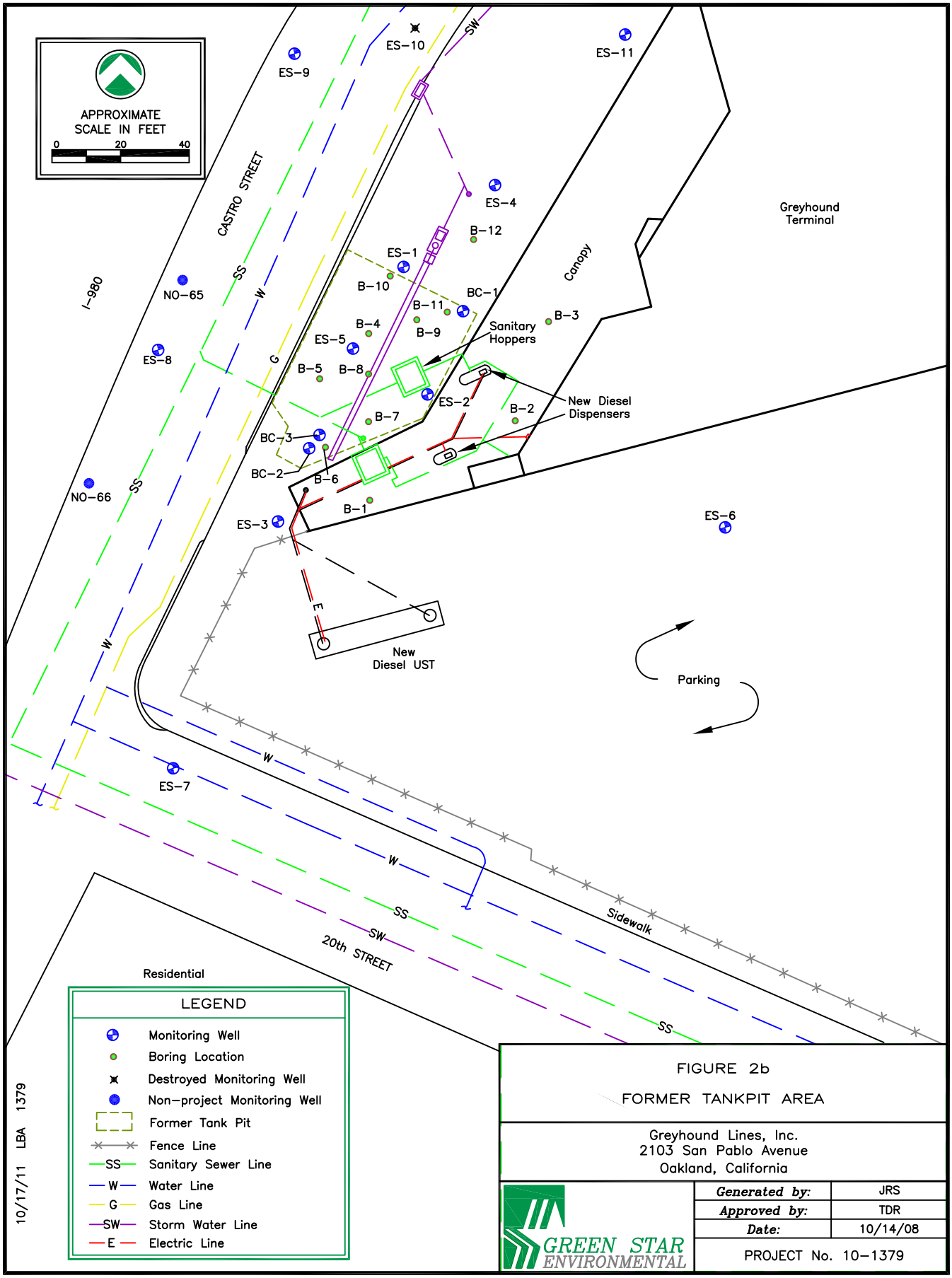
Greyhound Lines, Inc.
2103 San Pablo Avenue
Oakland, California

GREEN STAR ENVIRONMENTAL

Generated by:	TAH
Approved by:	LCA
Date:	08/31/2015

PROJECT No. 15-1379


APPROXIMATE
SCALE IN FEET
0
30
60
I-980
CASTRO STREET
SAN PABLO AVENUE
20th STREET
ES-10
ES-11
ES-9
ES-4
ES-1
ES-5
BC-1
ES-2
BC-3
BC-2
ES-3
ES-6
ES-7
NO-65
ES-8
NO-66
Bus
Terminal
Canopy
Sidewalk
Sidewalk
Parking
15,000 Gal. Diesel UST
Installed October 2008
LEGEND
Monitoring Well
Non-Project Monitoring Well
Destroyed Monitoring Well
Fence Line
Former Tank Pit
04/08/11 LBA 1379
FIGURE 2a
SITE PLAN
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, California
GREEN STAR ENVIRONMENTAL
Generated by: TAH
Approved by: TDR
Date: 04/08/11
PROJECT No. 11-1379



10/17/11 LBA 1379

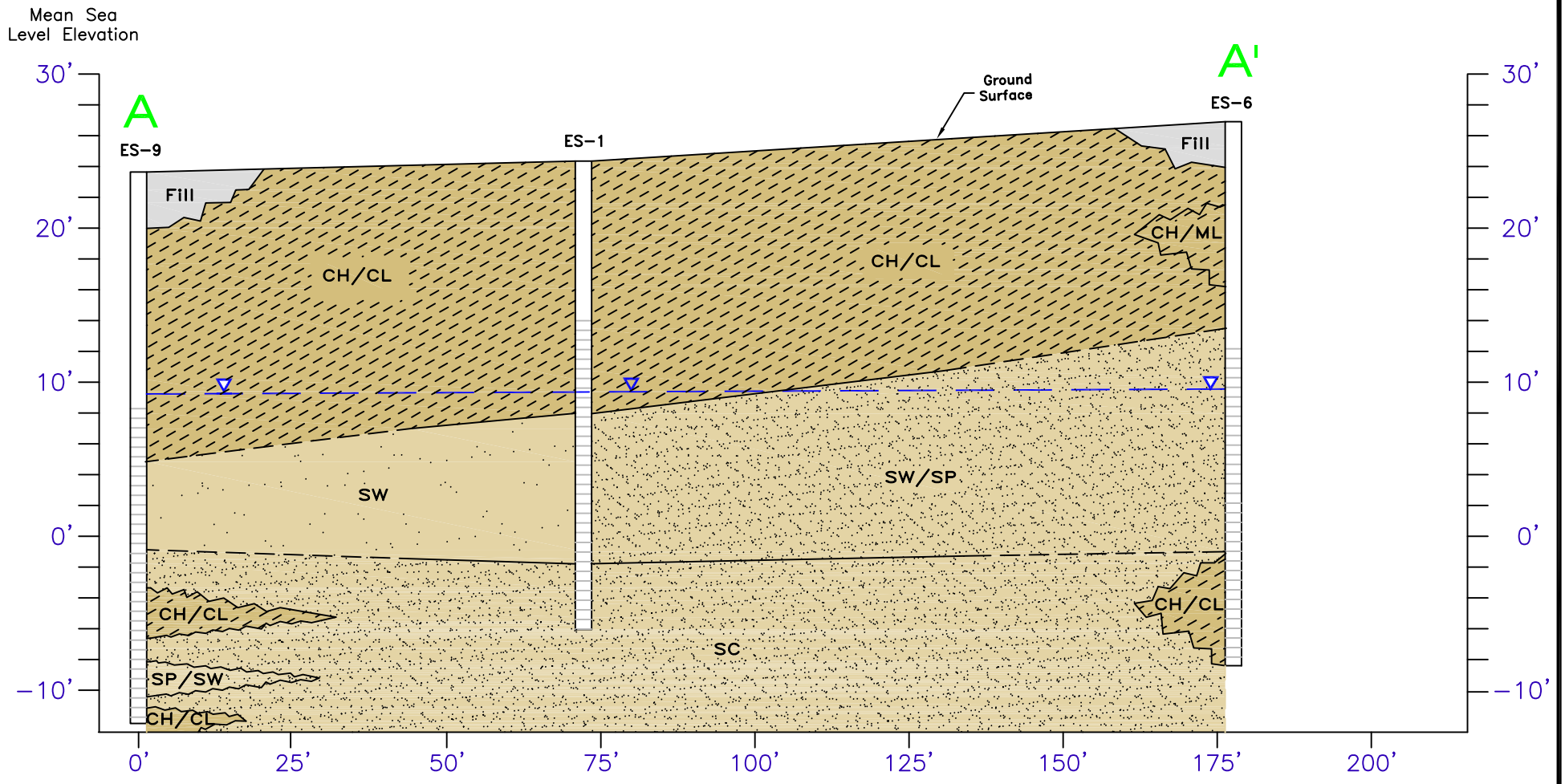
FIGURE 2b

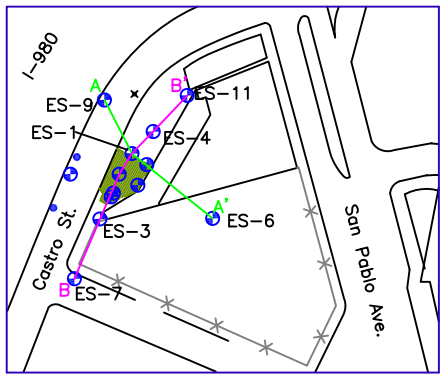
FORMER TANKPIT AREA

Greyhound Lines, Inc.
2103 San Pablo Avenue
Oakland, California

GREEN STAR ENVIRONMENTAL

Generated by:	JRS
Approved by:	TDR
Date:	10/14/08
PROJECT No. 10-1379	





1379 LBA 08/31/15

LEGEND

CH	High Plasticity Clays
CL	Low Plasticity Clays
ML	Clayey Silt
SC	Clayey Sand
SP	Poorly-Graded Sands
SW	Well-Graded Sands
▽	Groundwater Table

HORIZONTAL SCALE

0 12.5 25 FT.

VERTICAL SCALE

0 5 10 FT.

FIGURE 3a

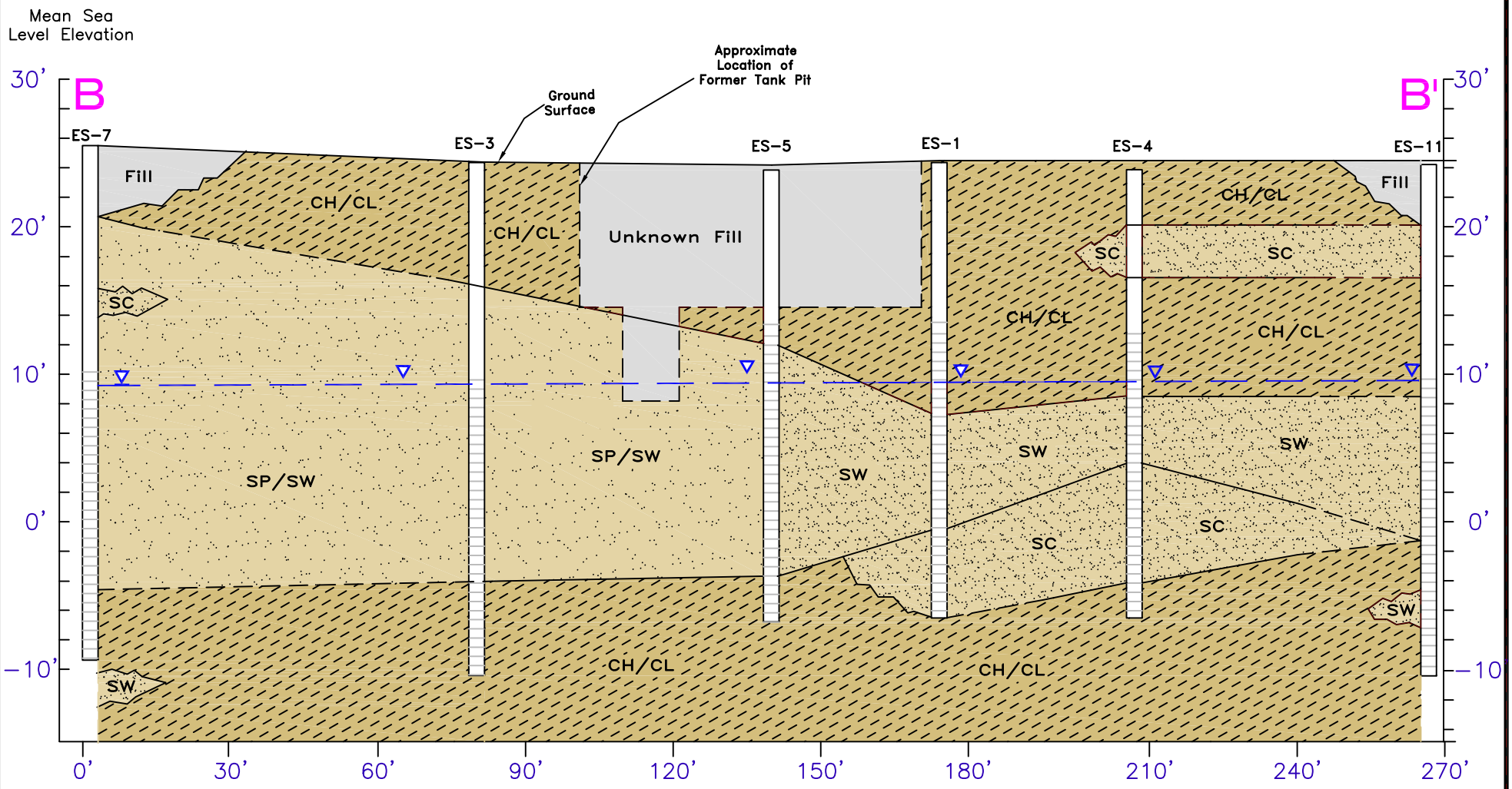
CROSS-SECTION A-A'

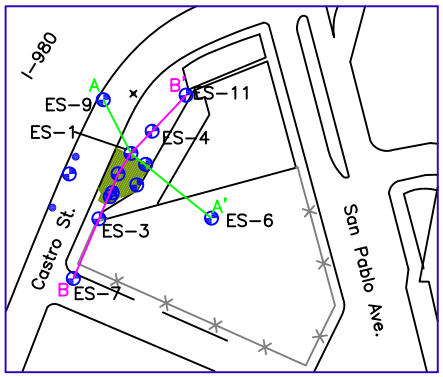
Greyhound Lines, Inc.
2103 San Pablo Avenue
Oakland, California

GREEN STAR ENVIRONMENTAL

Generated by:	*TAH*
Approved by:	*LCA*
Date:	*8/31/15*

PROJECT No. 15-1379





1379 LBA 08/31/2015

LEGEND	
CH	High Plasticity Clays
CL	Low Plasticity Clays
ML	Clayey Silt
SC	Clayey Sand
SP	Poorly-Graded Sands
SW	Well-Graded Sands
▽	Groundwater Table

HORIZONTAL SCALE

0 15 30 FT.

VERTICAL SCALE

0 5 10 FT.

FIGURE 3b

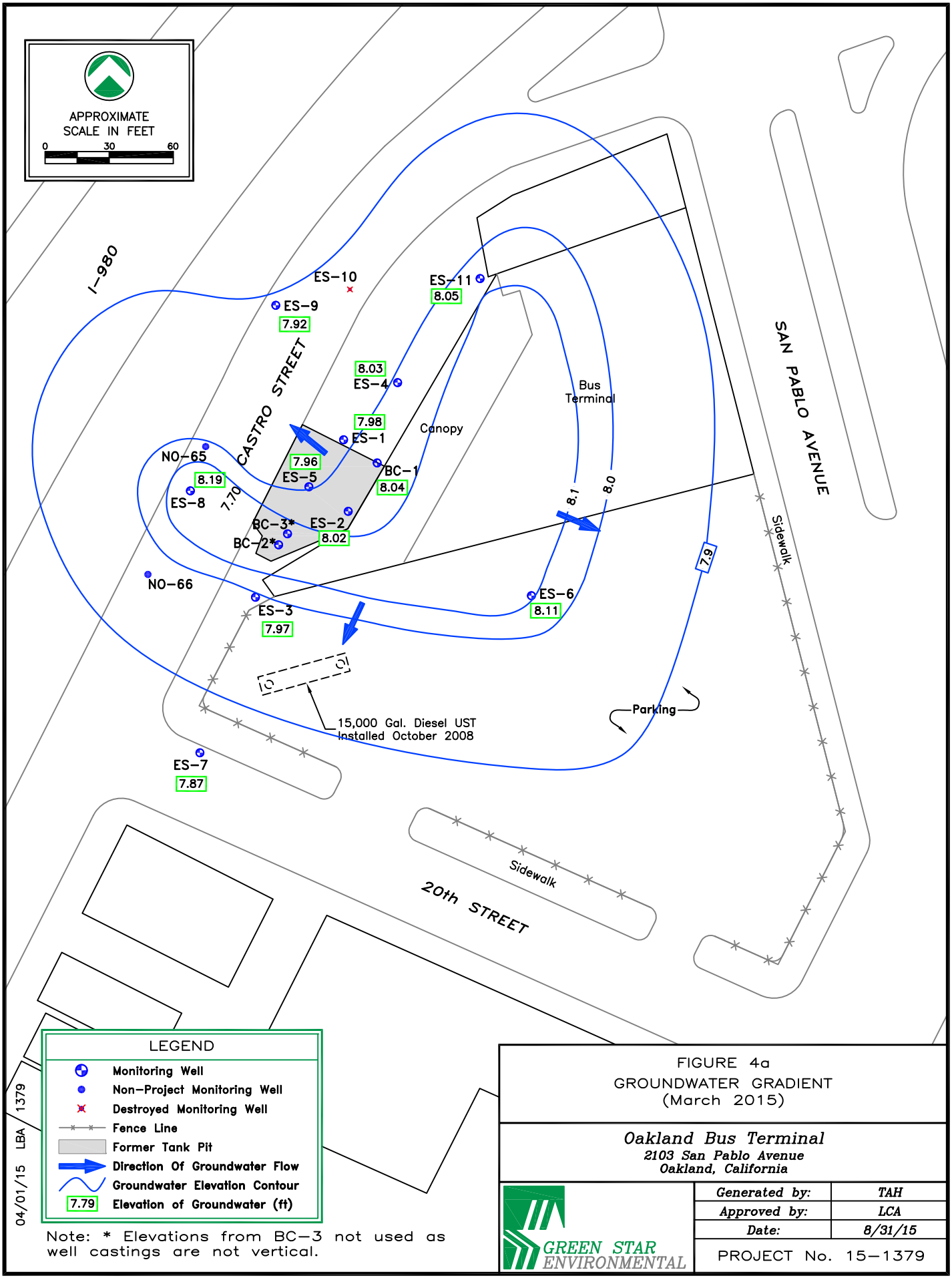
CROSS-SECTION B-B'

Greyhound Lines, Inc.
2103 San Pablo Avenue
Oakland, California

GREEN STAR ENVIRONMENTAL

Generated by:	*TAH*
Approved by:	*LCA*
Date:	*08/31/15*

PROJECT No. 15-1379



Note: * Elevations from BC-3 not used as well castings are not vertical.

04/01/15 LBA 1379

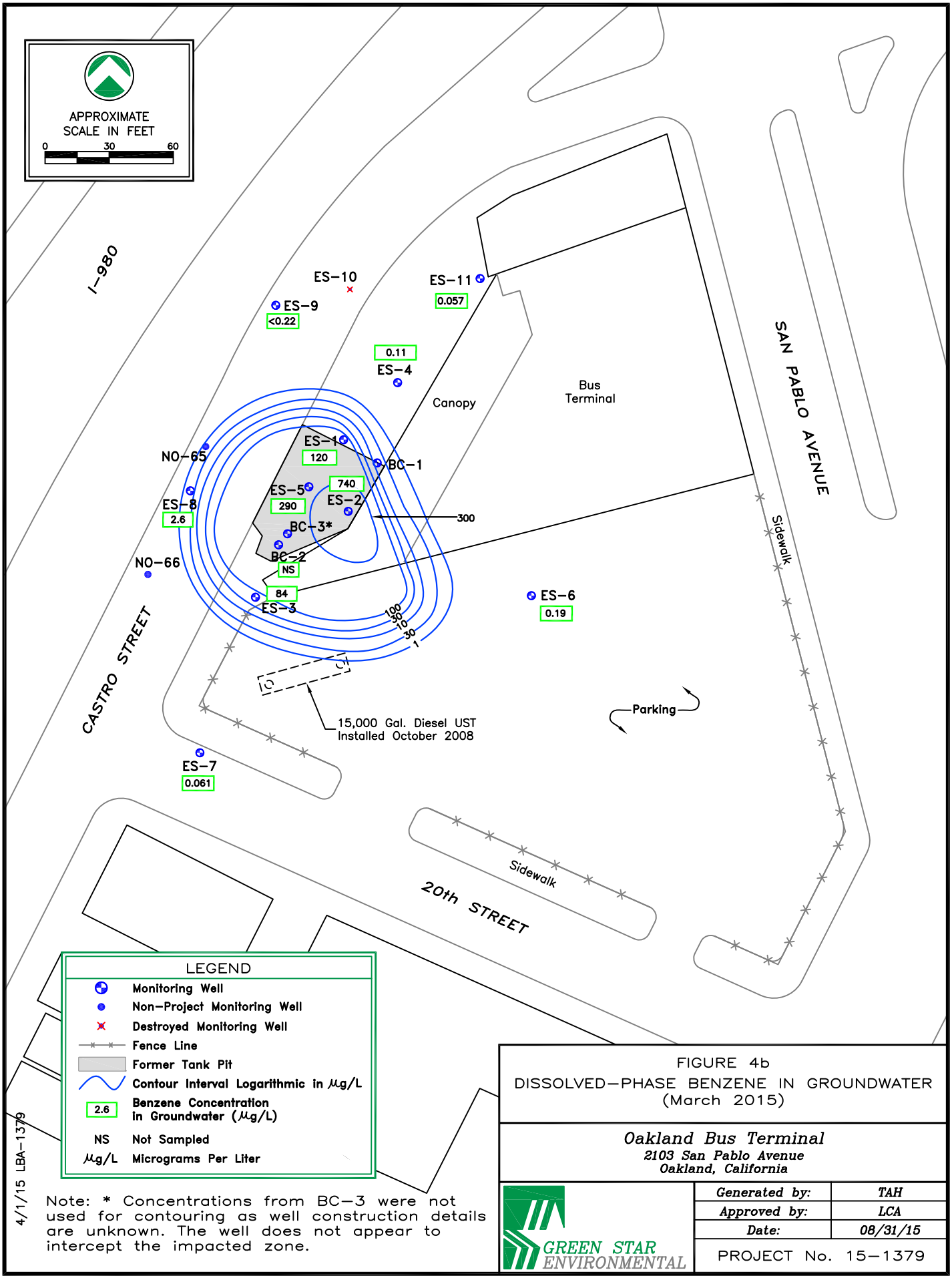
FIGURE 4a
GROUNDWATER GRADIENT
(March 2015)

Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, California

GREEN STAR ENVIRONMENTAL

Generated by:	*TAH*
Approved by:	*LCA*
Date:	*8/31/15*

PROJECT No. 15-1379



Note: * Concentrations from BC-3 were not used for contouring as well construction details are unknown. The well does not appear to intercept the impacted zone.

4/1/15 LBA-1379

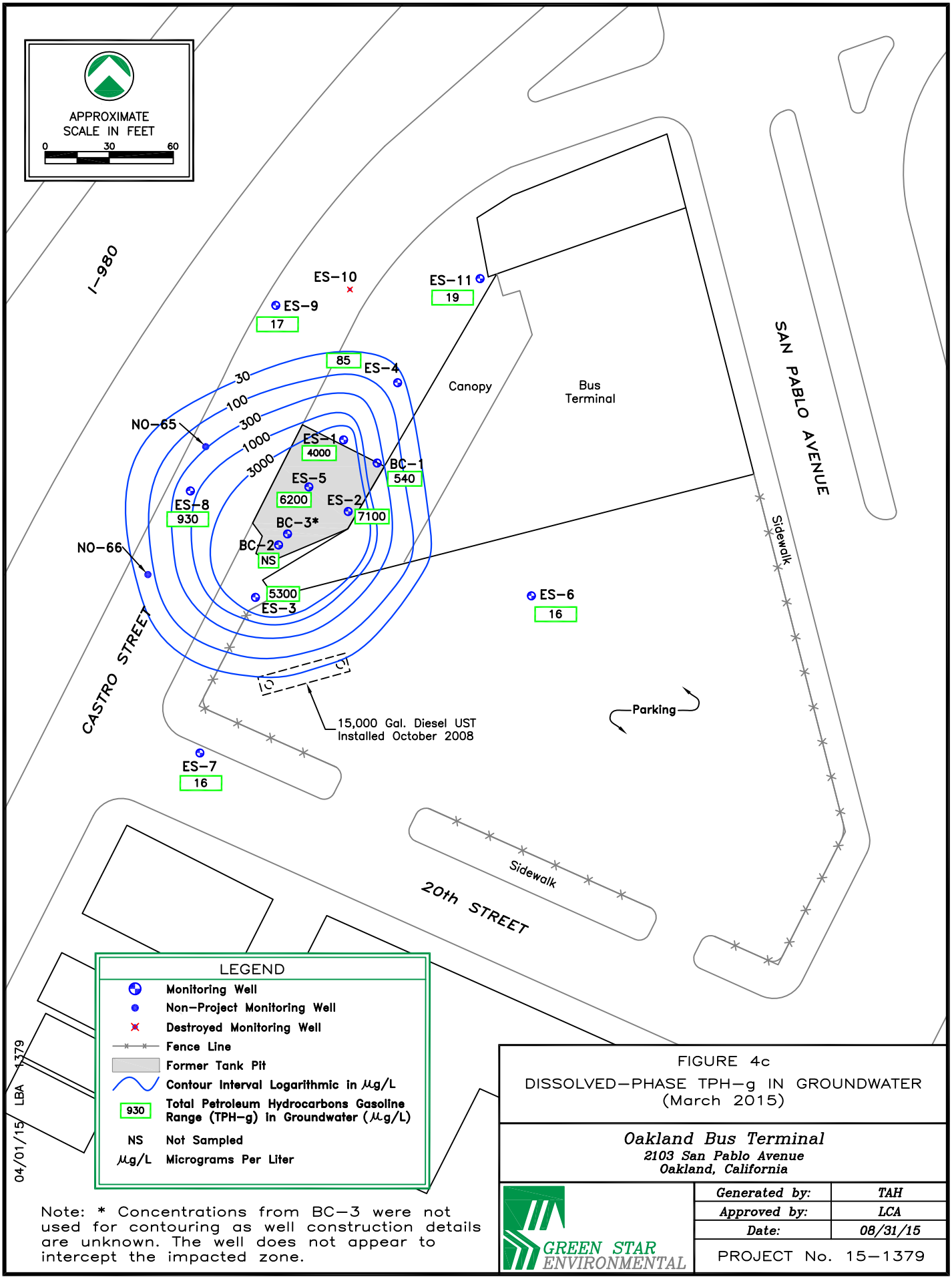
FIGURE 4b
DISSOLVED-PHASE BENZENE IN GROUNDWATER
(March 2015)

Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, California

GREEN STAR ENVIRONMENTAL

Generated by:	*TAH*
Approved by:	*LCA*
Date:	*08/31/15*

PROJECT No. 15-1379



Note: * Concentrations from BC-3 were not used for contouring as well construction details are unknown. The well does not appear to intercept the impacted zone.

FIGURE 4c

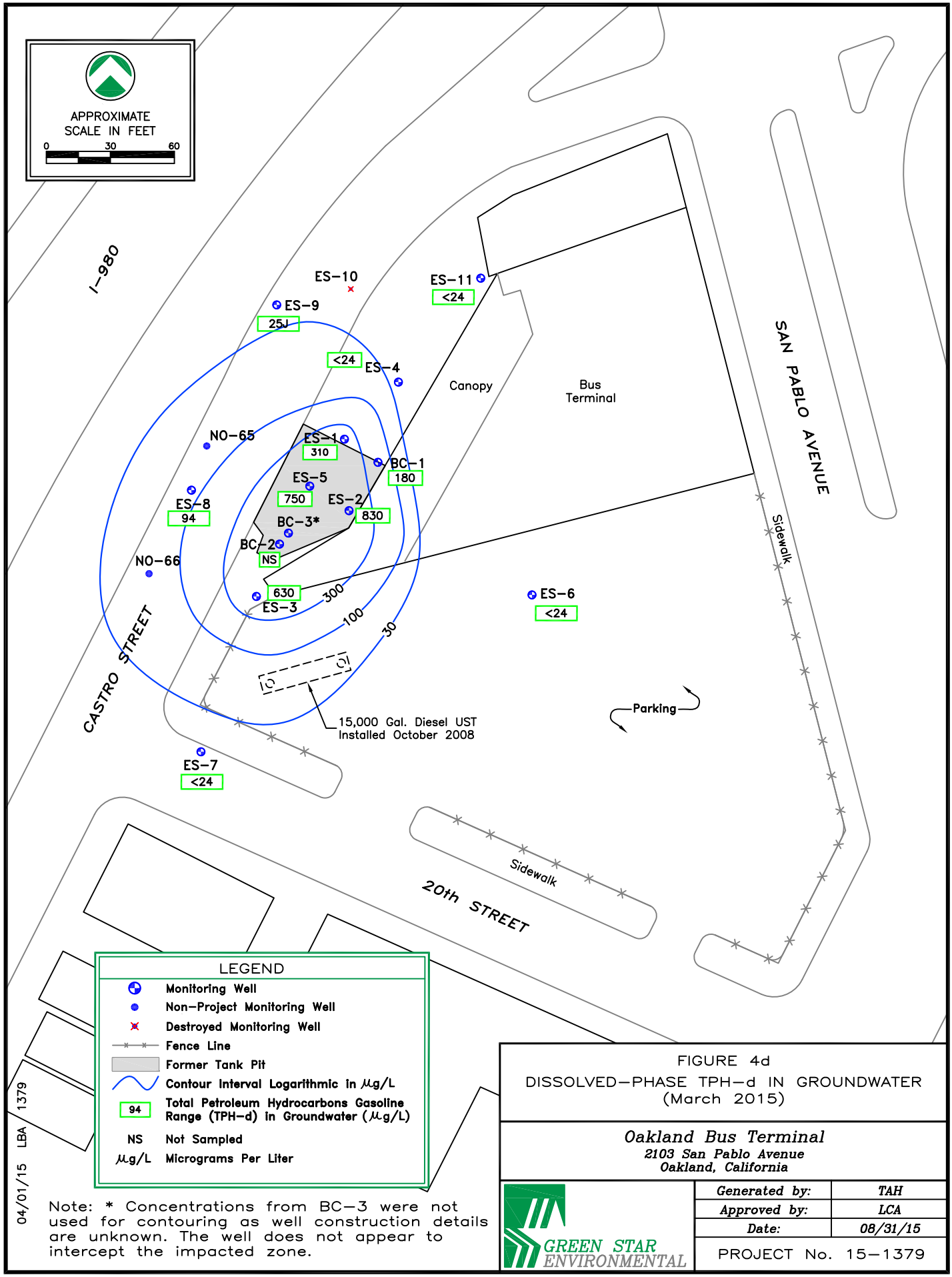
DISSOLVED-PHASE TPH-g IN GROUNDWATER
(March 2015)

Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, California

GREEN STAR ENVIRONMENTAL

Generated by:	*TAH*
Approved by:	*LCA*
Date:	*08/31/15*

PROJECT No. 15-1379



Note: * Concentrations from BC-3 were not used for contouring as well construction details are unknown. The well does not appear to intercept the impacted zone.

04/01/15 LBA 1379

FIGURE 4d
DISSOLVED-PHASE TPH-d IN GROUNDWATER
(March 2015)

Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, California

GREEN STAR ENVIRONMENTAL

Generated by:	*TAH*
Approved by:	*LCA*
Date:	*08/31/15*

PROJECT No. 15-1379

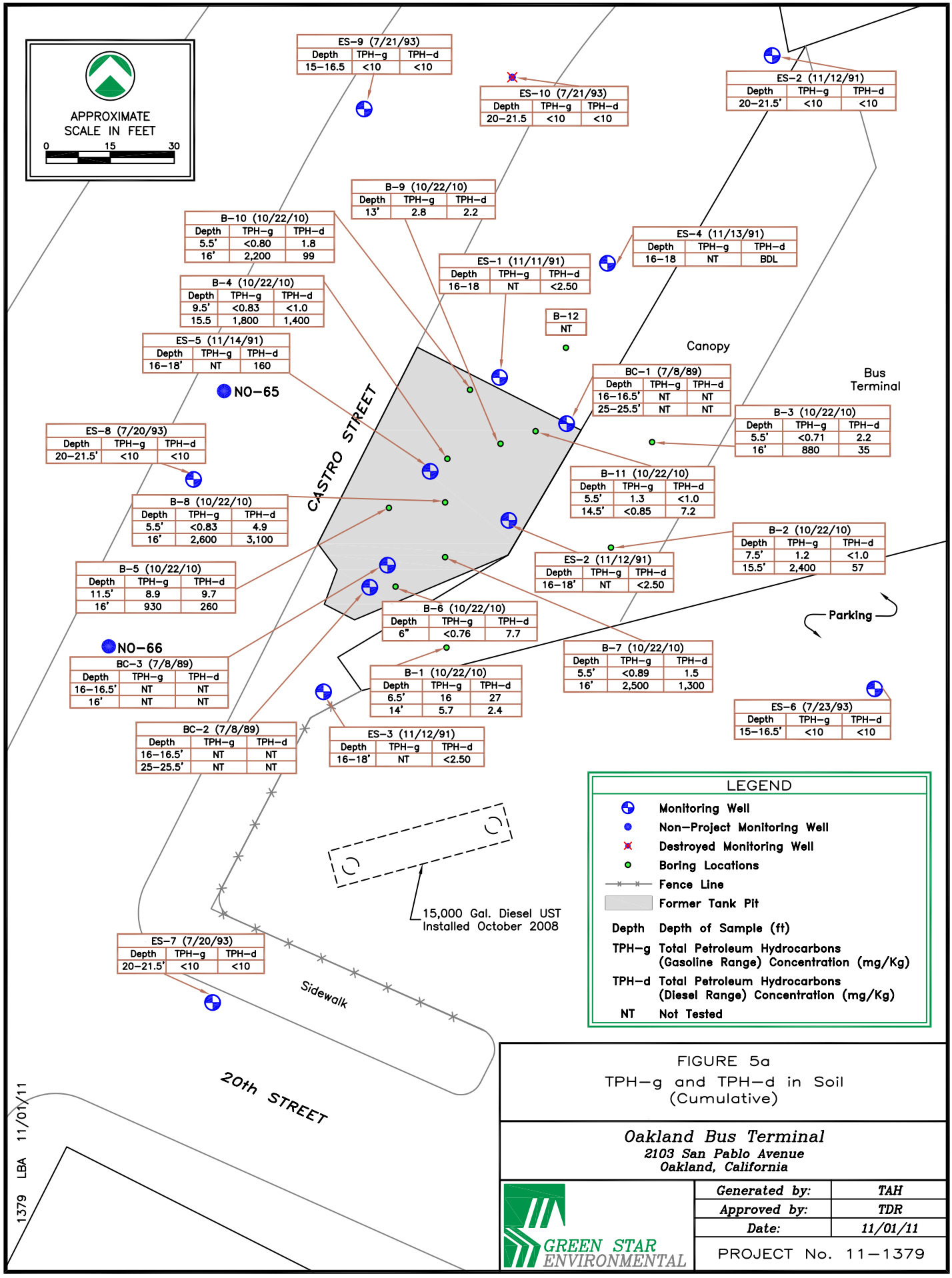


FIGURE 5a

TPH-g and TPH-d in Soil (Cumulative)

Oakland Bus Terminal

2103 San Pablo Avenue

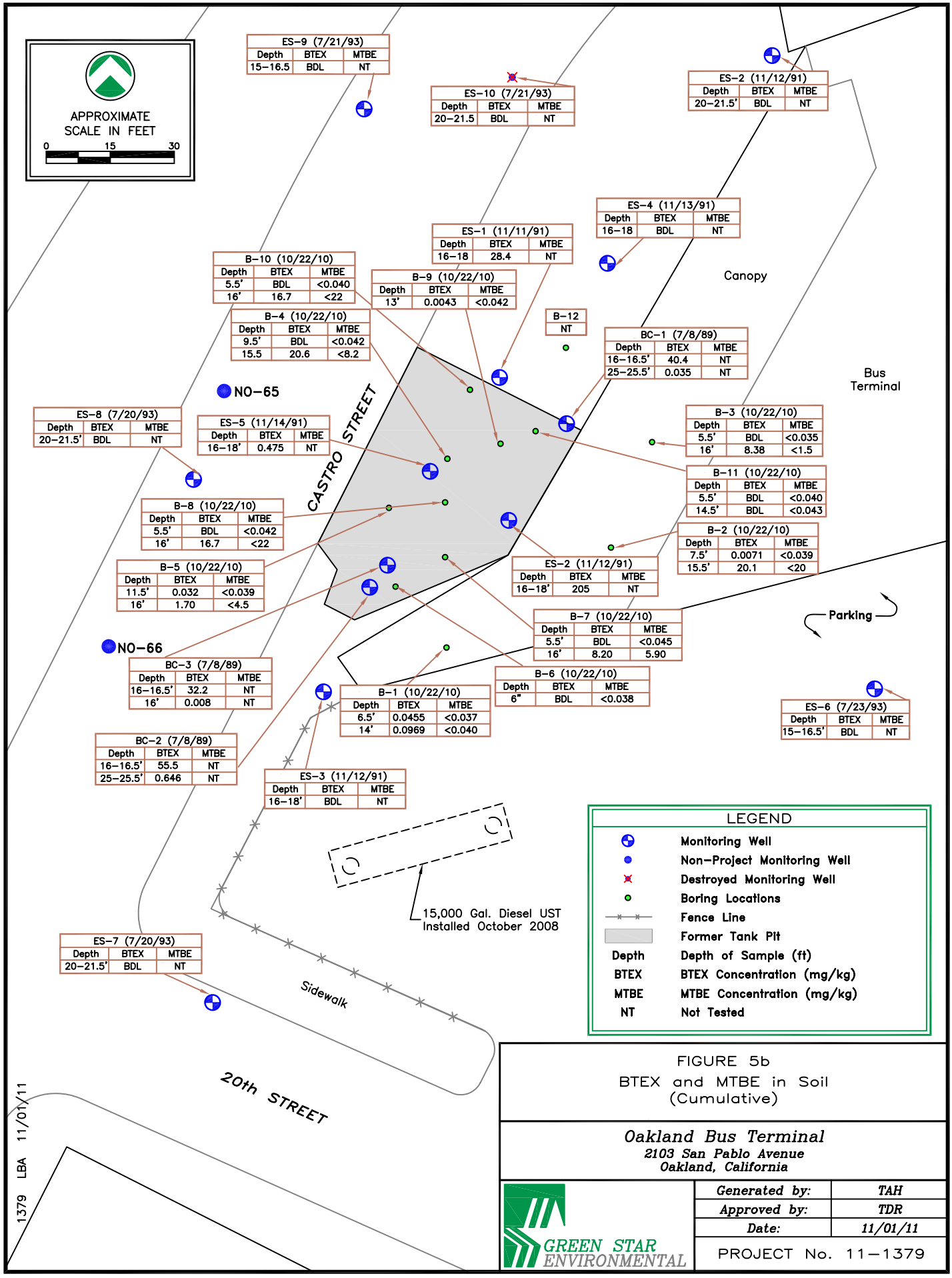
Oakland, California

Generated by:	*TAH*
Approved by:	*TDR*
Date:	*11/01/11*

GREEN STAR ENVIRONMENTAL

PROJECT No. 11-1379

1379 LBA 11/01/11



1379 LBA 11/01/11

FIGURE 5b
BTEX and MTBE in Soil
(Cumulative)

Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, California

GREEN STAR ENVIRONMENTAL

Generated by:	*TAH*
Approved by:	*TDR*
Date:	*11/01/11*

PROJECT No. 11-1379

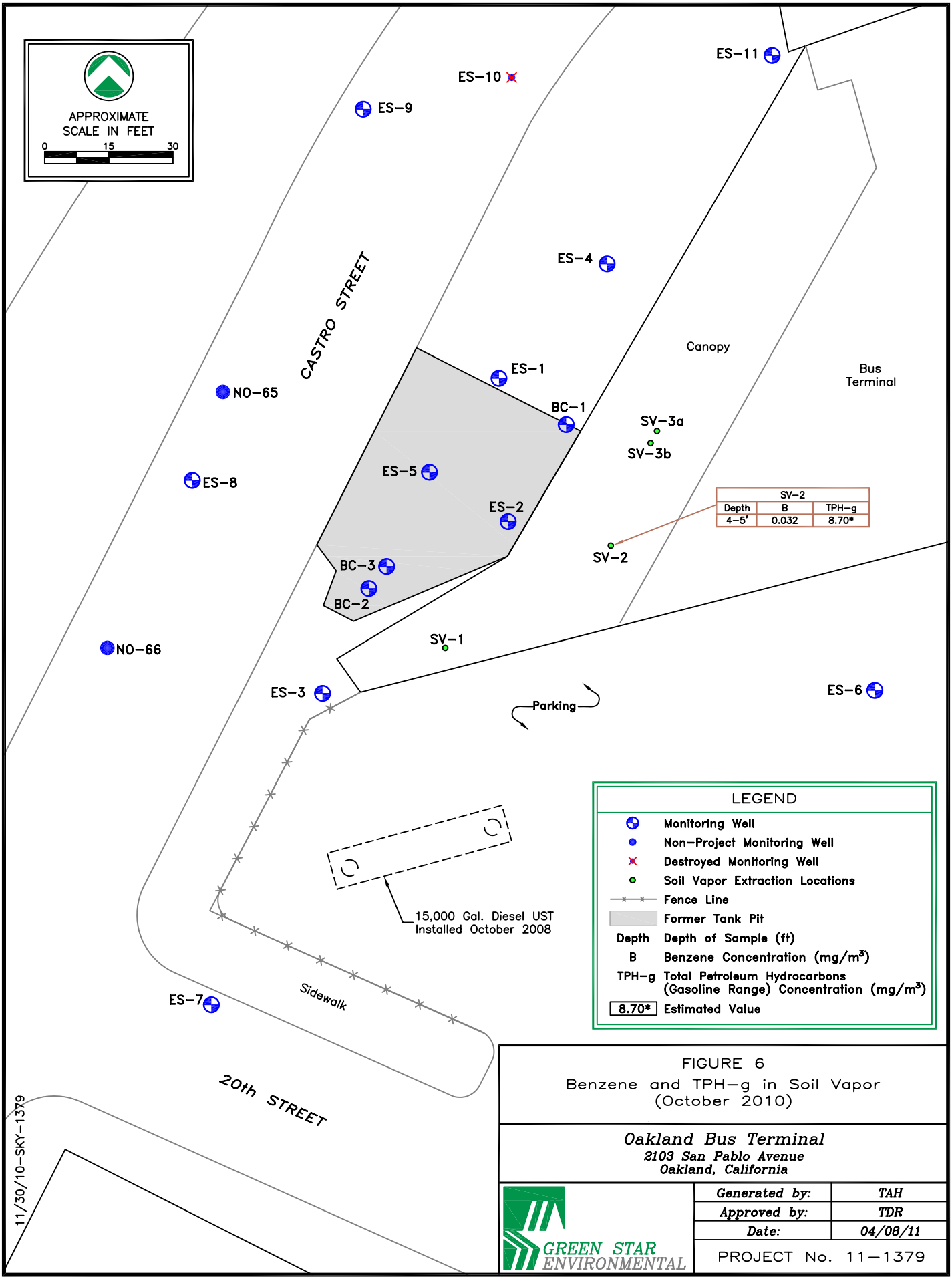


FIGURE 6

Benzene and TPH-g in Soil Vapor (October 2010)

Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, California

Generated by:	*TAH*
Approved by:	*TDR*
Date:	*04/08/11*

GREEN STAR ENVIRONMENTAL

PROJECT No. 11-1379

11/30/10-SKY-1379

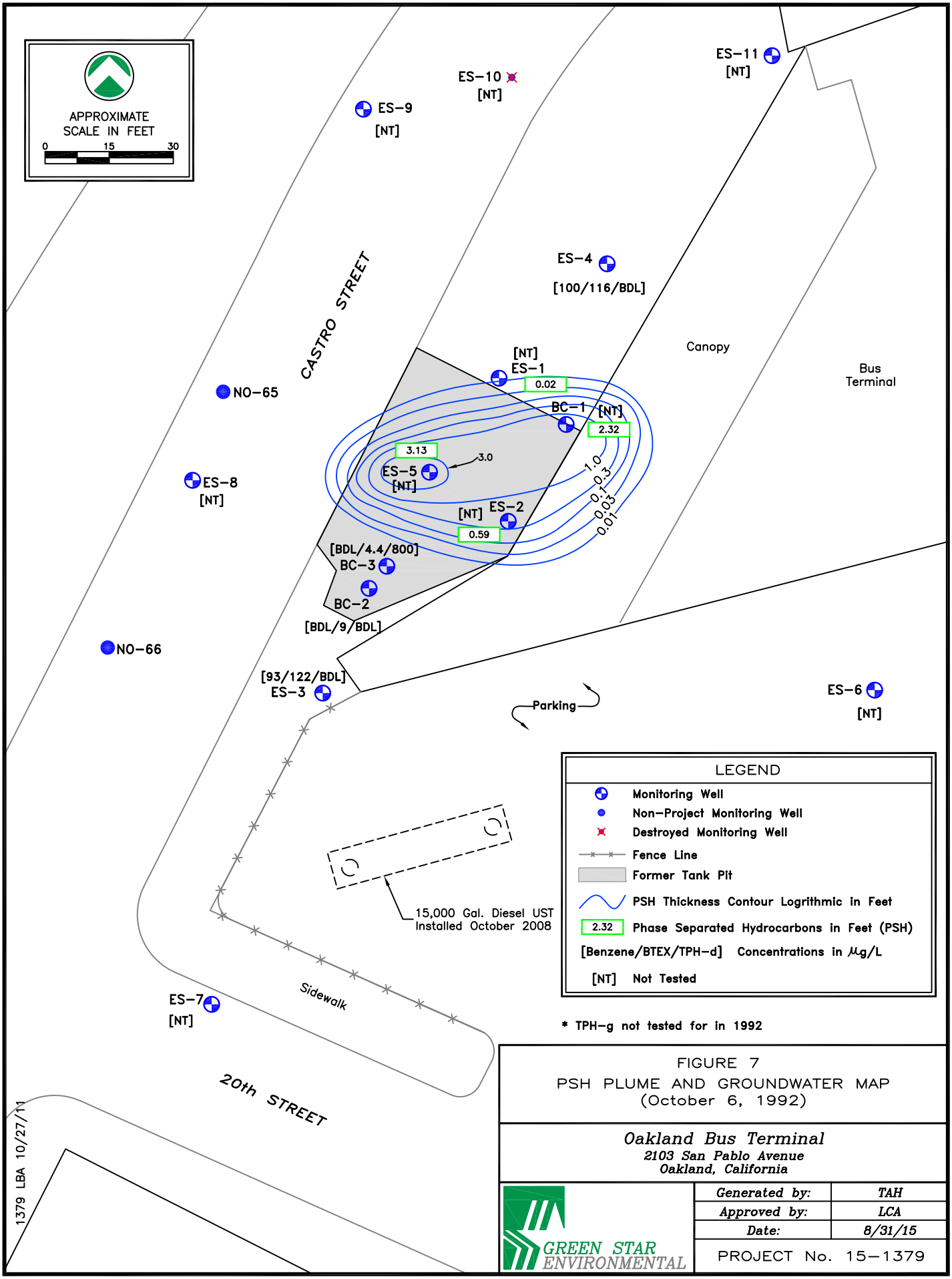


FIGURE 7

PSH PLUME AND GROUNDWATER MAP
(October 6, 1992)

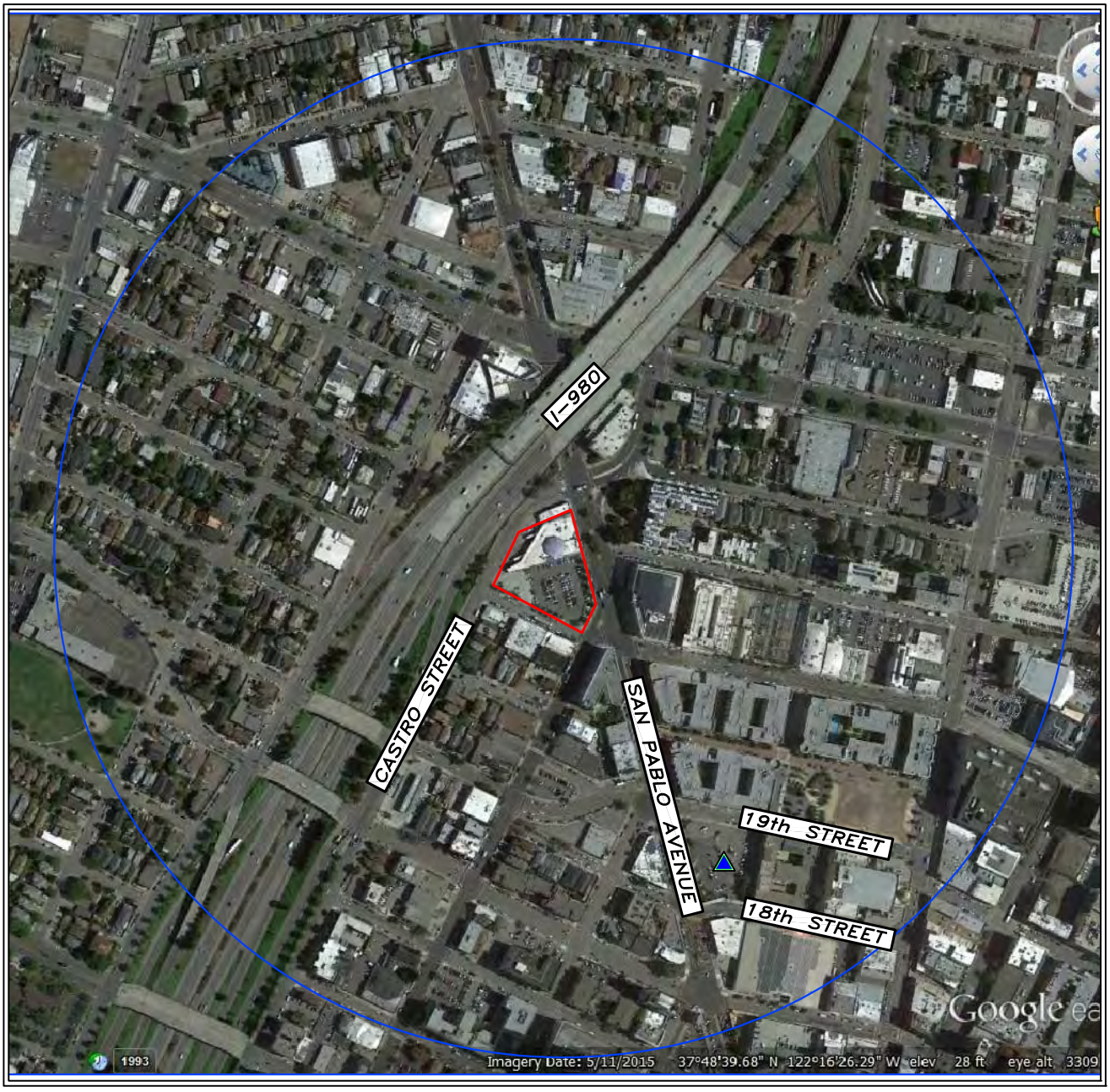
Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, California

GREEN STAR ENVIRONMENTAL

Generated by:	*TAH*
Approved by:	*LCA*
Date:	*8/31/15*

PROJECT No. 15-1379

1379 LBA 10/27/11



MAP SOURCE: Google Earth

NORTH

0 500 1000

(Feet)

Cathodic Protection Well

Property Boundary Line

8/31/15 LBA 1379

FIGURE 8

1,500 FOOT RADIUS
WATER WELL LOCATION MAP

Oakland Bus Terminal
2103 San Pablo Avenue
Oakland, California

GREEN STAR ENVIRONMENTAL

Generated by:	*TAH*
Approved by:	*LCA*
Date:	*08/31/15*

PROJECT No. 15-1379

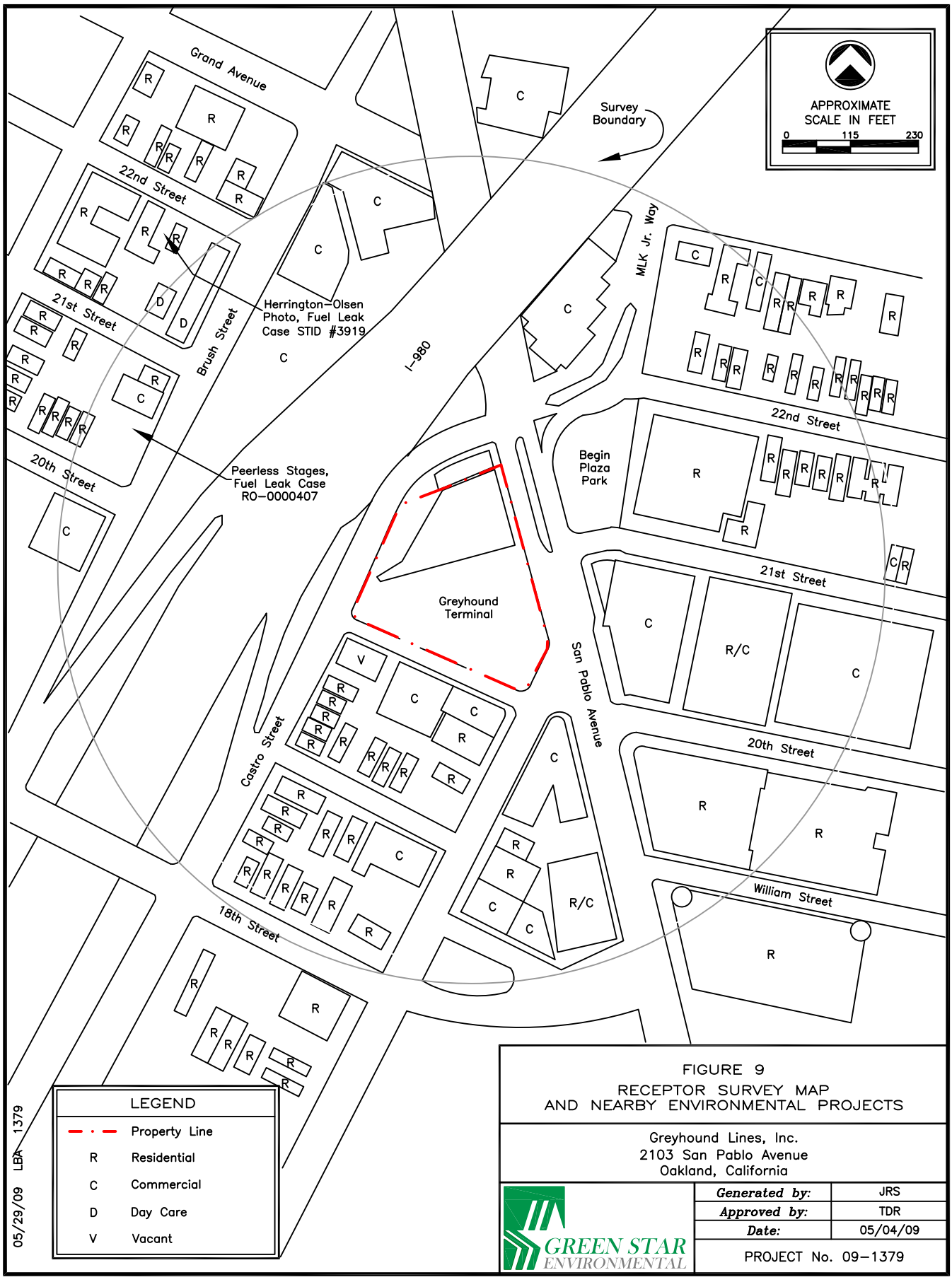
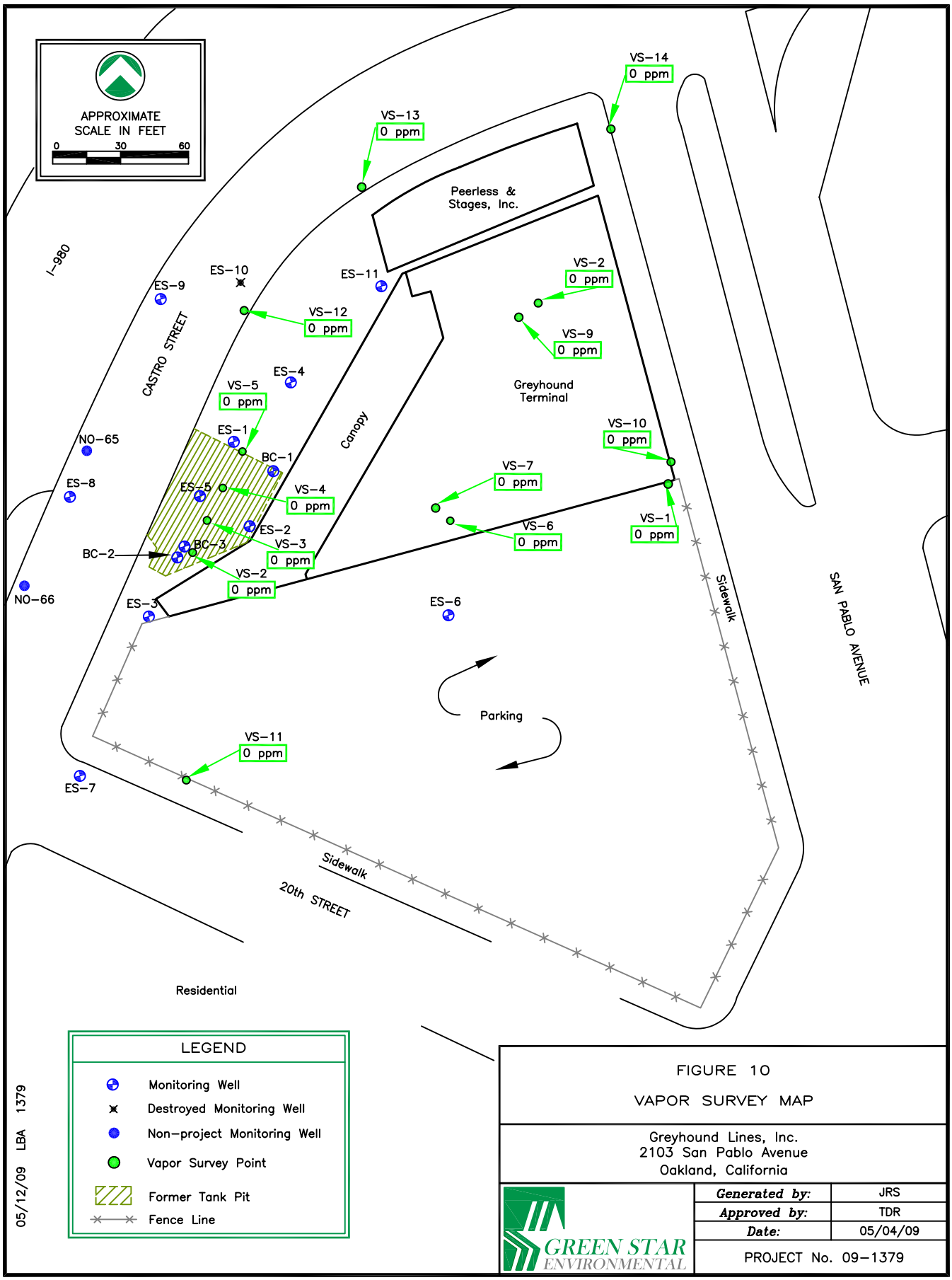


FIGURE 9
RECEPTOR SURVEY MAP
AND NEARBY ENVIRONMENTAL PROJECTS

Greyhound Lines, Inc.
2103 San Pablo Avenue
Oakland, California

GREEN STAR ENVIRONMENTAL

Generated by:	JRS
Approved by:	TDR
Date:	05/04/09
PROJECT No. 09-1379	


APPROXIMATE
SCALE IN FEET
0
30
60
VS-14
0 ppm
VS-13
0 ppm
Peerless &
Stages, Inc.
I-980
ES-10
ES-11
ES-9
VS-12
0 ppm
CASTRO STREET
VS-2
0 ppm
VS-9
0 ppm
ES-4
VS-5
0 ppm
Greyhound
Terminal
ES-1
Canopy
VS-10
0 ppm
NO-65
BC-1
VS-7
0 ppm
ES-8
ES-5
VS-4
0 ppm
VS-6
0 ppm
VS-1
0 ppm
ES-2
BC-2
BC-3
VS-3
0 ppm
VS-2
0 ppm
NO-66
ES-3
ES-6
Sidewalk
SAN PABLO AVENUE
Parking
VS-11
0 ppm
ES-7
Sidewalk
20th STREET
Residential
LEGEND
Monitoring Well
Destroyed Monitoring Well
Non-project Monitoring Well
Vapor Survey Point
Former Tank Pit
Fence Line
05/12/09 LBA 1379
FIGURE 10
VAPOR SURVEY MAP
Greyhound Lines, Inc.
2103 San Pablo Avenue
Oakland, California
GREEN STAR ENVIRONMENTAL
Generated by: JRS
Approved by: TDR
Date: 05/04/09
PROJECT No. 09-1379

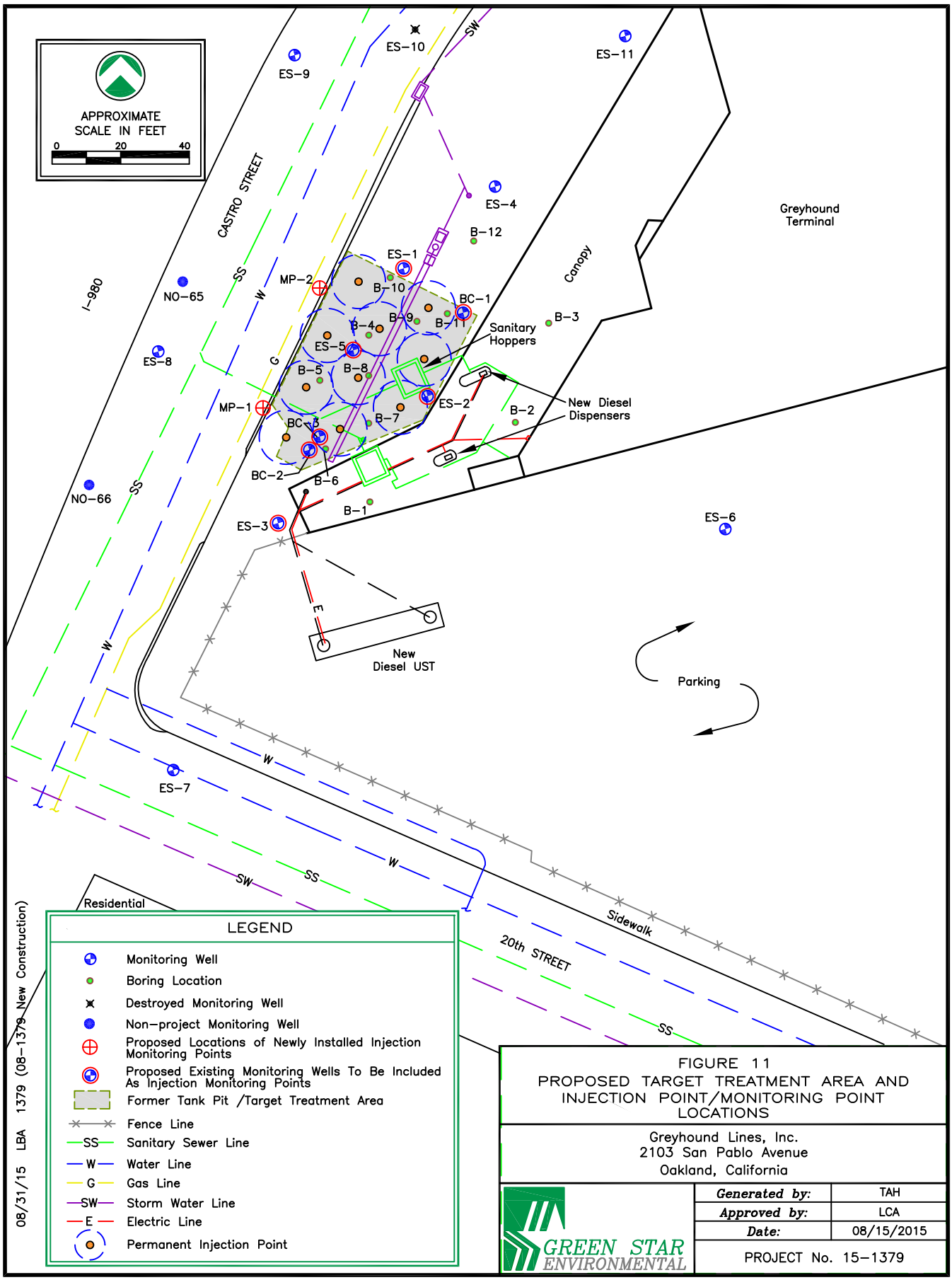
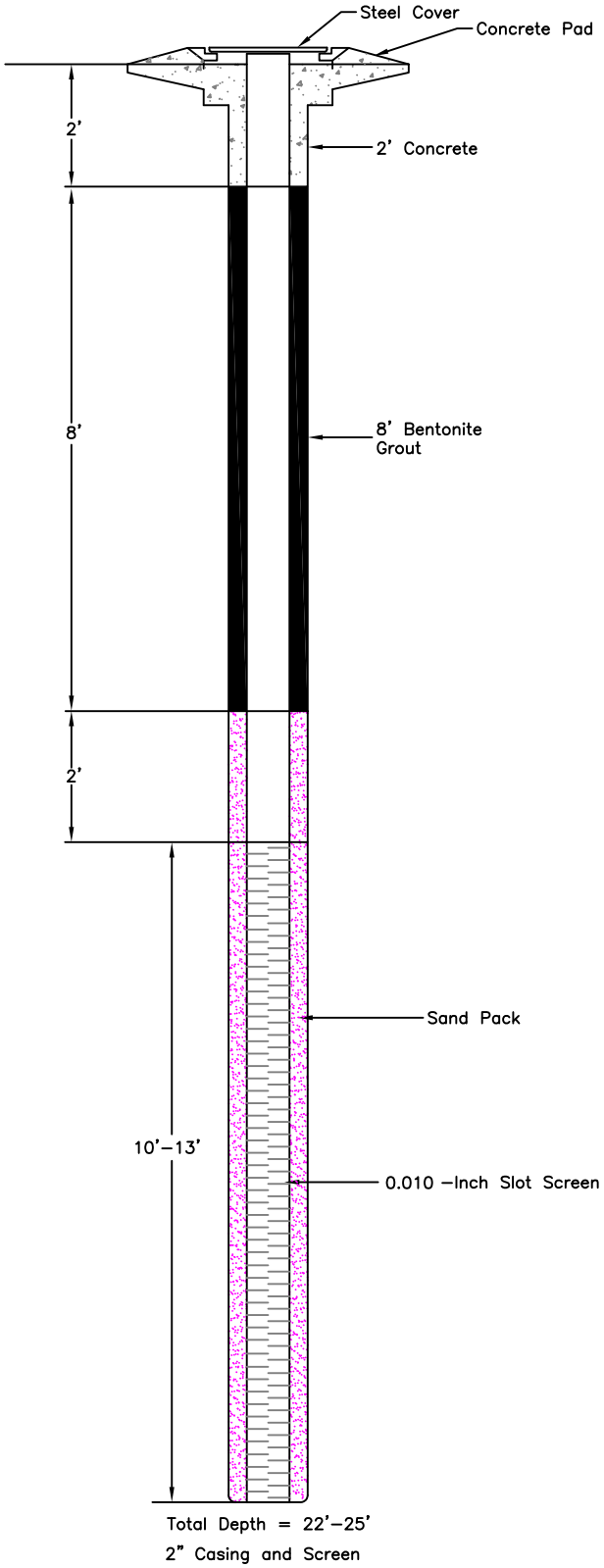


FIGURE 11
PROPOSED TARGET TREATMENT AREA AND INJECTION POINT/MONITORING POINT LOCATIONS

Greyhound Lines, Inc.
2103 San Pablo Avenue
Oakland, California

GREEN STAR ENVIRONMENTAL

Generated by:	TAH
Approved by:	LCA
Date:	08/15/2015
PROJECT No. 15-1379	



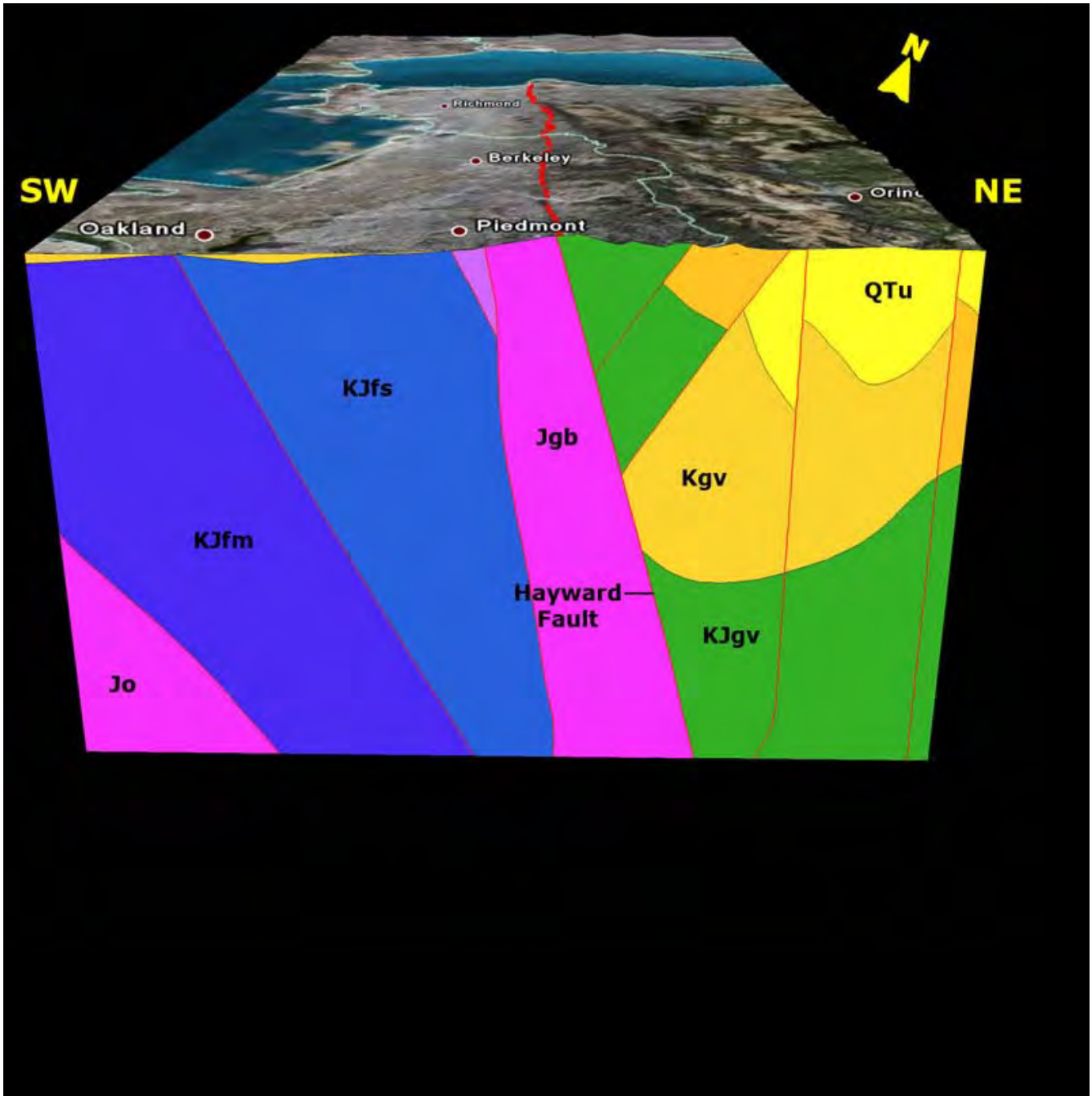
GREEN STAR ENVIRONMENTAL

GREYHOUND LINES, INC.
2103 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

FIGURE 12
CONSTRUCTION DETAIL FOR SOIL BORING CONVERTED TO INJECTION POINT

PROJECT No. 15–1379

APPENDIX A
USGS CROSS-SECTION OF SAN LEANDRO AREA

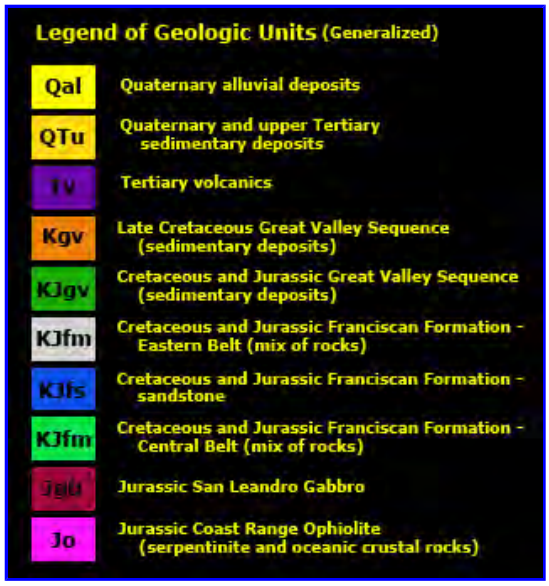


San Leandro area (cross section between Hayward and Oakland)

Click here to open a legend of geology units.

San Leandro area (cross section between Hayward and Oakland). The cross section cuts through the East Bay Hills (on the right) and the East Bay alluvial plain next to San Francisco Bay south of Oakland (on the left). By comparison to the Mission Peak area, the Hayward Fault in the San Leandro area has a nearly vertical profile. East of the Hayward Fault, a structural basin preserves a thick accumulation of Great Valley Sequence. West of the fault, the San Leandro Gabbro (Jgb) is a large intrusive igneous body that has unique physical properties compared to the Franciscan rocks (mostly volcanic and sedimentary rocks) or the Great Valley Sequence (sedimentary rocks). Gabbro has physical properties more like granitic rocks—being both harder and more brittle than sedimentary rocks. Geologists suggest that that where the Hayward Fault is in contact with the gabbro, it may be more prone to producing higher magnitude earthquakes than in surrounding areas.

For more information about geologic names and words in the legend, see glossary definitions (including Coast Range Ophiolite, Franciscan Formation, Great Valley Sequence, geologic time scale,gabbro, serpentinite, alluvium, and more).



Legend of geologic units symbols

Click on words for glossary definitions.

Jo, Jurassic Coast Range Ophiolite

Jgb, Jurassic San Leandro Gabbro

KJfm, Jurassic and Cretaceous Franciscan Formation (two belts—east and west of the Hayward Fault)

KJfs, Jurassic and Cretaceous Franciscan Formation sandstone;

KJgv, Jurassic and Cretaceous Great Valley Sequence

Kgv, Upper Cretaceous Great Valley Sequence

QTu, Tertiary and Quaternary sedimentary deposits

Qal, Quaternary alluvial deposits.

Return to Main Page

The URL of this page is:
http://3dparks.usgs.gov/hayward_fault/html/maphf_legend.html
Maintained by Webmaster, Menlo Park, CA
Last modified: 3/10/2008

APPENDIX B
BORING LOGS AND WELL CONSTRUCTION DIAGRAMS

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	1379.06	Boring/Well Number:	B-1
Project Name:	GLI Oakland	Date Drilled:	October 22, 2010
Location:	2103 San Pablo Ave. Oakland, CA	Casing Type/Diameter:	na
Drilling Method:	Hand Auger (HA)/Direct Push (DP)	Screen Type/Diameter:	na
Sampling Method:	Hand Auger (HA)/Direct Push (DP)	Gravel Pack Type:	na
Ground Elevation:	na	Grout Type:	na
Top of Casing Elevation:	na	Depth to Water/Date:	na
Logged by:	Terrance Harriman	Ground Water Elevation/Date:	na
Remarks:		Drilling Co./Driller:	Cascade Drilling/Clayton

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
	NA		HA					Concrete Surface	
						CL		Moist, soft, gray CLAY FILL with some GRAVEL and hydrocarbon odor	
28		100		X					
						GW		Moist GRAVEL FILL with few fines	
					5				5
			DP			CL		Moist, medium stiff, gray CLAY with hydrocarbon odor	
19		100		{X}					
					10			- darker gray	10
		100						- increasing fine-grained SAND and stronger odor	
318				{X}		SC		Moist, loose, gray, fine-grained, well-sorted CLAYEY SAND with hydrocarbon odor	
					15				15
250				X				- wet and darker gray ▽	
		100							
					20			The boring was terminated at 18 ft. bgs.	20

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	1379.06	Boring/Well Number:	B-2
Project Name:	GLI Oakland	Date Drilled:	October 22, 2010
Location:	2103 San Pablo Ave. Oakland, CA	Casing Type/Diameter:	na
Drilling Method:	Hand Auger (HA)/Direct Push (DP)	Screen Type/Diameter:	na
Sampling Method:	Hand Auger (HA)/Direct Push (DP)	Gravel Pack Type:	na
Ground Elevation:	na	Grout Type:	na
Top of Casing Elevation:	na	Depth to Water/Date:	na
Logged by:	Terrance Harriman	Ground Water Elevation/Date:	na
Remarks:		Drilling Co./Driller:	Cascade Drilling/Clayton

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
	NA		HA					Concrete Surface	
						CL		Moist, medium stiff, grayish-brown CLAY	
0		100		X					
					5				5
			DP						
7		100		{X}					
					10				10
		100						- hydrocarbon odor and increasing gray, fine-grained, SAND	
160				X		SC		Moist, loose, brownish-gray, fine-grained, well-sorted SAND hydrocarbon odor	
					15			- gray	15
358		100		{X}				- wet ▽	
								The boring was terminated at 18 ft. bgs.	
					20				20

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	1379.06	Boring/Well Number:	B-3
Project Name:	GLI Oakland	Date Drilled:	October 22, 2010
Location:	2103 San Pablo Ave. Oakland, CA	Casing Type/Diameter:	na
Drilling Method:	Hand Auger (HA)/Direct Push (DP)	Screen Type/Diameter:	na
Sampling Method:	Hand Auger (HA)/Direct Push (DP)	Gravel Pack Type:	na
Ground Elevation:	na	Grout Type:	na
Top of Casing Elevation:	na	Depth to Water/Date:	na
Logged by:	Terrance Harriman	Ground Water Elevation/Date:	na
Remarks:		Drilling Co./Driller:	Cascade Drilling/Clayton

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
	NA		HA					Concrete Surface	
						CL		Moist, medium stiff, brown SILTY CLAY	
		100							
0				X					
					5				5
1			DP	{X}				- gray	
		100							
								- brownish-gray	
					10				10
		100						- increasing gray, fine-grianed SAND	
10				X		SC		Moist, loose, greenish-gray, fine-grained, well-sorted CLAYEY SAND with hydrocarbon odor	
					15				15
								- darker gray	
1500		100		{X}				- wet ▽	
								The boring was terminated at 18 ft. bgs.	
					20				20

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	1379.06	Boring/Well Number:	B-4
Project Name:	GLI Oakland	Date Drilled:	October 20, 2010
Location:	2103 San Pablo Ave. Oakland, CA	Casing Type/Diameter:	na
Drilling Method:	Hand Auger (HA)/Direct Push (DP)	Screen Type/Diameter:	na
Sampling Method:	Hand Auger (HA)/Direct Push (DP)	Gravel Pack Type:	na
Ground Elevation:	na	Grout Type:	na
Top of Casing Elevation:	na	Depth to Water/Date:	na
Logged by:	Terrance Harriman	Ground Water Elevation/Date:	na
Remarks:		Drilling Co./Driller:	Cascade Drilling/Clayton

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
	NA		HA					Concrete Surface	
								FILL: broken concrete roadbase	
		100				CL		Moist, soft, brown, SILTY CLAY FILL with some GRAVEL	
65				X	5				5
			DP			CL		Moist, very stiff, grayish-brown CLAY	
		100							
170				{X}	10			- olive gray with hydrocarbon odor	10
		0			15			No Recovery	15
1530		100		{X}		SC		Mosit, dense, gray, fine-grained, well-sorted CLAYEY SAND with hydrocarbon odor ▽ - wet	
					20			The boring was terminated at 17 ft. bgs.	20

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	1379.06	Boring/Well Number:	B-5
Project Name:	GLI Oakland	Date Drilled:	October 20, 2010
Location:	2103 San Pablo Ave. Oakland, CA	Casing Type/Diameter:	na
Drilling Method:	Hand Auger (HA)/Direct Push (DP)	Screen Type/Diameter:	na
Sampling Method:	Hand Auger (HA)/Direct Push (DP)	Gravel Pack Type:	na
Ground Elevation:	na	Grout Type:	na
Top of Casing Elevation:	na	Depth to Water/Date:	na
Logged by:	Terrance Harriman	Ground Water Elevation/Date:	na
Remarks:		Drilling Co./Driller:	Cascade Drilling/Clayton

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
	NA	100	HA					Concrete Surface	
								FILL: broken concrete roadbase	
						CL		Moist, soft, brown SILTY CLAY with some GRAVEL FILL	
4		100	DP	X	5				5
		50				GW		Mosit, angular GRAVEL FILL with few fines	
					10				10
56		100		{X}		CL		Moist, stiff, grayish-brown CLAY - greenish-gray with hydrocarbon odor	
1988		100		X	15	SC		Moist, loose, greenish-gray, fine-grained, well-sorted CLAYEY SAND with hydrocarbon odor	15
1678		100		{X}				- wet ▽	
					20			The boring was terminated at 17.5 ft. bgs.	20

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	1379.06	Boring/Well Number:	B-6
Project Name:	GLI Oakland	Date Drilled:	October 21, 2010
Location:	2103 San Pablo Ave. Oakland, CA	Casing Type/Diameter:	na
Drilling Method:	Hand Auger (HA)/Direct Push (DP)	Screen Type/Diameter:	na
Sampling Method:	Hand Auger (HA)/Direct Push (DP)	Gravel Pack Type:	na
Ground Elevation:	na	Grout Type:	na
Top of Casing Elevation:	na	Depth to Water/Date:	na
Logged by:	Terrance Harriman	Ground Water Elevation/Date:	na
Remarks:		Drilling Co./Driller:	Cascade Drilling/Clayton

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
	NA		HA					Concrete Surface	
								FILL: broken concrete roadbase	
		100				CL		Moist, soft, brown CLAY with some GRAVEL FILL	
0				X	5				5
0			DP	{X}				- stringer of very moist	
		30				GW		Moist, angular GRAVEL FILL with few fines	
3				X	10				10
		30						- stringer of moist, gray, medium stiff CLAY	
		0			15			No recovery due to GRAVEL	15
		0							
					20			The boring was terminated at 17.5 ft. bgs.	20

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	1379.06	Boring/Well Number:	B-7
Project Name:	GLI Oakland	Date Drilled:	October 21, 2010
Location:	2103 San Pablo Ave. Oakland, CA	Casing Type/Diameter:	na
Drilling Method:	Hand Auger (HA)/Direct Push (DP)	Screen Type/Diameter:	na
Sampling Method:	Hand Auger (HA)/Direct Push (DP)	Gravel Pack Type:	na
Ground Elevation:	na	Grout Type:	na
Top of Casing Elevation:	na	Depth to Water/Date:	na
Logged by:	Terrance Harriman	Ground Water Elevation/Date:	na
Remarks:		Drilling Co./Driller:	Cascade Drilling/Clayton

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
	NA	100	HA					Concrete Surface	
								FILL: broken concrete roadbase, GRAVEL, and some brick	
					5	CL		Moist, soft, brown CLAY with some GRAVEL and brick FILL	5
0		50	DP	{X}		GW		Moist, angular GRAVEL FILL with few fines	
					10				10
		0						No recovery due to GRAVEL	
					15				15
						CL		Moist, very stiff, olive gray CLAY with hydrocarbon odors	
360		100		{X}		SC		Moist, loose, greenish-gray, fine-grianed, well-sorted CLAYEY SAND with hydrocarbon odor ▽ - wet	
					20			The boring was terminated at 18 ft. bgs.	20

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	1379.06	Boring/Well Number:	B-8
Project Name:	GLI Oakland	Date Drilled:	October 21, 2010
Location:	2103 San Pablo Ave. Oakland, CA	Casing Type/Diameter:	na
Drilling Method:	Hand Auger (HA)/Direct Push (DP)	Screen Type/Diameter:	na
Sampling Method:	Hand Auger (HA)/Direct Push (DP)	Gravel Pack Type:	na
Ground Elevation:	na	Grout Type:	na
Top of Casing Elevation:	na	Depth to Water/Date:	na
Logged by:	Terrance Harriman	Ground Water Elevation/Date:	na
Remarks:		Drilling Co./Driller:	Cascade Drilling/Clayton

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
	NA		HA					Concrete Surface	
								FILL: broken concrete roadbase	
		100				CL		Moist, soft, brown CLAY with some GRAVEL FILL	
0				X	5				5
0			DP	{X}					
		30				GW		Moist, angular GRAVEL FILL with few fines	
					10				10
		0						No recovery due to GRAVEL	
						CL		- stringer of moist, medium stiff greenish-gray CLAY with h/c odor	
		90				SC		Moist, loose, greenish-gray, fine-grained, well-sorted CLAYEY SAND with hydrocarbon odor	
67				X	15				15
345				{X}				▽ - wet	
		100							
					20				20
								The boring was terminated at 20 ft. bgs.	

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	1379.06	Boring/Well Number:	B-9
Project Name:	GLI Oakland	Date Drilled:	October 21, 2010
Location:	2103 San Pablo Ave. Oakland, CA	Casing Type/Diameter:	na
Drilling Method:	Hand Auger (HA)/Direct Push (DP)	Screen Type/Diameter:	na
Sampling Method:	Hand Auger (HA)/Direct Push (DP)	Gravel Pack Type:	na
Ground Elevation:	na	Grout Type:	na
Top of Casing Elevation:	na	Depth to Water/Date:	na
Logged by:	Terrance Harriman	Ground Water Elevation/Date:	na
Remarks:		Drilling Co./Driller:	Cascade Drilling/Clayton

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
	NA	100	HA		5			Concrete Surface FILL: broken concrete roadbase	5
0		100	DP	X	10	CL		Moist, stiff, grayish-brown CLAY - greenish-gray	10
4		100		X				- increasing greenish-gray, fine-grained SAND and hydrocarbon odor	
30		100		{X}	15	SC		Moist, loose, greenish-gray, fine-grained, well-sorted CLAYEY SAND with hydrocarbon odor	15
350		100		X	20			- wet ▽	20
								The boring was terminated at 20 ft. bgs.	

