



ASSOCIATED  
ENVIRONMENTAL  
GROUP, LLC

RECEIVED  
NOV 17 2010  
WA State Department  
of Ecology (SWRO)

November 15, 2010

Mr. Charles Cline, L.H.G.  
Department of Ecology  
SWRO Toxics Cleanup Program  
PO Box 47775  
Olympia, Washington 98504-7775

RE: Cleanup Action Plan/Limited Disproportionate Cost Analysis  
Flegel Property (VCP No. SW0866)  
407A Porter Way  
Milton, Washington

Dear Mr. Cline:

Associated Environmental Group, LLC (AEG) has prepared this Cleanup Action Plan (CAP) for your consideration to conduct remedial action activities at the Flegel Property, located at 407 A Porter Way, Milton, Washington (the Site). The scope of work (SOW) section of this Cleanup Action Plan (CAP) for Remedial Action describes the property, environmental conditions, remedial action objectives, abbreviated disproportionate cost analysis, and the appropriate cleanup action standards under the Washington Department of Ecology (Ecology) Model Toxics Control Act (MTCA). It also describes the long term compliance monitoring that is proposed for the Site.

AEG has submitted documents to Ecology, as part of Ecology's Voluntary Cleanup Program, including the following: *Site Characterization* (dated June 24, 2009), and three *Quarterly Groundwater Event* reports (dated October 23, 2009, January 28, 2010, and June 11, 2010). A review of these documents in conjunction with this letter is recommended for full details on the Site's background. An abbreviated description of previous environmental investigations is provided below.

#### **SITE & ADJOINING PROPERTY - PREVIOUS ENVIRONMENTAL INVESTIGATIONS**

AEG conducted a *Site Characterization* in June 2009 to evaluate the potential of migration of dissolved phase diesel and gasoline range petroleum hydrocarbons from the H&H facility (adjacent to the west of the Site); and characterized the fill present at the Site for presence of contaminants of concern including petroleum hydrocarbons in the gasoline, diesel through mineral oil range, volatile organic compounds, and metals. AEG advanced three soil borings which were completed as groundwater monitoring wells (AEG MW-1 through AEG MW-3) and nine test pits. AEG conducted groundwater monitoring and sampling activities at the three new wells and monitoring well ADAPT MW-2, installed by Salt Bush Inc. near the western property boundary of the Site during a previous environmental investigation in 1999. Figure 1, *Site Plan*, presents the layout of the Site, adjoining facility, and locations of the monitoring wells, and test pits advanced.

Soil analytical results from this investigation indicated presence of elevated heavy oil range total petroleum hydrocarbons (TPH), toluene, and priority pollutant metals including lead, arsenic, and chromium at levels above their respective Ecology MTCA Method A groundwater cleanup levels. Table 1, *Summary of Soil Analytical Results – TPH, BTEX & Metals*, presents the results from the *Site Characterization* phase of work. Groundwater analytical results exhibited similar constituents of concern (COC) at elevated detections. Diesel range TPH was also exhibited in groundwater. Low detections of benzene, toluene, ethylbenzene, and total xylenes (BTEX) and other volatile organic compounds typically associated with gasoline fuel were also exhibited albeit at detections below cleanup levels.

AEG concluded that the current and previous detections of diesel range TPH in soil during AEG's investigation and previous investigations are most likely associated with the Site's proximity to H&H Diesel and the known waste oil tank leak on that property. While the presence of gasoline associated VOC had not been exhibited in previous environmental work completed, AEG indicated that the presence of VOC may be associated with the lightest range of diesel hydrocarbons, the current use of the Site, or the proximity to the H&H facility. The detection of metals (specifically total lead, chromium (VI/III) and arsenic) throughout the Site in both soil and groundwater has been a recognized environmental concern and a focus of previous environmental investigations. The presence of metals, at locations of investigation, is most likely associated with the presence of fill at the Site. Based on these conclusions, AEG recommended conducting four consecutive quarterly groundwater events to assess the overall groundwater quality and direction of groundwater migration (AEG, 6/2009).

In September 2009, AEG completed a groundwater monitoring/sampling event at the Site. During Site work, approximately 0.68 feet of measurable free product was present at monitoring well AEGMW-3, located on the Site's western property boundary adjacent to the H&H facility. Groundwater analytical results for this well indicated presence of heavy oil range TPH (at 1,470 micrograms per liter - ug/L), gasoline range TPH (at 370 ug/L), ethylbenzene (at 2.6 ug/L), and total xylenes at (15.3 ug/L). The concentration of heavy oil range TPH is above Ecology MTCA Method A groundwater cleanup level of 500 ug/L (refer to Table 2, *Summary of Quarterly Groundwater Analytical Results – TPH & Metals*). Gasoline range TPH and associated VOC were exhibited at monitoring wells AEGMW-1 and ADAPTMW-2 albeit at levels below the groundwater cleanup levels for each respective constituent. Total and dissolved arsenic was also present in groundwater at levels above MTCA Method A cleanup level of 5 ug/L.

