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Remedial Investigation Work Plan
NuStar Terminals Operations Partnership, L.P.
Annex Terminal
Vancouver, Washington

Prepared for:
NuStar Terminals Operations Partnership, L.P.

January 23, 2009
1569-00

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

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1.0 Introduction

This Remedial Investigation (RI) Work Plan identifies the scope and procedures for completing the RI of the NuStar Terminals Operating Partnership, L.P. (NuStar) Annex Terminal located at 5420 NW Fruit Valley Road in Vancouver, Washington (the Facility). A location map for the Facility is provided on Figure 1; a Facility site plan is provided on Figure 2.

Work at the Facility is being conducted with oversight from the Washington State Department of Ecology (Ecology). An Agreed Order (No. 09-TC-S DE5250) was executed between NuStar and Ecology on November 6, 2008. Exhibit D of the Agreed Order presents a Project Schedule. The Project Schedule requires the submittal of an RI Work Plan within 60 days of the execution of the Agreed Order. On December 16, 2008, Ecology approved an extension to January 23, 2009 for the submittal date of the RI Work Plan.

1.1 Objectives

The RI Work Plan has been prepared and is being submitted on behalf of NuStar to meet the requirements of the Agreed Order. The objectives of the activities proposed in this RI Work Plan are to complete the RI of the Facility sufficiently to complete a Risk Assessment and evaluate whether remedial work is needed at the Facility.

1.2 Work Plan Organization

The RI Work Plan includes the following main topics:

- Background – a description of the Facility, geology, and hydrogeology and previous site investigations;
- Nature and Extent – a presentation of the nature and extent of constituents detected at the Facility based on the results of the previous site investigations;
- Scope of Work for Completing the RI – the goals and objectives of the work, scope of the proposed field investigation, approach for sampling, and chemical analyses;
- RI Report – the anticipated contents and outline of the RI Report; and
- Schedule.

2.0 Background

This section briefly discusses the Facility setting, historical operations, regional geology and hydrogeology, and prior environmental activities at the Facility. Additional detail is provided in the following reports:

- Phase II Environmental Assessment (ESA; AMEC, 2002a);
- Subsurface Investigation and Soil Removal Report (AMEC, 2002b);
- Results of Phase II Environmental Site Assessment (SECOR, 2003);
- Evaluation of Migration Potential Due to Proposed Clark Public Utilities Fruit Valley Well Field (Ash Creek Associates [ACA], 2007);
- Results of Direct-Push Groundwater Assessment (ACA, 2008a); and
- Groundwater Monitoring Report – Quarterly Monitoring 2007 (ACA, 2008b).

Excerpts from some of these reports are contained in Appendices A and B for reference, as described below.

2.1 Site Setting

2.1.1 Facility Description

The Facility is located in Vancouver, Washington (as shown on Figure 1). The NuStar property is approximately 31 acres and is roughly rectangular, with dimensions of approximately 800 by 1,800 feet. The terminal has been used to store and transfer liquid fertilizers, petroleum, alcohol, and fuel additives since 1957. The Facility is located in a mixed industrial-agricultural area and currently includes a tank farm containing jet fuel and methanol (seven aboveground storage tanks [ASTs] ranging in size from 30,000-gallon to 3,000,000-gallon); a covered truck refueling rack with two ASTs (approximately a 400-gallon AST and a 7,500-gallon AST containing ASA and FSI Additives); and several buildings used for equipment storage and offices. A former underground storage tank (UST) associated with a large vapor recovery system was also located on the Facility and was removed in 2001. The vapor recovery system and an associated oil/water separator (OWS) remain on-site. The surface of the Facility is comprised of graveled areas and grass fields, with asphalt-paved roads providing access to the fueling areas, ASTs, and office buildings.

2.1.2 Adjacent Properties

A berry farm owned by Mr. Merril Firestone is adjacent to the Facility to the north (referred to herein as the "Firestone Property"). Vacant land is present to the west and northwest of the Facility and industrial

property is located to the south. Undeveloped land or commercial/industrial facilities front the eastern side of Fruit Valley Road to the north, east, and south of the Facility.

2.2 Site History

Support Terminals Operating Partnership, L.P. (STOP) purchased the Facility from Cenex Harvest States Cooperative (Cenex) in 2003. In March 2008, STOP changed its name to NuStar.

The site was developed in 1957 as a truck loading terminal. Records are unclear as to whether the Facility was developed by Cenex. Historically, chemicals and other products stored at the site included liquid fertilizers and refined petroleum products such as gasoline; diesel and kerosene; de-natured alcohol; and petroleum product additives. A slop tank is present in the eastern portion of the Facility (Figure 2) and this is typically where waste, such as from tank-bottom cleanouts or the OWS, would be stored prior to off-site disposal or recycling. There is no indication that materials from tank-bottom cleanouts were buried at the Facility.

Prior to or during Cenex's ownership, American Cyanamid conducted agricultural research, including the testing of herbicides and pesticides, in the southeastern portion of the Facility (Figure 2).

2.3 Geology

The regional geology and the site-specific geologic conceptual model are described below.

2.3.1 Regional Geology

The regional geology is summarized below and is based on reports prepared by Pacific Groundwater Group (PGG; 2001) and AMEC (2002a). The vicinity of the Facility is dominated by three primary units: Recent Alluvial deposits (referred to as the "Recent Alluvial Aquifer" [RAA]); the Pleistocene Alluvial deposits (Pleistocene Alluvial Aquifer [PAA]); and the Troutdale Formation.

The RAA is the upper unit. The RAA deposits are approximately 55 feet thick and consist of fine-grained silt and sand within the areas investigated near Vancouver Lake. The PAA deposits are approximately 95 to 115 feet thick and consist of coarse-grained sand and gravel. The PAA originates from alluvial deposits of the Columbia River and deposits from the catastrophic Missoula Floods.

The Troutdale Formation underlies the PAA and can be in excess of 1,000 feet thick. It is made up of cemented sandy gravels and semi-consolidated sands, silts, and clays.

2.3.2 Site-Specific Geology

During previous site investigations performed by others, soil borings have been installed to depths of up to 50 feet below the ground surface (bgs) at the Facility. During a 2007 site investigation conducted by ACA, one boring was completed to a depth of 72 feet bgs.

The RAA underlying the Facility consists of silty, fine sand or sandy silt to a depth of approximately 10 feet bgs with variable layers of sand or silty sand. Below 10 feet bgs, the RAA consists of layers of fine- to medium-grained sand to a depth of approximately 50 to 60 feet bgs. The PAA is encountered below the RAA and consists of sand and/or gravel layers of varying thicknesses. The thickness of the PAA below the Facility is not known.

2.4 Hydrogeology

This section presents the understanding of the regional and local hydrogeology.

2.4.1 Regional Hydrogeology

The regional aquifers follow the regional geology discussed above. The regional hydrogeology summarized below is based on reports prepared in support of Clark Public Utilities Lakeshore Wellfield Exploration and Testing Program (2001), and by ACA (2008a and 2008b).

The RAA is unconfined and receives recharge directly from the land surface and/or surface water features. It is a productive aquifer with high well yields (several thousand gallons per minute [gpm] without significant drawdown). The groundwater flow system is highly influenced by local surface water bodies. The Columbia River, Vancouver Lake, Vancouver Lake Flushing Channel, and Lake River form natural hydrologic boundaries to the groundwater flow system. Tidal influences and seasonal variations in surface water runoff cause dynamic variation in the stage of the Columbia River, and resulting adjustments in the stages of the other three connected surface-water bodies. The groundwater flow system is also influenced by tidal and seasonal variations in the surface water bodies. Regionally, it is anticipated that groundwater in the vicinity of the Facility would have a net gradient towards Vancouver Lake and the Columbia River.

2.4.2 Local Hydrogeology

The depth to first encountered groundwater at the Facility ranges from approximately 15 to 32 feet bgs (Table 1). This zone corresponds to the silty, fine- to medium-grained sand of the RAA. Deeper groundwater of the PAA is encountered at a depth of approximately 50 to 70 feet bgs beneath the Facility (ACA, 2008a).

Shallow groundwater flow at the Facility has remained, under static conditions, relatively flat with a slight gradient (0.0002 foot per foot [ft/ft]) to the southeast. Figure 3 shows a recent groundwater elevation map and the inferred groundwater direction. AMEC, SECOR, and ACA investigations consistently indicated a flat to southerly groundwater flow direction of the shallow groundwater within the RAA. Groundwater contour maps prepared for these previous investigations are contained in Appendix B for reference.

2.5 Clark Public Utilities Proposed Wellfield

Clark Public Utilities (CPU) has proposed installing and operating a domestic water supply wellfield on vacant land northwest of the Facility. The land is currently owned by the Washington Department of Fish and Wildlife (WDFW) and lies east of Vancouver Lake and approximately 500 feet northwest of the Facility (Figure 1). The proposed wellfield has conceptually been designed to consist of four extraction wells each pumping at 3,500 gpm for a total of 20 million gallons per day (MGD; PGG, 2001). The wells would be installed and screened within the PAA, with anticipated depths of approximately 170 feet, and screened intervals from 70 to 170 feet below grade.

CPU completed drilling of four exploratory wells in October 2000 to assess the development of a wellfield source in the Vancouver Lake area. Aquifer testing was performed in 2007 to better assess the viability of the wellfield.

2.6 Environmental Activities at the Facility

Several investigations have been conducted at the Facility since 2001. The initial investigation addressed evidence of a possible fuel release during a UST decommissioning and resulted in further work to define the extent of potentially impacted soil and groundwater (AMEC 2002a, 2002b). In 2003, SECOR conducted a comprehensive Phase II ESA as a part of due diligence activities for Cenex during the property transaction to NuStar (SECOR, 2003). More recently, ACA has completed several investigations to characterize current environmental conditions (2007, 2008a, and 2008b). The scope of each of these investigations is described below. Section 3 utilizes the data collected from these investigations to describe the nature and extent of constituents detected in soil and groundwater during the past investigations.

Environmental Site Assessment – April 2002. Petroleum-impacted soils were reportedly encountered during the decommissioning of an underground gasoline-vapor recovery tank. Cenex excavated several test pits to delineate the extent of the impacted soils and approximately 60 to 100 cubic yards of soil were then excavated. Cenex retained AMEC to conduct further investigations to assess soil and groundwater conditions at and near the former UST.

On April 10 and 11, 2002, AMEC conducted soil and groundwater sampling activities at the Facility to evaluate the potential subsurface impact in the vicinity of the former underground gasoline-vapor recovery tank. Twelve (12) borings (GP-1 through GP-12) were completed by direct-push techniques or hand-

operated rotohammer to depths ranging from 20 to 32 feet bgs. Figure 2 shows the locations of the borings. As shown on the figure, the borings were completed around the vapor recovery system and the former UST pit.

In addition to completing the subsurface investigation, AMEC coordinated the removal of the soil excavated from the former UST area by Cenex and backfilling of the excavation. Prior to filling of the excavation with clean fill, four confirmation soil samples were collected (AMEC, 2002b). The samples were analyzed for volatile organic compounds (VOCs) by EPA Method 8260B. The results did not indicate the presence of fuel constituents remaining in soil in the excavation; the confirmation soil sample data are summarized in Table 2.

Seven soil samples (one each from borings GP-2, GP-3, GP-5, GP-7, GP-8, GP-9, and GP-12) were analyzed for the presence of petroleum hydrocarbons using NWTPH-HCID. Petroleum hydrocarbons were not identified in the samples (Table 2). Results are summarized on Figure 4.

Groundwater samples were collected from locations GP-3 and GP-7 through GP-12. The groundwater samples were analyzed for the presence of gasoline-range hydrocarbons (TPHg) and diesel-range hydrocarbons (TPHd) using NWTPH-Gx and NWTPH-Dx, respectively; polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270-SIM; and/or VOCs by EPA Method 8260B. TPHg, TPHd, BTEX (benzene, toluene, ethylbenzene, and xylenes), and several PAH constituents were detected in the grab groundwater samples (Tables 4 and 5). Based on the results of the groundwater analyses, AMEC concluded that additional assessment was needed to better assess the extent of the fuel constituents (AMEC, 2002a).

Subsurface Investigation – December 2002. Further subsurface investigation was conducted to evaluate the extent of petroleum hydrocarbons in soil and groundwater in the vicinity of the former UST, the existing vapor recovery unit, and the existing and former truck loading racks. The investigation included completion of 25 direct-push borings (GP-13 through GP-37) to depths ranging from 24 to 50 feet bgs, and installation and sampling of four monitoring wells (MW-1 through MW-4). Location of the borings and monitoring wells are shown on Figure 2.

Based on field screening results, soil samples selected from borings advanced within the former truck loading rack (GP-14 and GP-31 through GP-35) and from beneath the existing vapor recovery unit (GP-26) were submitted for chemical analysis. Soil samples were analyzed for one or more of the following:

- TPHg, TPHd, and heavy oil-range petroleum hydrocarbons (TPHho) using Method NWTPH-Gx and NWTPH-Dx;
- BTEX using EPA Method 8021B;
- PAHs using EPA Method 8270-SIM; and/or

- VOCs using EPA Method 8260B.

The laboratory results are summarized in Tables 2 (TPH and VOCs) and 3 (PAHs). Fuel-related constituents detected in soil samples were generally observed at depths of 6 feet or more and appear limited in extent.

Groundwater samples were collected from locations GP-21 through GP-25 and GP-28 through GP-30, and analyzed for one or more of the following:

- VOCs using EPA Method 8260B; and/or
- BTEX using EPA Method 8021B or EPA Method 8260B.

The laboratory results are summarized in Table 4 and detected concentrations are illustrated on Figure 5. As shown on Figure 5, fuel constituents are primarily detected near/southeast of the vapor recovery unit and decrease rapidly with distance from the unit.

Groundwater samples were collected from the four monitoring wells (MW-1 through MW-4) and analyzed for one or more of the following:

- TPHg, TPHd, and TPHho using Method NWTPH-Gx and NWTPH-Dx;
- Selected VOCs (1,2-dibromoethane, 1,2-dibromoethene, BTEX, methyl tert-butyl ether [MTBE], naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene, and n-propylbenzene) using EPA Method 8021B; and/or
- Total and dissolved lead using EPA 200 Series Method.

