ASSOCIATED
ENVIRONMENTAL
GROUP, LLC

Supplemental Remedial Investigation – 3rd Phase Workplan

Conducted on:

The Manor Market
3609 164th Street SW
Lynnwood, Washington 98087

Prepared for:

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&

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AEG Project #: 11-124

Date of Report: June 10, 2013

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1 INTRODUCTION

Associated Environmental Group, LLC (AEG) plans to complete a Supplemental Remedial Investigation – 3rd Phase at the Manor Market property, located at 3609 164th Street in Lynnwood, Snohomish County, Washington (the Site). Tasks to be completed for the 3rd Phase Supplemental Remedial Investigation (RI) are based on findings from AEG's previous subsurface investigations completed in September 2011 and February and March 2012. The tasks to be completed during the Supplemental RI – 3rd Phase will include further characterization of the impacted groundwater media at the Site via installation of six monitoring wells; three more for characterizing the petroleum hydrocarbon release, and three for characterizing groundwater in the area of the Crystal Cleaners tetrachloroethylene (PCE) release (Figure 2). The scope of work for this investigation was developed in accordance with Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Cleanup Regulations. The investigation will be performed in general accordance with the American Society for Testing and Materials (ASTM) Standard E 1903-97, *Standard Guide Environmental Site Assessments: Phase II Environmental Site Assessment Process*, and ASTM Standard EE 1689 – 95 (Reapproved 2008), *Standard Guide for Developing Conceptual Site Models for Contaminated Sites*.

1.1 Site Setting

The Manor Market is located on the northwest corner of the intersection of 164th Street SW and 36th Avenue West, in Lynnwood, Snohomish County, Washington. It is a rectangular-shaped property, approximately 0.75 acres and corresponds to Snohomish County Assessor's Parcel number 00372900300502. The geographic coordinates of the Site are: 47° 51' 1.25" North Latitude, 122° 16' 56.63" West Longitude, and is situated in Section 3, Township 27 North, and Range 4 East (WM). The current property owner is the Veniatony Corporation.

The Manor Market is a convenience store located in the eastern most section of the parcel. The Manor Market business includes retail gasoline sales using three gasoline pump islands with twin dispensers each, placed under one canopy on the southeast area of the property. The gas station and store building occupies approximately one-half of the parcel area with the Site surface covered by asphalt. The existing underground storage tank (UST) system was installed in 1998, and includes one 10,000-gallon capacity regular unleaded tank, and one dual compartment tank containing mid-grade and premium grade gasoline. Each UST is constructed of double wall steel clad with corrosion resistant composite materials. The fuel lines are composed of double lined flexible piping. UST and fuel line leak detection tests are performed by the Veeder-Root TLS-300 electric monitoring system.

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At the west end of the building complex is a dry cleaner (known to Ecology as Crystal Cleaners) once determined to have released PCE into the soil. This separate Site received a No Further Action (NFA) letter from Ecology with a Restrictive Covenant (now Environmental Covenant) applied to the soils. No groundwater monitoring was required because it was thought that the groundwater table was greater than 100 feet below the ground surface (bgs).

Figure 1, *Site & Vicinity Map*, presents the general boundaries of the Site and vicinity area. Figure 2 shows the Site plan with various investigation boreholes and three monitoring wells and the proposed six monitoring wells.

1.2 Previous Environmental Work Summary

A brief environmental history of the recent environmental investigations at the Site is provided below. A more in-depth presentation of environmental history and investigations at the Site is provided in AEG report entitled *Supplemental Site Characterization – Manor Market*, dated September 14, 2011.

Supplemental Site Characterization

AEG completed a Supplemental Site Characterization of the Site in September 2011 and again in February and March 2012. Field work for the 2011 investigation included the advancement of four soil borings (B-1 through B-4) at the Site on August 24, 2011 to assess the subsurface (soil and groundwater media) for the potential presence of petroleum hydrocarbons and volatile organic compounds due to the historical releases of gasoline fuel at the Site. The locales selected for this subsurface investigation were based on the following factors: 1) the findings and laboratory analytical results from previous investigations by ENVITECH Phase I and phase II Environmental Site Assessments; 2) QUEST environmental monitoring and UST decommissioning activities; and 3) the locations of the decommissioned UST system formerly operated at the Site. Soil and groundwater samples were collected and submitted for laboratory analysis for the following constituents of concern: gasoline range total petroleum hydrocarbons (TPH) and associated volatile organic compounds (VOCs), specifically benzene, toluene, ethylbenzene, and total xylenes (BTEX), and halogenated VOC associated with dry cleaning solvents due to operation of a drycleaner business within the same shopping center as the Site. AEG concluded the following:

"*Petroleum impacted soil and groundwater remain at the Site, most likely as a result of release(s) from the former UST system. It appears that previous remedial action (via excavation) had removed the bulk source of contamination. Based on laboratory analytical results and field observations, it appears that the subsurface impact is localized. In our professional opinion, shallow groundwater within the native soil subsurface is present at the*

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Site. Previous excavation activities to depths ranging from 12 to 14 feet [below ground surface] bgs and the subsequent backfilling to these depths have enabled surface water to migrate through the backfill material which was observed by AEG at boring B-1. The wet well-sorted sand, logged at B-1, at depths of approximately 22 to 23 1/2 feet bgs appears to represent shallow groundwater at the Site" (AEG, 2011).