Based on the presence of heavy oil range TPH, the continued presence of gasoline range TPH and associated VOC, and the unknown source of the fill found at the Site, AEG completed a regulatory file review of the H&H facility in order to obtain a more comprehensive understanding of the

subsurface conditions at the Site and its relationship with the historical operations at the H&H facility. In summary, according to an Ecology inspection summary, *"the property consists of fill from various sources. Fill depth results in an elevation of approximately 8 feet above the surrounding land. The property is encircled by open drainage ditches. The fill was from the B&L log yard in 1971 and 1972. This was prior to the use of ASARCO slag at B&L. The "Duwamish Drive-In" demolition material was used to further fill the site in 1987. Most of this fill went to the east side of the site."*

Complaints and citations have been issued by Ecology and the Tacoma-Pierce County Health Department to the H&H facility beginning in 1974. Petroleum based solvents, waste oil, fuel, and "caustic washing rinsate" were all reported to be present at the H&H facility. A 500 gallon Stoddard Solvent (mineral spirits) underground storage tank (UST) was removed from the H&H facility in 1991, and that there was confirmed soil contamination associated with this UST. In 1992, Ecology also discovered a leaking aboveground storage tank (AST) located on the east side of the main H&H facility building. The AST contained waste oil and consisted of a steel tank surrounded by a cracked concrete vault. Ecology also noted that rinsate from caustic parts washing was allowed to run onto the ground and infiltrate into the subsurface (AEG, 10/2009).

### CONCEPTUAL SITE MODEL

AEG developed a conceptual site model for the Site based on the findings of previous environmental investigations. The conceptual site model reflects the findings of previous environmental investigations and presents an exposure assessment for the Site. The exposure assessment involved evaluating the distribution of the dissolved and adsorbed phases of petroleum hydrocarbons in soil and groundwater onsite and at the adjoining H&H facility, potential pathways, and potential receptors. The conceptual site model will be used to support an evaluation of feasible remediation alternatives technology for the cleanup of petroleum contaminated soil (PCS) and impacted groundwater at the Site.

The primary conceptual release model for the Site is most likely associated with the Site's proximity to the adjoining H&H Diesel facility (to the west of the Site) and the known waste oil tank leak on that property. The presence of metals, at locations of investigation, is most likely associated with the presence of fill at the Site.

Soil and groundwater analytical laboratory results indicated petroleum hydrocarbons and heavy metals (specifically lead and arsenic) contaminated soil and groundwater, at concentrations above Ecology MTCA Method A cleanup levels, are present at the Site at selected locales. Specifically, diesel and heavy oil range TPH were found at the western area of the Site at subsurface depths of approximately three to eight feet bgs; and total lead and arsenic were detected at the western, southern and eastern areas of the Site at subsurface depths of approximately three to eight feet bgs.

However, elevated background levels of lead and arsenic are typically found in certain glacial and volcanic terrains throughout western Washington, and these concentrations tend to be far above the national average. The chromium detected in soil is most likely hexavalent chromium although confirmation laboratory analysis needs to be conducted in order to confirm whether hexavalent or trivalent chromium is present at the Site. The potential sources for trivalent chromium, for example from metal plating industrial practices, appear to be an unlikely source material for the chromium detected in the fill soil at the Site.

Subsurface conditions at the Site, at locations of investigation, generally consist of fill deposits. Fill deposits typically consisted of loose to medium dense black-gray silty sand with gravel or clay and local brick, metal and wood debris to approximately nine feet bgs. The nature of the soils in the water-bearing zones appears to range from loose to medium dense silty sand to silty sand with clay or gravel and wood debris.

Contaminant distribution and groundwater elevations (based on surveyed groundwater elevation data measured at the Site) indicate the direction of shallow groundwater flow at the Site, based on surveyed groundwater elevations, is generally to the west and south with southwesterly components. Localized groundwater flow at the Site appears to reflect that of the regional groundwater flow where the flow appears to be generally to the west, towards the Hylebos Waterway (Commencement Bay) located approximately 1 to 1 1/4 miles to the west, and/or to the south, towards Hylebos Creek which is directly west of the Site and discharges to areas south of the Site towards the Hylebos Waterway.

Presence of cohesionless soils at the Site including fill and alluvium deposits enabled the vertical migration of dissolved phase petroleum hydrocarbons to where groundwater was encountered (at approximately two feet to six feet bgs) and beyond the vadose zone. Contaminants may also spread laterally to the west from the H&H Diesel facility to the Site (in the vicinity of monitoring well AEG MW-3) due to the locale of the fuel release (located adjacent to the eastern corner of H&H's parts washing area and directly west of well AEG MW-3).

The findings of the subsurface investigations performed by AEG are presented in Tables 1 and 2. The potential receptors to humans are limited to several narrow potential exposure routes. Routes to human receptors include:

- Ingestion of or dermal contact with petroleum hydrocarbons and heavy metals contaminated soil and/or groundwater during soil excavation activities.

## REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAO) define the overall goals of the remedial effort and act as benchmarks for comparative evaluation of any remedial alternative. The RAO are specific to each of the contaminants and media affected at the Site.

### Petroleum Hydrocarbon Impacted Soil

- Remove the potential for direct contact to humans and the environment from residual petroleum hydrocarbon contaminated soil and associated substances, and remediate the impacted soils to concentrations below Ecology MTCA Method A soil cleanup levels.
- Removal and remediation of impacted soil will in turn remove the source of the contamination and reduce the potential for impact to the groundwater via the dissolved phase of gasoline range petroleum hydrocarbons.

### Petroleum Hydrocarbon Impacted Groundwater

- On-site groundwater: Remediate and restore the groundwater quality to concentrations below Ecology MTCA Method A groundwater cleanup levels and minimize the potential for exposure to humans and the environment.
- Downgradient off-property groundwater: The H&H Diesel facility is the source of diesel petroleum hydrocarbons contamination at the western area of the Site due to the proximity of the previous diesel fuel leakage/spill and presence of shallow groundwater in the vicinity area. However, hydrogeologically this facility is downgradient of the Site. Petroleum impacted groundwater at this facility will be the responsibility of the H&H Diesel company.

### Metals (Lead and Arsenic) Impacted Soil

- Remove the potential for direct contact to humans and the environment from metals contaminated soil and remediate the impacted soils to concentrations below Ecology MTCA Method A soil cleanup levels.
- Removal and remediation of impacted soil as the source material will in turn reduce the potential for continuing metal impacted groundwater. However, Ecology and the Cities of Fife and Milton have recognized that area-wide metals (lead and arsenic) contamination exists in the Fife and Milton area of Pierce County due to historic usages in the area and natural elevated background concentrations of these metals.

### Metals (Lead and Arsenic) Impacted Groundwater

- On-site groundwater: Remediate and restore the groundwater quality to concentrations below Ecology MTCA Method A groundwater cleanup levels and minimize the potential for exposure to humans and the environment. However, Ecology and the Cities of Fife and Milton have recognized that area-wide metals (lead and arsenic) contamination exists in the Fife and Milton area of Pierce County due to historic usages in the area and natural elevated background concentrations of these metals.

### **PROPOSED REMEDIAL ACTION – CLEANUP ACTION PLAN**

MTCA Method A cleanup levels are designed for facilities undergoing routine cleanup actions that involve relatively few hazardous substances (WAC 173-340-700(5)(a)). The conditions for using MTCA Method A cleanup levels are met at this Site because numerical standards are available for all indicator hazardous substances in all media of concern (WAC 173-340-704(1)(b)). The MTCA Method A soil and groundwater cleanup levels will be used at this Site since the conditions for applying this Method are met. Groundwater at the Site is not used for drinking water. The constituents of concern (COC) include diesel and heavy oil range TPH, lead, chromium, and arsenic.

**Table 1. Selected MTCA Cleanup Levels for Flegel Property - Site Remediation**

| Media       | Contaminants  | Cleanup Levels | Reference     |
|-------------|---------------|----------------|---------------|
| Soil        | TPH-Diesel    | 2,000 mg/Kg    | MTCA Method A |
|             | TPH-Heavy Oil | 2,000 mg/Kg    | MTCA Method A |
|             | Lead          | 250 mg/Kg      | MTCA Method A |
|             | Arsenic       | 20 mg/Kg       | MTCA Method A |
|             | Chromium      | 19/2,000 mg/Kg | MTCA Method A |
| Media       | Contaminants  | Cleanup Levels | Reference     |
| Groundwater | TPH-Diesel    | 500 µg/L       | MTCA Method A |
|             | TPH-Heavy Oil | 500 µg/L       | MTCA Method A |
|             | Lead          | 15 µg/L        | MTCA Method A |
|             | Arsenic       | 5 µg/L         | MTCA Method A |
|             | Chromium      | 50 µg/L        | MTCA Method A |

Based on the conceptual site model, the selected remediation for the cleanup action at the Site will include the following primary components, as presented below.

AEG proposes remediating petroleum contaminated soil and groundwater via excavation of identified contaminated areas followed by backfilling the excavated areas with clean imported soil. Areas of contamination were originally located during the *Site Characterization* and are presented

in Figure 1, *Site Plan*. Confirmation soil samples will be collected prior to backfilling of the excavation pits to assess whether the soil remedial action has remove the bulk source of contamination and that analytical results will show either no detectable concentrations of petroleum hydrocarbons or detections below cleanup levels; and for heavy metals (specifically arsenic and lead) to assess whether the confirmation samples and background soil concentrations of these constituents will meet the cleanup levels or are more representative of the area-wide high metal concentrations in this vicinity area.

AEG proposes remediating metals contaminated soil and groundwater via excavation of identified contaminated areas and followed by backfilling the excavated areas with clean imported soil. The areas of metal contamination were also originally located during the *Site Characterization* and are presented in Figure 1, *Site Plan*.

