ASSOCIATED
ENVIRONMENTAL
GROUP, LLC

June 24, 2013

Mr. Norman Hepner, P.E.
Environmental Engineer
Toxics Cleanup Program - Central Region Office
15 W. Yakima Ave, Suite 200
Yakima, WA 98902
Email: nhep461@ecy.wa.gov

**RE: Proposed Compliance Monitoring Work Plan**
Gateway 76 Nob Hill Facility
1802 East Nob Hill Boulevard
Yakima, Washington 98901

Dear Mr. Hepner:

Associated Environmental Group, LLC (AEG) has prepared the enclosed *Proposed Compliance Monitoring Work Plan* on behalf of R.H. Smith Distributing, owner of the Gateway 76 Nob Hill property, located at the above referenced address in Yakima, Washington (herein referred to as the Site). The proposed scope of work is based on a discussion and e-mail between AEG and the Washington State Department of Ecology (Ecology) Toxics Cleanup Program Site Manager. The *Proposed Compliance Monitoring Work Plan* replaces the work plan document *Proposed Limited In-Situ Bioremediation Work Plan*, previously submitted and dated May 1, 2013.

AEG requests that Ecology provide a formal opinion on the proposed *Work Plan*.

## SITE DESCRIPTION AND LOCATION

The subject Site is used as a retail gasoline station and as a convenience store. The fueling facilities and convenience store are currently active.

The Site is located at 1802 East Nob Hill Boulevard, within the City of Yakima, Yakima County, Washington State. The facility is located at the southeast corner of the intersection of East Nob Hill Boulevard and South 18th Street. The Site is physically located within the NW ¼ of the SE ¼ of Section 29. Township 13 N and Range 19 E of the Willamette Meridian. The Yakima County Parcel Number for the Property is 19132942431. The Site is listed in the Ecology database as Facility Site No. 506. The Site is generally level and is located in mixed residential/industrial/commercial area.

The Site was first developed in the early 1900s when the Property was used as a residence and possibly linked to larger orchard land or farmland. The Property was used as a residence for approximately 60 years until it was commercialized. In the late 1980s, the Site became a Maid



605 11TH AVENUE SE, SUITE 201 • OLYMPIA, WA • 98501
Phone: 360-352-9835 • Fax: 360-352-8164 • E-mail: admin@aegwa.com

O'Clover gas station. Four underground storage tanks (USTs) are present at the Site including two 10,000-gallon gasoline USTs, one 6,000-gallon gasoline UST, and one 6,000-gallon diesel tank. The USTs were installed in 1987.

The Site is included on the Ecology Leaking Underground Storage Tank (LUST) List, the Confirmed and Suspected Contaminated Sites List (CSCSL), and the UST List. The Site received a Washington Ranking Method (WARM) ranking of 2 in 1992 and was placed on the Hazardous Sites List. The basis of the ranking was related to human health concerns from contaminated groundwater containing benzene, toluene, ethylbenzene, and total xylenes (BTEX). In the early 1990s, adjacent residences were using drinking water from domestic wells.

In 1991 and 1992, petroleum contaminated groundwater in the general vicinity of the Gateway 76 Nob Hill Site was the subject of complaints by local residence and the subject of newspaper articles. Initial characterization was performed to determine if the release or releases had come from the Site. Apparently, a release that had occurred prior to 1991 was reported associated with the turbine pump for the westernmost 10,000-gallon gasoline UST. It was estimated that approximately 50 to 100 gallons of unleaded gasoline had been released. The original estimate had been 2,000 gallons.

In 1991, three wells were installed and BTEX and gasoline-range total petroleum hydrocarbon (TPH) were detected above Ecology Model Toxics Control Act (MTCA) Method A groundwater cleanup levels. About 0.2 feet of free product was detected in monitoring well MW-3 located adjacent to the USTs. Groundwater flow direction has been determined to be to the east-southeast at the Site. Six additional wells were installed in 1992. About 650 gallons of free product was removed from MW-3 using a skimming pump. Pumps were installed in various other wells to remove additional product. Up to 7,000 gallons of product and water was removed per day and treated during 1992.