AEG recommended "*Groundwater condition at the Site needs to be evaluated to assess whether it is localized and whether the impacted groundwater at boring B-1 is representative of the residual subsurface condition. AEG recommends installation of monitoring wells at the Site to further assess the impacted groundwater subsurface condition as well as assess whether the impact is localized only to the Site*".

AEG installed three monitoring wells (MW-1 through MW-3) at the Site on February 8 and 9, 2012 to further assess whether groundwater is present Site-wide and whether it has been adversely impacted due to the historical release(s) of gasoline fuel at the Site. The monitoring well locations selected for this supplemental remedial investigation at the Manor Market were based on the following: 1) the findings and laboratory analytical results from previous investigations by ENVITECH Phase I and phase II Environmental Site Assessments; 2) QUEST environmental monitoring and UST decommissioning activities; 3) the locations of the decommissioned UST system formerly operated at the Site and, 4) AEG's Supplemental Site Characterization investigation at the Site.

The monitoring wells were constructed to a total depth of 35 feet bgs. Well MW-1 was installed adjacent to the present day and former tank pad. Monitoring wells MW-2 and MW-3 were installed adjacent to the fuel dispensers where residual petroleum contamination was documented in previous investigations in the subsurface in the vicinity of these locations. Soil samples were collected from the boreholes using stainless steel split barrel samplers at selected depth intervals. Shallow groundwater was encountered during drilling activities only in borehole MW-1, at a depth of approximately 8.5 feet bgs.

The subsurface conditions at the Site were consistent with those described in AEG's Supplemental Site Characterization report (AEG, 2011). The groundwater monitoring wells were placed adjacent to or in the proximity to AEG's borings B-1 through B-3 advanced during the Supplemental Site Characterization in 2011.

Fill deposits were encountered in borehole MW-1 to a depth of approximately 8.5 feet bgs, underlain by wet sandy silt with clay to 12 feet bgs, and moist hard silt with sand and gravel to the total depth of the borehole. The wet silt layer encountered at approximately 8.5 feet bgs is

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likely the result of water migrating through the above permeable fill deposits. Groundwater was not observed in soil below 12 feet bgs to the total depth of the borehole during drilling activities. Groundwater was not observed in boreholes MW-2 and MW-3 during drilling activities.

Borehole MW-2 drilled immediately southeast of the fuel dispenser islands exhibited similar lithology as borehole MW-1. This borehole was placed at an inferred downgradient locale from the previous leaking USTs. Fill deposits in borehole MW-3 were encountered from below surface level to 4 feet bgs; underlain by stiff silt with sand and gravel to 23 feet bgs; followed by hard silt with trace of sand, gravel, and clay to the total depth of the borehole.

Figure 2, *Site Plan*, presents the locations of previous investigative borings by AEG during the Supplemental Site Characterization work and monitoring wells installed by AEG for the 2nd Phase Supplemental RI work.

Perched groundwater was present throughout the Site during AEG's initial quarterly groundwater event, conducted on March 1, 2012. The static water levels at the newly constructed groundwater monitoring wells ranged from approximately 24 feet to 28 feet bgs.

The direction of shallow groundwater flow at the Site and vicinity area during the March 2012 groundwater event was generally to the northeast (refer to Figure 3, *Groundwater Potentiometric Map – March 2012*).

The findings and conclusions derived during the Supplement Remedial Investigation – 2nd Phase for the Manor Market property, located in Lynnwood, Washington are as follows:

- AEG installed three monitoring wells (MW-1 through MW-3) at the Site on February 9, 2012 to assess the following: 1) whether residual contamination exists at the Site; 2) whether groundwater is present site-wide; and 3) if the groundwater media has been adversely impacted by the constituents of concern which included gasoline range TPH and associated VOCs, and total lead.

- Laboratory analytical results for soil samples collected at boring MW-1, located adjacent to the east of the former and current underground storage tanks, indicated contaminated soil at 13 1/2 feet and at deeper depths, to 36 1/2 feet bgs, the deepest depth of exploration. Gasoline range TPH (at 86 mg/Kg) and benzene (at 0.22 mg/Kg) exhibited at 24 1/2 feet bgs were at concentrations above Ecology MTCA Method A soil cleanup levels of 30 mg/Kg and 0.03 mg/Kg, respectively. Elevated benzene concentrations were also exhibited at 24 1/2 and 36 1/2 feet bgs (refer to Table 1).