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	1379.06	Boring/Well Number:	B-10
Project Name:	GLI Oakland	Date Drilled:	October 21, 2010
Location:	2103 San Pablo Ave. Oakland, CA	Casing Type/Diameter:	na
Drilling Method:	Hand Auger (HA)/Direct Push (DP)	Screen Type/Diameter:	na
Sampling Method:	Hand Auger (HA)/Direct Push (DP)	Gravel Pack Type:	na
Ground Elevation:	na	Grout Type:	na
Top of Casing Elevation:	na	Depth to Water/Date:	na
Logged by:	Terrance Harriman	Ground Water Elevation/Date:	na
Remarks:		Drilling Co./Driller:	Cascade Drilling/Clayton

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
	NA	100	HA		0			Concrete Surface	
								FILL: broken concrete roadbase and GRAVEL	
					5	CL		Moist, medium stiff, greenish-gray CLAY with hydrocarbon odor	5
6		100	DP	{X}	10			- very stiff	
6		100		X	15	SC		- increasing fine-grained SAND Moist, medium dense, greenish-gray, fine-grained, well-sorted CLAYEY SAND with hydrocarbon odors	10
69				X					15
381		100		{X}				- wet ▽	
					20			The boring was terminated at 19 ft. bgs.	20

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	1379.06	Boring/Well Number:	B-11
Project Name:	GLI Oakland	Date Drilled:	October 21, 2010
Location:	2103 San Pablo Ave. Oakland, CA	Casing Type/Diameter:	na
Drilling Method:	Hand Auger (HA)/Direct Push (DP)	Screen Type/Diameter:	na
Sampling Method:	Hand Auger (HA)/Direct Push (DP)	Gravel Pack Type:	na
Ground Elevation:	na	Grout Type:	na
Top of Casing Elevation:	na	Depth to Water/Date:	na
Logged by:	Terrance Harriman	Ground Water Elevation/Date:	na
Remarks:		Drilling Co./Driller:	Cascade Drilling/Clayton

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
	NA		HA					Concrete Surface	
								FILL: GRAVEL	
						CL		Moist,medium stiff, greenish-gray CLAY with hydrocarbon odor	
3		100		X					
								- very stiff	
					5				5
2			DP	{X}					
		100							
								- greenish-brown	
					10				
								- gray with increasing fine-grained SAND and stronger odor	10
		200				SC		Moist, medium dense, greenish-gray, fine-grained, well-sorted CLAYEY SAND with hydrocarbon odor	
28				X					
		90							
								- reddish-brown	
165				{X}	15				15
								The boring was terminated at 15 ft. bgs due to refusal.	
					20				20

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	1379.06	Boring/Well Number:	B-12
Project Name:	GLI Oakland	Date Drilled:	October 22, 2010
Location:	2103 San Pablo Ave. Oakland, CA	Casing Type/Diameter:	na
Drilling Method:	Hand Auger (HA)/Direct Push (DP)	Screen Type/Diameter:	na
Sampling Method:	Hand Auger (HA)/Direct Push (DP)	Gravel Pack Type:	na
Ground Elevation:	na	Grout Type:	na
Top of Casing Elevation:	na	Depth to Water/Date:	na
Logged by:	Terrance Harriman	Ground Water Elevation/Date:	na
Remarks:		Drilling Co./Driller:	Cascade Drilling/Clayton

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
	NA		HA					Concrete Surface	
								FILL: broken concrete roadbase and GRAVEL	
8		100		X		CL		Moist, medium stiff, gray CLAY with some hydrocarbon odor	
					5				5
3.0		100	DP	X				- mottled brown and gray	
					10				10
		100						- increasing fine-grained SAND	
30				X		SC		Moist, loose, grayish-brown, fine-grained, well-sorted CLAYEY SAND with hydrocarbon odor	
					15			- gray	15
355		100		X				- wet ▽	
					20			The boring was terminated at 18 ft. bgs.	20

ES ENGINEERING - SCIENCE

CLIENT: GREYHOUND LINES, INC.

LOCATION: 2103 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

COMPLETION DATE: 11 November 1991

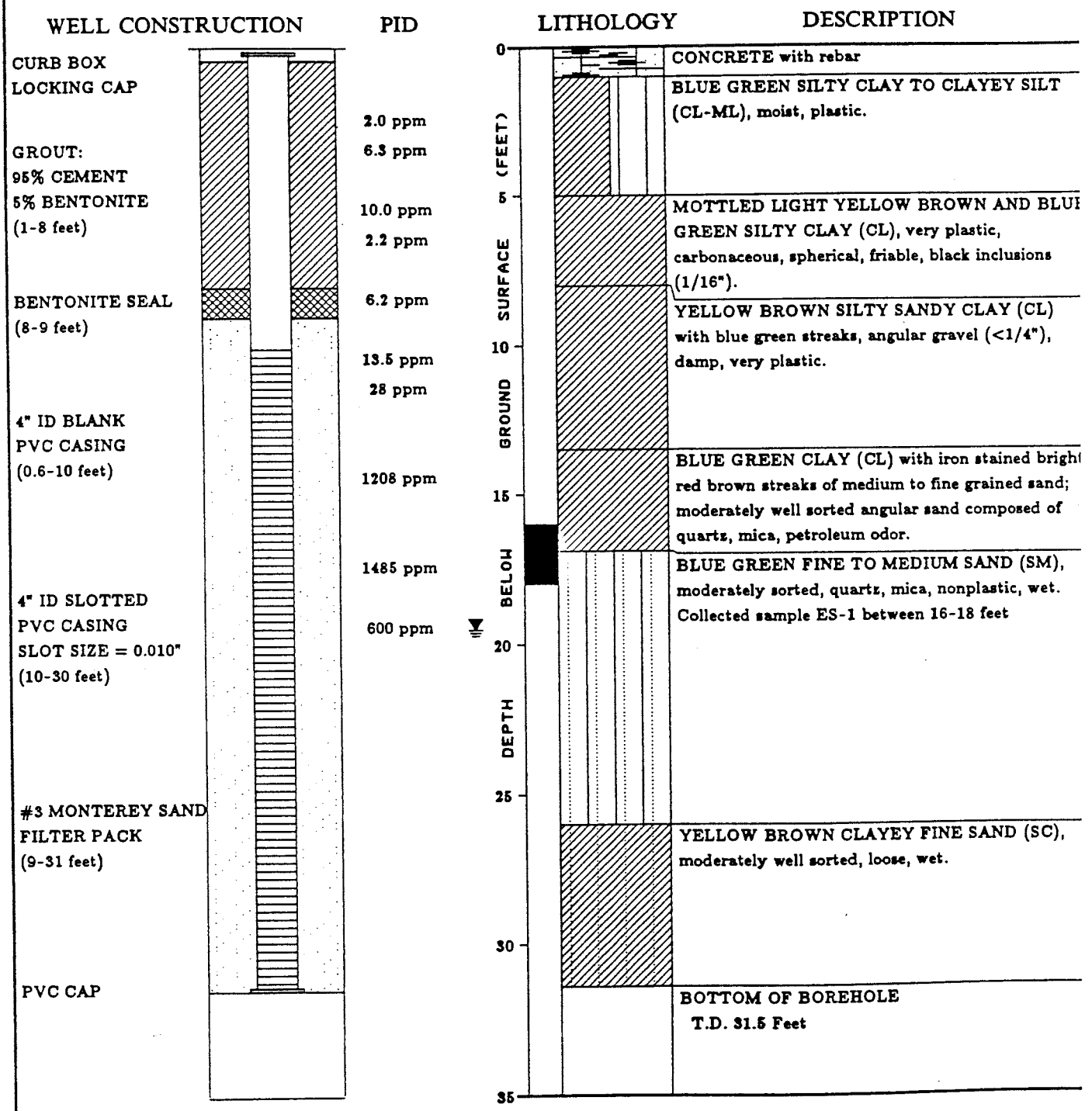
GEOLOGIST: H. PIETROPAOLI

TEST HOLE NUMBER: ES-1

DRILLER: AQUA SCIENCE ENGINEERS

DRILLING METHOD: HOLLOW-STEM AUGER

HOLE DIAMETER: 10.5-INCHES



EXPLANATION

▼ Water Level during drilling

—— Contact (approximate)

PID Photoionisation Detector Reading

■ Location of sample

ES ENGINEERING - SCIENCE

CLIENT: GREYHOUND LINES, INC.

TEST HOLE NUMBER: ES-4

LOCATION: 2103 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

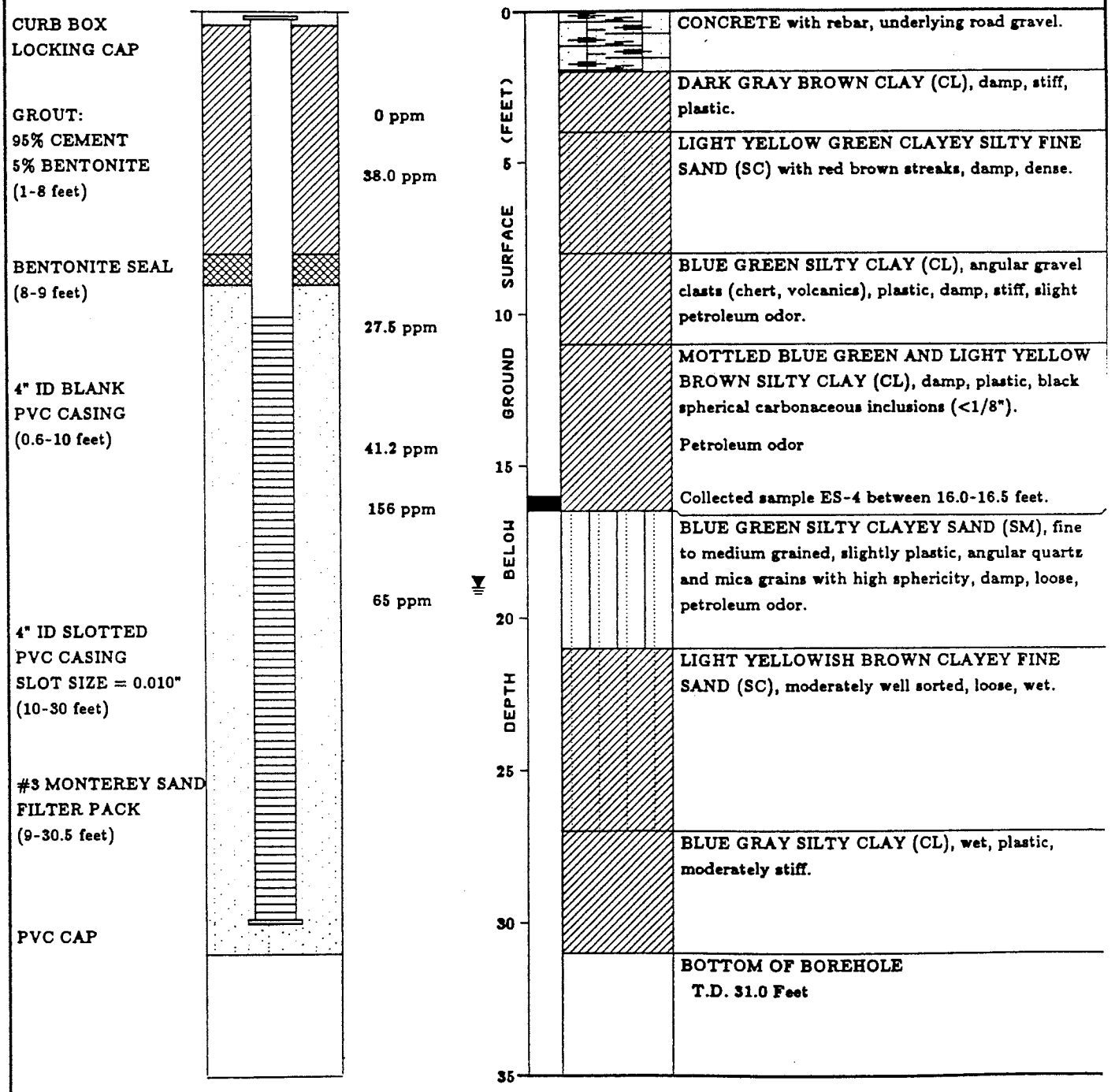
DRILLER: AQUA SCIENCE ENGINEERS

COMPLETION DATE: 13 November 1991

DRILLING METHOD: HOLLOW-STEM AUGER

GEOLOGIST: H. PIETROPAOLI

HOLE DIAMETER: 10.5-INCHES



EXPLANATION

▼ Water Level during drilling

—— Contact (approximate)

PID Photoionization Detector Reading

■ Location of sample

CLIENT: GREYHOUND LINES, INC.

TEST HOLE NUMBER: ES-5

LOCATION: 2103 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

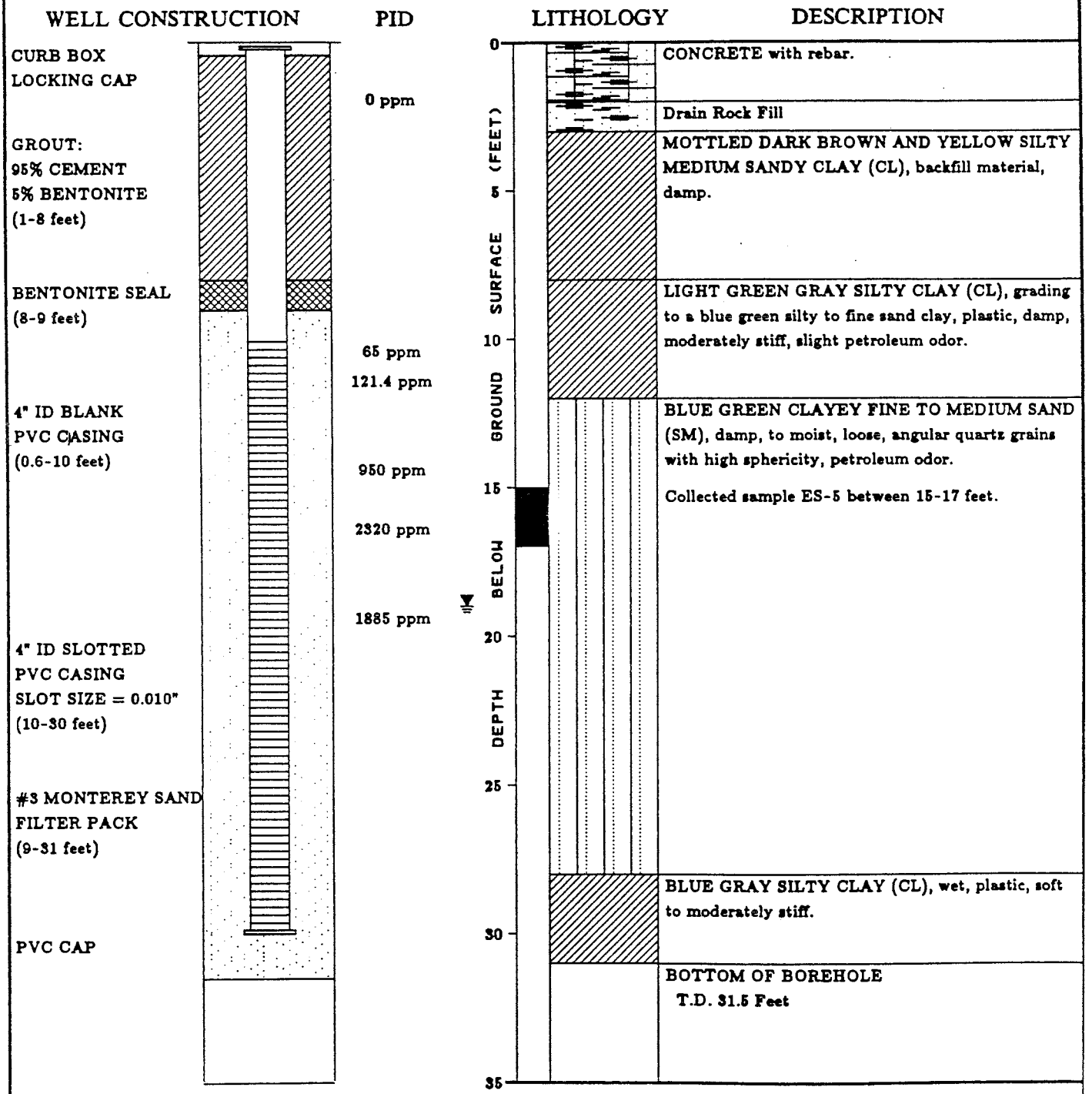
DRILLER: AQUA SCIENCE ENGINEERS

COMPLETION DATE: 14 November 1991

DRILLING METHOD: HOLLOW-STEM AUGER

GEOLOGIST: H. PIETROPAOLI

HOLE DIAMETER: 10.5-INCHES



EXPLANATION

▼ Water Level during drilling

—— Contact (approximate)

PID Photoionization Detector Reading

■ Location of sample

ENGINEERING-SCIENCE DRILLING RECORD

Contractor: Spectrum Exp.
Driller:
Inspector: JSP / LAB
Rig Type: CME 55
Drilling Method: 6.25" HSA

WATER LEVEL MEASUREMENTS

MP			
DTW from MP			
Time			
Date			

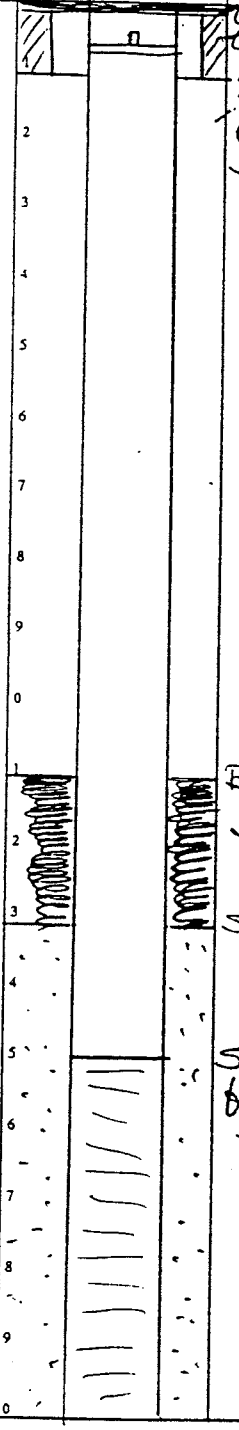
PROJECT NAME GLI- Oakland Terminal
PROJECT NO. SY356.06
Weather Clear Warm
Date/Time Start 7-19-93 / 1430
Date/Time Finish 7-19-93 / 1800

BORING NO ES-6
Sheet 1 of 2
Location: East of Bldg in Parking Lot

Plot Plan
Bldg
+ ES-6

Photovac Reading	Sample I.D.	Sample Depths	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
		1			0-5' Fill Material.
		2			
		3			
		4			5.0'-6.5'
		5		5	Light brown silt. Trace
D.0			100	11	of clay. [ML or CL]
		6		16	
		7			
		8			
		9			10.0'-11.5'
		10		3	Light brown silt and clay.
D.0			100	5	Trace of med. Sand.
		11		10	Damp. [ML or CL]
		12			
		13			
		14			15.0'-16.5'
		15		17	Medium mottled Sand.
D.0	14.5'		100	30	No silt or clay traces. Dry.
		16		38	
		17			
		18			
		19			20.0'-21.5'
		20		12	Medium mottled Sand. [SW]

WELL CONSTRUCTION



COMMENTS
Christy Box Concrete
Bentonite Grout to 1'.
Bentonite Pellets to 11'
SAND PACK TO 13'
Screened from 35' to 15'

SPT = STANDARD PENETRATION TEST CAL = CALIBRATION BZ = BREATHING ZONE
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED BH = BOREHOLE

SUMMARY

Contractor: Spectrum Exp.
Driller:
Inspector: JSP/LAB
Rig Type: CME 55
Drilling Method: 6.25" HSA

WATER LEVEL MEASUREMENTS

MP			
DTW from MP			
Time			
Date			

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME GLI- Oakland Terminal
PROJECT NO. SY356.06
Weather Clear, Warm
Date/Time Start 7-19-93 / 1430
Date/Time Finish

BORING NO. ES-6
Sheet 2 of 2
Location: East of Bldg in Parking Lot

Plot Plan: Bldg, ES-6, MW

Photovac Reading	Sample I.D.	Sample Depths	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL CONSTRUCTION	COMMENTS
		20		12	Saturated (Wet)		
0.0		21	100	32			
		22					
		23					
		24			25.0' - 26.5'		
		25		27	Medium mottled Sand.		
0.0			100	50	Saturated (Wet).		
		26		—			
		27					
		28					
		29			30.0' - 31.5'		
		30		3	Light grey clay. Little		
0.0			100	6	med. Sand. Moist.		
		31		10	or CL]		
		32					
		33					
		34					
		35		7	35.0'-36.0' Med. mottled Sand.		
0.0			100	10	Wet		
		36		14	36.0' - 36.5' Blue grey Clay		Bottom of well 35 ft.
		7			Little angular coarse Sand.		
		8			or CL]		
		9					
		0					

SPT = STANDARD PENETRATION TEST CAL = CALIBRATION BZ = BREATHING ZONE
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED BH = BOREHOLE

SUMMARY

Contractor: Spectrum Exp.
Driller:
Inspector: JSP/LAB
Rig Type: CME 55
Drilling Method: 6.25" HSA

WATER LEVEL MEASUREMENTS

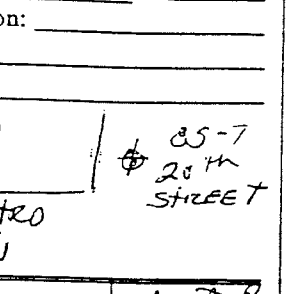
MP			
DTW from MP			
Time			
Date			

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME GLI- Oakland Terminal
PROJECT NO. SY356.06
Weather Clear, Warm
Date/Time Start 7-20-93 / 0730
Date/Time Finish 7-20-93 / 1200

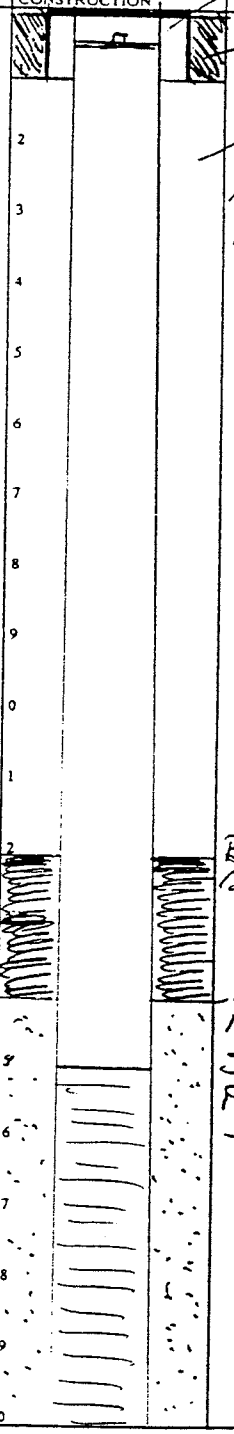
BORING NO. ES-7
Sheet 1 of 2
Location:

Plot Plan



Photovac Reading	Sample I.D.	Sample Depths	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
		1			0-2" Asphalt Surface 2"-10" Concrete 10"-5' Fill Material.
		2			
		3			
		4			
		5		3	5'-6.5' Brown fine sand. Trace
0.0			60	10	g silt. Damp.
		6		18	
		7			
		8			
		9			
		10		4	10'-11.5' Brown-grey fine sand
0.0			80	11	and clay. Little Silt. Damp
		11		18	[SC]
		12			
		13			
		14			
	0949	15		10	15'-15.5' Brown-grey fine sand
0.0	[illegible]		80	21	15.5'-16.5' Grey fin sand. Damp
		16		31	
		17			
		18			
		19			
		20		19	Fine to Med. Mottled Sand. Wet.

WELL CONSTRUCTION



COMMENTS

Christy Box
Concrete
Bentonite Grout 1' to 12'
Bentonite Pellets 12'-14'.
SAND PACK 14' to 35'
SCREENED From 15' to 35'

SPT = STANDARD PENETRATION TEST CAL = CALIBRATION BZ = BREATHING ZONE
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED BH = BOREHOLE

SUMMARY

Contractor: Spectrum Exp.
Driller:
Inspector: JSP/LAB
Rig Type: CME 55
Drilling Method: 6.25" HSA

WATER LEVEL MEASUREMENTS

MP			
DTW from MP			
Time			
Date			

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME GLI- Oakland Terminal
PROJECT NO. SY356.06
Weather Clear, Warm
Date/Time Start 7/20 93 / 0730
Date/Time Finish 7-20 93 / 1200

BORING NO. ES-7
Sheet 2 of 2
Location: Corner of 20th and Castro Street (West of Sitel
Plot Plan: ES-7 @ 20' ↑ Castro ←

Photovac Reading	Sample I.D.	Sample Depths	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL CONSTRUCTION	COMMENTS
		20.5		3 19	Fine to Med. Mottled Sand.		
0.0	0949	21	100	31 44	Wet		
		22					
		23					
		24			25.0'-26.5' Fine to med mottled Sand. [SW]		
		25		31			
0.0			100	50/5"	Wet.		
		26		—			
		27					
		28					
		29			[SW]		
		30		7	30.0'-30.5' Fine to Med. Mottled Sand.		
0.0			100	11	30.5'-31.5' Grey Clay little Sand.		
		31		17	Clay is damp. [H or CL]		
		32					
		33					
		34					
		35		12	35'-36' Clay little sand. [H or CL]		
0.0			100	17	36'-36.5' Fine to med. Sand.		Bottom of well 35'
		36		19	Wet.		
		7					
		8					
		9					
		0					

SPT = STANDARD PENETRATION TEST CAL = CALIBRATION BZ = BREATHING ZONE
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED BH = BOREHOLE

SUMMARY

Contractor: Spectrum Exp.
Driller:
Inspector: JSP / LAB
Rig Type: CME 55
Drilling Method: 6.25" HSA

WATER LEVEL MEASUREMENTS

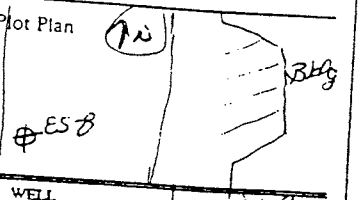
MP			
DTW from MP			
Time			
Date			

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME GLI- Oakland Terminal
PROJECT NO. SY356.06
Weather Clear, Warm
Date/Time Start 7-20-93 / 1300
Date/Time Finish 7-20-93 / 1630

BORING NO. ES-8
Sheet 1 of 2
Location: West of Site in Street (Coster)

Plot Plan (N)



Photovac Reading	Sample I.D.	Sample Depths	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL CONSTRUCTION	COMMENTS
					0'-1' Asphalt.		Christy Box
		1			1'-5' Fill - Roadbase (Sand & Gravel).		CONCRETE
		2					
		3					Cement Slurry to 1'
		4					
		5		8	5'-6.5' Brown clay Some med. Sand.		
0.0		100		9	Moist. [CH or CL]		
		6		18			
		7					
		8					
		9					
		10		5	10'-11.5' Blue/Grey clay with medium		
0.0		100		8	Sand. Tight. [CH or CL]		
		11		14			
		12					Pellets to 11.4'.
		13					
		14					SAND PACK to 12.10'
		15		13	15'-16.5' Fine to medium Sand.		
0.0		100		19	Grey-brown in color. Trace of		
		16		25	Silt. No Clay. Moist.		
		17					
		18					
		19					
		20		19	20'-21.5' Fine to Med. Mottled Sand. Wet. [SW]		

SPT = STANDARD PENETRATION TEST CAL = CALIBRATION BZ = BREATHING ZONE
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED BH = BOREHOLE

SUMMARY

Contractor: Spectrum Exp.
Driller:
Inspector: JSP / LMB
Rig Type: CME 55
Drilling Method: 6.25" HSA

WATER LEVEL MEASUREMENTS

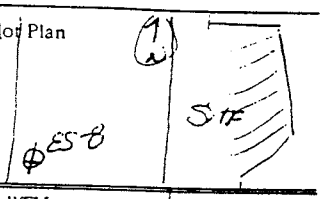
MP				
DTW from MP				
Time				
Date				

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME GLI- Oakland Terminal
PROJECT NO. SY356.06
Weather Clear, Warm
Date/Time Start 7/20/93 / 1300
Date/Time Finish 7/20/93 / 1630

BORING NO. ES-8
Sheet 2 of 2
Location: West Side in Costa Street

Plot Plan



Photovac Reading	Sample I.D.	Sample Depths	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL CONSTRUCTION	COMMENTS
				19	20'-21.5' Fine to Med. Mottled Sand. Wet.		
0.0	13:40	21	100	21			
				30			
		22					
		23					
		24					
					25'-25.75' Sand		
		25		11	25.75'-26.5' Mottled Clay. Little		
0.0			100	13	Sand. Wet. [CL or CL]		
		26		19			
		27					
		28					
		29					
					30'-31' Clay trace of Sand. [CL or CL]		
		30		6			
0.0			100	17	31-31.5' Medium Sand		
		31		50/5.5			
		32					
		33					
		34					
					35'-36' Medium Sand		
		35		10	36'-36.5' Grey Clay, Some Silt. [CL or CL]		
0.0			100	29			
		36		21			Bottom of Well-35'
		7					
		8					
		9					
		0					

SPT = STANDARD PENETRATION TEST CAL = CALIBRATION BZ = BREATHING ZONE
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED BH = BOREHOLE

SUMMARY

ENGINEERING-SCIENCE DRILLING RECORD

Contractor: Spectrum Exp.
Driller:
Inspector: JSP/LAB
Rig Type: CME 55
Drilling Method: 6.25" HSA

BORING NO. ES-9
Sheet 1 of 2
Location: West of Site north of ES-8.

PROJECT NAME GLI- Oakland Terminal
PROJECT NO. SY356.06

Weather Clear, Warm

Date/Time Start 7-21-93 / 0800
Date/Time Finish 7-21-93 / 10:30

Plot Plan: ES-9 Curb ES-8 Site

WATER LEVEL MEASUREMENTS

MP			
DTW from MP			
Time			
Date			

Photovac Reading	Sample I.D.	Sample Depths	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
					0-1' Asphalt
		1			1'-5' Fill Material
		2			
		3			
		4			
		5		7	5'-6.5' Brown clay. Medium
5.9	—		80	10	Sand throughout clay
		6		14	sample Moist Trace of
		7			Black Colored specks.
					(possible topsoil or discolored
		8			spots). [CL or CL].
		9			
		10		5	10'-11.6' Brown colored clay.
5.3	—		0	13	medium Sand throughout
		11		15	Spoon Sample. Moist.
					[CL or CL]
		12			
		13			
		14			
		15		15	15'-16.5' Brown fine to medium
6.1	1820		90	30	mottled Sand w/ clay.
		16		31	Moist. [SW or CL]
		17			
		18			
		19			
		20		21	20'-21.5' Brown fine to Med. mottled Sand. Wet. [SW]

WELL CONSTRUCTION

COMMENTS
- Christy Box
- Concrete Cap
- Grout Slurry 1 to 11.2 ft
- Bentonite Seal 11.2 to 13 ft
- Sand Pack 13 to 35 ft
- Screened 15 to 35 ft

SPT = STANDARD PENETRATION TEST CAL = CALIBRATION BZ = BREATHING ZONE
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED BH = BOREHOLE

SUMMARY

Contractor: Spectrum Exp.
Driller:
Inspector: JSP/LAB
Rig Type: CME 55
Drilling Method: 6.25" HSA

WATER LEVEL MEASUREMENTS

MP			
DTW from MP			
Time			
Date			

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME GLI- Oakland Terminal
PROJECT NO. SY356.06
Weather Clear Warm
Date/Time Start 7-21-93 / 0800
Date/Time Finish 7-21-93 / 10:30

BORING NO. ES-9
Sheet 2 of 2
Location: (West of Site, north of ES-8.

Plot Plan ES-9, ES-8, Site, N

Photovac Reading	Sample I.D.	Sample Depths	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL CONSTRUCTION	COMMENTS
				21	20'-21.5' Brown fine to medium mottled Sand. Wet. [SW]		
5.3	—	21	80	32			
				41			
		22					
		23					
		24					
				7	25'-25.5' Mottled Sand. [SW]		
5.3	—	25	75%	12	25.5'-26.5' Brown mottled Clay. Trace of Sand. Wet. [H or CL]		
		26		10			
		27					
		28					
		29					
				8	30'-31' Brown to Blue/Grey mottled Clay [H or CL]		
5.0	—	30	100%	14			
				50/1	31'-31.5' Medium mottled Sand. [SW]		
		31					
		32					
		33					
		34					
				6	35'-35.5' Brown fine to med Sand.		
3.7		35	100	9	35.5-36.5' Brown Clay with		
				15	trace of Sand. [CH or CL]		
		36					Bottom of well 35ft.
		7					
		8					
		9					
		0					

SPT = STANDARD PENETRATION TEST CAL = CALIBRATION BZ = BREATHING ZONE
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED BH = BOREHOLE

SUMMARY

Contractor: Spectrum Exp.
Driller:
Inspector: JSP/LAB
Rig Type: CME 55
Drilling Method: 6.25" HSA

WATER LEVEL MEASUREMENTS

MP			
DTW from MP			
Time			
Date			

ENGINEERING-SCIENCE DRILLING RECORD

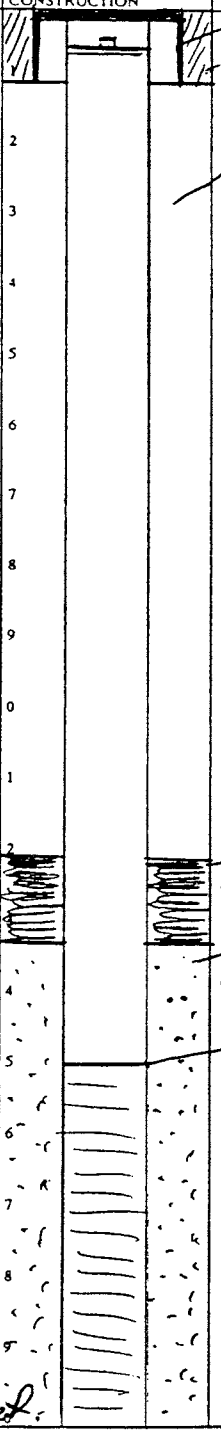
PROJECT NAME GLI- Oakland Terminal
PROJECT NO. SY356.06
Weather Clear Warm
Date/Time Start 7-21-93 / 1100
Date/Time Finish 7-21-93 / 1400

BORING NO. ES-10
Sheet 1 of 2
Location: West of Silo adjacent to West Side of Silo

Plot Plan
Castro Street
ES-10
ES-9
N

Photovac Reading	Sample I.D.	Sample Depths	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
		0			0-1' Asphalt
		1			1'-5' Fill Material.
		2			
		3			
		4			
		5		4	5'-6.5' Brown clay with blue colored mottling and some sand. Damp. [CH or CL]
0.0	—		70	10	
		6		13	
		7			
		8			
		9			
		10		3	10'-11.5' Brown clay with some medium sand. No blue colored mottling. Damp to moist. [CH or CL]
0.0	—		100	6	
		11		8	
		12			
		13			
		14			
		15		16	15'-16.5' Fine & med. Sand. Grey/brown colored. Moist. No clay.
0.0	—		100	38	
		16		44	
		17			
		18			
		19			
0.0	11@	20		19	20'-21.5' Fine-Med Mottled Sand. Wet. [SW]

WELL CONSTRUCTION



COMMENTS: Bot

SPT = STANDARD PENETRATION TEST CAL = CALIBRATION BZ = BREATHING ZONE
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED BH = BOREHOLE

SUMMARY

Contractor: Spect. Fum Exp.
Driller:
Inspector: JSP/LAB
Rig Type: CME 55
Drilling Method: 0.25" HSA

WATER LEVEL MEASUREMENTS

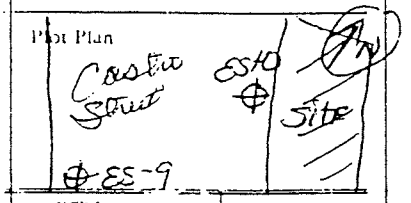
MP			
DTW from MP			
Time			
Date			

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME CLI - Oakland Terminal
PROJECT NO. SY356.06
Weather Clear, Warm
Date/Time Start 7-21-93/1100
Date/Time Finish 7-21-93/1400

BORING NO. ES-10
Sheet 2 of 2
Location: Adjacent to West side of Site.

Plot Plan



Photovac Reading	Sample ID	Sample Depths	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL CONSTRUCTION	COMMENTS
				19	20'-21.5' Fine-Med. Sand. Mottled Sand. Wet.		
0.0	11:50	21	100	38			
				44			
		22					
		23					
		24					
					[SW]		
		25		2	25'-25.5' Fine-Med Sand. Wet		
0.0	—		100	5	25.5'-26.5' Brown Sandy Clay.		
		26		6	moist. [CL or CL]		
		27					
		28					
					[CH or CL]		
		29					
				4	30'-30.5' Grey/brown Clay.		
0.0	—	30	100	19	30.5'-31.5' Fine-Med. mottled		
				15	Sand. moist.		
		31					
		32					
		33					
		34					
—				—	NO sample collected - Rig		
		35	—	—	Shut down.		Bottom of well 35'
		36		—			
		7					
		8					
		9					
		0					

SPT = STANDARD PENETRATION TEST CAL. = CALIBRATION B.Z. = BREATHING ZONE
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED BH = BOREHOLE

SUMMARY

Contractor: Spectrum Exp.
Driller:
Inspector: JSP/LAB
Rig Type: CME 55
Drilling Method: 6.25" HSA

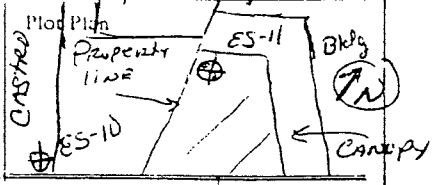
WATER LEVEL MEASUREMENTS

MP			
DTW from MP			
Time			
Date			

ENGINEERING-SCIENCE DRILLING RECORD

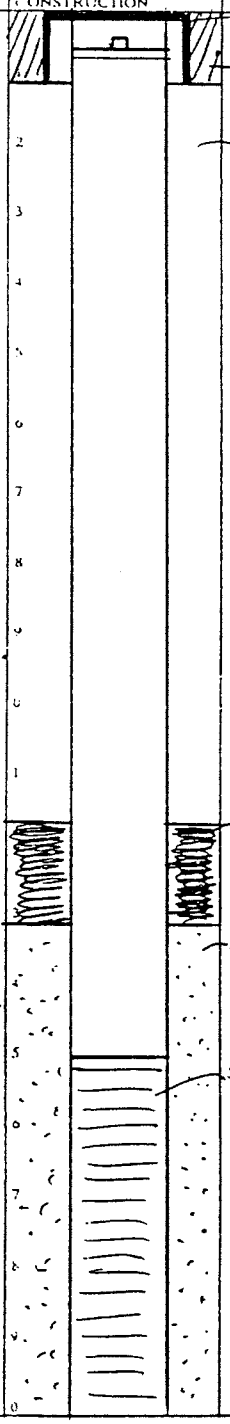
PROJECT NAME GLI - Oakland Terminal
PROJECT NO. SY356.06
Weather Clear, Warm
Date/Time Start 7-21-93 / 1500
Date/Time Finish 7-21-93 / 1825

BORING NO. ES-11
Sheet 1 of 2
Location: North end of parking area - along site property line



Photovac Reading	Sample I.D.	Sample Depths	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
		0			0-1' Concrete
		1			1-5' Fill Material
		2			
		3			
		4			
		5		6	5'-6.5' Brown clay and med.
0.0	—		100	14	Sand. Damp.
		6		15	
		7			
		8			
		9			
		10		4	10'-11.5' Brown-grey Sandy Clay
0.0	—		100	5	Fine Sand. Moist.
		11		10	[CH or CL]
		12			
		13			
		14			
		15		7	15'-15.8' Brown-gray clay [CH or CL]
0.0	—		100	13	15.8'-16.5' Fine-med Sand.
		16		14	Trace of Silt. Moist.
		17			
		18			
		19			
		20		22	

WELL CONSTRUCTION



COMMENTS
- Christy Box
- Concrete Cap
- Bentonite Grout/ Slurry 1 to 11.7 ft
- Bentonite Seal 11.7 to 13 ft
- Sand Pack 13 to 35 ft
- Screen 15 to 35 ft

SPT = STANDARD PENETRATION TEST CA = CALCULATION BZ = BREATHING ZONE
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED BH = BOREHOLE

SUMMARY

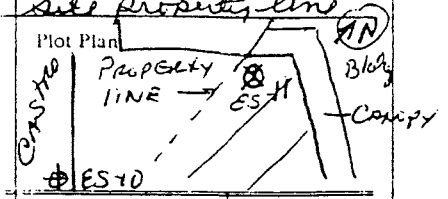
ENGINEERING-SCIENCE DRILLING RECORD

Contractor: Specialty Drill (SD)
Driller:
Inspector: JSP / LAB
Rig Type: CME 55
Drilling Method: 8.25" HSA
WATER LEVEL MEASUREMENTS
MP
DBS or MSL
Time
Date

PROJECT NAME GLI - Oakland Terminal
PROJECT NO. SY356.06
Weather Clear, Warm
Date Time Start 7-21-93 / 1500
Date Time Finish 7-21-93 / 1825

BORING NO. ES-11
Sheet 2 of 2
Location: Northend of Parking area - along site property line

Plot Plan



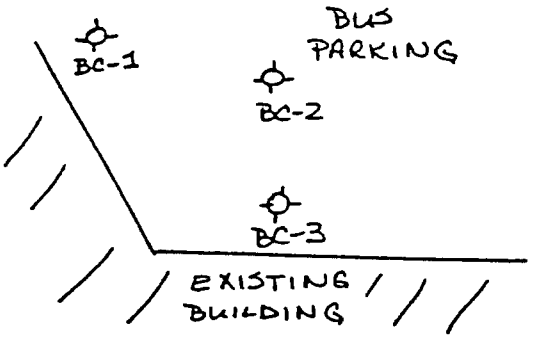
Photovac Reading	Sample I.D.	Sample Depths	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL CONSTRUCTION	COMMENTS
				22	20'-21.5' Fine - Med. mottled Sand Saturated/Wet. Trace of Silt. No Clay. [SW]		
0.0	1100	21	100	28			
				43			
		22					
		23					
		24					
		25		14	25'-26' Fine - Med mottled Sand. [SW]		
0.0	—		80	21	26'-26.5' Brown Clay. Trace of Sand. [CH or CL]		
		26		22			
		27					
		28					
		29					
		30		6	30-30.5' Fine - Med Sand. [ ]		
0.0	—		100	11	30.5'-31.5' Blue-grey Clay. Trace of Sand. [CH or CL]		
		31		16			
		32					
		33					
		34			[CH or CL]		
		35		4	35'-35.5' Fine Sandy Clay.		
0.0	—		100	9	35.5'-36.5' Clay. Blue-grey in Color. No Sand. [CH or CL]		Bottom of Well 35 ft.
		36		15			
		7					
		8					
		9					
		0					

SPT = STANDARD PENETRATION TEST CAL = CALIBRATION BZ = BREATHING ZONE
SS = SPLIT SPOON AC = AUGER CUTTINGS C = CORED BH = BOREHOLE

SUMMARY

LOCATION OF BORING

CASTRO STREET



CLIENT Western Greyhound Lines

LOCATION Oakland

JOB NO. 4529-01

BORING NO. BC-

SHEET 1 OF

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DRILLING START TIME 0844 DATE 6/8/89 FIN TIME 09 DATE 6/8

DRILLING CONTRACTOR A. S. E.

DRILLING METHOD 8" Hollow Stem Augers

SAMPLING METHOD Cal. mod. 2", 140# / 30 in (Cr

DRILLER Chris St. Pierre

RIG Mobile Drill B-61

BY D. Covington

DATE 6/8/89 CHK'D BY

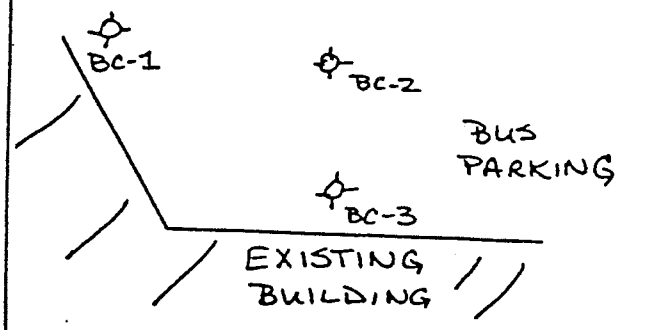
N/S E/W ELEV.

SURFACE CONDITIONS asphalt + concrete parking lot

WELL CONST. CASING	WELL CONST. ANNULUS	SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	SAMPLE NO. / SAMPLE DEPTH	BLOWS/6" SAMPLER	DEPTH IN FEET	SOIL CALLOUT	MATERIALS ENCOUNTERED AND DRILLING CONDITIONS
	← Backfilled with cuttings →					0		0-0.5' - CONCRETE
						1		0.5'-1.5' - clayey sand and gravel, gray, moist, strong hydrocarbon odo
						2		1.5'-4.0' - silty sand and gravel, dk. olive to gray, damp, loose TLV = 1100 ppm
						3		
						4		4.0'-6.5' - sandy clay, medium tan, dam slightly plastic, soft, TLV@~4' = 120 ppm
						5		
						6		
						7		6.5'-14' - sandy clay, greenish-gray damp, highly plastic, soft, TLV@~6.5' = 38 ppm TLV@ ~ 10' = 220 ppm
						8		
						9		
						10		
						11		
						12		
						13		
						14		14'-15' - silty med. sand, brown to rust, damp, loose, TLV = 40 ppm
		CM			9/15	15		
					27	16		15'-25' - sand, gray-brown with rust staining, damp, loose, trace silt, fine to med.-grained TLV @ 15.5' = 400 ppm TLV @ 20' = 520 ppm
						17		
						18		
						19		
						20		wet @ ~ 22'
						21		
						22		
						23		
						24		T.D = 25'
		CM			27	25		

LOCATION OF BORING

CASTRO ST.