Some of the contamination present in the Site vicinity was attributed to upgradient facilities such as the Exxon/Tiger Oil bulk fuel facility located approximately 400 feet west of the Site. The presence of groundwater contamination in a well along the southwestern boundary of the Site (MOC3, currently labeled MW-1) was attributed to unnamed offsite sources in the 1992 report. Three other service stations (Citgo/7-11, Time Oil, and ARCO AM/PM) are present at the intersection of East Nob Hill Boulevard and South 18th Street and represent potential sources of offsite groundwater contamination.

In 2002, Ecology sent a letter regarding the status of LUST remedial activities at Maid O'Clover and stated that there was a need for further action at the Site based on the presence of petroleum



605 11TH AVENUE SE, SUITE 201 • OLYMPIA, WA • 98501
Phone: 360-352-9835 • Fax: 360-352-8164 • E-mail: admin@aegwa.com

hydrocarbons above MTCA Method A cleanup levels. The 2002 Ecology letter concluded that there were inconsistencies in past reports regarding the levels of contaminants at the Site, and that the Site should remain in "Cleanup Started" status.

In 2004, a Phase II Environmental Site Assessment (ESA) was performed at the Site. The Phase II ESA discovered tetrachloroethylene (PCE) in groundwater above Ecology MTCA cleanup levels at two borehole locations at concentrations of 16.7 micrograms per liter (ug/L) and 38.2 ug/L. BTEX, gasoline TPH, and diesel TPH were not detected in any of the water and soil samples that were collected near the USTs. In 2005, Ecology sent a response to the Phase II investigation and stated that additional actions were needed to address the PCE in the groundwater.

It appears that this Site is located within the Yakima Railroad Area PCE plume. This is a large co-mingled plume that is present over a large area of downtown Yakima. Based on the draft *Revised Draft Remedial Investigation Report, Yakima Railroad Area, Yakima, Washington*, and dated December 1998, shallow groundwater flow is to the southeast in the vicinity of the Site. In 1998, PCE concentrations in wells located north (upgradient) of the Site ranged from about 10 to 100 ug/L. The closest wells sampled in the 1998 investigation were approximately 2,000 feet from the Site.

According to the CSCSL, three applications to enter the Voluntary Cleanup Program (VCP) have been received by Ecology (in February 2005, March 2007, and in March 2013) for the Site. The first two applications were terminated for various reasons in August 2005 and in October 2012. AEG is presently working under the last application, submitted in March 2013.

AEG began groundwater sampling from five previously installed monitoring wells located on the Site beginning on December 11, 2011. Initial samples included analyses for BTEX, TPH-gasoline, TPH-diesel, 1,2-dichloroethane (EDC), ethylene dibromide (EDB), total naphthalenes, methyl tertiary-butyl ether (MTBE), and total lead. Three wells (MW-1, MW-2, and MW-5) were sampled for TPH-heavy oil and mineral oil, as well. Three of the wells (MW-1, MW-2, and MW-4) were sampled for halogenated volatile organic compounds (VOCs), including PCE, trichloroethylene (TCE), 1,2-dichloroethylene (1,2-DCE), vinyl chloride, and carcinogenic polynuclear aromatic hydrocarbons (cPAHs).

No constituents were detected above MTCA Method A groundwater cleanup levels except benzene in monitoring well MW-1 (9.9 ug/L). The MTCA Method A groundwater cleanup level for benzene is 5 ug/L. It was suspected that the benzene detected in this well was coming from off-Site sources other than the Site itself.



605 11TH AVENUE SE, SUITE 201 • OLYMPIA, WA • 98501
Phone: 360-352-9835 • Fax: 360-352-8164 • E-mail: admin@aegwa.com

## CONCEPTUAL MODEL

A conceptual model has been developed for the Site. Much of the model is based on investigations for the Yakima Railroad Area as reported in the draft report.

### Soils

The shallower soils (shallower than 200 or 300 feet below ground surface [bgs]) consist of fill material, Yakima Valley Alluvium, and the Yakima Valley Terrace Deposits. The surface soil and fill consists of discontinuous layers of silty gravel, gravely sands, and organic soils. Significant modifications of the surface over the historic development of Yakima have affected the extent, depth, and permeability of the surface soils.

The Yakima Valley Alluvium consists of unconsolidated silts, sands, gravels, and cobbles deposited by rivers and streams. This unit occurs at or near the ground surface near the Site and extends to no more than 30 feet bgs. The alluvium is highly permeable and acts as an unconfined shallow water-bearing zone, which is directly recharged by precipitation and/or irrigation. The water level is typically eight to 12 feet bgs with a two to five-foot seasonal fluctuation.