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At boring MW-3 (located northeast of the former LUSTs on the eastern side of the Site), impacted soil was detected at 7 feet and 24 1/2 feet bgs where benzene was present at concentrations above MTCA Method A cleanup level (refer to Table 1).

- Laboratory analytical results for groundwater samples collected at monitoring well MW-1 indicated only elevated benzene concentration (at 9.9 ug/L) while the remaining constituents of concern were not detected above laboratory reporting limits (refer to Table 2). Groundwater at monitoring wells MW-2 and MW-3 did not exhibit indications of petroleum hydrocarbons impact. Groundwater collected from all monitoring wells showed no presence of total lead.

- Perched groundwater was present throughout the Site at all monitoring wells and ranged in depth from 24.63 feet to 28.30 feet bgs. The direction of groundwater flow during the March 2012 quarterly event was northeasterly (refer to Figure 3, *Groundwater Potentiometric Map*).

Discussion:
Laboratory analytical results for soil samples submitted for analysis indicate that residual impacted soil, above Ecology's MTCA Method A soil cleanup levels, remains in the vadose zone immediately south and northeast of the former and current fuel tanks. It appears, based on Site lithologies, that groundwater at the Site is perched. However, groundwater was present site-wide at all three monitoring wells during the March 2012 quarterly event.

The source of petroleum contamination at the Site – the former fuel tanks, continues to adversely impact the subsurface soil and groundwater media. However, in our professional opinion, the residual gasoline petroleum hydrocarbons is indicative of an older fuel release, as noted by the low levels of gasoline range TPH and benzene exhibited in both soil and groundwater.

1.3 Site Geology and Hydrogeology

The subject Site is located within the central Puget Lowlands of Western Washington State. The Puget Lowland is a north-south trough that lies from the Canadian Border south to near Chehalis, Washington, and between the Olympic Mountains to the west and the Cascade Mountains to the east. Landforms common to this region include Pacific inlets, islands, intermontane and coastal lowlands. The topography is dominated by north-south trending valleys and low, nearly flat-topped terraces that are less than 1,000 feet in elevation. Terraces are deeply eroded by streams and rivers and are susceptible to landslides. The topographic surface of the Site and vicinity area is largely the result of deposition and erosion since the recent glacial events (Easterbrook, 1970).

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According to the "*Preliminary Surficial Geologic Map of the Edmonds East and Edmonds West Quadrangles, Snohomish and King Counties, Washington*", the Site and vicinity are underlain by Recent age glacial deposits (last 15,000 years before present) which are comprised of "*…poorly sorted, nonstratified lodgment till* (Qvt) *deposited as ground moraine…including mixtures of sand, silt, clay, pebbles, cobbles, and boulders….color blue to grey and extremely compact"* (Smith, 1975).

2 OBJECTIVES AND SCOPE OF WORK

The objective of the Supplemental RI – 3rd Phase at the Site is to evaluate whether residual contamination persists at the petroleum hydrocarbon Site and to assess whether perched groundwater has been adversely impacted by releases of halogenated VOC and petroleum hydrocarbon sources on Property and/or by releases from upgradient sources. The constituents of concern for the Site include gasoline range TPH and associated VOCs, specifically BTEX as well as halogenated VOCs, including PCE, trichloroethylene (TCE), 1,2-dichloroethene (1,2-DCE), and vinyl chloride.

AEG's scope of work for this effort includes: conduct further subsurface investigation at areas adjacent to, upgradient and downgradient of the former leaking UST system via a hollow stem auger or rotary drilling rig; collect soil and groundwater samples for laboratory analyses; and the preparation of a report.

Specific tasks performed during the Supplemental Remedial Investigation – 3rd Phase includes the following:

- Conduct both public and private utilities locates for the Site. The utility locates will be performed in areas that may include the public right-of-ways.
- Advance six soil borings to be converted into monitoring wells (MW-4 through MW-9) using a hollow stem auger or rotary drilling rig to a maximum depth of 36 feet bgs. The final soil sample in each borehole will be collected by driving the split barrel sampler from 35 to 36 1/2 feet bgs. The borings will be placed at selected areas to evaluate the potential presence of petroleum hydrocarbons and BTEX, and halogenated VOCs in soil and groundwater at the Site.
- Log soil borings documenting lithology encountered, lithology contacts, moisture, density, sample depths, photoionization detection readings, and information regarding sheens and odors, as applicable. Field screen soil samples utilizing a Photoionization Detector (PID) to facilitate the selection of appropriate soil samples to be submitted to the analytical laboratory.