CLIENT	Western Greyhound Lines			BORING NO. BC-2
LOCATION	Oakland		JOB NO. 4529-01	SHEET 1 OF 1
WATER LEVEL				DRILLING START TIME 1005
TIME				FINISH TIME 1050
DATE				DATE 6/8/89
CASING DEPTH				DATE 6/8/89

DRILLING CONTRACTOR A.S.E.

DRILLING METHOD 8" Hollow Stem Augers

SAMPLING METHOD Cal. Mod. 2", 140#/30 in. (cm)

DRILLER Chris St. Pierre RIG Mobile Drill B-53

BY T. Covington DATE 6/8/89 CHK'D BY

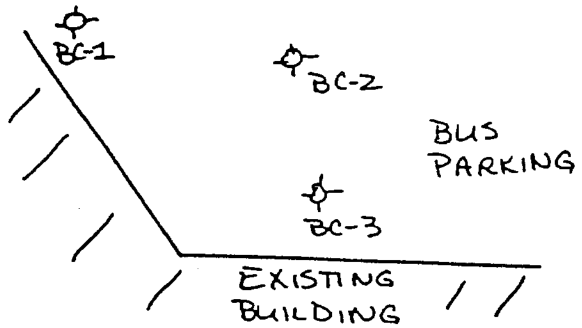
N/S E/W ELEV.

SURFACE CONDITIONS asphalt + concrete parking lot

WELL CONST. CASING	WELL CONST. ANNULUS	SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	SAMPLE NO. / SAMPLE DEPTH	BLOWS/6" SAMPLER	DEPTH IN FEET	SOIL CALLOUT	MATERIALS ENCOUNTERED AND DRILLING CONDITIONS
						0		concrete
						1		gravelly sand + clay
						2		1.0'-4.0' - sandy clay, olive green, damp, high plasticity, vy. soft, trace gravel
						3		
						4		4'-6.5' - sandy clay, med. tan to brown, damp, soft, high plasticity, TLV = 180 ppm
						5		
	Backfilled with cuttings					6		6.5'-9.0' - sandy clay, gray-green, soft, high plasticity TLV @ 6.5' = 12 ppm TLV @ 9' = 28 ppm
						7		
						8		9'-10' - as above with increase in sand content
						9		
						10		10'-14' - sand, orange to dk. rust, damp, loose, medium-grained, trace silt
						11		
						12		14±25' above with color change to gray
						13		
						14		TLV @ 16.5' = 560 ppm TLV @ 24' = 380 ppm
						15		saturated @ ~22'
		CM			7/16	16		
					26	17		
						18		
						19		
						20		
						21		
						22		
						23		
		CM			15/24	24		
					50(5")	25		T.D. = 25'

LOCATION OF BORING

CASTRO ST.



CLIENT	Western Greyhound Lines
LOCATION	Oakland
JOB NO.	4529-01
BORING NO.	BC-3
SHEET	1 OF 1
WATER LEVEL	
TIME	
DATE	
CASING DEPTH	
DRILLING CONTRACTOR	A.S.E.
DRILLING METHOD	8" Hollow Stem Augers
SAMPLING METHOD	Cal. mod. 2", 140# /30 in (cm)

DRILLING	START	FINISH
TIME	1220	130[illegible]
DATE	6/8/89	6/8/8[illegible]

DRILLER Chris St. Pierre
RIG mobile Drill B-61
[illegible]
DATE 6/8/89 CHK'D BY

N/S | E/W | ELEV.

SURFACE CONDITIONS asphalt + concrete parking lot

WELL CONST.: CASING | ANNULUS — Backfilled with cuttings

SAMPLER TYPE	BLOWS/6" SAMPLER	DEPTH IN FEET
cm	11 / 18 / 27	15–16
cm	25 / 50	25–26

MATERIALS ENCOUNTERED AND DRILLING CONDITIONS

concrete

sand + gravel, gray, dry, loose

1.5'-2' - sand, dk. brown, damp, loose, strong hydrocarbon odor

2'-4' - silty clay, dk. olive green, damp, soft, high plasticity
TLV= 300 ppm

4'-6.5' - silty clay, lt. gray, damp, less odor than above

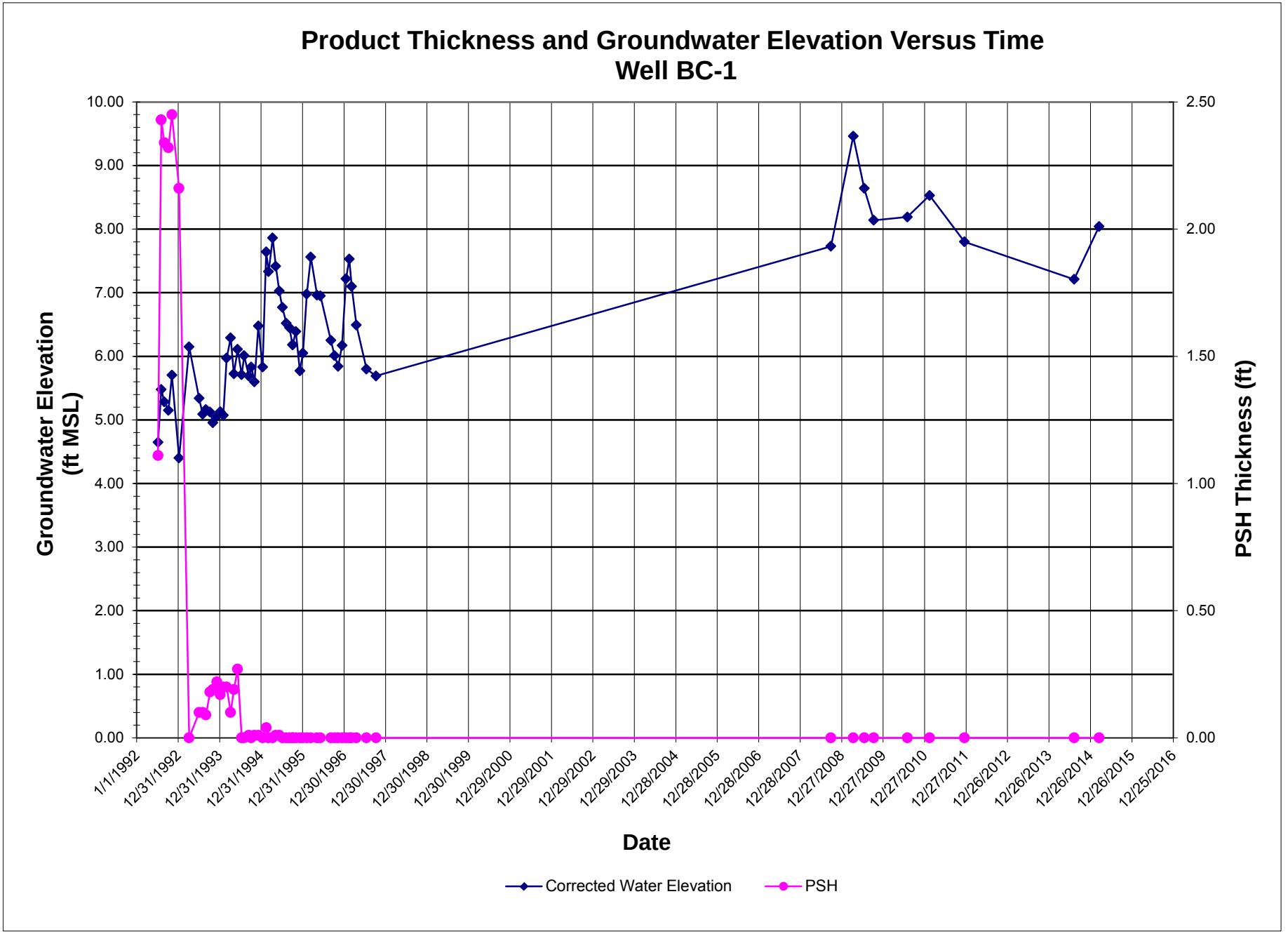
6.5'-14' - sandy clay, olive green, damp, soft, high plasticity
TLV @ ~7' = 140 ppm

14'-25' - sand, rust to brown, damp, wet at ~22', loose, medium-grained,

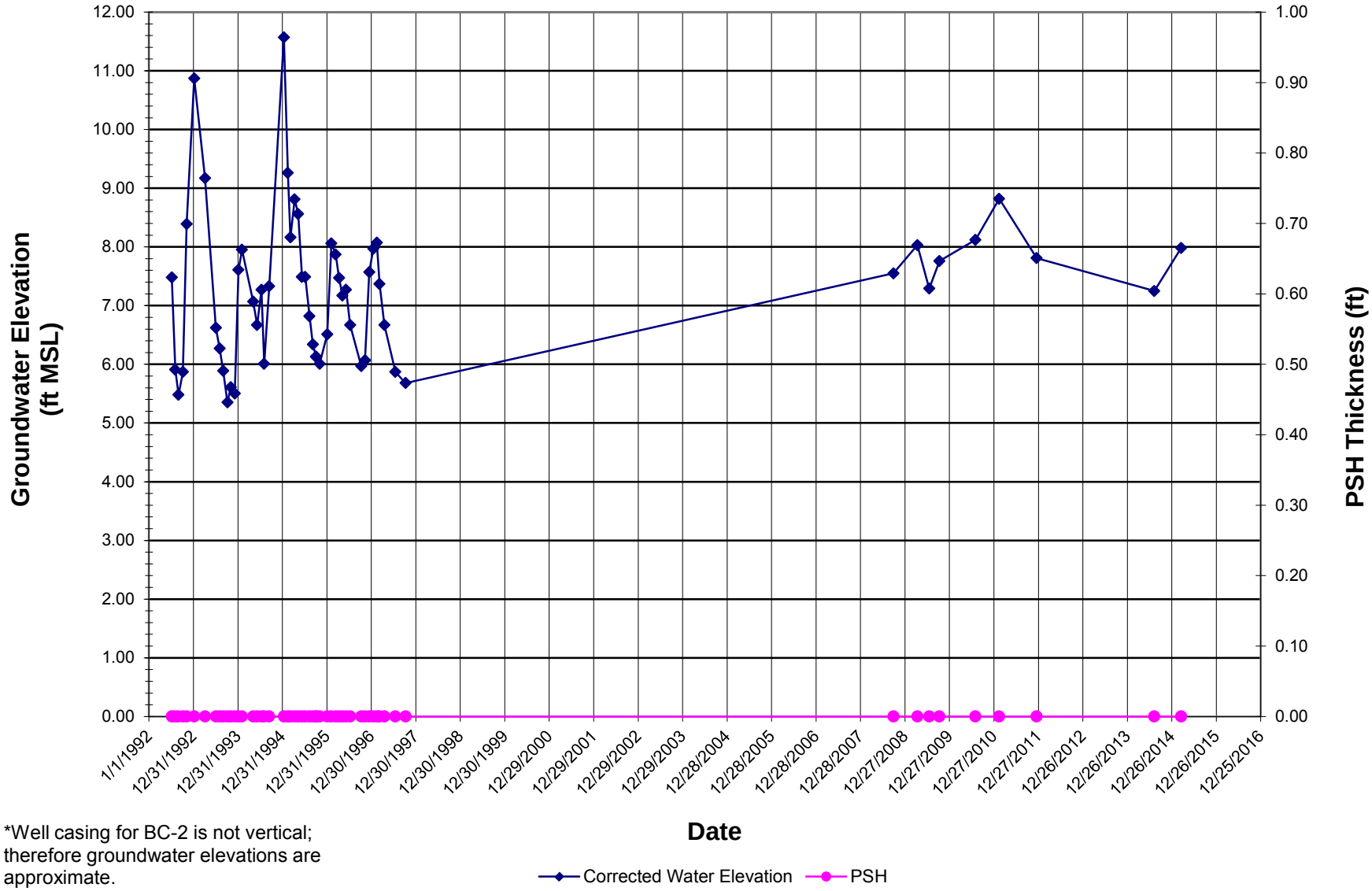
TLV @ 14' = 110 ppm
TLV @ 15.5' = 4400 ppm

T.D. = 25'

APPENDIX C
PSH THICKNESS AND GROUNDWATER ELEVATION GRAPHS

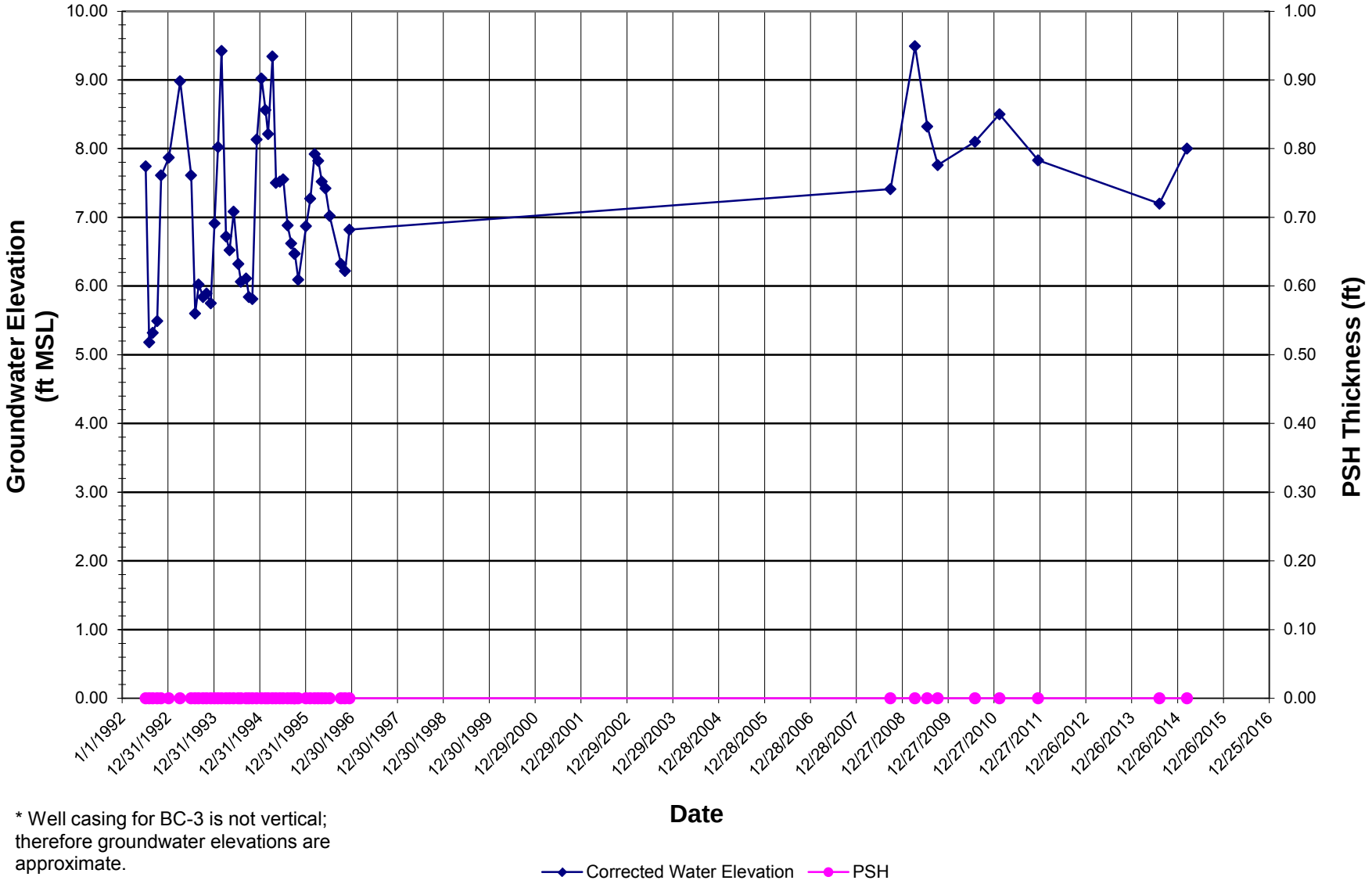

Product Thickness and Groundwater Elevation Versus Time
Well BC-1
Groundwater Elevation (ft MSL)
PSH Thickness (ft)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2.50
2.00
1.50
1.00
0.50
0.00
1/1/1992
12/31/1992
12/31/1993
12/31/1994
12/31/1995
12/30/1996
12/30/1997
12/30/1998
12/30/1999
12/29/2000
12/29/2001
12/29/2002
12/29/2003
12/28/2004
12/28/2005
12/28/2006
12/28/2007
12/27/2008
12/27/2009
12/27/2010
12/27/2011
12/26/2012
12/26/2013
12/26/2014
12/26/2015
12/25/2016
Date
Corrected Water Elevation
PSH

Product Thickness and Approximate* Groundwater Elevation Versus Time
Well BC-2

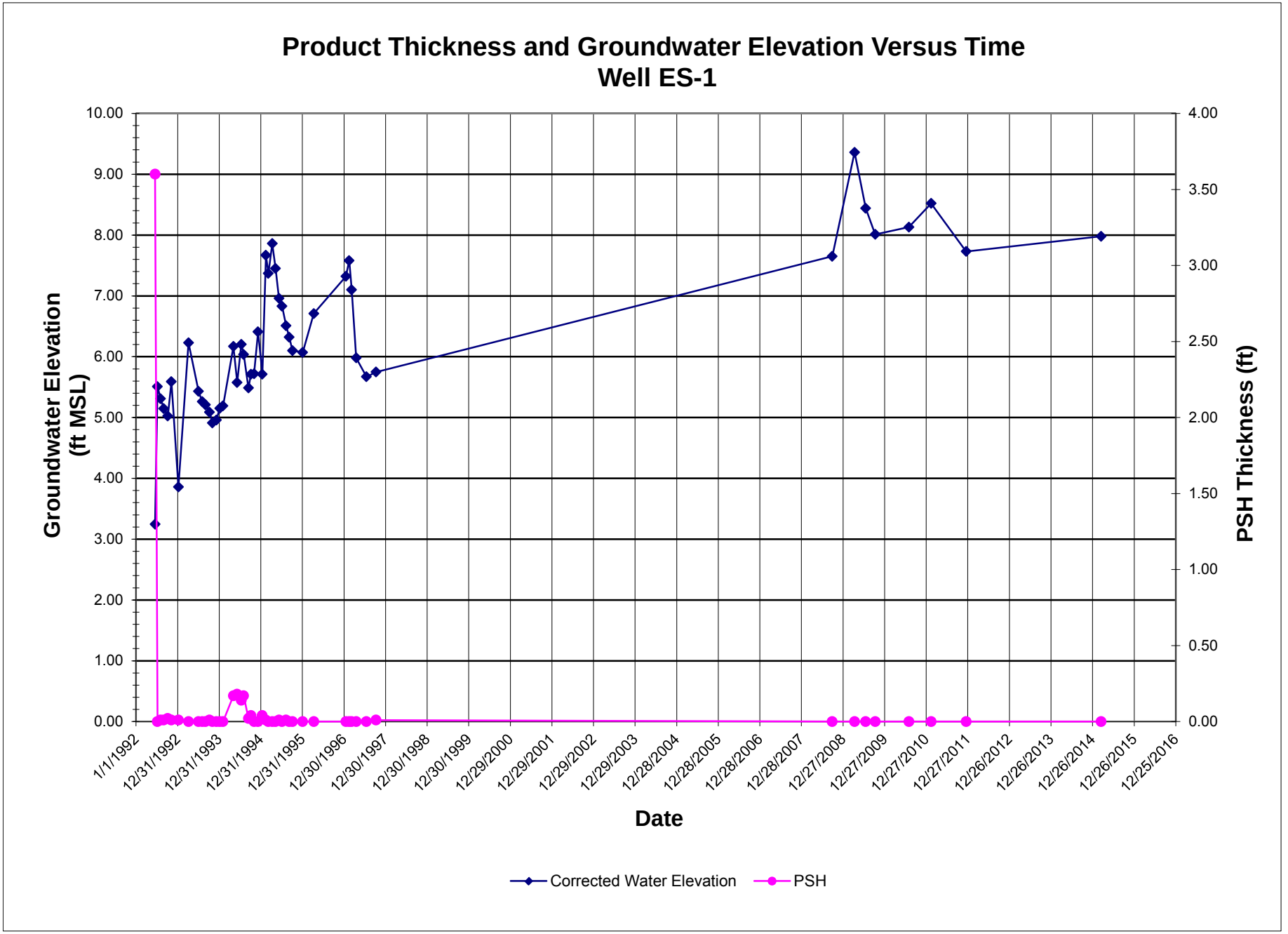


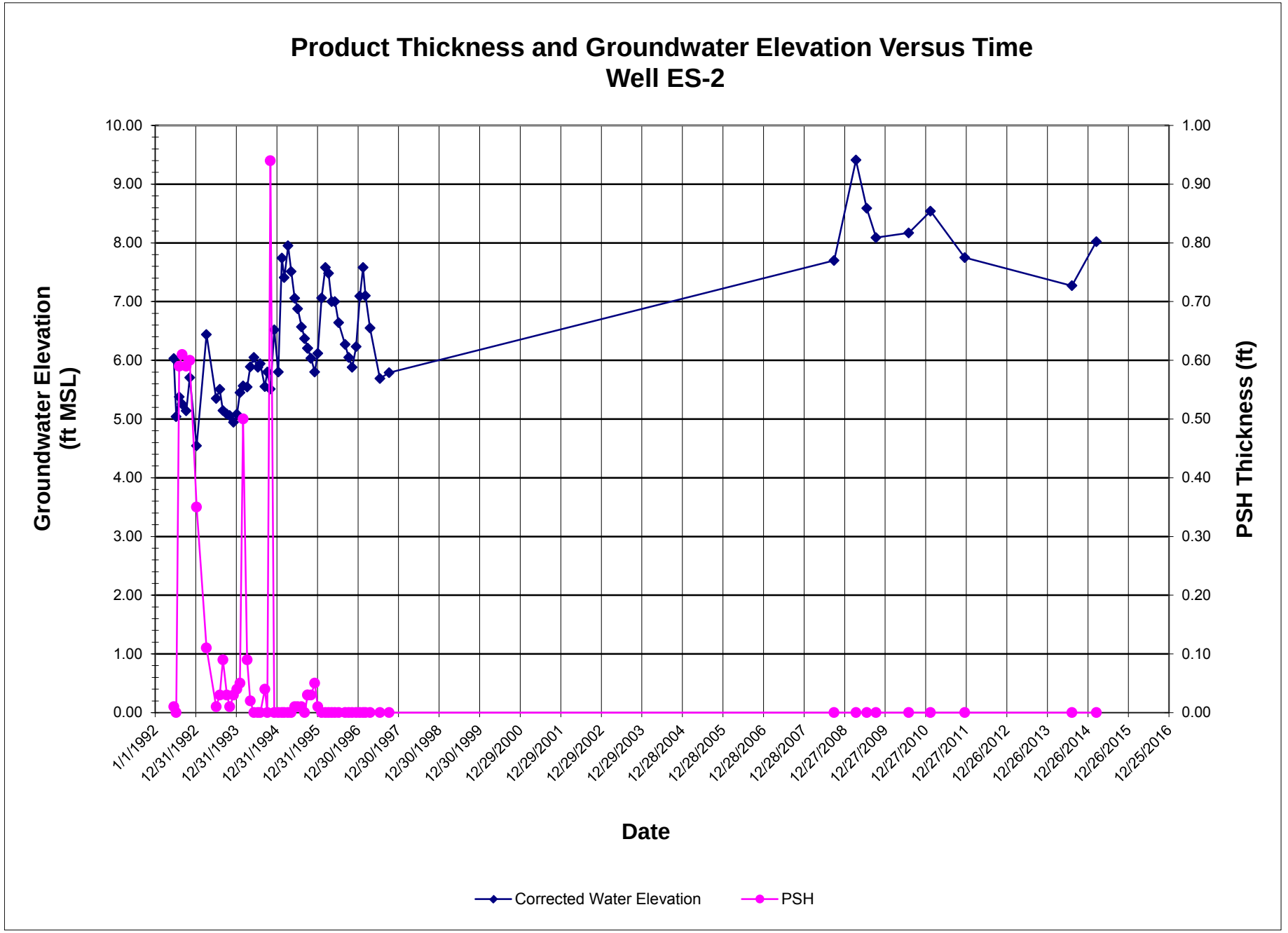
*Well casing for BC-2 is not vertical; therefore groundwater elevations are approximate.

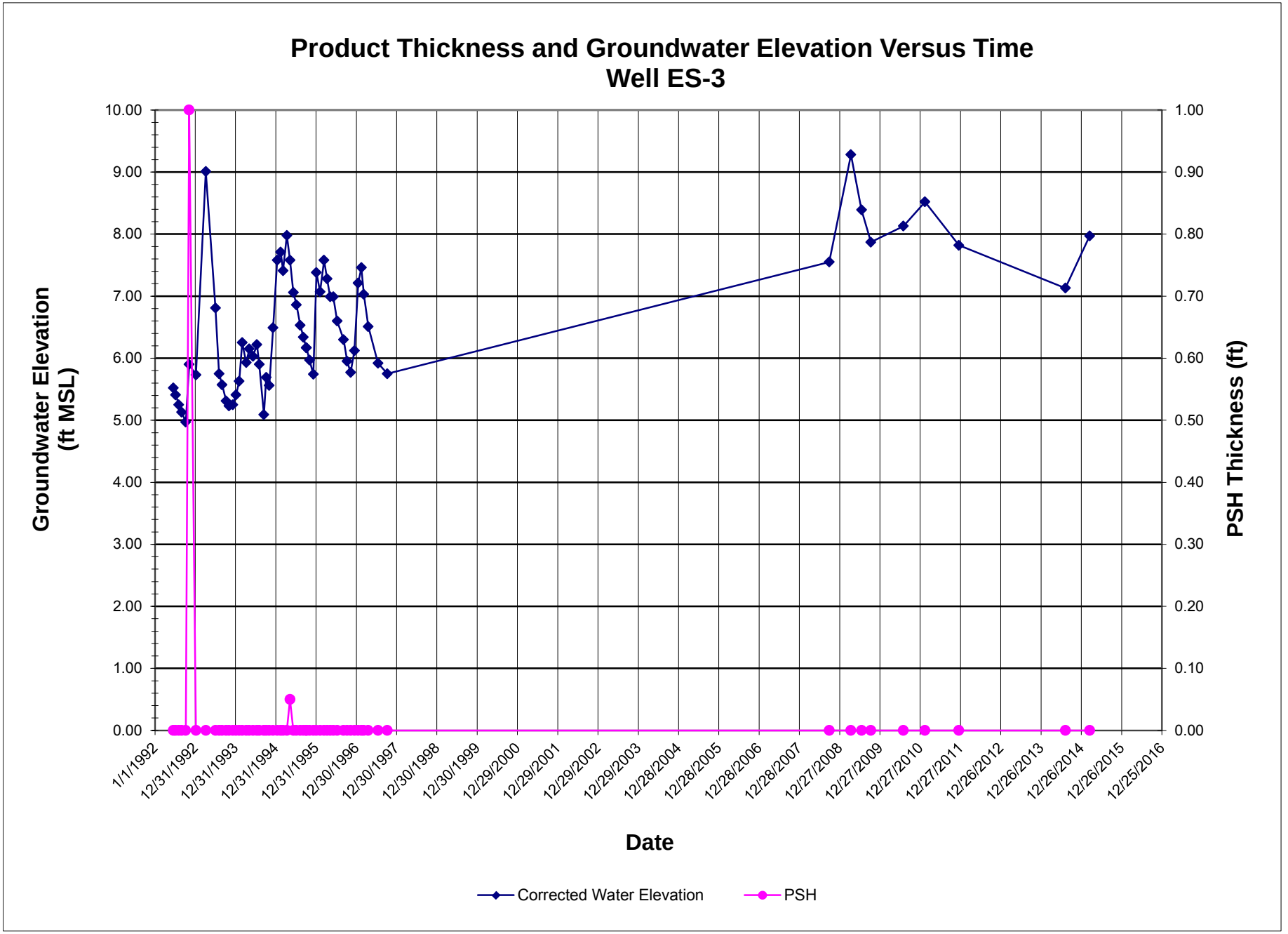
Product Thickness and Approximate* Groundwater Elevation Versus Time
Well BC-3

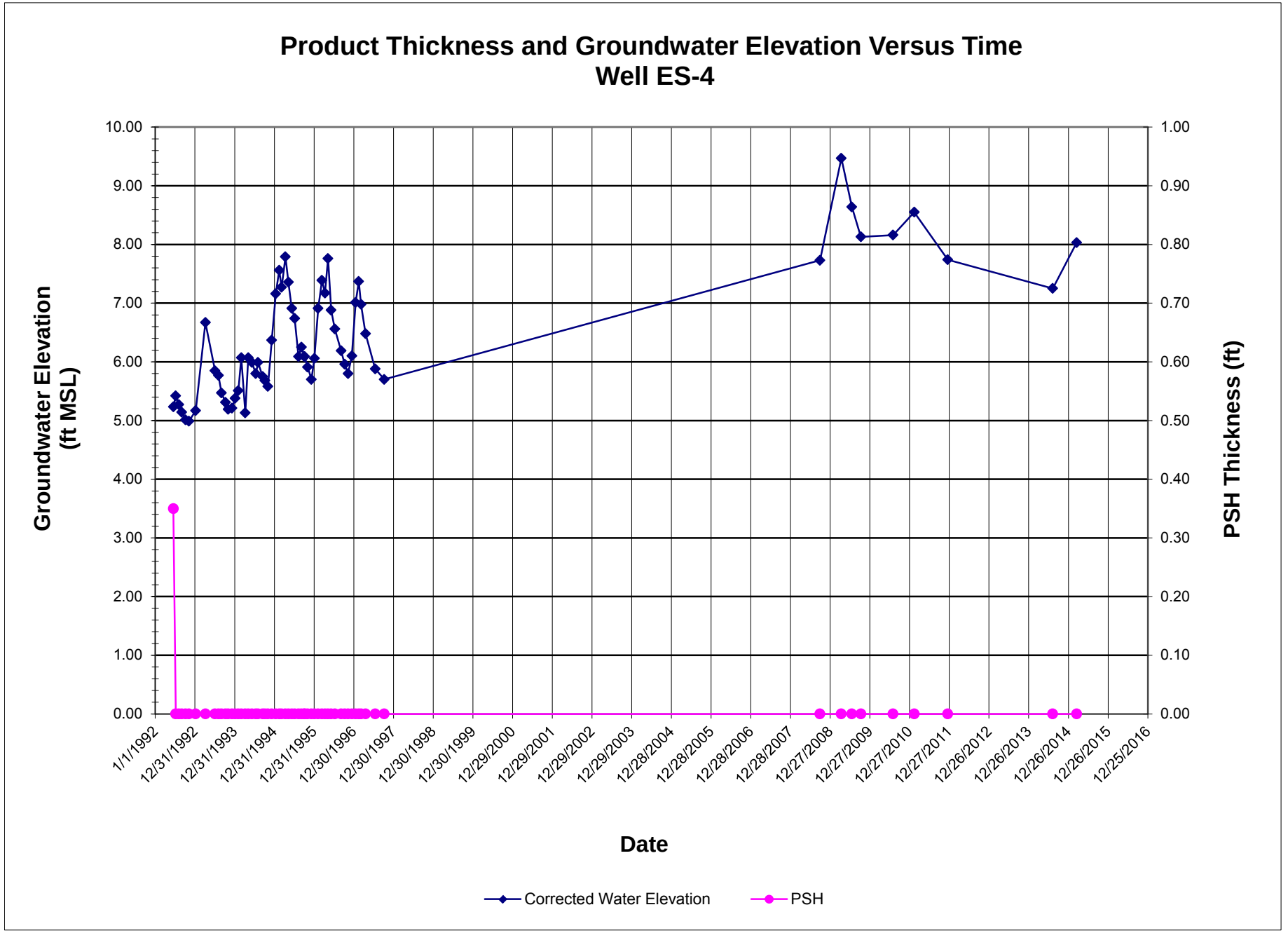


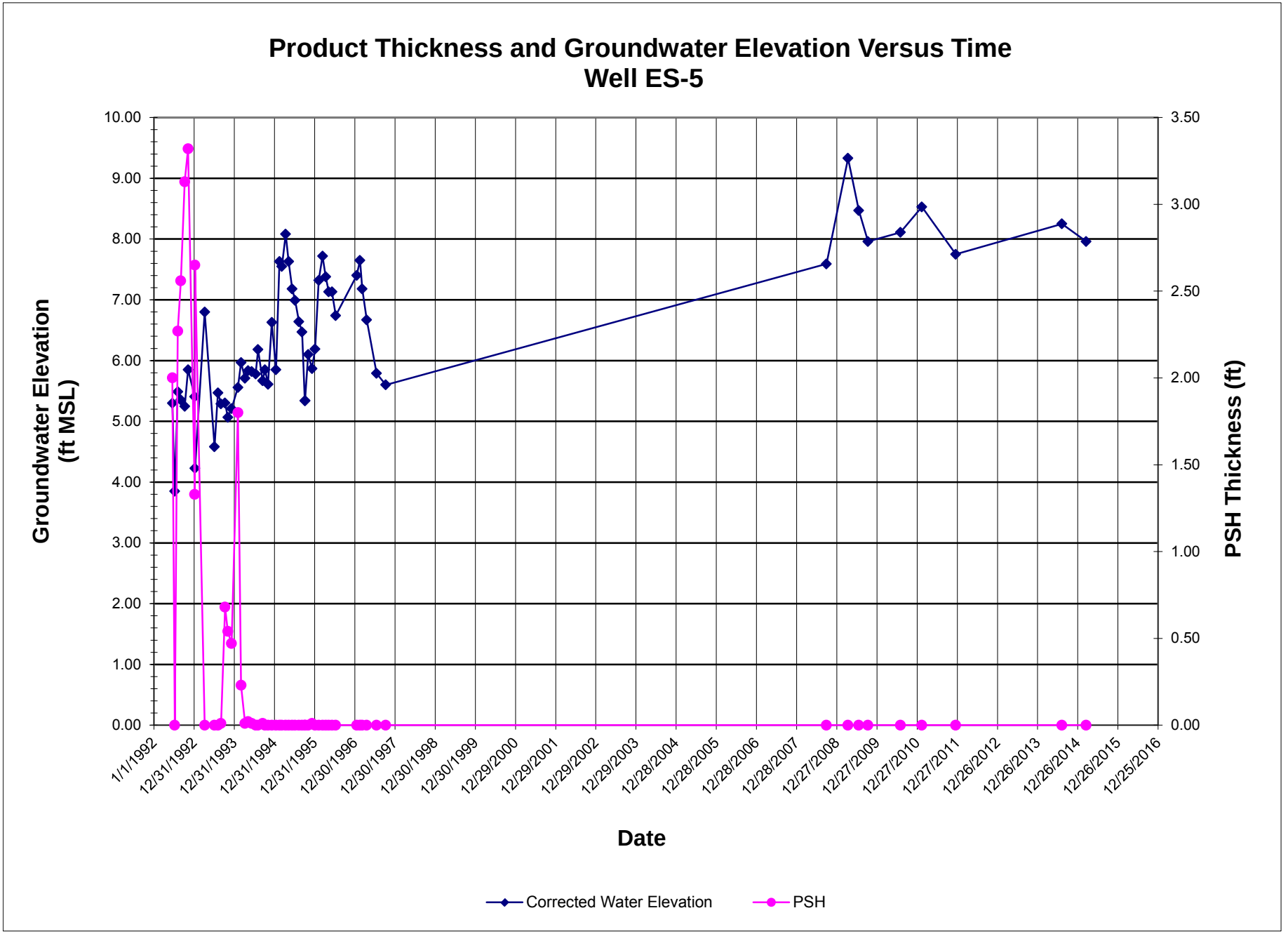
* Well casing for BC-3 is not vertical; therefore groundwater elevations are approximate.

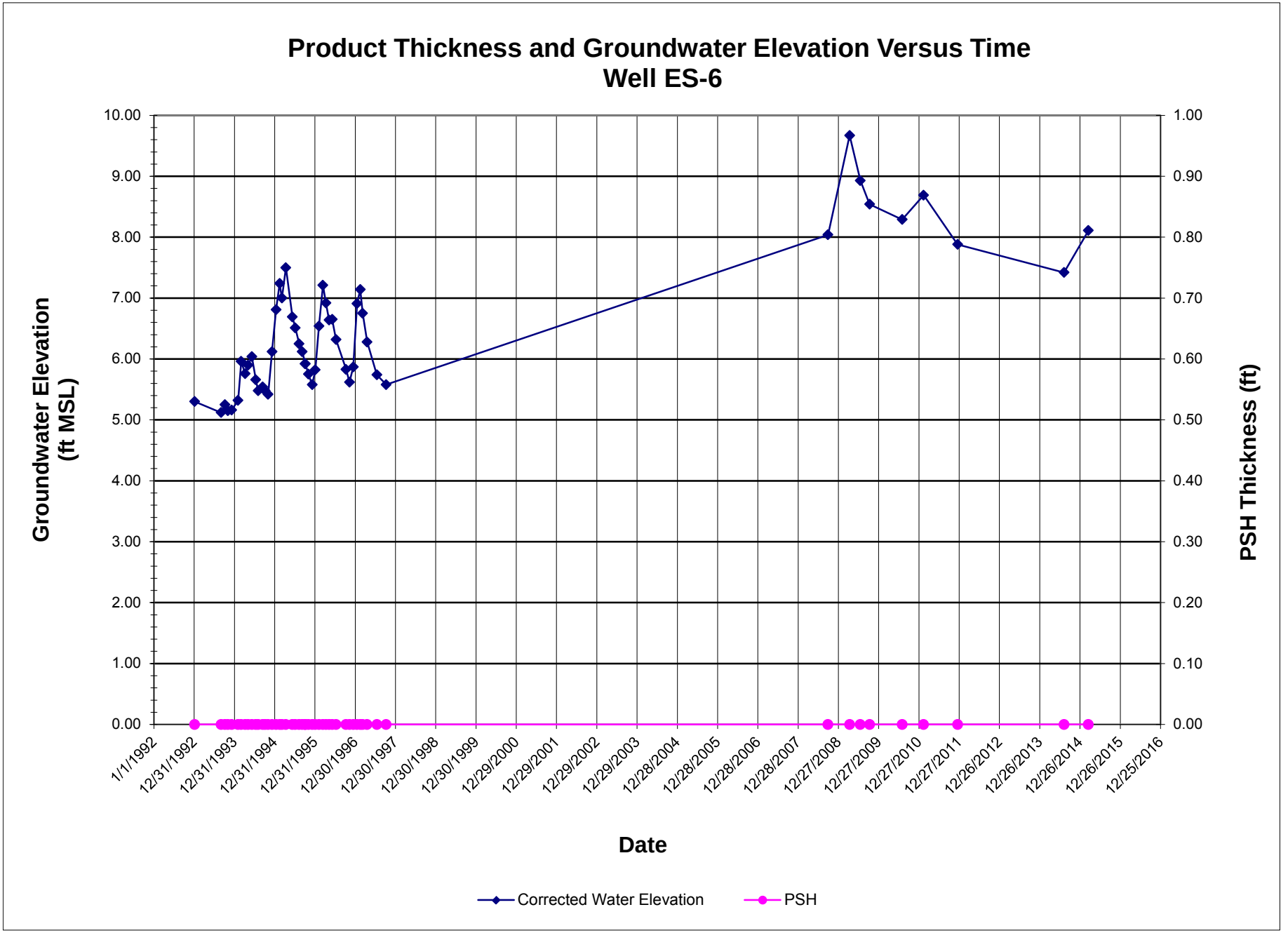

Product Thickness and Groundwater Elevation Versus Time
Well ES-1
Groundwater Elevation (ft MSL)
PSH Thickness (ft)
Date
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1/1/1992
12/31/1992
12/31/1993
12/31/1994
12/31/1995
12/30/1996
12/30/1997
12/30/1998
12/30/1999
12/29/2000
12/29/2001
12/29/2002
12/29/2003
12/28/2004
12/28/2005
12/28/2006
12/28/2007
12/27/2008
12/27/2009
12/27/2010
12/27/2011
12/26/2012
12/26/2013
12/26/2014
12/26/2015
12/25/2016
Corrected Water Elevation
PSH

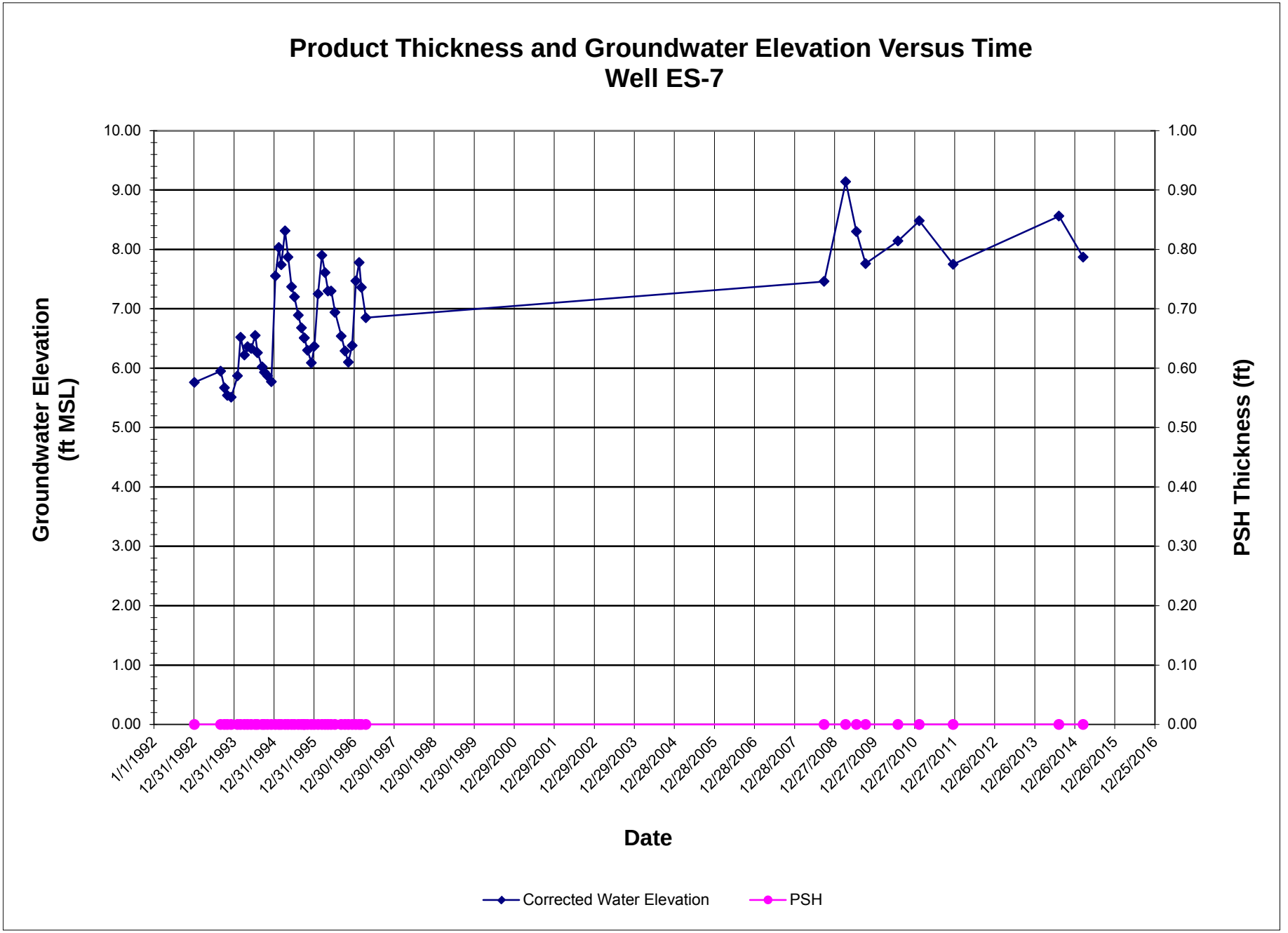

Product Thickness and Groundwater Elevation Versus Time
Well ES-2
Groundwater Elevation (ft MSL)
PSH Thickness (ft)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1/1/1992
12/31/1992
12/31/1993
12/31/1994
12/31/1995
12/30/1996
12/30/1997
12/30/1998
12/30/1999
12/29/2000
12/29/2001
12/29/2002
12/29/2003
12/28/2004
12/28/2005
12/28/2006
12/28/2007
12/27/2008
12/27/2009
12/27/2010
12/27/2011
12/26/2012
12/26/2013
12/26/2014
12/26/2015
12/25/2016
Date
Corrected Water Elevation
PSH