Subsequent to soil remedial action, AEG will continue to conduct groundwater monitoring and sampling activities at only monitoring well AEG MW-3, located at the western property boundary of the Site and eastern property boundary of the H&H Diesel facility to monitor the presence of petroleum hydrocarbons in groundwater at this area. The remaining wells at the Site (AEG MW-1, AEG MW-2, and ADAPT MW-2) have met the requisite four consecutive quarterly groundwater events for monitoring diesel through mineral oil range TPH. However, AEG will continue to conduct groundwater monitoring and sampling activities at all four monitoring wells for monitoring lead and arsenic in groundwater at the Site.

#### **LIMITED DISPROPORTIONATE COST ANALYSIS – GRAVITY WALL BETWEEN SITE AND H&H DIESEL FACILITY**

AEG conducted a limited disproportionate cost analysis by using the criteria described in WAC 173-340-360(3)(f) to evaluate whether construction of an impermeable barrier (gravity wall) between the Site and the adjoining H&H Diesel facility is a viable and good solution to the maximum extent practicable for addressing the petroleum hydrocarbons issue. The benefit from this remedial action technology was the deterrence of potential recurring issues of fuel spills and/or wash fluids from the H&H Diesel facility to migrate to the east, towards the Site.

AEG used the following criteria during the limited disproportionate cost evaluation: protectiveness, permanence, cost, effectiveness over the long term, management of short-term risks, technical and administrative implementability, and consideration of public concerns.

However, after a discussion with various environmental contractors which specialize in installation of the impermeable barrier and obtaining cost estimates for this work, AEG concluded that the cost

of construction/installation an impermeable barrier (gravity wall) to be prohibitive. This technology is not cost effective compared to the soil excavation/removal remedial option.

The specific details and associated costs on the construction of an impermeable barrier between the Site and H&H Diesel facility is as follows:

- The proposed an impermeable barrier would extend vertically 800 feet (trending south to north) and would be installed to a depth of 10 to 11 feet below ground surface. The required thickness of the wall is proposed at minimally four feet thick.
- The estimated cost for constructing the impermeable barrier averages at \$480,000.
- The impermeable barrier would be composed of a composite of soil/cement/bentonite which generally conforms to an unconfined compressive strength of 20 pounds per square inch (PSI) after 14 days and has an ultimate unconfined compressed strength less than 300 PSI.
- To install the impermeable barrier, a containment trench would be excavated, along with shoring, dewatering and soil removal activities. The trench would be filled with the soil/cement/bentonite slurry. During the soil/cement/bentonite slurry application and drying period, dewatering and shoring activities would be necessary.

Soil excavated for the trench in this area is anticipated to include some areas that are adversely impacted by diesel/heavy oil range petroleum hydrocarbons. AEG would segregate all soil to ensure minimal soil disposed of as petroleum contaminated soil which would be subsequently be disposed at a regulated landfill. The potential costs of disposing petroleum contaminated soil from a trench extending 800 feet, 10 to 11 feet in depth, and 4 to 5 feet in width averages around \$110,000.

AEG estimated that the volume of soil to dispose of may range up to 2,050 tons, based on a conservative estimate of 1.4 tons per cubic yards. The disposal fee for petroleum contaminated soil including transportation fee at a regulated landfill may range approximately from \$42 to \$53 per ton. This estimate is a conservative value and actual costs will be dictated by field and site conditions (for example, very wet and thus heavier soil) would increase the cost of disposal. In addition, AEG anticipates collecting soil samples for laboratory analysis throughout the excavation for the impermeable barrier. The number of soil samples may range from 30 to 50 samples for a trenching distance of 800 feet by 10 feet in depth. The projected cost for laboratory analyses and associated field work labor may range up to \$35,000.

As the gravity wall trench is being constructed, de-watering procedures would be maintained at all times. Since the depth-to-groundwater at the Site has ranged between two to four feet below ground surface, AEG anticipates extensive dewatering activities and treatment of the contained



groundwater prior to disposal would be necessary. The associated costs of treating and disposing the contaminated water via an on-site Baker Tanks containment system and granular activated carbon treatment system averages between \$70,000 to \$100,000. These costs are contingent on site conditions. The total estimated cost for construction of the impermeable barrier as presented above ranges approximately from \$600,000 to \$700,000 with a 10% contingency cost.

In our professional opinion, the cost for construction of an impermeable barrier (gravity wall) between the Site and the adjoining H&H Diesel facility is substantial and disproportionate to any benefits gained by this remedial action. Excavation of petroleum contaminated soil and obtaining an agreement and assurance from the H&H Diesel facility (in which AEG, the Client and H&H managers have engaged in) that the parts washing activities at this facility have changed and the fluids would not drain directly towards the Site would be a more pragmatic means to attain the cleanup action along the western area of the Site.

## **PROPOSED SCOPE OF WORK**

The scope of work (SOW) presented below is based on the most feasible and economical cleanup option for the Site, taking into account: contamination levels, property size, locales of impacted soil, current site usage, as well as future use. It is our opinion that excavation and removal of petroleum and metals contaminated soil at the Site is the most feasible and expeditious cleanup option for the Site.