The laboratory results are summarized in Tables 6 (TPH and VOCs) and 7 (PAHs and lead). BTEX concentrations are illustrated on Figure 5.

The subsurface investigation successfully delineated the extent of fuel-related constituents in soil and groundwater near the former UST, vapor recovery unit, and truck loading rack area. Lead concentrations in groundwater were non-detect, supporting that the fuel constituents in the subsurface are not a source of lead to the groundwater (Table 7).

Phase II Environmental Site Assessment – June 2003. SECOR performed a comprehensive Phase II ESA during April 2003 in support of due diligence efforts during the property transfer from Cenex to NuStar. SECOR conducted research on the historical uses of the Facility to assist in developing the scope of the investigation. SECOR's research of historical operations indicated the following uses or potential areas of concern:

- Fuel storage in ASTs;
- Storm water pond used to collect non-contact storm water;
- Slop tank used to store oily wastes prior to recycling or disposal;
- Truck loading rack used to store fuel;
- Vapor recovery unit and OWS;
- Former UST; and
- Former pesticide/herbicide handling and storage areas associated with American Cyanamide's site usage.

SECOR implemented a site-wide investigation to assess the potential impacts of each of these site uses/areas of potential concern. Thirteen (13) direct-push borings, three temporary monitoring wells, and 14 hand auger borings were advanced across the site.

Soil samples were selected for laboratory analysis from locations SB-4, SB-8, SB-9, SB-11, HA-3, HA-5, and PMW-5 (Figure 2). Groundwater samples were collected from locations SB-1-GW, SB-3-GW, SB-4-GW, SB-8-GW through SB-11-GW, SB-18-GW, PMW-5W, and PMW-7W (Figure 2). In addition, the four on-site monitoring wells (MW-1 through MW-4) were re-sampled. Soil and groundwater samples were analyzed for one or more of the following:

- TPHg, TPHd, and TPHho using Method NWTPH-Gx and NWTPH-Dx;
- BTEX and VOCS using EPA Method 8020B;
- PAHs using EPA Method 8270M-SIM;
- Organochlorine pesticides using EPA Method 8081A;
- Organophosphorous pesticides using EPA Method 8141A;
- Chlorinated herbicides using EPA Method 8151A;
- Lead using EPA Method 6000/7140;
- Triazines using EPA Method 619; and/or
- Nitrate-Nitrogen Anions using EPA Method 300.0.

The laboratory results for hydrocarbons, BTEX, VOCs, and PAHs are summarized in Tables 2 (TPH and VOCs) and 3 (PAHs) for soil, and Tables 4 (TPH and VOCs) and 5 (PAHs) for groundwater. TPH and BTEX concentrations detected in soil are illustrated on Figure 4. TPH and BTEX concentrations detected in the groundwater samples collected from the direct-push boring locations are shown on Figure 5. As shown on the figures, significant areas of concern associated with fuel-related constituents in soil or groundwater were not identified outside of the former UST/vapor recovery unit area.

Detected concentrations of other analytes are located on concentration maps prepared by SECOR, contained in Appendix A for reference. Soil and groundwater samples were collected for pesticide, herbicides, triazines, and nitrogen analyses in areas where American Cyanamide historically operated. As shown on the figures in Appendix A, triazines, pesticide, and herbicides were not detected in soil or groundwater. Nitrates were not detected at concentrations that would be indicative of a source (Appendix A). Lead concentrations in groundwater appeared slightly elevated and are inconsistent with previous analyses performed by AMEC for lead in groundwater at the Facility. It appears that the turbidity in the grab groundwater samples selected for lead analysis may have biased the results high and they do not appear to be representative of site conditions.

Recent Site Investigations. Since 2006, ACA has performed several investigations to assess the current conditions at the Facility. The investigations include sampling of off-site wells, direct-push groundwater assessment of deeper groundwater at the Facility, and a year-long quarterly groundwater monitoring program. Below is a brief summary of the investigations.

- On September 26, 2006, two samples (IRIG-Firestone and House-Firestone) were collected off-site to evaluate the migration potential of groundwater constituents to the north of the Facility. The adjacent property to the north (the Firestone Property) is used to grow berry crops and shallow wells are used to supply the irrigation water for the property. Samples collected from the irrigation wells at the Firestone Property were analyzed for TPHg using NWTPH-Gx, TPHd using NWTPH-Dx, VOCs using EPA Method 8260B, and PAHs using EPA Method 8270 SIM. Laboratory results are summarized in Table 8 and the laboratory analytical report is located in Appendix C. None of the constituents analyzed were detected in the groundwater samples above method reporting limits (MRLs).
- On June 11, 2007, two direct-push probe locations (GP-1 and GP-2) were advanced to assess deeper groundwater conditions beneath the Facility. The push-probes were advanced to depths of between 65 and 72 feet, where the PAA unit was encountered. Samples collected from the deeper groundwater zone were analyzed for TPHg using NWTPH-Gx, TPHd using NWTPH-Dx, BTEX using EPA Method 8021B, and VOCs using EPA Method 8260B. Except for MTBE, detected at a concentration of 13.7 micrograms per liter (µg/L) at location GP-1, no other VOCs, TPH, or PAHs were detected in the direct-push explorations. The groundwater sample from GP-1 was collected from 70 feet below grade, north of the vapor recovery unit area. Results of the sampling are shown on Figure 6.
- A one-year quarterly groundwater monitoring program was initiated in the second quarter of 2007. Second, third, and fourth quarter 2007 and first quarter 2008 monitoring events were completed by ACA on May 25, August 24, and November 26, 2007, and February 27, 2008, respectively. Groundwater samples were analyzed for TPHg by method NW-TPH-Gx, and TPHd and TPHho by method NW-TPH-Dx with silica gel cleanup; and BTEX and fuel oxygenates by EPA Method

8260B. Results from the quarterly monitoring are tabulated in Table 6; results from the 2008 sampling event are shown on Figure 6.

3.0 Nature and Extent

The results of the previous investigations have provided a comprehensive assessment of the environmental conditions at the Facility. The nature and extent of the detected constituents are summarized in this section. This understanding is then used to develop the scope of the RI activities presented in Section 4.

3.1 Soil

As described in Section 2, SECOR researched the historical operations at the Facility and conducted a site-wide investigation to assess whether these operations caused impacts to soil or groundwater at the Facility. As shown on Figure 4 and maps contained in Appendix A, sources of non-fuel-related constituents were not identified, and fuel-related constituents were primarily confined to the area around the former UST and the vapor recovery unit. Sediment samples collected from the storm water pond (e.g., HA-6) indicated the presence of heavy-range hydrocarbons, but the additional borings installed within the pond were non-detect, supporting that the presence of these heavier hydrocarbons are limited in extent within the pond. Two borings on the western portion of the property (SB-8 and SB-9) indicated the presence of heavy petroleum hydrocarbons and related PAHs in the subsurface soil (e.g., below 8 feet bgs; Figure 4 and Appendix A). However, adjacent borings were non-detect for heavy hydrocarbons, demonstrating that the hydrocarbons are localized and their extent is defined.

TPHg were detected in soil in the eastern portion of the Facility near the former UST, vapor recovery unit, and former truck rack. Releases in this area were from subsurface sources and impacts appear confined to depths below 6 feet and above a depth of 21 feet bgs (Tables 2 and 3) Confirmation soil sampling and analysis confirmed that petroleum hydrocarbon-impacted soil associated with the former UST was removed. As shown on Figure 4, the lateral extent of remaining fuel constituents in subsurface soil does not appear to extend significantly beyond the source areas (i.e., the vapor recovery unit area or the truck loading rack area).

Based on this review, the previous investigations have adequately characterized soil at the Facility and defined the lateral and vertical extents of detected constituents sufficient for completion of a Risk Assessment. Results support that the majority of fuel-impacted soil was removed during the excavations around the former UST and vapor recovery unit, and remaining residual concentrations in soil do not appear sufficient to be a significant ongoing source of degradation to shallow groundwater.

3.2 Groundwater

Consistent with the soil results, sources of non-fuel-related constituents were not identified (Appendix A) and fuel-related constituents were primarily confined to the area around the former UST and the vapor recovery unit. Lead concentrations were not detected in the groundwater monitoring wells at concentrations that suggested that the fuel constituents were a source of lead at the Facility (Table 7). Grab groundwater samples collected by SECOR contained higher concentrations of lead (Appendix A); however, the disparity in the results between the grab samples and the monitoring well samples suggests that the SECOR results were influenced by turbidity in the samples and are not representative of site conditions. Heavy-range hydrocarbons were detected in two locations in the western portion of the Facility. However, borings located adjacent and directly downgradient (i.e., to the south/southeast) were non-detect for these constituents (Figure 5), demonstrating that the presence of the heavy hydrocarbons is localized, limited in extent, and does not extend off the Facility.

To better understand whether the lateral extent of fuel-related constituents in the eastern portion of the Facility has been adequately defined from the previous investigations, isoconcentration maps of the 2002/2003 data were prepared. Figure 7 illustrates the isoconcentration map for benzene. The extent of benzene is consistent with the results for the toluene, ethylbenzene, xylenes, and TPHg data and is used to discuss the extent of these constituents at the Facility. As demonstrated by Figure 7, the fuel-related constituents are primarily located adjacent to the vapor recovery unit. Concentrations decrease in all directions from the vapor recovery unit and support that the truck loading rack operations have not impacted groundwater at the Facility significantly, if at all.

Deeper groundwater sampling conducted by ACA near and to the north of the vapor recovery unit did not detect fuel-related constituents, with the exception of a low concentration of MTBE (13.7 µg/L). These results support that the vertical extent of the fuel-related constituents is confined to the shallow groundwater unit (the RAA) and the dissolved-phase constituents have not migrated vertically. The low detection of MTBE in the deeper groundwater directly adjacent to the source area and non-detect MTBE at the northern Facility border support that a "plume" of MTBE has not moved preferentially vertically beneath the Facility.

Sampling of two wells located at the Firestone Property to the north did not indicate the presence of fuel-related constituents in these wells (Appendix C). The wells (a potable use well and agricultural irrigation well) are screened in the RAA. These results provide further support that the extent of the fuel-related constituents at the Facility is defined and has not migrated off the property.

Quarterly monitoring of wells MW-1 through MW-4 was conducted by ACA in 2007/2008 to better assess current groundwater conditions in the area of the vapor recovery unit. As shown in Table 6, concentrations have decreased significantly—in some cases up to three orders of magnitude—since the initial investigations in 2002/2003. With the exception of TPHg in well MW-3, the most recent results demonstrate constituent concentrations below Ecology's Model Toxic Control Act (MTCA) Method A concentrations

(Table 6). The significant and expeditious decreases in groundwater concentrations support the conclusion that the residual concentrations of fuel-related constituents in Facility soil are not sufficient to present an ongoing source of degradation to shallow groundwater.

Concentrations of benzene, MTBE, and TPHg in monitoring wells MW-1 through MW-4 are shown on Figures 8 through 10, respectively. The plots illustrate the significant decrease in constituent concentrations observed in the monitoring wells since 2003. The figures also show the MTCA Method A cleanup levels on the plots to provide a comparison for current conditions. TPHg in well MW-3 was primarily below MTCA Method A levels in the 2007 sampling, but fluctuated and showed a concentration above MTCA level A concentrations in the 2008 event. MTBE has fluctuated in well MW-2 in the 2007/2008 sampling events, but decreased to below the 20 µg/L MTCA Method A level in the 2008 sampling event.

4.0 Scope of Work for Remedial Investigation

The following describes the approach and scope of work proposed to complete the RI for the Facility. Work will be conducted in accordance with the Sampling and Analysis Plan (SAP) in Appendix D (which includes a Quality Assurance Project Plan [QAPP]). A Facility-specific Health and Safety Plan (HASP) is included in Appendix E.

4.1 Approach

As described in Section 2.6, numerous investigations have been performed at the Facility and have defined the lateral and vertical extents of TPH, BTEX and other fuel oxygenates in soil and groundwater. Non-fuel-related constituents were not observed. Two potential data gaps were identified:

1) Current constituent concentrations are primarily below MTCA Method A levels in the vapor recovery unit area; however, additional monitoring of existing wells would be prudent to further demonstrate these results.
2) Verification of total lead concentrations from the on-site monitoring wells.

Two additional quarterly monitoring events are proposed to better assess the above conditions.

4.2 Procedures

The specific procedures for completing field work are detailed in the SAP in Appendix D. The following provides a brief description of the method to be used for the groundwater sampling.

4.2.1 Groundwater Monitoring

Two quarters of groundwater samples will be collected from the four monitoring wells located on the Facility. To the extent practicable, the first sampling event will be scheduled during the first quarter 2009 to assess the trend over a one-year cycle from the last sampling event (February 2008). Groundwater monitoring activities will include measuring groundwater levels and collecting samples from each of the four wells. The collected groundwater samples will be analyzed for TPHg by method NW-TPHgx; TPHd and TPHho by method NW-TPHdx with silica gel cleanup; and BTEX and fuel oxygenates by EPA Method 8260B.

In addition, during the first groundwater monitoring event, each monitoring well will be sampled for total lead using EPA Method Series 6000/7000. The samples will be field-filtered to prevent a high bias due to lead sorption on sediment. Follow-up analysis during the second groundwater monitoring event will be dependent upon results from the previous event.

Procedures for groundwater monitoring, including quality assurance/quality control (QA/QC), are detailed in the SAP in Appendix D.

4.2.2 Investigation-Derived Waste

Investigation-derived waste (IDW) will consist of decontamination water, purge water, and personal protection equipment (PPE). IDW will be placed in Department of Transportation (DOT)-approved drums. Each drum will be labeled with the project name, general contents, and date.

Decontamination and purge water will be temporarily drummed and stored on-site pending testing for profiling. The IDW water will then be treated and/or disposed of as appropriate based on the testing results (e.g., off-site, to sanitary sewer, or using on-site system, as appropriate).

Disposable items, such as sample tubing, disposable bailers, bailer line, gloves, protective overalls (e.g., Tyvek®), paper towels, etc., will be placed in plastic bags after use and deposited in trash receptacles for disposal.