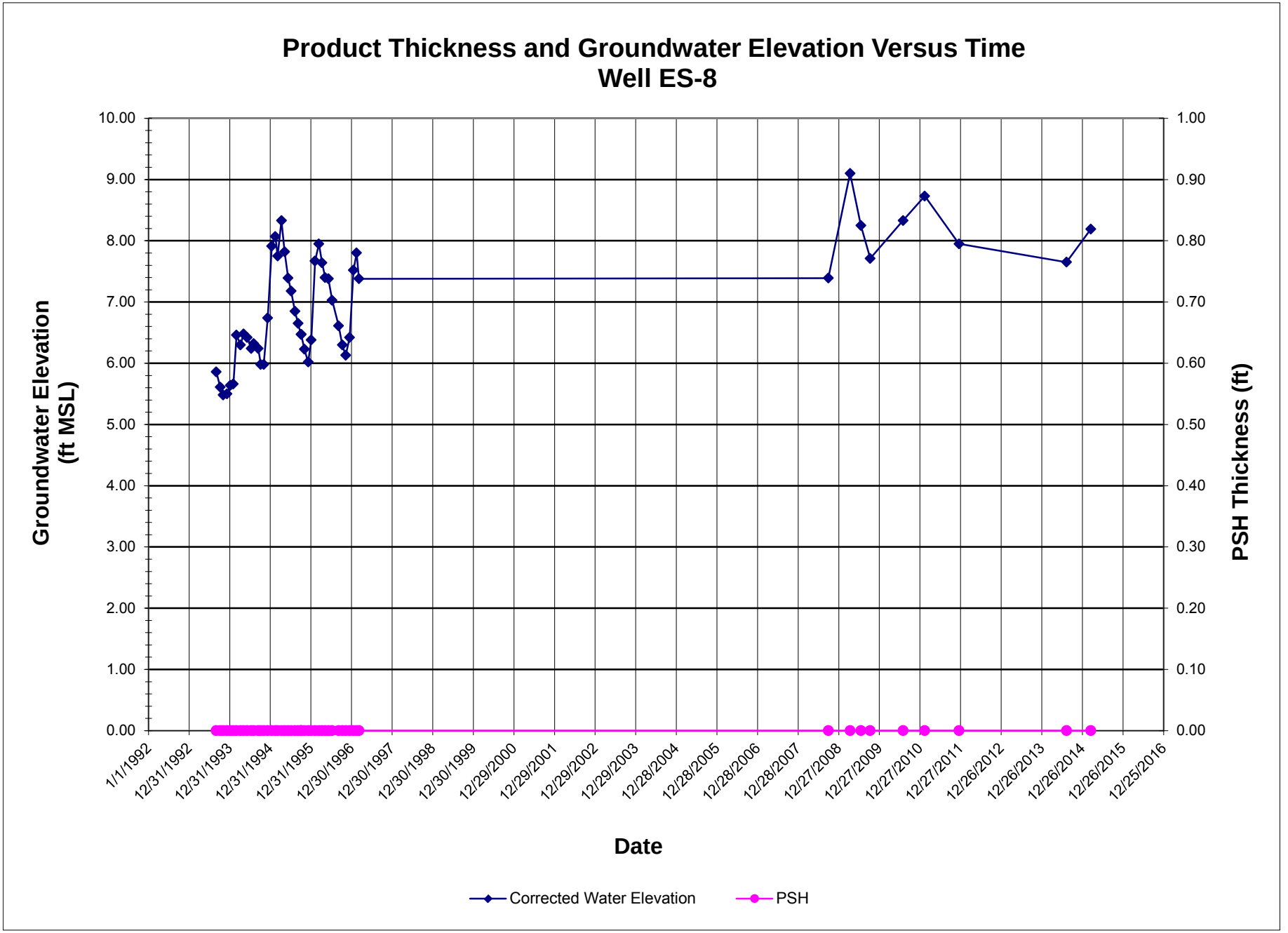

Product Thickness and Groundwater Elevation Versus Time
Well ES-3
Groundwater Elevation (ft MSL)
PSH Thickness (ft)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1/1/1992
12/31/1992
12/31/1993
12/31/1994
12/31/1995
12/30/1996
12/30/1997
12/30/1998
12/30/1999
12/29/2000
12/29/2001
12/29/2002
12/29/2003
12/28/2004
12/28/2005
12/28/2006
12/28/2007
12/27/2008
12/27/2009
12/27/2010
12/27/2011
12/26/2012
12/26/2013
12/26/2014
12/26/2015
12/25/2016
Date
Corrected Water Elevation
PSH

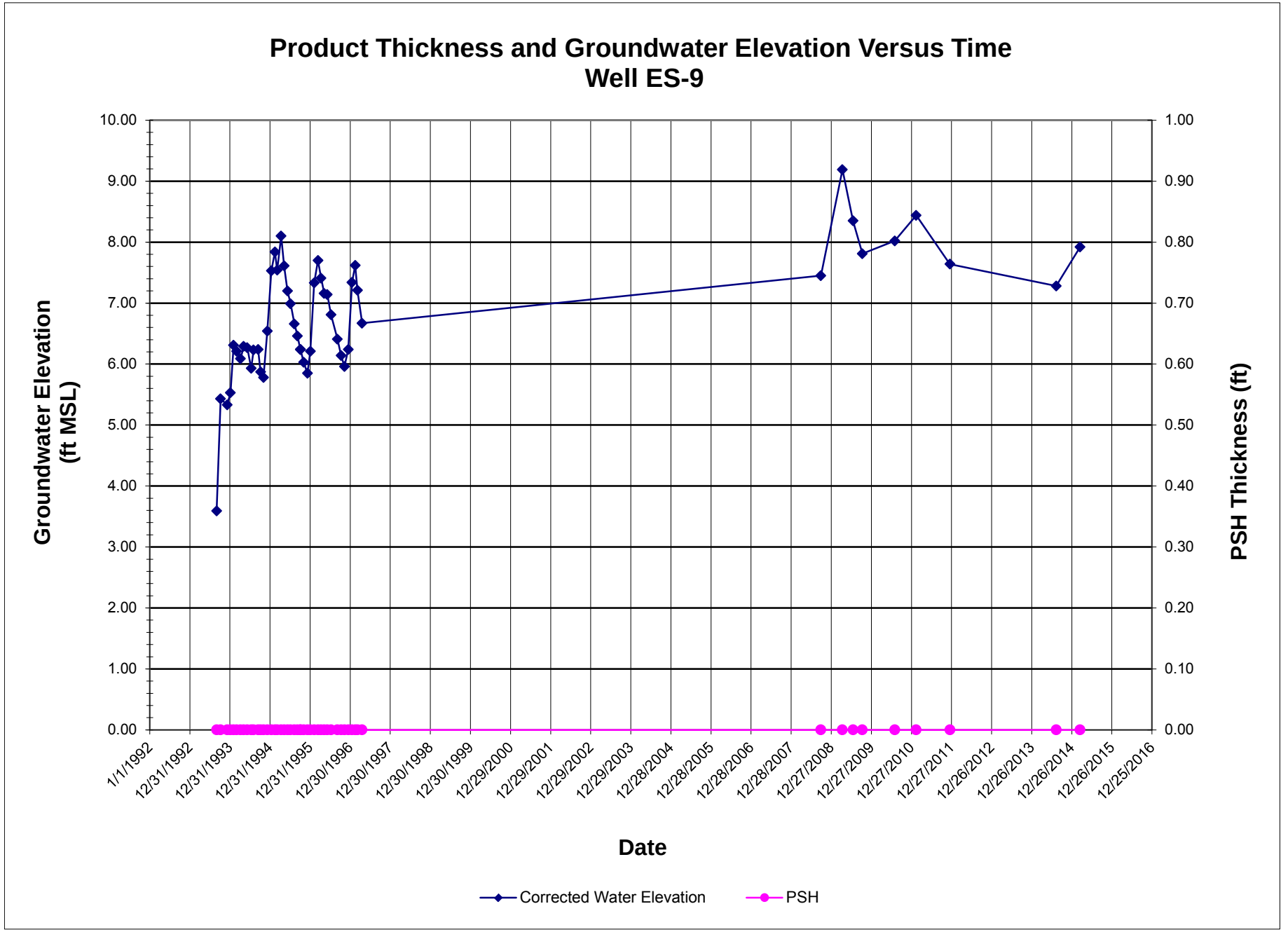

Product Thickness and Groundwater Elevation Versus Time
Well ES-4
Groundwater Elevation (ft MSL)
PSH Thickness (ft)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1/1/1992
12/31/1992
12/31/1993
12/31/1994
12/31/1995
12/30/1996
12/30/1997
12/30/1998
12/30/1999
12/29/2000
12/29/2001
12/29/2002
12/29/2003
12/28/2004
12/28/2005
12/28/2006
12/28/2007
12/27/2008
12/27/2009
12/27/2010
12/27/2011
12/26/2012
12/26/2013
12/26/2014
12/26/2015
12/25/2016
Date
Corrected Water Elevation
PSH

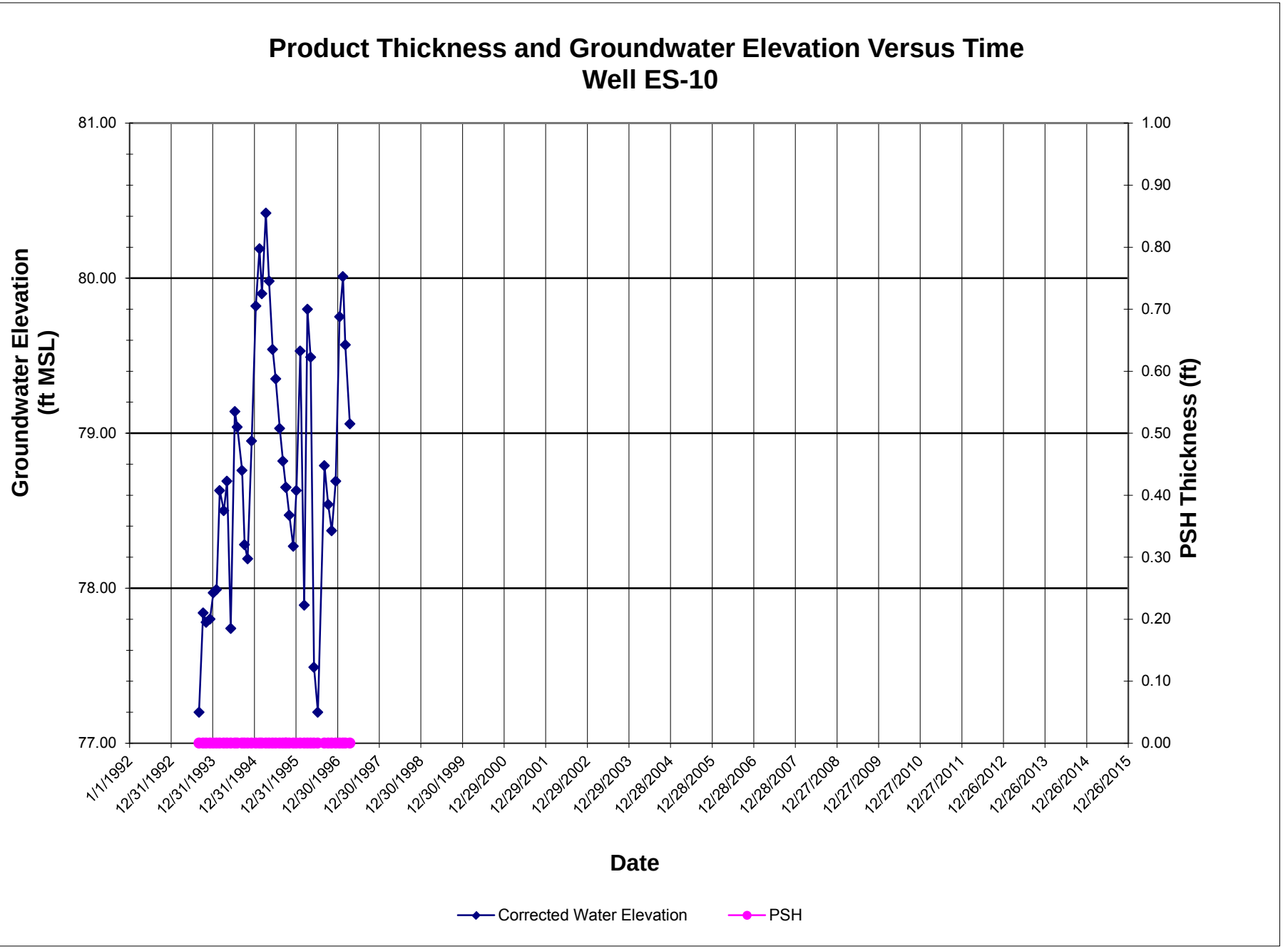

Product Thickness and Groundwater Elevation Versus Time
Well ES-5
Groundwater Elevation (ft MSL)
PSH Thickness (ft)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1/1/1992
12/31/1992
12/31/1993
12/31/1994
12/31/1995
12/30/1996
12/30/1997
12/30/1998
12/30/1999
12/29/2000
12/29/2001
12/29/2002
12/29/2003
12/28/2004
12/28/2005
12/28/2006
12/28/2007
12/27/2008
12/27/2009
12/27/2010
12/27/2011
12/26/2012
12/26/2013
12/26/2014
12/26/2015
12/25/2016
Date
Corrected Water Elevation
PSH

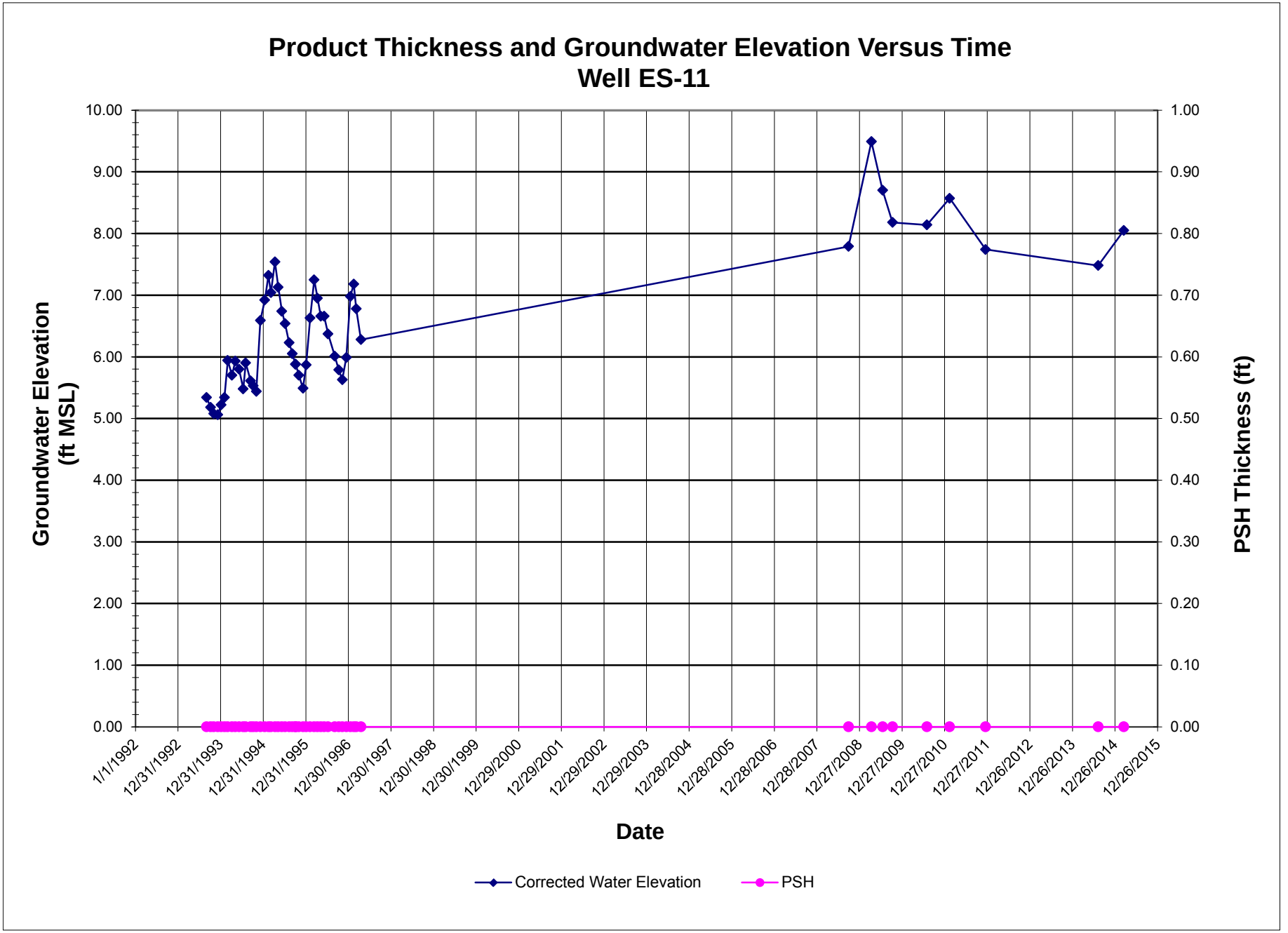

Product Thickness and Groundwater Elevation Versus Time
Well ES-6
Groundwater Elevation (ft MSL)
PSH Thickness (ft)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1/1/1992
12/31/1992
12/31/1993
12/31/1994
12/31/1995
12/30/1996
12/30/1997
12/30/1998
12/30/1999
12/29/2000
12/29/2001
12/29/2002
12/29/2003
12/28/2004
12/28/2005
12/28/2006
12/28/2007
12/27/2008
12/27/2009
12/27/2010
12/27/2011
12/26/2012
12/26/2013
12/26/2014
12/26/2015
12/25/2016
Date
Corrected Water Elevation
PSH


Product Thickness and Groundwater Elevation Versus Time
Well ES-7
Groundwater Elevation (ft MSL)
PSH Thickness (ft)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1/1/1992
12/31/1992
12/31/1993
12/31/1994
12/31/1995
12/30/1996
12/30/1997
12/30/1998
12/30/1999
12/29/2000
12/29/2001
12/29/2002
12/29/2003
12/28/2004
12/28/2005
12/28/2006
12/28/2007
12/27/2008
12/27/2009
12/27/2010
12/27/2011
12/26/2012
12/26/2013
12/26/2014
12/26/2015
12/25/2016
Date
Corrected Water Elevation
PSH

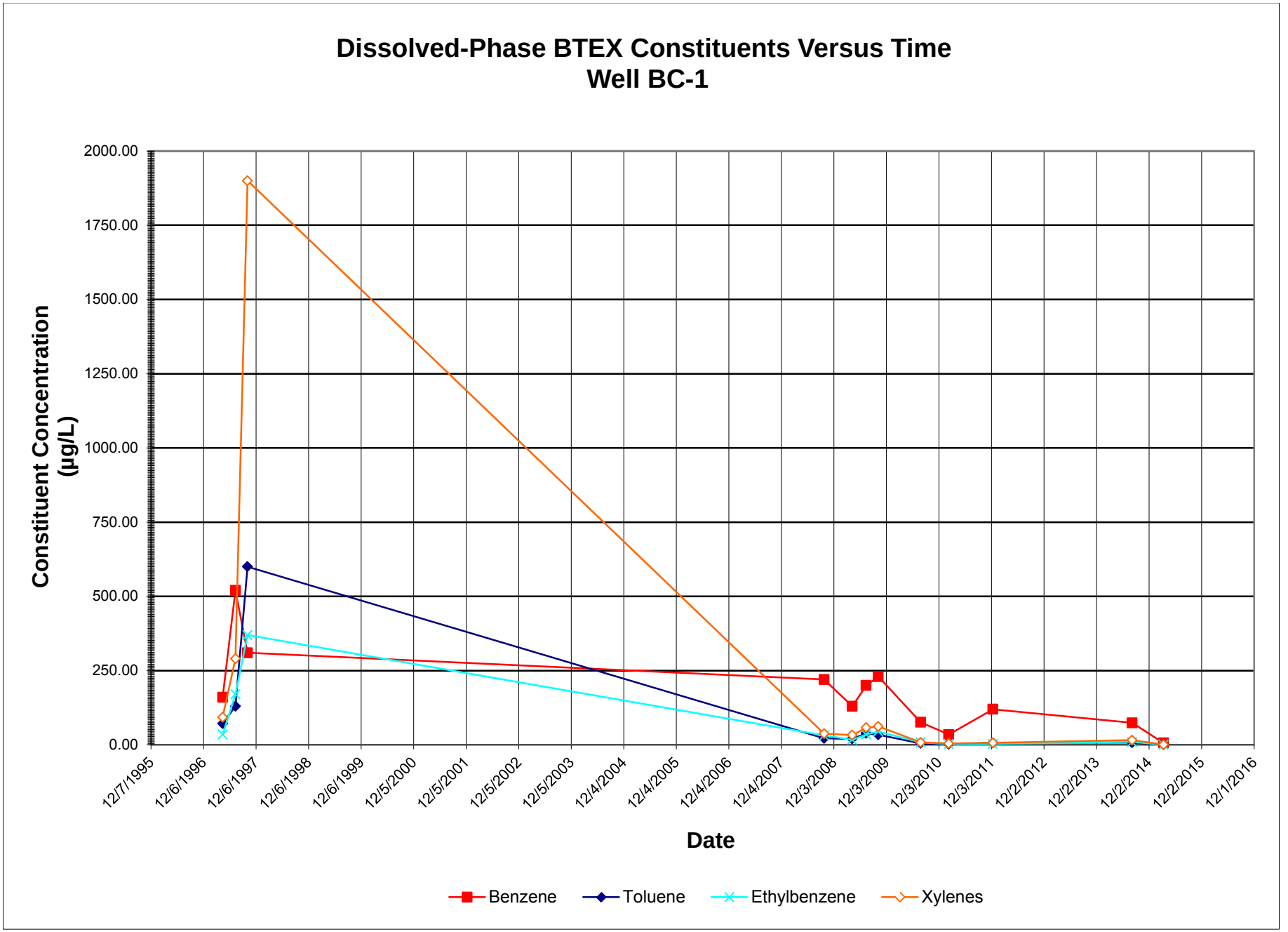

Product Thickness and Groundwater Elevation Versus Time
Well ES-8
Groundwater Elevation (ft MSL)
PSH Thickness (ft)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1/1/1992
12/31/1992
12/31/1993
12/31/1994
12/31/1995
12/30/1996
12/30/1997
12/30/1998
12/30/1999
12/29/2000
12/29/2001
12/29/2002
12/29/2003
12/28/2004
12/28/2005
12/28/2006
12/28/2007
12/27/2008
12/27/2009
12/27/2010
12/27/2011
12/26/2012
12/26/2013
12/26/2014
12/26/2015
12/25/2016
Date
Corrected Water Elevation
PSH

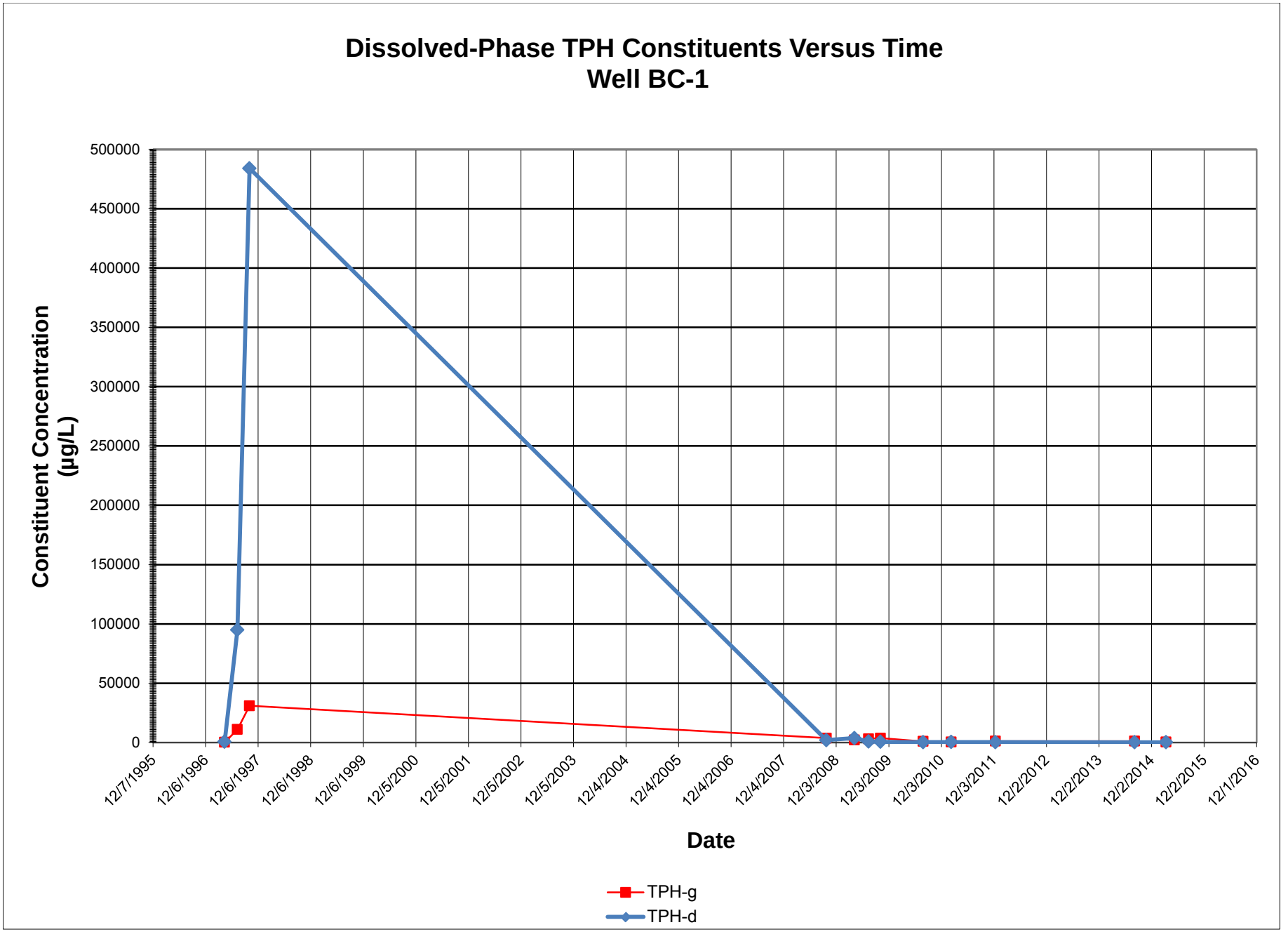

Product Thickness and Groundwater Elevation Versus Time
Well ES-9
Groundwater Elevation (ft MSL)
PSH Thickness (ft)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1/1/1992
12/31/1992
12/31/1993
12/31/1994
12/31/1995
12/30/1996
12/30/1997
12/30/1998
12/30/1999
12/29/2000
12/29/2001
12/29/2002
12/29/2003
12/28/2004
12/28/2005
12/28/2006
12/28/2007
12/27/2008
12/27/2009
12/27/2010
12/27/2011
12/26/2012
12/26/2013
12/26/2014
12/26/2015
12/25/2016
Date
Corrected Water Elevation
PSH


Product Thickness and Groundwater Elevation Versus Time
Well ES-10
Groundwater Elevation (ft MSL)
81.00
80.00
79.00
78.00
77.00
PSH Thickness (ft)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1/1/1992
12/31/1992
12/31/1993
12/31/1994
12/31/1995
12/30/1996
12/30/1997
12/30/1998
12/30/1999
12/29/2000
12/29/2001
12/29/2002
12/29/2003
12/28/2004
12/28/2005
12/28/2006
12/28/2007
12/27/2008
12/27/2009
12/27/2010
12/27/2011
12/26/2012
12/26/2013
12/26/2014
12/26/2015
Date
Corrected Water Elevation
PSH

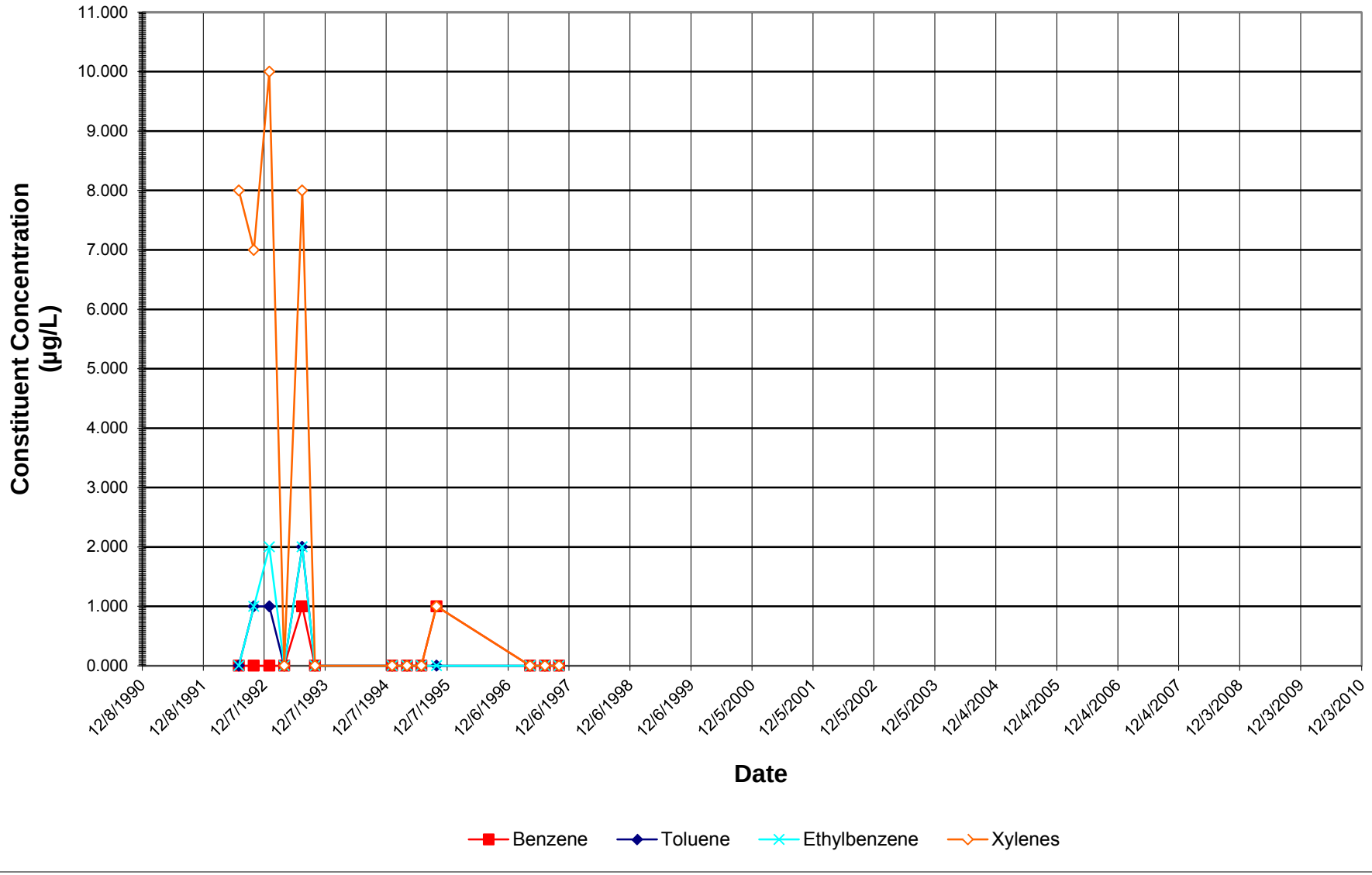

Product Thickness and Groundwater Elevation Versus Time
Well ES-11
Groundwater Elevation (ft MSL)
PSH Thickness (ft)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1/1/1992
12/31/1992
12/31/1993
12/31/1994
12/31/1995
12/30/1996
12/30/1997
12/30/1998
12/30/1999
12/29/2000
12/29/2001
12/29/2002
12/29/2003
12/28/2004
12/28/2005
12/28/2006
12/28/2007
12/27/2008
12/27/2009
12/27/2010
12/27/2011
12/26/2012
12/26/2013
12/26/2014
12/26/2015
Date
Corrected Water Elevation
PSH

APPENDIX D
DISSOLVED-PHASE BTEX AND TPH CONSTITUENT GRAPHS

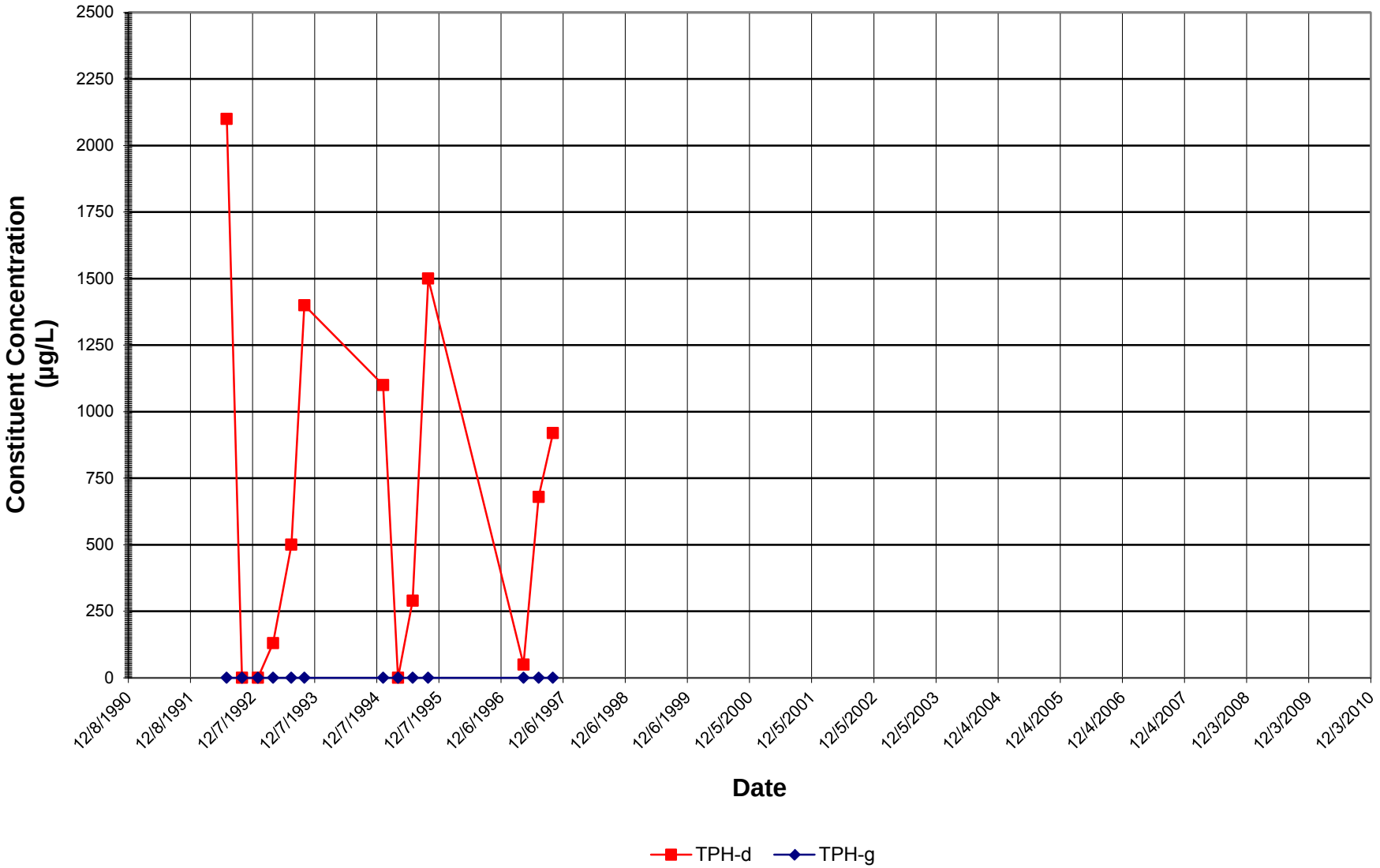

Dissolved-Phase BTEX Constituents Versus Time
Well BC-1
Constituent Concentration (µg/L)
2000.00
1750.00
1500.00
1250.00
1000.00
750.00
500.00
250.00
0.00
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
12/5/2000
12/5/2001
12/5/2002
12/5/2003
12/4/2004
12/4/2005
12/4/2006
12/4/2007
12/3/2008
12/3/2009
12/3/2010
12/3/2011
12/2/2012
12/2/2013
12/2/2014
12/2/2015
12/1/2016
Date
Benzene
Toluene
Ethylbenzene
Xylenes

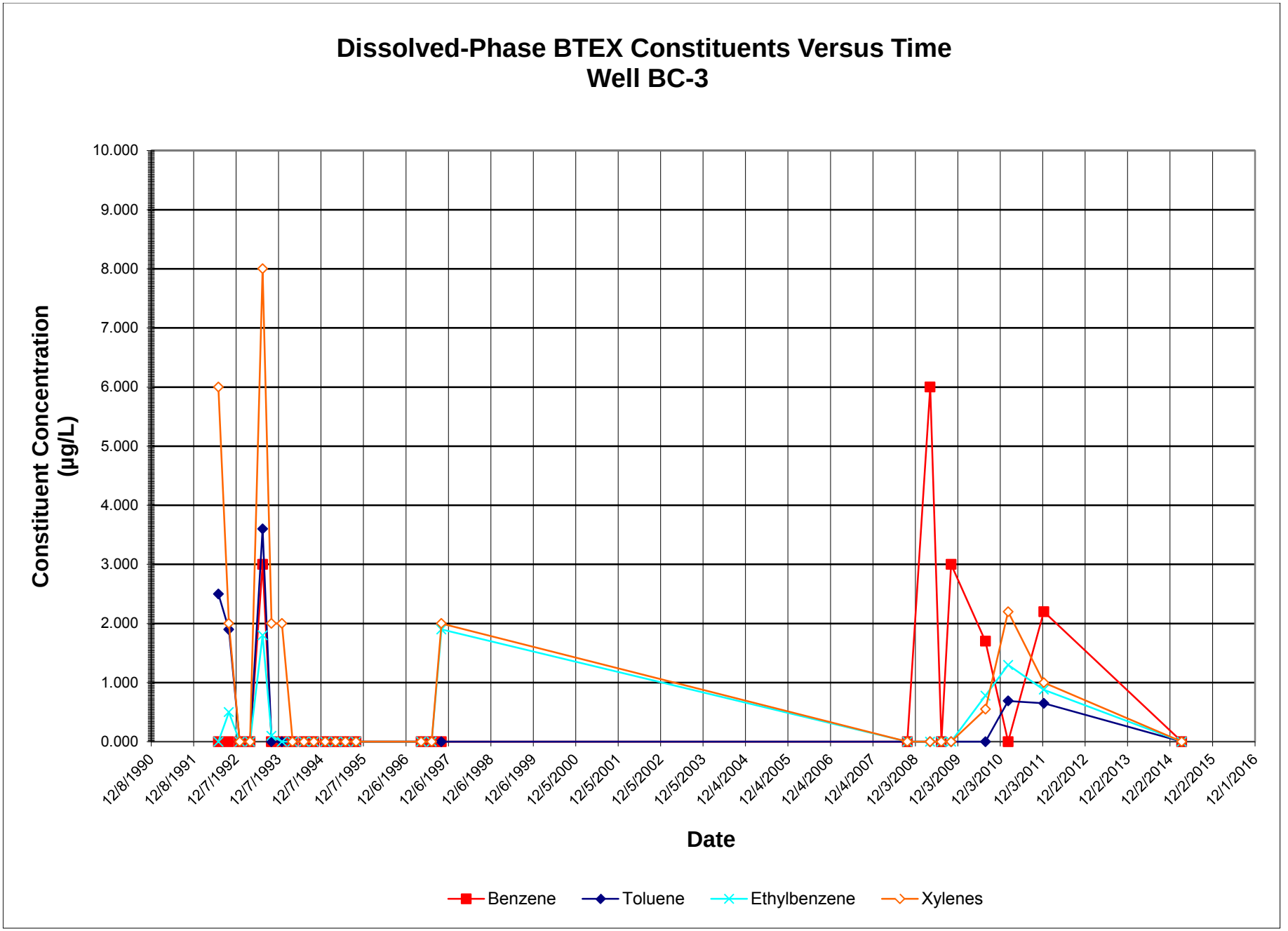

Dissolved-Phase TPH Constituents Versus Time
Well BC-1
Constituent Concentration (µg/L)
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
12/5/2000
12/5/2001
12/5/2002
12/5/2003
12/4/2004
12/4/2005
12/4/2006
12/4/2007
12/3/2008
12/3/2009
12/3/2010
12/3/2011
12/2/2012
12/2/2013
12/2/2014
12/2/2015
12/1/2016
Date
TPH-g
TPH-d