The Yakima Valley Terrace Deposits consist of gravels with minor clay, silt, and sand deposited by high energy streams associated with glacial retreats and advances. The gravels can be stratified and indurated to a conglomerate with discontinuous layers of permeable cemented gravels, caliche, and clay/silt. The terrace deposits can extend to 300 feet bgs. The deposits act as an unconfined water-bearing zone which is used for domestic, public, irrigation, and industrial water supply wells. The gravels are recharged by precipitation, irrigation, and upward leakage from the underlying Upper Ellensburg Formation. The subject Site is mostly located within the alluvium materials and to some extent, the terrace deposits.

### Groundwater

The characterization of groundwater conditions for the Yakima Railroad Area Remedial Investigation (RI) involved interpretation of groundwater level data and other information from 28 RI monitoring wells and selected monitoring wells at 13 subfacilities. Regional hydrogeologic information and data from these wells were used to generate a conceptual model of groundwater flow in the water-bearing zones investigated.

Four quarters of monitoring were reported in the draft RI document. The potentiometric surface maps for the shallow water-bearing zone indicate that the gradient and estimated direction of groundwater flow is consistently to the southeast across the Yakima Railroad Area and toward the Site during all four quarters of monitoring. The seasonal variations of groundwater levels ranged



605 11TH AVENUE SE, SUITE 201 • OLYMPIA, WA • 98501
Phone: 360-352-9835 • Fax: 360-352-8164 • E-mail: admin@aegwa.com

from 0.39 to 11.76 feet and averaged less than five feet for wells screened in the shallow water-bearing zone. Irrigation recharge is likely the primary factor responsible for the larger fluctuations at the monitoring wells.

Annual precipitation in the Yakima River Valley is approximately eight inches, with more than half occurring during the winter months as snow. Potential evapotranspiration determined using a modified Blaney-Criddle calculation from the U.S. Department of Agriculture is approximately 38 inches annually. Basically, this means that little or no recharge is coming from precipitation in this area. Consequently, crops require extensive irrigation.

Irrigation canals are located throughout the Yakima Railroad Area. The irrigation canals are typically constructed of concrete-lined channels; however, leakage from the channels is common. Application of irrigation water occurs during the summer and early fall months (generally from April or May to October) and affects the regional surface water flow and groundwater levels within the Yakima area.

Seasonal irrigation in the Yakima Valley is interpreted to be responsible for the higher groundwater levels that were typically recorded during the June and September monitoring rounds as compared to the December and March monitoring rounds. Groundwater levels measured in the Yakima Railroad Area suggest that recharge from irrigation is primarily a regional phenomenon, and is not caused by localized point sources. Point sources would result in localized mounding of groundwater, which would be reflected in the groundwater contour maps generated by the RI. Runoff in the spring would also contribute recharge to groundwater along reaches of streams and rivers in the Yakima Valley that lose water to the subsurface, resulting in higher groundwater levels in the late spring to early summer period.

**SCOPE OF WORK**

The objective of this proposed Work Plan is to incorporate soil investigation data in the vicinity of monitoring well MW-1 to eliminate this well as a property monitoring point and develop a groundwater monitoring plan that meets the requirements of the Ecology Toxics Cleanup Program and the Model Toxics Control Act (MTCA). Ecology has indicated that they would be willing to consider an environmental covenant for contaminated soils present on the Site if it can be demonstrated that soil contamination is protective of groundwater (demonstrated by groundwater monitoring). Ecology has also indicated the following:

1. MW-1 Investigation: Ecology would accept three boreholes adjacent to MW-1 as a means of demonstrating that the Site is not contributing to the up-gradient well contamination if it can be shown that the soil is not contaminated and that all groundwater monitoring events continues to show this well to be up-gradient. *Three soil borings were drilled and sampled on June 6, 2013. Analytical results of soil samples collected show no detections for the*



605 11TH AVENUE SE, SUITE 201 • OLYMPIA, WA • 98501
Phone: 360-352-9835 • Fax: 360-352-8164 • E-mail: admin@aegwa.com

*contaminants of concern (COCs). The boring information and sample results will be presented in a separate document.*