AEG's SOW for the Cleanup Action Plan will consist of the following tasks:

- Excavate soil to approximately 10 feet below ground surface (bgs) in the areas of contamination.
- Collect confirmation soil samples to ensure that there are no detectable concentrations or the concentrations of the constituents of concern are below Ecology MTCA Method A soil cleanup levels.
- Submit all collected soil and groundwater samples to a Washington State accredited analytical laboratory.
- Collect all soil and groundwater samples in a laboratory provided containers. The containers will be labeled and placed in a portable chilled ice chest and transported to the laboratory following standard chain-of-custody procedures.
- Submit soil samples for laboratory analysis of diesel and heavy oil range TPH via Northwest Method NWTPH-D/Dx; and lead, chromium, and arsenic via EPA Method 7000 series.

- Backfill the entire excavated area with clean imported soil as applicable to maintain uniform and functional ground surface level.
- Disposal of petroleum and metal contaminated soil at a regulated disposal facility.
- Prepare and submit a *Remedial Action Report* presenting the findings and conclusions to Ecology.
- Submit all subsurface investigation data and laboratory data into Ecology's Environmental Information Management (EIM) System.
- All data generated will be submitted to Ecology in accordance with WAC 173-340-840(5) in both written and electronic format.
- All reports generated by AEG will be reviewed by a WA State licensed hydrogeologist.

## PERFORMANCE MONITORING OF GROUNDWATER

The performance monitoring of groundwater at the Site would include the following tasks:

- After soil remedial action, conduct groundwater monitoring and sampling activities at the Site for all existing monitoring wells for an additional one calendar year on a quarterly basis for analysis of total lead and arsenic.
- Conduct groundwater monitoring and sampling activities at only monitoring well AEG MW-3 for an additional one calendar year on a quarterly basis for analysis of diesel and heavy oil range TPH.
- Prepare and submit Quarterly Groundwater Monitoring/Sampling Reports documenting the depth-to-water and summarizing analytical results of the performance groundwater monitoring. All reports generated by AEG will be reviewed by a WA State licensed hydrogeologist.
- All data generated will be submitted to Ecology in accordance with WAC 173-340-840(5) in both written and electronic format.

The proposed cleanup actions and further groundwater investigations will be conducted as an independent cleanup action under the Ecology Voluntary Cleanup Program to meet the MTCA requirements for obtaining an NFA determination from Ecology. The MTCA requirements for substantial equivalence under Section 515 of Chapter 173-340 of the Washington Administrative Code (WAC 173-340-515) will be met, including providing Ecology with information on the Site cleanup action.

Following completion of all phases of site work described herein, AEG will prepare and submit to Ecology a request for a *No Further Action* determination for the Site provided that the detections

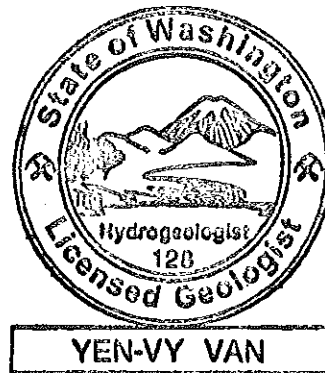
for constituents of concern will either be not detected or detected below Ecology MTCA Method A cleanup levels.

## CLOSING

Before proceeding with the proposed scope of work presented above, AEG's client requests a verbal and/or documentation indicating approval from Ecology for the proposed CAP. Please contact the undersigned at (360) 352-9835 with questions, comments, and/or your approval.