5.0 Remedial Investigation Report

An RI Report will be prepared following completion of the field activities and receipt of the analytical data. The RI Report will provide a detailed summary of the scope and results of previous investigations performed at the Facility, including tabulations of the soil and groundwater data collected during the previous investigations and maps illustrating locations of explorations. Previous investigation reports will be included as appendices, as appropriate, to support the descriptions in the report. The results of the work proposed in

this RI Work Plan will also be detailed, documenting the field activities and analytical results. The Facility Conceptual Model will be described, incorporating the results of the previous and recent investigations.

The report will be prepared in general accordance with the following outline:

1) Introduction
2) Background (Facility History, Setting, and Operations)
3) Summary of Previous Investigations
4) Geology and Hydrogeology
5) Results of Recent Investigation to Complete the RI
7) Beneficial Land and Water Use Survey
8) Site Conceptual Model
9) References

Information provided in appendices will include:

- Facility photographs, as applicable;
- Previous investigation reports and/or applicable excerpts, tables, and figures;
- Field methods and sampling procedures used in Facility investigations;
- Boring logs and well construction details; and
- Analytical data from this investigation, including a Quality Assurance Review.

6.0 Project Schedule

The RI Report will be submitted by November 9, 2009, in accordance with Exhibit D of the Agreed Order, assuming approval of this RI Work Plan is obtained by February 28, 2009.

7.0 References

AMEC, 2002a. Phase II Environmental Site Assessment - Cenex Harvest State Cooperatives. May 2002.

AMEC, 2002b. Subsurface Investigation and Soil Removal Report - Cenex Harvest State Cooperatives. December 2002

Ash Creek Associates (ACA), 2007. Evaluation of Migration Potential Due to Proposed Clark Public Utilities Fruit Valley Well Field. April 10, 2007.

Ash Creek Associates (ACA), 2008a. Results of Direct-Push Groundwater Assessment. January 28, 2008.

Ash Creek Associates (ACA), 2008b. Groundwater Monitoring Report – Quarterly Monitoring 2007. January 28, 2008.

Pacific Groundwater Group (PGG), 2001. Clark Public Utilities Lakeshore Wellfield Exploration and Testing Program. February 2001.

Pacific Groundwater Group (PGG), 2003. Work Plan for Drilling and Testing Test Well TW-7, Clark Public Utilities Fruit Valley Test Well Site. April 2003.

SECOR, 2003. Results of Phase II Environmental Site Assessment. June 6, 2003.

Table 1
Historical Groundwater Elevation Data
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

Well Number	Top of Casing Elevation (feet above MSL)[1]	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-1	NS	05/14/02	16.00	NS
	26.66	05/25/07	14.92	11.74
	26.66	08/24/07	18.67	7.99
	26.66	11/26/07	17.91	8.75
	26.66	02/27/08	16.92	9.74
MW-2	NS	05/14/02	27.46	NS
	38.21	05/25/07	26.46	11.75
	38.21	08/24/07	30.17	8.04
	38.21	11/26/07	29.42	8.79
	38.21	02/27/08	28.50	9.71
MW-3	NS	05/14/02	28.15	NS
	39.11	05/25/07	27.17	11.94
	39.11	08/24/07	31.04	8.07
	39.11	11/06/07	30.36	8.75
	39.11	02/27/08	28.71	10.40
MW-4	NS	05/14/02	29.40	NS
	40.17	05/25/07	28.35	11.82
	40.17	08/24/07	32.12	8.05
	40.17	11/06/07	31.40	8.77
	40.17	02/27/08	30.40	9.77

Notes:

1. Survey elevations determined by Statewide Land Surveying, October, 2007.
2. feet above MSL = Feet above mean sea level.
3. feet BTOC = Feet below top of casing.
4. NS = Not surveyed.

Table 2
Historical Soil Analytical Results: TPH and VOCs
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

				Concentrations in mg/kg (ppm)																					
Sample Location	Sample Date	Depth	TPH-HCID	TPHg	TPHd	TPHho	Benzene	Toluene	Ethylbenzene	Xylenes	1,2-Dibromo-ethane	1,2-Dichloro-ethane	Ethanol	tert-Butyl alcohol	Ethyl tert-Butyl Ether (ETBE)	Diisopropyl Ether (DIPE)	Methyl tert-butyl ether (MTBE)	Tert-Amyl Methyl Ether (TAME)	Naphthalene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Isopropyl-benzene	n-Propyl-benzene	n-Butyl-benzene	sec-Butyl-benzene	Chloroform
Soil Borings																									
GP-2	04/10/02-4/11/02	10-12	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-3	04/10/02-4/11/02	10-12	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-4	04/10/02-4/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-5	04/10/02-4/11/02	17-19	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-6	04/10/02-4/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-7	04/10/02-4/11/02	14-16	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-8	04/10/02-4/11/02	6-8	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-9	04/10/02-4/11/02	16-18	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-10	04/10/02-4/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-11	04/10/02-4/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-12	04/10/02-4/11/02	22-24	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP14	05/09/02	10-12	--[9.]	3,230	19,700	<1,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP16	05/09/02	10-12	ND[8.]	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW2	05/09/02	25-26.5	ND[8.]	314	<25	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP26	06/26/02	6-8	--	5,850	--	--	<2.5	9.74	91.3	825	<2.5	<2.5	--	--	--	--	<10	--	124	891	293	29.7	125	--	--
GP27	06/26/02	10-12	--	4.96	--	--	<0.0050	<0.0050	<0.0050	<0.1	<0.05	<0.05	--	--	--	--	<0.2	--	<0.5	<0.1	<0.05	<0.2	<0.05	--	--
GP31	06/26/02	22-24	--	<2.5	<25	<50	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP32	06/26/02	6.5-8	--	910	2,530	<50	<5	<5	<5	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP33	06/26/02	8-10	--	363	31,500	<2,500	<0.500	<0.500	7.2	33.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP34	06/26/02	6-8	--	728	13,600	<1,000	<0.500	<0.500	0.717	16.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP35	06/26/02	8-10	--	10.3	<25	<50	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-1	04/17/03	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-1	04/17/03	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2	04/17/03	4	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2	04/17/03	22	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3	04/18/03	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3	04/18/03	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-4	04/17/03	3	ND[8.]	--	<25	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-4	04/17/03	27	ND[8.]	--	<25	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-5	04/17/03	11	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-6	04/16/03	3	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-6	04/16/03	16	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-7	04/17/03	12	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-8	04/17/03	8	--[9.]	1,020	7,890	<1,000	<0.500	<0.500	<0.500	7.45	--	--	--	--	--	--	--	--	6.14	31	20.4	<1	3.22	3.54	--	<0.5
SB-8	04/17/03	16	--[9.]	369	1,440	<50	<0.500	<0.500	<0.500	<1,000	--	--	--	--	--	--	--	--	6.47	1.67	<0.5	1.13	0.837	<2.5	--	0.539
SB-9	04/18/03	12	--[9.]	504	1,890	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-9	04/18/03	15	--[9.]	168	1,210	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-10	04/18/03	4	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-11	04/16/03	2.5	ND[8.]	--	<25	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-11	04/16/03	14	ND[8.]	--	<25	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-12	04/22/03	3	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-12	04/18/03	12	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-13	04/22/03	2	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-13	04/22/03	5	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-18	04/18/03	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-18	04/18/03	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hand Augers																									
HA-1	04/17/03	3	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-1	04/17/03	6	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-2	04/18/03	2	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-2	04/18/03	5	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-3	04/17/03	2	--	--	--	--	<0.1	<0.1	<0.1	<300	--	--	--	--	--	--	--	--	<0.2	<0.1	<0.1	<0.2	<0.1	<0.5	--	<0.1
HA-3	04/17/03	5.5	--	--	--	--	<0.1	<0.1	<0.1	<300	--	--	--	--	--	--	--	--	<0.2	<0.1	<0.1	<0.2	<0.1	<0.5	--	<0.1
HA-4	04/18/03	2	ND[8.]	--	--	--	<0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
HA-4	04/18/03	5	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
HA-5	04/18/03	3	--[9.]	3,320	4,780	<50	<5.0	10.5	48.5	500	--	--	--	--	--	--	--	--	76.4	341	109	<10	39.1	<25	--	6.6
HA-5	04/18/03	5	--[9.]	2,290	10,700	<250	6.7	216	177	1,204	--	--	--	--	--	--	--	--	141	576	176	20.8	83.3	34	--	<5
Washington DOE MTCA Method A cleanup level				100/30	2,000	2,000	0.03	7	6	9	NA	NA	NA	NA	NA	NA	NA	NA	5	NA	NA	NA	NA	NA	NA	NA

Please refer to notes at end of table.

Table 2
Historical Soil Analytical Results: TPH and VOCs
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

				Concentrations in mg/kg (ppm)																					
Sample Location	Sample Date	Depth	TPH-HCID	TPHg	TPHd	TPHho	Benzene	Toluene	Ethylbenzene	Xylenes	1,2-Dibromo-ethane	1,2-Dichloro-ethane	Ethanol	tert-Butyl alcohol	Ethyl tert-Butyl Ether (ETBE)	Diisopropyl Ether (DIPE)	Methyl tert-butyl ether (MTBE)	Tert-Amyl Methyl Ether (TAME)	Naphthalene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Isopropyl-benzene	n-Propyl-benzene	n-Butyl-benzene	sec-Butyl-benzene	Chloroform
Hand Augers																									
HA-6	04/18/03	2	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-6	04/18/03	5	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-7	04/14/03	6	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-8	04/14/03	6	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-9	04/15/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-10	04/15/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-11	04/15/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-12	04/15/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-13	04/22/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Soil Sample from Advancement of Temporary Monitoring Wells																									
PMW-5	04/16/03	8	ND[8.]		31	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PMW-5	04/16/03	10	--[9.]	--	146	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PMW-6	04/16/03	3	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PMW-6	04/16/03	12	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PMW-7	04/16/03	3	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PMW-7	04/16/03	16	ND[8.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Soil Samples from Excavation Confirmation																									
N. Wall	5/20/2002	10	--	--	--	--	<0.100	<0.100	<0.100	<0.2	--	--	--	--	--	--	<0.1	--	<0.2	<0.1	<0.1	<0.2	<0.1	<0.5	<0.1	<0.1
N. Wall	5/20/2002	3	--	--	--	--	<0.100	<0.100	<0.100	<0.2	--	--	--	--	--	--	<0.1	--	<0.2	<0.1	<0.1	<0.2	<0.1	<0.5	<0.1	<0.1
E. Wall	5/21/2002	10	--	--	--	--	<0.100	<0.100	<0.100	<0.2	--	--	--	--	--	--	<0.1	--	<0.2	<0.1	<0.1	<0.2	<0.1	<0.5	<0.1	<0.1
E. Wall	5/21/2002	3	--	--	--	--	<0.100	<0.100	<0.100	<0.2	--	--	--	--	--	--	<0.1	--	<0.2	<0.1	<0.1	<0.2	<0.1	<0.5	<0.1	<0.1
Washington DOE MTCA Method A cleanup level[12.]				100/30[11.]	2,000	2,000	0.03	7	6	9	NA	NA	NA	NA	NA	NA	NA	NA	5	NA	NA	NA	NA	NA	NA	NA

Notes:

1. TPHg = Total petroleum hydrocarbons in the gasoline carbon range by NW-TPH-Gx method.
2. TPHd = Total petroleum hydrocarbons in the diesel carbon range by NW-TPH-Dx method with silica gel cleanup.
3. TPHho = Total petroleum hydrocarbons in the heavy oil carbon range by NW-TPH-Dx method with silica gel cleanup.
4. mg/kg (ppm) = Milligrams per kilogram (parts per million).
5. -- = Not analyzed or not available.
6. < = Not detected at or above the specified laboratory method reporting limit (MRL).
7. ND= Not Detected; MRL not availbale.
8. No detection for gasoline-, diesel-, and heavy oil-range hydrocarbons using NWTPH-HCID.
9. A detection of either gasoiline-, diesel-, and/or heavy oil-range hydrocarbon was detected using NWTPH-HCID. Follow-up analysis was completed.
10. **Boldface** value represents detected concentrations of listed analyte.
11. TPHg cleanup level dependent on presence of benzene in soil. Cleanup level = 30 mg/kg if benzene is present and 100 mg/kg if benzene is not present.
12. Washington DOE MTCA = Washington Department of Ecology Model Toxics Control Act.
13. NA = Cleanup level not available.

Table 3
Historical Soil Analytical Results: PAHs
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

			Concentrations in mg/kg (ppm)															
Sample Location	Sample Date	Depth (feet bgs)	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)-anthracene	Benzo(a)pyrene	Benzo(b)-fluoranthene	Benzo(ghi)-perylene	Benzo(k)-fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)-pyrene	Napthalene	Phenanthrene	Pyrene
GP-26	06/26/02	6-8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-27	06/26/02	10-12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-31	06/26/02	22-24	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134
GP-32	06/26/02	6.5-8	1.73	<0.268	0.968	0.828	0.343	0.283	0.142	0.316	0.646	0.065	1.74	2.87	0.15	19.80	6.75	2.05
GP-33	06/26/02	8-10	6.27	<0.335	8.35	0.0458	0.0146	0.0144	<0.0134	<0.0134	0.0863	<0.0134	<0.670	8.65	<0.0134	12.80	33.40	0.989
GP-34	06/26/02	6-8	4.34	<0.335	<3.35	0.485	0.198	0.162	0.090	0.170	0.386	0.037	1.38	5.91	0.094	11.90	19.10	3.33
GP-35	06/26/02	8-10	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134
SB-4	04/17/03	3	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134
SB-4	04/17/03	27	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134
SB-8	04/17/03	8	3.85	<1.68	<2.68	<0.134	<0.134	<0.134	<0.134	<0.134	<0.134	<0.134	<0.670	7.03	<0.134	5.20	23.50	3.09
SB-8	04/17/03	16	6.72	<0.268	<0.402	<0.0268	<0.0268	<0.0268	<0.0268	<0.0268	<0.0268	<0.0268	<0.134	1.14	<0.0268	4.44	4.02	0.553
SB-9	04/18/03	12	<0.670	<0.670	268	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.067	1.92	<0.0134	3.49	4.24	0.248
SB-9	04/18/03	15	0.104	<0.0586	<0.0402	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	0.275	<0.0134	1.42	0.595	0.040
SB-11	04/16/03	2.5	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134
SB-11	04/16/03	14	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134
Hand Augers																		
HA-5	04/18/03	3	<6.7	<6.7	0.398	<0.067	<0.067	<0.067	<0.067	<0.067	<0.067	<0.067	0.078	<6.7	<0.067	101	3.12	0.198
HA-5	04/18/03	5	<6.7	<6.7	0.334	<0.067	<0.067	<0.067	<0.067	<0.067	<0.067	<0.067	0.081	<6.7	<0.067	114	2.76	0.198
Soil Sample from Advancement of Temporary Monitoring Wells																		
PMW-5	04/16/03	8	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134
PMW-5	04/16/03	10	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	<0.0134	0.035
Washington DOE MTCA Method A cleanup level[8]			NA	NA	NA	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	5	NA	NA

Notes:

1. PAHs = Polynuclear Aromatic Hydrocarbons by EPA 8270 SIM.
2. mg/kg (ppm) = Milligrams per kilogram (parts per million).
3. **Boldface** value represents detected concentrations of listed analyte.
4. < = Not detected at or above the specified laboratory method reporting limit (MRL).
5. Detected concentration is estimated based on presence of analyte in blank.
6. ND = Not Detected.
7. NA = Cleanup level not available.
8. Washington DOE MTCA Method A cleanup level = Washington Department of Ecology Model Toxics Control Act Method A cleanup level.