Dissolved-Phase BTEX Constituents Versus Time
Well BC-2

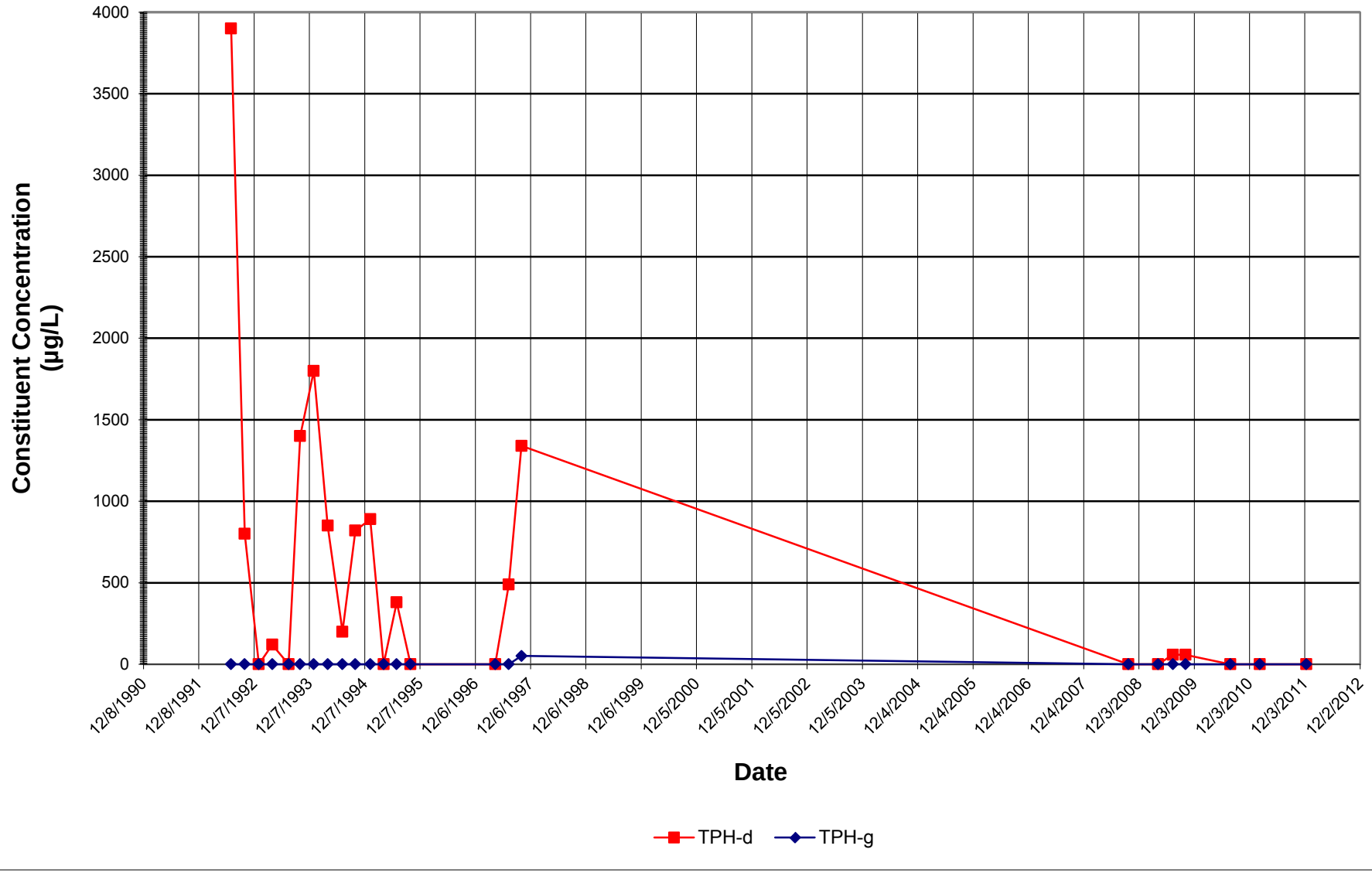


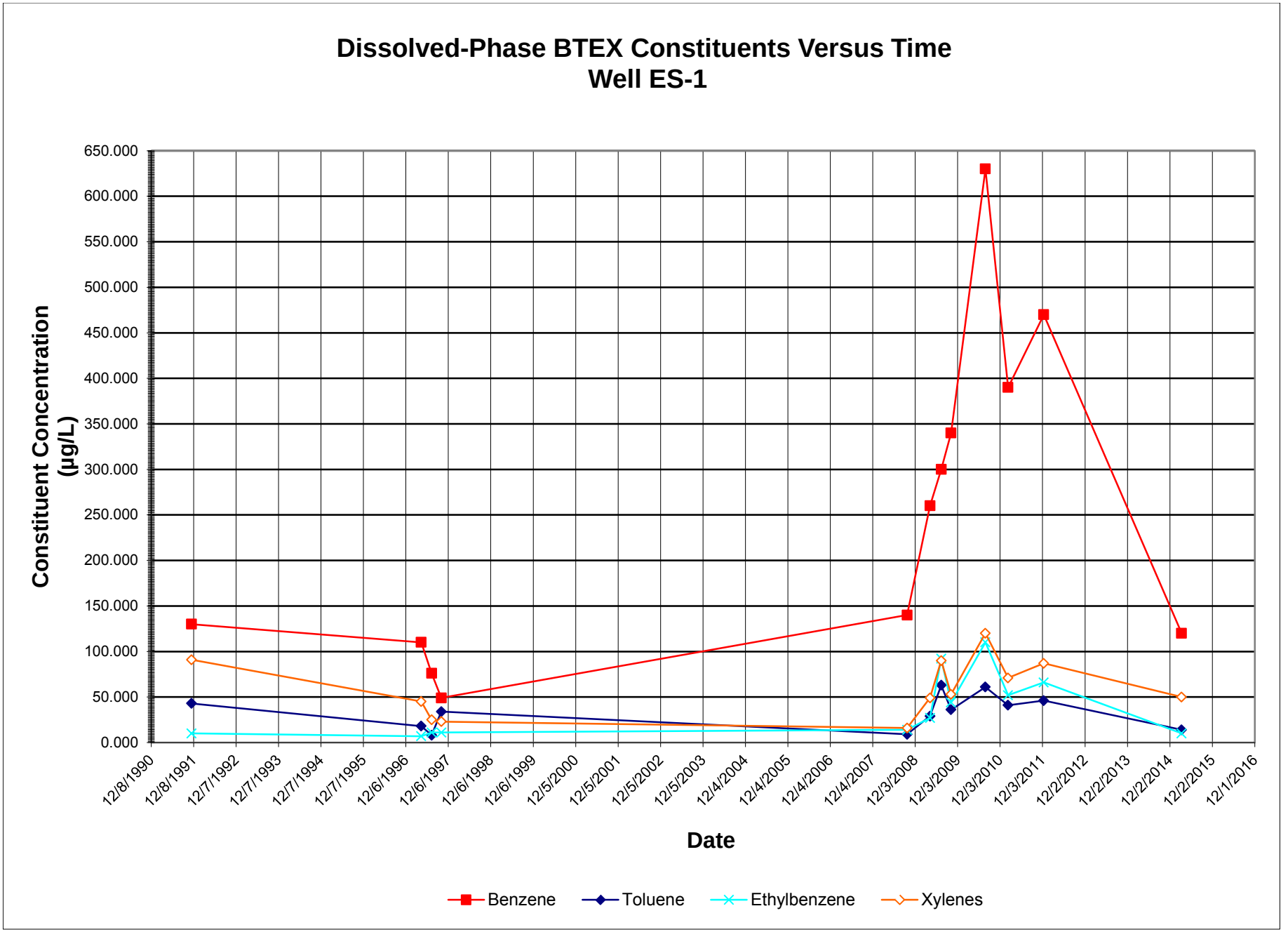
Dissolved-Phase TPH Constituents Versus Time
Well BC-2



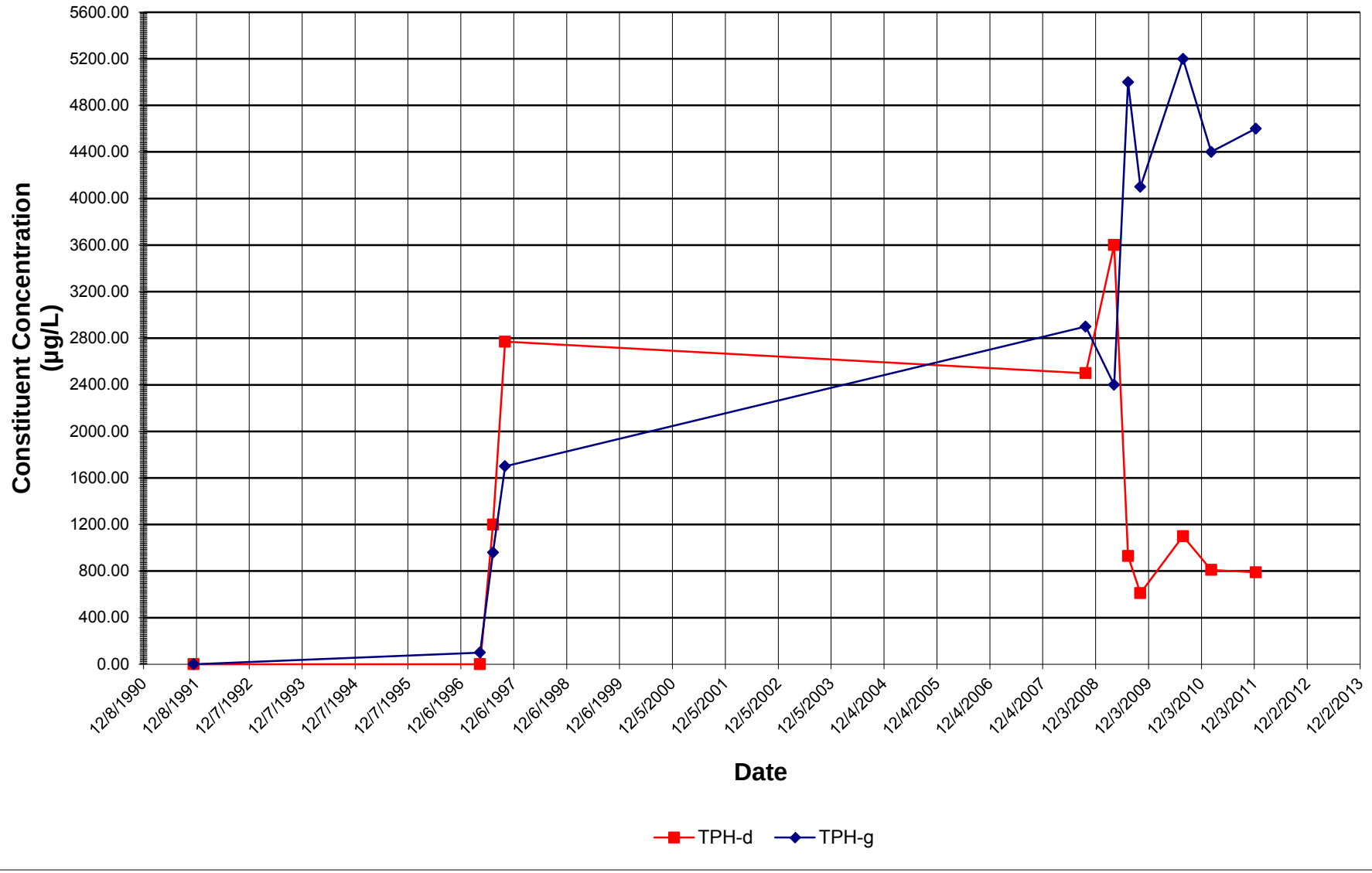

Dissolved-Phase BTEX Constituents Versus Time
Well BC-3
Constituent Concentration (µg/L)
10.000
9.000
8.000
7.000
6.000
5.000
4.000
3.000
2.000
1.000
0.000
12/8/1990
12/8/1991
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
12/5/2000
12/5/2001
12/5/2002
12/5/2003
12/4/2004
12/4/2005
12/4/2006
12/4/2007
12/3/2008
12/3/2009
12/3/2010
12/3/2011
12/2/2012
12/2/2013
12/2/2014
12/2/2015
12/1/2016
Date
Benzene
Toluene
Ethylbenzene
Xylenes

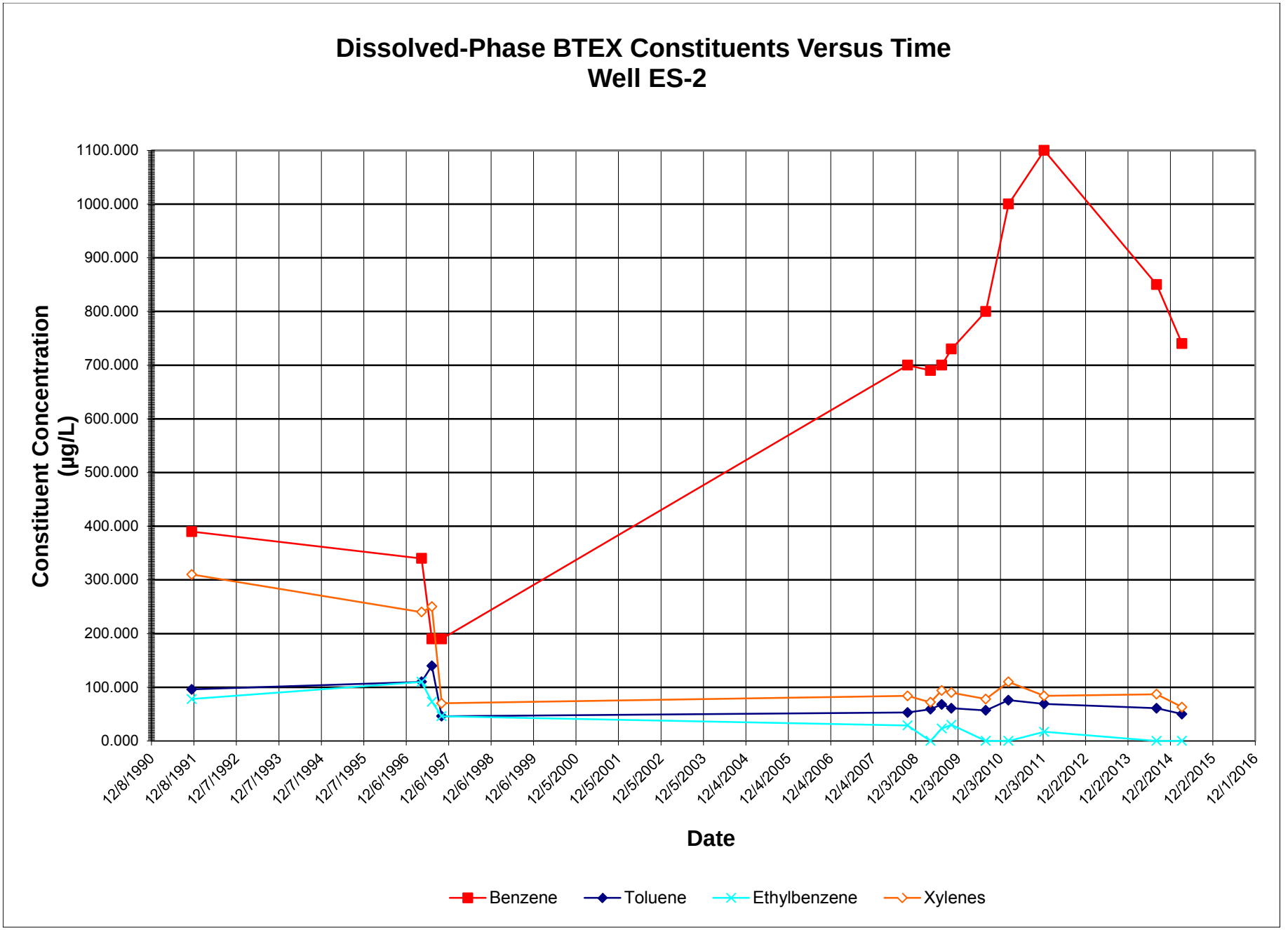
Dissolved-Phase TPH Constituents Versus Time
Well BC-3



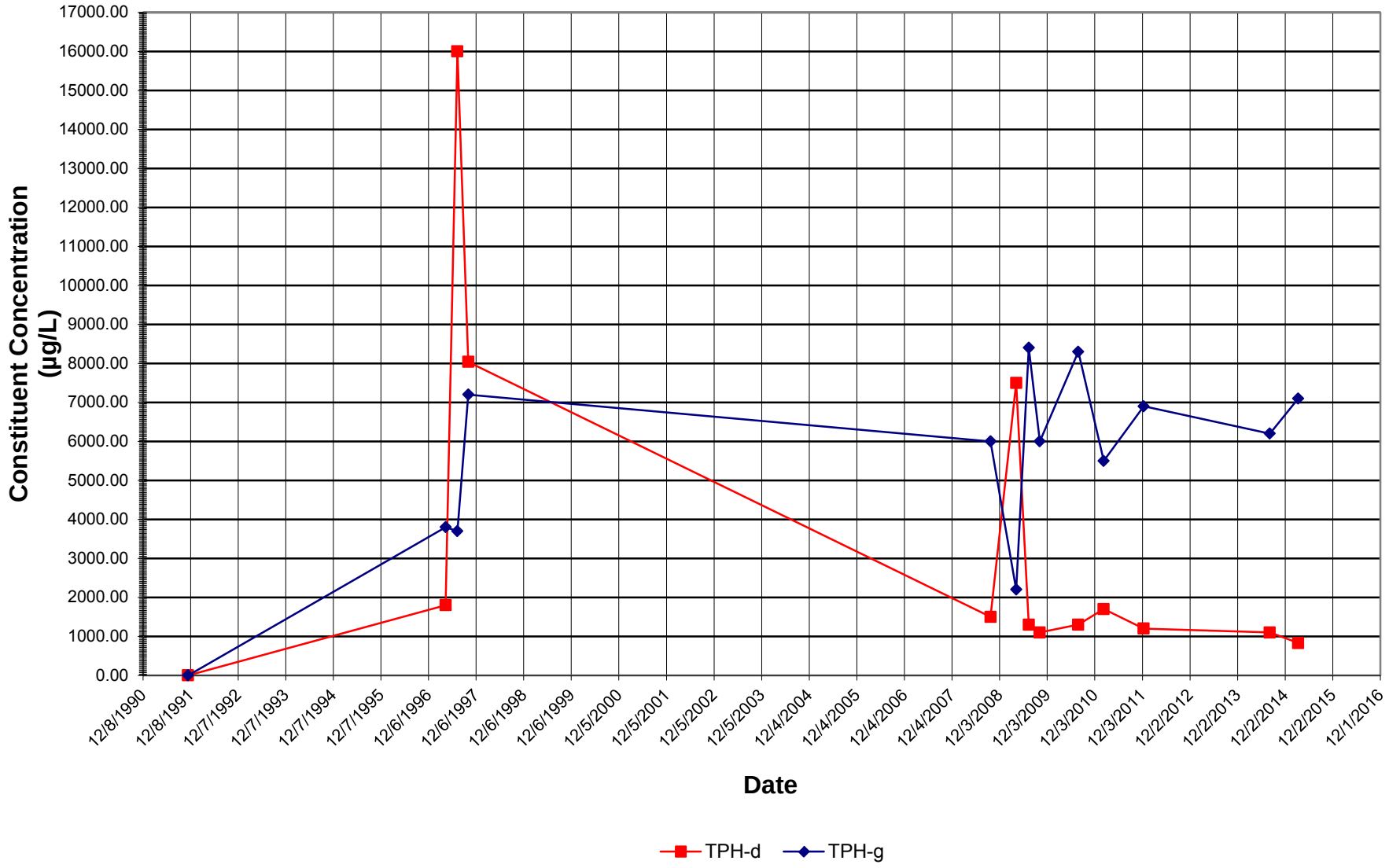

Dissolved-Phase BTEX Constituents Versus Time
Well ES-1
Constituent Concentration (µg/L)
650.000
600.000
550.000
500.000
450.000
400.000
350.000
300.000
250.000
200.000
150.000
100.000
50.000
0.000
12/8/1990
12/8/1991
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
12/5/2000
12/5/2001
12/5/2002
12/5/2003
12/4/2004
12/4/2005
12/4/2006
12/4/2007
12/3/2008
12/3/2009
12/3/2010
12/3/2011
12/2/2012
12/2/2013
12/2/2014
12/2/2015
12/1/2016
Date
Benzene
Toluene
Ethylbenzene
Xylenes

Dissolved-Phase TPH Constituents Versus Time
Well ES-1

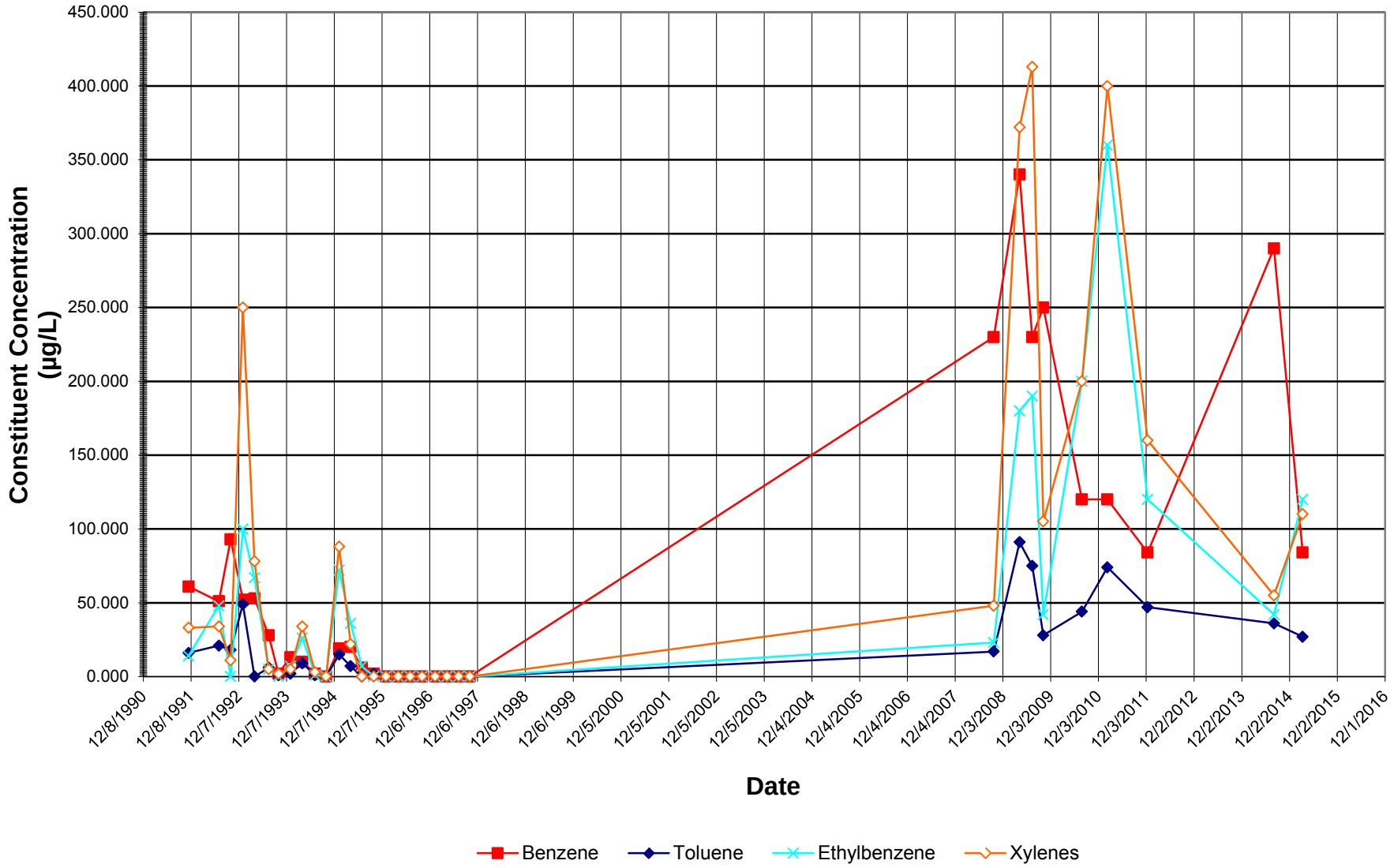


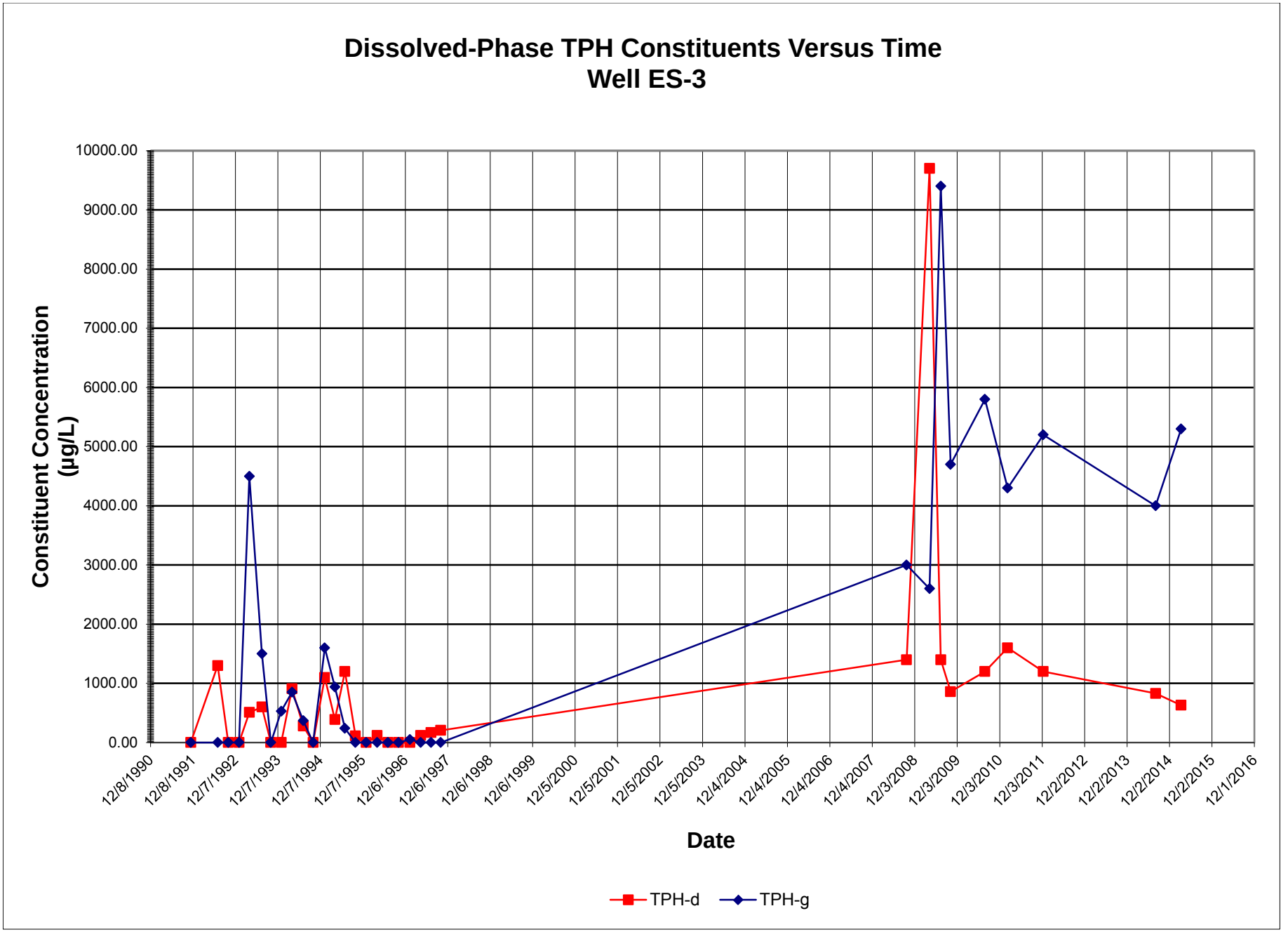

Dissolved-Phase BTEX Constituents Versus Time
Well ES-2
Constituent Concentration (µg/L)
1100.000
1000.000
900.000
800.000
700.000
600.000
500.000
400.000
300.000
200.000
100.000
0.000
12/8/1990
12/8/1991
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
12/5/2000
12/5/2001
12/5/2002
12/5/2003
12/4/2004
12/4/2005
12/4/2006
12/4/2007
12/3/2008
12/3/2009
12/3/2010
12/3/2011
12/2/2012
12/2/2013
12/2/2014
12/2/2015
12/1/2016
Date
Benzene
Toluene
Ethylbenzene
Xylenes

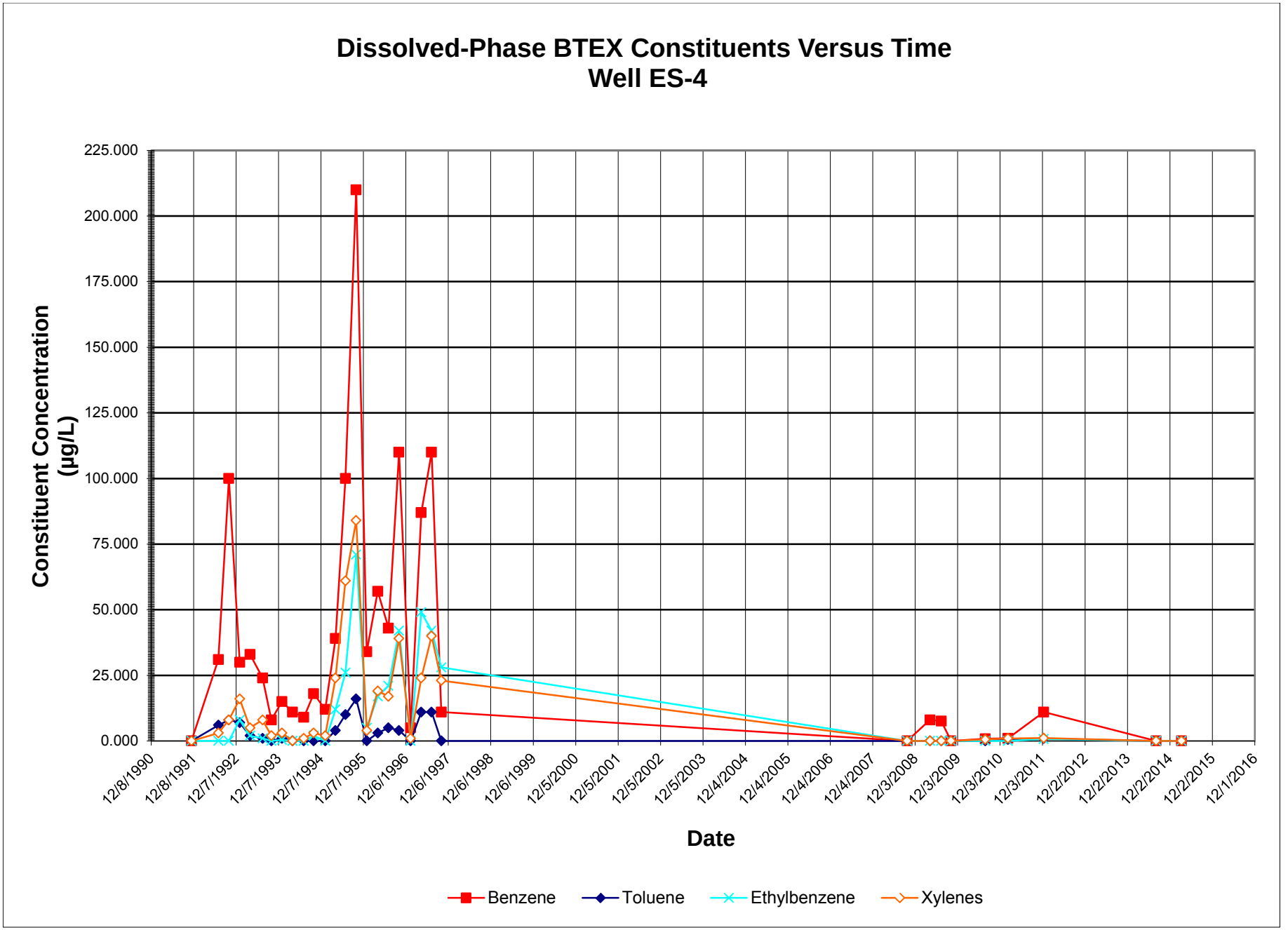
Dissolved-Phase TPH Constituents Versus Time
Well ES-2



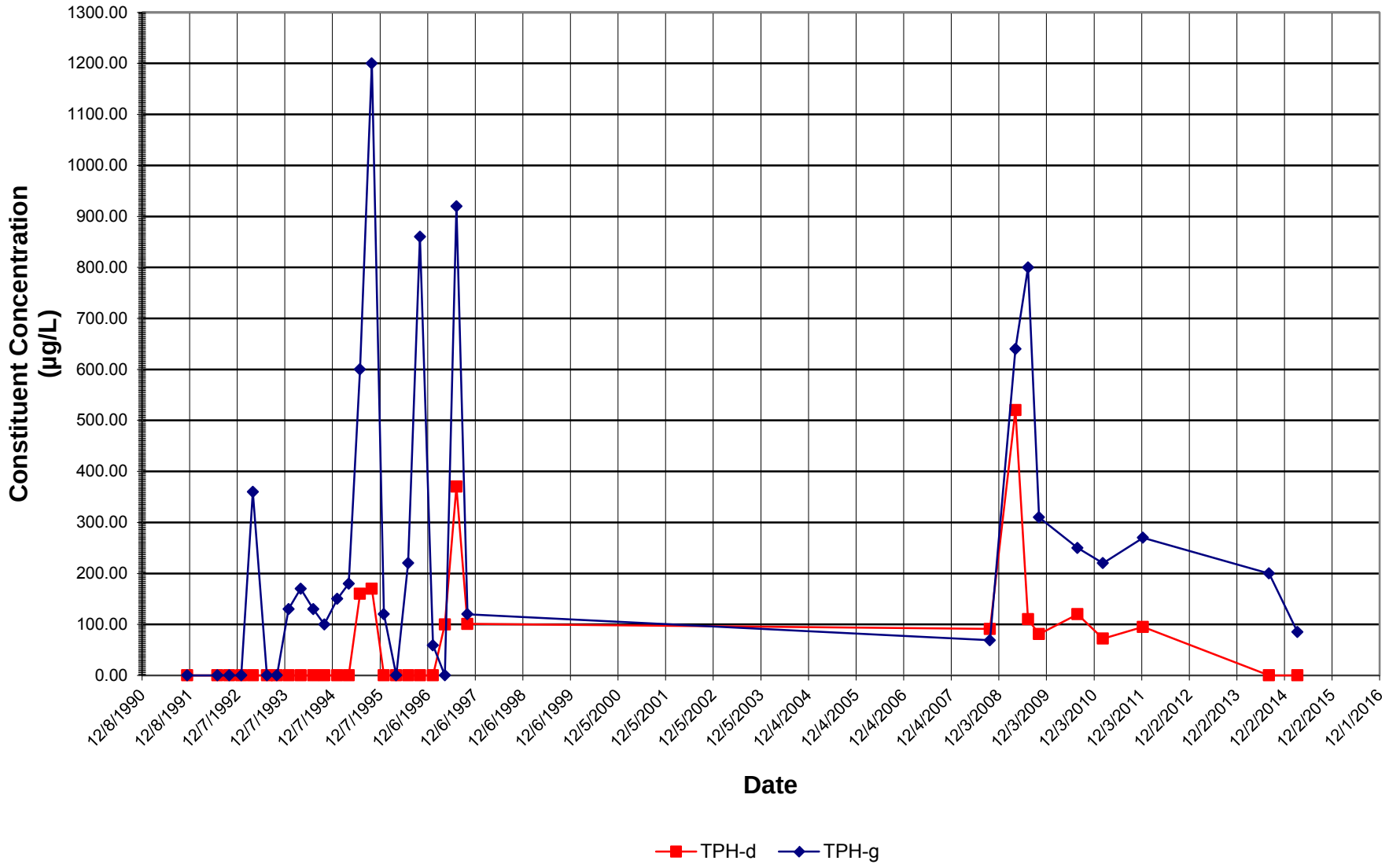
Dissolved-Phase BTEX Constituents Versus Time
Well ES-3



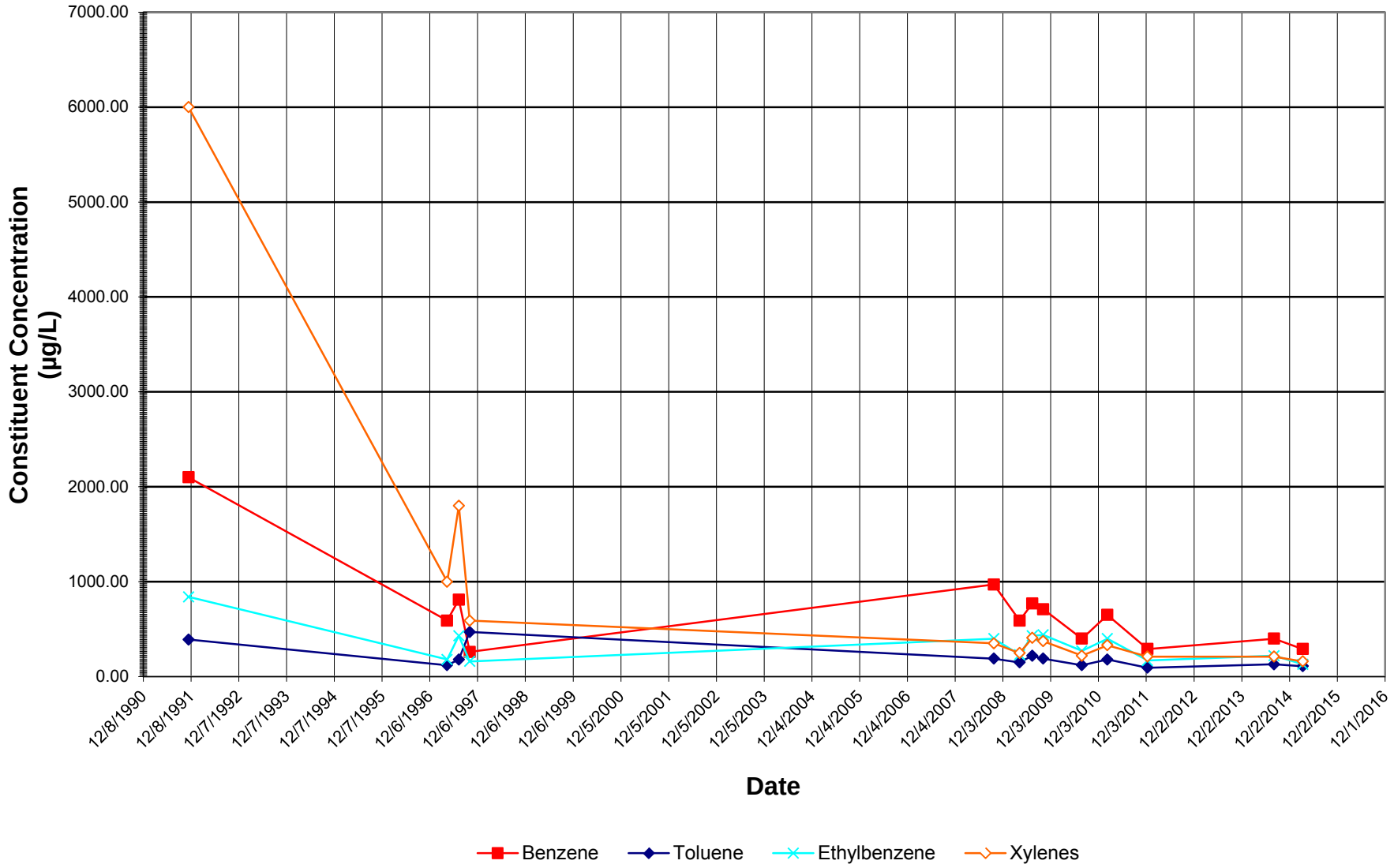

Dissolved-Phase TPH Constituents Versus Time
Well ES-3
Constituent Concentration (µg/L)
10000.00
9000.00
8000.00
7000.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
12/8/1990
12/8/1991
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
12/5/2000
12/5/2001
12/5/2002
12/5/2003
12/4/2004
12/4/2005
12/4/2006
12/4/2007
12/3/2008
12/3/2009
12/3/2010
12/3/2011
12/2/2012
12/2/2013
12/2/2014
12/2/2015
12/1/2016
Date
TPH-d
TPH-g


Dissolved-Phase BTEX Constituents Versus Time
Well ES-4
Constituent Concentration (µg/L)
225.000
200.000
175.000
150.000
125.000
100.000
75.000
50.000
25.000
0.000
12/8/1990
12/8/1991
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
12/5/2000
12/5/2001
12/5/2002
12/5/2003
12/4/2004
12/4/2005
12/4/2006
12/4/2007
12/3/2008
12/3/2009
12/3/2010
12/3/2011
12/2/2012
12/2/2013
12/2/2014
12/2/2015
12/1/2016
Date
Benzene
Toluene
Ethylbenzene
Xylenes

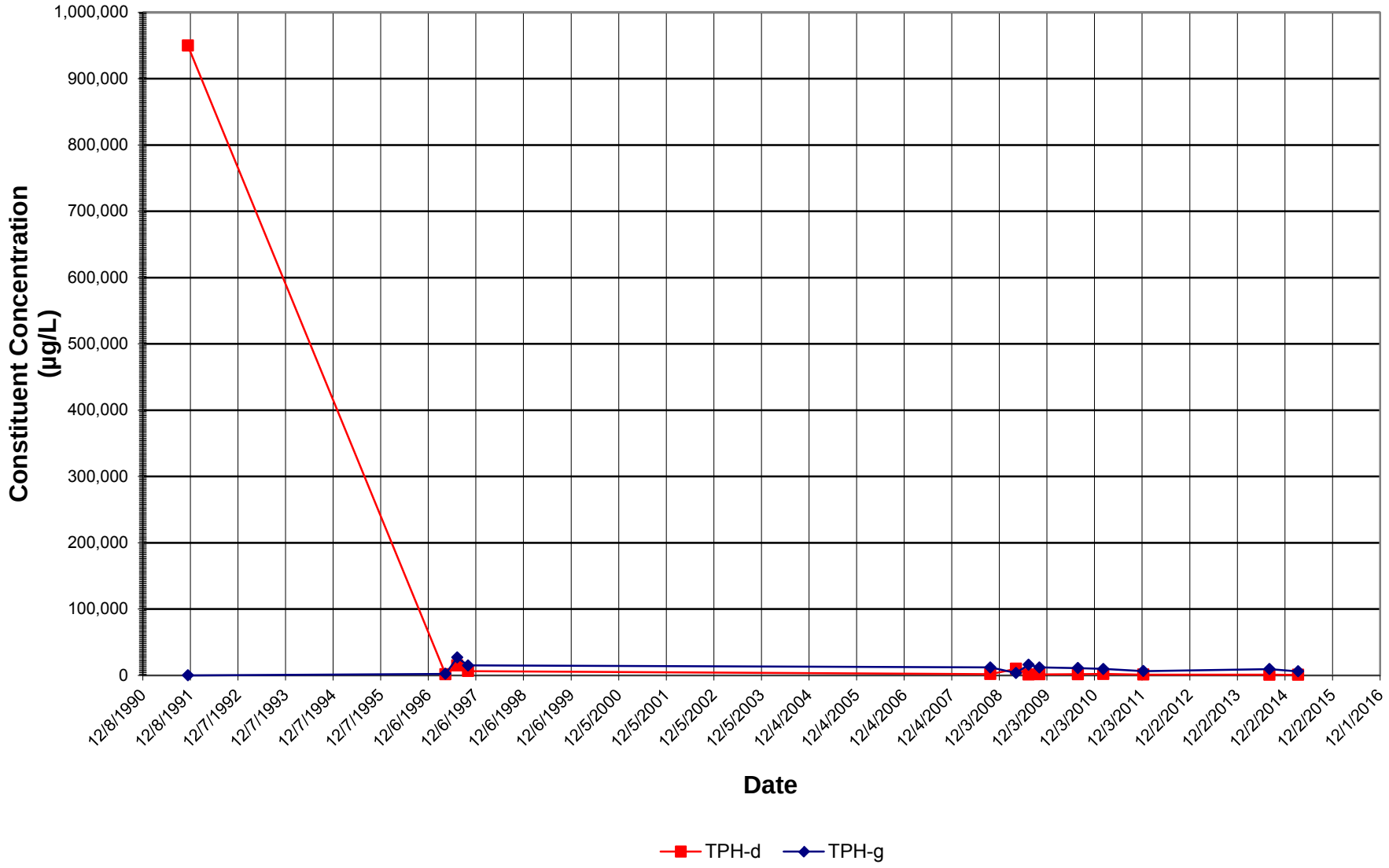
Dissolved-Phase TPH Constituents Versus Time
Well ES-4



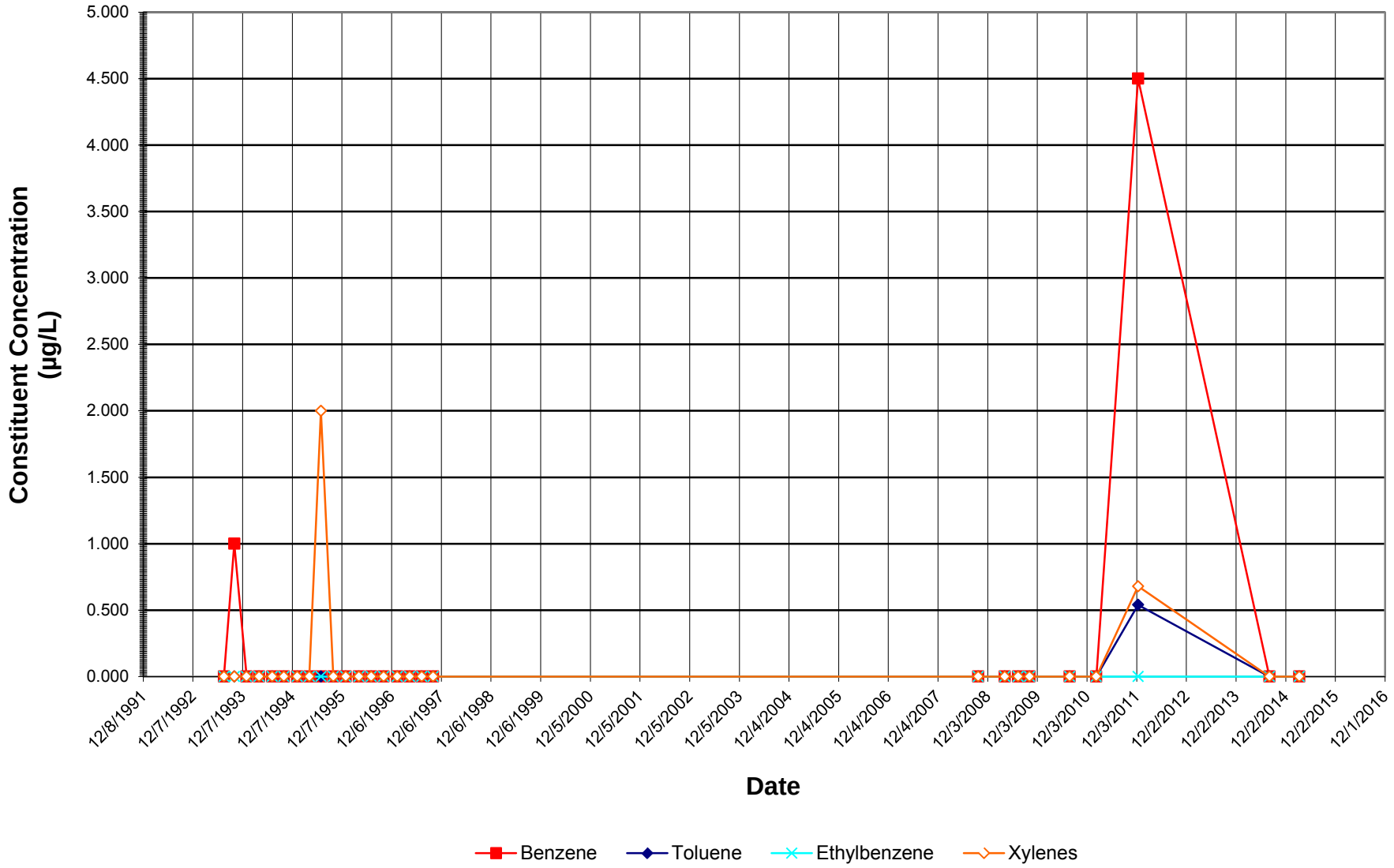
Dissolved-Phase BTEX Constituents Versus Time
Well ES-5