Sincerely,  
Associated Environmental Group, LLC

Yen-Vy Van, P.G., P. H.G.  
Principal Hydrogeologist



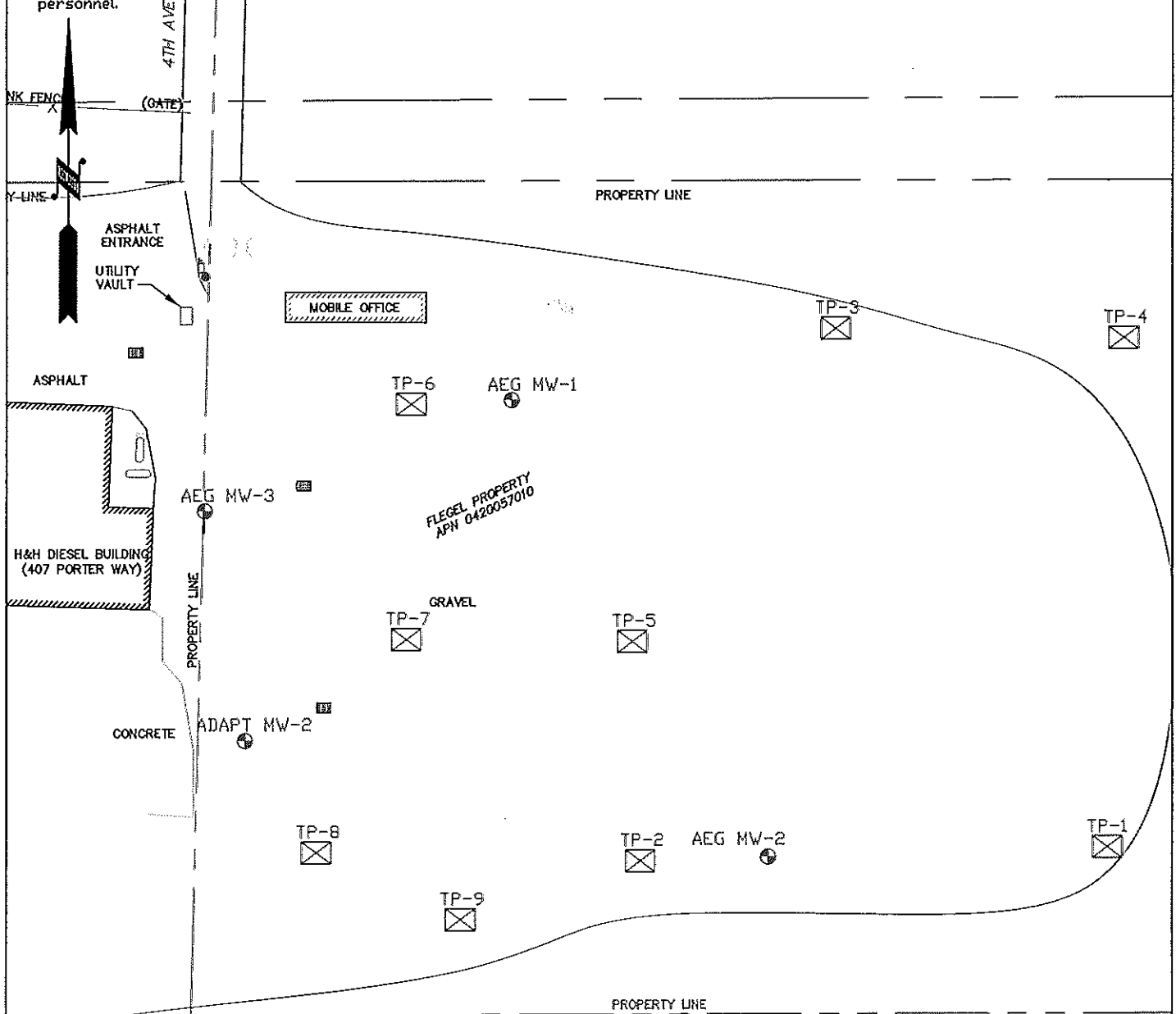
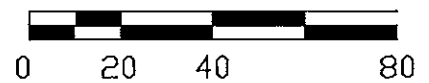
Michael S. Chun, R.S.A.  
General Manager/Principal

Enclosures: Figure 1, *Site Plan*  
Table 1, *Summary of Soil Analytical Results – TPH, BTEX & Metals*  
Table 2, *Summary of Quarterly Groundwater Analytical Results – TPH & Metals*




cc: Ms. Twila Flegel

Notes: (a) The locations of all features shown are approximate.  
 (b) This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.  
 Reference: Drawing created from sketch provided by AEG's personnel.

SCALE: 1"=40 FEET



# LEGEND

- MW-1  GROUNDWATER MONITORING WELL (AEG 2009)
- ADAPTMW-2  GROUNDWATER MONITORING WELL (SALTBUSH 1999)
- TP-1  TEST PIT (AEG 2009)



ASSOCIATED ENVIRONMENTAL GROUP, LLC  
 1728 State Avenue NE, Suite 101  
 Olympia, WA 98506  
 (360) 352-9835 Fax (360) 352-8164

FIGURE 1  
 SITE PLAN

FLEGEL/H&H PROPERTIES  
 407A & 407 PORTER WAY  
 MILTON, WA

Project# 07-200  
 File:

Date: 11/12/2010  
 Sheet 1 OF 1

Table 1 Summary of Soil Analytical Results - TPH, BTEX & Metals  
Flegel Property  
Milton, WA