Table 4
Historical Grab Groundwater Sample Analytical Results: TPH and VOCs
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

				Concentrations in mg/L (ppm)															
Sample Location	Sample Date	Depth (feet bgs)	TPH-HCID	TPHg	TPHd	TPHho	Benzene	Toluene	Ethyl-benzene	Xylenes	Methyl tert-butyl ether (MTBE)	Tert-Amyl Methyl Ether (TAME)	Naphthalene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Isopropyl-benzene	n-Propylbenzene	n-Butyl-benzene	sec-Butyl-benzene	Chloroform
Groundwater Samples from Soil Borings																				
GP-1	04/10/02-04/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-2	04/10/02-04/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-3	04/10/02-04/11/02	24	--	25.1	ND	--	5.2	1.03	1.41	1.258	--	--	0.14	0.338	0.128	--	0.113	--	--	--
GP-4	04/10/02-04/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-5	04/10/02-04/11/02	22	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-6	04/10/02-04/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-7	04/10/02-04/11/02	24	--	60.2	ND	--	3.97	16.2	2.17	9.69	--	--	0.212	0.914	0.228	--	0.113	--	--	--
GP-8	04/10/02-04/11/02	23	--	--	--	--	15	32.9	4.51	19.57	--	--	0.462	2.11	0.55	--	0.268	--	--	--
GP-9	04/10/02-04/11/02	24	--	0.536	--	--	ND	ND	0.00135	0.01153	--	--	0.0782	0.0102	0.0114	--	0.0031	0.0017	--	--
GP-10	04/10/02-04/11/02	23	--	159	ND	--	4.44	28.1	5.09	23.07	--	--	0.476	2.79	0.728	--	0.358	--	--	--
GP-11	04/10/02-04/11/02	32	--	--	--	--	14.2	48.3	8.25	36.6	--	--	1.91	6.4	1.76	--	0.835	--	--	--
GP-12	4/11/2002	32	--	--	--	--	0.698	1.64	0.363	0.999	--	--	--	0.11	0.0318	--	0.0244	--	--	--
GP-13	05/09/02-05/10/02	--	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	--	--	--	--	--	--	--	--
GP-14	5/9/2002	--	--	--	--	--	<0.001	<0.001	<0.001	0.00518	<0.001	--	<0.002	0.00219	<0.001	<0.002	<0.001	<0.005	<0.001	<0.001
GP-15	05/09/02-05/10/02	--	--	--	--	--	<0.0005	<0.0005	0.0019	0.0186	--	--	--	--	--	--	--	--	--	--
GP-16	5/9/2002	--	--	--	--	--	<0.0005	<0.0005	0.00515	0.0522	--	--	--	--	--	--	--	--	--	--
GP-17	05/09/02-05/10/02	--	--	--	--	--	0.0243	0.00056	0.00186	0.0146	--	--	--	--	--	--	--	--	--	--
GP-18	05/09/02-05/10/02	--	--	--	--	--	0.00064	0.00053	0.00051	0.00411	--	--	--	--	--	--	--	--	--	--
GP-19	05/09/02	34	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	--	--	--	--	--	--	--	--
GP-20	05/09/02	34	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	--	--	--	--	--	--	--	--
GP-21	05/10/02	34	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	--	--	--	--	--	--	--	--
GP-22	05/10/02	34	--	--	--	--	5.81	29.2	6.31	28.6	--	--	--	--	--	--	--	--	--	--
GP-23	05/10/02	34	--	--	--	--	0.00544	0.101	0.0667	0.302	--	--	--	--	--	--	--	--	--	--
GP-24	05/10/02	24	--	--	--	--	0.00094	0.0144	0.00846	0.0424	--	--	--	--	--	--	--	--	--	--
GP-25	05/10/02	24	--	--	--	--	0.00062	0.00882	0.00398	0.0193	--	--	--	--	--	--	--	--	--	--
GP-28	06/26/02	26	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	--	--	--	--	--	--	--	--
GP-29	06/26/02	50	--	--	--	--	0.538	6.14	1.55	7.14	--	--	--	--	--	--	--	--	--	--
GP-30	06/26/02	26	--	--	--	--	<0.0005	0.000626	0.000507	<0.001	--	--	--	--	--	--	--	--	--	--
SB-1	04/17/03	36	ND[7.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2	04/17/03	--	ND[7.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3	04/18/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-4	04/17/03	--	ND[7.]	--	<0.526	<1.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-5	04/17/03	--	ND[7.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-6	04/18/03	24	ND[7.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-7	04/17/03	--	ND[7.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-8	04/17/03	--	--[6.]	--	20.9	<1.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-9	04/18/03	--	--[6.]	--	66.2	<1.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-10	04/18/03	--	ND[7.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-11	04/16/03	--	ND[7.]	--	<0.500	<1.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-12	04/18/03	--	ND[7.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-18	04/18/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-1	06/11/07	70-72	--	--	--	--	<0.001	<0.001	<0.001	<0.002	0.0137	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	--	--	--
GP-2	06/11/07	64-66	--	--	--	--	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	--	--	--
Groundwater Samples from Temporary Monitoring Wells																				
PMW-5	04/16/03	10-20	--[7.]	--	1.88	<0.943	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PMW-6	04/16/03	5-20	ND[6.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PMW-7	04/16/03	9-24	ND[6.]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Groundwater Sample from Irrigation Well																				
IRRIG WELL	04/17/03	--		--	--	--	<0.001	<0.001	<0.001	<0.002	<0.001	--	<0.002	<0.001	<0.001	<0.002	<0.001	<0.005	<0.001	<0.001
Washington DOE MTCA Method A cleanup level[11.]				0.800[10.]	0.5	0.5	0.0	1	0.7	1	0.02	NA	0.16	NA	NA	NA	NA	NA	NA	NA

Notes:

1. TPHg = Total petroleum hydrocarbons in the gasoline carbon range by NW-TPH-Gx method.
2. TPHd = Total petroleum hydrocarbons in the diesel carbon range by NW-TPH-Dx method.
3. TPHho = Total petroleum hydrocarbons in the heavy oil carbon range by NW-TPH-Dx method.
4. Benzene, toulene, ethylbenzene, and total xylenes (BTEX) analysis per EPA Method 8260B.
5. Volatile organic compounds (VOCs) analysis per EPA Method 8260B.
6. -- = Not analyzed.
7. No detection for gasoline-, diesel-, and heavy oil-range hydrocarbons using NWTPH-HCID.
8. A detection of either gasoiline-, diesel-, and/or heavy oil-range hydrocarbon was detected using NWTPH-HCID. Follow-up analysis was completed.
8. < = Not detected at or above the specified laboratory method reporting limit (MRL).
9. mg/L (ppm) = Milligrams per liter (parts per million).
10. TPHg cleanup level dependent on presence of benzene in groundwater. Cleanup level = 0.800 mg/L if benzene is present and 1.00 mg/L if benzene is not present.
11. Washington DOE MTCA = Washington Department of Ecology Model Toxics Control Act.
12. ND = Not detected at or above the specified laboratory MRL.
13. NA = Cleanup level not available.

Table 5
Historical Grab Groundwater Sample Analytical Results: PAHs
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

			Concentrations in mg/L (ppm)															
Sample Location	Sample Date	Depth (feet bgs)	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(ghi)-perylene	Benzo(k)-fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)-pyrene	Napthalene	Phenanthrene	Pyrene
Groundwater Samples from Soil Borings																		
SB-4	04/17/03	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
SB-8	04/17/03	--	**0.0112**	<0.00468	<0.00468	<0.00468	<0.00468	<0.00468	<0.00468	<0.00468	<0.00468	<0.00936	<0.00468	**0.0179**	<0.00468	**0.642**	**0.0323**	<0.00468
SB-9	04/18/03	--	<0.00789	<0.00421	**0.00404**	<0.00105	<0.00105	<0.00105	<0.00105	<0.00105	<0.00105	<0.00211	<0.00105	**0.00209**	<0.00105	**0.728**	**0.0389**	**0.00235**
SB-11	04/16/03	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	**0.000266**	<0.00010	<0.00010
GP-1	06/11/07	70-72	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.000192	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962
GP-2	06/11/07	64-66	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.000192	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962	<0.0000962
Groundwater Samples from Temporary Monitoring Wells																		
PMW-5	04/16/03		<0.00010	<0.00010	<0.00015	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	**0.00034**	<0.00010	<0.00010
Washington DOE MTCA Method A cleanup level[7.]			NA	NA	NA	0.100[8.]	0.100[8.]	0.100[8.]	NA	0.100[8.]	0.100[8.]	0.100[8.]	NA	NA	0.100[8.]	160	NA	NA

Notes:

1. BTEX (Benzene, toluene, ethylbenzene, and xylenes) and fuel oxygenates by EPA Method 8260B. Results reported in milligrams per liter.
2. mg/L (ppm) = Milligrams per liter (parts per million).
3. **Boldface** value represents detected concentrations of listed analyte.
4. < = Not detected at or above the specified laboratory method reporting limit (MRL).
5. Detected concentration is estimated based on presence of analyte in blank.
6. NA = Cleanup level not available.
7. Washington DOE MTCA Method A cleanup level = Washington Department of Ecology Model Toxics Control Act Method A cleanup level.
8. 0.100 mg/L is the cleanup level for the summation of carcinogenic PAHs.

Table 6
Analytical Results from Groundwater Monitoring Wells: TPH and VOCs
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

			Concentrations in mg/L (ppm)																				
Well Number	Sample Date	Screened Interval (feet bgs)	TPHg	TPHd	TPHho	Benzene	Toluene	Ethylbenzene	Xylenes	1,2-Dibromoethane	1,2-Dichloroethane	Ethanol	tert-Butyl alcohol	Ethyl tert-Butyl Ether (ETBE)	Diisopropyl Ether (DIPE)	Methyl tert-butyl ether (MTBE)	Tert-Amyl Methyl Ether (TAME)	Naphthalene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Isopropyl-benzene	n-Propylbenzene	n-Butyl-benzene	sec-Butyl-benzene	Chloroform
MW-1	05/14/02	14.5-24.5	<0.080	0.455 [5.]	<0.500	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	--	--	--	--	<0.002	--	<0.002	<0.001	<0.0005	<0.002	<0.0005	--	--	--
	05/19/03		--	--	--	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001					<0.001		<0.002	<0.001	<0.001	<0.002	<0.001	<0.05	<0.001	<0.001
	05/25/07		<0.080	<0.238	<0.476	<0.0002	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.150	<0.025	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.0005	<0.002	<0.0005	--	--	--
	08/24/07		<0.1	<0.238	<0.476	<0.001	<0.002	<0.002	<0.006	<0.0005	<0.0005	<0.100	<0.020	<0.0005	<0.0005	<0.0005	<0.0005	<5.0	<0.001	<0.001	<0.002	<0.001	--	--	--
	11/26/07		<0.080	<0.236	<0.472	<0.001	<0.002	<0.002	<0.006	<0.0005	<0.0005	<0.100	<0.020	<0.0005	<0.0005	<0.0005	<0.0005	<5.0	<0.001	<0.001	<0.002	<0.001	--	--	--
	02/27/08		<0.080	<0.294	<0.588	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.100	<0.0010	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--
MW-2	05/14/02	20-35	41.4	<0.250	<0.500	4.35	2.68	1.84	8.72	<0.025	<0.025	--	--	--	--	0.7	--	0.106	0.665	0.194	<100	0.071	--	--	--
	05/19/03		--	--	--	0.534	0.00975	0.194	0.876	<0.05	<0.05	--	--	--	--	0.0776	--	0.015	0.16	0.0624	0.0099	0.0158	0.0033	<0.05	<0.05
	05/25/07		0.439	<0.238	<0.476	0.071	0.00114	0.0361	0.0453	<0.0005	<0.0005	<0.150	<0.025	<0.001	<0.001	0.0182	<0.001	<0.002	0.04	0.0335	0.003	0.00249	--	--	--
	08/24/07		0.102	<0.238	<0.476	<0.001	<0.002	<0.002	<0.006	<0.0005	<0.0005	<0.100	<0.020	<0.0005	<0.0005	0.059	<0.0005	<0.05	<0.001	<0.001	0.0032	<0.001	--	--	--
	11/26/07		<0.080	<0.236	<0.472	<0.001	<0.002	<0.002	<0.006	<0.0005	<0.0005	<0.100	<0.020	<0.0005	<0.0005	0.083	<0.0005	<0.05	<0.001	<0.001	<0.002	<0.001	--	--	--
	02/27/08		0.0817	<0.294	<0.588	0.005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.100	<0.0010	<0.0005	<0.0005	0.015	<0.0005	<0.0005	<0.0005	<0.0005	0.00034 J	<0.0005	--	--	--
MW-3	05/14/02	24.5-34.5	4.5	<0.250	<0.500	0.0419	0.0096	0.293	0.521	<0.001	<0.001	--	--	--	--	<4.00	--	0.0489	0.296	0.106	0.0213	0.0591	--	--	--
	05/19/03		--	--	--	0.0908	0.0097	0.338	0.5382	<0.05	<0.05	--	--	--	--	0.0037	--	0.0308	0.315	0.0895	0.0194	0.0623	--	--	--
	05/25/07		0.361	<0.238	<0.476	<0.0005	<0.0005	0.0132	0.0145	<0.0005	<0.0005	<0.150	<0.025	<0.001	<0.001	<0.002	<0.001	<0.002	0.0107	0.00348	0.00532	0.0093	0.0068	<0.05	<0.05
	08/24/07		<0.1	<0.238	<0.476	<0.001	<0.002	<0.002	<0.006	<0.0005	<0.0005	<0.100	<0.020	<0.0005	<0.0005	<0.0005	<0.0005	<0.05	<0.001	<0.001	<0.002	<0.001	--	--	--
	11/26/07		<0.080	<0.236	<0.472	0.0011	<0.002	0.0066	<0.006	<0.0005	<0.0005	<0.100	<0.020	<0.0005	<0.0005	0.0069	<0.0005	<0.05	<0.001	<0.001	0.0031	0.0012	--	--	--
	02/27/08		2.14	0.387 [6.]	<0.500	<0.0005	<0.0005	0.17	0.17	<0.0005	<0.0005	<0.100	<0.0010	<0.0005	<0.0005	<0.0005	<0.0005	0.0064	0.21	0.051	0.022	0.056	--	--	--
MW-3 DUP	02/27/08	24.5-34.5	1.85	0.342	<0.485	0.0011	<0.0005	0.19	0.2	<0.0005	<0.0005	<0.100	<0.0010	<0.0005	<0.0005	<0.0005	<0.0005	0.0076	0.23	0.058	0.026	0.066	--	--	--
MW-4	05/14/02	20-35	<0.080	0.358 [5.]	<0.500	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	--	--	--	--	<0.002	--	<0.002	<0.001	<0.0005	<0.002	<0.0005	--	--	--
	05/19/03		--	--	--	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	--	--	--	--	<0.001	--	<0.002	<0.001	<0.001	<0.002	<0.001	--	--	--
	05/25/07		<0.080	<0.238	<0.476	<0.0002	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.150	<0.025	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.0005	<0.002	<0.0005	<0.05	<0.001	<0.001
	08/24/07		<0.1	<0.238	<0.476	<0.001	<0.002	<0.002	<0.006	<0.0005	<0.0005	<0.100	<0.020	<0.0005	<0.0005	<0.0005	<0.0005	<0.05	<0.001	<0.001	<0.002	<0.001	--	--	--
	11/26/07		<0.080	<0.236	<0.472	<0.001	<0.002	<0.002	<0.006	<0.0005	<0.0005	<0.100	<0.020	<0.0005	<0.0005	<0.0005	<0.0005	<0.05	<0.001	<0.001	<0.002	<0.001	--	--	--
	02/27/08		<0.080	<0.248	<0.495	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.100	<0.0010	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--
Washington DOE MTCA Method A cleanup level [9.]			0.800 [8.]	0.5	0.5	0.0	1	0.7	1	NA	0.005	NA	NA	NA	NA	0.02	NA	0.16	NA	NA	NA	NA	NA	NA	NA