2. Groundwater Monitoring: A valid statistical method to evaluate the groundwater data (to include the historical data) can be used OR Ecology would accept the following options:
   a. Four additional ***consecutive*** quarters of groundwater monitoring in wells MW 2, 4, 5, & 6 provided all contaminants are non-detect. Monitoring of PCE and daughter products is required to demonstrate that the Site is not exacerbating the existing PCE plume. Monitoring of MW-1 can be limited to measurements of depth to groundwater as necessary to calculate groundwater gradient. In the event that monitoring well MW-1 is shown not to be upgradient, monitoring of MW-1 is required; in which case, it may be prudent to monitor this well for all contaminants.
   b. If contamination is detected, eight ***consecutive*** quarters below MTCA Method A cleanup levels OR three consecutive years (six semi-annual events) of groundwater monitoring would be required during high/low groundwater table based on irrigation cycles.

Two monitoring events have been conducted to date by AEG to determine initial concentrations. Three wells have been sampled onsite to determine the possible presence of halogenated VOCs. Five wells have been sampled for BTEX, TPH, and associated constituents (monitoring well MW-3 has been filled with silt and cannot be sampled). Four of the wells demonstrated non-detect for the sampled constituents during the two monitoring events.

AEG proposes to conduct an additional four quarters in the four wells (MW-2, MW-4, MW-5, and MW-6) that have been below MTCA Method A groundwater cleanup levels for TPH, BTEX, and associated petroleum constituents. The four additional sampling events will also be conducted on these four wells (MW-2, MW-4, MW-5, and MW-6) for halogenated VOCs. Should these monitoring events demonstrate all of the constituents below groundwater cleanup levels; AEG will request a no further action (NFA) opinion letter for the Site.

AEG will compare the results statistically or directly with Ecology MTCA Method A groundwater cleanup levels, presented below. The Ecology three-part statistical method will be used should any concentration be detected above cleanup level as described in WAC 173-340-720(9). A monthly frequency is recommended that will overlap the irrigation cycle (May to October/October to May), rather than a quarterly frequency oriented around precipitation events. The cycle is based on the periods of canal flow as the canals are filled and subsequently leak to groundwater (approximately May to October) to when they are emptied (approximately October to May) and the groundwater table drops to its maximum depth bgs.



605 11TH AVENUE SE, SUITE 201 • OLYMPIA, WA • 98501
Phone: 360-352-9835 • Fax: 360-352-8164 • E-mail: admin@aegwa.com

MTCA Cleanup Levels for Gateway Nob Hill, Yakima

| Media | Contaminants | Cleanup Levels | Reference |
|---|---|---|---|
| Groundwater | **TPH-gasoline** | **800 ug/L** | **MTCA Method A** |
| | **Benzene** | **5 ug/L** | **MTCA Method A** |
| | **Toluene** | **1,000 ug/L** | **MTCA Method A** |
| | **Ethylbenzene** | **700 ug/L** | **MTCA Method A** |
| | **Total Xylenes** | **1,000 ug/L** | **MTCA Method A** |
| | **PCE** | **5 ug/L** | **MTCA Method A** |
| | **TCE** | **5 ug/L** | **MTCA Method A** |
| | **1,2-DCE** | **72 ug/L** | **MTCA Method B** |
| | **Vinyl Chloride** | **0.2 ug/L** | **MTCA Method A** |

AEG's scope of work for the *Compliance Monitoring* is as follows:

- Develop and oversee filing of an Environmental Covenant by R.H. Smith Distributing with the Yakima County Auditor's office for the soils on Site.
- Provide a Washington State Licensed Hydrogeologist for the project.
- Provide all soil and groundwater data electronically and in hardcopy according to Washington Administrative Code (WAC) 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840-1 (Data Submittal Requirements).
- Document Compliance Monitoring activities.
- Prepare a *Supplemental Remedial Investigation Project Summary* documenting the field activities and methodologies associated with the soil investigation around MW-1.

Groundwater Monitoring/Sampling Events

- AEG will conduct four consecutive quarterly groundwater monitoring/sampling events at monitoring wells MW-2, MW-4, MW-5, and MW-6 should results indicate concentrations that are non-detect. Should concentrations exceed any cleanup level, statistical monitoring will proceed on a monthly frequency. Ecology has suggested that because of the irrigation cycle, three years of monitoring would be required to incorporate the semi-yearly changes in the groundwater table. However, AEG would suggest that if the criteria from WAC 173-340-720(9) is met, monthly or quarterly statistical sampling over an additional 2.5 years could provide the necessary latest three years of data. One irrigation cycle has been sampled.
- Prior to groundwater monitoring and sampling activities, the monitoring wells will be purged until field parameters such as pH, conductivity, and temperature have stabilized.