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- Collect soil samples for laboratory analyses from each of the borings at depths ranging from 5 feet bgs, to the total depth to be explored. The soil samples will be handled in accordance with industry standard chain-of-custody protocols and transported to Libby Environmental, Inc., in Olympia, Washington, for analysis.

- Analyze soil samples for the following constituents:
  - ❖ Gasoline range TPH via Northwest Method NWTPH-Gx;
  - ❖ Gasoline associated VOCs, specifically benzene, toluene, ethylbenzene, total xylenes.
  - ❖ Halogenated VOCs, specifically PCE, TCE, 1,2-DCE, and vinyl chloride.

- Complete the six borings as monitoring wells (MW-4 through MW-9) to a total depth of 35 feet bgs. The wells will be 2 inch diameter, schedule 40, flush-threaded, PVC casing mated to an appropriate length of screened interval, annular borehole materials such as silica sand, bentonite seal, and a surface-flush monument cemented in place. Each well will be constructed in accordance with the Ecology *Minimum Standards for the Construction and Maintenance of Wells*, WAC 173-160.

- Due to a lack of adequate water in the wells after its completion, the monitoring wells may not be mechanically developed.

- Three weeks after monitoring well installation, conduct groundwater monitoring and sampling activities at all newly constructed monitoring wells as well as previously constructed monitoring wells. Prior to collecting groundwater samples, the following activities will be conducted:

  - ❖ Obtain depth-to-water measurements at all of the monitoring wells;

  - ❖ Collect representative groundwater samples from each monitoring well via the peristaltic pump and place groundwater in laboratory provided containers. The containers will be labeled and placed in a portable chilled ice chest and transported to Libby Environmental laboratory following standard chain-of-custody procedures.

- Analyze groundwater samples for the following constituents of concern as per Ecology MTCA Cleanup Regulation Table 830–1, *Required Testing for Petroleum Releases*:

  - ❖ Gasoline range TPH via Northwest Method NWTPH-Gx;
  - ❖ Associated VOCs: specific aromatic hydrocarbons including BTEX; and fuel additives and blending compounds including methyl tertiary-butyl ether (MTBE), total naphthalene, 1-2 dibromoethane (EDB), and 1-2 dichloroethane (EDC) via EPA Method 8260C;
  - ❖ Total Lead via EPA Method 7421;

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- ❖ Halogenated VOCs, including PCE, TCE, 1,2-DCE, and vinyl chloride by EPA Method 8260.

- Compare soil and groundwater analytical results to Ecology MTCA Method A cleanup levels for soil and groundwater.
- Retain a Professional Licensed Surveyor to survey the elevations of the monitoring wells installed. Ground surface and casing elevations at each will be surveyed to the nearest 0.01 foot relative to an assigned benchmark. The survey will include the relationship of the installed wells to the property parcel boundary.
- Prepare a report containing a summary of the subsurface conditions encountered, a discussion of Site soil and groundwater conditions, analytical laboratory results, findings, and recommendations.

2.1 Monitoring Well Construction/Development

The monitoring well design and construction methods will conform to requirements and specifications outlined in Washington Administrative Code 173-160 for "resource protection wells" in the State of Washington. All monitoring wells will be completed at 35 feet bgs based on the previous *Supplemental Site Characterization* work conducted by AEG. The monitoring wells will be installed to a total depth of 35 feet with 15 feet of 2-inch diameter, 0.020-inch machine slotted PVC well screen mated to 2-inch diameter, threaded, flush joint PVC riser pipe to the surface.

The annulus of each boring will be backfilled with a pre-sieved Colorado 10x20 grade annular silica sand pack from the bottom of the casing to approximately two feet above the top of the well screen. A two-foot thick bentonite seal will be placed above the sand pack to prevent the infiltration of surface water along the well casing and to stabilize the upper section of the well. The wells will be completed as flush-mounted monitoring wells.

Due to the lack of sufficient water in the monitoring wells at the completion of well construction, the wells may not be mechanically developed.

2.2 Groundwater Sampling Procedures

Prior to sampling, depth-to-water measurements will be obtained by using an electronic water level indicator. The static water level at the wells sampled previously at the Site ranged from approximately 24.63 feet to 28.30 feet below the top of casing in the wells. Due to the likelihood that recharge of groundwater at the Site will pose an issue to collecting adequate groundwater

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samples based on the low permeability of lithologies present and presence of glacial till in the area, AEG may elect to forgo the purging of each well for either the normally required minimum of three well casing volumes or until the field parameters, including pH, temperature, specific conductance, dissolved oxygen, and/or total dissolved solids have stabilized.