Notes:

1. TPHg = Total petroleum hydrocarbons in gasoline carbon range by NW-TPHgx method.
2. TPHd = Total petroleum hydrocarbons in diesel carbon range by NW-TPHdx method with silica gel cleanup.
3. TPHho = Total petroleum hydrocarbons ion heavy oil carbon range NW-TPHdx method with silica gel cleanup.
4. **Boldface** values represent detected concentrations of listed analyte.
5. Analysis completed without silica gel cleanup. Lab detected hydrocarbons with non-petroleum peaks or elution pattern that suggests the presence of biogenic interference.
6. Hydrocarbon pattern most closely resembles a blend of heavy gas/light diesel range components.
7. mg/L (ppm) = Milligrams per liter (parts per million).
8. TPHg cleanup level dependent on presence of benzene in groundwater. Cleanup level = 0.800 mg/L if benzene is present and 1.00 mg/L if benzene is not present.
9. Washington DOE MTCA Method A cleanup level = Washington Department of Ecology Model Toxics Control Act Method A cleanup level.
10. < = Not detected at or above the specified laboratory method reporting limit (MRL).

Table 7
Analytical Results from Groundwater Monitoring Wells: PAHs and Lead
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

			Concentrations in mg/L (ppm)																
Well Number	Sample Date	Screened Interval (feet bgs)	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(ghi)-perylene	Benzo(k)-fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)-pyrene	Napthalene	Phenanthrene	Pyrene	Total Lead	Dissolved Lead
MW-1	05/19/03	14.5-24.5	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	**0.000238**	<0.001
MW-2	05/01/03	20-35	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	**0.0153**	<0.00010	<0.00010	<0.001	<0.001
MW-3	05/19/03	24.5-34.5	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	**0.0242**	<0.00010	<0.00010	<0.001	<0.001
MW-4	05/19/03	20-35	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	**0.000156**	<0.001
Washington DOE MTCA Method A cleanup level[5]			0.005	1	0.7	1	NA	0.005	NA	NA	NA	NA	0.02	NA	0.16	NA	NA	NA	0.015	0

Notes:

1. mg/L (ppm) = Milligrams per liter (parts per million).
2. **Boldface** values represent detected concentrations of listed analyte.
3. < = Not detected at or above the specified laboratory method reporting limit (MRL).
4. NA = Cleanup level not available.
5. Washington DOE MTCA Method A cleanup level = Washington Department of Ecology Model Toxics Control Act Method A cleanup level.

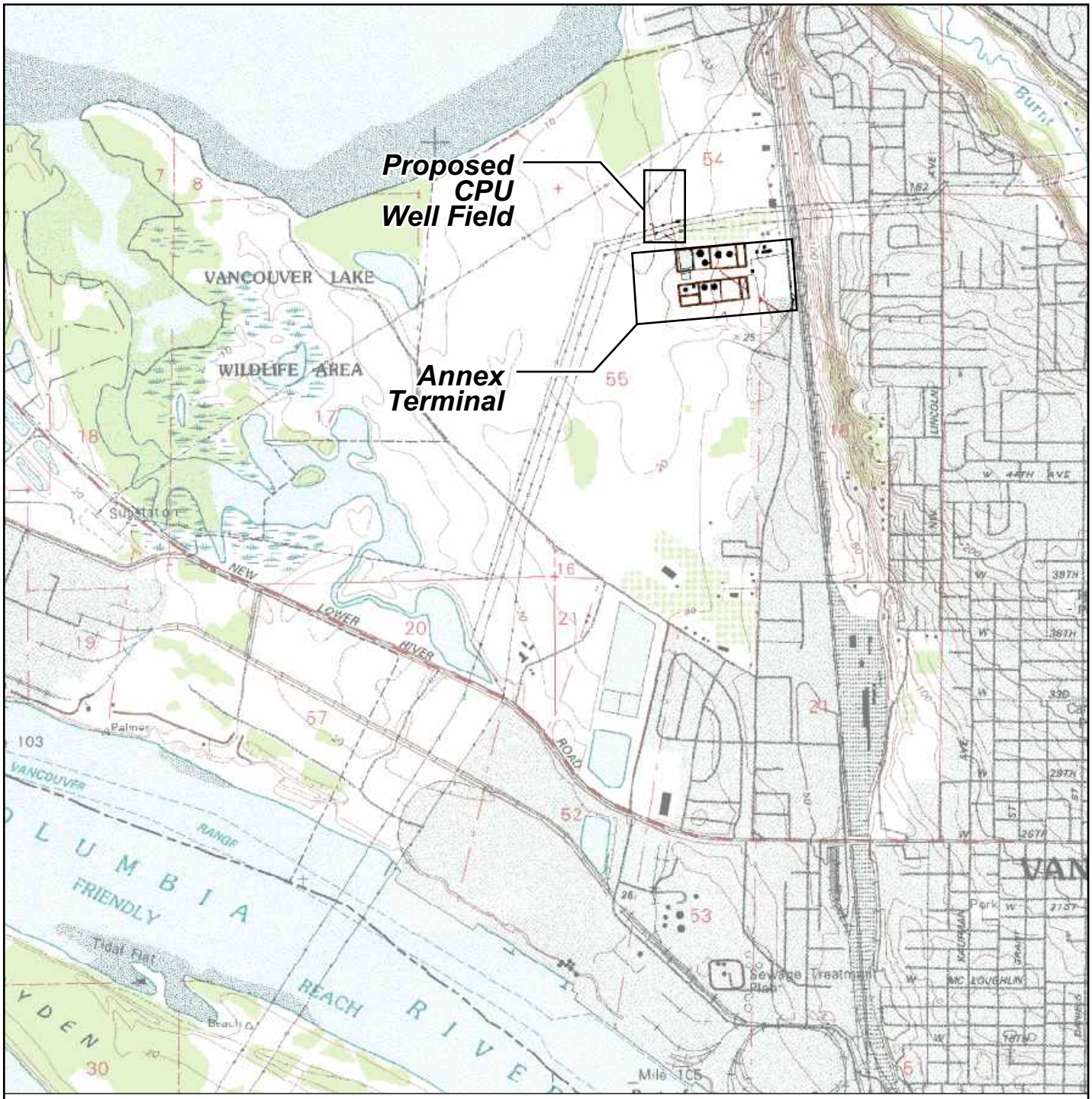
Table 8
Firestone Property Groundwater Analytical Results: TPH, VOCs, and PAHs
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

		Concentrations in mg/L (ppm)																
Sample Location	Sample Date	TPHg	TPHd	TPHho	Benzene	Toluene	Ethyl-benzene	Xylenes	Methyl tert-butyl ether (MTBE)	Tert-Amyl Methyl Ether (TAME)	Naphthalene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Isopropyl-benzene	n-Propylbenzene	n-Butyl-benzene	sec-Butyl-benzene	Chloroform
IRIG-Firestone	9/26/2006	<0.080	<0.238	<0.476	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.005	<0.001	<0.001
House-Firestone	9/26/2006	<0.080	<0.238	<0.476	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.005	<0.001	<0.001
Washington DOE MTCA Method A cleanup level[11.]		0.8[10.]	0.500	0.500	0.005	1	0.700	1	0.02	NA	0.16	NA	NA	NA	NA	NA	NA	NA

		Concentrations in mg/L (ppm)									
Well Number	Sample Date	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(ghi)-perylene	Napthalene	Phenanthrene	Pyrene
IRIG-Firestone	09/26/06	<0.0000943	<0.0000943	<0.0000943	<0.0000943	<0.0000943	<0.0000943	<0.0000943	<0.0000943	<0.0000943	<0.0000943
House-Firestone	09/26/06	<0.0000943	<0.0000943	<0.0000943	<0.0000943	<0.0000943	<0.0000943	<0.0000943	<0.0000943	<0.0000943	<0.0000943
Washington DOE MTCA Method A cleanup level[11.]		0.005	1	0.7	1	NA	0.005	NA	NA	NA	NA

Notes:

1. TPHg = Total petroleum hydrocarbons in the gasoline carbon range by NW-TPH-Gx method.
2. TPHd = Total petroleum hydrocarbons in the diesel carbon range by NW-TPH-Dx method.
3. TPHho = Total petroleum hydrocarbons in the heavy oil carbon range by NW-TPH-Dx method.
4. Benzene, toulene, ethylbenzene, and total xylenes (BTEX) analysis per EPA Method 8260B.
5. Volatile organic compounds (VOCs) analysis per EPA Method 8260B.
6. Polycyclic aromatic hydrocarbons (PAHs) analysis per EPA Method 8270SIM.
7. -- = Not analyzed.
8. < = Not detected at or above the specified laboratory method reporting limit (MRL).
9. mg/L (ppm) = Milligrams per liter (parts per million).
10. TPHg cleanup level dependent on presence of benzene in groundwater. Cleanup level = 0.800 mg/L if benzene is present and 1.00 mg/L if benzene is not present.
11. Washington DOE MTCA = Washington Department of Ecology Model Toxics Control Act.
12. ND = Not detected at or above the specified laboratory MRL.
13. NA = Cleanup level not available.



Base map prepared from USGS 7.5-minute quadrangle of Vancouver, WA, dated 1990, as provided by Topozone.

0 2,000 4,000

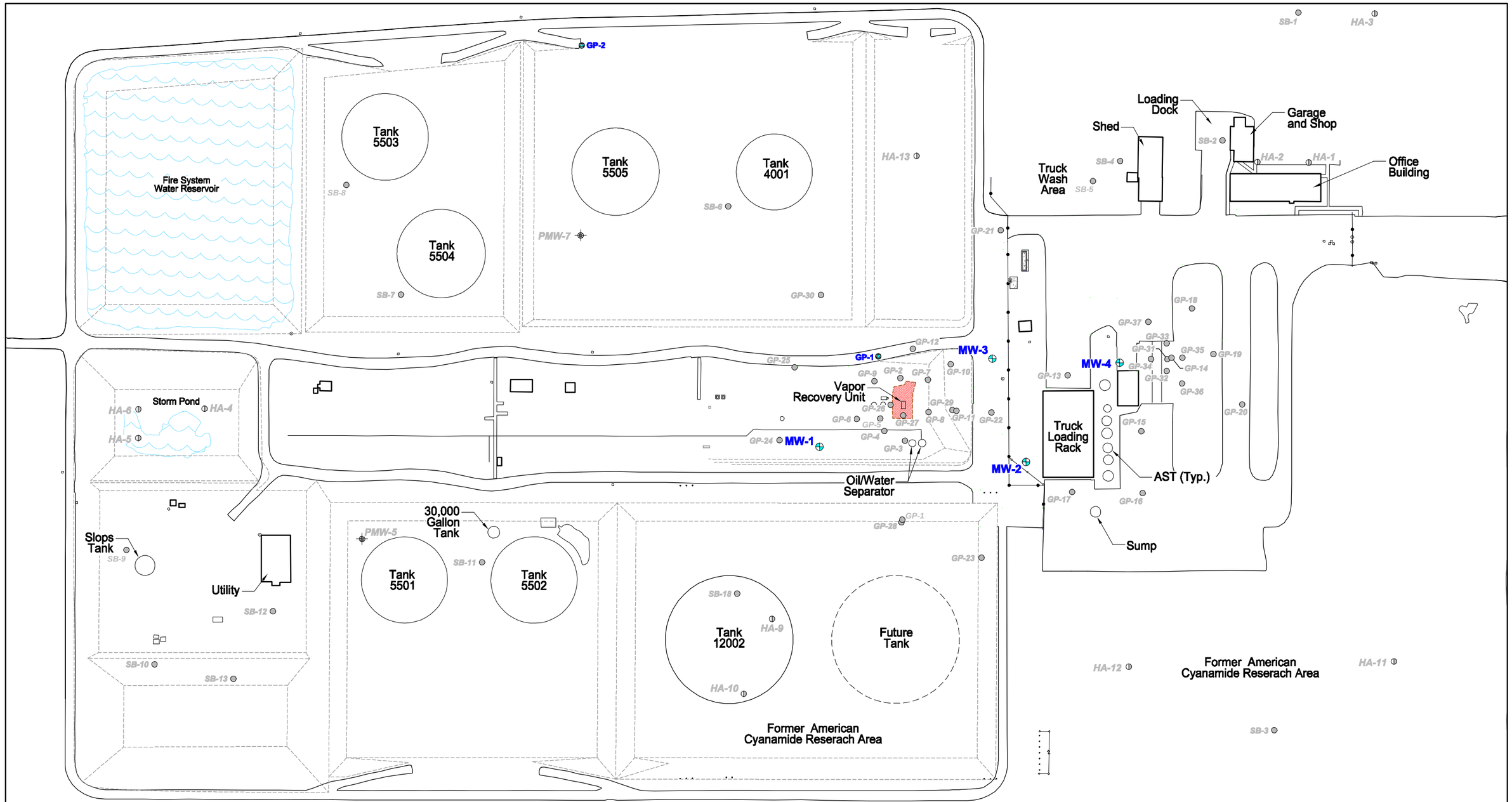
Scale in Feet

N

Facility Location Map

Remedial Investigation Work Plan
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