| Sample Number <sup>1</sup>            | Sample Depth<br>(feet) | Date Sampled | Gasoline TPH <sup>2</sup><br>(mg/Kg) | Select Volatile Organic Compounds <sup>3</sup> (mg/Kg) |         |              |               | Diesel Extended TPH <sup>4</sup><br>(mg/Kg) |           | NTCA's Metals <sup>5</sup> (mg/Kg) |      |         |                                 |         |
|---------------------------------------|------------------------|--------------|--------------------------------------|--|---------|--------------|---------------|---|-----------|------------------------------------|------|---------|---------------------------------|---------|
|                                       |                        |              |                                      | Benzene  | Toluene | Ethylbenzene | Total Xylenes | Diesel                                      | Heavy Oil | Mercury                            | Lead | Cadmium | Chromium<br>VI/III <sup>6</sup> | Arsenic |
| AEG MW1-S1-3                          | 3                      | 5/13/09      | -                                    | -  | -       | -            | -             | <50   | <100      | -                                  | -    | -       | -                               | -       |
| AEG MW1-S2-8                          | 8                      | 5/13/09      | <10                                  | <0.02  | <0.05   | <0.05        | <0.15         | -   | -         | -                                  | -    | -       | -                               | -       |
| AEG MW1-S3-15                         | 15                     | 5/13/09      | -                                    | -  | -       | -            | -             | <50   | <100      | -                                  | -    | -       | -                               | -       |
| AEG MW2-S4-3                          | 3                      | 5/13/09      | -                                    | -  | -       | -            | -             | 500   | <100      | -                                  | -    | -       | -                               | -       |
| AEG MW2-S5-10                         | 10                     | 5/13/09      | <10                                  | <0.02  | <0.05   | <0.05        | <0.15         | -   | -         | -                                  | -    | -       | -                               | -       |
| AEG MW3-S6-3                          | 3                      | 5/13/09      | <10                                  | <0.02  | <0.05   | <0.05        | <0.15         | 200   | 13,000    | <0.5                               | 290  | <1.0    | 140                             | 21      |
| AEG MW3-S7-8                          | 8                      | 5/13/09      | -                                    | -  | -       | -            | -             | <50   | 200       | -                                  | -    | -       | -                               | -       |
| AEG MW3-S8-12                         | 12                     | 5/13/09      | <10                                  | <0.02  | <0.05   | <0.05        | <0.15         | -   | -         | -                                  | -    | -       | -                               | -       |
| TP1-5                                 | 5                      | 5/13/09      | -                                    | -  | -       | -            | -             | <50   | <100      | -                                  | -    | -       | -                               | -       |
| TP1-8                                 | 8                      | 5/13/09      | <10                                  | <0.02  | <0.05   | <0.05        | <0.15         | -   | -         | -                                  | -    | -       | -                               | -       |
| TP2-5                                 | 5                      | 5/13/09      | -                                    | -  | -       | -            | -             | -   | -         | <0.5                               | 72   | <1.0    | 28                              | 8.4     |
| TP4-8                                 | 8                      | 5/13/09      | <10                                  | <0.02  | <0.05   | 0.07         | <0.15         | -   | -         | <0.5                               | 13   | <1.0    | 15                              | 5.7     |
| TP5-6                                 | 6                      | 5/13/09      | -                                    | -  | -       | -            | -             | <50   | <100      | -                                  | -    | -       | -                               | -       |
| TP6-3                                 | 3                      | 5/13/09      | -                                    | -  | -       | -            | -             | <50   | 520       | <0.5                               | 42   | <1.0    | 18                              | 6.5     |
| TP6-8                                 | 8                      | 5/13/09      | -                                    | -  | -       | -            | -             | <50   | 130       | -                                  | -    | -       | -                               | -       |
| TP7-6                                 | 6                      | 5/13/09      | 25                                   | <0.02  | <0.05   | <0.05        | <0.15         | -   | -         | -                                  | -    | -       | -                               | -       |
| TP8-3                                 | 3                      | 5/13/09      | <10                                  | <0.02  | <0.05   | <0.05        | <0.15         | <50   | <100      | <0.5                               | 67   | <1.0    | 21                              | 19      |
| TP8-7                                 | 7                      | 5/13/09      | <10                                  | <0.02  | <0.05   | <0.05        | <0.15         | <50   | 460       | -                                  | -    | -       | -                               | -       |
| TP9-8                                 | 8                      | 5/13/09      | <10                                  | <0.02  | <0.05   | <0.05        | <0.15         | -   | -         | -                                  | -    | -       | -                               | -       |
| MDL                                   |                        |              | 10                                   | 0.02   | 0.05    | 0.05         | 0.15          | 50  | 100       | 0.50                               | 5.0  | 1.0     | 5.0                             | 5.0     |
| Ecology MTCA Method A Clean Up Levels |                        |              | 100                                  | 0.03   | 7       | 6            | 9             | 2,000                                       | 2,000     | 2                                  | 250  | 2       | 192,000                         | 20      |

Notes:

<sup>1</sup> Approximate Sample locations are shown in figure 2

<sup>2</sup> Gasoline range total petroleum hydrocarbons (TPH). Analyzed by Northwest Method TPH-Gx.

<sup>3</sup> Select Volatile Organic Compounds. Analyzed by EPA Method 8260B.