Groundwater samples will be collected from all the wells by a peristaltic pump and dedicated polyethylene tubing to mitigate cross contamination during groundwater sampling activities. Permanent dedicated tubing will be installed in each of the wells to a depth of 34 feet bgs for sample collection following U.S. EPA approved low-flow purge technique. The groundwater samples will be placed in laboratory provided containers for laboratory analyses.

To reasonably ensure the purity of AEG's samples, the following actions will be taken (1) nitrile gloves will be used in handling all sampling jars and sampling devices; (2) the sampling equipment will be scrubbed with Alconox detergent and rinsed with water prior to each sample extracted; and (3) the containers will be placed in a chilled cooler and transported under a chain-of-custody to Libby Environmental laboratory, a Washington State certified analytical laboratory located in Olympia, Washington with a standard five day laboratory turn-around-time.

2.3 Monitoring Wells Survey

All monitoring wells installed during this effort will be surveyed by a licensed surveyor. The purpose for the survey is to establish elevation data relating the land surface to the potentiometric surface of the shallow groundwater. Vertical and horizontal datum will be established using the Washington State Department of Transportation monument identifiers in NAVD 88 and NAD 83/91, respectively. Horizontal datum is established using the Washington State Plane North Coordinate System. Ground surface and top of casing elevations will be surveyed to the nearest 0.01 foot. The groundwater elevations will be measured from the top of the PVC monitoring well casing (north side). Table 3, *Summary of Groundwater Elevations*, presents the depth-to-water and associated groundwater elevations for the three monitoring wells drilled in Phase 2. The well structures will be related to the parcel boundary to determine whether the upgradient wells are located outside of the property boundary.

2.4 Quality Controls

All soil and groundwater samples will be collected in general accordance with industry protocols for the collection, documentation, and handling of samples. Descriptions of soil and sampling depths will be logged in the field, and the drillers and geologist will confirm sample depths as soil samples are collected. A site map showing boring locations will be completed prior to leaving the Site.

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Soil samples will be tightly packed into jars to eliminate sample headspace. Water samples will be filled carefully in the sampling bottles to prevent volatilization. Upon sampling, all samples will be placed immediately into chilled ice chests.

All samples will be transported the day of sample collection and submitted under standard chain-of-custody protocols to Libby Environmental Inc. The laboratory provides standard quality assurance/quality control (QA/QC) which includes the following: surrogate recoveries for each sample, method blank results, duplicate analyses, matrix or blank spiked analyses, and duplicate spiked analyses.

2.5 Investigation Derived Waste

Investigation derived waste generated at the Site during this project consists of soil cuttings from the subsurface exploration activities, decontamination water generated during the decontamination of the hollow stem auger, and purge water collected during groundwater sampling activities. These wastes will be placed in approved Department of Transportation (DOT) 55-gallon steel drums and stored at the Site for subsequent characterization and disposal.

2.6 Recommendation

AEG recommends that groundwater sampling be conducted more frequently than quarterly to provide short-term trends within the Site because of the possible influence of contamination from upgradient sites. This monthly or semi-monthly sampling should continue for at least a calendar year to include seasonal effects and possibly allow for statistical interpretation. An upgradient site (Unocal 5533) has confirmed TPH, BTEX, and MTBE contamination in the soil and groundwater dating back to the early 1990s. Placement of the six proposed monitoring wells should be such that upgradient effects can be identified and to determine the amount of influence from that source, the impact from on Site sources, and to include the area adjacent to the dry cleaner site. Groundwater monitoring will determine whether an NFA letter can be requested or whether more active remediation is necessary.

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3 LIMITATIONS

This report summarizes the findings of the services authorized under our agreement. It has been prepared using generally accepted professional practices, related to the nature of the work accomplished. This workplan was prepared for the exclusive use of Mr. Nicholas Bahn, Hanmi Bank, and their designated representatives for the specific application to the project purpose.

Recommendations, opinions, Site history and proposed actions contained in this workplan apply to conditions and information available at the time this workplan was completed. Since conditions and regulations beyond our control can change at any time after completion of this proposed work, we are not responsible for any impacts of any changes in conditions, standards, practices and/or regulations subsequent to our performance of services. We cannot warrant or validate the accuracy of information supplied by others, in whole or part.

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4 REFERENCES

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American Society for Testing and Materials (ASTM) Standard E 1903-97, *Standard Guide Environmental Site Assessments: Phase II Environmental Site Assessment Process*.

Associated Environmental Group, LLC, 2011. *Supplemental Site Characterization - Manor Market, 3609 164th Avenue SW, Lynwood, WA.*

Easterbrook, D. J., *Landforms of Washington,* Department of Geology, Western Washington State College. 1970.

Smith, Mackey, 1975. *Preliminary Surficial Geologic Map of Edmonds East and Edmonds West Quadrangles, Snohomish and King Counties, Washington.* United States Geological Survey Geologic Map GM-14.