Ash Creek Associates, Inc. Environmental and Geotechnical Consultants	Project Number 1569-00	Figure 1
	January 2009	



Legend:

- MW-1 — Groundwater Monitoring Well Location
- GP-1 — Direct-Push Geoprobe Location
- GP-1 — Historical Direct-Push Boring Location (Approximate)
- PMW-5 — Historical Temporary Well Location (Approximate)
- HA-1 — Historical Hand Auger Location (Approximate)
- Excavation

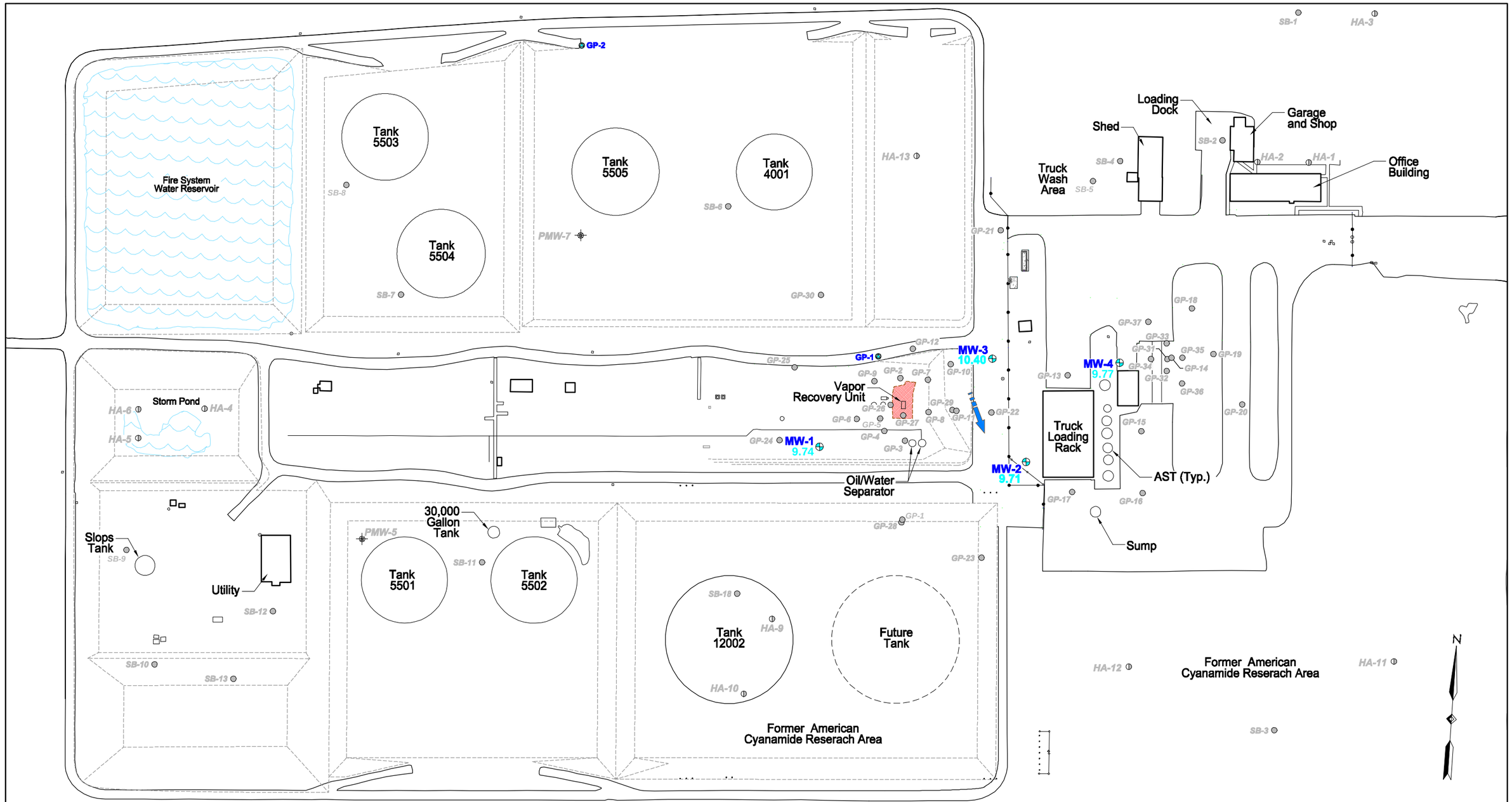
NOTE: **Base map completed from a number of sources including but not limited to; Figure VAN1-21-002 provided by NuStar (1/8/2007) and a Monitoring Well Survey by Statewide Land Surveying, Inc (10/30/2007). Locations of roads and containments are approximate.**

Facility Site Plan

Remedial Investigation Work Plan
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1569-00	Figure
January 2009		2



Legend:

MW-1 9.74 — Groundwater Monitoring Well Location and Groundwater Elevation in Feet Above Mean Sea Limit (MSL)

GP-1 — Direct-Push Geoprobe Location

Estimated Groundwater Flow Direction

Excavation

GP-1 — Historical Direct-Push Boring Location (Approximate)

PMW-5 — Historical Temporary Well Location (Approximate)

HA-1 — Historical Hand Auger Location (Approximate)

0 100 200

Scale in Feet

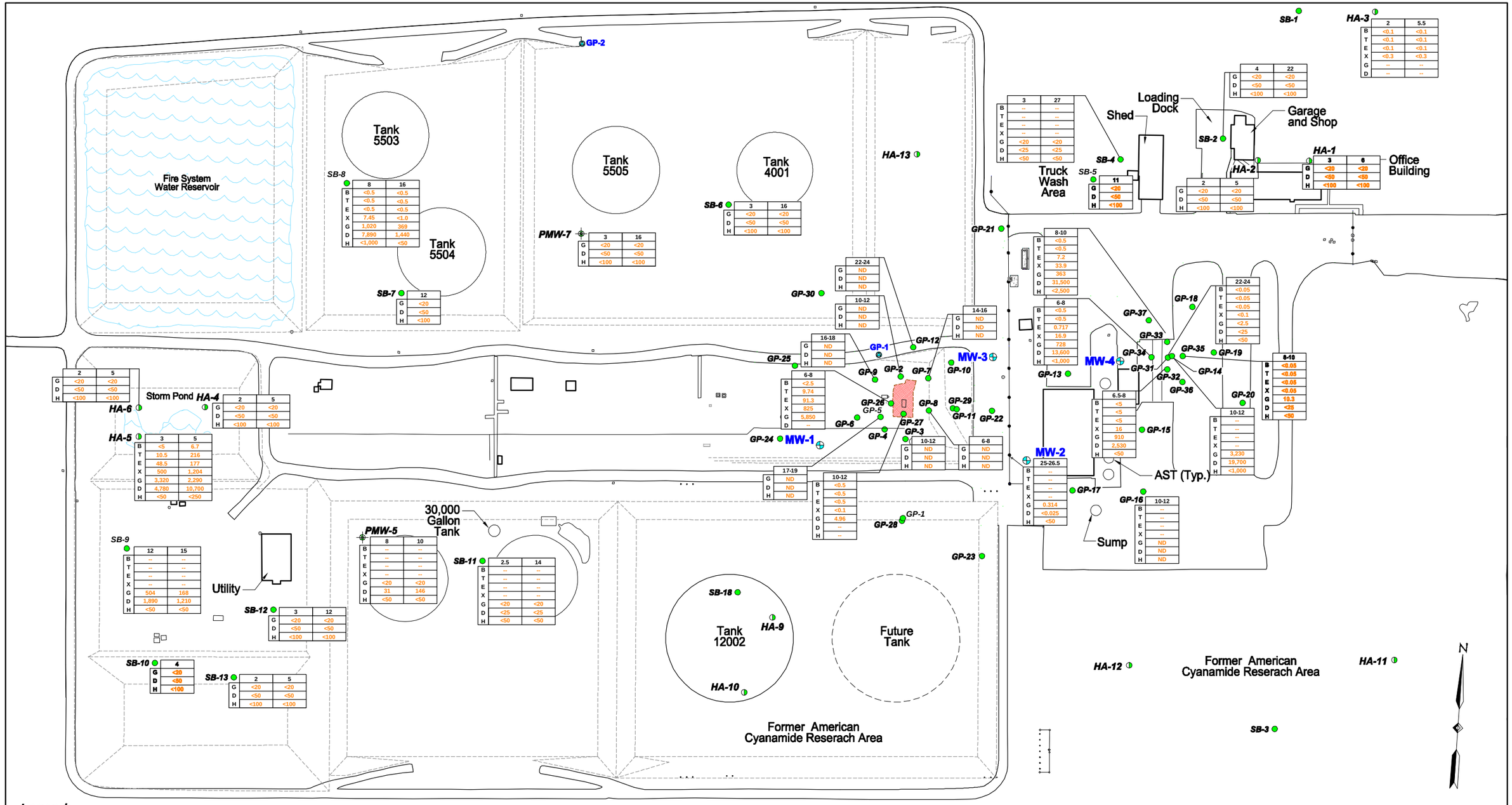
NOTE: **Base map completed from a number of sources including but not limited to; Figure VAN1-21-002 provided by NuStar (1/8/2007) and a Monitoring Well Survey by Statewide Land Surveying, Inc (10/30/2007). Locations of roads and containments are approximate.**

Relative Groundwater Elevations - February 2008

Remedial Investigation Work Plan
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1569-00	Figure
January 2009		3



SB-1		HA-3	2	5.5
		B	<0.1	<0.1
		T	<0.1	<0.1
		E	<0.1	<0.1
		X	<0.3	<0.3
		G	--	--
		D	--	--

SB-2	4	22
G	<20	<20
D	<50	<50
H	<100	<100

HA-1	3	6
G	<20	<20
D	<50	<50
H	<100	<100

HA-2	2	5
G	<20	<20
D	<50	<50
H	<100	<100

SB-4	3	27
B	--	--
T	--	--
E	--	--
X	--	--
G	<20	<20
D	<25	<25
H	<50	<50

SB-5	11
G	<20
D	<50
H	<100

SB-6	3	16
G	<20	<20
D	<50	<50
H	<100	<100

SB-8	8	16
B	<0.5	<0.5
T	<0.5	<0.5
E	<0.5	<0.5
X	7.45	<1.0
G	1,020	369
D	7,890	1,440
H	<1,000	<50

PMW-7	3	16
G	<20	<20
D	<50	<50
H	<100	<100

SB-7	12
G	<20
D	<50
H	<100

GP-30	22-24	10-12	14-16
G	ND	ND	ND
D	ND	ND	ND
H	ND	ND	ND

GP-25	16-18
G	ND
D	ND
H	ND

GP-24	6-8
B	<2.5
T	9.74
E	91.3
X	825
G	5,850
D	--

MW-1	10-12	6-8
G	ND	ND
D	ND	ND
H	ND	ND

	17-19	10-12
G	ND	
D	ND	
H	ND	
B		<0.5
T		<0.5
E		<0.5
X		<0.1
G		4.96
D		--
H		--

GP-21	8-10	6-8	22-24
B	<0.5	<0.5	<0.05
T	<0.5	<0.5	<0.05
E	7.2	0.717	<0.1
X	33.9	16.9	<2.5
G	363	728	<25
D	31,500	13,600	<50
H	<2,500	<1,000	

MW-4	6.5-8	10-12
B	<5	--
T	<5	--
E	<5	--
X	16	--
G	910	3,230
D	2,530	19,700
H	<50	<1,000

	6-10
B	<0.05
T	<0.05
E	<0.05
X	<0.05
G	10.3
D	<25
H	<50

MW-2	25-26.5
B	--
T	--
E	--
X	--
G	0.314
D	<0.025
H	<50

GP-16	10-12
B	--
T	--
E	--
X	--
G	ND
D	ND
H	ND

HA-4	2	5
G	<20	<20
D	<50	<50
H	<100	<100

HA-5	3	5
B	<5	6.7
T	10.5	216
E	48.5	177
X	500	1,204
G	3,320	2,290
D	4,780	10,700
H	<50	<250

HA-6	2	5
G	<20	<20
D	<50	<50
H	<100	<100

SB-9	12	15
B	--	--
T	--	--
E	--	--
X	--	--
G	504	168
D	1,890	1,210
H	<50	<50

PMW-5	8	10
B	--	--
T	--	--
E	--	--
X	--	--
G	<20	<20
D	31	146
H	<50	<50

SB-11	2.5	14
B	--	--
T	--	--
E	--	--
X	--	--
G	<20	<20
D	<25	<25
H	<50	<50

SB-12	3	12
G	<20	<20
D	<50	<50
H	<100	<100

SB-10	4
G	<20
D	<50
H	<100

SB-13	2	5
G	<20	<20
D	<50	<50
H	<100	<100

Legend:

- **MW-1** — Groundwater Monitoring Well Location
- **GP-1** — Deeper Direct-Push Geoprobe Location (Sampled 6/11/07)
- ***GP-1*** — Historical Direct-Push Boring Location (Approximate) (Sampled 2002-2003)
- ***PMW-5*** — Historical Temporary Well Location (Approximate) (Sampled April 2003)
- ***HA-1*** — Historical Hand Auger Location (Approximate) (Sampled April 2003)

	6.5-8
B	<5
T	<5
E	<5
X	16
G	910
D	2,530
H	<50

Sample Depth (Feet)
Concentration in mg/kg
Analyte Sampled

B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
TPHg = Total Petroleum Hydrocarbons Gasoline-Range
TPHd = Total Petroleum Hydrocarbons Diesel-Range
TPHh = Total Petroleum Hydrocarbons Heavy Oil-Range
-- = Not Analyzed

Excavation

0 100 200
Scale in Feet

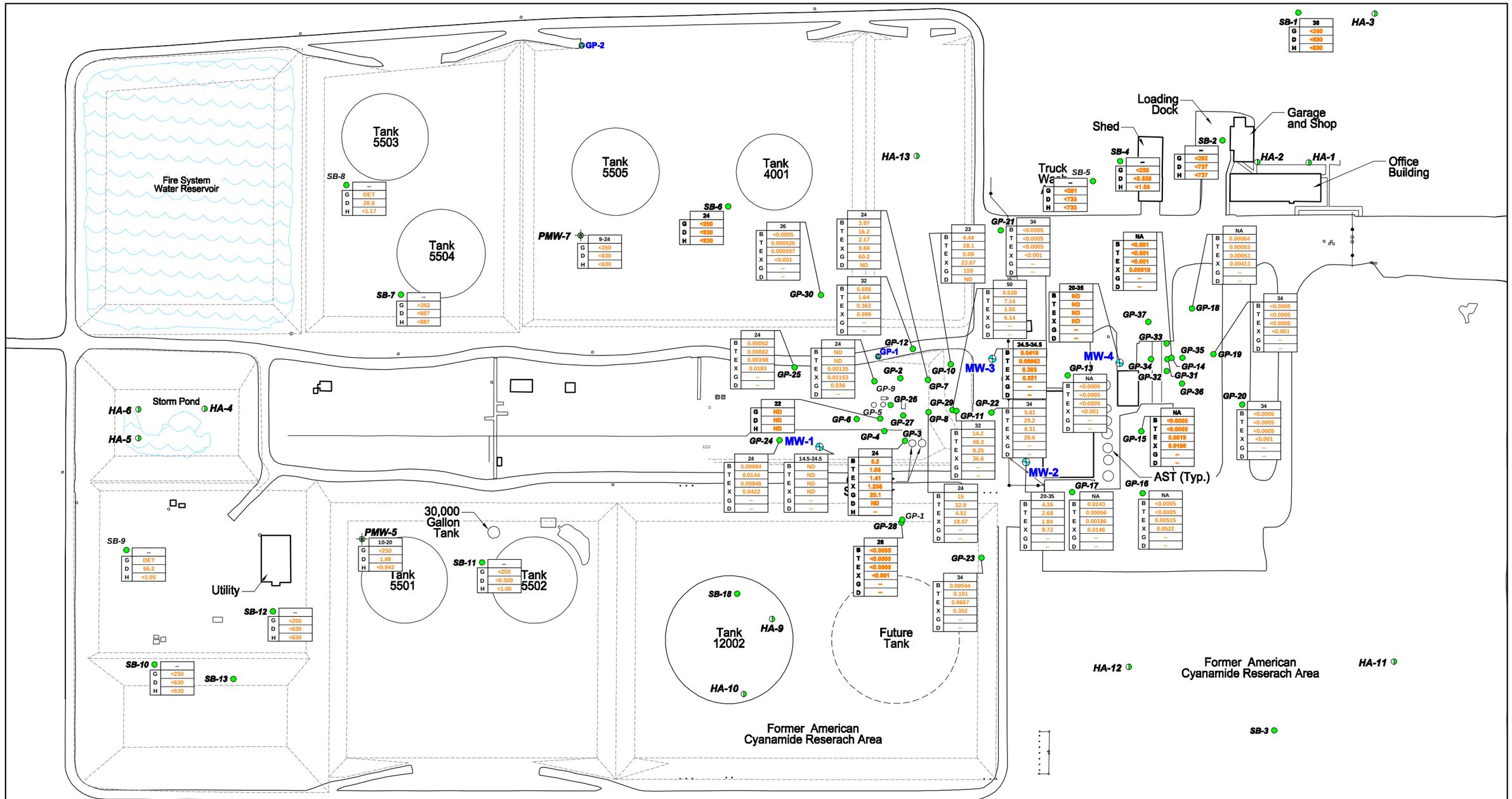
NOTE: **Base map completed from a number of sources including but not limited to; Figure VAN1-21-002 provided by NuStar (1/8/2007) and a Monitoring Well Survey by Statewide Land Surveying, Inc (10/30/2007). Locations of roads and containments are approximate.**

2002/2003 BTEX and TPH Concentrations in Soil

Remedial Investigation Work Plan
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1569-00	Figure
January 2009		4



Legend:

- **MW-1** Groundwater Monitoring Well Location (Sampled 5/14/02)
- **GP-1** Deeper Direct-Push Geoprobe Location
- ***GP-1*** Historical Direct-Push Boring Location (Approximate) (Sampled 2002)
- ***PMW-5*** Historical Temporary Well Location (Approximate)
- ***HA-1*** Historical Hand Auger Location (Approximate)

Sample Depth (Feet)
NA = Not Available

Concentration in mg/L

Analyte Sampled
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
TPHg = Total Petroleum Hydrocarbons Gasoline-Range
TPHd = Total Petroleum Hydrocarbons Diesel-Range
TPHh = Total Petroleum Hydrocarbons Heavy Oil-Range
-- = Not Analyzed
DET = Detected

N

0 100 200
Scale in Feet

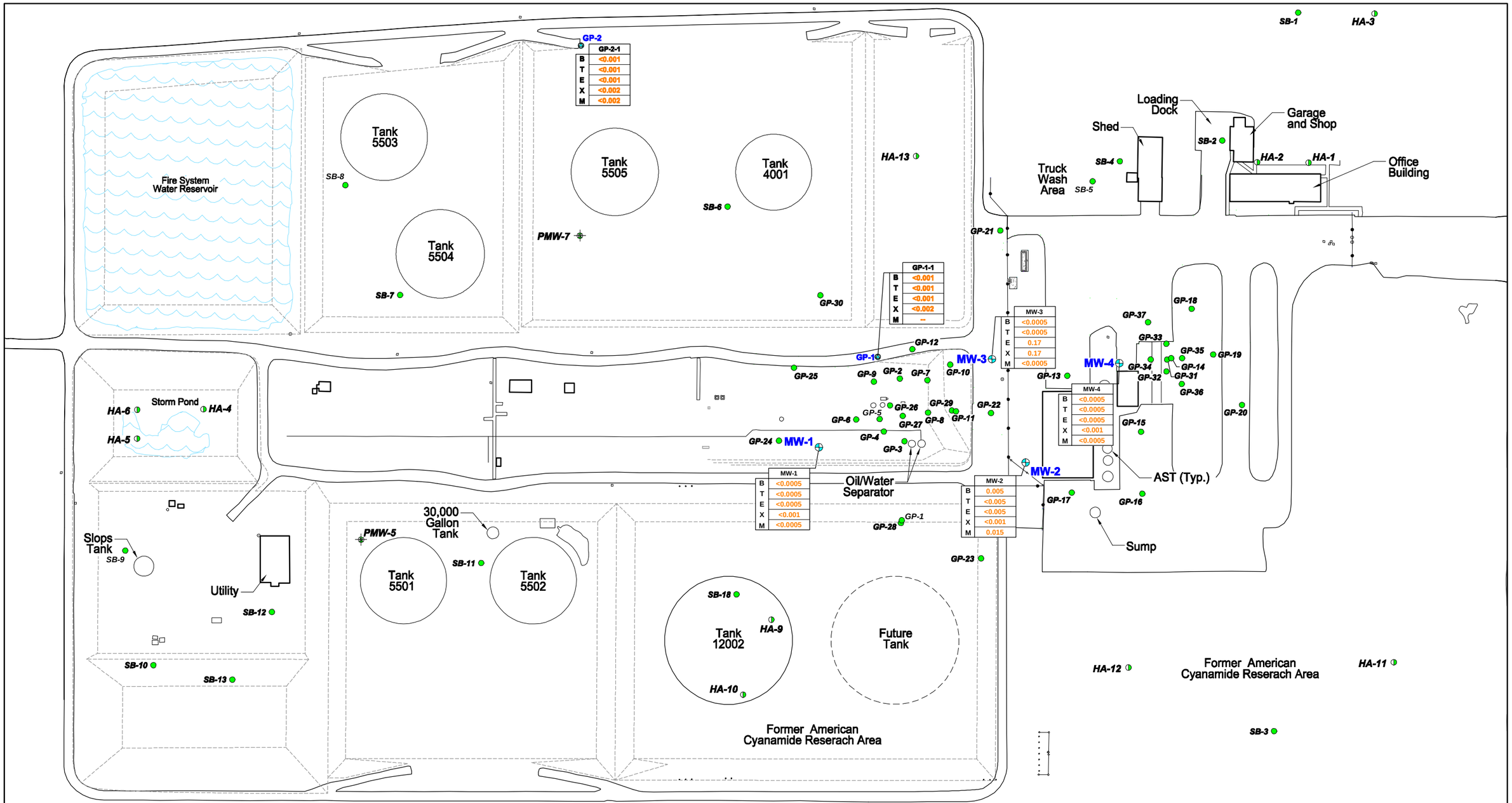
NOTE: **Base map completed from a number of sources including but not limited to; Figure VAN1-21-002 provided by NuStar (1/8/2007) and a Monitoring Well Survey by Statewide Land Surveying, Inc (10/30/2007). Locations of roads and containments are approximate.**

2002/2003 BTEX and TPH Concentrations in Groundwater

Remedial Investigation Work Plan
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number 1569-00
January 2009
Figure 5



Legend:

- **MW-1** — Groundwater Monitoring Well Location (Sampled 2/27/08)
- **GP-1** — Deeper Direct-Push Geoprobe Location (Sampled 6/11/07)
- ***GP-1*** — Historical Direct-Push Boring Location (Approximate)
- ***PMW-5*** — Historical Temporary Well Location (Approximate)
- ***HA-1*** — Historical Hand Auger Location (Approximate)

MW-1	
B	<0.0005
T	<0.0005
E	<0.0005
X	<0.001
M	<0.0005

Sample Identification

Concentration in mg/L

Analyte Sampled
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
M = Methyl Tert-Butyl Ether
-- = Not Analyzed

N

0 100 200

Scale in Feet

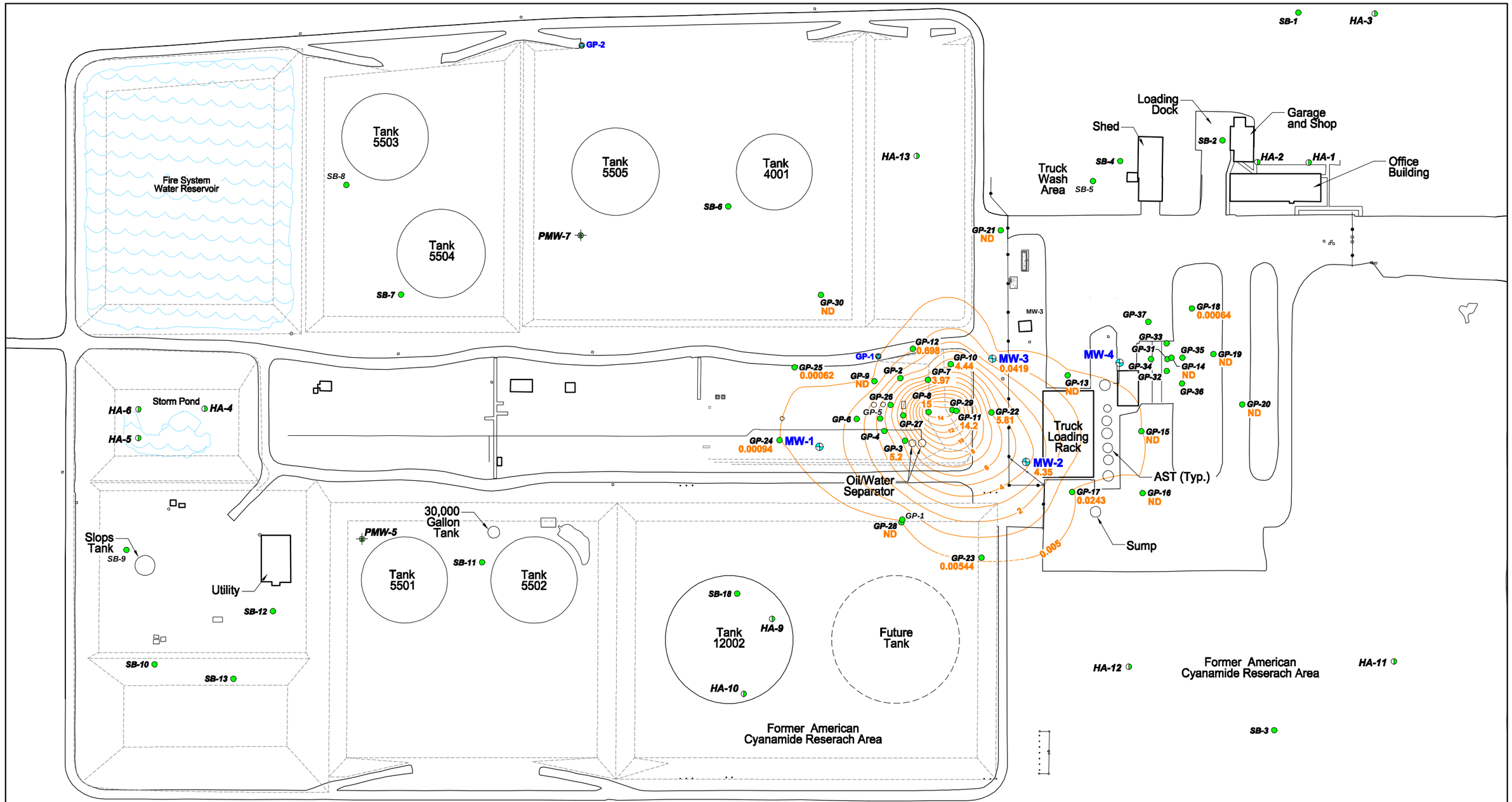
NOTE: **Base map completed from a number of sources including but not limited to; Figure VAN1-21-002 provided by NuStar (1/8/2007) and a Monitoring Well Survey by Statewide Land Surveying, Inc (10/30/2007). Locations of roads and containments are approximate.**