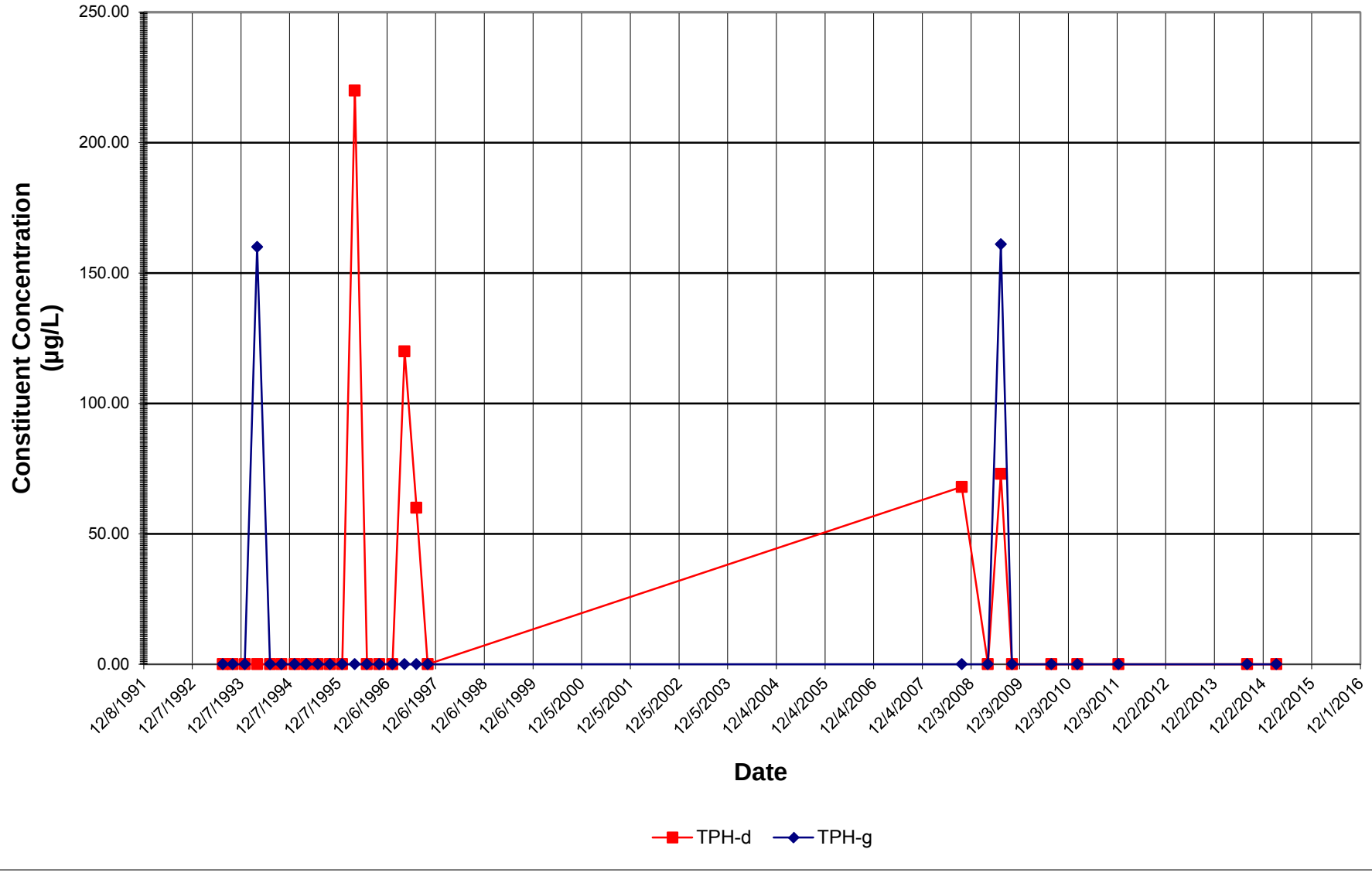
Dissolved-Phase TPH Constituents Versus Time
Well ES-5



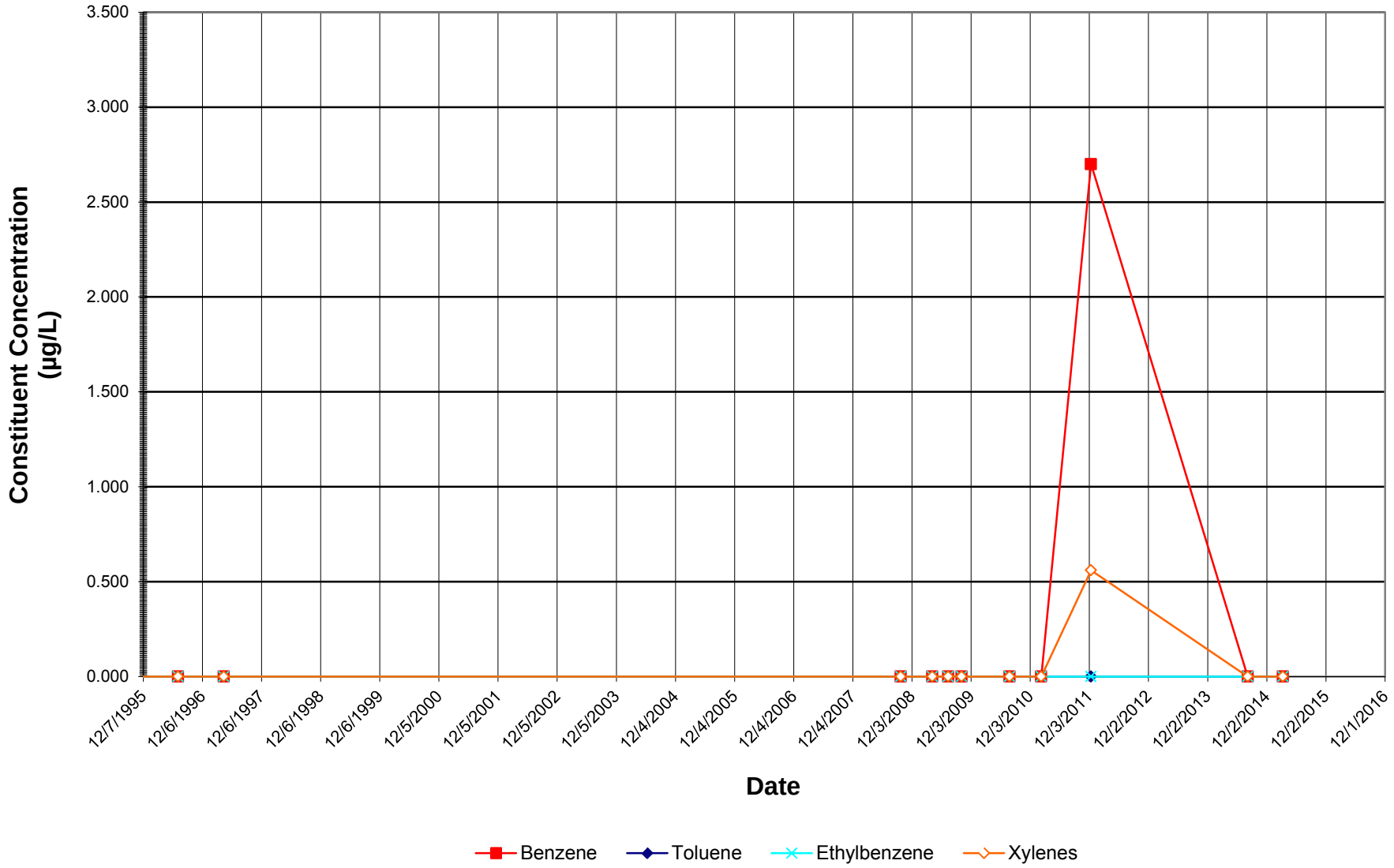
Dissolved-Phase BTEX Constituents Versus Time
Well ES-6



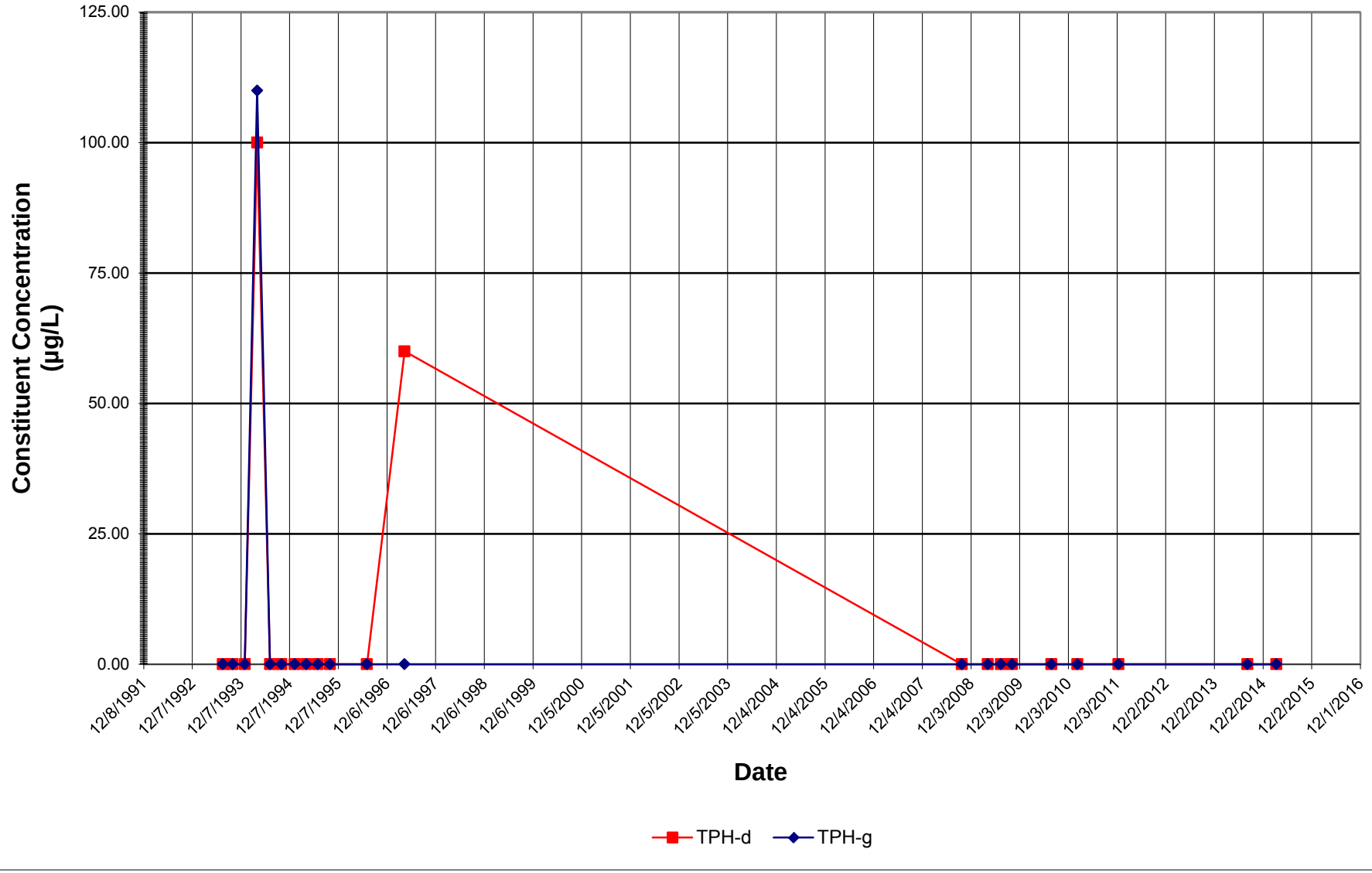
Dissolved-Phase TPH Constituents Versus Time
Well ES-6



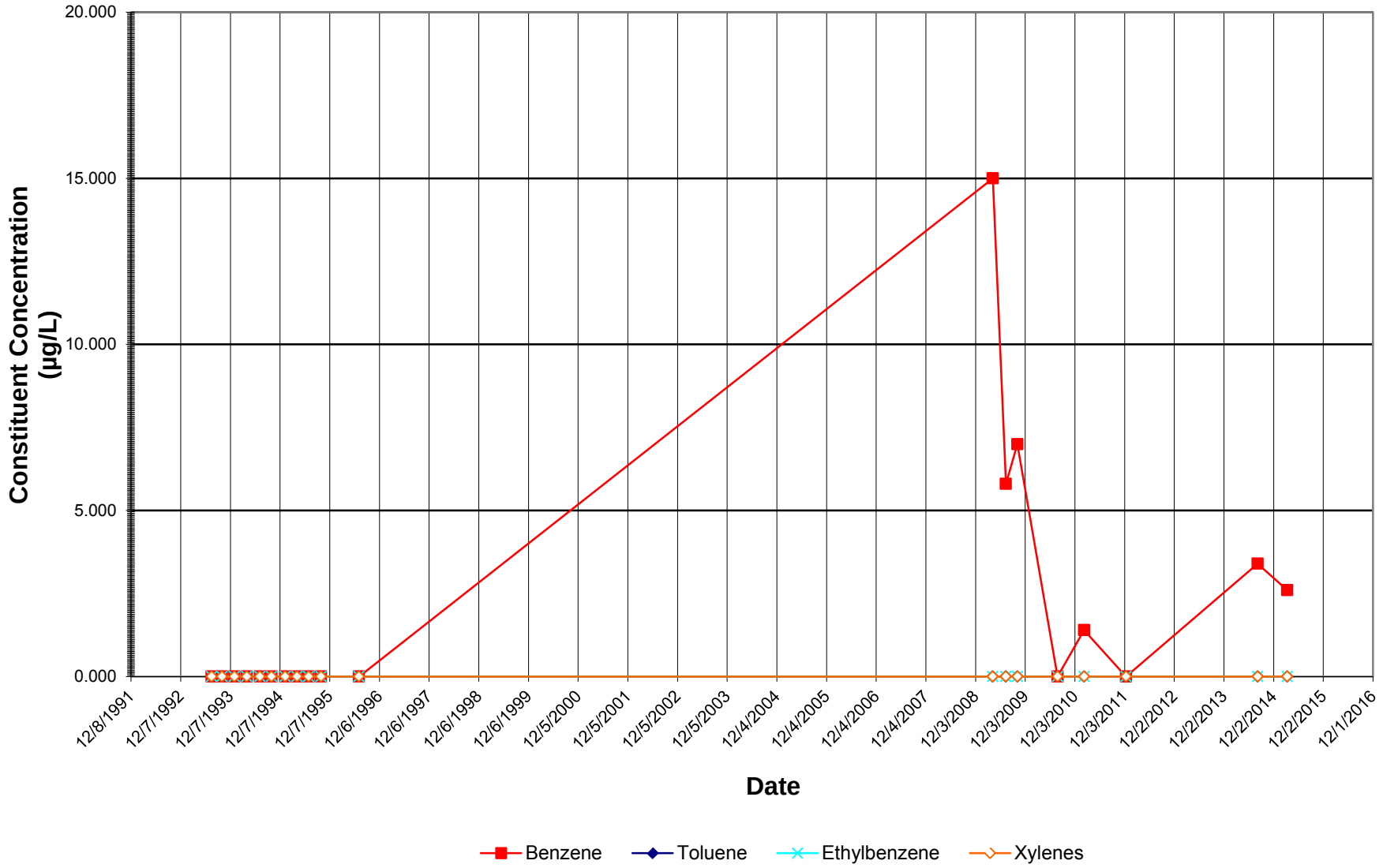
Dissolved-Phase BTEX Constituents Versus Time
Well ES-7



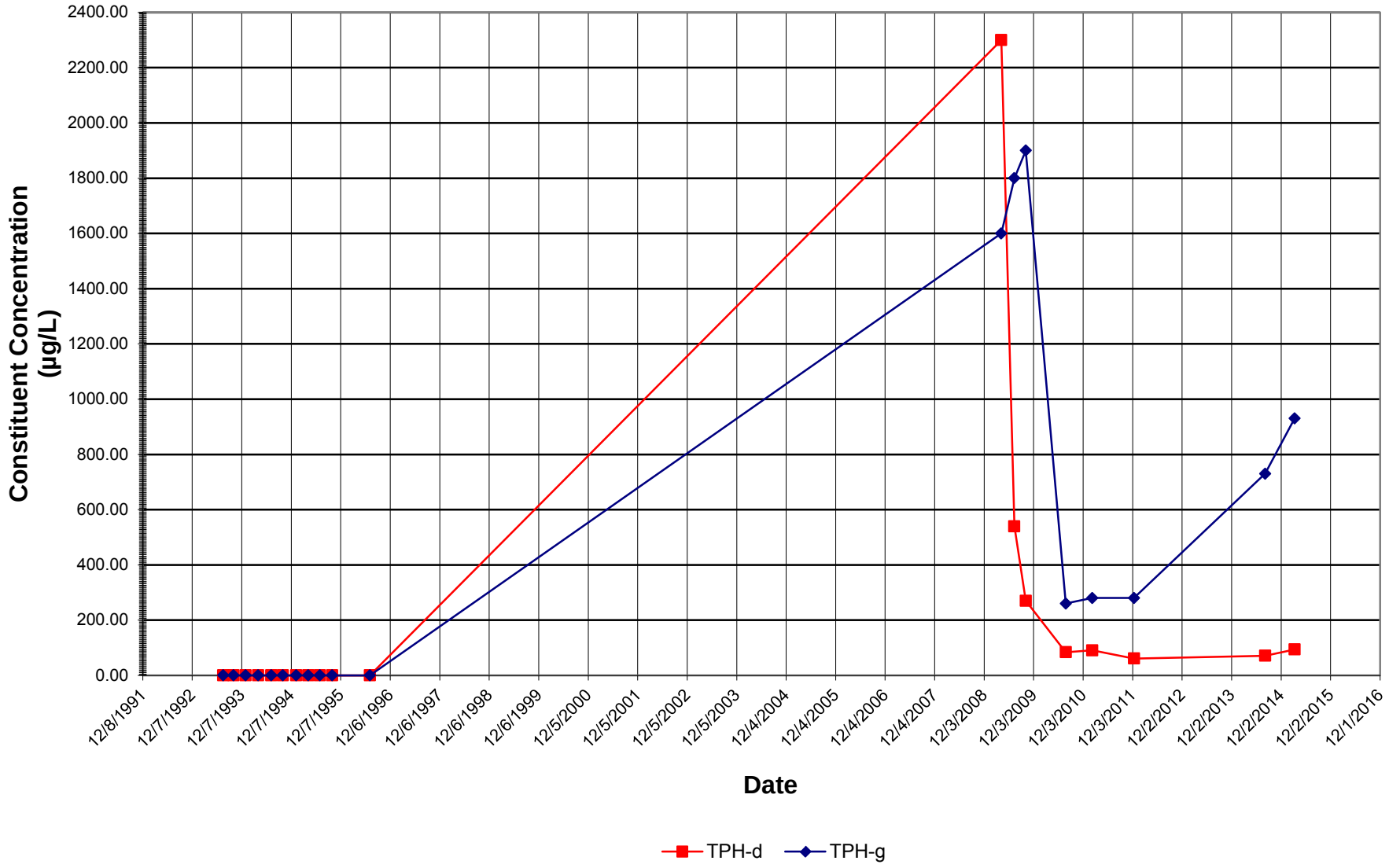
Dissolved-Phase TPH Constituents Versus Time
Well ES-7



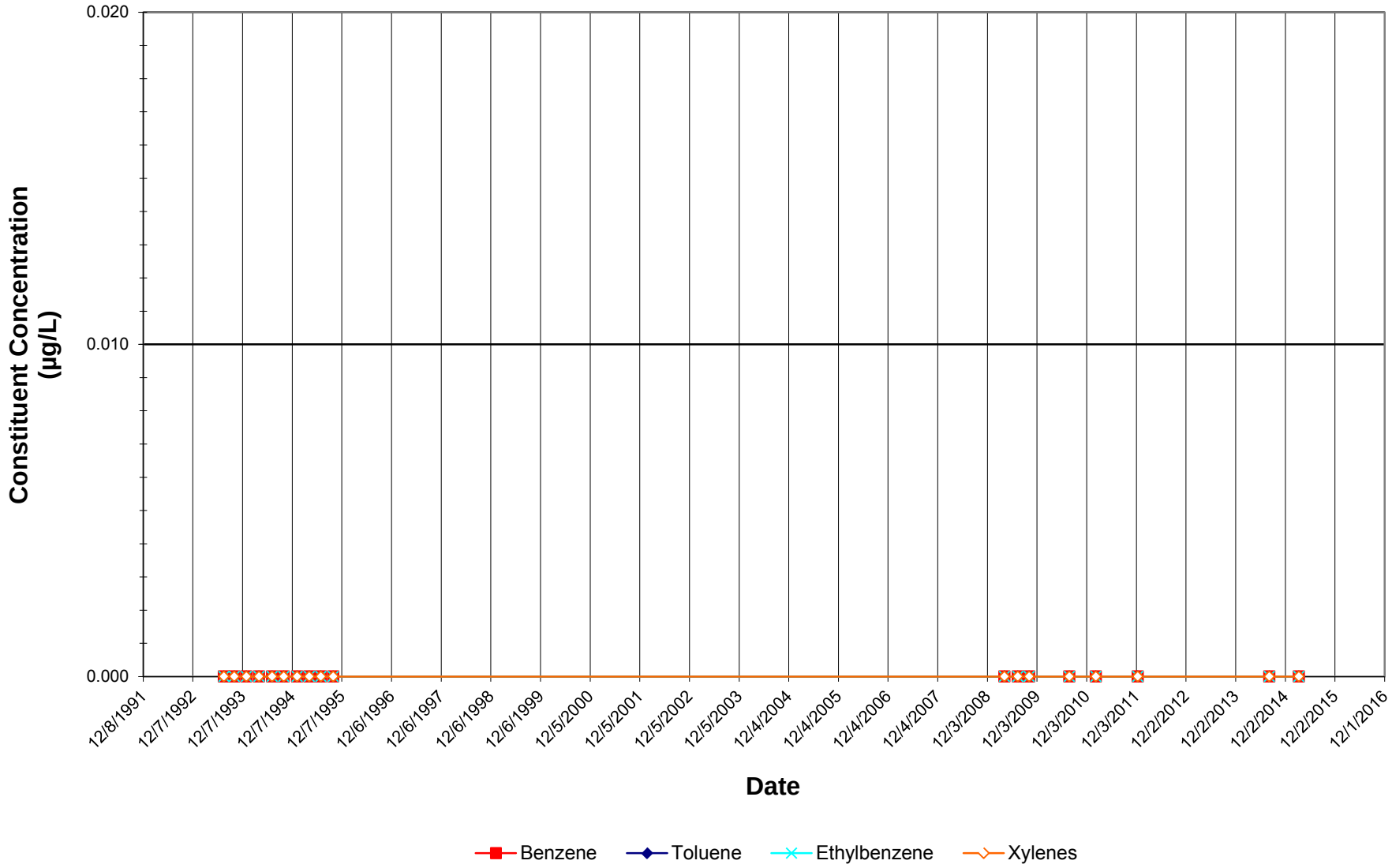
Dissolved-Phase BTEX Constituents Versus Time
Well ES-8



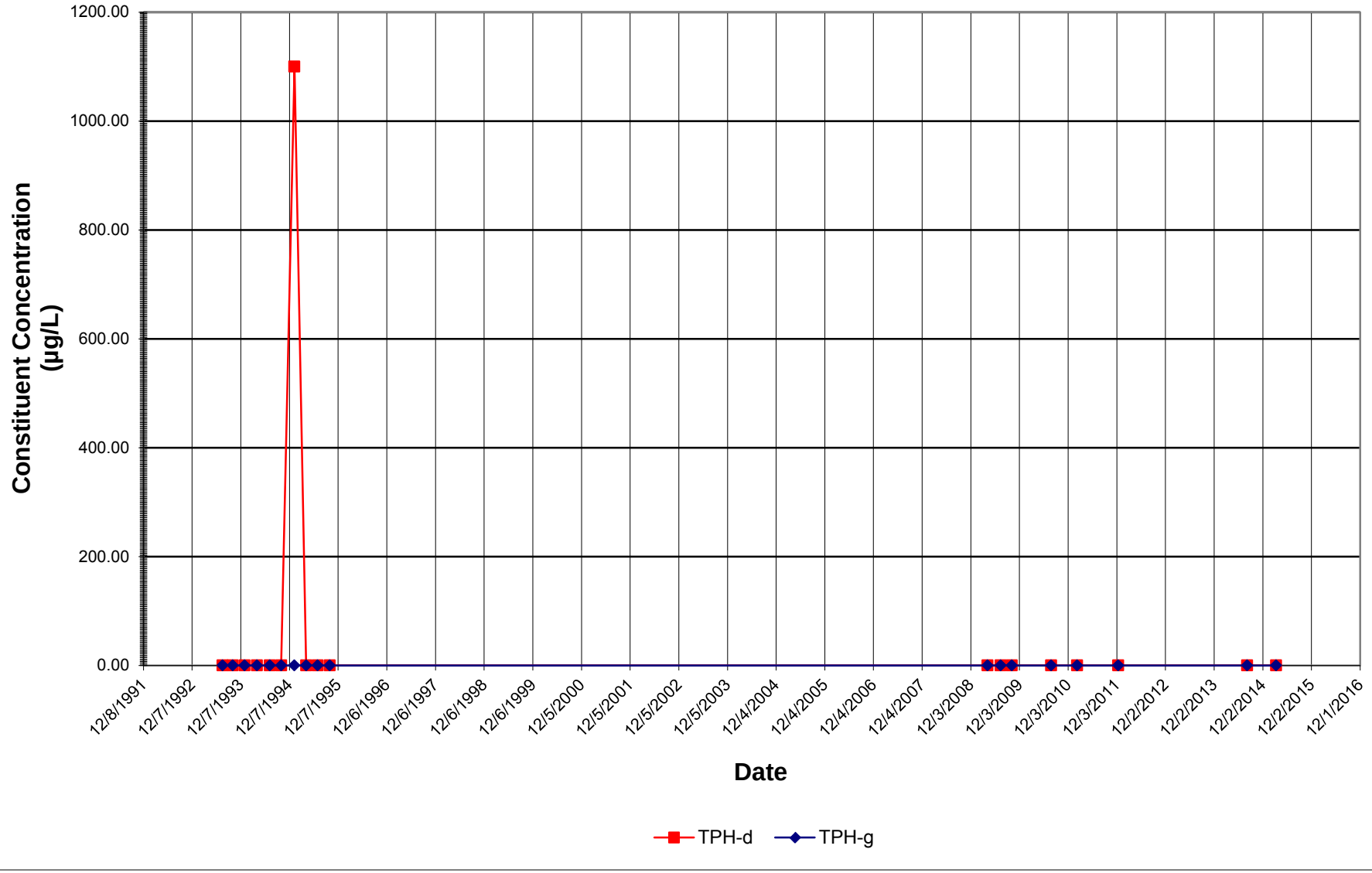
Dissolved-Phase TPH Constituents Versus Time
Well ES-8



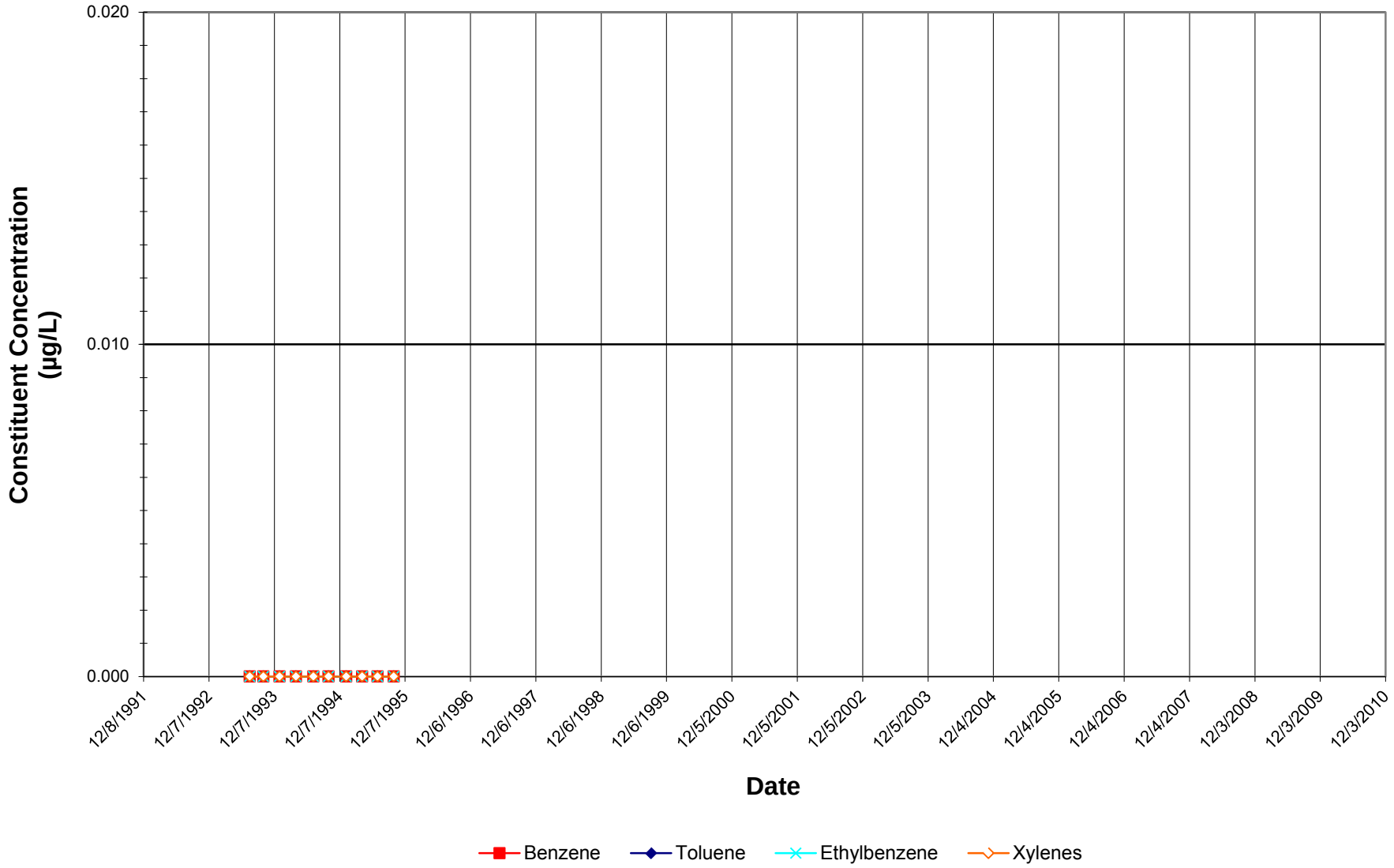
Dissolved-Phase BTEX Constituents Versus Time
Well ES-9



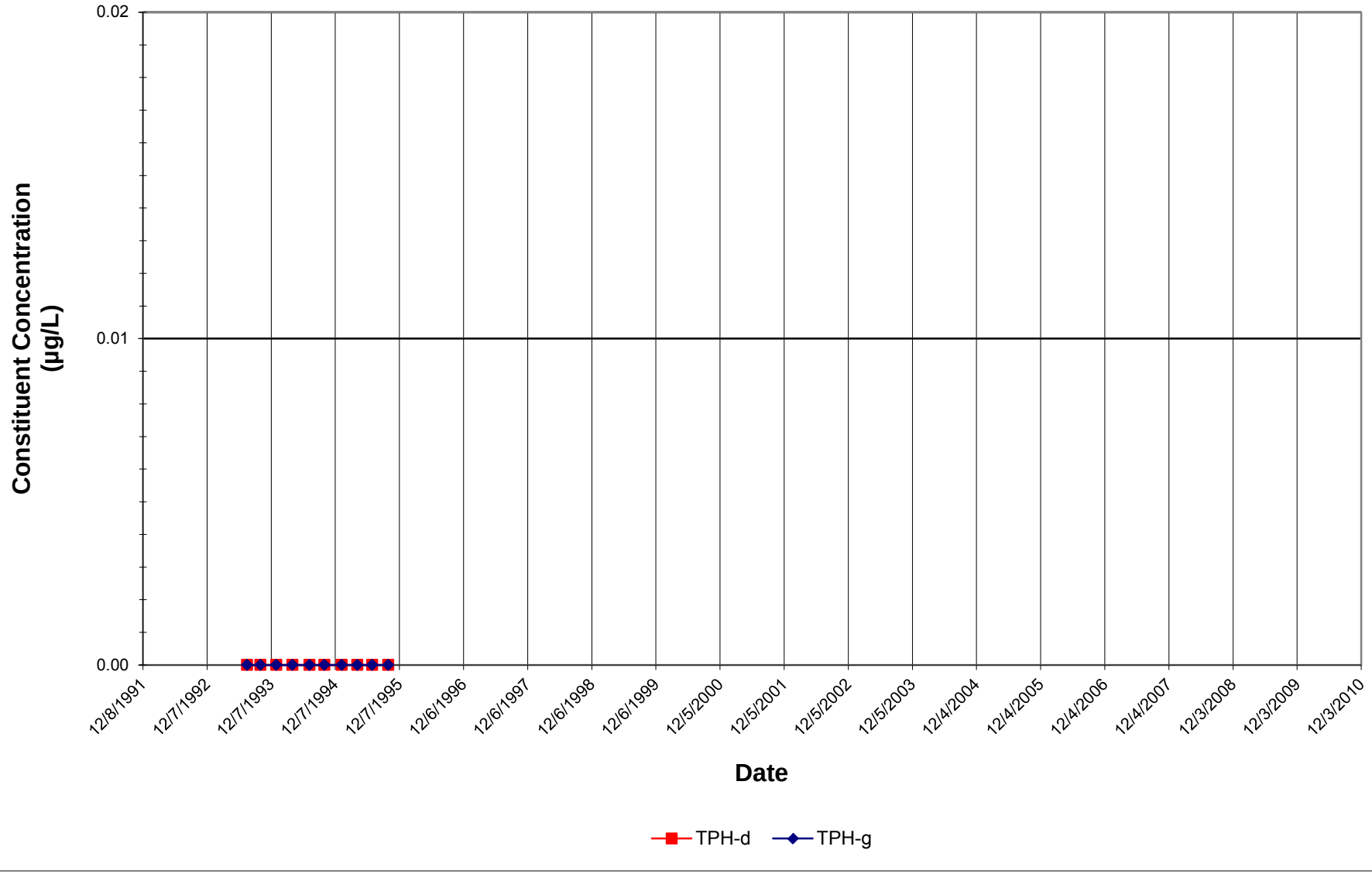
Dissolved-Phase TPH Constituents Versus Time
Well ES-9

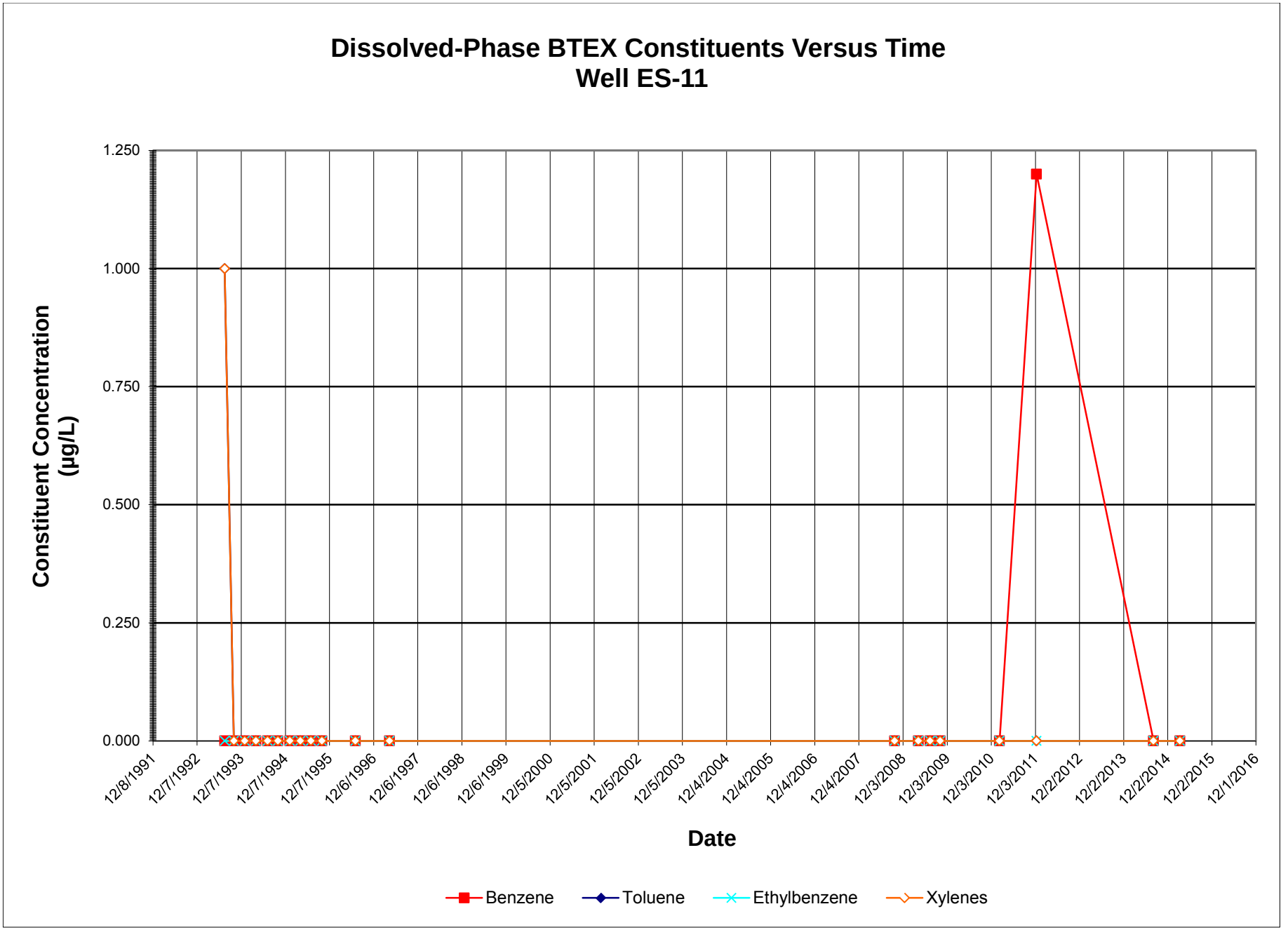


Dissolved-Phase BTEX Constituents Versus Time
Well ES-10

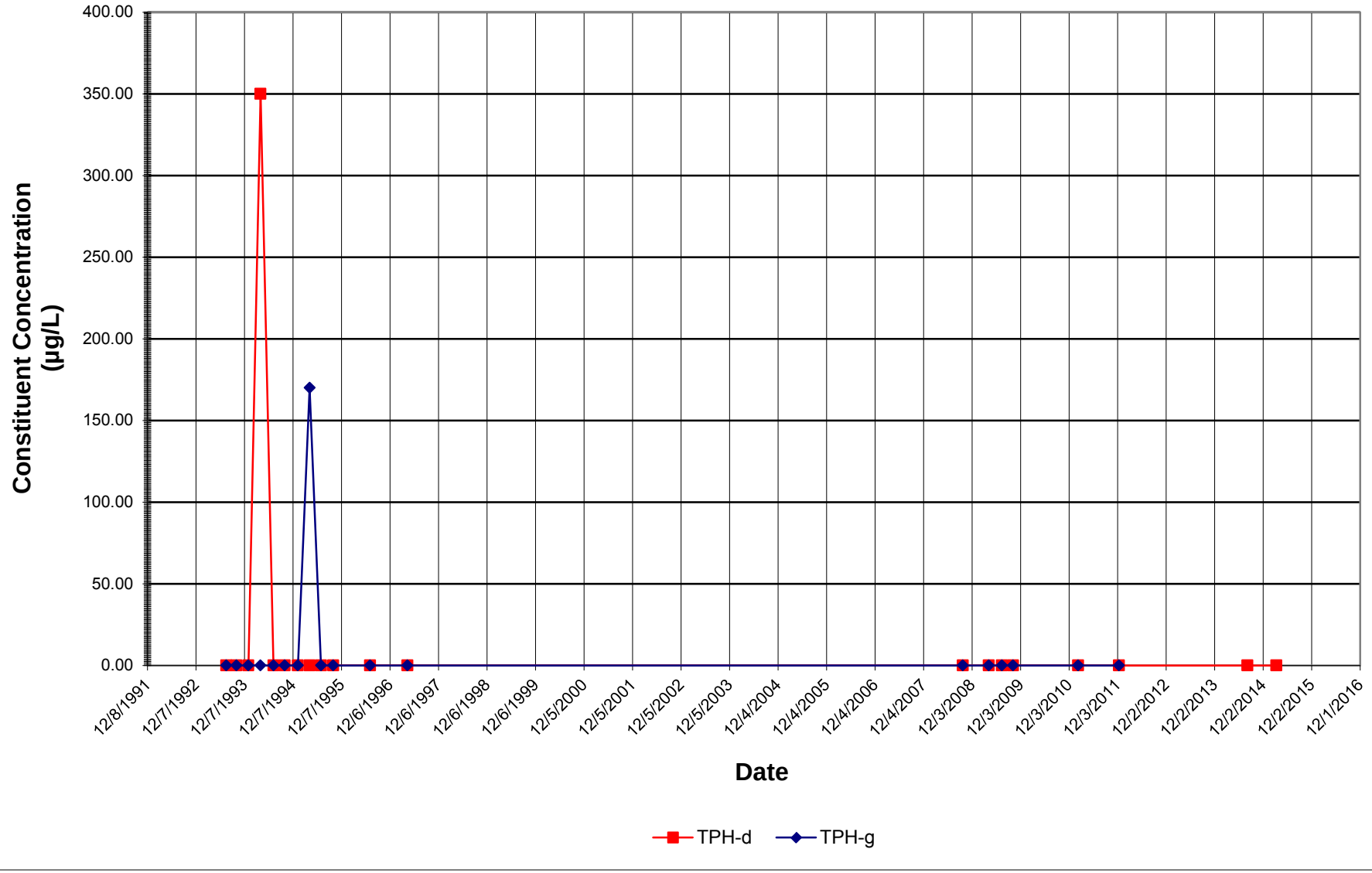


Dissolved-Phase TPH Constituents Versus Time
Well ES-10

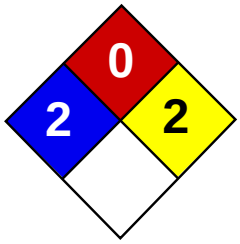



Dissolved-Phase BTEX Constituents Versus Time
Well ES-11
Constituent Concentration (µg/L)
1.250
1.000
0.750
0.500
0.250
0.000
12/8/1991
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
12/5/2000
12/5/2001
12/5/2002
12/5/2003
12/4/2004
12/4/2005
12/4/2006
12/4/2007
12/3/2008
12/3/2009
12/3/2010
12/3/2011
12/2/2012
12/2/2013
12/2/2014
12/2/2015
12/1/2016
Date
Benzene
Toluene
Ethylbenzene
Xylenes

Dissolved-Phase TPH Constituents Versus Time
Well ES-11



APPENDIX E
INJECTION CHEMICAL SAFETY DATA SHEETS



Material Safety Data Sheet
Sodium percarbonate MSDS

Section 1: Chemical Product and Company Identification

Product Name: Sodium percarbonate

Catalog Codes: SLS4516

CAS#: 15630-89-4

RTECS: Not available.

TSCA: TSCA 8(b) inventory: Sodium percarbonate

CI#: Not applicable.