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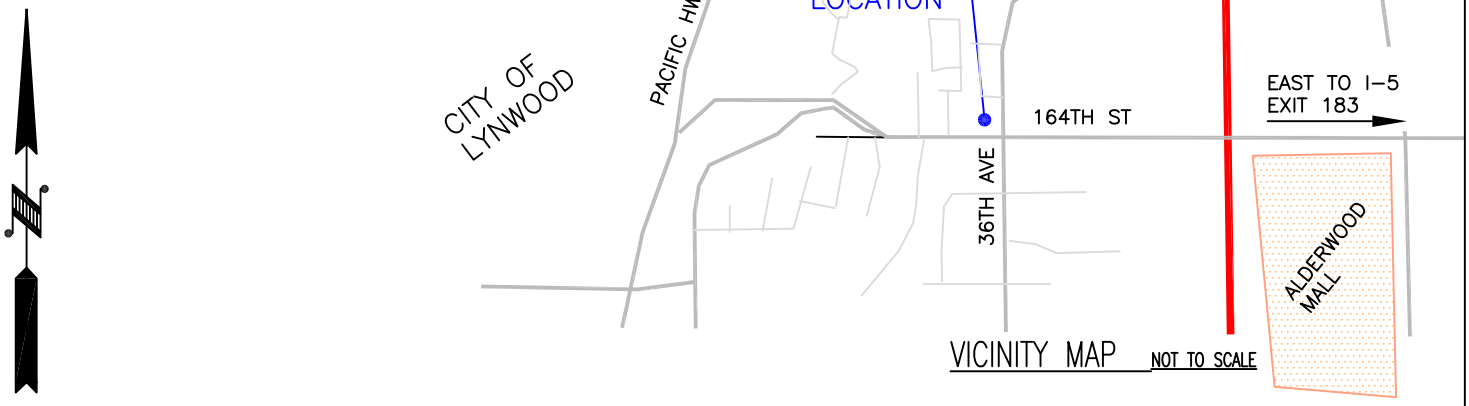
Notes:
(1) The locations of all features shown are approximate.
(2) This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.

Reference: Drawing created from surveyor's drawing by PACIFIC GEOMATIC SERVICES, Inc and notes provided by AEG, LLC



DRAWING SCALE: 1"= 150'

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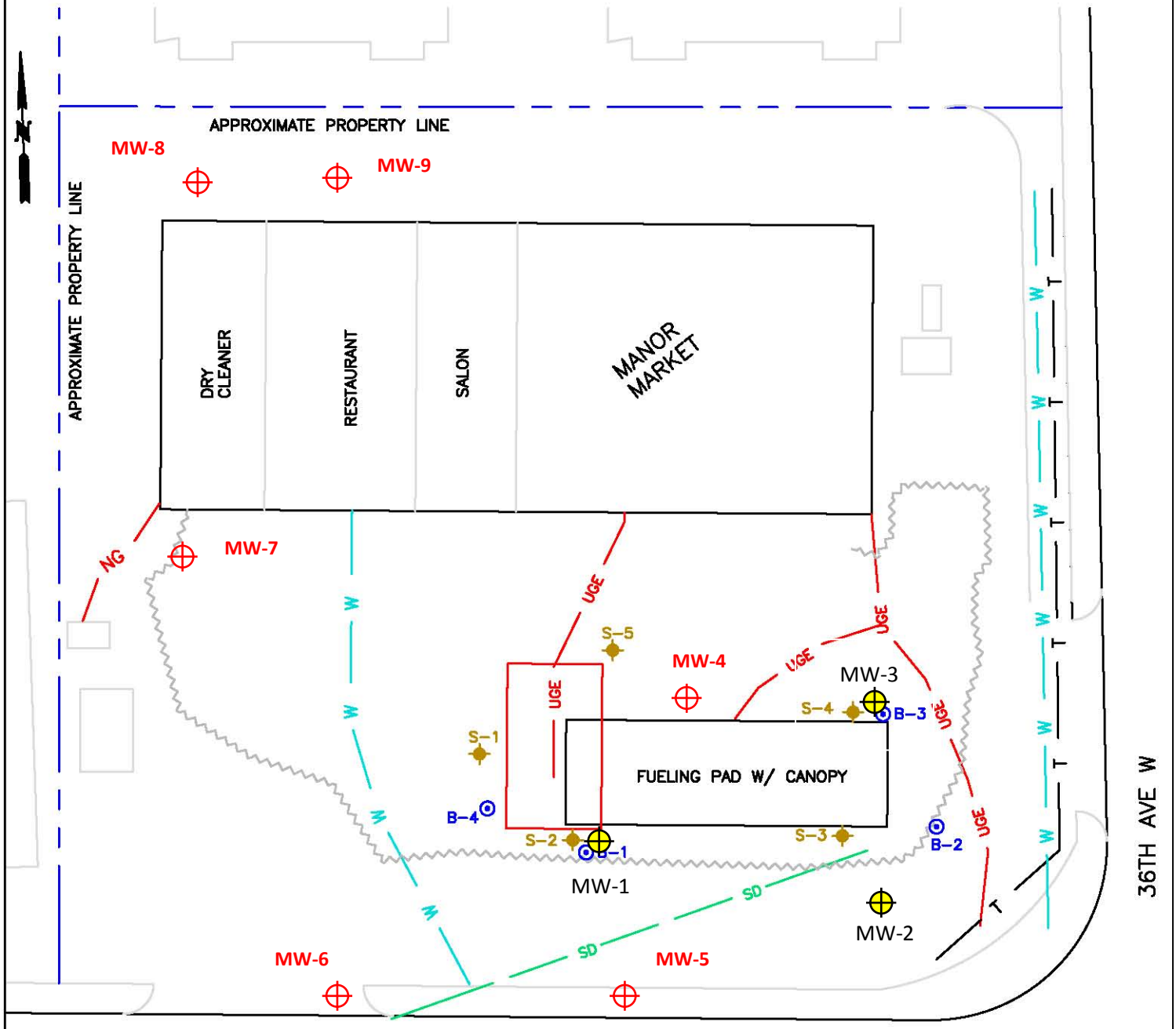
FIGURE 1
SITE &
VICINITY MAP