2007/2008 BTEX and MTBE Concentrations in Groundwater

Remedial Investigation Work Plan
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1569-00	Figure
January 2009		6



Legend:

- **MW-1** — Groundwater Monitoring Well Location
- **GP-1** — Deeper Direct-Push Geoprobe Location
- ***GP-1*** — Historical Direct-Push Boring Location (Approximate)
- ***PMW-5*** — Historical Temporary Well Location (Approximate)
- ***HA-1*** — Historical Hand Auger Location (Approximate)
- **0.00094** — Benzene Concentration in mg/L
- **0.005** — Benzene Groundwater Concentration Contour in µg/L
- **ND** — Not Detected

NOTE: **Base map completed from a number of sources including but not limited to; Figure VAN1-21-002 provided by NuStar (1/8/2007) and a Monitoring Well Survey by Statewide Land Surveying, Inc (10/30/2007). Locations of roads and containments are approximate.**

April - June 2002 Benzene Concentrations in Groundwater

Remedial Investigation Work Plan
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1569-00	Figure
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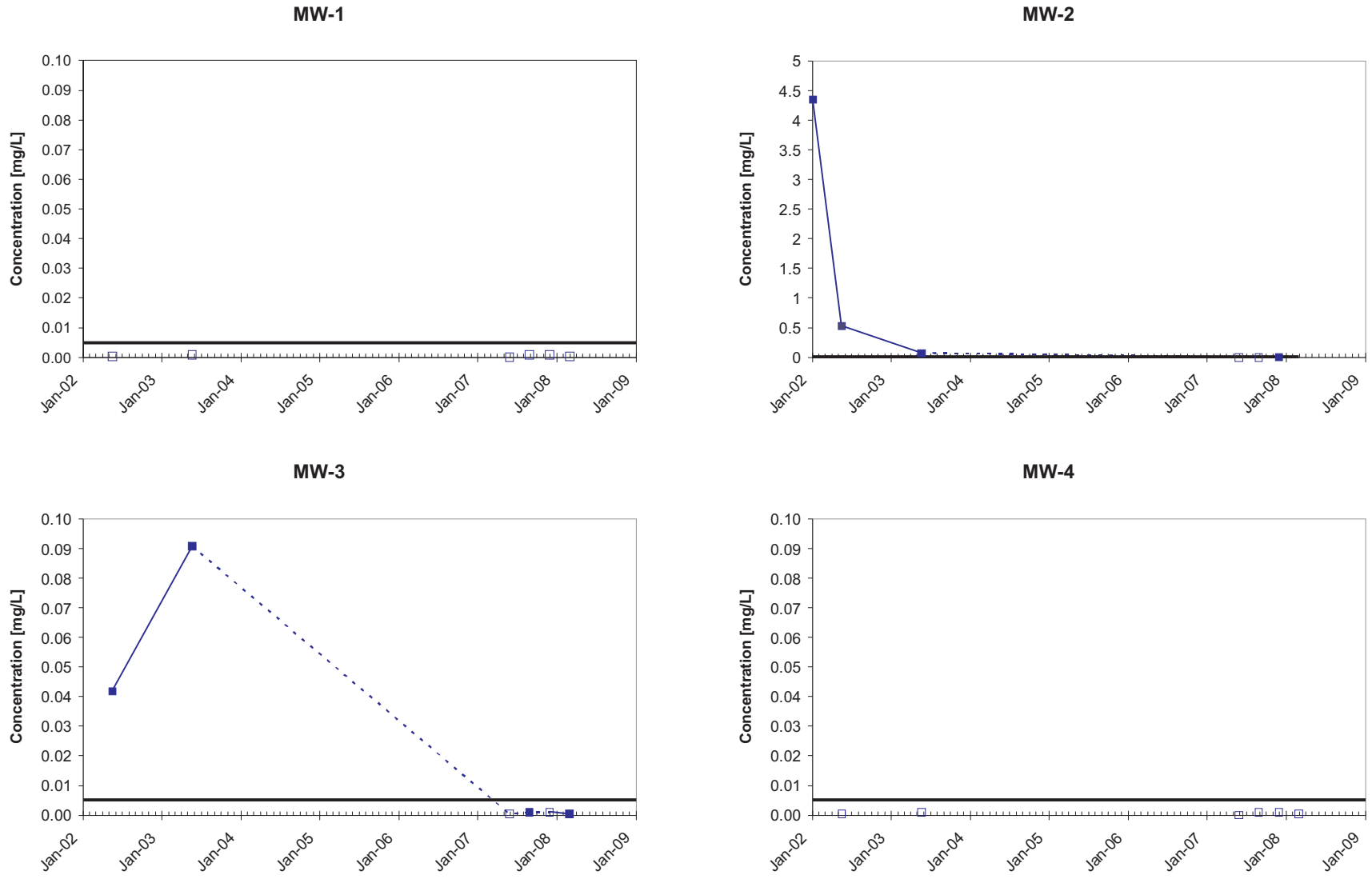

Legend:

- Detected Analyte Concentration
- Non-Detect (Laboratory Reporting Limit)
- Concentration Trend
- Inferred Concentration Trend
- MTCA Method A Cleanup Standard

Benzene Concentration Trends in Monitoring Wells

Remedial Investigation Work Plan
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

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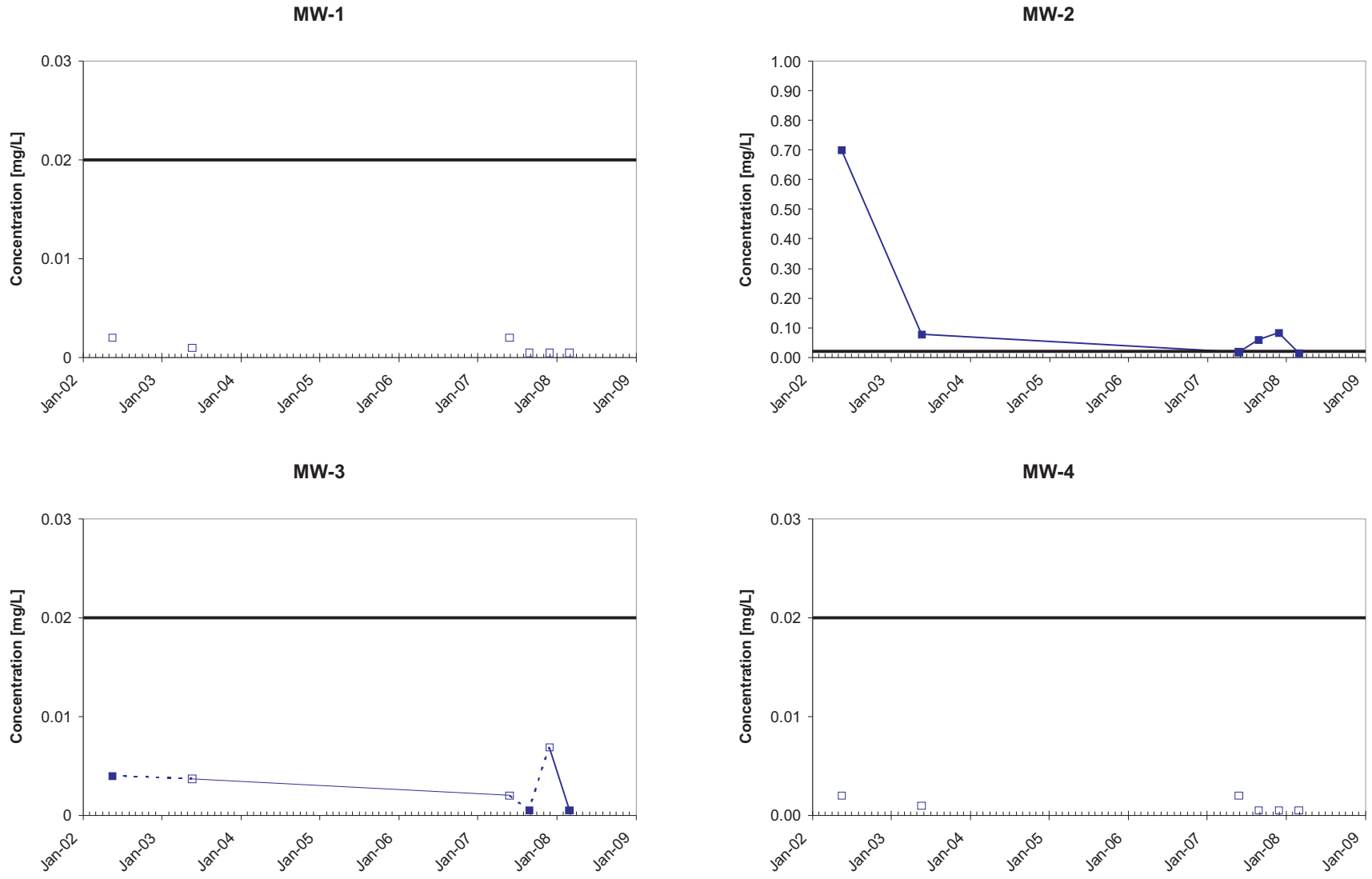
Project Number	1569-00	Figure
January 2009		8



Legend:

- Detected Analyte Concentration
- Non-Detect (Laboratory Reporting Limit)
- Concentration Trend
- Inferred Concentration Trend
- MTCA Method A Cleanup Standard

MTBE Concentration Trends in Monitoring Wells

Remedial Investigation Work Plan
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
Vancouver, Washington

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

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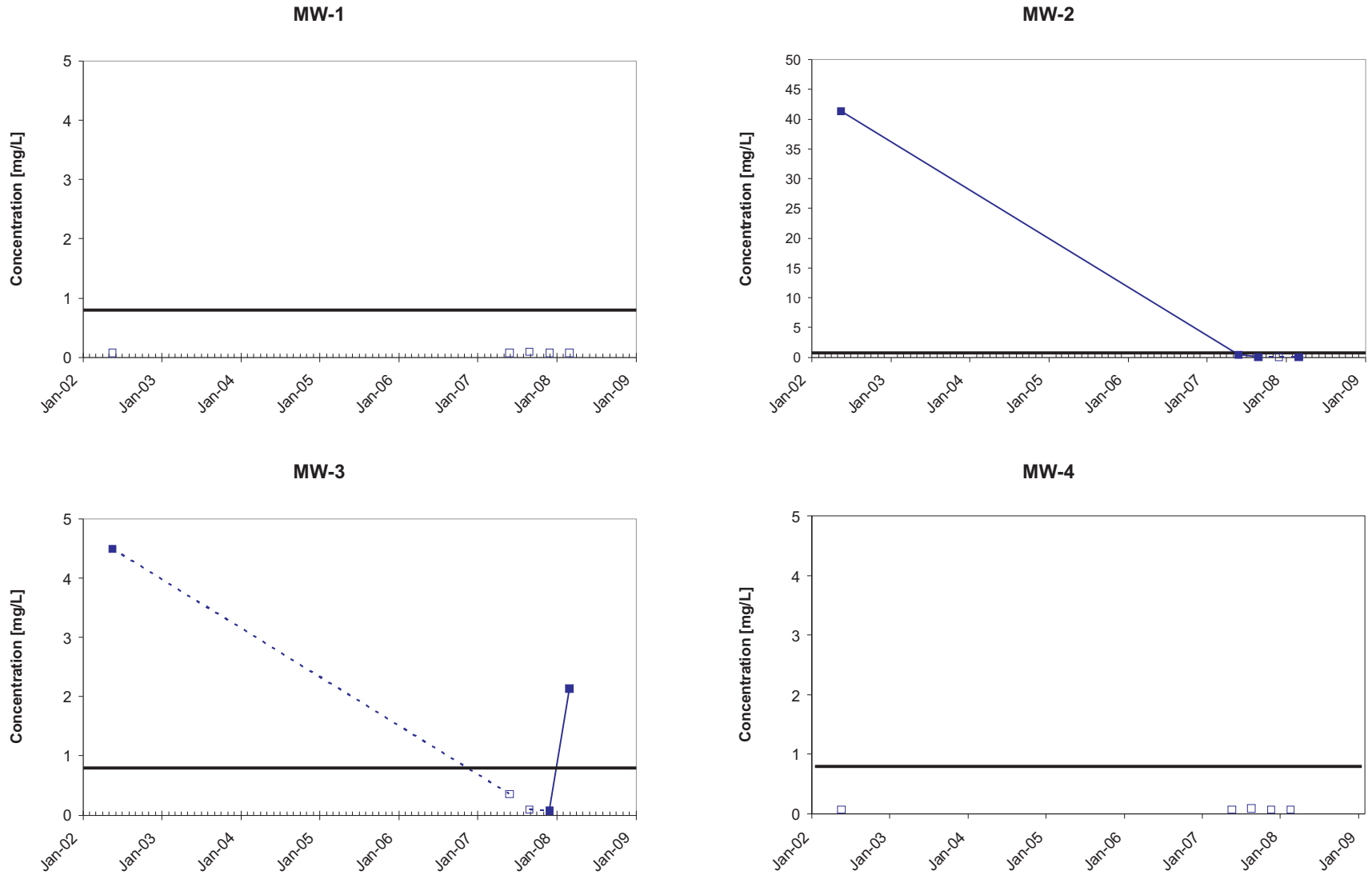

TPHg Concentration Trends in Monitoring Wells

Remedial Investigation Work Plan
NuStar Terminals Operations Partnership, L.P. - Annex Terminal
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