Synonym: Sodium carbonate peroxyhydrate

Chemical Name: Carbonic acid disodium salt, compd. with hydrogen peroxide

Chemical Formula: Na2CO3.1-1/2H2O2

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Sodium percarbonate	15630-89-4	100

Toxicological Data on Ingredients: Sodium percarbonate: ORAL (LD50): Acute: 2400 mg/kg [Rat]. 2200 mg/kg [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (irritant), of eye contact (irritant). Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (sensitizer). Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure is not known to aggravate medical condition.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cold water may be used. Cover the irritated skin with an emollient. If irritation persists, seek medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
Do not allow water to enter container because of violent reaction. Keep container tightly closed. Powerful oxidizing agent; may ignite oxidizable materials.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. If necessary: Neutralize the residue with a dilute solution of acetic acid.

Large Spill:
Oxidizing material. Stop leak if without risk. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of acetic acid.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Keep away from combustible material Do not ingest. Do not breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes Keep away from incompatibles such as reducing agents, organic materials, metals, acids, moisture.

Storage: Oxidizing materials should be stored in a separate safety storage cabinet or room.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Crystals solid.)

Odor: Odorless. (Slight.)

Taste: Acrid. (Slight.)

Molecular Weight: 157.01 g/mole

Color: White.

pH (1% soln/water): 10 [Basic.]

Boiling Point: Not available.

Melting Point: Not available.

Critical Temperature: Not available.

Specific Gravity: Not available.

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility:
Soluble in hot water. Partially soluble in cold water. Very slightly soluble in methanol. Insoluble in diethyl ether, n-octanol.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances:
Highly reactive with reducing agents, acids. Reactive with organic materials, metals, moisture.

Corrosivity:
Corrosive in presence of aluminum, of zinc, of copper. Slightly corrosive to corrosive in presence of steel. Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Eye contact. Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 2200 mg/kg [Mouse].

Chronic Effects on Humans: Not available.

Other Toxic Effects on Humans:
Very hazardous in case of skin contact (irritant). Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (sensitizer).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Material is irritating to mucous membranes and upper respiratory tract.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 5.1: Oxidizing material.

Identification: : Oxidizing Solid, n.o.s. (Sodium Percarbonate) : UN1479 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
New Jersey: Sodium percarbonate TSCA 8(b) inventory: Sodium percarbonate

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS C: Oxidizing material. CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R38- Irritating to skin. R41- Risk of serious damage to eyes.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 0

Reactivity: 2

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 0

Reactivity: 2

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: -Manufacturer's Material Safety Data Sheet.

Other Special Considerations: Not available.

Created: 10/11/2005 12:36 PM

Last Updated: 05/21/2013 12:00 PM

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Fisher Scientific

Part of Thermo Fisher Scientific

SAFETY DATA SHEET

Creation Date 24-Nov-2010 **Revision Date** 06-Jul-2014 **Revision Number** 1

1. Identification

Product Name **Sodium Persulfate**

Cat No. : **BP26371, O61141, 06114500**

Synonyms Sodium peroxydisulfate

Recommended Use Laboratory chemicals.

Uses advised against No Information available

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Oxidizing solids	Category 3
Acute oral toxicity	Category 4
Skin Corrosion/irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Respiratory Sensitization	Category 1
Skin Sensitization	Category 1
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Danger

Hazard Statements
May intensify fire; oxidizer
Harmful if swallowed
Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause respiratory irritation

Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
In case of inadequate ventilation wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep/Store away from clothing/ other combustible materials
Take any precaution to avoid mixing with combustibles
Inhalation
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
If skin irritation or rash occurs: Get medical advice/attention
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Ingestion
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition / information on ingredients

Component	CAS-No	Weight %
Sodium persulfate	7775-27-1	>95

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Obtain medical attention.

Ingestion Do not induce vomiting. Call a physician or Poison Control Center immediately.

Most important symptoms/effects May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Flooding quantities of water.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature Not applicable

Explosion Limits
Upper No data available
Lower No data available

Oxidizing Properties Oxidizer

Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Oxidizer: Contact with combustible/organic material may cause fire. Containers may explode when heated or if contaminated with water. Decomposes violently at elevated temperatures. May ignite combustibles (wood paper, oil, clothing, etc.).

Hazardous Combustion Products
Sulfur oxides.
Sulfur oxides oxygen

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
2	2	2	OX

6. Accidental release measures

Personal Precautions Use personal protective equipment. Ensure adequate ventilation. Avoid dust formation. Avoid contact with skin, eyes and clothing.

Environmental Precautions See Section 12 for additional ecological information.

Methods for Containment and Clean Up Keep combustibles (wood, paper, oil, etc) away from spilled material. Avoid dust formation. Sweep up and shovel into suitable containers for disposal. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Wear personal protective equipment. Use only with adequate ventilation. Keep away from clothing and other combustible materials. Avoid dust formation. Avoid contact with skin and eyes. Do not breathe dust. Do not ingest. Keep containers dry and tightly closed to avoid moisture absorption and contamination.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store near combustible materials. Keep away from acids. Protect from moisture.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Sodium persulfate	TWA: 0.1 mg/m³		

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
Sodium persulfate			TWA: 0.1 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

Engineering Measures Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Powder Solid
Appearance	White
Odor	Odorless
Odor Threshold	No information available
pH	5 - 7 550 g/l H2O
Melting Point/Range	100 °C / 212 °F
Boiling Point/Range	No information available
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Relative Density	2.6
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	Not applicable
Decomposition Temperature	180 °C
Viscosity	Not applicable
Molecular Formula	Na2 O8 S2
Molecular Weight	238.09

10. Stability and reactivity

Reactive Hazard Yes

Stability Oxidizer: Contact with combustible/organic material may cause fire. Hygroscopic.

Conditions to Avoid Incompatible products. Excess heat. Avoid dust formation. Exposure to moisture. Combustible material.

Incompatible Materials Strong oxidizing agents, Acids, Strong reducing agents, Combustible material

Hazardous Decomposition Products Sulfur oxides, oxygen

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium persulfate	895 mg/kg (Rat)	10000 mg/kg (Rabbit)	21.6 mg/L (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes, respiratory system and skin

Sensitization No information available May cause sensitization by inhalation and skin contact

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Sodium persulfate	7775-27-1	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity

Do not empty into drains.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Sodium persulfate	Not listed	771 mg/L LC50 96 h	Not listed	133 mg/L EC50 = 48 h

Persistence and Degradability Soluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No	UN1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard Class	5.1
Packing Group	III

TDG

UN-No	UN1505
Proper Shipping Name	SODIUM PERSULFATE
Hazard Class	5.1
Packing Group	III

IATA

UN-No	1505
Proper Shipping Name	SODIUM PERSULPHATE
Hazard Class	5.1
Packing Group	III

IMDG/IMO

UN-No	1505
Proper Shipping Name	SODIUM PERSULPHATE
Hazard Class	5.1
Packing Group	III

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Sodium persulfate	X	X	-	231-892-1	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No

Reactive Hazard Yes

Clean Water Act Not applicable

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA
Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sodium persulfate	-	X	-	-	-

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class
C Oxidizing materials
D1B Toxic materials
D2A Very toxic materials
D2B Toxic materials

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 24-Nov-2010
Revision Date 06-Jul-2014
Print Date 06-Jul-2014
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Disclaimer

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of SDS

MATERIAL SAFETY DATA SHEET

Hydrogen Peroxide (20 to 40%)

MSDS Ref. No.: 7722-84-1-3
Date Approved: 11/04/2009
Revision No.: 12

This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS) requirements.

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Hydrogen Peroxide (20 to 40%)

ALTERNATE PRODUCT NAME(S): Durox® Reg., LR & LRA 35%, Oxypure® 35%, Standard 27, 35 & 40%, Super D® 25 & 35, Technical 35%, HTP 35%, OHP 35%, Chlorate Grade, 20%, Semiconductor Reg, Seg, RGS, RGS 2, 27% & 31%

GENERAL USE: Durox® 35% Reg., LR and LRA - meets the Food Chemical Codex requirements for aseptic packaging and other food related applications.

Oxypure® 35% - certified by NSF to meet NSF/ANSI Standard 60 requirements for drinking water treatment.

Standard 27, 35 and 40% - most suitable grade for industrial bleaching, processing, pollution abatement and general oxidation reactions.

Semiconductor Reg, Seg, RGS, RGS 2, 27% and 31% - conform to ACS and Semi Specs. for wafer etching and cleaning, and applications requiring low residues.

Super D® 25 and 35% - meets US Pharmacopoeia specifications for 3% topical solutions when diluted with proper quality water. While manufactured to the USP standards for purity and to FMC's demanding ISO 9002 quality standards, FMC does not claim that it's Hydrogen Peroxide is manufactured in accordance with all pharmaceutical cGMP conditions.

Technical 35% - essentially free of inorganic metals suitable for chemical synthesis.

HTP 35% - specially formulated for aerospace equipment conditioning.

OHP 35% - specially formulated for OHP process, advanced oxidation, and activated peroxide applications

Chlorate Grade 20% - specially formulated for use in chlorate

manufacture or processing.

MANUFACTURER

FMC CORPORATION
FMC Peroxygens
1735 Market Street
Philadelphia, PA 19103
(215) 299-6000 (General Information)
msdsinfo@fmc.com (Email - General Information)

FMC of Canada Ltd.
FMC Peroxygens
PG Pulp Mill Road
Prince George, BC V2N2S6
(250) 561-4200 (General Information)

EMERGENCY TELEPHONE NUMBERS

(281) 474-8750 (Plant: Pasadena, TX, US - Call Collect)
(250) 561-4221 (Plant: Prince George, BC, Canada - Call Collect)
(303) 595-9048 (Medical - U.S. - Call Collect)

For leak, fire, spill, or accident emergencies, call:
(800) 424-9300 (CHEMTREC - U.S.A.)
(613) 996-6666 (CANUTEC - Canada)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- Clear, colorless, odorless liquid
- Oxidizer.
- Contact with combustibles may cause fire.
- Decomposes yielding oxygen that supports combustion of organic matters and can cause overpressure if confined.
- Corrosive to eyes, nose, throat, lungs and gastrointestinal tract.

POTENTIAL HEALTH EFFECTS: Corrosive to eyes, nose, throat and lungs. May cause irreversible tissue damage to the eyes including blindness. May cause skin irritation.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt.%	EC No.	EC Class
Hydrogen Peroxide	7722-84-1	20 - 40	231-765-0	O, C, Xn; R5- R8-R20/22-R35
Water	7732-18-5	60 - 80	231-791-2	Not classified

4. FIRST AID MEASURES

EYES: Immediately flush with water for at least 15 minutes, lifting the upper and lower eyelids intermittently. See a medical doctor or ophthalmologist immediately.

SKIN: Wash with plenty of soap and water. Get medical attention if irritation occurs and persists.

INGESTION: Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a medical doctor immediately.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, contact a medical doctor.

NOTES TO MEDICAL DOCTOR: Hydrogen peroxide at these concentrations is a strong oxidant. Direct contact with the eye is likely to cause corneal damage especially if not washed immediately. Careful ophthalmologic evaluation is recommended and the possibility of local corticosteroid therapy should be considered. Because of the likelihood of corrosive effects on the gastrointestinal tract after ingestion, and the unlikelihood of systemic effects, attempts at evacuating the stomach via emesis induction or gastric lavage should be avoided. There is a remote possibility, however, that a nasogastric or orogastric tube may be required for the reduction of severe distension due to gas formation.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Flood with water.

FIRE / EXPLOSION HAZARDS: Product is non-combustible. On decomposition releases oxygen which may intensify fire.

FIRE FIGHTING PROCEDURES: Any tank or container surrounded by fire should be flooded with water for cooling. Wear full protective clothing and self-contained breathing apparatus.

FLAMMABLE LIMITS: Non-combustible

SENSITIVITY TO IMPACT: No data available

SENSITIVITY TO STATIC DISCHARGE: No data available

6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES: Dilute with a large volume of water and hold in a pond or diked area until hydrogen peroxide decomposes. Hydrogen peroxide may be decomposed by adding sodium metabisulfite or sodium sulfite after diluting to about 5%. Dispose according to methods outlined for waste disposal.

Combustible materials exposed to hydrogen peroxide should be immediately submerged in or rinsed with large amounts of water to ensure that all hydrogen peroxide is removed. Residual hydrogen peroxide that is allowed to dry (upon evaporation hydrogen peroxide can concentrate) on organic materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in a fire.

7. HANDLING AND STORAGE

HANDLING: Wear chemical splash-type monogoggles and full-face shield, impervious clothing, such as rubber, PVC, etc., and rubber or neoprene gloves and shoes. Avoid cotton, wool and leather. Avoid excessive heat and contamination. Contamination may cause decomposition and generation of oxygen gas which could result in high pressures and possible container rupture. Hydrogen peroxide should be stored only in vented containers and transferred only in a prescribed manner (see FMC Technical Bulletins). Never return unused hydrogen peroxide to original container, empty drums should be triple rinsed with water before discarding. Utensils used for handling hydrogen peroxide should only be made of glass, stainless steel, aluminum or plastic.

STORAGE: Store drums in cool areas out of direct sunlight and away from combustibles. For bulk storage refer to FMC Technical Bulletins.

COMMENTS: VENTILATION: Provide mechanical general and/or local exhaust ventilation to prevent release of vapor or mist into the work environment.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

Chemical Name	ACGIH	OSHA	Supplier
Hydrogen Peroxide	1 ppm (TWA)	1 ppm (PEL) 1.4 mg/m^3 (PEL)	

ENGINEERING CONTROLS: Ventilation should be provided to minimize the release of hydrogen peroxide vapors and mists into the work environment. Spills should be minimized or confined immediately to prevent release into the work area. Remove contaminated clothing immediately and wash before reuse.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Use chemical splash-type monogoggles and a full-face shield made of polycarbonate, acetate, polycarbonate/acetate, PETG or thermoplastic.

RESPIRATORY: If concentrations in excess of 10 ppm are expected, use NIOSH/DHHS approved self-contained breathing apparatus (SCBA), or other approved atmospheric-supplied respirator (ASR) equipment (e.g., a full-face airline respirator (ALR)). DO NOT use any form of air-purifying respirator (APR) or filtering facepiece (AKA dust mask), especially those containing oxidizable sorbants such as activated carbon.

PROTECTIVE CLOTHING: For body protection wear impervious clothing such as an approved splash protective suit made of SBR Rubber, PVC (PVC Outershell w/Polyester Substrate), Gore-Tex (Polyester trilaminate w/Gore-Tex), or a specialized HAZMAT Splash or Protective Suite (Level A, B, or C). For foot protection, wear approved boots made of NBR, PVC, Polyurethane, or neoprene. Overboots made of Latex or PVC, as well as firefighter boots or specialized HAZMAT boots are also permitted. DO NOT wear any form of boot or overboots made of nylon or nylon blends. DO NOT use cotton, wool or leather, as these materials react RAPIDLY with higher concentrations of hydrogen peroxide. Completely submerge hydrogen peroxide contaminated clothing or other materials in water prior to drying. Residual hydrogen peroxide, if allowed to dry on materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in a fire.

GLOVES: For hand protection, wear approved gloves made of nitrile, PVC, or neoprene. DO NOT use cotton, wool or leather for these materials react RAPIDLY with higher concentrations of hydrogen peroxide. Thoroughly rinse the outside of gloves with water prior to removal. Inspect regularly for leaks.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR:	Odorless
APPEARANCE:	Clear, colorless liquid
AUTOIGNITION TEMPERATURE:	Non-combustible
BOILING POINT:	103ºC/218ºF (20%); 105ºC/223ºF (27%); 107ºC/225ºF (31%); 108ºC/226ºF (35%)
COEFFICIENT OF OIL / WATER:	Not available
DENSITY / WEIGHT PER VOLUME:	Not available
EVAPORATION RATE:	> 1 (Butyl Acetate = 1)
FLASH POINT:	Non-combustible
FREEZING POINT:	-15ºC/6ºF (20%); -22ºC/-8ºF (27%); -26ºC/-15ºF (31%); -33ºC/-27ºF (35%)
ODOR THRESHOLD:	Not available
OXIDIZING PROPERTIES:	Strong oxidizer
PERCENT VOLATILE:	100
pH:	<= 3.7 5.0 - 6.0 @ 25 °C (1% solution)
SOLUBILITY IN WATER:	100 %
SPECIFIC GRAVITY:	1.07 @ 20ºC/4ºC (20%); 1.10 @ 20ºC/4ºC (27%); 1.11 @ 20ºC/4ºC (31%); 1.13 @ 20ºC/4ºC (35%)
VAPOR DENSITY:	(Air = 1): Not available
VAPOR PRESSURE:	28 mmHg @ 30ºC (20%); 26 mmHg @ 30ºC (27%) ;24 mmHg @ 30ºC (31%); 23 mmHg @ 30ºC (35%)

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID:	Excessive heat or contamination could cause product to become unstable.
STABILITY:	Stable (heat and contamination could cause decomposition)
POLYMERIZATION:	Will not occur
INCOMPATIBLE MATERIALS:	Reducing agents, wood, paper and other combustibles, iron and other heavy metals, copper alloys and caustic.
HAZARDOUS DECOMPOSITION PRODUCTS:	Oxygen which supports combustion.

COMMENTS: Materials to Avoid : Dirt, organics, cyanides and combustibles such as wood, paper, oils, etc.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: 35% hydrogen peroxide: Extremely irritating/corrosive (rabbit) [FMC Study Number: I83-748]

SKIN EFFECTS: 35% hydrogen peroxide: Mildly irritating after 4-hour exposure (rabbit) [FMC Study Number: I83-747]

DERMAL LD_{50}: 35% hydrogen peroxide: > 2,000 mg/kg (rabbit) [FMC Study Number: I83-746]

ORAL LD_{50}: 35% hydrogen peroxide: 1,193 mg/kg (rat) [FMC Study Number: I83-745]

INHALATION LC_{50}: 50% hydrogen peroxide: > 0.17 mg/l (rat) [FMC Study Number: I89-1080]

TARGET ORGANS: Eyes, nose, throat and lungs

ACUTE EFFECTS FROM OVEREXPOSURE: Extremely irritating/corrosive to eyes and gastrointestinal tract. May cause irreversible tissue damage to the eyes including blindness. Inhalation of mist or vapors may be severely irritating to nose, throat and lungs. May cause skin irritation.

CHRONIC EFFECTS FROM OVEREXPOSURE: The International Agency for Research on Cancer (IARC) has concluded that there is inadequate evidence for carcinogenicity of hydrogen peroxide in humans, but limited evidence in experimental animals (Group 3 - not classifiable as to its carcinogenicity to humans). The American Conference of Governmental Industrial Hygienists (ACGIH) has concluded that hydrogen peroxide is a 'Confirmed Animal Carcinogen with Unknown Relevance to Humans' (A3).

CARCINOGENICITY:

Chemical Name	IARC	NTP	OSHA	Other
Hydrogen Peroxide	3	Not listed	Not listed	(ACGIH) A3

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: Channel catfish 96-hour LC_{50} = 37.4 mg/L
Fathead minnow 96-hour LC_{50} = 16.4 mg/L
Daphnia magna 24-hour EC_{50} = 7.7 mg/L
Daphnia pulex 48-hour LC_{50} = 2.4 mg/L
Freshwater snail 96-hour LC_{50} = 17.7 mg/L
For more information refer to ECETOC "Joint Assessment of Commodity Chemicals No. 22, Hydrogen Peroxide." ISSN-0773-6339, January 1993

CHEMICAL FATE INFORMATION: Hydrogen peroxide in the aquatic environment is subject to various reduction or oxidation processes and decomposes into water and oxygen. Hydrogen peroxide half-life in freshwater ranged from 8 hours to 20 days, in air from 10-20 hrs. and in soils from minutes to hours depending upon microbiological activity and metal contaminants.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: An acceptable method of disposal is to dilute with a large amount of water and allow the hydrogen peroxide to decompose followed by discharge into a suitable treatment system in accordance with all regulatory agencies. The appropriate regulatory agencies should be contacted prior to disposal.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

PROPER SHIPPING NAME:	Hydrogen peroxide, aqueous solutions with not less than 20% but not more than 40% hydrogen peroxide
PRIMARY HAZARD CLASS / DIVISION:	5.1 (Oxidizer)
HAZARD CLASS, SUBSIDIARY:	8
UN/NA NUMBER:	UN 2014
PACKING GROUP:	II
LABEL(S):	Oxidizer, Corrosive
PLACARD(S):	5.1 (Oxidizer)

ADDITIONAL INFORMATION:

DOT Marking: Hydrogen Peroxide, aqueous solution with not less than 20%, but not more than 40% Hydrogen Peroxide, UN 2014

Hazardous Substance/RQ: Not applicable

49 STCC Number: 4918775

DOT Spec: stainless steel/high purity aluminum cargo tanks and rail cars. UN Spec: HDPE drums. Contact FMC for specific details.

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

PROPER SHIPPING NAME: Hydrogen peroxide, aqueous solutions with not less than 20%, but not more than 60% hydrogen peroxide.

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) / INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)

PROPER SHIPPING NAME: Hydrogen peroxide, aqueous solutions with not less than 20%, but not more than 40% hydrogen peroxide (*).

OTHER INFORMATION:

(*) Air regulations permit shipment of Hydrogen Peroxide (20 - 40%) in non-vented containers for Air Cargo Only aircraft, as well as for Passenger and Cargo aircraft. HOWEVER, all FMC Hydrogen Peroxide containers are vented and therefore, air shipments of FMC H_20_2 is not permitted. IATA air regulations state that venting of packages containing oxidizing substances is not permitted for air transport.

Protect from physical damage. Keep drums in upright position. Drums should not be stacked in transit. Do not store drum on wooden pallets.

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355, APPENDIX A):
Not listed

SECTION 311 HAZARD CATEGORIES (40 CFR 370):
Fire Hazard, Immediate (Acute) Health Hazard

SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370):
The Threshold Planning Quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs; however, this product contains the following ingredients with a TPQ of less than 10,000 lbs.: None, (conc. <52%)

SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372):
Not listed

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

CERCLA DESIGNATION & REPORTABLE QUANTITIES (RQ) (40 CFR 302.4):
Unlisted (Hydrogen Peroxide 20-40%); RQ = 100 lbs.; Ignitability, Corrosivity

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA INVENTORY STATUS (40 CFR 710):
Listed

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)
RCRA IDENTIFICATION OF HAZARDOUS WASTE (40 CFR 261):
Waste Number: D001, D002

CANADA

WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM):

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Hazard Classification / Division:	C E D2B
Product Identification Number:	2014
Ingredient Disclosure List:	Listed
Domestic Substance List:	All components listed

INTERNATIONAL LISTINGS

Hydrogen peroxide:

China: Listed
Japan (ENCS): (1)-419
Korea: KE-20204
Philippines (PICCS): Listed

HAZARD AND RISK PHRASE DESCRIPTIONS:

EC Symbols: O (Oxidizer)

	C	(Corrosive)
	Xn	(Harmful)
EC Risk Phrases:	R5	(Heating may cause an explosion.)
	R8	(Contact with combustible material may cause fire)
	R35	(Causes severe burns.)
	R20/22	(Harmful by inhalation and if swallowed.)

16. OTHER INFORMATION

HMIS

Health	3
Flammability	0
Physical Hazard	1
Personal Protection (PPE)	H

Protection = H (Safety goggles, gloves, apron, the use of a supplied air or SCBA respirator is required in lieu of a vapor cartridge respirator)

HMIS = Hazardous Materials Identification System

Degree of Hazard Code:
4 = Severe
3 = Serious
2 = Moderate
1 = Slight
0 = Minimal

NFPA

Health	3
Flammability	0
Reactivity	1
Special	OX

SPECIAL = OX (Oxidizer)

NFPA (National Fire Protection Association)

Degree of Hazard Code:
4 = Extreme
3 = High
2 = Moderate
1 = Slight
0 = Insignificant

REVISION SUMMARY:
This MSDS replaces Revision #11, dated June 03, 2008.

Changes in information are as follows:
Section 1 (Product and Company Identification)
Section 9 (Physical and Chemical Properties)
Section 14 (Transport Information)
Section 16 (Other Information)

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Ivey International Inc.

MSDS NUMBER: 120829

MATERIAL SAFETY DATA SHEET
Ivey-sol® Surfactant Technology

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name:	Ivey-sol
Chemical Name:	Not Applicable (mixture)
Chemical Family:	Non-ionic Surfactants
Formula:	Not Applicable (mixture)
Synonym(s):	Ivey-sol 103, Ivey-sol 106, and Ivey-sol 108

CONTACT BY COUNTRY:

Canada:
Canada Colors & Chemical — 6605 Hurontario Street, Suite 400, Mississauga,ON L5T 0A3
Tel: + 1-416-848-7692 www.canadacolors.com

United States:
EnviroSupply & Service, Inc. — 1791 Kaiser Ave., Irvine, California, USA 92614
Tel: + 1-949-757-0353 www.EnviroSupply.net

Australia:
Quantum Chemicals Pty Ltd. — 70 Quantum Close, Quantum Industrial Park,
Dandenong South Victoria, 3175
Tel: +61-3-8795 8067 www.quantumchemicals.com.au

Prepared By:	Technical Products Department (Ivey International Inc.)
Telephone Number:	+ 1-604-538-1168 or Toll Free + 1-800-246-2744
Prepared (Last Updated):	August 29,2012

Ivey International Inc. (IVEY) urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the proper use and handling of the subject product. The reader should consider consulting reference materials, and/or IVEY technical support personnel, and/or other recognized experts, as necessary or appropriate to the use and understanding of the data contained in this MSDS. To promote the safe handling, storage and use of this product, each customer or recipient should (1) notify his employees, agents, contractors, and others whom he knows or believes will use this product, of the information in this MSDS and any other information regarding product use, storage and handling, (2) furnish this same information to each of his customers for the product, and (3) request his customers to notify their employees, customers, and other users of the product, and of this information.

SECTION 2: COMPOSITION INFORMATION

Components:	Ivey-sol (biodegradable) non-ionic surfactants (Blend)
Generic Description:	Water based biodegradable wetting agents and surfactants.

Ivey-sol®/SPT® Technology - Stock Mixtures. Patented and or proprietary blends. Information in this MSDS is applicable for all component products listed.

SECTION 3: HAZARDS IDENTIFICATION

Effects of a Single Exposure.

Swallowing:	Non to slightly toxic. May cause abdominal discomfort and nausea for some individuals.
Skin Absorption:	No evidence of harmful effects.
Inhalation:	No evidence of harmful effects.

Skin Contact:	Brief contact should not result in any significant effects. Prolong exposure may cause mild irritation with local itching and redness for individuals with sensitive skin.
Eye Contact:	May cause mild to moderate irritation.
Effects of Repeated Exposure:	Repeated skin contact may cause mild dermatitis (dryness of skin).
Medical Conditions:	Existing dermatitis may be aggravated through repeated skin contact.
Other Effects:	None currently known.

Section 4: FIRST AID MEASURES

Swallowing:	If patient if fully conscious, give two glasses of water
Skin Absorption:	Wash exposed skin with soap and water. Obtain medical attention if irritation or dermatitis persists. Wash exposed clothing before reuse.
Inhalation:	Not applicable.
Eye Contact:	Immediately flush eyes with water and continue to flush as required. Remove any contact lenses, if worn. Obtain medical attention if deemed necessary.
Note to Physician:	There is no required antidote. Treatment should be directed at the control of symptoms and the clinical condition of the patient.

Section 5: FIRE FIGHTER MEASURES

Flammability:	Not Flammable
Auto Ignition Temperature	Not Available
Upper Flammable Limit	Not Established
Lower Flammable Limit	Not Established
Explosive Date:	Explosive Power - Not Available Rate of Burning - Not Available
Hazardous Combustion Products:	Not applicable
Special Protective Equipment:	Not Applicable
Extinguishing Media:	Not Applicable
Extinguishing Media to be avoided:	Not Applicable
Special Fire Fighting Procedures:	Not Applicable

Section 6: ACCIDENTAL RELEASE MEASURES

Step to be taken if Material is Released or Spilled:	Eliminate and/or contain source with inert material (sand, earth, absorbent pads, etc.). Wear basic eye and skin protection. Floor may be slightly slippery; so use care to avoid falling. Avoid discharge to natural waters, and/or dilute with water. Transfer liquids to suitable containers for recovery, re-use or disposal. Contact III for technical assistance if required.

Section 7: HANDLING AND STORAGE

Handling Procedures:	Avoid contact with eyes, skin, and clothing. Do not swallow. Keep containers closed or sealed when not in use. Wash thoroughly after handling.
Storage:	Keep closed or sealed when not in use. Do not allow to freeze.
Ventilation:	General mechanical room ventilation should be satisfactory.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Gloves / Type Gloves / Type:	Latex, or similar would be sufficient.
Respiratory / Type:	None expected to be required. However, if an engineered/industrial application where vapors and/or misting may occur, wear MSHA/NIOSH approved half mask air purifying respirator.
Eye / Type:	Mono Goggles or similar.

Footwear / Type:	No special requirements.
Clothing / Type:	Wear an apron and /or coveralls.
Other / Type:	Eye bath.
Engineering Controls:	General mechanical room ventilation should be satisfactory.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Water Based Liquid
Appearance:	Clear to slightly Cloudy White Color
Odor:	Mild
Molecular Weight:	Mixture (Not Applicable)
Boiling Point:	Not Applicable
Freezing Point:	Approx. $0^{o}C$ ($32^{o}F$)
Pour Point:	Not Applicable
Melting Point:	Not Applicable
Specific Gravity:	0.99-1.04 (Water = 1.0)
Vapor Pressure:	<0.01 mm Hg
Vapor Density:	> 1 (Air = 1.00)
pH:	Not Available (Typically 6.5-7.5 Range)
Solubility in Water:	100%
Evaporation Rate:	<0.01
Coefficient of Oil/Water Distribution	Not Determined

Section 10: STABILITY AND REACTIVITY

Stability:	Stable
Conditions to Avoid:	Prolonged excessive heat may cause product decomposition. Freezing should also be avoided as it may cause product decomposition. In some cases, it may cause irreversible changes.
Incompatible Materials:	Normally un-reactive; however avoid strong bases at high temperatures, strong acids, strong oxidizing agents, and materials with reactive hydroxyl compounds. These compounds would damage the mixture and reduce its effectiveness during application.
Hazardous Decomposition Products:	Not applicable.
Hazardous Polymerization:	Will not occur.

Section 11: TOXICOLOGICAL INFORMATION

Exposure Limit of Material:	Not Established
LD/50:	Not Available
LC/50:	Not Available
EL:	Not Established
Carcinogenicity of Material:	None Known
Reproductive Effects:	Not Available
Irritancy of Material:	See Section 3
Sensitizing Capability:	Not Available
Synergistic Materials:	Not Available

LD: Lethal Dose LC: Lethal Concentration EL: Exposure Limit

Section 12: ECOLOGICAL CONSIDERATIONS

Environmental Toxicity:	Low Potential to affect aquatic organisms*
Biodegradability:	>90% in 28 days**
LC/50:	48 Hour: 0.11 %, Species: Daphnia magna
LC/50:	96 Hour: 0.07695%, Species: Rainbow Trout

* When used in accordance with Ivey International Inc. In-situ and Ex-situ Remediation Applicable Guidelines.

** Based on actual testing or on data for similar material(s). Degradation Biodegradation reached in Modified OECD Screening Test (OECD Test No.301 E) after 28 days: 90 %. Biodegradation reached in CO2 Evolution Test (Modified Sturm Test, OECD Test No. 301 B) after 28 days: 70 %.

All available ecological data have been taken into account for the development of the hazard and precautionary information contained in this Material Safety Data Sheet.

Section 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method:	For aqueous Ivey-sol mixture solutions; aerobic biological wastewater treatment systems are effective in treating said mixtures. Ivey-sol does not have any known negative affect on coagulant or flocculent water treatment processes.

Section 14: TRANSPORTATION INFORMATION

UN Number:	Not Applicable
IATA Number	Not Regulated
TDG Classification:	Not Required
Shipping Name:	Ivey-sol
Packing Group:	Not Applicable
Special Shipping Instructions:	Do not allow to freeze

Section 15: REGULATORY INFORMATION

WHMIS Classification:	Not Controlled as per WHMIS Regulation.
CPR Compliance:	This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
CEPA Compliance:	All ingredients of this product are listed on the DSL.

Section 16: OTHER INFORMATION

Available Literature and Brochures:	Additional information on this product may be obtained by calling our customer service representatives at -800-246-2744 or -604-538-1168.
Recommended Uses and restrictions:	For the application of air, soil, groundwater, shoreline, and off-shore spill petroleum reclamations purposes. Secondary recoveries of petroleum products form crude-oil, oil-shale, and oil-sands. Additional information on uses can be made available by contacting out technical sales director in your area by visiting www.iveyinternational.com, or by calling toll free 1-800-246-2744 or +1-604-538-1168.
Legend:	TS - Trade Secret D2B - Toxic Material causing Other Effects. mm - Millimeters LD - Lethal Dose LC - Lethal Concentration EL - Exposure Limit Hg - Mercury (760 mm Hg = 1 Atmosphere, Sea Level)

Ref: Ivey-sol/MSDS/ (Revised August 29,2012)

SAFETY DATA SHEET

Version 1

1. Identification of the Substance / Preparation and of the Company / Undertaking

Product Name: Sodium Hydroxide 30-50%
UN/ID No UN1824
Synonyms: Sodium Hydroxide; Caustic; Caustic Soda; Lye; Sodium Hydrate; Caustic Soda Membrane Grade 50%; Caustic Soda Diaphragm 30%, 35%, 40%, 50%
Molecular Weight: 40

Company Name:
Vertex Chemical Corporation, 11685 Manchester Road, St. Louis, Missouri 63131. (314) 471-0500

Emergency Telephone:
NATIONAL EMERGENCY RESPONSE CENTER:
1-800-424-8802
VERTEX CHEMICAL CORPORATION 314-471-0500
CHEMTREC (US): 1-800-424-9300
Call CHEMTREC only in the event of chemical emergencies involving a SPILL, LEAK, FIRE, EXPOSURE, or ACCIDENT involving chemicals.

Email:
vertexchem@vertexchem.com
www.vertexchemical.com

2. Hazards Identification

GHS - Classification

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 1 Category 1A
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 1

Signal Word: **Danger**
Hazard Statements:
• Harmful if swallowed
• Causes severe skin burns and eye damage
• Causes damage to organs
Physical Hazards

Corrosive to metals	Category 1

• May be corrosive to metals

Precautionary Statements:
• P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
• P330 - Rinse mouth
• P312 - Call a POISON CENTER or doctor if you feel unwell
• P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
• P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
• P363 - Wash contaminated clothing before reuse
• P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• P280 - Wear protective gloves/protective clothing/eye protection/face protection
• P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
• P310 - Immediately call a POISON CENTER or doctor/physician
• P260 - Do not breathe dust/fume/gas/mist/vapors/spray
• P264 - Wash face, hands and any exposed skin thoroughly after handling
• P270 - Do not eat, drink or smoke when using this product
• P307 + P311 - IF exposed: Call a POISON CENTER or doctor/physician
• P405 - Store locked up
• P501 - Dispose of contents/ container to an approved waste disposal plant
• P334 - Immerse in cool water/wrap in wet bandages
• P390 - Absorb spillage to prevent material damage
• P406 - Store in corrosive resistant aluminum container with a resistant inliner

3. Composition / Information on Ingredients

Hazardous

Chemical Name	CAS No	Weight-%	EC No
Caustic soda	1310-73-2	30-50	215-185-5
Sodium chloride	7647-14-5	< 1.0	231-598-3
Sodium carbonate	497-19-8	< 0.2	207-838-8

Non-Hazardous

Chemical Name	CAS No	Weight-%	EC No
Water	7732-18-5	Balance	231-791-2

4. First Aid Measures

General Advice: Immediate medical attention is required.

Eye Contact: Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area.

Skin Contact: Immediate medical attention is required. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.

Inhalation: Move to fresh air. Call a physician or poison control center immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Ingestion: Immediate medical attention is required. Do NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Remove from exposure, lie down. Clean mouth with water and drink afterwards plenty of water. Call a physician or poison control center immediately.

Note to Physicians: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. Treat symptomatically.

Self-protection of the First Aider: Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

5. Fire-fighting Measures

Flammable Properties:
Not considered to be a fire hazard

Explosive Properties:
No information available

Suitable Extinguishing Media:
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Unsuitable Extinguishing Media:
No information available

Specific Hazards Arising from the Chemical:
The product causes burns of eyes, skin and mucous membranes; Thermal decomposition can lead to release of irritating and toxic gases and vapors; In the event of fire and/or explosion do not breathe fumes

Protective Equipment and Precautions for Firefighters:
In the event of a fire, wear full protective clothing and MSHA/NIOSH (approved or equivalent) self-contained breathing apparatus with full facepiece operated in the pressure-demand or other positive pressure mode

6. Accidental Release Measures

Personal Precautions: Evacuate personnel to safe areas. Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Keep people away from and upwind of spill/leak.

Environmental Precautions: Do not allow into any sewer, on the ground or into any body of water. Should not be released into the environment. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

Methods for Cleaning Up: Dike far ahead of liquid spill for later disposal. Soak up with inert absorbent material. Take up mechanically, placing in appropriate containers for disposal. Clean contaminated surface thoroughly. Prevent product from entering drains. Dam up. After cleaning, flush away traces with water.

Other Information: Not applicable.

7. Handling and Storage

Advice on Safe Handling: Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Use only with adequate ventilation and in closed systems.

Storage Conditions: Keep container tightly closed in a dry and well-ventilated place. Keep out of the reach of children. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labeled containers.

Incompatible Materials: Strong acids and bases; Oxidizing agents

8. Exposure Controls / Personal Protection

Chemical Name	ACGIH TLV	OSHA PEL	Ontario TWA
Caustic soda	Ceiling: 2 mg/m³	2 mg/m³ Ceiling 2 mg/m³ TWA	CEV: 2 mg/m³

Chemical Name	European Union	China	Japan	Korea	Australia	Taiwan
Caustic soda		Ceiling: 2 mg/m³ Ceiling	Ceiling: 2 mg/m³	Ceiling: 2 mg/m³	2 mg/m³ Peak	TWA: 2 mg/m³

Exposure Guidelines Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992)

Engineering Controls: Ensure adequate ventilation, especially in confined areas

Personal protective equipment (PPE)

Eye/Face Protection: Tight sealing safety goggles. Face protection shield.

Body Protection: Gloves made of plastic or rubber. Rubber boots. Suitable protective clothing. Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Wear chemical resistant clothing such as gloves, apron, boots or whole bodysuits made from neoprene, as appropriate.

General Hygiene Considerations:

When using do not eat, drink or smoke. Wash contaminated clothing before reuse. Keep away from food, drink and animal feeding stuffs. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Avoid contact with skin, eyes or clothing. Take off all contaminated clothing and wash it before reuse. Wear suitable gloves and eye/face protection.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid
Appearance: No information available
Color: Colorless
Odor: Odorless
Odor Threshold: No information available

Property	Values	Remarks • Method
pH:	14	
"Salt Out" Point (°F):		No information available
Melting Point/Freezing Point:	14 °C / 57 °F	
Boiling Point/Boiling Range:	145 °C / 293 °F	
Flash Point:		No information available
Evaporation Rate (BuAc=1):		No information available
Flammability (solid, gas):		No information available
Flammability Limits in Air:		No information available
Upper Flammability Limit:		
Lower Flammability Limit:		
Vapor Pressure (mm Hg) :		No information available
Vapor density (Air =1)		No information available
Specific Gravity (H2O=1):	1.54	
Specific Gravity (2nd value):		
Water Solubility:		No information available
Solubility(ies):		No information available
Partition Coefficient (n-octanol/water)		No information available
Autoignition Temperature:		No information available
Decomposition Temperature:		No information available
Kinematic Viscosity:		No information available
Dynamic Viscosity:		No information available
Oxidizing Properties:	No information available	
Explosive Properties:	No information available	

9.2. Other information

Softening Point:	No information available
Molecular Weight:	40
VOC Content(%):	No information available
Density:	No information available
Bulk Density:	No information available

10. Stability and Reactivity

Stability: Stable under normal conditions of use and storage

Conditions to Avoid: Exposure to air or moisture over prolonged periods

Incompatible Materials: Strong acids and bases; Oxidizing agents

Hazardous Decomposition Products: Thermal decomposition can lead to release of irritating and toxic gases and vapors

Possibility of Hazardous Reactions: None under normal processing

11. Toxicological Information

Product Information

Acute Toxicity: 0% of the mixture consists of ingredient(s) of unknown toxicity.

The following values are calculated based on chapter 3.1 of the GHS document

Chemical Name	Oral LD_{50} :	Dermal LD_{50} :	LC_{50} (Lethal Concentration):
Caustic soda		1350 mg/kg (Rabbit)	
Sodium chloride	3 g/kg (Rat)	10 g/kg (Rabbit)	42 g/m^3 (Rat) 1 h
Sodium carbonate	4090 mg/kg (Rat)		
Water	90 mL/kg (Rat)		

Chronic Toxicity:

Carcinogenicity: This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP

Target Organ Effects: Eyes, Respiratory system, Skin

12. Ecological Information

Ecotoxicity

0% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
Caustic soda		*45.4: 96 h Oncorhynchus mykiss mg/L LC50 static*	

Sodium chloride		*5560 - 6080: 96 h Lepomis macrochirus mg/L LC50 flow-through 6020 - 7070: 96 h Pimephales promelas mg/L LC50 static 12946: 96 h Lepomis macrochirus mg/L LC50 static 7050: 96 h Pimephales promelas mg/L LC50 semi-static 6420 - 6700: 96 h Pimephales promelas mg/L LC50 static 4747 - 7824: 96 h Oncorhynchus mykiss mg/L LC50 flow-through*	*1000: 48 h Daphnia magna mg/L EC50 340.7 - 469.2: 48 h Daphnia magna mg/L EC50 Static*
Sodium carbonate	*242: 120 h Nitzschia mg/L EC50*	*300: 96 h Lepomis macrochirus mg/L LC50 static 310 - 1220: 96 h Pimephales promelas mg/L LC50 static*	*265: 48 h Daphnia magna mg/L EC50*

Persistence and Degradability: No information available.

Bioaccumulation: No information available.

Mobility: No information available.

13. Disposal Considerations

Waste from Residues/Unused Products: Disposal should be in accordance with applicable regional, national and local laws and regulations

Contaminated Packaging: Do not reuse container.

14. Transport Information

IATA

DOT

Proper shipping name SODIUM HYDROXIDE SOLUTION
Hazard Class 8
UN/ID No UN1824
Packing Group PG II
Reportable Quantity (RQ) 1000 lbs
Description UN1824, SODIUM HYDROXIDE SOLUTION, 8, PG II

TDG

MEX

15. Regulatory Information

International Inventories

All of the components in the product are on the following Inventory lists: TSCA (United States):, Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Australia (AICS), South Korea (KECL):, China (IECSC), Philippines (PICCS),
This product contains a substance not listed on international inventories - it is for research and development use only.

AICS	Complies
TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	-
IECSC	Complies
KECL	Complies
PICCS	Complies

Chemical Name	AICS	TSCA	DSL	NDSL	EINECS	ELINCS	ENCS	IECSC	KECL	PICCS
Caustic soda	Listed	Listed	Listed	-	Listed	-	(2)-1972 (1)-410	Listed	KE-31487	Listed
Sodium chloride	Listed	Listed	Listed	-	Listed	-	(1)-236	Listed	KE-31387	Present
Sodium carbonate	Listed	Listed	Listed	-	Listed	-	(1)-164	Listed	KE-31380	Present
Water	Listed	Listed	Listed	-	Listed	-	-	Listed	KE-35400	Present

Inventory Legend

AICS - Australian Inventory of Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

RESTRICTIONS - REACH TITLE VII No information available

US Federal Regulations

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

Chemical Name	CERCLA Hazardous Substances and the Reportable Quantities	SARA Extremely Hazardous Substances EPCRA RQ	SARA Extremely Hazardous Substances TPQ
Caustic soda	1000 lb 454 kg	-	-

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic health hazard	No
Fire hazard	No
Sudden release of pressure hazard	No
Reactive hazard	Yes

U.S. State Right-to-Know Regulations

California Proposition 65:
This product does not contain any Proposition 65 chemicals

16. Other Information

National Fire Protection Association (NFPA) Ratings

NSF Certification

Maximum Use (mg/L unless otherwise indicated):	100
Prepared By:	Adam Peterson, Rob Kelley, Andrew Morabu and Todd Bain from the HSE department.
Issue Date:	08-Jan-2013
Revision Date:	08-Jan-2013
Revision Note:	MSDS converted to GHS SDS Format.

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End of Safety Data Sheet