MANOR MARKET
3609 164TH ST SW
LYNNWOOD, WA

Project# 11-124	Date: 9/08/2011
File:	Sheet 1 OF 2

Notes:
(1) The locations of all features shown are approximate.
(2) This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.

Reference: Drawing created from notes provided by AEG, LLC.



Groundwater Monitoring Well

Proposed Groundwater Monitoring Well

LEGEND

S-1	SAMPLES BY AEG
B-1	BORINGS BY AEG
NG	BURIED NATURAL GAS LINE
SD	STORMWATER DRAIN LINE
W	WATER LINE
UGE	BURIED ELECTRICAL LINE
T	BURIED TELEPHONE LINE

DRAWING SCALE: 1"= 30'

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FIGURE 2
SITE PLAN

MANOR MARKET
3609 164TH ST SW
LYNNWOOD, WA

Project# 11-124	Date: 9/09/2011
File:	Sheet 2 OF 2

Notes:
(1) The locations of all features shown are approximate.
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LEGEND

INFERRED GROUNDWATER DIRECTION	W — WATER LINE
MW-1 — MONITORING WELLS BY AEG	UGE — BURIED ELECTRICAL LINE
NG — BURIED NATURAL GAS LINE	T — BURIED TELEPHONE LINE
SD — STORMWATER DRAIN LINE	CATCH BASIN

DRAWING SCALE: 1"= 30'

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FIGURE 3 – GROUNDWATER POTENTIOMETRIC MAP
MARCH 2012

MANOR MARKET
3609 164TH ST SW
LYNNWOOD, WA

Project# 11-124	Date: 03/26/2012
File:	Sheet 3 OF 3

Table 1 Summary of Soil Analytical Results
Manor Market, Lynnwood, WA
Supplemental Site Characterization

Sample Number[1]	Date Sampled	Depth Sampled (feet)	**Gasoline TPH[2] (mg/Kg)**	Select Volatile Organic Compounds[3] (mg/Kg)						
				Benzene	Toluene	Ethylbenzene	**Total Xylenes**	PCE	TCE	Vinyl Chloride
B1-S3-5.5/6.0	8/24/2011	5.5-6.0	**190**	**1.3**	2.0	5.0	**12**	--	--	--
B1-S7-25.5/26.0	8/24/2011	25.5-26.0	12	**0.11**	<0.02	<0.05	0.11	--	--	--
B2-S5-11.5/12.0	8/24/2011	11.5-12.0	<10	<0.02	<0.02	<0.05	<0.15	--	--	--
B2-S8-16.5/17.0	8/24/2011	16.5-17.0	<10	<0.02	<0.02	<0.05	<0.15	--	--	--
B3-S2-5.5/6.0	8/24/2011	5.5-6.0	22	**0.24**	0.67	0.48	0.73	<0.02	<0.03	<0.02
B3-S6-11.5/12.0	8/24/2011	11.5-12.0	<10	<0.02	<0.02	<0.05	<0.15	--	--	--
B4-S3-7.5/8.0	8/24/2011	7.5-8.0	<10	<0.02	<0.02	<0.05	<0.15	--	--	--
Reporting Limits			10	0.02	0.05	0.05	0.15	0.02	0.03	0.02
Ecology MTCA Method A Clean Up Levels			30 [4]	0.03	7	6	9	0.05	0.03	*