<sup>4</sup> Diesel extended range TPH. Analyzed by Northwest Method NWTPH-D/Dx

<sup>5</sup> Analyzed by EPA Method 6020

<sup>6</sup> Soil cleanup level for Chromium VI is 19 mg/Kg & Chromium III is 2,000 mg/Kg

mg/Kg - milligrams per Kilogram

- = not analyzed for constituent

< = not detected above laboratory limits

\* Ecology has not designated a cleanup level for this constituent

MDL = Method Detection Limits

Bold indicates the detected concentration exceeds Ecology

MTCA Method A cleanup levels

**Table 2 Summary of Quarterly Groundwater Analytical Results - TPH & Metals**  
**Flegel Property**  
**Milton, WA**

| Monitoring Well                       | Date Sampled | Gasoline TPH <sup>2</sup><br>(ug/L) | Diesel Extended TPH <sup>3</sup> (ug/L) |           |             | MTCA 5 Metals <sup>4</sup> (ug/L) - Total Metals |      |         |                       |         | Dissolved Metals (ug/L) |         |
|---------------------------------------|--------------|-------------------------------------|---|-----------|-------------|--|------|---------|-----------------------|---------|-------------------------|---------|
|                                       |              |                                     | Diesel                                  | Heavy Oil | Mineral Oil | Mercury  | Lead | Cadmium | Chromium <sup>6</sup> | Arsenic | Lead                    | Arsenic |
| AEG MW1-W                             | 5/28/09      | <100                                | <200                                    | <400      | <400        | <0.5   | 6.6  | <1.0    | <10                   | 50.9    | --                      | --      |
|                                       | 9/11/09      | 156                                 | <200                                    | <400      | <400        | <0.5   | <5.0 | <1.0    | <10                   | 70      | <5.0                    | 60      |
|                                       | 12/18/09     | <100                                | <200                                    | <400      | <400        | <0.5   | <5.0 | <1.0    | <10                   | 50.3    | <5.0                    | 44.4    |
|                                       | 4/5/10       | <100                                | <200                                    | <400      | <400        | <0.5   | <5.0 | <1.0    | <10                   | 44.2    | <5.0                    | 31.7    |
| AEG MW2-W                             | 5/28/09      | <100                                | <200                                    | <400      | <400        | <0.5   | 40.7 | <1.0    | 27.7                  | 102     | --                      | --      |
|                                       | 9/11/09      | <100                                | <200                                    | <400      | <400        | <0.5   | <5.0 | <1.0    | <10                   | 203     | <5.0                    | 183     |
|                                       | 12/18/09     | <100                                | <200                                    | <400      | <400        | <0.5   | <5.0 | <1.0    | <10                   | 202     | <5.0                    | 169     |
|                                       | 4/5/10       | <100                                | <200                                    | <400      | <400        | <0.5   | <5.0 | <1.0    | <10                   | 91.9    | <5.0                    | 32.4    |
| AEG MW3-W                             | 5/28/09      | <100                                | 700                                     | <400      | <400        | <0.5   | <5.0 | <1.0    | 7.8                   | 20.4    | --                      | --      |
|                                       | 9/22/09      | 370                                 | <200                                    | 1,470     | <400        | --   | --   | --      | --                    | --      | --                      | --      |
|                                       | 12/18/09     | 760                                 | <200                                    | <400      | <400        | --   | --   | --      | --                    | --      | --                      | --      |
|                                       | 4/5/10       | <100                                | 995                                     | <400      | <400        | <0.5   | <5.0 | <1.0    | <10                   | 29.9    | <5.0                    | 10.4    |
| ADAPT MW2-W                           | 5/28/09      | <100                                | <200                                    | <400      | <400        | <0.5   | <5.0 | <1.0    | <10                   | <5.0    | --                      | --      |
|                                       | 9/11/09      | 205                                 | <200                                    | <400      | <400        | <0.5   | <5.0 | <1.0    | <10                   | 13      | <5.0                    | 12.3    |
|                                       | 12/18/09     | <100                                | <200                                    | <400      | <400        | <0.5   | <5.0 | <1.0    | <10                   | <5.0    | <5.0                    | 11      |
|                                       | 4/5/10       | <100                                | <200                                    | <400      | <400        | <0.5   | <5.0 | <1.0    | <10                   | 12.4    | <5.0                    | 7.4     |
| PQL                                   |              |                                     | 100                                     | 400       | 400         | 0.5  | 5.0  | 1.0     | 10                    | 5.0     | 5.0                     | 5.0     |
| Ecology MTCA Method A Clean Up Levels |              |                                     | 800 <sup>5</sup>                        | 500       | 500         | 2  | 15   | 5       | 50                    | 5       | 15                      | 5       |

**Notes:**

- <sup>1</sup> Locations of monitoring wells are shown in figure 1
- <sup>2</sup> Gasoline range total petroleum hydrocarbons (TPH). Analyzed by Northwest Method NWTTPH-Gx.
- <sup>3</sup> Diesel extended range TPH. Analyzed by Northwest Method NWTTPH-D/Dx
- <sup>4</sup> Analyzed by EPA Method 7000 Series
- <sup>5</sup> Cleanup level with presence of benzene
- <sup>6</sup> If detection exceeds groundwater cleanup level for total chromium, then the type of chromium needs to be differentiated.
- ug/L = micrograms per liter
- = not analyzed for constituent
- < = not detected above laboratory limits
- \* Ecology has not designated a cleanup level for this constituent
- PQL = Practical Quantification Limits
- Bold indicates the detected concentration exceeds Ecology
- MTCA Method A cleanup level