605 11TH AVENUE SE, SUITE 201 • OLYMPIA, WA • 98501
Phone: 360-352-9835 • Fax: 360-352-8164 • E-mail: admin@aegwa.com

Groundwater samples will be collected via an EPA approved micropurge technique with a peristaltic pump. The samples will be placed in a chilled cooler until delivery to the analytical laboratory.

- Submit groundwater samples for laboratory analyses of gasoline range total petroleum hydrocarbons (TPH), BTEX, and tetrachloroethylene (PCE) and other halogenated VOC.
- Prepare and submit *Semi-Annual Groundwater Events* Reports.
- All reports generated by AEG will be prepared and reviewed by a Washington State licensed hydrogeologist.

**CLOSING**

Before proceeding with the proposed scope of work, AEG requests Ecology prepare an Opinion Letter for the Site indicating approval of the *Proposed Supplemental Remedial Investigation Workplan*. Please contact us at (360) 352-9835 with questions, comments, and/or your approval.

Sincerely,
**Associated Environmental Group, LLC**

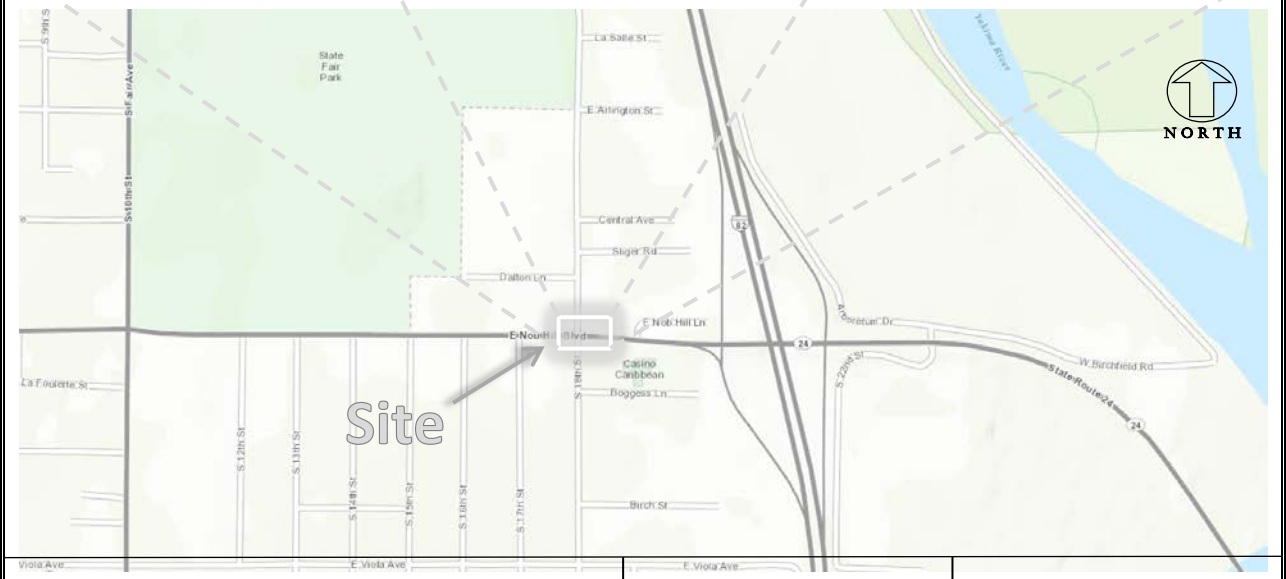
Charles S. Cline, P.G., P.Hg. enior Hydrogeologist


Enclosures:
Figure 1 *Site Plan*

cc: Ms. Sue Smith, R.H. Distributing



605 11TH AVENUE SE, SUITE 201 • OLYMPIA, WA • 98501
Phone: 360-352-9835 • Fax: 360-352-8164 • E-mail: admin@aegwa.com


ASSOCIATED ENVIRONMENTAL GROUP, LLC

**FIGURE 1**

SITE VICINITY MAP

**Gateway 76**

1802 East Nob Hill Blvd.
Yakima, WA