Notes:
[1]Approximate sample locations are shown in figure 2
[2]Gasoline range total petroleum hydrocarbons (TPH). Analyzed by Northwest Method NWTPH-Gx.
[3]Select Volatile Organic Compounds. Analyzed by EPA Method 8260C.
[4]Cleanup level with presence of benzene
mg/Kg = milligrams per kilograms
PCE = tetrachloroethene
TCE = trichloroethene
-- = not analyzed for this constituent
< = not detected above laboratory limits
* Ecology has not designated a cleanup level for this constituent
Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

Table 1 Summary of Soil Analytical Results
Manor Market - Supplemental RI, 2nd Phase
Lynnwood, WA

Sample Number[1]	Date Sampled	Depth Sampled (feet)	**Gasoline TPH[2] (mg/Kg)**	Select Volatile Organic Compounds[3] (mg/Kg)			
				Benzene	Toluene	Ethylbenzene	Total Xylenes
MW1-S1/12-13.5	2/8/2012	12.0-13.5	<10	0.021	<0.10	<0.05	<0.15
MW1-S2/23-24.5	2/8/2012	23.0-24.5	**86**	**0.22**	<0.10	<0.05	<0.15
MW1-S3/30-31.5	2/8/2012	30.0-31.5	<10	**0.032**	0.11	<0.05	<0.15
MW1-S4/35-36.5	2/8/2012	35.0-36.5	<10	**0.88**	<0.10	<0.05	<0.15
MW2-S1/23-24.5	2/8/2012	23.0-24.5	<10	<0.02	<0.10	<0.05	<0.15
MW3-S1/7	2/9/2012	7.0	<10	**0.048**	0.20	0.27	1.1
MW3-S2/23-24.5	2/9/2012	23.0-24.5	<10	**0.036**	0.10	<0.05	<0.15
MW3-S3/13-14.5	2/9/2012	13.0-14.5	<10	<0.02	<0.10	<0.05	<0.15
PQL			10	0.02	0.10	0.05	0.15
Ecology MTCA Method A Clean Up Levels			30 [4]	0.03	7	6	9

Notes:
[1]Approximate sample locations are shown in figure 2
[2]Gasoline range total petroleum hydrocarbons (TPH). Analyzed by Northwest Method NWTPH-Gx
[3]Select Volatile Organic Compounds. Analyzed by EPA Method 8021B or 8260B
[4]Cleanup level with presence of benzene
mg/Kg = milligrams per kilograms
MTCA = Model Toxics Control Act
PQL=Practical Quantitation Limits
-- = not analyzed for this constituent
< = not detected above laboratory limits
* Ecology has not designated a MTCA Method A cleanup level for this constituent
Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

Table 2 Summary of Groundwater Analytical Results
Manor Market
Lynnwood, WA

Well Number[1]	Date Sampled	Gasoline TPH[2] (ug/L)	Select Volatile Aromatic Compounds[3] (ug/L)								**Total Lead[4] (ug/L)**
			Benzene	Toluene	Ethylbenzene	Total Xylenes	EDC	EDB	Total Naphthalenes	MTBE	
MW-1	3/1/2012	<100	**9.9**	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0
	11/20/2012		Dry Well								
	3/28/2013	<100	**13**	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	**76.0**	<5.0
	5/30/2013	<100	**13.2**	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	**111**	**19.9**
MW-2	3/1/2012	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0
	11/20/2012	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0
	3/28/2013	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0
	5/30/2013	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0
MW-3	3/1/2012	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0
	11/20/2012	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0
	3/28/2013	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	8.3	6.8
	5/30/2013	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	8.0	<5.0
PQL		100	1.0	1.0	1.0	1.0	1.0	0.01	5.0	5.0	5.0
Ecology MTCA Method A Clean Up Levels		800 [5]	5	1,000	700	1,000	5	0.010	160	20	15

Notes:
[1]Monitoring well locations are shown in Figure 1
[2]Gasoline range total petroleum hydrocarbons (TPH). Analyzed by Northwest Method NWTPH-Gx.
[3]Select Volatile Organic Compounds in gasoline range organics (GRO) per Table 830-1. Analyzed by EPA Method 8260B.
[4]Analyzed by EPA Method 7421
[5]Cleanup level with presence of benzene
EDC = 1,2-Dichloroethane
EDB = 1,2-Dibromoethane
MTBE = methyl tertiary-butyl ether
PQL = Practical Quantification Limit
MTCA = Model Toxics Control Act
ug/L= micrograms per liter
-- = not analyzed for constituent
< = not detected above laboratory limits
* Ecology has not designated a cleanup level for this constituent
Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level